Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana

FINAL - Appendix F

Public Participation, Comments, and Responses

OCTOBER 2016

Contents

LIST OF TABLES

Attachments

This appendix describes agency, tribal, and public outreach and involvement that has occurred since the start of the Environmental Impact Statement (EIS) process in 2016.

1.0 Scoping

Reclamation and the Corps have undertaken the preparation of an EIS under the requirements of NEPA (42 U.S.C. 4321 et seq.; 43 CFR 1500-1508; 43 CFR 46). The implementation regulations of NEPA and the lead agencies require a formal scoping process when initiating an EIS process. The lead agencies use scoping to involve other federal agencies, state, local and tribal governments, stakeholders, and the public in a) providing input on the purpose and need for the project, b) identifying issues of concern, and c) providing input on the range of alternatives to be analyzed in the EIS.

Reclamation and the Corps have undertaken a robust outreach effort as part of scoping to engage the public in the EIS process. The outreach efforts consisted of several parts. A federal Notice of Intent and Scoping Notice was published in the *Federal Register* on January 4, 2016. The Notice of Intent discussed the project's purpose, project location, regulatory background, and environmental process to date, and provides information on the scoping comment period and public meeting.

A postcard announcing the scoping process and scoping meeting was mailed to the entire stakeholder list. The Corps issued a press release on January 7, 2016 and distributed it to local and regional media. The news release was also posted on the Corps and Reclamation websites. Reclamation and the Corps held a public scoping meeting and invited agencies, tribes, non-governmental organizations, and the public to participate in an open exchange of information and to provide comments on the proposed scope of the EIS.

A project website, established by Reclamation, was updated to include the Notice of Intent, the Press Release, the posters used at the scoping meeting, the handout on alternatives, a NEPA handout, and a public comment form. The website is found at: http://www.usbr.gov/gp/mtao/loweryellowstone/.

Reclamation and the Corps held a public scoping meeting and invited agencies, tribes, non-governmental organizations, and the public to participate in an open exchange of information and to provide comments on the proposed scope of the EIS. The public scoping meeting was held in Glendive, Montana on January 21, 2016 at the Dawson County High School Auditorium to provide information to the public as to the alternatives being considered and issues to be addressed in the EIS and to answer questions. The meeting ran from 6 p.m. to 8 p.m. and was attended by 65 people plus representatives of the two lead agencies and the consultant team. Scoping poster boards were prepared and used at the scoping meeting to provide information on the project's purpose, alternatives under consideration, and the NEPA process. Handouts discussing the process and alternatives were handed out at the scoping meeting.

As part of the scoping process, the public was given the opportunity to provide written comments during the scoping period (January 4 through February 18, 2016) to identify issues and effects that should be addressed in the EIS, as well as reasonable alternatives to improve fish passage at the Intake Diversion Dam.

A total of 89 individuals 14 agencies/organizations, and six elected officials submitted scoping comments on the project. Public scoping is not intended to serve as a voting process; rather it is a means to involve the public in identifying issues, data, or substantive comments that should be considered in the NEPA process. An issue or comment that may have been raised in one comment letter is given the same consideration as an issue that may have been raised by several commenters.

The agencies and organizations that submitted comments were:

- United States Environmental Protection Agency
- Izaak Walton League of America
- Upper Basin Pallid Sturgeon Workgroup
- American Fisheries Society, Montana Chapter
- Our Montana, Inc.
- Defenders of Wildlife & National Resources Defense Council
- Lower Yellowstone Irrigation Project (by WWC Engineering)
- Sidney Water Users Irrigation District
- North Dakota State University, Williston Research Extension Center
- Montana Trout Unlimited
- American Rivers
- Lower Yellowstone Irrigation Project District 1
- Missouri River Grassroots Network – Sierra Club

Elected officials submitting comments were:

- Steve Daines, U.S. Senator, Montana
- Jon Tester, U.S. Senator, Montana
- Shane Gorder, Richland County Commissioner
- Loren Young, Richland County Commissioner
- Duane Mitchell, Richland County Commissioner
- Scott Buxbaum, Yellowstone Township Supervisor

Comments were sorted by category as shown in Table 1-1. Comments on alternatives, whether supporting a given alternative, objecting to a given alternative, or offering a new alternative, were the most common, accounting for over half of the total comments. Comments voicing concern about the pallid sturgeon and other threatened or endangered species were next, followed immediately by comments voicing economic concerns, centering on the need to continue providing irrigation for the area’s farmers and ranchers. The project’s Scoping Summary Report provides additional information on the scoping process and includes a copy of all scoping comments.

Table 1-1 Scoping Comments by Category

Category	Number of Comments	Category	Number of Comments
Alternatives	130	Mitigation	11
Aquatic Communities	5	Project Cost	12
Climate	2	Project Process	16
Cumulative Effects	2	Purpose and Need	7
Economics	38	Recreation	4
Energy	3	Transportation	1
Threatened and Endangered Species	41	Utilities	2
General	6	Visual Resources	2
Geomorphology	8	Water Quality	7
Hazardous Materials	1	Water Rights	11
Lands and Vegetation	2	Wildlife	8

Several commenters proposed alternatives that would include removal of the existing weir. One such alternative consists of 10 components: 1) water conservation check structures; 2) water conservation flow measuring devices; 3) convert laterals from ditches to pipes; 4) convert fields from flood irrigation to sprinklers; 5) line open canals; 6) control overchecking; 7) water pumping from a source other than the Yellowstone River; 8) pumping stations along the river; 9) use of existing headworks; and 10) renewable energy resources.

A similar alternative was also proposed allowing for removal of the existing weir. This would include 1) using gravity flow into the existing headworks when river flow allows; 2) using pumps, either in the river or in the alluvium, during period of low flows; 3) reducing diversion volumes by investing in conservation measures in the canal, at turnouts, and in laterals (lining, piping, possibly sprinkler conversion, improving headgate efficiency, etc.); 4) employing groundwater pumps in appropriate locations within the irrigation project area, as a backup as necessary; 5) providing power for pumps using a wind generator, or, if feasible, low-head hydro in the Main Canals; and 6) if power cannot be produced on site, establish a trust fund dedicated to purchasing power, and possibly fund operation and maintenance for the pump system.

Other commenters urged consideration of the removal of the existing weir, though with less detail.

Three other alternatives were proposed. The first suggested installing a bypass channel just south of the existing weir that would be approximately 100 feet wide, about 2,000 feet long and with various flow restrictions for sturgeon rest areas as natural flows. The commenter stated that the elevation change in a 2,000-foot run is not any more than some riffles in the Yellowstone River where the sturgeon are able to pass.

The second suggested alternative is to have the MFWP relocate all the sturgeon that they catch below the weir to above the weir each year during their annual survey and undertake a ten-year study to see if the numbers increase or decrease. In the commenter’s opinion, if the number of caught sturgeon increases it would mean the sturgeon are spawning and coming downstream. If the number of caught sturgeon decreases, it would mean the sturgeon are going upstream and staying there.

A third suggestion is to move the point of diversion for the canal upstream far enough to allow diversions of water into the canal without a weir. The water delivery canal with inlet and outlet gates, constructed parallel to the BNSF railroad, could provide flood control to the 100-year level for the railroad and the screen structures. The removal of the Intake Diversion Dam would then provide a natural river for fish migration. The rocks removed from the weir could be used as stream bank protection for the new canal.

Following the public release of the Draft EIS, it was realized that 12 comment letters submitted during the scoping period were not forwarded to the interdisciplinary team responsible for analysis in the Draft EIS. The majority of substantive comments (i.e., suggested alternatives, studies, and data) in the 12 comment letters were also identified in other comment letters and are already addressed in the Draft EIS. However, the comments did include additional variations on alternatives not previously considered. This addendum provides the evaluation of substantive comments not considered or analyzed in the Draft EIS and was posted to the project website (http://www.usbr.gov/gp/mtao/loweryellowstone/EIS/addendum_eis.pdf).

One commenter suggested that a short weir could prolong the ability to divert irrigation water through the current headworks, thereby reducing pumping demands while still allowing fish passage.

One commenter proposed that retractable or inflatable gates should be re-evaluated as a means to keep the river open most of the year. The author stated that there are many designs of gated weirs that may work at Intake.

One commenter recommended that under the Crow Tribe Water Rights Settlement Act of 2010 there are 50,000 acre-feet of water in Bighorn Reservoir available for purchase. The recommendation was to enter into a water service contract with the Crow Tribe and release that water over 2-3 weeks during the peak of the Yellowstone hydrograph to support pallid sturgeon passage at Intake Diversion Dam via the existing side channel.

A commenter suggested that dam removal and pumping alternatives considered during scoping do not include reference to what the commenter considers the best practicable technology. It was recommended that hydraulic ram pumps requiring low hydraulic head pressure, no electrical supply, and minimal maintenance should be considered as an alternative pump technology.

A meeting with interested agencies was held on the same day as the scoping meeting (January 21, 2016) at the Dawson County Chamber of Commerce and Agriculture in Glendive. Interested agencies were given the opportunity to provide written comments during the scoping period to identify issues and effects that should be addressed in the EIS, as well as reasonable alternatives to improve fish passage at the Intake Diversion Dam. Formal scoping comments were received from the following agencies:

- U.S. Environmental Protection Agency
- Lower Yellowstone Project Board of Control
- Sidney Water Users Irrigation District.

The agency meeting in January was attended by representatives from the Corps, Reclamation, Montana Fish, Wildlife and Parks, and the LYP Board of Control.

2.0 Tribal Involvement

The relationship between the federal government and tribes is defined in the U.S. Constitution. Article 1, Section 8 gives Congress the authority to regulate "commerce with foreign nations, and among the several states, and with the Indian tribes." Until 1871, this relationship with individual tribes was enumerated through treaties, from which the concept of the "trust relationship" originated. According to the Supreme Court decision in Cherokee Nation v. Georgia (1831), Indian tribes are considered to constitute "domestic, dependent nations" whose "relationship to the United States resembles that of a ward to his guardian." This decision established the doctrine of federal trusteeship — the trust relationship — in Indian affairs.

All federal agencies, including Reclamation and the Corps, have a government-to-government relationship with tribes. Federally recognized tribes are to be respected as sovereign governments and federal agencies have a trust responsibility to respect this sovereignty by protecting and maintaining rights reserved by or granted to tribes or individual Indians by treaties, federal court decisions, statutes, and executive orders. The sovereignty of tribes and this trust relationship have been affirmed through treaties, court decisions, legislation, regulations, and policies. The result is that federal agencies are to assess the impacts of their activities on Indian Trust Assets (ITA), to protect and conserve ITAs to the extent possible. The ITAs are discussed in Chapter 3 and 4 of this EIS.

In furtherance of the government to government relationship, the Corps and Reclamation reached out to each tribe along the Lower Yellowstone and Missouri Rivers, seeking their input on concerns "that uniquely or significantly affect your Tribe, related to the project." Specifically, information on ITAs, Traditional Cultural Properties, and other resources of tribal concern was requested. Attachment 1 includes the correspondence distributed, and Attachment 2 the one response letter. The tribes that were contacted are:

- Apsaalooke (Crow) Nation
- Assiniboine and Sioux Tribes of Fort Peck
- Blackfeet Tribe
- Cheyenne River Sioux Tribe
- Chippewa Cree Tribe of Rocky Boy's
- Crow Creek Sioux Tribe
- Eastern Shoshone Tribe
- Flandreau Santee Sioux Tribe
- Gros Ventre and Assiniboine Tribes of Fort Belknap
- Iowa Tribe of Kansas and Nebraska
- Kickapoo Tribe in Kansas
- Lower Brule Sioux Tribe
- Northern Arapaho Tribe
- Northern Cheyenne Tribe
- Oglala Sioux Tribe
- Omaha Tribe of Nebraska
- Ponca Tribe of Nebraska

- Prairie Band Potawatomi Nation
- Rosebud Sioux Tribe
- Sac and Fox Nation of Missouri in Kansas and Nebraska
- Santee Sioux Tribe of Nebraska
- Sisseton-Wahpeton Oyate
- Spirit Lake Sioux Tribe
- Standing Rock Sioux Tribe
- Three Affiliated Tribes
- Turtle Mountain Band of Chippewa Indians
- Winnebago Tribe of Nebraska
- Yankton Sioux Tribe

3.0 Cooperating Agencies

As part of an earlier environmental review process, which resulted in the issuance of an EA in 2010, Reclamation and the Corps established a Cooperating Agency Team to facilitate communication among state and federal agencies. The team met and exchanged information throughout the NEPA process. Cooperating agencies provided information based upon their special expertise or jurisdiction related to the Intake Project, assisted with analyses, and reviewed draft documents and analyses.

With the decision to prepare an EIS, the lead agencies again sent out requests to appropriate agencies to participate in the NEPA process as a cooperating agency. The following agencies have agreed to participate in the EIS effort as cooperating agencies:

- Montana Fish, Wildlife and Parks
- Montana Department of Natural Resources and Conservation
- Lower Yellowstone Irrigation Project
- U.S. Fish and Wildlife Service
- Western Area Power Administration

The U.S. Environmental Protection Agency, while declining to be a cooperating agency, expressed a desire to remain involved where possible.

Scoping

A meeting with interested agencies was held on the same day as the scoping meeting (January 21, 2016) at the Dawson County Chamber of Commerce and Agriculture in Glendive. Interested agencies were given the opportunity to provide written comments during the scoping period to identify issues and effects that should be addressed in the EIS, as well as reasonable alternatives to improve fish passage at the Intake Diversion Dam. Formal scoping comments were received from the following agencies:

- U.S. Environmental Protection Agency
- Lower Yellowstone Irrigation Project Board of Control
- Sidney Water Users Irrigation District

The agency meeting in January was attended by representatives from the Corps, Reclamation, Montana Fish, Wildlife and Parks, and the LYP Board of Control.

DEIS

A meeting with interested agencies was held in Glendive, MT on June 29, 2016. The meeting included an overview of the presentation that was given at each of the 3 public meetings. Agencies participating in that meeting included representatives from the Corps, Reclamation, Montana Fish, Wildlife and Parks, Montana Department of Natural Resources and Conservation, WAPA, and the LYP Board of Control.

4.0 DEIS Review Period

The Notice of Availability (NOA) for the Draft EIS was published in the *Federal Register* on June 3, 2016. A Notice of Additional Public Meeting was issued in the *Federal Register* of June 14, 2016, adding the Billings public meeting. The 45-day public review and comment period on the EIS ran from June 3, 2016 to July 18, 2016, and was later extended to July 28, 2016. Three public meetings were held at which time verbal comments were accepted. The first was held at the Richland County Fair Event Center, Sidney, MT, on Tuesday, June 28. The second was held the following evening, June 29, at the Dawson County High School Auditorium, 900 N. Merrill Avenue, Glendive, MT. The third meeting was held on June 30 at the Lincoln Center, 415 N. 30th Street in Billings, MT. Written comments were accepted at all three meetings.

In addition, written comments were submitted at the meetings or via e-mail, sent to cenwo-planning@usace.army.mil, or via regular mail sent to the U.S. Army Corps of Engineers Omaha District, ATTN: CENWO-PM, AA, 1616 Capitol Avenue, Omaha, NE 68102.

The public meetings included sign-in tables, display boards staffed by Corps and Reclamation staff, a thirty-minute presentation by Corps and Reclamation staff, and then a period for public testimony. A court reporter was present at all three meetings to record public comments. The Sidney, MT public meeting on June 28 was attended by 484 persons (462 signed-in and 22 did not). Thirteen persons testified at this meeting. At the Glendive, MT meeting on June 29, 194 persons attended (189 signed-in; 5 did not). Thirteen persons testified at that meeting. Finally, in Billings on June 30, 426 persons attended (420 signed-in; 6 did not), with 61 persons testifying. Attendees included elected officials, local agency staff, representatives of non-profit organizations, local businesses, and private citizens.

A total of 13,258 elected officials, agency staff, business representatives, organization representatives, and individuals provided comments during the DEIS comment period. The Distribution List is included as Attachment 5 to this appendix.

Elected officials submitting comments were:

- Shane Gorder, Richland County Commissioner
- Duane Mitchell, Richland County Commissioner
- R. Cayko, McKenzie County Commissioner
- Taylor Brown, Montana State Senator
- Brad Tschida, Montana State Representative
- S. Staffanson, Montana State Representative
- M. Rosendale, Montana State Senator

The agencies and organizations that submitted comments were:

- United States Environmental Protection Agency
- Upper Basin Pallid Sturgeon Workgroup
- American Fisheries Society, Montana Chapter
- Our Montana, Inc.
- Defenders of Wildlife & National Resources Defense Council

- Montana River Action
- Lower Yellowstone Irrigation Project (by WWC Engineering)
- Montana Trout Unlimited
- American Rivers
- Lower Yellowstone Irrigation Project
- Montana Water Resources Association
- Buffalo Rapids Irrigation District #2
- Walleyes Unlimited of Montana
- Dawson County Economic Development
- Richland County Economic Development
- Richland County Conservation District
- Richland County Public Works
- Ocean Defenders Alliance
- Montana Department of Natural Resources and Conservation
- Montana Fish, Wildlife, and Parks
- Lower Yellowstone Rural Electric Cooperative
- Montana Stockgrowers Association
- City of Sidney Utilities
- Yellowstone Valley Audubon Society
- Garrison Diversion Conservancy District

As can be seen in Table 4-1, comments on the DEIS covered a wide variety of topics. Most comments did not ask specific question but rather stated a preference and provided a general statement. Not surprisingly, the greatest number of specific comments dealt with the pallid sturgeon and other threatened or listed species. Other frequent comments addressed costs (both capital and operations and maintenance) and funding, questions on the project description, and the overall environmental and permitting process. It should be noted that all comments were reviewed by the Corps and Reclamation. Comments received are included in Attachment 3, and responses to those comments Attachment 4.

Table 4-1 DEIS Comments by Category

Category	Number of Comments	Category	Number of Comments
Preference for Bypass Channel Alternative	243	Geomorphology/ Hydrology	19
Preference for Dam Removal Alternatives	117*	Mitigation/Adaptive Management	43
Preference for Other Alternatives	9	Project Cost and Funding	65
Project Description, Corrections, etc.	82	Project Process, NEPA, Purpose & Need	65
Climate	9	Recreation	5
Economics/Social	43	Transportation	2
Energy	9	Visual Resources	2
General	197	Water Quality	6
Land & Vegetation	9	Water Rights	6
Noise/Air	6	Wildlife	15
Threatened and Endangered Species	162	*In addition, 12,144 form letters were received in support of Dam Removal Alternatives	

5.0 Final EIS Review Period

The public, including elected officials, agencies, and other interested parties, were notified of the availability of the Final EIS. There is a 30-day public review period following release of the Final EIS and before the Record of Decision is signed and published. The ROD would be issued no earlier than thirty days after the start of the 30-day review period. Notices of availability for the Final EIS and the ROD will be sent to all agencies, tribes, and individuals who submitted comments on the Draft EIS.

The public involvement process for this EIS has been completed in accordance with regulations implementing NEPA. Agencies and the public were notified of the scoping process, the availability of the DEIS and FEIS and invited to public meetings on the DEIS. The public was given opportunity to comment during the 45 day scoping period and the 55 day DEIS comment period through various means (public meeting, email, and postal mail).

Attachment 1
Correspondence Distributed

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Lester Randall, Chairman
Kickapoo Tribe in Kansas
PO Box 271
1107 Goldfinch Road
Horton, Kansas 66439

Dear Chairman Randall:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

As part of our Federal Tribal Trust responsibility, the Corps and Reclamation are seeking input on concerns that uniquely or significantly affect your Tribe, related to the project. Early identification of Tribal concerns will allow the agencies and tribes to cooperatively identify ways to avoid and minimize potential adverse impacts to Indian Trust Assets (ITAs), Traditional Cultural Properties (TCPs), and other resources of tribal concern as project planning and alternatives are developed and refined.

The proposed Federal action is to improve passage for endangered pallid sturgeon and other native fish at Intake Diversion Dam. Reclamation previously consulted with your Tribe in 2008 regarding the proposed Intake Diversion Dam Fish Passage Project and in support of preparation of an Environmental Assessment (EA) published in 2010 in compliance with NEPA and a supplemental EA published in 2015. In response to litigation, the Corps and Reclamation are now jointly preparing an Environmental Impact Statement (EIS) that will provide more detailed analysis of the Proposed Action and additional, newly proposed alternatives. The Corps will serve as administrative lead for NEPA-compliance activities during preparation of the EIS.

The design of the Proposed Action being addressed in the EIS is not finalized at this time. The EIS will include consideration of a range of reasonable alternatives to the proposed Federal action that meet the purpose and need of improving pallid sturgeon passage while continuing a viable and effective operation of the Lower Yellowstone Project. In general, alternatives currently being discussed include:

- Bypass Channel: Originally proposed in the 2015 Supplemental EA. Construct a bypass channel from the inlet of the existing high flow chute to just downstream of the existing dam and rubble field. Replace Intake Diversion Dam with a concrete weir to ensure adequate surface elevations in the river at the upstream bypass channel entrance as well as to ensure desired flow split at the irrigation headworks.
- Rock Ramp: Originally proposed in the 2015 Supplemental EA. Replace Intake Diversion Dam with a concrete weir and boulder and cobble rock ramp to ensure adequate surface elevations in the river upstream of the weir at the headworks for diversion into the main canal.
- Multiple Pumping Stations: Remove the Intake Diversion Dam and construct seven pumping stations on the Yellowstone River to deliver water to the Lower Yellowstone Project. Locations of the pumping stations are conceptual at this time. Since the Lower Yellowstone Project was designed for gravity flow of water primarily from a single water source at Intake, this alternative would require some restructuring of the Lower Yellowstone Project canal system to accommodate a water supply from multiple points along the canal.
- High Flow Channel: Excavate the existing 4-mile-long high flow channel to provide appropriate habitat conditions for pallid sturgeon passage. Parameters related to depth, velocity, and timing need to be considered. The high flow channel is located on the right descending bank.
- Pumping with Conservation Measures: Remove the Intake Diversion Dam and operate the headworks when there is sufficient flow in the river to do so. Implement conservation measures to reduce water demand, implement pumping to provide water source when it cannot be obtained via the headworks, and power this alternative with wind power.

Both current and past project information and analyses can be accessed online at *http://www.usbr.gov/gp/mtao/loweryellowstone.*

The Corps and Reclamation understand the unique relationship your Tribe has to the Yellowstone River and we want to ensure that this relationship is respected; additionally, we want to ensure that your Tribe has an opportunity to engage in communications with the Corps and Reclamation and provide inputs as this study progresses toward actions and alternatives.

If you have comments, any questions, or would like to schedule a meeting, please contact Tiffany Vanosdall, Project Manager, at 402-995-2695 or email at tiffany.k.vanosdall@usace.army.mil or Cathi Warren, Native American Consultation Specialist, at 402-995-2684 or email at catherine.j.warren@usace.army.mil.

We recognize our Government-to-Government responsibilities and will work to meet with you and your staff for consultation at any time during this process. If your Tribe is interested in Government-to-Government consultation, please contact Mr. Joel Ames, Tribal Liaison, at (402) 995-2909 or email at joel.o.ames@usace.army.mil.

Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Liana Onnen, Chairman
Prairie Band Potawatomi Nation
16281 Q Road
Mayetta, Kansas 66509

Dear Chairman Onnen:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

As part of our Federal Tribal Trust responsibility, the Corps and Reclamation are seeking input on concerns that uniquely or significantly affect your Tribe, related to the project. Early identification of Tribal concerns will allow the agencies and tribes to cooperatively identify ways to avoid and minimize potential adverse impacts to Indian Trust Assets (ITAs), Traditional Cultural Properties (TCPs), and other resources of tribal concern as project planning and alternatives are developed and refined.

The proposed Federal action is to improve passage for endangered pallid sturgeon and other native fish at Intake Diversion Dam. Reclamation previously consulted with your Tribe in 2008 regarding the proposed Intake Diversion Dam Fish Passage Project and in support of preparation of an Environmental Assessment (EA) published in 2010 in compliance with NEPA and a supplemental EA published in 2015. In response to litigation, the Corps and Reclamation are now jointly preparing an Environmental Impact Statement (EIS) that will provide more detailed analysis of the Proposed Action and additional, newly proposed alternatives. The Corps will serve as administrative lead for NEPA-compliance activities during preparation of the EIS.

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- High Flow Channel: Excavate the existing 4-mile-long high flow channel to provide appropriate habitat conditions for pallid sturgeon passage. Parameters related to depth, velocity, and timing need to be considered. The high flow channel is located on the right descending bank.
- Pumping with Conservation Measures: Remove the Intake Diversion Dam and operate the headworks when there is sufficient flow in the river to do so. Implement conservation measures to reduce water demand, implement pumping to provide water source when it cannot be obtained via the headworks, and power this alternative with wind power.

Both current and past project information and analyses can be accessed online at *http://www.usbr.gov/gp/mtao/loweryellowstone.*

The Corps and Reclamation understand the unique relationship your Tribe has to the Yellowstone River and we want to ensure that this relationship is respected; additionally, we want to ensure that your Tribe has an opportunity to engage in communications with the Corps and Reclamation and provide inputs as this study progresses toward actions and alternatives.

If you have comments, any questions, or would like to schedule a meeting, please contact Tiffany Vanosdall, Project Manager, at 402-995-2695 or email at tiffany.k.vanosdall@usace.army.mil or Cathi Warren, Native American Consultation Specialist, at 402-995-2684 or email at catherine.j.warren@usace.army.mil.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Darrin Old Coyote, Chairman, Crow Tribal Council
Apsaalooke (Crow) Nation
P.O. Box 159
Bacheeitche Avenue
Crow Agency, Montana 59022

Dear Chairman Old Coyote:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

As part of our Federal Tribal Trust responsibility, the Corps and Reclamation are seeking input on concerns that uniquely or significantly affect your Tribe, related to the project. Early identification of Tribal concerns will allow the agencies and tribes to cooperatively identify ways to avoid and minimize potential adverse impacts to Indian Trust Assets (ITAs), Traditional Cultural Properties (TCPs), and other resources of tribal concern as project planning and alternatives are developed and refined.

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- Bypass Channel: Originally proposed in the 2015 Supplemental EA. Construct a bypass channel from the inlet of the existing high flow chute to just downstream of the existing dam and rubble field. Replace Intake Diversion Dam with a concrete weir to ensure adequate surface elevations in the river at the upstream bypass channel entrance as well as to ensure desired flow split at the irrigation headworks.
- Rock Ramp: Originally proposed in the 2015 Supplemental EA. Replace Intake Diversion Dam with a concrete weir and boulder and cobble rock ramp to ensure adequate surface elevations in the river upstream of the weir at the headworks for diversion into the main canal.
- Multiple Pumping Stations: Remove the Intake Diversion Dam and construct seven pumping stations on the Yellowstone River to deliver water to the Lower Yellowstone Project. Locations of the pumping stations are conceptual at this time. Since the Lower Yellowstone Project was designed for gravity flow of water primarily from a single water source at Intake, this alternative would require some restructuring of the Lower Yellowstone Project canal system to accommodate a water supply from multiple points along the canal.
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- Pumping with Conservation Measures: Remove the Intake Diversion Dam and operate the headworks when there is sufficient flow in the river to do so. Implement conservation measures to reduce water demand, implement pumping to provide water source when it cannot be obtained via the headworks, and power this alternative with wind power.

Both current and past project information and analyses can be accessed online at *http://www.usbr.gov/gp/mtao/loweryellowstone.*

The Corps and Reclamation understand the unique relationship your Tribe has to the Yellowstone River and we want to ensure that this relationship is respected; additionally, we want to ensure that your Tribe has an opportunity to engage in communications with the Corps and Reclamation and provide inputs as this study progresses toward actions and alternatives.

If you have comments, any questions, or would like to schedule a meeting, please contact Tiffany Vanosdall, Project Manager, at 402-995-2695 or email at tiffany.k.vanosdall@usace.army.mil or Cathi Warren, Native American Consultation Specialist, at 402-995-2684 or email at catherine.j.warren@usace.army.mil.

We recognize our Government-to-Government responsibilities and will work to meet with you and your staff for consultation at any time during this process. If your Tribe is interested in Government-to-Government consultation, please contact Mr. Joel Ames, Tribal Liaison, at (402) 995-2909 or email at joel.o.ames@usace.army.mil.

Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. George Reed, Cultural Resource Director
Apsaalooke (Crow) Nation
P.O. Box 159
Crow Agency, Montana 59022

Mr. Emerson Bull Chief, THPO
Apsaalooke (Crow) Nation
P.O. Box 159
Crow Agency, Montana 59022

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Harry Barnes, Chairman, Blackfeet Tribal Business Council
Blackfeet Tribe
P.O. Box 850
Blackfeet Tribe Agency Square
Browning, Montana 59417

Dear Chairman Barnes:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

As part of our Federal Tribal Trust responsibility, the Corps and Reclamation are seeking input on concerns that uniquely or significantly affect your Tribe, related to the project. Early identification of Tribal concerns will allow the agencies and tribes to cooperatively identify ways to avoid and minimize potential adverse impacts to Indian Trust Assets (ITAs), Traditional Cultural Properties (TCPs), and other resources of tribal concern as project planning and alternatives are developed and refined.

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The Corps and Reclamation understand the unique relationship your Tribe has to the Yellowstone River and we want to ensure that this relationship is respected; additionally, we want to ensure that your Tribe has an opportunity to engage in communications with the Corps and Reclamation and provide inputs as this study progresses toward actions and alternatives.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Ms. Gayle Skunkcap Jr., Director, Fish & Wildlife Department
Blackfeet Tribe
P.O. Box 850
101 Popimi Street
Browning, Montana 59417

Mr. John Murray, Planning Department, THPO
Blackfeet Tribe
Box 850
620 All Chief Road
Browning, Montana 59417

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Ken St. Marks, Acting Chairman, Chippewa Cree Business Committee
Chippewa Cree Tribe of Rocky Boy's
P.O. Box 544
31 Agency Square
Box Elder, Montana 59521

Dear Chairman St. Marks:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

As part of our Federal Tribal Trust responsibility, the Corps and Reclamation are seeking input on concerns that uniquely or significantly affect your Tribe, related to the project. Early identification of Tribal concerns will allow the agencies and tribes to cooperatively identify ways to avoid and minimize potential adverse impacts to Indian Trust Assets (ITAs), Traditional Cultural Properties (TCPs), and other resources of tribal concern as project planning and alternatives are developed and refined.

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- <u>Rock Ramp</u>: Originally proposed in the 2015 Supplemental EA. Replace Intake Diversion Dam with a concrete weir and boulder and cobble rock ramp to ensure adequate surface elevations in the river upstream of the weir at the headworks for diversion into the main canal.
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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Curtis Monteau, Director of Natural Resources
Chippewa Cree Tribe of Rocky Boy's
RR 1, Box 542
Box Elder, Montana 59521

Mr. Alvin Windy Boy, Sr., THPO
Chippewa Cree Tribe of Rocky Boy's
P.O. Box 230
Box Elder, Montana 59521

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Darwin St. Clair, Jr., Chairman, Shoshone Business Council
Eastern Shoshone Tribe
P.O. Box 538
15 N. Fork Rd
Fort Washakie, Wyoming 82514

Dear Chairman St. Clair, Jr.:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Baptiste Weed, Fish & Wildlife, Natural Resources, Joint Tribal Water Engineer
Eastern Shoshone Tribe
PO Box 217
Fort Washakie, Wyoming 82514

Mr. Wilfred Ferris, THPO
Eastern Shoshone Tribe
PO Box 538
Fort Washakie, Wyoming 82514

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Timothy Rhodd, Chairman
Iowa Tribe of Kansas and Nebraska
3345 8Thrasher Rd.
White Cloud, Kansas 66094

Dear Chairman Rhodd:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Lance Foster, THPO
Iowa Tribe of Kansas and Nebraska
3345 Thrasher Road
White Cloud, Kansas 66094

Mr. Alan Kelley, Vice Chairman
Iowa Tribe of Kansas and Nebraska
3345 B Thrasher Road
White Cloud, Kansas 66094

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Llevando Fisher, President, Tribal Council
Northern Cheyenne Tribe
P.O. Box 128
600 S. Cheyenne Ave.
Lame Deer, Montana 59043

Dear President Fisher:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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We recognize our Government-to-Government responsibilities and will work to meet with you and your staff for consultation at any time during this process. If your Tribe is interested in Government-to-Government consultation, please contact Mr. Joel Ames, Tribal Liaison, at (402) 995-2909 or email at joel.o.ames@usace.army.mil.

Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Allen Clubfoot, Director, Natural Resources Department
Northern Cheyenne Tribe
P.O. Box 128
104 Little Coyote Drive
Lame Deer, Montana 59043

Ms. Teanna Limpy, THPO
Northern Cheyenne Tribe
P.O. Box 128
Lame Deer, Montana 59043

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Edmore Green, Chairman
Sac and Fox Nation of Missouri in Kansas and Nebraska
305 N. Main Street
Reserve, Kansas 66434

Dear Chairman Green:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

As part of our Federal Tribal Trust responsibility, the Corps and Reclamation are seeking input on concerns that uniquely or significantly affect your Tribe, related to the project. Early identification of Tribal concerns will allow the agencies and tribes to cooperatively identify ways to avoid and minimize potential adverse impacts to Indian Trust Assets (ITAs), Traditional Cultural Properties (TCPs), and other resources of tribal concern as project planning and alternatives are developed and refined.

The proposed Federal action is to improve passage for endangered pallid sturgeon and other native fish at Intake Diversion Dam. Reclamation previously consulted with your Tribe in 2008 regarding the proposed Intake Diversion Dam Fish Passage Project and in support of preparation of an Environmental Assessment (EA) published in 2010 in compliance with NEPA and a supplemental EA published in 2015. In response to litigation, the Corps and Reclamation are now jointly preparing an Environmental Impact Statement (EIS) that will provide more detailed analysis of the Proposed Action and additional, newly proposed alternatives. The Corps will serve as administrative lead for NEPA-compliance activities during preparation of the EIS.

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- Rock Ramp: Originally proposed in the 2015 Supplemental EA Replace Intake Diversion Dam with a concrete weir and boulder and cobble rock ramp to ensure adequate surface elevations in the river upstream of the weir at the headworks for diversion into the main canal.
- Multiple Pumping Stations: Remove the Intake Diversion Dam and construct seven pumping stations on the Yellowstone River to deliver water to the Lower Yellowstone Project. Locations of the pumping stations are conceptual at this time. Since the Lower Yellowstone Project was designed for gravity flow of water primarily from a single water source at Intake, this alternative would require some restructuring of the Lower Yellowstone Project canal system to accommodate a water supply from multiple points along the canal.
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- Pumping with Conservation Measures: Remove the Intake Diversion Dam and operate the headworks when there is sufficient flow in the river to do so. Implement conservation measures to reduce water demand, implement pumping to provide water source when it cannot be obtained via the headworks, and power this alternative with wind power.

Both current and past project information and analyses can be accessed online at *http://www.usbr.gov/gp/mtao/loweryellowstone.*

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Ms. Sandra Massey, Historic Preservation Officer
Sac and Fox Nation of Missouri in Kansas and Nebraska
305 N. Main Street
Reserve, Kansas 66434

Ms. Lisa Montgomery, Director, Environmental Department
Sac and Fox Nation in Kansas and Missouri
305 N. Main Street
Reserve, Kansas 66434

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Dave Archambault, II, Chairman, Tribal Council
Standing Rock Sioux Tribe
P.O. Box D
Block 1 North Standing Rock Ave.
Fort Yates, North Dakota 58538

Dear Chairman Archambault, II:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Kelly Morgan, Tribal Archeologist
Standing Rock Sioux Tribe
P.O. Box D
Fort Yates, North Dakota 58538

Mr. Jon Eagle, THPO
Standing Rock Sioux Tribe
PO Box D
Fort Yates, North Dakota 58538

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Ms. Darla Lapointe, Chairperson
Winnebago Tribe of Nebraska
P.O. Box 687
100 Bluff Street
Winnebago, Nebraska 68071

Dear Chairperson Lapointe:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Henry Payer, THPO Office
Winnebago Tribe of Nebraska
PO Box 687
Winnebago, Nebraska 68071

Mr. Vince Bass, Vice Chairman
Winnebago Tribe of Nebraska
PO Box 687
Winnebago, Nebraska 68071

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. AT Rusty Stafne, Chairman
Assiniboine and Sioux Tribes of Fort Peck
P.O. Box 1027
501 Medicine Bear
Road Poplar, Montana
59255

Dear Chairman Stafne:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Arnold (Arnie) Big Horn, Administrator, Water Resource Department
Assiniboine and Sioux Tribes of Fort Peck
P.O. Box 1027
5353 BIA Route 14
Poplar, Montana 59255

Ms. Deb Madison, Environmental Program Manager, Office of Environmental Protection
Assiniboine and Sioux Tribes of Fort Peck
603 Court Avenue
Box 1027
Poplar, Montana 59255

Mr. Darrell Youppe, THPO
Assiniboine and Sioux Tribes of Fort Peck
P.O. Box 1027
501 Medicine Bear Road
Poplar, Montana 59255

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Mark Azure, President, Fort Belknap Community Council
Gros Ventre and Assiniboine Tribes of Fort Belknap
656 Agency Main Street
Harlem, Montana 59526

Dear President Azure:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. John Allen, Council Member
Gros Ventre and Assiniboine Tribes of Fort Belknap
656 Agency Main Street
Harlem, Montana 59526

Mr. Dennis LongKnife, Environmental Compliance Officer, Environmental Dept.
Gros Ventre and Assiniboine Tribes of Fort Belknap
656 Agency Main Street
P.O. Box 983
Harlem, Montana 59526

Mr. Morris Belgard, THPO
Gros Ventre and Assiniboine Tribes of Fort Belknap
656 Agency Main Street
Harlem, Montana 59526

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Mark Fox, Chairman
Three Affiliated Tribes
404 Frontage Rd
New Town, North Dakota 58763

Dear Chairman Fox:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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- Bypass Channel: Originally proposed in the 2015 Supplemental EA. Construct a bypass channel from the inlet of the existing high flow chute to just downstream of the existing dam and rubble field. Replace Intake Diversion Dam with a concrete weir to ensure adequate surface elevations in the river at the upstream bypass channel entrance as well as to ensure desired flow split at the irrigation headworks.
- Rock Ramp: Originally proposed in the 2015 Supplemental EA. Replace Intake Diversion Dam with a concrete weir and boulder and cobble rock ramp to ensure adequate surface elevations in the river upstream of the weir at the headworks for diversion into the main canal.
- Multiple Pumping Stations: Remove the Intake Diversion Dam and construct seven pumping stations on the Yellowstone River to deliver water to the Lower Yellowstone Project. Locations of the pumping stations are conceptual at this time. Since the Lower Yellowstone Project was designed for gravity flow of water primarily from a single water source at Intake, this alternative would require some restructuring of the Lower Yellowstone Project canal system to accommodate a water supply from multiple points along the canal.
- High Flow Channel: Excavate the existing 4-mile-long high flow channel to provide appropriate habitat conditions for pallid sturgeon passage. Parameters related to depth, velocity, and timing need to be considered. The high flow channel is located on the right descending bank.
- Pumping with Conservation Measures: Remove the Intake Diversion Dam and operate the headworks when there is sufficient flow in the river to do so. Implement conservation measures to reduce water demand, implement pumping to provide water source when it cannot be obtained via the headworks, and power this alternative with wind power.

Both current and past project information and analyses can be accessed online at *http://www.usbr.gov/gp/mtao/lowerye/lowstone.*

The Corps and Reclamation understand the unique relationship your Tribe has to the Yellowstone River and we want to ensure that this relationship is respected; additionally, we want to ensure that your Tribe has an opportunity to engage in communications with the Corps and Reclamation and provide inputs as this study progresses toward actions and alternatives.

If you have comments, any questions, or would like to schedule a meeting, please contact Tiffany Vanosdall, Project Manager, at 402-995-2695 or email at tiffany.k.vanosdall@usace.army.mil or Cathi Warren, Native American Consultation Specialist, at 402-995-2684 or email at catherine.j.warren@usace.army.mil.

We recognize our Government-to-Government responsibilities and will work to meet with you and your staff for consultation at any time during this process. If your Tribe is interested in Government-to-Government consultation, please contact Mr. Joel Ames, Tribal Liaison, at (402) 995-2909 or email at joel.o.ames@usace.army.mil.

Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Carson Hood, Director, Natural Resources
Three Affiliated Tribes
404 Frontage Rd
New Town, North Dakota 58763

Mr. Antoine Fettig-Smith, Director, Fish and Wildlife Division
Three Affiliated Tribes
404 Frontage Road
P.O. Box 1818
New Town, North Dakota 58763

Mr. Elgin Crow's Breast, THPO
Three Affiliated Tribes
404 Frontage Rd
New Town, North Dakota 58763

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. John Yellow Bird Steele, President, Tribal Council
Oglala Sioux Tribe
P.O. Box 2070
Hwy 8 Main Street
Pine Ridge, South Dakota 57770

Dear President Yellow Bird Steele:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

As part of our Federal Tribal Trust responsibility, the Corps and Reclamation are seeking input on concerns that uniquely or significantly affect your Tribe, related to the project. Early identification of Tribal concerns will allow the agencies and tribes to cooperatively identify ways to avoid and minimize potential adverse impacts to Indian Trust Assets (ITAs), Traditional Cultural Properties (TCPs), and other resources of tribal concern as project planning and alternatives are developed and refined.

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The Corps and Reclamation understand the unique relationship your Tribe has to the Yellowstone River and we want to ensure that this relationship is respected; additionally, we want to ensure that your Tribe has an opportunity to engage in communications with the Corps and Reclamation and provide inputs as this study progresses toward actions and alternatives.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Ms. Trina Lone Hill, THPO Office
Oglala Sioux Tribe
P.O. Box 419
Red Cloud Building, Main Street
Pine Ridge, South Dakota 57770

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Clifford Wolfe, Chairman, Tribal Council
Omaha Tribe of Nebraska
P.O. Box 368
100 Main Street
Macy, Nebraska 68039

Dear Chairman Wolfe:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

As part of our Federal Tribal Trust responsibility, the Corps and Reclamation are seeking input on concerns that uniquely or significantly affect your Tribe, related to the project. Early identification of Tribal concerns will allow the agencies and tribes to cooperatively identify ways to avoid and minimize potential adverse impacts to Indian Trust Assets (ITAs), Traditional Cultural Properties (TCPs), and other resources of tribal concern as project planning and alternatives are developed and refined.

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- <u>Bypass Channel</u>: Originally proposed in the 2015 Supplemental EA Construct a bypass channel from the inlet of the existing high flow chute to just downstream of the existing dam and rubble field. Replace Intake Diversion Dam with a concrete weir to ensure adequate surface elevations in the river at the upstream bypass channel entrance as well as to ensure desired flow split at the irrigation headworks.
- <u>Rock Ramp</u>: Originally proposed in the 2015 Supplemental EA Replace Intake Diversion Dam with a concrete weir and boulder and cobble rock ramp to ensure adequate surface elevations in the river upstream of the weir at the headworks for diversion into the main canal.
- <u>Multiple Pumping Stations</u>: Remove the Intake Diversion Dam and construct seven pumping stations on the Yellowstone River to deliver water to the Lower Yellowstone Project. Locations of the pumping stations are conceptual at this time. Since the Lower Yellowstone Project was designed for gravity flow of water primarily from a single water source at Intake, this alternative would require some restructuring of the Lower Yellowstone Project canal system to accommodate a water supply from multiple points along the canal.
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- <u>Pumping with Conservation Measures</u>: Remove the Intake Diversion Dam and operate the headworks when there is sufficient flow in the river to do so. Implement conservation measures to reduce water demand, implement pumping to provide water source when it cannot be obtained via the headworks, and power this alternative with wind power.

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The Corps and Reclamation understand the unique relationship your Tribe has to the Yellowstone River and we want to ensure that this relationship is respected; additionally, we want to ensure that your Tribe has an opportunity to engage in communications with the Corps and Reclamation and provide inputs as this study progresses toward actions and alternatives.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Thomas Parker, THPO
Omaha Tribe of Nebraska
P.O. Box 368
Macy, Nebraska 68039

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Larry Wright, Chairman
Ponca Tribe of Nebraska
252-1 Spruce
PO Box 288
Niobrara, Nebraska 68760

Dear Chairman Wright:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Shannon Wright, Director of Cultural Affairs
Ponca Tribe of Nebraska
P.O. Box 288
2548 Park Ave.
Niobrara, Nebraska 68760

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. William Kindle, President, Tribal Council
Rosebud Sioux Tribe
P.O. Box 430
11 Legand Ave.
Rosebud, South Dakota 57570

Dear President Kindle:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Russell Eagle Bear, THPO
Rosebud Sioux Tribe
PO Box 809
Rosebud, South Dakota 57570

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Roger Trudell, Chairman
Santee Sioux Tribe of Nebraska
108 Spirit Lake Ave. West
Niobrara, Nebraska 68760

Dear Chairman Trudell:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Rick Thomas, THPO
Santee Sioux Tribe of Nebraska
52948 Highway 12
Niobrara, Nebraska 68760

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. David Flute, Chairman
Sisseton-Wahpeton Oyate
P.O. Box 509
100 Veterns Memorial Drive
Agency Village, South Dakota 57262

Dear Chairman Flute:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

As part of our Federal Tribal Trust responsibility, the Corps and Reclamation are seeking input on concerns that uniquely or significantly affect your Tribe, related to the project. Early identification of Tribal concerns will allow the agencies and tribes to cooperatively identify ways to avoid and minimize potential adverse impacts to Indian Trust Assets (ITAs), Traditional Cultural Properties (TCPs), and other resources of tribal concern as project planning and alternatives are developed and refined.

The proposed Federal action is to improve passage for endangered pallid sturgeon and other native fish at Intake Diversion Dam. Reclamation previously consulted with your Tribe in 2008 regarding the proposed Intake Diversion Dam Fish Passage Project and in support of preparation of an Environmental Assessment (EA) published in 2010 in compliance with NEPA and a supplemental EA published in 2015. In response to litigation, the Corps and Reclamation are now jointly preparing an Environmental Impact Statement (EIS) that will provide more detailed analysis of the Proposed Action and additional, newly proposed alternatives. The Corps will serve as administrative lead for NEPA-compliance activities during preparation of the EIS.

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- Multiple Pumping Stations: Remove the Intake Diversion Dam and construct seven pumping stations on the Yellowstone River to deliver water to the Lower Yellowstone Project. Locations of the pumping stations are conceptual at this time. Since the Lower Yellowstone Project was designed for gravity flow of water primarily from a single water source at Intake, this alternative would require some restructuring of the Lower Yellowstone Project canal system to accommodate a water supply from multiple points along the canal.
- High Flow Channel: Excavate the existing 4-mile-long high flow channel to provide appropriate habitat conditions for pallid sturgeon passage. Parameters related to depth, velocity, and timing need to be considered. The high flow channel is located on the right descending bank.
- Pumping with Conservation Measures: Remove the Intake Diversion Dam and operate the headworks when there is sufficient flow in the river to do so. Implement conservation measures to reduce water demand, implement pumping to provide water source when it cannot be obtained via the headworks, and power this alternative with wind power.

Both current and past project information and analyses can be accessed online at *http://www.usbr.gov/gp/mtao/loweryellowstone.*

The Corps and Reclamation understand the unique relationship your Tribe has to the Yellowstone River and we want to ensure that this relationship is respected; additionally, we want to ensure that your Tribe has an opportunity to engage in communications with the Corps and Reclamation and provide inputs as this study progresses toward actions and alternatives.

If you have comments, any questions, or would like to schedule a meeting, please contact Tiffany Vanosdall, Project Manager, at 402-995-2695 or email at tiffany.k.vanosdall@usace.army.mil or Cathi Warren, Native American Consultation Specialist, at 402-995-2684 or email at catherine.j.warren@usace.army.mil.

We recognize our Government-to-Government responsibilities and will work to meet with you and your staff for consultation at any time during this process. If your Tribe is interested in Government-to-Government consultation, please contact Mr. Joel Ames, Tribal Liaison, at (402) 995-2909 or email at joel.o.ames@usace.army.mil.

Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Ms. Dianne Desrosiers, THPO
Sisseton-Wahpeton Oyate
PO Box 907
205 Oak St. E. Ste 121
Sisseton, South Dakota 57262

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Ms. Myra Pearson, Chairwoman, Tribal Council
Spirit Lake Sioux Tribe
P.O. Box 359
816 3rd Avenue North, Tribal Adm Blgd.
Fort Totten, North Dakota 58335

Dear Chairperson Pearson:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

As part of our Federal Tribal Trust responsibility, the Corps and Reclamation are seeking input on concerns that uniquely or significantly affect your Tribe, related to the project. Early identification of Tribal concerns will allow the agencies and tribes to cooperatively identify ways to avoid and minimize potential adverse impacts to Indian Trust Assets (ITAs), Traditional Cultural Properties (TCPs), and other resources of tribal concern as project planning and alternatives are developed and refined.

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The Corps and Reclamation understand the unique relationship your Tribe has to the Yellowstone River and we want to ensure that this relationship is respected; additionally, we want to ensure that your Tribe has an opportunity to engage in communications with the Corps and Reclamation and provide inputs as this study progresses toward actions and alternatives.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Darrell Smith, THPO
Spirit Lake Sioux Tribe
P.O. Box 359
Fort Totten, North Dakota 58335

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Richard McCloud, Chairman, Turtle Mountain Band
Turtle Mountain Band of Chippewa Indians
P.O. Box 900
4180 Hwy 281
Belcourt, North Dakota 58316

Dear Chairman McCloud:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Bruce Nedeau, Director, Natural Resources, THPO
Turtle Mountain Band of Chippewa Indians
P.O. Box 900
Belcourt, North Dakota 58316

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Robert Flying Hawk, Chairman
Yankton Sioux Tribe
P.O. Box 1153
800 Main Avenue SW
Wagner, South Dakota 57380

Dear Chairman Flying Hawk:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River . Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Perry Little, THPO
Yankton Sioux Tribe
P.O. Box 1153
800 Main Avenue SW
Wagner, South Dakota 57380

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Harold Frazier, Chairman
Cheyenne River Sioux Tribe
P.O. Box 590
2001 Main Street
Eagle Butte, South Dakota 57625

Dear Chairman Frazier:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Steve Vance, THPO
Cheyenne River Sioux Tribe
P.O. Box 590
Eagle Butte, South Dakota 57625

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Ms. Roxanne Sazue, Chairperson
Crow Creek Sioux Tribe
P.O. Box 50
100 Drifting Goose Street
Fort Thompson, South Dakota 57339

Dear Chairperson Sazue:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Darrell Zephier, THPO
Crow Creek Sioux Tribe
P.O. Box 50
Fort Thompson, South Dakota 57339

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Anthony Reider, President, Executive Committee
Flandreau Santee Sioux Tribe
P.O. Box 283
603 West Broad Avenue
Flandreau, South Dakota 57028

Dear President Reider:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

As part of our Federal Tribal Trust responsibility, the Corps and Reclamation are seeking input on concerns that uniquely or significantly affect your Tribe, related to the project. Early identification of Tribal concerns will allow the agencies and tribes to cooperatively identify ways to avoid and minimize potential adverse impacts to Indian Trust Assets (ITAs), Traditional Cultural Properties (TCPs), and other resources of tribal concern as project planning and alternatives are developed and refined.

The proposed Federal action is to improve passage for endangered pallid sturgeon and other native fish at Intake Diversion Dam. Reclamation previously consulted with your Tribe in 2008 regarding the proposed Intake Diversion Dam Fish Passage Project and in support of preparation of an Environmental Assessment (EA) published in 2010 in compliance with NEPA and a supplemental EA published in 2015. In response to litigation, the Corps and Reclamation are now jointly preparing an Environmental Impact Statement (EIS) that will provide more detailed analysis of the Proposed Action and additional, newly proposed alternatives. The Corps will serve as administrative lead for NEPA-compliance activities during preparation of the EIS.

The design of the Proposed Action being addressed in the EIS is not finalized at this time. The EIS will include consideration of a range of reasonable alternatives to the proposed Federal action that meet the purpose and need of improving pallid sturgeon passage while continuing a viable and effective operation of the Lower Yellowstone Project. In general, alternatives currently being discussed include:

- Bypass Channel: Originally proposed in the 2015 Supplemental EA. Construct a bypass channel from the inlet of the existing high flow chute to just downstream of the existing dam and rubble field. Replace Intake Diversion Dam with a concrete weir to ensure adequate surface elevations in the river at the upstream bypass channel entrance as well as to ensure desired flow split at the irrigation headworks.
- Rock Ramp: Originally proposed in the 2015 Supplemental EA. Replace Intake Diversion Dam with a concrete weir and boulder and cobble rock ramp to ensure adequate surface elevations in the river upstream of the weir at the headworks for diversion into the main canal.
- Multiple Pumping Stations: Remove the Intake Diversion Dam and construct seven pumping stations on the Yellowstone River to deliver water to the Lower Yellowstone Project. Locations of the pumping stations are conceptual at this time. Since the Lower Yellowstone Project was designed for gravity flow of water primarily from a single water source at Intake, this alternative would require some restructuring of the Lower Yellowstone Project canal system to accommodate a water supply from multiple points along the canal.
- High Flow Channel: Excavate the existing 4-mile-long high flow channel to provide appropriate habitat conditions for pallid sturgeon passage. Parameters related to depth, velocity, and timing need to be considered. The high flow channel is located on the right descending bank.
- Pumping with Conservation Measures: Remove the Intake Diversion Dam and operate the headworks when there is sufficient flow in the river to do so. Implement conservation measures to reduce water demand, implement pumping to provide water source when it cannot be obtained via the headworks, and power this alternative with wind power.

Both current and past project information and analyses can be accessed online at *http://www.usbr.gov/gp/mtao/loweryellowstone*.

The Corps and Reclamation understand the unique relationship your Tribe has to the Yellowstone River and we want to ensure that this relationship is respected; additionally, we want to ensure that your Tribe has an opportunity to engage in communications with the Corps and Reclamation and provide inputs as this study progresses toward actions and alternatives.

If you have comments, any questions, or would like to schedule a meeting, please contact Tiffany Vanosdall, Project Manager, at 402-995-2695 or email at tiffany.k.vanosdall@usace.army.mil or Cathi Warren, Native American Consultation Specialist, at 402-995-2684 or email at catherine.j.warren@usace.army.mil.

We recognize our Government-to-Government responsibilities and will work to meet with you and your staff for consultation at any time during this process. If your Tribe is interested in Government-to-Government consultation, please contact Mr. Joel Ames, Tribal Liaison, at (402) 995-2909 or email at joel.o.ames@usace.army.mil.

Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Ms. Elizabeth Wakeman, Tribal Response Program Coordinator/Brownsfield Program Director
Flandreau Santee Sioux Tribe
219 Owancaya Duta Drive
Flandreau, South Dakota 57028

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Kevin Wright, Chairman, Tribal Council
Lower Brule Sioux Tribe
P.O. Box 187
187 Oyate Circle
Lower Brule, South Dakota 57548

Dear Chairman Wright:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

As part of our Federal Tribal Trust responsibility, the Corps and Reclamation are seeking input on concerns that uniquely or significantly affect your Tribe, related to the project. Early identification of Tribal concerns will allow the agencies and tribes to cooperatively identify ways to avoid and minimize potential adverse impacts to Indian Trust Assets (ITAs), Traditional Cultural Properties (TCPs), and other resources of tribal concern as project planning and alternatives are developed and refined.

The proposed Federal action is to improve passage for endangered pallid sturgeon and other native fish at Intake Diversion Dam. Reclamation previously consulted with your Tribe in 2008 regarding the proposed Intake Diversion Dam Fish Passage Project and in support of preparation of an Environmental Assessment (EA) published in 2010 in compliance with NEPA and a supplemental EA published in 2015. In response to litigation, the Corps and Reclamation are now jointly preparing an Environmental Impact Statement (EIS) that will provide more detailed analysis of the Proposed Action and additional, newly proposed alternatives. The Corps will serve as administrative lead for NEPA-compliance activities during preparation of the EIS.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Mr. Scott Jones, Cultural Resource Director
Lower Brule Sioux Tribe
P.O. Box 187
Lower Brule, South Dakota 57548

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

April 5, 2016

District Commander

Mr. Dean Goggles, Chairman, Arapaho Business Committee
Northern Arapaho Tribe
P.O. Box 396
533 Ethete, Ethete, Wyoming 82520
Fort Washakie, Wyoming 82514

Dear Chairman Goggles:

The U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) invite your Tribe to comment on the proposed Intake Diversion Dam Fish Passage Project (Project or undertaking) on the Lower Yellowstone River at Intake in Dawson County, Montana (see enclosed location map). The Project has been proposed to improve pallid sturgeon passage while continuing viable and effective operation of the Lower Yellowstone Irrigation Project. The Lower Yellowstone Irrigation Project was authorized by the Secretary of the Interior on May 10, 1904 in order to provide a dependable water supply sufficient to irrigate dry agricultural lands on the west bank of the Yellowstone River. Construction of the Lower Yellowstone Irrigation Project began in 1905 and included Intake Diversion Dam (also known as Yellowstone River Diversion Dam)-a 12-foot high wood and stone diversion dam that spans the Yellowstone River and diverts water into the Main Canal for irrigation. Intake Diversion Dam is located approximately 70 miles upstream of the confluence of the Yellowstone and Missouri rivers near Glendive, Montana.

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Sincerely,

John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished:

Ms. Yufna SoliderWolf, Director THPO
Northern Arapaho Tribe
P.O. Box 67
Fort Washakie, Wyoming 82514

Attachment 2
Correspondence Received

RECEIVED
25 April 16

CROW TRIBAL CULTURAL DEPARTMENT

Department Of The Army **April 19, 2016**

CORPS OF ENGINEERS OHAHA DISTRICT

1816 Capital Avenue

Omaha, NE 68102

To Whom It May Concern:

I received correspondence from the chairman's office on April 12, 2016, concerning the Proposed Intake Diversion Dam Fish Passage Project. Although the Bureau of Reclamation has contacted us in 2008, there was really no information shared. I, director of the culture department and chairman of the Preservation Board/Culture Committee, am only one person who doesn't even have a vote but I will present the correspondence to the board for their consideration and comments.

The Apsaalooke Nation does have an unique relationship with the Elk River, the confluence of the Elk River is a boundary of the territorial homeland of the Apsaalooke. At dawn of September 29, 1851, our great leader and statesman, Blackfoot, revealed his sacred bundle, a swan, he painted the bill blue and placed it facing the rising sun. He offered his pipe in prayer, he was asking for guidance for what he was to undertake later that day. In his prayer he designated the homeland of the Apsaalooke,"where my four base tepee poles set on the ground is mine, as long as there is even just one Apsaalooke left, I want that one Apsaalooke to have a place to come home to. Whoever interferes with what I have done, I want something to happen to them and if they are persistent I want them to be gone. This is an unwritten code of the Apsaalooke that can never be changed.

The confluence of the Elk River, although it has meandered since that time, the highest peak in the Big Saddle in the Black Hills, Sinks Canyon in the Wind Hills, along the ridge, Continental Divide, to the headwaters of the Big River, Three Forks. These four geographical landmarks are all abstract, they can never be changed or altered and there are no other places in the world like these four geographical sites. Farther Desmet, a Catholic priest who did not speak the Apsaalooke language nor did he know the topography of the land interpreted Blackfoot's prayer at the treaty conference at Horse Creek. That misinterpretation designated the 38.5 million acre territorial homeland of the Apsaalooke.

This is just a synopsis of why we are concerned about our territorial home land, within this vast area we are concerned about our historical and sacred sites which have been disturbed, destroyed and desecrated by other Indigenous Nations, who know nothing about these sites, the irony of the matter is that the United States government allows them.

Very respectfully submitted,

George Reed, Jr.

George Reed, Jr. Chairman,

Preservation Board/Culture Committee

Attachment 3
Public Comments

LOWER YELLOWSTONE INTAKE DIVERSION DAM FISH PASSAGE PROJECT, MONTANA

Thursday, June 30, 2016

Lincoln Center Auditorium
415 N. 30th Street
Billings, Montana
6:00 p.m. - 9:00 p.m.

PUBLIC HEARING

Reported by Sharon L. Gaughan, RDR, CRR, CRC

APPEARANCES

BUREAU OF RECLAMATION:

David Trimpe (Project Manager)
Steve Davies
Jerry Benock

CORPS OF ENGINEERS:

Tiffany Vanosdall (Project Manager)
Kayla Eckert-Uptmore
Eric Laux
Curtis Miller
Sage Joyce

TETRA TECH

Scott Estergard (Project Manager)
Linda Lovgren

THURSDAY, JUNE 30, 2016

MS. ECKERT-UPTMORE: Good evening. We're ready to start and for people to find their seats. We'll give it a few seconds. I'm getting a gesture from the back that you cannot hear me. Can I see a thumbs up. Super. All right.

Good evening and welcome. My name is Kayla Eckert-Uptmore and I'm the Chief of Civil Works for the U.S. Army Corps of Engineers, Omaha District. If you are wondering why the U.S. Army Corps of Engineers has sent a team of folks all the way from Omaha, Nebraska to Montana to hold this meeting, there is a reasonable answer. The Corps of Civil Works program boundaries are based on watersheds, and its military program boundaries are based on state boundaries.

As you well know, the Yellowstone River is a tributary to the Missouri River. So as the Missouri River and its tributaries flow from Montana to the confluence with the Mississippi River, Omaha District is responsible from the headwaters of Montana to just around Burwell, Nebraska. That's an eight state region. The largest geographical footprint of any Corps district in the nation.

The Corps staff here today are from the Omaha District. Closer to home for many of you, though, who live in Montana is the Bureau of Reclamation represented by staff from the Montana area office here in Billings.

Together we have made available, for public review and comment, the Lower Yellowstone Intake Diversion Dam Fish Passage Draft Environmental Impact Statement, or the Draft EIS, as you'll hear a lot of folks call it.

This is the third of the three public meetings. We held one on June 28th in Sidney, Montana; June 29th in Glendive, Montana; and today is our last during the public comment period.

The purpose of this meeting is to hear from you. We have two highly qualified project managers from both agencies here today who have been meeting with multiple technical teams to complete this Draft EIS. They will provide a brief overview of the work that's been done to date. We will then offer a public comment period for you to share your perspectives and your opinions. We will not be answering questions directly during the comment session, but we will be here after the comment period throughout the front corridor there to answer directly any questions you may have. Our intent is to ensure that there's ample opportunity for all perspectives to be heard. We will be here as long as it takes this evening to accomplish that.

But before we begin, I would like to introduce the staff that we have here. From the Corps of Engineers in the front we have Eric Laux, the Omaha District Chief of Environmental Resources. We have Curtis Miller, the Omaha District, Chief of the Hydraulic Engineering Section. We have Sage Joyce from the Omaha District, but she's here local at the Montana regulatory office here in Billings. Tiffany Vanosdall, the Yellowstone Intake EIS project manager.

From the Bureau of Reclamation, we have Steve Davies, the Montana area office manager. Jerry Benock, the Montana area office manager of planning. And David Trimpe, the Montana area office, Yellowstone Intake EIS project manager.

Between all of these followings, hopefully we have the right personnel into here to be able to answer questions that you might have. Again, we are here this evening as long as you need us to ensure that your questions are answered.

Now, for the formal public session, I would like to review the meeting guidelines. First, I ask that we offer all speakers courtesy and respect. As highlighted in your handout, the meeting guidelines -- hopefully everyone was able to grab a meeting guidelines form when they came in -- in review, we encourage everyone to sign up at the front table, regardless if you want to speak or not, so we have a proper accounting of attendance.

If you do want to speak, there was also an opportunity to sign in on the sheet there, but you're not limited to speaking, you're still able to speak if you haven't signed in at this point. You will be invited to speak in the order of the sign-in sheet.

When you come to the mic, please state your name clearly and who you represent. And so that we can afford an opportunity for everyone to speak, we ask that you limit your comments to three minutes.

Once everyone who signed up to speak has spoken, the mic will remain available for those of you who want to speak but hadn't signed up. All will be held to the three-minute rule. I will hold up a pink card with a No. 1. So if you kindly keep an eye on me over at the table over here. That will signify that you have one minute remaining. If you do not finish your remarks in three minutes, you're welcome to take place in the line again. When at the mic, just introduce yourself again, please.

The meeting and the public comments will be recorded by our certified court reporter for the official meeting documents. In all the meetings to date, the majority of the speakers have easily finished in three minutes or less.

Again, we ask that you be respectful to all speakers. That you refrain from profanity and you be courteous to the audience and other speakers by holding to the stop bell. A little bit different than those of you who have been at the past meetings, tonight we'll still do the pink card, but we have a bell that will come over the microphone to tell you that your full three minutes is up.

Again, we will have plenty of comments again. Please place yourself in line again when you hear the bell.

So with that, I ask you to please turn your attention to the project managers. David will be starting for the review. And, again, I just can't emphasize enough to offer all speakers courtesy and respect this evening. Thank you for being here. We look forward to hearing your comments.

MR. TRIMPE: So just a little history about the Lower Yellowstone Project. It was authorized under the Reclamation Act of 1902 as a single purpose irrigation project. That means all costs are incurred by the individual water users. Construction occurred from 1905 to 1908 by Reclamation. The first water delivered to the main canal was approximately 1909.

As you can see on the left, the project does encompass four irrigation districts: Intake, Savage, Lower Yellowstone I and II. Other facilities include the Intake diversion dam, the headworks and fish streams, 72-mile-long main canal, 225 miles of laterals, three pumping stations, and it encompasses about 58,000 acres.

Operation is performed by the Lower Yellowstone Irrigation Project Board of Control, and the diversion rate is approximately 1374 cfs, which is also the full water right.

So the pallid sturgeon, which is also the reason why we are here, was listed by the Fish & Wildlife Service in 1990. It is considered endangered throughout this entire range and it is native to both Yellowstone and Missouri Rivers.

Some primary threats to the pallid sturgeon include construction of dams, bank stabilization, entrainment, disease and predation, as well as commercial fishing.

So currently the pallid sturgeon can be found mostly downstream of Intake Diversion Dam down to the headwaters of Lake Sakakawea. Historically, it was found up above Cartersville, as well as in the Tongue and Powder Rivers.

So if we provide a fish passage at Intake Diversion Dam, it would open up approximately 165 miles of spawning, rearing, and drifting habitat. The next likely impediment would be Cartersville Dam, which is approximately river mile 237.

So shortly after the pallid sturgeon was listed in 1990, Reclamation decided to look at the effects of the Lower Yellowstone Project on the species. Based on best available science, there is very limited passage past the diversion dam, and there was entrainment into the main canal prior to the new headworks and streams.

2005 was a big milestone for the project. That's when Reclamation, Army Corps of Engineers, Montana Fish, Wildlife and Parks, the Nature Conservancy, as well as the Service did a value planning study that looked at 110 alternatives to provide passage and entrainment protection of the project.

In 2007 under the Water Resources and Development Act, the Corps received authorization to design, construct, and implement a project at Intake.

So we have been through a couple environmental analyses. So briefly, the first one in 2010 was the first environmental assessment. The agencies identified the rock ramp and the screened headworks as the preferred alternative.

In 2012 that new screened headworks was put into operation. And then in 2015, the agencies released the supplemental environmental assessment that identified the bypass channel as a preferred alternative.

Today, here and now in 2016, we are

undertaking an environmental impact statement. So the Notice of Availability was published in the Federal Register on June 3rd. That was the official start of the comment period. Shortly after the release of the Draft EIS, the agencies published an addendum addressing four new alternatives that were not addressed in the Draft EIS. Because of that addendum, the public comment period has been extended to July 28th. The Draft EIS does analyze six alternatives, one of them being the no action.

So the purpose and need of the project, which has not changed, is to improve passage for pallid sturgeon, as well as native species, continue the viable and effective operation of the Lower Yellowstone Project, as well as contribute to ecosystem restoration.

Prior to the release of the Draft EIS, we did go through a public scoping period. That occurred from January 4th to February 18th. We did hold one public scoping meeting January 21st in Glendive. On the right is just a rough breakdown of the comments that the agencies received during scoping. The majority of them centered around alternatives, economics, and threatened endangered species.

We also received several alternatives as part of scoping. Just a couple of them were dam removal with pumping, implementation of wind power or conservation measures, and just physically relocating pallid sturgeon upstream of the dam.

So the alternatives that we're going to talk about tonight, as well, they are in the Draft EIS, is the no action, the rock ramp, and the bypass channel, the modified side channel, and then our two pumping options, the multiple pump stations, as well as multiple pumps with conservation measures.

So the no action, which is also considered the baseline, which you measure benefits and impacts from, would be the continued operation of maintenance of the project as currently occurs. This does include the annual placement of rock on the diversion dam. And because no fish passage would be provided at the site, Reclamation or the Corps would likely be required to consult with the Fish & Wildlife Service.

There is no construction cost associated with this alternative. Annual O&M would be around

2.6 million dollars and then a per acre cost would be $46.53. So the annual O&M, as well as the cost per acre would be the cost to the water users.

I want to caution that these numbers are just estimates. This would be not be your exact assessment. This is just for planning purposes only.

So the rock ramp, which was also analyzed in 2010 and 2015, does include a new concrete weir approximately 40 feet upstream of the existing dam. It does include a 1500 foot shallowed-sloped boulder and cobble walk ramp. This alternative does allow the District to divert their full water right down to 3,000 cfs from the Yellowstone River. The rock ramp does cut off the boat ramp that currently exists at the fishing access site. So that would likely have to be moved downstream of the new rock ramp.

Construction is estimated at approximately 90.4 million dollars. Annual O&M is about 2.8. And then a cost per acre of $50, which is approximately 7.5 percent greater than the no action alternative.

So the bypass channel, which is also the agencies' preferred alternative, includes an

11,150 foot bypass channel. The entrance would come in just downstream of the existing dam and rubble field, and it does include the construction of a new concrete weir that does allow for the diversion of the full water right down to 3,000 cfs from the Yellowstone River.

All the fill that is excavated from the bypass channel would be placed in the existing side channel that does help stabilize that upstream entrance area. Construction is estimated at approximately 57 million dollars. Annual O&M of 2.8, and a cost per acre of $49.27, or approximately 5.9 percent increase from no action.

So these are the alternatives that we have previously analyzed. So we do have three new alternatives that we are fully analyzing this time. So with that, I'll turn it over to Tiffany.

MS. VANOSDALL: So we looked at several, or a few new alternatives in this EIS in response to comments that we had gotten during scoping, comments that we had gotten based on the finalization of the 2015 EA.

One of those alternatives is the modified side channel. We developed this alternative in response to the fact that there had been a few pallids that used the existing side channel that's out there right now. We would excavate that channel in order to allow that channel to flow more frequently, as frequently as we designed the bypass channel to flow.

The reason that we did that is it would meet the criteria that we were given by the biological review team in what pallids need in order to pass. So we would excavate that existing channel to meet that criteria.

Another thing that we heard is there were people that didn't want to replace the existing weir. So this alternative utilizes the existing weir that's out there. It would require continued rocking of that structure for long-term O&M.

There would be a bridge across the side channel in order to access the existing weir so that the rock could be placed. It's approximately four and a half miles long and the entrance of it for the fish is pretty far downstream from the existing weir.

One of the features of this that makes it more difficult for the pallid is generally in fish passage you want your outlet to be as close to the obstruction as possible, so that when they're streaming upstream, they come to the obstruction and your passage is right there. So that is the downfall of this alternative. However, it does utilize an existing route that pallids have used.

Construction is a little over 54 million. Annual O&M is about 2.9 million, which is, per acre, about a $51.19. In general, that's a 10 percent increase for the water user from the no action.

The multiple pump stations was an alternative that was looked at as an alternative that removes the existing weir. In response to some comments that we had heard that we needed to look at an alternative that does not include a weir. So this alternative would remove the existing diversion dam. It would construct five pumping stations along the Yellowstone with four pumps at each station, which that would be a total of 20 pumps. And those pumps would deliver the full capacity of 1374 cfs.

It would require an upgrade of the existing power system. The pumps would require more power than the power system that's out there can handle, so it does involve an upgrade of those systems.

There would be construction of fish screens. So the pumps would be located off the channel, there would be a canal to those pumps. Within that canal would be a fish screen so that the fish aren't entrained in those pumps.

You could use the existing headworks for gravity diversion about 17 percent of the time the main river is above 30,000 cfs. The rest of the time we would have to use the pumping. The reason that we included the gravity diversions is during those times, you could reduce the O&M by not running the pumps.

It would include the relocation of the Intake fishing access site, because the very first pump would need to be located at that site.

Construction of this alternative is about 132 million dollars. Annual O&M is a little over 5 million dollars. And the annual O&M per acre is a little over $88. So that's an increase for the water user of about 19 percent in O&M.

This is just a schematic of the pump stations. And I know you can't see them, but it does include how the canal to the pump stations were and what the fish screens and site canal would look like. This is in the EIS if people are interested.

So a lot of people have asked, I don't necessarily understand what these pumps would look like. I know there's pumps out there right now. I want to make a comparison to what is existing. A lot of people are familiar with the Savage pumping plant. That pumping plant pumps about 60 cfs or 38 million gallons per day. The Yellowstone requirement is 888 million gallon per day. So the Savage pumping plant can produce about 4 percent of that requirement.

So it would require about 20 stations of this size to deliver the full water right. Keeping in mind that the Savage pumping plant is not screened, so in actuality, you would actually probably have to have those pumps a little bit bigger.

The other alternative that includes the existing weir is multiple pumps with conservation measures. It includes removing the Intake dam. It also includes delivering about half of the existing water right of 608 cfs and making up the difference with conservation measures, both on farm and in the existing canal.

Delivery of the water would occur with

Ranney Wells. There would be construction of seven pump sites with six Ranney Wells at each site. It would also include upgrading of the existing power system. We looked at buying into or constructing wind power, because we had heard that there were people that wanted us to look into alternative energy sources. So we did wind power as the source of power for this alternative. You could do gravity diversion with a combination of pumping about 60 percent of the time to help reduce the O&M and the pumping cost. About 40 percent of time you could only do pumping.

This includes implementation of water conservation measures, which I'll talk a little bit on the next slide, and it would require redesign of the main canal. The existing canal is designed to run up to 1374 cfs. To only run 608 cfs, there would have to be some redesign of that canal.

This alternative would also include relocation of the Intake fishing access, because, again, the Ranney Wells would be -- the first set of pumps would need to occur at that site.

Construction of this alternative is approximately 478 million dollars. Annual O&M

would be about 4.4 million dollars, for a per acre cost of a little over $77. And that's about a 66 percent increase in O&M for the water user.

So some of the conservation measures that were proposed that could potentially be implemented both on farms and within the canal itself include check structures, flow measuring devices, converting some of the laterals to pipe, using sprinklers, lining the main canal and some of the remaining laterals, controlling overchecking, and groundwater pumping.

I do want to note that we looked at whether the 608 cfs, even with conservation measures, would be able to deliver the water needed for the pumps that are out there and we determined that it would not.

This is simply a schematic of what a Ranney Well looks like and that, too, is in the Draft EIS, if someone wants to look at it. And basically it's a lateral pipe that pulls in water from the alluvium, or kind of the groundwater of the river, and utilizes that source of water instead of the river surface water.

So I went over the cost estimates individually, but here it's on -- it's in comparison to each other side by side. And when we're looking at cost estimates, we look at several factors other than just construction costs.

So for each alternatives you look at what it costs to construct it. You look at how long it takes to construct it. Because if an alternative takes a really long time to construct for an ecosystem project, then you're delaying receiving your benefits for that long as well.

We look at the cost of design. We add that in. Construction management. And generally, the more complicated the project, which is generally a higher cost project, the higher your construction management estimate is, so we generally just take a percentage of construction cost.

We looked at -- we added real estate. The rock ramp and the bypass channel are all on federal land, so there's no real estate requirements. The modified side channel, the multiple pumps, and the pumps with conservation measures all would require acquisition of some private land.

So that gives you what we call a total

first cost. Then we look at the annual O&M. And what we do is we take the construction costs and we analyze it over a 50-year period. The reason that we do that is to make sure that each alternative is kind of an apples to apples comparison. Because you want to know if an alternative has an extremely high construction cost but very low O&M cost, you want to make sure that you're factoring that in and comparing it right against a project that has maybe a very low construction cost and has a really high O&M cost. So that you're getting a good feel and comparing it with what the true costs are in an alternative.

So like I said, we take those costs and we analyze it over 50 years. And then what the Corps is required to do is called a cost effective incremental cost analysis. When we invest in projects, generally you have to show that the benefits of a project outweigh the costs.

For ecosystems, there isn't really a monetary value that's assigned to an ecosystem. So what we do is we look at how many habitat you can get or how many habitat benefits you can get from an alternative and at what cost. And then you compare those against each other and you look for alternatives that give you the most habitat for a lower cost. So you compare all the alternatives against each other and you kind of rule out those alternatives that give you less benefit for more cost.

In going through that analysis -- and I'm not going to get into detail. If anybody wants to talk to me afterwards, I'm happy to explain it. But through that process, you get to the bypass channel and the multiple pumping station as both cost effective alternatives.

At that point we look at what it takes to get the benefits that you're getting. The bypass channel gives you almost 70 percent of your benefits at a lower cost. That additional 30 percent of benefits that the multiple pumps give you is at a much higher cost. So you can get your benefits from the bypass channel at about $727 per unit of habitat. To get the additional benefit in the multiple pumping, it costs you an additional $1,400 per habitat unit. And so that's the information that the decision-maker uses in order to determine which alternatives are most cost effective.

So this is a summary of the impacts from the EIS. I'm not going to go into any detail, they are in the EIS, if you want to talk to us about a specific resource that interests you we haven't talked about what the impacts are.

In summary, we looked at surface water, hydrology hydraulics, groundwater hydrology, geomorphology, aquatic community, federally listed species and state listed species of concern, lands and vegetation, recreation, noise, social and economic conditions and historic properties.

And we determined that none of the alternatives have significant negative impacts to the environment or any of those resources. Many of them have beneficial impacts.

So the Corps of Engineers and the Bureau of Reclamation in coordination with the Fish & Wildlife Service have determined that the bypass channel is the preferred alternative. The reason for that is the three agencies are confident that it does meet the physical and biological requirements in order for the passage to meet our Endangered Species Act needs.

It is a cost effective means of providing a fish passage. It's expected to have the lowest annual O&M. And it would not result in significant long-term adverse environmental impacts.

So that gets us to where what your role is in this, and that's how to comment. Tonight you can either give spoken or written comment. There are comment cards. You can hand those to us at any point. You can also sign up to speak. We will go through all those names. If you didn't sign up, you can still get up and speak. You can mail us comments, and the address is up there. It's also out in the hall. You won't get a response to those mailed-in comments. We won't say, Hey, we got those, but you can send those certified mail if you want. You can e-mail us. You will get a response to that that says, Hey, I got your comment and I forwarded it to the project manager.

The due date for all comments is they must be postmarked, if they're by mail, by July 28th. They must be received, if they're e-mailed, by July 28th. And then for any additional information on the analysis we did, the alternatives we looked at, or anything else, both David and my contact information is up here. And so this presentation will be posted to Montana area office's Web site. So you can access it there, or you can get our information out of here. The project Web site can be accessed, and that's up here as well. It's also out in the hall.

So we're ready to move into the spoken comment period. Kayla kind of went over the ground rules for that. All of the comments will be recorded by the court reporter. I will call people up in groups of four, generally. It will be great if you can come up to the mic in the group that you're called in. You can sit down in the chairs while you're waiting for others to speak. You'll be called in the order that you signed in.

We will be available following the meeting for any questions. If there are any of you that don't want to speak to the larger group, feel free to come out and talk to us later. You can have the court reporter get your comments not in front of the group, but just more private if you like. We're not going to respond to oral comments from up here. And all of the comments that you give us tonight through the comment period will be used in order to finalize the EIS.

So I'm going to go ahead and grab the

commenters. And again, you'll have three minutes to speak. Kayla will let you know when you have a minute left. We ask you to please be respectful of everyone else that needs to speak. We will let you finish, but we would like to let everyone through, and then you can come up and add the rest of your comments.

Okay. To start out, we have Duane
TB-1 Mitchell, Taylor Brown and Scott Staffanson.

MR. MITCHELL: My name is Duane Mitchell. I'm a Richland County Commissioner, and I would like to thank everybody for coming, even those that just came across town or across the state.

Genesis 1:28, God blessed them and God said unto them, Be fruitful and multiply and replenish the earth, and subdue it; and have dominion over the fish of the sea, over the fowl of the air, and over every living thing that moveth upon the earth.

1 I just have a couple questions and then a couple of comments. This past Sunday after church my wife was asked by a young girl, a college freshman, If the Intake Diversion Dam has been in operation for over a hundred years, why isn't the pallid sturgeon extinct? They must have --

1 cont'd

(Whereupon, Mr. Mitchell was asked to speak up.)

MR. MITCHELL: Is that better? This young lady asked my wife, If the Intake Diversion Dam has been working for a hundred years, why are the pallid sturgeon not extinct? They must be doing something correct to have been able to live this long.

2

With this perceived threat of climate change, global warming, and carbon print, how much of a carbon print has the Lower Yellowstone Irrigation Project created over the last 107 years it has been providing water to the valley?

Today Sidney Sugars employs 130 full-time employees. During the campaign, they have over 300 employees with an annual payroll of about 10 million dollars. According to the Chamber of Commerce, each paycheck that is earned in the community turns six to seven times in that community.

Now, add the 70 million dollars of operating expense that Sidney Sugars pays into our economy annually, and you are now talking about a serious impact to our city, county, and state. This will not affect only Sidney, but the other cities and counties around Sidney.

I called the Montana Department of Revenue to see how much this could affect the tax base for Richland County. The appraisal value of one acre of irrigated ground in Richland County is $664.62; one acre of wild hay land is $175.98; one acre of grazing land is $39.30.

The taxable value on one acre of irrigated land is $14.34; one acre of wild hay land is $3.80; one acre of grazing land is 84 cents.

Many years ago Congressman Pat Williams, our Representative to Washington, DC, said, If you want to find the source of the problem, follow the money.

3 I have been following the money that is being invested by the government through the Corps, Lower Yellowstone, the many businesses in Sidney that are continually fighting this, and all we're trying to do is preserve our economy and the future of our valley and for the our future generations. However, last night Steve and Matt both said that they were seeking a win/win situation --

(End of time signal ringing.)

MR. MITCHELL: Am I done? Okay.

TB-2

MR. BROWN: Good evening. My name is Taylor Brown. I'm currently serving as a State Senator in Senate District 28, which is located here in Yellowstone County. And I want to thank you for coming to Montana this evening to hear our comments. I'll try to keep my remarks brief so that those who have traveled for hundreds of miles can also speak, like the one that's going to follow me came an awfully long way.

1

As a Montana State Senator in a District to improve a portion of the Yellowstone River Valley, I stand today in strong support of the environmental impact study that shows the bypass channel to be the best alternative for both agriculture and for aquatic species.

2

At the outset of my remarks, however, I would like to register my objection to the location and the scheduling of this particular meeting in Billings, Montana, on the evening of June 30th. I think we all know why this meeting was scheduled tonight.

(Applause.)

MR. BROWN: I think we know why this meeting was scheduled tonight. I don't want to question your authority to do so. I only would like to register my complaint that, first, if you had scheduled such an important meeting over 200 miles away from the location in question; and second, that you schedule it at one of the very worst times of the year for irrigators to try to attend.

(Applause.)

MR. BROWN: Please don't count this in my three minutes, but I would suggest that you hold your applause, because I've done a lot of this kind of testimony myself and applause just slows the evening down. Thank you for your applause, but I think we should all refrain from applause tonight if we can.

To continue, I think the nature of this location is precisely why you're going to hear tonight a bunch of different kind of testimony than you've heard the past two nights from people who actually live and work in the affected area.

The sacrifices that were made by many in this crowd to travel to be here tonight were
3 immense. Please give significant weight to their comments. Because I fear that there are many here tonight that couldn't even point to the Intake

3 cont'd weir on a map a week ago.

4 My comment is this: That the proposed EIS had used real science and sound reasoning to arrive at the right solution. Our State's two biggest industries, agriculture and travel/tourism desperately needs you to get this decision right. I believe you have done that with this proposed alternative through the bypass channel. Please do the right thing and trust the process in which we have all spent, or many of us, have spent so many months. Our state's economy cannot afford continued uncertainty about this critical issue. Thank you for your time this year and I would have a written comment that I would like to submit, if I may.

TB-3

MR. STAFFANSON: My name is Scott

1 Staffanson. I am the Representative from House District 35, which encompasses most of the land that is irrigated by this project. I am in full support of this bypass channel option to keep our irrigation project viable. I am a farmer and rancher. I irrigate in the heart of this project. The canal runs through our place, and I am an environmentalist. I have spent my life making decisions that, No. 1, provide for the viability

of the farm that I have been entrusted with. To do that, you must make sure that you're looking out for the long-term viability of that operation. Irrigation is a very important part of this operation. Right now my daughter, Jessie, is at home and she's taking care of the water so I can be here.

2

I guess I think there are many positive environmental impacts that are provided by this irrigation project. And I think to change it to add the pumps definitely will be a negative to the environmental impact. I think the way the project is it needs some improvements with the new improved weir. The main reason that needs to be changed is because of the addition of the fish screens that were put in that -- this is the second phase of that and I think it needs to be there to keep the project viable. And the bypass channel is a very good way to allow the pallid sturgeon to get up the channel, as far as I can see.

I also have a letter from a constituent that I will read later on, but I encourage the Corps to go forward with this. We have delayed it enough. We have studied it enough and it needs to happen. Thank you.

MS. VANOSDALL: Jeremy Morgret and Ron Etzel.

TB-4 MR. MORGRET: I'm Jeremy Morgret. I represent Stockman Bank. I'm here in support of the bypass channel as well. It's a solution that meets all of the needs of the environment and the 1 fish, but it also still retains the economic viability of the region. So therefore, I ask you to please move forward with it in support of it. Thank you.

TB-5 MR. ETZEL: My name is Ron Etzel. I'm a current operator for the Lower Yellowstone Irrigation Project. I grew up off the project on a dryland farm, the same farm my grandfather and grandmother raised 12 kids. And my parents raised five kids. And I had to go to work for the 1 irrigation project because I couldn't support my two kids on an income of that. And the same thing is happening to the irrigating farmers, and putting pumps in would put an undue burden. And, I don't know, if they keep squeezing the farmer out, what are we going to eat? Thank you.

MS. VANOSDALL: Sean and Melissa Appelberg, Samree Reynolds, Denise Lang and Butch

Bratsky.

TB-6 MR. APPELBERG: Sean Appelberg. This is my wife, Melissa Appelberg. We've been living in the Sidney area for the last seven years.

(Whereupon, Mr. Appelberg was asked to speak up.)

MR. APPELBERG: We've been living in the Sidney area for the last seven years. I work for the South 40 Restaurant. Lola and Arnold Hansen has the restaurant and a farm and they're one of the larger employers, and this bypass project 1 needs to go through. The other alternatives I've seen just are entirely too expensive. These ranchers and farmers depend on the irrigation and the pumping process just isn't going to work, so please go forward with this bypass project.

TB-7 MS. REYNOLDS: Hi, I'm Samree Reynolds and I work at Sidney Sugars. Thank you, again, for this opportunity to be heard. At the first meeting I spoke about not saving one species from becoming extinct at the cost of another, more important, species.

Last night I spoke about the delays of endangering the pallid sturgeon even further. Both times I voiced my support of the bypass channel as the most viable, cost effective, environmentally safe alternative.

At these two meetings everyone who had come up to speak all had been born and raised here, grew up here, with lots of history and family here. I'm not from around here. I'm a city girl. I was not born and raised here, so I knew nothing about farm life and irrigation. But since having worked at the Sidney sugar factory for going on 19 years now, I do know the concept
1 of how the pumps are supposed to work. I know it takes a lot of time and money to maintain them. When you compare the cost of the bypass channel at 57 million to the multiple pumps at 478 million, it is a no-brainer which one is the best solution. If a simple city girl like me can see that, I pray that powers that be who make the decision on this can see it, too.

So I believe that supporting the bypass channel, along with keeping the division dam, or underwater speed bump as James Brower calls it, will be a win/win for all of us, fish and humans alike. Thank you so much.

TB-8 MS. LANG: Hi, my name is Denise Lang. I'm also with Sidney Sugars. I want to thank you all for sharing all of the information on this project and allowing us, the community, to voice our concerns and opinions.

Through a friend of mine during a conversation we had the other day with her and her support, I have the courage to speak up and I encourage others to do the same.

Growing up in Sidney I didn't know much about the canal, except that the fish, the farmers, and the entire community were supported by it. The job I have at Sidney Sugars is due to the farmers' ability to grow sugar beets and has given me and many others stable employment.

1 Without the water, farmers will no longer be able to grow the beets, workers will lose their jobs, and the factory and businesses will close. People will be forced to relocate. And as a result, will have to sell their homes possibly, foreclose on their loans and start from scratch. You get the trickle-down effect.

People chose to live here for a reason. The canal, to survive, the water will need to change what once was the Lone Tree Creek to plush foliage and improve the wildlife habitat immensely.

2 If the water goes, so will the human life and the abundant wildlife future for which the Intake Diversion was built. A hundred plus years this gravity system has worked. I just don't think it takes a rocket scientist to figure out that the bypass channel is the best option and I support it a hundred percent. I think I speak for the majority in saying, We don't want no stinking pumps. Thank you.

TB-9 MR. BRATSKY: Good evening. Butch Bratsky is my name, and I am a Billings native here currently working at Stockman Bank. First of all, I would like to thank you for giving us this opportunity to voice our opinions on what has taken place. And I would like to thank all of the folks that did show up here.

1 You know, farming and the agriculture in general is a high-end cost input event, and we really can't afford a lot more expenses. And therefore, we feel and urge you to go with your preferred method, which is the bypass channel.

2 You know, at our bank we currently have 750 to 800 million dollars in ag loans, and we're proud to say we finance agriculture. And when they hurt out in the country, everyone hurts. It

2 cont'd rolls down to the city. So we hope that you are very diligent in making the decision that truly does make the most sense, and I urge you to follow the preferred bypass channel option. Thank you.

TB-10 MS. VANOSDALL: Wayne Denowh, Garth Kallevig, Barry Rakes, Steve Pest -- Post -- Pust.

MR. DENOWH: That would be Pust. I'm Wayne Denowh. I'm a retired businessman from Miles City. I was in the irrigation supply business. One of the things that I did and helped with my customers was irrigation water rights. And you got a big problem moving a water right downstream. The water right is designed 1 site-specific, meaning, you ain't going to move it.

So when you move those pumps in downstream, you go to the back of the line for your water. Unless the government can do what the common, ordinary man can't do, that's a no-brainer to me.

One of the things I did was I got on the Internet and I thought, Well, I better Google this thing and find something out. I see in the 2 Bismarck Tribune in 2009 an article that says that there is less than 200 pallid sturgeon left. And

in some of the information here, the current
numbers, they're saying about 125. So we're
2 cont'd losing nine to ten -- about nine or ten a year.
So if this thing goes into court, we got a couple
of years and we're going to lose 20, and then ten
every year since. It's not a good idea.

Also, one of the things that's in the
Miles City area was the T&Y put in a fish bypass.
And if you do a little bit of Googling, you can
3 find the articles. It's a project Montana Fish,
Wildlife & Parks project, also. And it's a
roaring success.

So you have something that is proven
locally by the local people that's doing it and
4 it's successful. And now your preferred option is
basically what they have already proven that it's
going to work.

I would suggest that you get -- one of
the things that my customers, in the little
mailing, they said, Do it now. So that's what I
say, Do it now. Thank you.

TB-11 MR. KALLEVIG: My name is Garth Kallevig.
I'm from Sidney. I've lived in the area for 63
years and worked there. I'm currently a banker at
Stockman Bank for the last 35 years.

First of all, as a banker, I would like to say is I get to see balance sheets and projections for these ag businesses in the valley. I get to see them firsthand. And there just is not room on their balance sheets for additional debt for additional pump costs.

Something that's going to be an added
1 cost to their production is going to make it just tough. They've got enough difficulties out there now making a profit. So added cost is just going to make it tougher. So as a banker for the ag customers and someone else mentioned the trickle-down effect on our local economy, I don't think anybody would be untouched if we add expenses and jeopardize our ag valley farmers who irrigate in this district.

And then speaking a little different curve here. You know, as a father, as a parent, I've done that for 39 years and a grandparent for 19 years, we all try our best raising our kids to teach them right and wrong. And sometimes, you know, it's black and white and it actually worked. And other times, it was gray areas and maybe it worked, maybe it didn't work. There is several times when it absolutely, right and wrong, just

kind of went out the window, and it isn't fair and
your child would say, Gee, this isn't fair, Dad.
And you would come back in and say, Well, life
isn't fair.

And in this instance I think we have an
opportunity to hit the fair button. Fair to the
fish and the other species that would benefit from
this EIS study that this fish bypass that the
2 Corps has come up with and the Bureau has
endorsed. We have a chance to hit the fair button
for the ag businesses, for the communities, for
everybody. And so how often do you get that
opportunity to hit the fair button? Let's hit the
fair button and let's get it done. Thank you.

TB-12 MR. RAKES: Hello, my name is Barry
Rakes. I'm from Fallon, Montana, and I'm the
president of Buffalo Rapids Irrigation District
No. 2 in Terry. And I live at Fallon.

We have pumps. Pumps are expensive to
maintain. Our average yearly pump fee for our
1 little district, which is 11,531 acres, runs
$74,000 a year just for pump maintenance. And
that's not the labor cost of taking the pumps in
and out.

2 This fish bypass makes common sense. And

I'm afraid our world has lost common sense. I come in support of Sidney because it affects me, too. I raise sugar beets and I raise malt barley, and it's trucked to Sidney, Montana. And it comes down to that, it's going to affect the whole Yellowstone River Valley.

3 Pumps is not an alternative. It takes -- you get a power glitch, your pumps go off. There's a ditch across the river, it takes two days to get the water back to the other end. That's what happens.

I've asked the guys here from Sidney, I said, What's it take to get from your ditch back to the other end? He said, Three days. Okay. You get storms multiple nights, and you can literally start the pumps, they kick off again. How long is the power out? It's -- there's three days of irrigating. And you can lose a crop in our area in the time.

So I drove up here today just to support these guys. It's good for the fish, as well, and I think the fish will learn how to go to the bypass.

4 There's a deer underpass between Miles City and Terry. And they said, How are the deer

4 cont'd

going to get to the other side? Well, they found out. They went to the underpass and the deer are getting back and forth to the other side. So the fish will find its way around the bypass, too. And that's my comments. Thank you very much.

MR. PUST: It is Pust. I represent the

TB-13

Savage Irrigation --

(Whereupon, the reporter asked Mr. Pust to speak up.)

MR. PUST: I'm Steve Pust. I'm chairman of the Savage Irrigation. I have been down there for 15-plus years and working in that corridor for 25-plus years.

1

I do commend the Corps and the Bureau for the meetings that I was involved with. In the scoping phase and in the development of some of these alternatives and going through what seemed like hundreds of other alternatives. I found the processes to be fair in the sense that we have lots of expert opinions from fish biologists to other experts, as well as the environmentalists have input. And I figured that was a time when I had to bite my tongue and hold my temper. But it is understandable that all the opinions were important. And I think what we have seen here is maybe not a total meeting of the minds that is happening for everybody, but that we have found something that should work.

What I'm concerned about, also, is the funding for this in the end. And as part of my comments, I wanted to point out that in 1953 the Garrison Diversion came full blown. What the biologists say are that our fish are approximately that old. We wouldn't consider kicking Garrison Dam out to get the fish their passage again. It is not economically or financially feasible. But the people of the United States have decided what is important. I believe that that should also be time for that.

2

In closing I would say this, I believe this is a good project because it costs the taxpayers the minimum. The cost to us as landowners in the project is also where it needs to be.

And then the other reason is I believe No. 36, the female sturgeon, knew what she was doing, and the bypass channel is the preferred alternative. Thank you.

MS. VANOSDALL: Tim Koffkey, Raleigh G. Geck, Mike Murphy, and Kathleen Walter.

TB-14

MR. KOFFKEY: My name is Tim Koffkey and I'm the ditch rider for the Lower Yellowstone Irrigation Project, District 1. I'm also known as the preacher of the project; irrigation project, that is.

For the past 22 and a half years, I've been a pastor. Sometimes pastors are known as shepherds. And we envision Him as a shepherd with a staff, but we forget about the fact that the shepherd also carries a rod, which is used to protect and to defend. So I'm here as a shepherd with his rod here to protect and defend the community that I serve.

1 I speak in support of the fish bypass channel. But before I speak to my support for that, I would like to address some concerns I have for this process and the agenda of the environmentalists. 2 As was stated earlier, I would like to state my objection to the fact that we are here in Billings on this day and this time. To accommodate the environmentalists, I would challenge you that perhaps you should have made a trip out two days earlier and got yourselves into Sidney. The fact that you would not travel to Sidney is an act of cowardness. That's just

beyond me. Look into the eyes, see the community which you seek to destroy, because that is what will happen. But I suppose that it is easier to not come face-to-face with that reality.

Secondly, you environmentalists state that the pallid sturgeon has been around for millions of years, which leads me to think that you believe in Darwin's hypothesis of evolution. If that is the case, then according to Darwin's system, natural selection is the law of the land and only the strong will survive. If the pallid sturgeon has not managed to evolve to adapt to the
3 changes, perhaps it is not meant to live according to the natural selection process. That is not my theory. That's a Charles Darwin G2. I was going propose that we consider to exert our superior strength over the sturgeon and have a giant community fish fry.

Thirdly, it has been stated that the fish do not like and will not use the man-made bypass to get upstream. I would recommend that each of
4 you to take a trip to Ballard, Washington to the Hiram M. Chittenden Locks located there and to see the man-made salmon fish ladder. I have been there, I grew up in that area. And you see the

4 cont'd

salmon jump from one level of the ladder to the next. A man-made process, and yet somehow these salmon figured it out. You know why they figured it out? Because the fish, as God created them, are actually very intelligent and able to adapt. I'll be back again.

TB-15

MR. GECK: My name is Raleigh Geck. I'm a businessman from Sidney, Montana. I run a small electronics store. Most people have covered a lot of stuff I was going to cover. I just got to say, again, and I find it very interesting how we had the meetings farther and farther from ground zero. We get now closer to a bigger airport where these environmentalists can fly in easier and get out. We had the meetings in the summertime when it's harder for the farmers to get to because they are farming, irrigating. Not like these liberal professors from out East that want to come here and tell us how to run our lives. You know they have all summer to do this stuff.

But you could tell that I'm not a professional speaker, so some of my thoughts might be very random. I heard from the gentleman last night, the gentleman from the Defenders of Wildlife, some of the things he said. They could not find a biologist in Montana that would say the fish would find this weir -- or the fish passage. You proved two years ago that it's the best option. Again, you have proved it this time that it is the best option.

1 I am here now representing the responsible taxpayer: The cost involved for the other options are absolutely ridiculous. You want to double these guys' costs? That doesn't make any sense. All these guys that showed up here, they take care of their land every day.

2 The environmentalists, these other guys, got nothing. Don't allow the radical extremists delaying all this stuff. And as Mr. Denowh said earlier, If you delay, the fish are dying. But I know other people that fish this river. They catch these fish. And it seems like recently the fish they're catching, they're not very big when they catch them, so they seem to be reproducing.

3 You have documented proof. Fish have gone over the diversion. It is not a dam. It is a diversion. You also have documented proof these fish have gone around it through the slough. You have documented that. They do that every year. So what they are saying is not true.

4 The gentleman from the Defenders of Wildlife also said they won't find it, they won't find that bypass channel. I believe they will. Your document is about that thick from what I hear. You used biologists to come up with it. They say that this is the best option. It's common sense.

5 To come up with these pumps isn't. The gentleman from Buffalo Rapids, he said you don't want pumps. They have them, you know. Okay. They break down and fill with junk. The cost involves a half a billion dollars of taxpayer money? Let's be responsible. If you can do this for million dollars -- thank you.

TB-16 MR. MURPHY: Good evening and thank you for the opportunity to be here. I'm Mike Murphy, Executive Director for the Montana Water Resource Association. I'm also a rancher from the Wolf Creek, Montana area and an irrigator out in the Lower Valley.

These comments are provided on behalf of the Montana Water Resources Association, the member irrigation districts, the irrigation associations, and private ditch companies, and the respective several thousand farm and ranch families from throughout Montana, including those located on the Lower Yellowstone Irrigation Project. In providing these comments, MWRA stands in strong support of the Lower Yellowstone irrigators and the century old Intake Diversion, paramount to the economic viability of the agricultural community, property values, businesses and the rural cities and towns in Eastern Montana.

1 MWRA stands in strong support of the 100 percent design-complete, shovel-ready and twice-determined preferred alternative concrete weir and fish friendly bypass. The preferred alternative is scientifically determined to be the best environmental and economic alternative to provide a balanced win/win result.

The improved concrete weir and fish bypass provide for a continued viable and cost effective water delivery system for the irrigation community and provides the endangered pallid sturgeon with the best opportunity for survival while benefitting all Lower Yellowstone fisheries.

2 Other alternatives, such as removing the existing dam and forcing the irrigators to pump their water from the river and assume an extremely

2 cont'd

expensive and far less reliable power-dependent pumping process would also result in adverse environmental impacts.

The proposed preferred alternative, concrete weir and fish bypass, is based upon an extensive and thorough scientific evaluation of impacts that culminate with an opportunity to enhance the long-term viability and stability of the farm and ranch community, agriculture-dependent businesses, and rural communities while addressing the needs of the pallid sturgeon and other fisheries and wildlife in the Lower Yellowstone.

Legal maneuvering to oppose the economically viable and environmentally friendly preferred alternative leaves the fate of the pallid sturgeon in jeopardy and is clearly a costly effort by some environmental groups to push a much broader and disturbing agenda supporting removal/elimination of dams or diversions from our rivers. The agenda promoted irrespective of the cost or impact to agriculture, local communities, or even fish and wildlife dependent sportsmen and women, and ignores other adverse environmental impacts.

Finally, we extend our appreciation to the Army Corps of Engineers and Bureau of Reclamation for all of their hard work and diligent assessment of the possible alternatives and a win-win situation. Again, thank you. I'll provide these written comments.

TB-17

MS. WALTER: Hello, my name is Kathleen Walter and this is Sean Christensen. I'm from Medicine Lake, Montana. I no longer live in Sidney. But I grew up there and my dad worked at Sidney Sugars for 25 years. Raised six children on his salary from Sidney Sugars, and we've all become productive, tax-paying members in the United States, several of us in Montana.

This is Sean Christensen. His dad now works for Sidney Sugars. And if you want a face to put on the impact, this young man's face is here for you. Sean's three brothers, his mother, and his dad depend on Sidney Sugars for their livelihood.

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We are obviously for the bypass. And for that reason and for many other reasons. One of the other reasons, you being from Omaha, Nebraska know all about the Ogallala Aquifer. You know about the fact that in Kansas, Nebraska, Oklahoma, 1 cont'd where they're pumping water out of the ground, it goes away. It's no longer there and they're having a heck of a time irrigating there. We need that irrigation to support the economy in Sidney, Sidney Sugars especially, and this young man's family. Thank you.

MS. VANOSDALL: Blaine A. Gifford, David Garland, Pat Roberts and Jack Jennaway.

TB-18 MR. GIFFORD: I brought my own stopwatch. My name is Blaine Gifford. I'm a more commonly known as Chip. I'm one of the owners of Johnson Hardware, which is 101 years old in Sidney, and my wife is third generation.

Last night I couldn't put my head around what the Defenders of Wildlife were talking about, why they wanted to pump. The pumps are -- you have to use fossil fuels; you have to use power, which is usually provided by some sort of fossil
1 fuels or windmills, which would damage the endangered species, which we do have whooping cranes and we do have bald eagles. I couldn't really figure out why they don't like us. So I thought I can go look on their Web site. And I'm thinking, well, they do like the sturgeon, but I wasn't sure.

But then when I thought about it, what I realized is they aren't afraid this won't work, they're afraid it will. Because they have the scientists, they know that this has a very high percentage of working, and they are trying to 2 eliminate this structure out of the river. They are trying to have a free-flowing river. And they're going to be attacking this and all the other inputs and similar structures from Billings down to Intake. So everyone in Eastern Montana needs to keep an eye on this.

Just for your information, $350,000,000 is their budget, Defenders of Wildlife. As of a few years ago, they have people that make $300,000 based out of Washington. These people sit back in their posh houses and expect us to try to scrape out life when they take our water away. And they have high-dollar lawyers. We're the Davids. They're the Goliaths. They're the big corporations.

It's probably less than 5 percent of historical habitat of how the sturgeons will be saved, but we're all for it. But we're all for the bypass and we're for this program that is the best that has come.

3 All the alternatives will cost money or will be environmentally unfriendly. So therefore, we're supporting the bypass channel. The preferred reason, they're smart scientists, smart people, engineers, that have put this together. This is the most viable solution and it's a working solution. Thank you.

TB-19 MR. GARLAND: My name is David Garland. I'm the proud manager of Sidney Sugars. Since the 1830's, there's been 181 sugar beet factories that have been constructed in the United States and operated. Billings' Western Sugar factory was built, I believe, in 1906. And Sidney Sugars began hauling sugar to Billings in 1925.

Today only 12 sugar beet factories are operating in the United States. So it makes me wonder, why does my factory continue to operate? Is it built stronger, better than any other factory? No. We are just like any other factory. Do we operate efficiently? Do we have the secrets that make us profitable and keeps us open? No. So what is the reason that it keeps operating? And it comes down to reliable water.

1 The construction of the factory was built as a result of the irrigation canal. And with the

1 cont'd wooden structure, we have had reliable water since its construction.

The concrete weir will do the same. It's one of the only guarantees. Experts have talked about the unreliableness of the pumps. We know the concrete weir will work.

Last night the only argument I heard from the environmentalists was that they weren't sure if the process or if the bypass would work. It's 2 going to be wide enough. It's going to be deep enough. It's part of the river. It will work.

When the river changes courses over time, the fish seem to find their way up anyway. And it's my feeling that the fish will use that bypass.

With that, I want to continue being an operating factory. We need the water. The fish need the bypass channel. It's time to put the shovels to the ground and get it done.

TB-20 MS. ROBERTS: My name is Pat Roberts and my husband and I own Mon-Kota Fertilizers & Irrigation, irrigation being our main source of 1 income. Without the water, we have no income.

After the Sidney meeting, one of our customers came to me and said, Without water,

1 cont'd

you're done. Yes, we are done. And by being "done," that means there are five families going to lose their total income. Three of those happen to be in their 20's and they can surely go on and find something more to do. Four of our employees are nearing retirement. We're too old to start over. We don't have -- if we can't sell our business to get money to retire, we're done. We're totally done. There's nothing we can do to keep going.

As Dave said earlier about the number of employees at Sidney Sugars, I know many of those young men personally. They're young men, buying homes, raising families. We need them in our community. We need more people to stay there, to make it home. I think what the environmentalists sometimes forget is where does your product at the grocery store come from? We have to grow the commodities to make the products that you buy. Years and years ago one of my sons said to me on our way back home after having visited his grandparents on a farm, Mom, does Grandma's grocery store not have eggs? I had to have a little discussion of where eggs come from and why we had to go to the grocery store to buy our eggs

2 and Grandma didn't. So my store survived the
irrigation solely from the bypass alternative.
Thank you.

TB-21 MR. JENNAWAY: My name is Jack Jennaway.
I'm here representing my family's ranch, and I'm a
student up on the road at Rocky Mountain College.
I would just like to speak more generally tonight.
With our growing population and the fact that
natural resources, such as land and water, are not
1 going to increase anytime soon, we need to be
smart about the way we use our resources. And
with irrigation, with regard to water needs to be
the first priority. Not just because of all of
the people in here that depend on it, but because
of the impact that it has on our local economy.

The ability for these farmers and
ranchers to operate in this area has a wider
impact on other industries, such as retail and
banking and finance. Candidly, I'm a 20-year-old
college student and I'm not an economist and I can
figure that out. But we also should not abandon
our environmental interest, as well. Of course,
we should be good stewards of the rivers and the
2 fish. And in the current environment, where
people tend to be so divided and we tend to

2 cont'd

look -- when we're looking for answers, we are often willing to substitute hurting our opponent for helping ourselves. Any win/win is a good thing and that's exactly what this bypass channel is. It's a win/win. So, obviously, we should do it.

When the gentleman here said that he was a farmer and an environmentalist and he's for the bypass channel, I listen to that.

And just as another remark, since I have a little bit of time left, it seems as though, based on the testimony we've heard so far, we have reached a consensus, the bypass channel is the clear path forward and I am in strong favor of us moving forward with this project. Thank you.

MS. VANOSDALL: Next up is Tom Erskine, Tami Christenen, Bruce Farling and Scott Bosse.

TB-22

MR. ERSKINE: My name is Tom Erskine. I'm with Interstate Engineering in Billings and Sidney. I'm also a retired ag loan officer. I did that for 35 years. And I'm a taxpayer. I live in Billings. I like to eat. And I'm also a sportsman.

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I feel both of the alternatives are out. I don't know how on the one side of the mouth we

1 cont'd can talk about energy conservation, and then on the other side of our mouth say we want to put a bunch of pumps in the river that we don't even have the power to take care of. So I don't think 2 they can be considered. I believe the preferred alternative, the bypass channel, is the best alternative, not only for farming, but for the communities, for the people and jobs, and for the pallid sturgeon. Thank you.

TB-23 MS. CHRISTENSEN: Good evening. I'm Tami Christenen. I'm a business owner in Sidney, Montana. I own the Case IH dealership there. Our family has been in Sidney for about 29 years.

And I'm going to change my speech a 1 little bit from last night. You know, I think back, and our irrigation project has been there for a hundred years and there haven't been any issues with it. The diversion dam is reliable. It doesn't create any pollution. It's environmentally friendly. 2 It's been brought to my attention that there are more pallid sturgeon in the Missouri River and there's a bigger problem there than there is on the Yellowstone River, so I'm not quite sure why we're continuing to have 3 this discussion. We need to move forward with

3 cont'd this weir and bypass, just as the before when the Bureau had decided it over two years ago.

We did some checking today and we found it interesting the Defenders of Wildlife people spoke last night about how they're in favor of the pumps. And yet, they went out on record in 2015 against the wind energy turbines for killing eagles per their spring magazine in 2014.

4 The pumps would cause pollution in our area in the air, as well as noise pollution. They would disturb the fish by putting metal into the water and creating noise and vibration. And the overall economy of Sidney would be gone if we don't have irrigation. It would affect the whole town.

5 I also represent the city council and our water supply needs irrigation to put water in our wells. It would be cost prohibitive if irrigation is gone and we have to add more wells to supply the City of Sidney with water.

The irrigated crops in Sidney also go to feedlots. They go out to the dryland. It would be cost prohibitive for the nonirrigated farmers to as well.

And with that, I'll do the same thing I

did last night although we're going to do it a little different. I would like everybody in the audience who is in favor of this bypass to please stand up, and I would like this on record.

(The majority of the audience stands up.)

MS. CHRISTENSEN: And now I would like the people who aren't for it to stand up.

(A few people in the audience stand up.)

MS. CHRISTENSEN: And for the record, I feel that the majority of the people in this room are for this bypass and we need to go forward with it.

TB-24

MR. FARLING: Good evening. I'm Bruce Farling. I'm the executive director of Montana Trout Unlimited and I really appreciate the opportunity to speak tonight. I will be submitting some detailed comments, but tonight I just want to hit a few general points. I really want to make it clear to the agencies and everyone in the audience here, there's no one in my organization, there's no one I know of in the conservation community that I've talked to, and others, who wants to put irrigators out of business, who wants to stop irrigating on the Lower Yellowstone, or who wants to put Sidney

Sugars out of business. That is not anybody's goal.

I represent 4200 Montanans. We have members in every single county, except one. I can't remember which one it is. I think it's Roosevelt. I drove 350 miles to be here, and I did not get on a jet plane. I'm very familiar with Intake. I've worked with agriculture and I've worked identifying zones of agreement to bring in with irrigators all over Western Montana, and also up in the Legislature on policy.

My friend, Mike Murphy, from the Water Resources Association can attest to that. Sort of putting him on the spot, but I think Mike would actually back that up.

So a few things, and maybe I could sort of respond to Senator Brown's comments about why in Billings and a few other people. Why in Billings? It's because the Yellowstone River is a national treasure. People love it all over the country. It's beloved in Montana and it's beloved by my members.

We're in business with that and we're looking at the business of that, and my members say, There needs to be some advocates for fish here, too, and advocates that are sensitive to agriculture.

The other reason is, basically, that we are looking to find an agreement where we can leave the irrigators whole and also give these fish the highest probability of success, which I think everybody in this room agrees with. The problem is -- I guess it's the problem. I'm a scientist with fisheries and hydrology background. I work with fisheries and biologists all over the state. There's a strong consensus among the biologists in this state that the bypass
2 alternative does not give the fish the highest opportunity for the success. And so that's why we've asked that you take a stronger look, sharpened pencil, elaborate a little bit more, study more alternatives, more options, they're going to get thrown around, to make sure we're comfortable with the decision we make here is the absolute correct decision for the people on the Lower Yellowstone, for the people who love the fish, and the people who love the river, and for pallid sturgeon. Thanks for the opportunity to comment.

TB-25 MR. BOSSE: Good evening. My name is

Scott Bosse. I'm the Northern Rockies Director for American Rivers. We're a national river conservation group with a Northern Rockies office based in Bozeman.

I would like to echo one thing that Mr. Farling just said. I appreciate the fact that the Corps and Bureau agreed to host this public meeting in Billings.

1 The Yellowstone is my home river and I spend time on it almost every week during the snow-free months. It's also Montana's river. Billings is the midway point of the Yellowstone River, and I think it's important to give Montanans from across the state an opportunity to comment on this issue.

Before I get into the comments on our preferred alternative, I want to shed a little light on my background. I'm a fishery biologist, a former fishing guide, and in my younger days, I made my living working as a commercial fisherman in Alaska. The family for whom I fished for four years lost their way of life due to the Exxon Valdez oil spill when I was there, so I understand what it's like to make your living off of the land and then have it all taken away. We at American

Rivers understand how important it is not just to take care of the fish, but also to take care of the people who make their living from farming along the Lower Yellowstone River.

When we viewed this draft environmental impact statement, we asked ourselves a couple of questions in trying to determine which alternative made the most sense to us.

2 The first question was what is going to work for the fish, because that's the primary purpose of this project. If it doesn't work for the fish, it doesn't work. And we're not just talking about pallid sturgeon. There are 52 fish species in the Lower Yellowstone River; 32 of them are native. There's seven fish species of special concern. So this isn't just about restoring the pallid sturgeon.

3 Allow me to explain how we determined that this project probably won't work for fish. We've reviewed the scientific literature, looked for examples of similar projects across the country, and found that there's never been a fish passage facility built that's been shown to pass pallid sturgeon, or shovelnose sturgeon, which is a close relative to the pallid.

A lot of people here tonight talked about
the Tongue River Bypass, which is a fantastic
project. But the truth is it's never passed
4 pallid sturgeon. It's been successful at
providing passage for lots of other species of
fish, but not for pallid sturgeon, and that's the
focal species we're trying to help get past the
Intake Diversion Dam.

The other question we asked ourselves is
which alternative can succeed in passing fish
while also keeping farmers in the Lower
Yellowstone Project whole. Our organization has
been involved in approximately 200 dam project
issues across the country over the past 20 years.
If you want to look at a successful project after
5 which this one can be modeled, you can look at the
removal of the Savage Rapids Dam on the Rogue
River in Oregon. It's a very similar case to what
we face at Intake Diversion Dam. It involved
federally listed fish species, and the Bureau of
Reclamation was involved in removing the dam and
replacing its function with a pump system. Thus
far, it seems to have worked well for fish and
farmers. So I think there's some good models out
there.

6 There's one final issue I would like to address, and that is the vulnerability of the proposed bypass canal to extreme floods and ice jam events on the Lower Yellowstone River, both of which are very common. Flows on the Lower Yellowstone River can reach 70,000 cfs, sometimes even 100,000 cfs. When that happens, we have genuine concerns about the structural integrity of the bypass. Riprap and levees along the Yellowstone River fail all the time and need to be repaired on a regular basis. If the bypass canal fails in a major flood or ice jam event, pallid sturgeon will have no effective means of getting above Intake Diversion Dam.

7 In closing, American Rivers supports an open river alternative that involves removing Intake Diversion Dam and replacing its function with a pump system, and the absolute worst thing we can do is throw 57 million dollars at a solution that won't work for fish or farmers and could, in fact, make the situation worse than it is today.

MS. VANOSDALL: Okay. Next up is Walt McNutt, Dave Kelsey, Steve Forrest, and Richard Cayko.

TB-26

MR. MCNUTT: For the record my name is Walt McNutt. I am part owner of Tri County Implement in Sidney and I spent 16 years of my life in the State Legislature. While there, I worked for the eagle, water issues, and natural resource issues and had a great deal of interaction with many environmentalists and with people who depend on agriculture and economics in this state to survive.

One thing that I have come to realize, and we heard last night, if I may make a comment about, one of the gentlemen said that we want a win/win. Well, there's no win/win. Their win/win is the only way this is going to work is taking out that ag. You just heard it from the previous speaker. That's the only viable way they're going to accept anything you propose. And I got to tell you, these people are not stupid and they are well funded and it isn't from Montana.

Now, I've finally gotten to a point that I'm tired of people coming into our state and telling us what to do for us when we are the best stewards of this land. We are the best stewards

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of the cropland involved in this project. And we have studied and studied about the bypass and the

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cont'd

weir that the Corps of Engineers and the Bureau of Reclamation and the U.S. Fish & Wildlife says will work.

Why do we constantly have to say we want to protect the farmer, but these pallid sturgeon is the most important thing here. I don't agree with that. Human life and culture and economy is what's going to pay for what's done to try to preserve these sturgeon. And if you think these people are going to change their mind, don't you believe it, because they're not. And when this is all done, and I assume this has to go back to the Judge, and they're going to be in there just like the two that filed suit, tooth and nail fighting every step of the way. They are not going away.

If they're so committed to the viability of farmers, why don't they put their efforts in a fundraising campaign to establish a trust fund to pay for the O&M for the duration of the project. You're not going to see them do that. Thank you.

TB-27

MR. KELSEY: Hi. My name is Dave Kelsey. I farm and ranch out at Molt just northwest of town here. And I also operate a small irrigated operation south of Bridger that's fed from a diversion dam off of Clarks Fork.

I guess I am somewhat happy that the media is here in support our neighbors to the east.

And I'm a member of the Billings Chamber Committee and a Director of Yellowstone Valley Electric Cooperative. We know the importance of agriculture. Agriculture is the No. 1 industry in this state. And we should not take a second seat to anybody with regard to that.

1 Our operation at Bridger, without the diversion dam and the irrigation project that it supplies, would be pretty much over. So it is critical that we support this bypass channel effort.

2 And I guess the thing that bothers me about this whole deal, these folks are not happy, these environmental folks are not happy meeting a happy medium. They want to move from that bypass channel and that diversion dam in Glendive on up the Yellowstone and take everything out along the way.

This is nonsense, folks. This is total nonsense. We cannot allow this. We have a high percentage of our membership in Yellowstone Valley Electric and the folks around Billings and all up and down the Yellowstone that are dependent on these rivers for survival. If you went down there and you didn't have these rivers along the way, there would not be these communities. These communities develop because that river was there, and the irrigation project that it provided. We cannot forget that.

And I'll tell you another thing. We've got to start outweighing these folks. They're driving our energy through the roof and they're trying to take control of our waters. It's just time. Enough is enough.

TB-28

MR. FORREST: Steve Forrest, Defenders of Wildlife. I want to thank you again for coming to Montana. I value the knowledge of the folks that did drive hundreds of miles to get here. I think that's an incredible effort.

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It's not a win/win situation if one side doesn't win. And the problem we have with the preferred alternative is that we don't think it's going to work. It's not going to provide passage for sturgeon. Your own EIS makes it pretty clear, it acknowledges that the open river alternative is going to give the sturgeon the best chance possible. That is the best science we have on this issue. All the rest of it is guesswork for putting down a 60 million dollar bet on an unknown chance. We could put down a hundred million dollar bet on a sure thing. I don't bet, necessarily, all the time, but that seems like better odds to me that's worth the extra investment.

2

And as I said last night, my organization and the other organizations who are here tonight are willing to look for that money elsewhere to make up that difference. Let's do this right the first time.

2

And just one other thing, given all this uncertainty around the bypass configuration, whether the sturgeon are going to find it and use it, whether they will use it in numbers; and if they do use it, are the numbers sufficient to accommodate their rather unusual spawning regime. All that remains to be seen. And we've got a great deal of uncertainty. I think that behooves the Corps to be held accountable until passage is achieved. The Bureau is going to stay. They're stuck. And the irrigators are stuck, if this doesn't work. But I would like to see the Corps, who's getting off on a pretty good deal on this

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cont'd river to stay involved until, in fact, we have shown that sturgeon are moving up river in sufficient numbers to spawn, so that's my last point and I think we're going to push that pretty hard, is that we would like to see you guys hang in there until at least the project is completed. Thank you.

TB-29 MR. CAYKO: Good evening. My name is Richard Cayko. I'm the Chairman of the Board of Control of the Lower Yellowstone Irrigation Project. And I'm also the Chairman of McKenzie County Commissioners in North Dakota. And I bring that up because part of this project is in North Dakota, also. So there's two states involved here and two sets of districts.

As elected officials, we have a responsibility, and I've been on these boards for many years, to do the best with the tax dollars that we are charged with. If you wanted to spend
1 a half a billion dollars putting some pumps in this river system that aren't going to work, that ain't going to fly. We can take the money -- and 57 million is a lot of money -- to do what we're going to do, but at least it's going to work. And the reason it's going to work is because it's the

most environmentally and economical way to go.

2

If you think back, I grew up right on that river right where the pallid sturgeon and the shovelnose sturgeon are. The dam was built and in operation for over a hundred years, right? When we were growing up, our irrigation ditches were full of shovelnose and pallid sturgeon. The question is: How did they get in there if they didn't get above the dam? I mean they had to get across there somehow.

3

The dam, or the weir that we call it, and James has called it a speed bump, when we get the new weir in here, concrete weir strong enough to survive the ice flows, we won't have to -- picture the low water and all those rocks sticking up, we won't have to worry about that because they won't have the rock. There'll be a level -- there'll be an elevation to get the water right and the irrigation that holds constantly water in it.

The bypass channel will take 15 percent of the Yellowstone River down, 30,000 cfs, take 15 percent, you got about 4500 cfs going through that channel. If them fish can't swim through there, I don't know where they're going to go because the canal is only 1574 cfs, and 4500 is about three and a half times bigger. And that's large and that will be enough. Thank you.

MS. VANOSDALL: Next up is Becky Reidle, Shelby Reidle and Justin Kucera.

TB-30

SHELBY & BECKY REIDLE: Hello. My name is Shelby Reidle. And my name is Becky Reidle. And we signed up individually but we have a cooperative statement that we would like to give time for six minutes.

I am proudly both a farmer's daughter and a farmer's wife. My family, I'm a mom of six, is in the third generation of farmers in the Lower Yellowstone Valley. And my husband's family, he's in the fourth generation to farm and live in the Lower Yellowstone Valley.

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We are in favor of the bypass tonight. This option has been studied repeatedly three times in 15 years, and it is the preferred option of the U. S. Army Corps of Engineers, the Department of Interior, and the Fish & Wildlife. Furthermore, the results of earlier Corps studies have now been verified by an independent contractor.

We feel that the opposition is using a double standard claiming that the bypass channel option requires even more study when they're proposing for removing the weir altogether has only been studied for six months.

By creating the bypass, not only will the pallid sturgeon have an easier journey north, so will many other aquatic species. If the opposition is truly concerned with the environment, they would not support removal of the weir in favor of installing numerous pumping stations. 2 Installing pump sites across the river would require dredging, both initially and for routine maintenance.

3 In addition, the electrical infrastructure needed to operate these many pumps would be continually detrimental to wildlife, including, but not limbed to, whooping cranes and long-eared bats, which are also endangered species. The necessary power lines would interfere with the whooping crane flight patterns and the noise pollution created by the pumps would disrupt the bats' sonar.

For these reasons, we support the bypass channel and believe it is time to move ahead with it. It is the best choice for the wildlife, agriculture and overall quality of life in the

Lower Yellowstone Valley.

I do have one question to leave with the members of the obstructionists, opposition, Did you eat today? Whether you are vegan, vegetarian, or carnivore like me, if you drink soy milk or dairy it doesn't matter, a farmer put that on your table, a farmer feeds you three times a day. On behalf of the farmers here and across the country, you're welcome. We don't need your gratitude but we deserve your consideration and your respect.

TB-31

MR. KUCERA: Hi. I'm Justin Kucera. I'm a fourth generation Montanan. I appreciate farmers and ranchers. Irrigation is No. 1. Recreation is No. 2. Both very important to the economy and well-being in Montana. And I guess I'm here in defense of recreation and things that are wild.

1

I support the purpose of this pallid sturgeon passage, but we need to keep the farmers farming. There's no doubt about that.

2

I don't understand why we have to put the bypass channel into an existing side channel, it already works for pallid sturgeon. I don't understand why we can't move the water entrance/fish exit of the preferred alternative

2
cont'd

downstream and leave the existing side channel to function as a wild connection. It's more than fish or farmers when you're from here and you love that river and you want to see it come out of its banks and be wild sometimes. I just feel that I can't support a bypass channel that destroys a national treasure, which is the freedom of the Yellowstone River. It just makes no sense to me.

I think there are other alternatives. I haven't seen any EIS. I asked for it a few months ago and it never showed up at my door.

I get nervous. I don't really do this ever.

The Yellowstone River is where I live. It's where I raise my children. I drink from it, and I just spent a week on it. I love it. The Lower Yellowstone Valley, the irrigator, the agriculture, that means we've got the croplands, we've got the river between, the riparian areas, the flora, the fauna and it's amazing. It's the greatest place in the world and I just don't think this alternative is the best one for here in Montana, or the pallid sturgeon or the farmer or for recreation.

I'm shocked that it's at 2.9 million

dollars for O&M. I can't imagine the rock in that diversion -- I could be wrong, but I can't imagine that takes 2.9 million dollars.

3 We should look at other alteratives including off-stream storage, such as that at Nelson and Deadman's Basin reservoirs. Look at water re-use and water conservation. Take less water out of the river, catch and store the nutrient-loaded return flows from the irrigated fields.

I don't know, I'm just one guy, but there's got to be other alternatives that don't plug the one way the pallids get up and down the river and don't destroy one of the last wild rivers we have. Thank you.

MS. VANOSDALL: Next up is Dale Rambur, Stephanie Schlothauer and James Brower.

MR. BROWER: They said I could have their three minutes each. I'm just teasing. I'm waiting for them to come down.

MS. VANOSDALL: Dale? And it's possible that I'm ruining the names, so if you signed up to speak, we are at the last few that are signed up, so just step out. I have Dale Rambur, Stephanie Schlothauer and James.

TB-32 MS. SCHLOTHAUER: Good evening. My name is Stephanie Schlothauer and I'm married to a farmer and this is my family. All here. They're all wearing yellow shirts. We are a big, big family.

First of all, let me say that I am one of
the many that is so impressed with the engineering
skills of the people who designed the original
gravity flow canal and lateral system of the
Yellowstone Irrigation District over one hundred
1 years ago. They built this canal system and it
has worked successfully and dependably to support
food and feed and business for thousands of human
beings and for wildlife. And I believe we can
support the bypass project, because it is the one
that is most acceptable.

The point that I would like to make is a
scientific one. And that is, that there has been
DNA testing, and I quote, "to determine the rates
of hybridization between pallid and shovelnose
2 sturgeon, and based on the genetic markers
assessed, the DNA markers for the pallid sturgeon
were genetically indistinguishable from the more
common shovelnose sturgeon. Their ability to
hybridize, and thus evolve comes about when the

2 cont'd

shovelnose fertilizes the eggs of the pallid sturgeon. Because of this ability of two species to hybridize, some biologists have expressed concern that it is a violation of the Endangered Species Act to protect one species that may not be genetically isolated from another." I think that is a very important fact to bring out. So it almost substantiates the fact that the pallid sturgeon is evolving and it is being helped to evolve. So thank you, and thank you, all my family. I'm so glad that we're all here to show you what a big family we are.

TB-33

MR. BROWER: Is Dale Rambur here? Does he want to speak? Okay. Hopefully he comes in by the time I'm done. I'll try and take up some extra time for you. All right.

Hi. I want to thank everybody that took the time to travel so far to get here so that your comments could be heard and things could be weighed and we could see how we can work together to find the best solution for the fish while keeping the reliability that the irrigation project has had for 107 years.

I want to reiterate that the bypass channel has been studied several times since 2005 and that removal of the dam has been studied for, I assume, six months. That, in itself, raises the argument that our friends who love the fish have made that there is no certainty in 15 years of study or not enough certainty of 15 years of study on the bypass. And I disagree with that. It's been studied for 15 years. In fact, I have seen several news articles that talked about how many tens of millions of dollars have been spent studying the pallid sturgeon.

And I want to reiterate that the contractor who bid the job to build the bypass channel and construct the concrete weir with its notch that will pass water over the top of it 170 years instead of the stacked rock we have now, which will ruin fish passage, but the contractor bid it for 28 million dollars to do the construction of the bypass channel, not the 57 million you're hearing from people who have only been involved for less than a year.

1 First concern I have, you remove the dam and you are going to dry up several legitimate water right holding pump stations above the dam, because you will lower the water level of the river seven feet. By lowering the water level of

1 cont'd the river seven feet, you will dry up two existing
side channels that have been there over a hundred
years and supports a lot of aquatic wildlife. So
removing the dam is not a hundred percent win/win
for every fish or every side channel in the
Yellowstone River, because there was a scientific
paper finished by MSU talking about the importance
2 of the side channels and how there's a very
limited number of side channels in the Yellowstone
River. And they're important because they support
a broad variety of fish in the side channels and
out of the side channels and they give the small
fish someplace to live and hide from their
predators.

So removing the dam has a lot of
unintended consequences, including the
installation of pumps, which create a lot of noise
and vibration and will be placed all along about a
thousand feet of the Yellowstone River where some
of the prime habitat, thousands of acres, has been
generated in 107 years of flood irrigation that
support the northern long-eared bat and the
whooping crane. You really need to make a
decision soon enough to say --

MS. ECKERT-UPTMORE: We will bring you

back up as soon as we get through the list. Thank you.

MS. VANOSDALL: So that's the list of everyone that had signed up. We invite anyone that didn't sign up to come forward and make a statement. If you did sign up and didn't finish, we invite you to finish your statement. We will still hold you to the three minutes. This time we ask that you state your name and who you represent and make sure you do that clearly for the court reporter.

MR. LINDE: Hello. I'm Dave --

(Whereupon, the court reporter asked the commenter to speak up.)

TB-34 MR. LINDE: I wasn't going to say anything, but this guy over here was proud of closing or taking out 200 dams. I would be
1 ashamed to say that. This is the taking down of America, a little bit at a time. Do the bypass. Do the right thing.

TB-35 MR. SCHMIERER: I'm Lee Roy Schmierer, along with my brother and my wife and his wife, Dennis and Karen, and my wife, Charity. We're second generation farmers in the Savage area. We are now four generations of us living in that area there now.

I will say that we are very proud to be environmentalists. We're not just mere farmers, we're caretakers of the land and the river. God has entrusted me with that, and I take it seriously.

We are not wannabes like some people are here. They have nothing invested. It will cost them nothing when it's done, but yet they're here with their opinions.

1 We're happy hunters and fishermen. We love the land, we love the river, we love the wildlife. Just as dad did, it's really just who we are, what I want, and what I have been privileged to have and want to hand down to my children and my grandchildren. And therefore, I support the fish bypass because it's best for the river, the land, the wildlife, and the people that are vested in it and carefully care for it.

I want to say to our opponents, you do have a privilege here to come and speak, but you don't have a right.

TB-36 MS. PETERSON: Lynne Peterson. I am Superintendent of Savage Schools, and I would like to thank all the people here for passing the mill levies for the public education. You are looking at the people who pass mill levies to get us new schools and they deserve a round of applause.

And I represent Savage, Montana and my dad is a sugar beet farmer. What I would like is 450 million dollars to support my 126 students. We need to put that into education, so we can have better stewards of the land, so we can have people who come from our area, who know the area, invest in it, and return to make it a better place.

1 I think we're focusing on a really small piece of the puzzle. We have bigger environmental challenges coming at us. We need to be prepared.

And I understand how you want to save the pallid sturgeon. And I say to those environmentalists what we are told in education when we're faced with a cost that we don't know how to cover. Hold a bake sale. Don't put it on the farmers.

TB-37 MR. MITCHELL: Duane Mitchell. I wasn't aware that I could speak for three minutes at one time. I'm going to finish what I was starting to speak about.

Congressman Pat Williams said, Just follow the money. Just a little bit ago, you know, I -- last night we heard about this win/win situation that we're looking for. And I prayed to God and I asked God to give me some wisdom and tell me how you can do -- take the diversion dam out and replace it with some pumps and that's going to be good for the farmer.

But then a little bit ago Steve said he would rather bet a hundred million dollars to remove the dam to save the fish and basically you farmers are going to be on your own. And I think that's going about, follow the money. But I would like it to be known that the County Commissioners
1
in Richland County, all of them, all support the bypass channel. Thank you.

TB-38 MR. WYRWAS: My name is Danny Wyrwas, W-Y-R-W-A-S. Hi, thank you for your consideration. Your decision isn't easy as you weigh nature versus man. In my opinion, Montana is the most beautiful state in the freest country in the world. We are just over 1,000,000 people. Based on population, Montana is a small city. However, we are the fourth largest land mass state with an immensely diverse landscape. Residents across this state are family and friends. My brother, by another mother, Shane Gorder, who was born and raised in Sidney, asked me to share a few words.

1 I understand that saving the pallid sturgeon is vital. I am an avid fisher, hunter and outdoorsman, with an understanding of ecosystems and nature. Conservation is how I am able to fill my freezer and eat. I also understand that my family and friends' lives may be impacted by an impulsive decision.

2 Salmon on either coast of this great country have been decimated in years past by a variety of factors; one being dams. In the Pacific Northwest their reclamation efforts are actually paying off. Yes, dams were a big factor in the decline of salmon; and, yes, the removal of many dams, especially along the Columbia have helped boost their numbers, but those dams were turbine power generating dams, which killed the fingerings by the thousands. This dam does not have the destructive nature as those ones. This is a 100 percent natural irrigation system.

Upon looking at the combined efforts of those involved to save the salmon, both government and non-government, it has been widely documented that ladders or weirs have played a huge role in

2 cont'd the success of the salmon. The Pacific Northwest and all the ecosystems that were affected continue to show promise as salmon populations are moving up and to the right. Those involved are seeing that it is both complicated and quite simple. The simplicity came when they created a passage for the salmon. This project also has a passage system in place.

The complexity came because as societies try to solve problems, they create bigger and worse problems. An example from the salmon: Over fishing is also a culprit, so farmed fishing started to become an option. Sadly, as researchers studied their effects, they found that feeding farmed fish wild sardines, mackerel, and herring actually competed with and caused wild fish to starve. Also, it was found that it was taking six pounds of fish to get one pound of flesh. Our efforts to help actually hurt.

Montana is home to more Superfund Sites than any other state in the country, as we have allowed big companies to come exploit our lands then leave us with a mess. We are land and resources. We know that they are not expendable.

3 Fish & Game have documented sturgeon

3 cont'd above the dam. We have a proven ladder system that can be installed. We have a zero emission, zero maintenance irrigation system in place.

So I have to ask: Why would we create waste by putting in a fuel-eating pump system that could cause problems that could resemble those of the City of Laurel when flows are less then
4 normal? Why would we put ourselves at risk of a disaster that could happen to the Yellowstone River like that which happened as one of our refineries had a pipe leak thousands of gallons of fuel into the river? Why would we create expense when we Montanans are known for being conservative? Look into the audience, these are primarily farmers from Glendive to Fairview. They are innovators and creators. In my opinion, they could build the bypass better and at half the cost of the government. That statement isn't meant to be disrespectful. These people know that preserving waterways, game, fish and land directly dictate their lives. They know how to rub two sugar beets together and make a dollar.

My brother from another mother, Kevin Murphy, who lives in Colstrip, may be out of a job in the near future as the EPA restricts CO2 output by coal-fired power, yet the solution here is to put in a CO2-creating pump. This doesn't make sense, just like New Orleans doesn't make sense, yet we taxpayers pay to keep that town above water, even though it was built on the coast 20 feet below sea level. Why are we creating a problem where there is no problem?

One last thing. As you weigh this, please remove bias, the inability to see the other person's point of view and release wisdom.

MS. ECKERT-UPTMORE: That's time. You're welcome to come back.

TB-39

MR. PASCHKE: My name is Ted Paschke. That's P-A-S-C-H-K-E. I did not know about this until two nights ago. I have lived in five countries, traveled to 13, and I have had two international marriages. I've seen a few things.

When I was called about this two nights ago, I was angry immediately. And then I was saddened. And I'm still angry. And I have not figured out why we are here tonight. I have listened.

1

First of all, this young man right in the back briefly said, If you want to save the fish, one of the options is transplant them, seed them

1 cont'd above the Intake facility. That's been done all over the United States with success. Why not do that? If you really want to save the fish, that will do it.

The other thing is my first marriage, wife deceased, was thrilled when she saw the salmon run in Washington state. Fish can do it. Salmon jump.

But I want to talk to the people from Glendive, Fairview, Sidney, Montana. You know, you hold your anecdotes. I grew up in the Lower Yellowstone Valley, beautiful life. But these people, and I believe, they don't care. I don't know how you're going to fight them, but they're not going to go away.

2 It's not geology. It's a world view. And their view is not important. We have the win/win solution here. I knew nothing until two days ago. And when you hold up the one, shout at me so I hear you. I don't know what we're here for. You have government studies that say this will work. What are we here for? Do it.

And if you don't want to do it, transplant all the fish upstream. Why are we here? And this is the danger, friends, part of these people that are going to destroy you won't care. They will destroy the country. They don't care. Personal vested interest. They are not going away. So I just say, Shame on you. Shame on you. Cease and desist the destruction.

TB-40 MR. STEINBEISSER: My name is Jim Steinbeisser, S-T-E-I-N-B-E-I-S-S-E-R.

1 First of all, I would like to thank the Bureau for all the work they have done to prepare for this. I do stand in support of the bypass channel. I think it's by far the most viable

2 option. There's been a lot of points said to tonight, and I don't want to repeat all those. But, one, I would suspect that a sustainability analysis was done comparing the fish bypass channel, or alternative, to one of the pumping plants. The pumping plant would no way even compare, so its sustainability needs to be a part of this and should be considered.

3 Just a one other thing I would like to mention. The other day I had a French photographer follow me around for a day. For those of you who might be wondering why would a photographer follow me around. I was wondering that, too. But anyway, I told him that I had a

3 cont'd meeting in Sidney that night and it was about the pallid sturgeon and what we were going to do about the sturgeon's viability and talk about the fish bypass. And he looked at me kind of silly and he said, Well, in France, we have them all over the place. Fish bypasses, they work excellent. If the pallid sturgeon has been around for 70-plus million years, I think it's going to figure out the fish bypass. Thank you.

TB-41 MR. REKDAL: Hi, my name is Seth Rekdal, R-E-K-D-A-L, and this is Dalton Lemburg, L-E-M-B-U-R-G. We are representing the FFA. So we're representing FFA, more specifically the Shepherd FFA.

I was never raised around agriculture. I was basically a city kid growing up. And in seventh grade, I joined the FFA organization, which stands for Future Farmers of America. I 1 joined the FFA and I didn't know much about agriculture or about the agricultural industry. And I began in my seventh grade year and through my senior year, so six total years in the organization. I have learned quite a bit about the industry and agriculture, as well.

I'm know it is on the decline,

1 cont'd

agriculture, as with every industry in the nation in the world. And I can remember like in my 8th grade history class our teacher told us that to build a civilization, you're building a community, the first thing you need is people and the second thing you need is agriculture. So a decision like this should be based on something like agriculture, something that's the basis of the community and the people.

TB-42

MR. LEMBURG: Again, I'm Dalton Lemburg. I'm with the Shepherd FFA. One thing that I personally have learned in my few years in the FFA, I don't know if all of you may know this, but less than 2 percent, 2 percent of the whole United States population, the freest country in the world are directly involved in production of 1 agriculture. And first off, I would like all of you to give yourself a hand, applause, for being a part of that.

Secondly, it gives me a bad feeling in my stomach when somebody, a part of the 98 percent, comes after the less than 2 that put food three times a day on the table and still can create a surplus for the freest country in the world.

Now, what I would also like to say is

1 cont'd that I believe in the future of agriculture. You are agriculture. I believe in your future. And I believe that you should stand by and keep doing what you're doing, Sidney, and your surrounding area. You're doing a heck of a job.

TB-43 MS. STAFFANSON: So many hard acts to follow. My name is Gail Staffanson, S-T-A-F-F-A-N-S-O-N. And I'm just here to read a letter from Rita Steinbeisser, S-T-E-I-N-B-E-I-S-S-E-R.

1 To whom it may concern: I am writing in support of the bypass channel for the Intake dam to help out not only the pallid sturgeon, but every other aquatic species in the river. The bypass channel is the best chance to help the endangered species while still keeping the irrigation project, Sidney Sugars, and agriculture and the research stations viable.

As a wife and mother of farmers living and working in Richland County, I am frustrated that the viable solution is not being utilized. We continue to waste money in the court, when a solution to the problem has been identified. It benefits the pallid sturgeon, it sustains the local economy of the Mon-Dak Region with the installation of a bypass channel.

To my understanding there's now a recommendation to install pumps. This appears to be cost prohibitive from an economic standpoint, as well as disruptive to the environment. The pump solution runs the risk of disrupting other wildlife, possibly creating a Sidney water problem, and affecting the livelihood of the people living and working in Mon-Dak Region.

If you are not concerned about the 58,000 acres of irrigated farming land, I urge you to think about all the businesses in our community that rely on agriculture to sustain the economy through the oil booms and busts. Agriculture has thrived for more than a hundred years thanks to the innovative irrigation project that was built with the land and environment in mind.

2

I feel the Lower Yellowstone Irrigation Project has done their due diligence to find a solution that is mindful of fish habitat.

Now I encourage you to do the same and consider the economic welfare of agriculture in the Mon-Dak Region, as well as the ample water supply for residents living in this area. Best regards, Rita Steinbeisser. Thanks.

I support the bypass.

TB-44 MR. BROWER: My name is James Brower. I spoke earlier and didn't say my name. That's B-R-O-W-E-R.

First of all, thank you to those that have traveled all these miles to get here. I want to go back to what I was trying to say about the pump solution, no matter how you power it. I have been in design irrigation and working with irrigation systems in three different states, on three different major rivers, national treasures. And it's funny, the cycle that we go through. They want to remove dams. And I believe the people who take pride in removing dams are afraid that the bypass channel will work, because if the 1 bypass channel works, it will solve problems without removing dams all over the country. It will benefit the fish all over the country without having to make a choice between people or the fish. I know these people here don't want to hurt the farms, but they don't have experience on the farms with pumps. They don't realize that with pumps you have to rebuild them every three to five years for hundreds of thousands of dollars. With the motors, you have to rebuild them every seven

1 cont'd to ten years worth more than the pumps, hundreds of thousands of dollars. So if these people don't like the preferred alternative that's been analyzed three times and they don't want that paid for, these people themselves need to personally pay for the O&M cost that would otherwise be hoisted upon the local farmers, which is a 2 percent minority. And I believe in the United States it's against the law to pick on a minority. Let's not make the American farmer the next listed endangered species that you need to protect.

Let's not delay any longer the construction of a viable solution that will help all fish in the river. And if it doesn't help them, the Corps and the Bureau, and the federal government and the project are legally obligated 2 to create a fish passage, so fish passage solutions will continue to be implemented until it works. But after 15 years of study, we are confident the fish passage will work. But if you want the dam removed, pay the O&M costs yourself. Otherwise, you don't really care. Thank you.

TB-45 MS. SEDER: My name Pat Seder. I am here as a tax-paying construction worker who supports

ag in our Yellowstone County and in our state.
I am came here tonight to kind of figure
out what was going on, and I appreciate all the
folks that came from Sidney. And I want to say
1 I'm glad they're having a meeting here tonight
because it gives me an opportunity to speak in
their support. Also, I want to support myself
here. I live in Huntley. I have a small
irrigated place and I have a lot of neighbors who
have irrigated places. And I'm afraid that if you
give these folks an inch, they're going to think
it over, and they're going to start, like they
can, and they're going to move all the way
upstream every chance they get. And I think
that -- I don't know, the direction of our country
is scary to me already and it's kind of gone
viral, and I think at some point we need to shut
down some of these people and bring some common
sense back into the way you make decisions.
And on a side note, I've been an
electrician. I've been an electrician for 35
years, and there's some other issues involving
2 motors and pumps and water. They have already
proven that water and badly powered equipment in
boats kill people in the water. What do you think

2 cont'd

is going to happen if there's faults and leakage? There's more than a sturgeon that's going to get killed. The electrical current is a very dangerous thing to be messing around with in water. I think that's a very poor alternative.

So aside from that, I just want to say I support the bypass. I think it's a viable alternative for everybody and I think that the common sense needs to come back into our country.

And I also want to commend these kids from Shepherd. I've been working in the real world and I think our ag community brings out the best in our young people, and with the work ethic that our country needs desperately. And these kids come out here and were very vocal and very responsible about the way that they presented themselves and we need more of these kids. And thank you, farmers, for producing them. They are our future and they are the best of all of us.

TB-46

MR. BROOKS: My name is David Brooks. I'm with the Montana Trout Unlimited. And I just wanted to clarify that I'm also from Montana, I drove here. I didn't fly here tonight. I'm not a university professor. And I don't have some -- and you can talk to my boss about this -- what a

1 environmentalist is supposed to have, but seriously, I appreciate everybody coming tonight and offering comment. And I, of course, care about the pallid sturgeon and want to see the fish passage work and these fish be recovered here. And so, yes, it scares me that there's a huge risk that the bypass channel will not work and that's even stated in the EIS that there's zero examples of bypass channels working on this plan. So that scares me.

2 But the thing that scares me equally is the cost here. 57 million dollars is a lot of money. Yeah, the EIS states that after one year of implementation of any of these alternatives, the Corps of Engineers will be gone and the Bureau of Reclamation, that's not bringing any money to the table for this project, will likely not have money to support an alternative or improvements and will scrap the whole thing.

If we take a minute and consider that this alternative, the bypass channel, might not work, who is going to be on the hook if it doesn't. It's likely to be us as taxpayers, the State of Montana, and possibly the irrigation district for recovering these pallid sturgeon.

2 cont'd

And so, yes, the money issue is important. We need to look really hard at spending 57 million dollars in a solution that can be bust and we will not have any agencies around to help find Plan B when we're back to the drawing board to consider one of these other options.

3

Meanwhile, I have read the entire EIS. It's long and tedious. And even I can see in this EIS that the numbers, the financials, on many of these alternatives are grossly inflated. Let me give you one example that I think someone here in the crowd can probably speak to. For the open river alternatives, one of the expenses being charged is for a ditch rider. We have a ditch rider. And I think he introduced himself as Mr. Koffkey. They have budgeted per year for a ditch rider on an open river alternative half a million dollars. So maybe that's every year as a ditch rider, but I would offer that that's probably an inflated cost, and there are many others like this that I see in the EIS for the other alternatives. So I would say we need to sharpen our pencils, we need to go back and look at this with a real concern over the money being spent here, and I believe us as taxpayers and the

3 irrigators run a huge risk if the bypass channel does not work.

TB-47 MS. MESSER: Good evening. And I have spoke in the two previous meetings on the economy and the economics and how devastating the loss of the weir would be to our entire economy.

1 I have looked at the EIS and there is a portion of it that talks about a monitoring where we could actually take a look at alternatives if the bypass doesn't work. For the conservationists, the obstructionists, whatever, if that is what your uncertainty is about, if it isn't going to work and they're willing to help us figure it out, why don't you bring the money to the table and help us really find a solution to work together to truly care about the fish and the lives of these people and all of the economies that support our state and our nation. 2 And why don't we actually get this thing started. I fully support the bypass channel.

TB-48 MR. KOFFKEY: Tim Koffkey, K-O-F-F-K-E-Y, Lower Yellowstone Irrigation Project, proud to be a ditch rider. I love my job. I love the opportunity that I have to serve the farmers and to be a part of that 2 percent that take care of our great nation and those around the world.

I have some issues. Sorry. Last night they say you want to work toward a win/win possibility. Really? When you want the most expensive option out there? You say, Why waste 57 million dollars? I say to you, What is 57 million in comparison to 132 million or a half billion dollars?

1

You say, It won't work. Why can't you be an optimist and say, It just might for a fraction of the cost. Not only that, the pumping stations are a minimum of five, possibly seven. As stated in the EIS, one of the things that affects the pallid sturgeon is the bank stabilization of the river. You will have to stabilize five to seven banks wherever you put these pumps at because the river doesn't know. She's beautiful and she flows where she wants and she takes the land that she wants. So in order to protect those pumping stations, you're going to have to stabilize the area around it, which will further challenge the pallid sturgeon, according to the EIS study.

2

What about some other EIS studies besides the environment impact study? What about the economic impact, not just for Richland County or

2 cont'd

Dawson County. Maybe the people that live in Richland and Dawson come here to Yellowstone County to do their shopping. I've been here multiple times and many times I see license plate numbers with the No. 27 and 16. So we're not just talking about the economic impact of Richland and Dawson County. It's state-wide.

3

What about the agricultural impact? The solution that you suggest, these pumping stations, the farmers could never afford the O&M. Never. They have said that they will go under. If we have to go to the pumping stations because they can't afford it, third and fourth generation farmers will be gone. Thank you.

TB-49

MR. STEINBEISSER: I'm Don Steinbeisser, S-T-E-I-N-B-E-I-S-S-E-R. I'm an irrigator in Sidney. And I want to thank the Bureau of Reclamation for all the work you've done on this. The bypass channel is the best option and I just want to say, as a former Legislator, I spent 12 years in the Legislature, I dealt with Trout Unlimited numerous times and they tend to be obstructionists. And the environmental groups here today, that's their purpose.

1

When President Nixon signed the

Endangered Species Act in 1973, he said, We're going to work together to save the species. These guys are not working together. They're trying but they're not. And I know how they are because I've dealt with them in the Legislature. They're obstructionists. So I want to thank you very much.

TB-50 MS. MCFARLAND: Good evening. My name is Lisa McFarland, M-C-F-A-R-L-A-N-D. My husband is a fifth generation farmer. I'm a fourth generation farmer here in Yellowstone County. And I'm also the President of Yellowstone County Farm Bureau. And I just want to say that I believe the people in Yellowstone County are in support of 1 these good people from Sidney and the bypass, because eventually it's going to work its way up the river and affect us here. And the biggest issue and the reason why we need you to support these people is because a service is to all. Billings is being eaten up by people who want a half-million-dollar home on a little spot. Eventually, we're no longer going to be able to farm here. Our families are going to be pushed out, and we're going to have to rely on the farmers and ranchers in the small communities.

2 So I ask you to support the bypass, and I appreciate all of my neighbors and friends from Sidney.

And Trout Unlimited has 4200 members in the state of Montana. One organization that I'm involved in, the Montana Farm Bureau Federation has over 20,000 members. So that just puts in perspective where the people in our state are supported. Thank you.

TB-51 MR. ASBECK: I'm Hugo Asbeck. I'm 79 years old. Nobody told me I had to be 16 or older
1 to go to work. I can tell you one thing, water flows downhill a hell of a lot better than it does uphill with a pump.

There's been all my friends, farmers and ranchers and business people, there's been a lot of sweat and blood went into this farming operation and irrigation project, way more than any environmentalists have ever thought of putting out. Thank you.

TB-52 MR. BLOESSER: My name is Trey Bloesser. I'm just graduated from Savage and I'm going to go to college in Bozeman this year and get a degree in animal science, livestock production. I guess I would just like to say that farmers and ranchers are true conservationists. My cat just brought a baby bunny yesterday and we tried nursing that back to health. It died, but it just shows that we truly care more than any of those people sitting over there.

My sister, she has five kids, and she brought home four baby pheasants, and she put them in her house when their mom died. That stuff happens all the time. I'm sure everyone in this room has stories like that. And those conservationists have no idea, they do not know what they're talking about.

I would also like to say I am a young up and coming rancher and farmer. Between the government regulations, climate change, environmentalists, and population growth, it's going to be hard to feed the world in a few years. And by 2050, in 34 years, the world is going to grow by 2 billion people to 9 billion. And I guess I don't know how we'll feed all those people, except to not feed the environmentalists.

But in all reality, I guess we will feed them. But I know for a fact that their taking away 58,000 acres of irrigated farmland is not going to help the world feed itself. Thank you.

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TB-53

MR. KOFFKEY: Tim Koffkey, third verse, same as the first. As I said, the third environmental impact statement, when you take away
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the livelihood of somebody that that's all they have known all their lives for three or four generations -- that's what's going to happen. And don't sit there smugly. Sorry.

When you have the heart and soul of an individual, a human being created in the image of God. Someone who's been given dominion over the earth and the animals, and they are greatest environmentalists around. But you will destroy that person when you take away that, because that is what's going to happen if the environmentalists look at standing up in that courtroom and declare a moratorium. Your intent is not to save the fish -- I said this last night -- you have an agenda that has far greater impacts. It begins with the dehumanization of people.

The President of PETA once said, A rat is a pig is a dog is a boy. Essentially saying, You're all the same. Humans are not going to be (indiscernible) exists around the earth. Once you dehumanize it, it becomes easier to kill.

Since party activists tend to go to the

quotes, there is one that goes so far as to say that he has more sympathy for threatened insect species than for children dying of hunger in Africa.

David Brown, the former head of the Sierra Club said, While the death of young men in war is unfortunate, it is no more serious than the touching of mountains in wilderness area by humankind.

I find those statements to be revolting and disgusting and despicable. They are inhumane. And that's what happens when you have an agenda and a mind-set that begins with, We're nothing special, we're no better than an animal.

You would rather destroy our communities than to see us live peacefully and respectfully taking care of the environment that exists in Montana. To you, the environmentalists, Enough is never enough. We give you an inch and you take a mile. We give you a mile and you take a thousand.

In 1980's there was a move to plastic bags to save a tree. Trees that were planted for that sole purpose. (Indiscernible.) That's what my dad did. Save the tree. Buy plastic. So we were asked paper or plastic when we went to the grocery stores. But no paper. Now paper -- or the plastic, I'm sorry, is ruining the environment. Hello. We all knew that back in the 1980's. The paper was a renewable resource, but we gave in to it. And now it's not good enough.

TB-54 MS. TRUSHEL: Hello. My name is Brittany Trushel. B-R-I-T-T-A-N-Y, T-R-U-S-H-E-L. So I'll start out, I represent myself. What bothers me is that we have scientific data that show the pallid sturgeon do not really use the Yellowstone River. David, in our meetings, you know this. And so this whole smoke and mirrors thing focusing on the Yellowstone River and trying to make these farmers that put food on our table responsible for the demise of a species, what remains in some dams on the Missouri and Mississippi Rivers? I mean that's the reason the pallid sturgeon is in danger -- or isn't extinct after the hundred years because they don't use the river. That's why the biologists don't think they'll use this passage. Because they're not in the Yellowstone River. They're in the Missouri River. They're a large river fish.

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And so all of this here and all of this traveling here is moot. This is all a smoke and mirrors show trying to put something on a people that are hardworking. I worked in Sidney for years, and I worked on pallid sturgeon for years. And it's really sad that we do not have the basic biology information to make a choice, all of us make this choice, because that's what we're doing. We're putting this on the backs of people, putting this, all the management and operational costs, when these animals are probably not going to use this fish passage. And they never used it last year, a high water year, they lived up in this top where they spawned. Still not enough water (indiscernible) and they died.

And so I would just like to say that because there's basic science that's not here, and I think it's really truly sad that we all (indiscernible) making the decision and, that is, some small dam's fault, where people have lived there for generations and farmed when it's not. It's about people, Mississippi River states and the barge traffic down there, and that we want to hold water back. So thank you.

TB-55

MR. QUINNELL: Wayne Quinnell, Q-U-I-N-N-E-L-L. I'm an electrician from Fallon, Montana, and we're all gathered here today to try

1 and save an endangered species from possible extinction. On one side of the line is the environmentalists. They're the endangered species, they're backing the pallid sturgeon. On the other side of the line is us, the locals. We also want to save the pallid sturgeon; but, however, we are here to save the endangered species of the small American farmer. The farmer has plenty of obstacles standing in his or her way in this day and age. Fuel costs, labor costs, the war on GMO crops, low commodity prices, and now the uncertainty of the future of affordable, viable water for irrigation.

2 Without the LYIP, many of these 350 farm families will have to sell out and move on because they won't be able to afford to keep the farms, farms that have been in their families for generations. Sell the lands that have been worked for three, four, even five generations. Grandkids next to their grandparents. Calloused hands, sore backs, scarred knuckles. All earned from years of hard work carving out a living and all of that heritage could be gone with the blink of an eye.

3 So I talked to a few of my friends who are farmers from Intake all the way down to

3 cont'd

Fairview and got some input about what their yields are on average. So this is just a little look at what these 58,000 acres could produce for the world. So if all 58,000 acres were planted in wheat, that wheat could produce enough flour to make 418 and a half million loaves of bread.

If all of that was planted in corn, it would produce enough corn to make 3.72 billion corn tortillas.

If all of that land was planted in barley, you could take that barley, malt it, and make 350 million gallons of beer.

If you took all this land and planted it in sugar beets, it could produce 350,000 tons of sugar. That is 700 million pounds of sugar.

So this is just a few of the reasons why

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I believe we should all support the fish bypass. And I'll have a more to say about the electrical side in a little bit.

TB-56

MR. GRIFFIN: Good evening and thank you for the opportunity to speak. My name is Brad Griffin, and I live here in Billings. I'm a lobbyist for the Montana Equipment Dealers Association. I represent over 50 businesses across the state of Montana that provide farm

equipment services to Montana's ranchers and
farmers. I stand here in support of the diversion
1 of the channel. And I have been a lobbyist for 23
years up in Helena, and back and forth where the
political discourse became so poisoned by
obstructionists. We used to look for
middle-of-the-road solutions, like the one you
have before you. And I urge you to not give the
opponents a precedence. That's an important word
to remember because if they get -- if they win
this precedence, they'll take it up and down every
2 river wherever they want to go to take out dams
and diversions. I think it's important that we
honor the 15 years of study that has gone into
this, and I would urge you to adopt and support
the middle-of-the-road solution that you have
before you. Thank you very much.

TB-57 MR. PASCHKE: Ted Paschke. Montana would
say, Keep the power dry. I'm a little emotional.
Again, I want to ask a question: What are we here
for tonight? I'm asking you. I have heard
tonight years of study, millions of dollars spent
1 already on those studies. It is time for you to
act. It is time for you to do it. You need this
bypass channel. That is the record of many bodies

1 cont'd

that have reviewed this already. It is time for you -- these people have been giving their lifetime stories here. Let's forget all of the stories. You have the study that defined and the recommended solution is the bypass channel. Do it. Just do it.

And I believe I owe an apology to someone in this general area. I'm not sure who this gentleman is even with. He hasn't spoken. I talked about shame. Well, maybe I should have been looking to the three gentlemen that spoke previously. So I apologize. If you're on their team, then I say, Shame to you.

But I just reiterate that it is time for you to move. No more meetings, no more studies, no more la pelea -- that's Spanish -- confrontation. Just do it. Okay.

TB-58

MR. KOFFKEY: I promise this will be my last time. Tim Koffkey, K-O-F-F-K-E-Y. This will be my last statement.

People traveling to San Diego visiting the Swallows or to San Juan Capistrano. I want to invite you all to look down to the Willow Bridge (phonetic) at about 6:00 in the morning to see the swallows under the bridge. Hundreds of swallows that feed off what is around there. And they're there because it is their habitat.

1 What about the geese and the ducks that raise their young in the canal? Every day I drive that canal twice a day, over 20 miles up and down and I see these geese and these ducks raise their young on the canal. That's their habitat, their land and we need to protect that, not only the numerous wildlife that live and thrive because of the canal and its drainage.

2 Our farmers and irrigators and employees put in long hours so people can enjoy the convenience of buying food in the grocery store. They do it not for personal recognition or to make tons of money. They do it for the love of the outdoors and the love of the land, the love of the animals, the love of the environment. They do it for the love of what they are doing for the opportunity to serve their community. This is why I support our farmers, our community, our schools. And I support the bypass channel and I support this limited species, the hardworking farmer, before they, too, become extinct.

So to you, environmentalists, as I said last night and I say it again, I want to suggest that you come up to Richland County, put in the hardworking hours of the farmers, walk in their shoes. Don't just live in our area, come work it, come work the fields. Come with the ditch rider, do my job. Come home with numb hands from operating a weed-eater. Come home after 13, 15 hours days and go back out at 11:30 at night when the power goes off. Do my job, and then come and tell me what you want to do. Then perhaps you would have a greater appreciation for what it is that we do and what you are looking to destroy and take away.

So to our farmers and all those that traveled here, thank you. We love you. We appreciate your hard work. I have deep and profound appreciation for all the work you do. God bless.

TB-58a

MR. BUXBAUM: Scott Buxbaum, B-U-X-B-A-U-M. I'm an irrigator and farmer from the Fairview area. I live on the North Dakota side. I just have some numbers to show that I wanted in the comments, that if we do the pumping

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situation like you're proposing, these numbers are go up and this is going to be an additional expense on my farm. I raise 550 acres of sugar

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beets on my farm. My taxes would go up by at least 42,000 per year.

My loss in production, my sugar beets will grow -- in the heat of July and August, my sugar beets will grow anywhere from two and a half to three ton per week. I figure two and a half ton, and my loss in production is $68,000. Just on my farm alone it's going to cost me $111,000 if we do pumps.

If they have that loss in the middle of July when the beets need that crucial water, we will lose that production. And that will, in turn, be a loss of production, a loss of income. And then on the other hand, you have an increase of taxes because those pumps take a lot of O&M. It's costing more money for the upkeep and O&M. Thank you.

TB-60

MR. DEHERRERA: My name is James Deherrera. D-E-H-E-R-R-E-R-A. At this point, I just wanted to bring -- we had one lady tonight that said that she was a scientist and that the pallid sturgeon aren't native to the Yellowstone River. If you want to, go to and Google Comprehensive Sturgeon Research Project.

She stated that -- again, she stated that the pallid sturgeon aren't native to the Yellowstone River. If they weren't native to the Yellowstone River, why didn't they just do a big release of 700,000 eggs? This was on Monday, June 27th that they released 700,000 eggs in the Upper Missouri River, one and a half miles east of the Milk River, which would be west of Frazer, Montana and just a little bit southeast of Nashua, Montana.

1 And so they released 700,000 baby fish June 27th, the collaborating scientists of the Missouri River Pallid Sturgeon Drift Study released over 700,000 one-day post hatch pallid sturgeon to the Upper Missouri River.

And I just wanted everyone to understand that when she come up and she said that they weren't a native fish, that aren't in the Yellowstone River, that that is now documented, their release into the Upper Missouri River. And
2 I am for the bypass channel. Thank you.

TB-61 MS. TRUSHEL: Brittany Trushel. T-R-U-S-H-E-L.

Pallid sturgeon are absolutely native to
1 the Yellowstone River and to Montana. They are a large river fish that is in the Missouri River.

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cont'd

percent of radio-tagged pallid sturgeon have moved up the Yellowstone River. 5 percent. We are putting all of our eggs into 5 percent.

Missouri River, absolutely. And they're absolutely native to Montana. And they absolutely use the Lower Yellowstone River. In fact, one of their spawning habitats is seven miles up the Yellowstone River right below the Fairview Bridge. And it's actually called Crapper's Corner, because there used to be an old house there.

Every year these pallid sturgeon go there and spawn, and then their eggs and larvae go straight down the links to Sakakawea usually into the area where they hatch their eggs and they die.

So they might use -- the 5 percent, they come up and they use the Yellowstone River, but they are large river turbid fish that reside in the Missouri and Michigan Rivers.

TB-62

MR. QUINNELL: Wayne Quinnell, Q-U-I-N-N-E-L-L. So one of the matter of the diversion dam, the environmentalists' groups say they want to work with us on, so long as it's taken out and replaced with the electric pumps. Oh, yes, the electric pumps that we are all told will still reliably deliver the full water right.

1 But in reality, though, there is nothing more reliable and economical than gravity. Pumps are kind of like a new sports car full of computer technology. I'm sure they work great at first. Then you have programming glitches and they break down, and it takes three engineering degrees to find out what the problem is.

Gravity irrigation is like that old 1994 Dodge diesel pickup. It's not fancy. It doesn't have all the bells and whistles, but when you turn the key, it's going to fire right up and it's going to go to work for a long, long time. Simple to fix, after all, water flows downhill.

2 Now, back to the electric pumps. The company that I work for does all the maintenance on the electrical systems for the LYIP, so I have a little insight on this subject. As you heard earlier, it would take over 20 times the pumping capacity of the pumps that currently supply the Savage Irrigation District from the Savage Pumping Station.

When the pumps that are at the SID station are no little run-of-the-mill water pumps. Each of the three electric motors puts out more horsepower than the average American car. The

2 cont'd

amount of power they consume is mind boggling. They operate on a 2400-volt system, that's 20 times more power than in your home. And when things go wrong, in a 2400-volt system, you don't just go to the electrical panel and reset the tripped breaker. You can't just go to the local supply store and get a $26 part and fix the problem.

A couple of years ago two fuses at SID blew, and they had to be special ordered and built at the cost of $3,000 per fuse, and it took over a month to get them back up and running.

So what happens when the pumps fail and the farmers lose their ability to irrigate their land? That was all. Thank you.

MR. DAVIES: Not seeing anybody else coming forward, my name is Steve Davies. I'm with the Bureau of Reclamation. We're going to be closing here shortly. How about that? Okay.

I'm Steve Davies with the Bureau of Reclamation. On behalf of the Bureau of Reclamation and the Corps of Engineers, I want to thank everybody for showing up tonight. A lot of you drove long distances. Thanks, everybody, for making your comments tonight. Your comments, whether verbal or written, are critical for us to make an informed decision. The turnout at each of these meetings, and this is the third and final meeting that we're going to conduct publicly, has been phenomenal. We had about 500 people show up at Sidney. We had about 175 in Glendive. I haven't heard a number tonight, but we're probably around 200. That's about 900 people or so. The final numbers for the count of this will show up in the final EIS about who showed up at each of the meetings.

Thank you, David and Tiffany for making presentations tonight. Thank you to the staff of the Lincoln Center for making this facility available for us tonight. Thank you very much for our recorder. It's very critical. We took some timeouts on a couple of occasions tonight, probably several occasions tonight to make sure that the words that everybody spoke here tonight were accurately recorded. Thank you for our law enforcement. We had law enforcement presence here for most of the night. I truly thank them for showing up tonight.

How to comment. So this doesn't end our comment period. Maybe we could put the slide back up here. So all the spoken and written comments tonight will become part of the record. There's still opportunity to provide comments. You can mail comments to the U. S. Army Corps of Engineers. The address is there. The due date for comments, if you're mailing these, they must be postmarked by July 28th. The environment impact statement, all documents are posted on our Web site, our project Web site, the Bureau of Reclamation, Montana area office Web site listed at the bottom. Don't hesitate to contact us for any questions for this.

This presentation will be made available on this Web site. I want to also say that there are hard copies of the environmental impact statements at the libraries of Sidney, Glendive, and Billings. I believe there's one copy at each of those.

Thanks, everybody, for coming tonight. Great turnout. Again, we're going to be recording -- or responding to all of these comments. A lot of you came a long distance tonight and you're probably traveling back tonight. Please drive safely and thanks again for coming.

If anybody read from statements tonight, the reporter would appreciate those copies. Thank you.

(Whereupon, the proceedings duly ended at 9:08 p.m.)

CERTIFICATE

STATE OF MONTANA)
: ss.
County of Yellowstone)

I, Sharon L. Gaughan, RDR, CRR, CRC, Court Reporter for the State of Montana, residing in Billings, Montana, do hereby certify:

That I was duly authorized to and did report the proceedings in the above-entitled cause;

I further certify that the foregoing 128 pages of this transcript represent a true and accurate transcription of my stenotype notes to the best of my ability.

DATED this, the day of , 2016.

/s/ Sharon L. Gaughan
Sharon L. Gaughan, RDR, CRR, CRC

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DRAFT ENVIRONMENTAL IMPACT STATEMENT

for the

LOWER YELLOWSTONE INTAKE DIVERSION DAM

FISH PASSAGE PROJECT

PUBLIC INPUT MEETING

TUESDAY, JUNE 28, 2016

6:00 P.M. - 7:00 P.M.

RICHLAND COUNTY FAIRGROUNDS EVENT CENTER

2118 WEST HOLLY STREET

SIDNEY, MT 59270

U.S. ARMY CORPS OF ENGINEERS, OMAHA DISTRICT

U.S. DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

KAYLA ECKERT UPTMOR: Good evening. The U.S. Army Corps of Engineers and the Bureau of Reclamation welcomes everybody this evening to the public meeting. My name is Kayla Eckert Uptmor. I am the Chief of Civil Works for the Omaha District.

There are a number of staff that you will see tonight. We represent the Omaha District. Our district headquarters is the largest geographical boundary, Montana following the Missouri River Basin down to just south of Omaha, Nebraska. There is a number of us who traveled out today. We appreciate seeing such is great turnout tonight. We are really looking forward to hearing from everybody.

The U.S. Army Corps of Engineers and the Bureau of Reclamation as joint lead agencies have made available for public review and comment the Lower Yellowstone Intake Diversion Dam Fish Passage Draft Environmental Impact Statement, or an EIS, as many of you have heard it called. This is the first of three public meetings that we are holding. The second one will be June 29, tomorrow, in Glendive; and the third will be June 30th in Billings, Montana.

The purpose of the meeting is to hear from you. We will not be answering the majority of the questions directly. Our intent is to ensure that there is enough time and opportunity for as many folks from the public to be heard as possible.

We have a transcriber who will be recording everything this evening for the record. And we ask that you do take time to sign in this evening if you haven't already, if you didn't have the opportunity when you came in.

I'd like to take a quick moment, as I mentioned, we have a few folks from Omaha District staff. It's a local state Bureau of Reclamation office. Major Arlo Reece, the Omaha District Deputy Commander; Tiffany Vanosdall, the U.S. Army Corps of Engineers Yellowstone Intake Project Manager; Eric Laux, the Omaha District Chief of Environmental, way in the back in the yellow shirt; Curtis Miller, the Omaha District Chief of Hydraulics, for the Hydraulic Engineering Section; For the Bureau of Reclamation, we have Steve Davies, the Montana Area Office Manager; Gerry Benock, the Bureau of Reclamation Area Office Manager of Planning; and David Trimpe, the Montana Area Office Yellowstone Intake PM.

So again, we are here to hear from you tonight. Hopefully, everybody was able to pick up this sheet on the meeting guidelines and I just want to review that real quick. Again, if you plan to speak tonight, at the table back here, we had sign-in. If, as the evening progresses, we get through the folks that have signed in, you folks that also want to stand and speak, there is certainly going to be opportunity. We are here to listen until the last person who wants to speak has spoken.

If you do plan to speak, we will be speaking in the order of the sign-in sheet to start with. When you come to the microphone, there is two microphones in the front. When you are called up--Tiffany will be calling folks up--please state your name clearly and who you represent or if you are just general public so the transcriber can get that.

We are going ask that you please, in this initial round, limit your comments to three minutes. I have a hot pink sheet here with a number one that tells you when you are down to one minute. If you wish to speak again, there is certainly going to be opportunity. So the three minutes again is just to go through one round to make sure that we get everybody heard, and then if you need additional time or have additional thoughts, certainly there is going to be opportunity to come back up. And again, as I mentioned, the meeting and public comments will be recorded by our certified court reporter for the official meetings documents.

So again, we are happy to be here. We are happy to be here to hear your views on the project. We value your input. We value your opinion. So with that, I will turn it over to David and Tiffany, and we will get started.

Thank you.

DAVID TRIMPE: Thank you, Kayla.

All right, so just kind of a brief history of the Lower Yellowstone Project. It was authorized under the Reclamation Act of 1902 as a single-purpose project. That means that any funding that Reclamation spends on this project, the

Irrigation District water users have to reimburse. They also pay for the O&M.

The project was constructed from 1905 to 1908 by Reclamation, with the first water being delivered in 1909. As you can see on the left, the Project does have four Irrigation Districts: Intake, Savage, Lower Yellowstone Districts 1 and 2. Facilities include the Intake Diversion Dam, the headworks and fish screens, the 72-mile-long Main Canal, 225 miles of laterals, three pumping stations, and the Project does cover about 58,000 acres. Operation is controlled by the Lower Yellowstone Irrigation Project Board of Control and diversion rate is 1,374 cfs, which is the water right.

So the pallid sturgeon, which is the reason why we are here, was listed in 1990 by the Fish & Wildlife Service. It is considered endangered throughout this entire range. It is, however, native to both Yellowstone and Missouri Rivers. Primary threats are construction of dams, bank stabilization, entrainment, disease and predation, as well as commercial fishing.

So currently, pallid sturgeon are mostly found below the Intake Diversion Dam down to the headwaters of Lake Sakakawea. But historically, they were found upstream of Cartersville and also used the Tongue and Powder Rivers. So the reason why we are here is that we provide fish passage at Intake Diversion Dam that would provide 165 miles of additional spawning, rearing and drift distance. The next likely impediment could be

Cartersville at River Mile 237.

So shortly after the pallid sturgeon was listed in the 1990s, Reclamation decided to start studying the pallid sturgeon and identifying any effects that the Lower Yellowstone Project may have on the pallid sturgeon. Best available science says that there is limited passage past the dam, mostly through the existing side channel around Joe's Island. And we did have entrainment into the main canals, especially when they were stocking them upstream.

2005 was a big milestone for the Project. We did a big Value Planning Study where 110 alternatives were identified for fish passage and screening. In 2007, the Water Resource & Development Act authorized the Corps of Engineers to assist Reclamation with construction and implementation of the Project at Intake Diversion Dam.

So we have been through several environmental assessments. The first one was back in 2010, where the Corps and Reclamation identified the Rock Ramp as well as the Screened Headworks as a preferred alternative. In 2012, the new headworks and screen insertion was completed. In 2015, the Supplemental Environmental Assessment was released identifying the Bypass Channel as the new preferred alternative.

And then in 2016, we are currently undertaking this Environmental Impact Statement. So the Draft EIS was announced in the June 3rd publication of the Notice of

Availability. Shortly after the Draft EIS hit the street, Reclamation and the Corps released an Addendum discussing and disclosing four alternatives that were not discussed in that initial Draft EIS. Because of that Addendum, the public comment period has been extended to July 28th. The Draft EIS does look at six alternatives, one of them being No Action.

So the purpose and need of this Project is to improve passage for pallid sturgeon and other native species, as well as continue the viable and effective operation of the Lower Yellowstone Project, as well as contributing to ecosystem restoration. Prior to the Draft EIS, we did go through a public scoping period, which occurred from January 4th through February 18th. We did hold one scoping meeting in Glendive on the 21st.

There on the right, you will see a summary of the comments that the agency had received. Most of them were considering alternatives to threatened endangered species as well as economics. Also during scoping, we had several alternatives that were proposed. Just a couple of them were Dam Removal with Pumping Implementation of Wind Power, a Trust Fund, a Low-head Hydro Project and Physically Relocating the Pallid Sturgeon Upstream of the Dam without providing a passage avenue.

So the alternatives that we are going to talk about tonight that are also in the Draft EIS include the No Action, the Rock Ramp, the Bypass Channel, the Modified Side

Channel, the Multiple Pump Stations and Multiple Pumps Stations with Conservation Measures.

So the No Action, which is also considered the baseline which you measure benefits and impacts of the action alternatives to would include the continued operation and maintenance of the districts as currently occurs. This does include the annual placement of rocks on the dam to check water. And because no passage would be provided at the Project, Reclamation and the Corps would likely have to consult with the Fish & Wildlife Service.

Annual O&Ms for No Action is about $2.6 million and the per acre cost is $46.53. This is higher than current assessments because this does account for rehab of the rocking structure, as well as the monitoring requirements out of an endangered species consultation.

So the Rock Ramp, just like was analyzed in the 2010 and 2015 EAs, does have a new concrete weir just upstream of the existing diversion dam. Many people have said that this concrete dam would be higher, but it is actually the same elevation as the current rock that is placed on the existing dam. This does include the 1500-foot shallow-sloped boulder and cobble rock ramp, and this does provide the Irrigation District with their full water right down to flows of 3,000 cfs in the Yellowstone River.

The Rock Ramp does cross across the boat ramp so the boat ramp would have to be relocated downstream. Construction is estimated at about 90.4 million, annual O&M about 2.8 and then a per-acre cost of $50, which is approximately 7.5 percent higher than the No Action.

The Bypass Channel, which is also the agency preferred alternative, includes an 11,150-foot bypass channel. The entrance would be located just downstream of the existing dam and rubble field. This does, like the rock ramp, include the construction of a new concrete weir that does provide for the full water right down to 3,000 cfs.

All the material that is excavated from the bypass channel will be placed into the existing side channel to help stabilize the upstream entrance of the bypass channel. Construction is estimated at $57 million, annual O&M of 2.8 million and then a cost per acre of $49.27, which is approximately 5.9 percent.

So now we have three alternatives that were not previously analyzed. And with that, I will turn it over to Tiffany.

TIFFANY VANOSDALL: So as David said, there were a few alternatives that were proposed during scoping and in some comments that we received that were either previously analyzed and dismissed, or had never been analyzed in documents before.

One of those is the Modified Side Channel. Essentially what that is is the existing side channel that is out there would be excavated so that it would flow more frequently. A few pallid sturgeon have been documented to pass through the existing channel. And the purpose of this would be to excavate it to a level that they could pass more frequently. It would not include a new weir structure. It would include maintenance of the existing structure that's there right now. So there would be a bridge put in over the channel to provide for that ability to O&M the existing weir.

The entrance of this side channel is about a mile and a half downstream of the existing weir. The bypass channel is right at the weir. So if you looked at an EIS, generally fish biologists prefer for a fish bypass to be closer to the obstruction. So that's one downfall of this alternative; the exit to it is quite a bit downstream. But it does take advantage of the side channel that's already there.

Construction on this alternative is approximately 54 million, annual O&M is about 2.9 million so O&M per acre is about $51.18 per acre, which is an increase of around 10 percent.

Another alternative that's considered in detail in the EIS is a Multiple Pump Stations. Basically, that is removal of the existing dam, construction of five pumping stations that include four pumps at each station. The pumping would deliver the full water right.

We would have to upgrade the existing power structure in order to get enough power out there to run the pumps.

The existing headworks that was constructed in 2012 would be used when river flows are high enough for the gravity diversion, which is anything pretty much over 30,000 cfs in the main river, which is about 17 percent of the irrigation season. The rest of the time it would be pumped through those pumps so you could save on some O&M of pumping when it could be diverted through the existing headworks. It would require some alterations to the intake FAS because one of those pump sites would need to be placed at that location.

Construction is about $132 million, annual O&M is a little over 5 million, which is an annual O&M per-acre cost of a little over $88, and that is a 90 percent increase from existing O&M.

This chart is a schematic of how the pump stations would work. They would actually--there would be an intake off the river so the pumps would not be right on the river's bank. There would be an intake canal that would lead to the structure, and there would actually be fish screens constructed within those canals. And then there would be a pump that would remove those smaller fish from that canal and put them back into the river.

To give people an idea of what that pumping would look like, a lot of people have asked us, "Well, aren't there existing pumps and how would they compare to the pumps for other irrigation districts?"

The Lower Yellowstone Project peak demand is about

1,000 per unit. That, of course, is cfs, which is 888 million gallons per day. Some of you might be familiar with the Savage Pumping Plant. That has an intake of 60 cubic feet per second so that's 38 million gallons per day, which is only about four percent of what the need of the Lower Yellowstone need is. So you would require 20 stations that are the same size as what the Savage Pumping Plant is.

The last alternative that's considered in detail in the EIS is Multiple Pumps with Conservation Measures. And the idea behind that is that you could implement conservation measures both on the irrigation canal and on the farms that would theoretically lower the need of withdrawal. So in this case, you would remove the Intake Diversion Dam. You would construct seven pump sites, which would have six Ranney Wells at each site.

And a Ranney Well is basically--it's not a surface water diversion. It's for a ground water diversion so it actually pulls water from the alluvium of the river, which is kind of the ground water that exists around the river. We would have to again upgrade the existing pumping system.

We have looked at wind power to use for that pumping, and we would potentially be able to bank the wind power that's created when the Irrigation District didn't need power, and it would offset some of those costs. You could gravity divert out of the existing headworks at least part of the cfs that's required for 60 percent of the time. Forty percent of the time, you would have to do pumping only.

It would require implementation of conservation measures that would reduce the capacity of withdrawal to about 680 cfs. So you would have to do conservation measures throughout the system that would reduce pretty much the requirement to about half of what it is.

It would require a redesign of the Main Canal because, as you know, the canal right now transports 1,374. It would have to be redesigned to transfer about half of that through it. And it would also require relocation of the intake FAS because one of the Ranney Well sites would need to be located at that spot.

Construction of that alternative is about $477 million. Annual O&M is about 4.4 million per acre. That's about $77, which is an increase of about 66 percent over your existing condition.

So some of the conservation measures that were proposed in scoping to go along with this alternative, including additional check structures in the Main Canal, flow measuring devices installed at the canals, convert some of the laterals to pipe, installing center pivot sprinklers, lining the Main Canal and the laterals, control over checking, which is an operational change for the water levels, and then ground water pumping and installing some ground water pumps.

If you read the analysis in the EIS, you will notice that there is a lot of analysis that goes into whether it's even feasible to reduce it this amount and still deliver the amount of water that the Irrigation District needs. And the conclusion is you can't bring it that low and still deliver that water that is needed throughout those acres. But it is analyzed in detail in the documents.

And this is just a schematic of a Ranney Well. It shows how it has a screened lateral pipe in the ground water that pulls water into the pumping station.

So this is an overall comparison of cost estimates between the alternatives. The first line is construction costs. The second line is the duration of construction. One of the things you have to consider is how long an alternative takes to construct if you are looking for benefits for pallid sturgeon passage. If an alternative takes a long time, such as the Multiple Pumping with Conservation Measures, which takes 90 months, you are actually going quite a while before you are getting benefits for that alternative.

So we do look at how long it takes a construction alternative when we are considering implementation. There is cost of design that's associated with each alternative. And generally, the more expensive the alternative, the more expensive the design costs. The same with construction management; a more expensive, more complicated alternative has a higher construction management cost.

There are real estate costs associated with the Modified Side Channel, the Multiple Pump and the Multiple Pump with Conservation Measures. The Rock Ramp and the Bypass Channel are both constructed on existing federal land. The others would require some acquisition of private property in order to construct them.

So that gets us to what we call the total first costs, and that adds up all of those costs together and has a total cost that we consider when we are trying to decide on an alternative to implement. Then we look at annual O,M&R, and that is listed across the bottom and I talked about those before.

And then we take all of those and we actually annualize the costs over 50 years. So we try and make it a fair comparison so if something is extremely expensive to construct but then has a really low O&M, it can compete against something that has low construction costs but an extremely high O&M. We want to make sure you are taking all that into consideration.

And so when you are trying to make a decision on ecosystem restoration, essentially when the government constructs a project, we try and look at cost/benefit ratios. Are the benefits that you are getting out of a project worth the cost that it is going to take to build the project?

When you are doing ecosystem restoration, it's hard to assign a monetary value to what the ecosystem is worth. And so what the Corps of Engineers does and what we are required in our analysis is called cost effectiveness. And essentially what that does--and I am not going to get into the details of it--is if somebody is actually really interested in how this process works, you can catch me after the meeting, and I will walk you through every step of it. But I have a feeling it would completely bore everyone in here.

But essentially what you do is you look at each alternative and you say does this alternative provide more benefit for less cost than the other alternatives? And it's kind of a rating system. And after you do that, you say yes, it's cost-effective if it has a higher benefit for a lower cost than other alternatives.

So from that analysis, you show the No Action is always cost effective. The Modified Side Channel shows up as cost effective because the net benefits are higher than the Rock Ramp, which is the next one below it, at a lower cost. And the Bypass Channel is cost effective, and the Multiple Pumps are cost effective because the Multiple Pumps, based on the modeling, has a higher benefit than the Bypass Channel, even though the cost is quite a bit more, it shows up as being cost effective because it has a higher benefit.

Then you do what we call income-out cost analysis. And that basically says for each habitat unit that these alternatives deliver, what am I paying for each one of those habitat units? And then the two that we analyze, the Bypass

Channel and the Multiple Pump Stations, the Bypass Channel gets you about 70 percent of your benefits at a price of $727 per habitat unit. To get the additional benefits that you get from a pumping station, you pay an additional almost $1,400 per habit unit. And the decision that you have to make is are the additional habitat units worth that additional cost? And so that's the process that goes into the decision-making of what alternatives are cost-effective and what you are going to select.

So a summary of the impacts that are in the EIS, I am not going to go through each one of these, but basically it's just a comparison of the major resources: hydrology and hydraulic, ground water hydrology, geomorphology, communities, listed species, lands and vegetation, recreation, noise, socioeconomics and historic properties. And each of the alternatives is compared against the baseline to show what the major impacts are going to be, and all of that is within the EIS.

In several instances, the impacts are beneficial. In most, they are fairly minor. Some things like historic properties, all of the alternatives have major impacts because the irrigation, the features out there are all historic property. So there is some impact of historic property no matter what alternative you implement. So all of this is in the EIS, and we can talk about any of the specifics if people want later.

So the preferred alternative of the Corps of Engineers and Bureau of Reclamation as identified in the Draft EIS is the Bypass Channel. The reasoning for that is the Bypass Channel, in coordination with the Fish & Wildlife Service, meets the needs of the pallid sturgeon and is expected to pass enough pallid sturgeon in order to meet our biological requirements. It is a cost-effective means of providing that fish passage and meeting those biological requirements. It's expected to have the lowest O&M for the Irrigation District, and it does not result in any significant long-term environmental impact.

So that brings us to what you guys are here for, and that's how you can comment on the EIS. Tonight we will take any spoken or written comments. Your spoken comments will be recorded. Your written comments you can either hand to one of us or you can send them in later. You can also send them by mail. You will not get a response that says, "Hey, we got your comments by mail," but you can send it certified if you like. You can also e-mail the e-mail address up there. If you e-mail it, you will get a nice little e-mail back from Jennifer Salak saying, "Hey, we got your comments. It's been forwarded on to the PM."

The due dates, all comments must be postmarked or received by July 28th in order to be considered in the Final EIS. And then if you need any additional information on anything, if you have any questions about the EIS or the process or whatever, you can actually contact either David or myself. Our contact information is up there. Just give us a call and we will talk about any of your concerns.

And then that also gives the Project website. It is Bureau of Reclamation. If you Google Intake Fish Passage, it would probably come up as well.

So we are going to move into the spoken comment portion of this meeting. Again, if you haven't signed up to speak, I would encourage you to go sign up. We are going to call out all of those names first. I am going to call out four names at a time, and we would ask you to just come up to the microphones, and when those four get done speaking, I will have four more come up.

Kayla will hold up that little pink sheet when you have a minute left. The only reason we do that is we want to make sure--there is a huge number of people here. We want to make sure everybody has an opportunity to at least get up to the microphone. Once we get through everyone, if you don't feel like you have had enough time to say everything you needed to say, you are welcome to come back up and make more comments.

We will be available following the meeting in the back if you want to talk to one of us, if you just have a question that you want answered on the spot. We are not going to answer any questions in this larger venue right now, but we are more than willing to talk at the back of the room. And all comments that you give will be part of the Final EIS so they will be published with the EIS itself.

All right. So we are going to start off with the elected officials and first off: Duane Mitchell, Richard Cayko, and that's it for elected officials. If anyone else is an elected official and they want to speak right now, this would be the time to step up to a microphone.

TS-01 DUANE MITCHELL: I would like to thank everybody for coming tonight. And you know it's written in the Bible in the Book of Genesis, Chapter 1:28, "God blessed them and God said unto them be fruitful and multiply, replenish the earth and subdue it and have dominion over fish of the sea and over the fowl of the air and over every living thing that moveth upon the earth."

1 Last Sunday, a young lady asked my wife in church, "How is it that this dam has been operating for 107 years and the pallid sturgeon aren't extinct yet? They must have figured out some way to get around this diversion dam."

2 The other question I have is everybody is concerned about global warming and the carbon print. My question is how much carbon print has this dam created in the last 107 years of operation? And then as a county commissioner, I made some calls the other day. And there is 130 employees that work at Sidney Sugar that produce about $4 million in wages in this community. And according to the Chamber of Commerce, them wages are spent six times in the community so that's a $24 million hit just from the factory.

3 And then as a commissioner, I am really worried about the tax base so I called Helena, Montana Department of

Revenue. And one irrigated ground appraised value is $664.62. A wild hay acre is $175.98, and a grazing acre is $39.30. So when we go to start figuring out our tax values, that irrigated property is worth $14.34, the hay ground is worth $3.80, and the
3 grazing land is worth 84 cents.

If you do anything to that dam, you are going to kill this county. There is 55, 58,000 acres, and that tax base would disappear. And we know what happens when taxes go down. So please think about that.

Thank you.

(Applause.)

TIFFANY VANOSDALL: And I didn't say it earlier but I want to remind you to say your name and if you are representing anybody.

TS-02 RICHARD CAYKO: My name is Rich Cayko. And that's spelled C-A-Y-K-O; it's not P-S-Y-C-H-O.

(Laughter.)

I represent the Lower Yellowstone Irrigation Project as the Chairman of the District 2, which is the North Dakota side and also as the Chairman of the Board of Control. I also am a County Commissioner from Kinsey County, North Dakota, and I serve as Chairman of that group at this time. I am also a Director of the Garrison Diversion Conservancy District in North Dakota, which deals with the Army Corps of Engineers and Bureau of Reclamation with many projects.

1 I am just going to make a statement that says that we believe that the weir and the fish bypass would be the best alternative. As you all know, we studied this back in 2009 when we had all these public meetings. I was involved with this. I was at many meetings with many of you folks. And we studied it, I think, very, very thoroughly.

2 The other alternatives were looked at and most of them, you know, was the cost factor. The farmers here, they etch out a little living here and they do a good job. But there are four and five generations that have been here for a long, long time. We want to keep it that way.

The Project itself does a lot for the community, does a lot for the environment, it does a lot for the habitat of these endangered species. Not only the pallid sturgeon, there are other ones around here too. And I don't want to put the farmer on that endangered species list. So with that, that's all I have to say for now. The rest of them can get on the hot topics.

Thank you.

(Applause.)

TIFFANY VANOSDALL: All right. I am going to call four more up. If you guys would all come up and just get in line and make sure you state your name. Samree Reynolds, Marcy Hamburg, Ron Etzel and Bob Gilbert.

TS-03 SAMREE REYNOLDS: Hello. My name is Samree Reynolds and I am with Sidney Sugars. And I spoke up two years ago about this in Glendive. And back then, I didn't have any information and no education. Well, this time around, I'm a little better educated and little bit more informed.

But I am still not understanding why we are even
going through this when you have shown that the bypass is the
1 answer to our problems. We are saving the fish and saving the
farmers. I guess my question is why are we saving one species
from being extinct while making another species extinct, the
farmers? We need them. So I say let's go for it.

Thank you.

(Applause.)

TS-04 MARCY HAMBURG: My name is Marcy Hamburg. I have had the privilege of being married to my wonderful husband for 35 years and been living in this community since then. He has worked for the Irrigation Project for the past 45-some years and I have known many of the men and workers who worked for the Irrigation Project. I have gotten to know several of the farmers in the community.

Our Commissioner Mitchell made the comment that if the Irrigation Project is not here, the dam, the bypass is probably the best option for our community so that we can maintain the business and the properties that our communities have had over these several years.

I am also the County Planner for Richland County.
1 Over the years, the last probably seven years with the oil

1 Cont industry, some people might say that we have enough money to maintain our community with the oil money. That is not true. Our community is an agricultural-based community. It has been for a hundred years and will continue to do so when the oil is no longer a viable source for Richland County like it was 30-some years ago when we had not enough revenue, even to maintain our county with the roads and everything that's going on in our communities with the impact from the oil industry.

2 So I would like to show my support in saying please, get this project done.

Thank you.

(Applause.)

TS-05

RON ETZEL: My name is Ron Etzel. I am an

1 equipment operator for the Lower Yellowstone Irrigation Project. And I know first-hand that these pumps are expensive to maintain and they break down a lot. And I am sure the board members would say, too, that the bills are expense for them; and when they are broke down, you don't have any water.

I am sure if you have been hearing about Buffalo Rapids, they were without water for about a month on one of their

2 pumping stations. And I think that we need to have the Bypass; it's probably the best option for the farmers, the Irrigation Project and for the fish.

Thank you.

(Applause.)

TS-06

BOB GILBERT: Good evening. My name is Bob Gilbert. I am the Executive Director of Walleyes Unlimited of Montana, which is a 3,000-member 501(c)(3) non-profit group.

1

We strongly support more and more fishing and having more and more fish in the State of Montana. However, we also support the preferred alternative on the Intake Diversion. It will work. It will be cost effective.

I looked at the--I try to be nice but sometimes I have a little difficulty. The opponents to the preferred alternative told the judge, and he agreed, that there is no guarantee the fish will use this bypass.

But the other question is: Is there any guarantee that the fish won't use it? It's a two-way street. We have to do the best we can. People come first.

2

You may not like it; you may not be happy about it, but people come first. We will try to do what we can to save these endangered species. But every day in this world, numerous specious go extinct. That's the way it is. If it hadn't happened, we'd have T. Rex's running around here and all sorts of things. It just doesn't work that way.

So our organization, 3,000 members, we support the preferred alternative. We will be appearing in Glendive tomorrow night, and if I can get somebody to do that, another one in Billings. Billings is--Billings reminds me--having a meeting on the Intake Diversion Dam in Billings reminds me of the

Administration for the United States having coal royalty hearings in the State of Washington that doesn't have any coal.

(Applause.)

And the opponents can--I spent 10 years in the Montana Legislature and I've been lobbying in the Legislature for 22 years now. I don't call them environmentalists anymore. The majority of them, they are obstructionists, and that's what's happening.

(Applause.)

Again, we support the preferred alternative. I urge you to do it and we will continue talking to you and not about you.

Thank you.

(Applause.)

TIFFANY VANOSDALL: So the next four, Gerry Entzel, Garth Kellesig, David Garland and James Brower.

TS-07

GARTH KELLESIG: My name is Garth Kellesig. I have lived and worked in the area for about 63 years.

1

When can you ever remember having three government agencies that agree on the same thing? The Army Corps of Engineers, Bureau of Reclamation, Fish, Wildlife, and they all three agree that the Fish Bypass is the best option and I think that probably the majority of the people here agree with that as well. It's the best solution for our community as a whole, especially for our ag producers and all of our businesses that

1 Cont would be affected, our local environment, and last but not least, the pallid sturgeon. I strongly support the Fish Bypass Project.

Thank you.

TS-08 (Applause.)

GERRY ENTZEL: I am Gerry Entzel. I was born and raised in Sidney. I don't farm but I support our local agriculture community.

There is no proof about this. It says, "the Intake Diversion Dam has likely impeded upstream," which means perhaps it hasn't either.

A VOICE: We can't hear you.

GERRY ENTZEL: So I support the farmers. I don't know where the proof is. I think the pallid must be kind of lazy

1 because there is lots of shovelnose sturgeon in--and I don't know how many people know the difference between a pallid sturgeon and a shovelnose unless you have one on your fishing rod. They look a lot alike. But there are lots of other bottom feeders like the carp and the buffalo fish.

And I agree with Duane Mitchell about the carbon footprint of our Diversion Dam. And I also had someone ask me about are there other diversion dams on the Yellowstone. And do the people that oppose the Diversion Dam really know how it works, like with gravity and so on.

But I think our farmers are good stewards of the land; they take good care of our ecosystem. They know what they are doing. And I just think we need to support them and they are the ones that are using this and this is our county. This is our part of the river and the major set of the people that use it and take care of it because--they take good care of it because that's their livelihood. I think we need to do what's best for our agriculture program here.

Thank you.

TS-09 (Applause.)

DAVID GARLAND: My name David Garland. I am the General Manager for Sidney Sugars. I don't want to put you on the spot, Duane, but your numbers are a little low. Wages are along about 10 million a year with benefits added on top of that. But the point is the economic impact is significant that Sidney provides.

Looking back at the history of sugar beet processing from the 1830s on, there has been 181 sugar beet factories in the United States. Today Sidney Sugars that Holly built in 1925 because of the Irrigation Canal Project, of those
1 181 factories, only 12 are still remaining in the United States.

So I am kind of asking why Sidney is still operating. Many factories built after our plant are now closed. So the question is is it built better? No, it's just brick and mortar. Do we operate differently? And no, we operate the same as any other beet factory. So what's the reason that we are still in operation and it comes back to reliable water. Reliable water

1 Cont grows a reliable crop and we are able to process year after year.

2 For that reason, Sidney Sugars supports the preferred alternative, and I would encourage everybody to comment.

Thanks.

TS-10 (Applause.)

JAMES BROWER: My name is James Brower. I am with the Lower Yellowstone Irrigation Project, and I am not sure if you guys know which alternative I prefer.

(Laughter.)

I wanted to make sure I got my statement correct so I wore it on my shirt. By the way, these shirts are available for people who are going to the Billings meeting. Stop by the Irrigation Project office, and if this is the alternative they prefer, these shirts are all available.

The first thing I wanted to say is I have been talking with people in the community for the previous two years about these different options, about the help we have been getting from the Corps of Engineers, the help we are getting from the Bureau of Reclamation, the careful engineering that's done, the
1 science, the studies.

A lot of these government agencies, including Montana Fish & Wildlife and others, the DNRC, have put a lot of work into analyzing over 130 different alternatives that were suggested in the public comments last time. And twice in a row through two different environmental studies, one Environmental

Assessment and one Environmental Impact Statement, the preferred alternative that secures a viable passage for the pallid sturgeon
1 Cont is the Bypass Channel.

The Bypass Channel has its opening in the best spots that the scientists and the engineers can predict for the fish to find the bypass channel. And it provides significant water depth all year long and it provides the right velocities for the fish to be able to make it up the river.

What is really unique about this option is with the cooperation of several governmental agencies and their employees, we have found an alternative that's going to save the
2 fish at the same time as it saves the farmer. And as the farmer supports the communities around it since 1905, if anybody is counting, that's the Great Depression, a couple great recessions, the Dust Bowl Era in the 1930s. It's something Teddy Roosevelt supported and something that has created over 10,000 acres of wildlife habitat now and some of the greatest wildlife densities.

So why risk six communities and thousands of acres of wildlife habitat by removing the dam which could create all kinds of unintended consequences, perhaps making it easier for invasive species to move up the Yellowstone River and the rest of Montana, perhaps drying out two side channels that previous scientific studies have proven are important to the fish species of the Yellowstone River.

3 So right now, we have got one viable alternative

3 Cont

that's good for the farmer, good for the fish and good for the rest of the habitat. And let's not risk that by removing the dam and getting five new pump stations with 20 pumps that could have failures like Buffalo Rapids has been suffering through for over a month and a half and adversely affecting their crops.

Thank you very much.

(Applause.)

TIFFANY VANOSDALL: So I have one more name of people that signed up. If you want to make a comment and you didn't sign up, please feel free to also come up to the mike. Please be sure to say your name so that we have it on the record.

But Les Miller the is final name that I have.

TS-11

KENNETH CRAIG MOEN: Actually, it's a pseudonym. My real name is Kenneth Craig Moen. I was born in Sidney, moved to Williston for a lot of years, am back now.

1

I fail to understand a lot of the hyperbole and the fact that so much of our world right now, there is a lot of double talk and a lot of things that take precedence over people. To spend that many of hundreds of millions of dollars on some pumps and decrease the flow of the water by 260 million cfs will choke us. It will suck the life blood out of our community and our region.

As a result of that, our ground water will dissipate, the drinking water for the people, the cattle, the plants. So why don't you just save your $600 million and just

1 Cont choke the life blood out of us and or puree us and feed us to them damn fish and then you will have your fish taken care of.

I have always been--I have been environmentally sound-minded way before you ever were born. I picked up garbage before the Indian put hides on the teepees. As a little kid I never liked it.

(Phone ringing. Laughter.)

That's one of my friends in life I just love. He is helping on a project. He does it of his own free will because I have limitations, like all of you.

If it's not broke, don't fix it. There is pallid sturgeon all over this region. Otherwise, just turn this place back into the buffalo commons and that will be the end of it.

2 I think of the alternatives. I'd love to leave it as is but as I look at the alternatives--the bypass is most viable for us--the pumps are too problematic. That's a manmade machine that is going to just give us a hassle like anything made by man. That's all I got.

Thank you.

(Applause.)

TIFFANY VANOSDALL: Was there anyone else who would like to take the opportunity to come up and speak?

TS-12 RAQUEL SHIPMAN: Hello. My name is Raquel Shipman. I am just representing the general public.

I grew up in Sidney, Montana, left here in 1988, was gone for 11 years. And I have lived all over the state of Montana, Wyoming, ranching-farming areas. And it's something that I have always been proud of to be from Sidney, Montana. You drive into this valley and people make fun of, 'Oh, you are from that side of Montana.' Well, I think this side of Montana is just as pretty.

My family has a place out on 350, and for, what, the two years, I drive out to water every morning. We are not irrigators. I just have a garden out there that I take care of. And when you get on top of 350 past the old dump grounds and you look down into this valley to the south, and if you get out of your vehicle and walk out and you look to the north, you wouldn't believe the beauty that we have here. And it's because of our irrigation system. And it's not just beauty; it's farmland. It's what's feeding our families; not just beet crops. It's hay crops. My husband works for the feed lot. It's putting hay into the feed lot, corn, you name it.

1 And these farmers are stewards of the land. They are true environmentalists. They are the backbone to our community here. They are what has economically sustained us for long before we had the oil and continue to support us when the oil is not here.

2 And to put in windmills and pumps, I myself question how the pumps and the windmills are going to work. I am very concerned for a carbon footprint when we have lots of

wildlife, birds, you name it, that are sustained off of the
2 Cont Yellowstone Irrigation District. And I think when we start changing things, I think we are going to have problems. I don't feel like this is a problem now. I think it's working but I think studies need to be done more extensively.

I have tons of people that I know that are fishermen. My family fishes and they are catching these fish. They are seeing them there. They have taken pictures.

I just think we need to really do our homework with this. I feel like this bypass is the best option, and I want
3 our economy to stay strong here in Richland County. It's what's fed me and my family since I have been born here.

Thank you.

(Applause.)

TS-13

SCOTT BUXBAUM: I am Scott Buxbaum. I am from Fairview. I am an irrigated farmer.

I raise sugar beets and small grains. I have got three or four grandsons that look like they want to be farmers. And so when we look at this thing, we look at the viability of it. My grandsons are going to be the fourth generation of farmers in the lower Yellowstone valley, hopefully. We don't want to put them into a problem where they are going to have some issues trying to come up with the money to pay the taxes to have the water for our farm. And I hate to have to have them go through that.

So I am really in favor of this Bypass Preferred
1 Alternative. And just so let's keep this in mind: we are not here just for ourselves. We are here for the future generations that are going to run this valley and keep this community viable and running.

Thank you.

(Applause.)

TIFFANY VANOSDALL: Is there anyone else that would like to speak?

Steve is going to say a few words closing. Just a reminder, we will be standing around the back if you want to come and talk to any of the agency folks and ask any questions.

Thanks.

STEVE DAVIES: Hi. My name is Steve Davies. I am the Area Manager for the Bureau of Reclamation.

First, thank you for a fantastic turnout tonight. It's very indicative of the importance and interest of this Project to this community. I want to thank everyone who spoke tonight. It's not an easy thing getting up in front of a crowd this big so thank you for that. Your voice is very important to this process.

Thank you, David and Tiffany, for drawing the short straws for presenting this information tonight. There's many members of our law enforcement community here tonight. I want to thank you for showing up tonight as well.

As Tiffany just said, the staff from Reclamation and the Corps and Tetra Tech Engineering, there are several poster boards out in the back that go through each of the alternatives. We are going to remain for as long as anybody wants to talk about this tonight if anybody has any questions about these alternatives.

I asked for this slide to be put up because I wanted to highlight the website at the bottom. The Environmental Impact Statement and all the appendices and documentation and analyses are all available at that website. They are fairly large documents. They are broken up into several; but for anybody who wants to read the actual Environmental Impact Statement and the alternatives and processes presented, they are all available at this website.

Tomorrow night, we are going to repeat this exact same format in Glendive at the high school and then on Thursday night in Billings at the Lincoln Center, which is in downtown Billings. It will be the same format, same content. Anybody can get up and talk so there won't be anything different that's presented at any of these meetings. Doors and the timeframes are the same. We open at 5:30 for doors and the presentations will go at 6:00 o'clock, and then we will go as long as people want to talk.

July 28th is a key date. Comments are due for this. That's going to essentially--comments need to be postmarked by that date for any written comments so that if there are any remaining comments and anybody wants to do, if you want to read the documents or send in comments, there is a process for that. I'd encourage you to do so by July 28th.

With that, we are going to close out any discussion on this and we will remain in the back of the room for anybody that wants to talk about this.

Thanks everybody again for coming out to the support meeting.

(Applause.)

(End of Public Proceedings.)

TS-14

WRITTEN COMMENTS

To Whom it may Concern:

1 I am writing this letter in support of the proposed bypass channel for the Lower Yellowstone Irrigation project at Intake, MT. The pallid sturgeon has survived in the river for the entire 100 plus years the irrigation system has been in place. Hundreds of Lower Yellowstone Valley farmers, as well as the communities of Glendive, Savage, Sidney and Fairview are dependent on the delivery of water from the Yellowstone River for their livelihood. The elimination of the irrigation system would result in the bankruptcy of approximately 300 family farms and the closure of countless businesses dependent on agriculture, as well as the loss of hundreds of other jobs related to the agriculture sector. Sidney Sugars, which provides approximately 150 full-time jobs and another 150 part-time jobs, would close forever. My family business, Johnson Hardware and Furniture in Sidney, MT., was founded by my great uncles in 1915. There is no doubt in my mind that our family business, which currently employs more than 20 people, would not have survived for the past 101 years in Sidney without the consistent, stable presence of irrigated farm land in the valley. My family's business has survived two World Wars, the Great Depression, numerous recessions, fires, droughts and floods, and not one or two but three oil booms and busts. The

reason my business, and all the valley residents, have survived here is because of the stable presence of irrigated farms in the

1 Cont

Lower Yellowstone Valley. I am in support of the continuation of the Lower Yellowstone Irrigation Project and strongly urge the court to rule in favor of the proposed bypass channel and the long-term viability of irrigated farming in this valley.

Sincerely,

Philip C Johnson

Johnson Hardware & Furniture

111 South Central Avenue

Sidney, MT 59270

TS-15

To whom it may concern:

My name is Jeannie Dunn and I live and work in Sidney, Mt. My husband, Pat, has been an employee at Holly Sugar/Sidney Sugars for more than 30 years. The sugar industry has provided my family with the ability to own a home and raise a family. If the

1

irrigation canal is shut down, or changed to an economically unsustainable pump system, Sidney Sugars will close and my family will lose our home. I am not alone in this. Hundreds of farmers and town people in our area face bankruptcy if irrigated farming were to leave the valley. Untold businesses and their employees would be affected. I understand that the pallid sturgeon is an endangered species but at what point do people come into the equation. We won't lose our lives but we will lose everything we have worked for in our lives. When do people matter? Please, please make the right decision and rule in favor of the proposed

2 bypass channel for the Lower Yellowstone Irrigation Project and long-term survival of all the communities tied to it. Thank you for taking the time to read my letter and God bless you.

Jeannie Dunn

Sidney, MT

TS-16

To whom it may concern:

My name is Bernadette Barbula and I am writing to offer my support

1 for the Lower Yellowstone Irrigation Project's proposed bypass channel. I have lived and worked in Sidney, MT for decades and my job at a local Sidney business is in severe jeopardy if the court rules against the bypass. All the other options for the LYIP are economically unsustainable and would result in the closure of

2 Sidney Sugars and the loss of countless jobs. Farms, businesses and families in all the valley communities would be facing bankruptcy and foreclosure. An economic disaster would occur! We will lose our home! We will be forced to uproot our family and move to somewhere else and leave the place we have chosen to live our lives. At what point do people matter in the decision facing the court? I would argue that people are more important than a ancient fish that not only exists in the Missouri River, but also

in the Mississippi River. The pallid sturgeon will survive whether or not the Lower Yellowstone Valley Irrigation project continues - but the communities in this valley will not. I beg you to rule in favor of the proposed bypass channel for the Lower Yellowstone Irrigation Project.

B. Barbula

Sidney, MT

BP-288

1 Use bypass channel.

Lynell Odenbach

Irrigated Farm Land Owner

604 Rock Spring Road

Naperville, IL

BP-289

1 I'm still not convinced changing the dam is worth saving the fish. The farmers are worth more than the fish. If the fish are truly worth improving the dam, build the bypass.

Randi Hass

PO Box 172

Sidney, MT 59270

BP-290

1 Bypass channel as recommended with this EIS as well as past,

1 Cont should be clear to be the best option as the preferred alternative.

Gene Buxcel

BLS Inc.

34494 County Road 110

Savage, MT 59262

BP-291

1 Bypass channel, the preferred alternative.

Seth Buxcel

10499 County Road 340

Savage, MT 59262

BP-292

1 The best factory cannot survive on less water or lower sugar beet production. Conservation measures suck as wind turbines will have very high maintenance cost. Overall economy will take a downturn without ample crop production.

Ken Buckles

Sidney Sugars

402 7th Avenue SE

Sidney MT 59270

BP-293

1 We need to keep the dam and build the fish bypass. Our community

1 Cont depends on it. Thousands of lives depend on it. Human Lives matter too!!!

Ross Rosaaen

Niehenke Welding

312 North Central Avenue

Sidney, MT 59270

BP-294

1 Any alternative to the present system that makes farming either impossible or unaffordable is not acceptable! The fish go before the lower Yellowstone valley.

William Nankind

Landowner

13107 Highway 200

Fairview, MT 59221

BP-295

1 Use bypass channel.

Char Jonsson

Jonsson Farms

34494 County Road 110

Savage, MT 59262

BP-296

1 Use the bypass channel.

Leonard Odenbach

Retired farmer

11051 County Road 344

Savage, MT 59262

BP-297

1 We suggest the no action. We use the irrigation water and need it.

Elaine and Harold Emly

34992 Hwy 23

Sidney, MT 59270

CERTIFICATE OF REPORTER

I, JOSLYN CUMMINGS, Official Court Reporter,

Do hereby certify that I reported in machine shorthand the foregoing proceedings at the time, place and with the appearances hereinbefore noted.

I further certify that the transcript transcribed from my original shorthand notes by means of computer-assisted transcription, is a full, true, and correct transcript of the oral testimony adduced therein, to the best of my ability.

I further certify that I am not of counsel for, nor in any way related to, any of the parties in this matter, nor am I in any way interested in the outcome thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this 15th day of July, 2016.

____

JOSLYN CUMMINGS
Official Court Reporter

DRAFT ENVIRONMENTAL IMPACT STATEMENT

for the

LOWER YELLOWSTONE INTAKE DIVERSION DAM

FISH PASSAGE PROJECT

PUBLIC INPUT MEETING

WEDNESDAY, JUNE 29, 2016

6:00 P.M. - 8:00 P.M.

DAWSON COUNTY HIGH SCHOOL AUDITORIUM

900 NORTH MERRILL STREET

GLENDIVE, MONTANA 59330

U.S. ARMY CORPS OF ENGINEERS, OMAHA DISTRICT

U.S. DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

KAYLA ECKERT UPTMOR: Good evening. Good evening and welcome. Thank you everybody for taking the time to come out this evening. My name is Kayla Eckert Uptmor, and I am the Chief of Civil Works for the U.S. Army Corps of Engineers Omaha District.

So if you are wondering why the U.S. Army Corps of Engineers would send a team of folks all the way from Omaha, Nebraska to Montana to hold this meeting, there is a reasonable answer. The Corps' Civil Works Program boundaries are established based on watersheds and its Military Program boundaries are based on state boundaries.

As all of you know, the Yellowstone River is a tributary to the Missouri River so as the Missouri River and its tributaries flow from Montana to the confluence with the Mississippi, Omaha District is responsible for everything from Montana down to Omaha, Nebraska. The Omaha District is responsible for an eight-state region, the largest geographical footprint of the Army Corps districts in the nation.

The Corps staff here today are all from the Omaha District. But closer to home, many of you who live in Montana, the Bureau of Reclamation is represented by staff from its Montana area office in Billings.

Together, we have made available for public review and comment the Lower Yellowstone Intake Diversion Dam Fish

Passage Draft Environmental Impact Statement, or as many people refer to it, the Draft EIS. This is the second of three public meetings. We had one last night in Sidney; this evening in Glendive; and then tomorrow in Billings, Montana.

So the purpose of this meeting is to hear from you. We have two highly qualified project managers from both agencies here today who have been leading multiple technical teams to complete this Draft EIS. They will provide a brief overview of the work that's been done to date.

We will then offer a comment opportunity for you to share your perspectives and your opinions. We will not be answering questions directly during the comment session but will be here after the comment period throughout the lobby to answer them directly and any questions that you have might have. Our intent is to be sure there is ample opportunity for all perspectives to be heard. We will be here as long as that takes.

But before we begin, I would like to introduce the staff that we have here today. On behalf of Colonel John Henderson, the Omaha District Commander, we have Major Arlo Reece, the Deputy District Commander; Eric Laux, if you don't mind standing please, Eric, Omaha District Chief of Environmental Resources Section; Curtis Miller, the Omaha District Chief of the Hydraulic Engineering Section; Sage Joyce from the Omaha District Montana Regulatory Office out of Billings; Tiffany Vanosdall, the Yellowstone Intake EIS Project Manager for the Bureau of

Reclamation; Steve Davies, the Montana Area Office Manager; Gerry Benock, the Montana Area Office Manager of Planning; and David Trimpe, the Montana Area Office Yellowstone Intake EIS Project Manager.

Again, we are all here this evening as long as it takes to ensure that all your questions are answered and your statements are heard.

Now, for the formal public comment session, I would like to review the meeting guidelines that you all picked up when you came in. First, I ask that we offer all speakers courtesy and respect. As highlighted in your handout on the meeting guidelines that we will review quickly, we encourage everyone to sign in at the front tables, regardless if you want to speak or not. And if you do want to speak, please sign in at the table that signifies that. And we have that list up front so if you didn't sign up and you wanted to, you could go back.

You will be invited to speak in the order of the sign-in sheet. When you come to the mike, please remember to state your name and who you are representing. So that we can afford the opportunity for everyone to speak, we will ask that you limit your comments to three minutes. Once everyone who has signed up to speak has spoken, the mike will remain available for those who want to speak but hadn't signed up or those who have additional comments.

All will be held to the three-minute rule.

I will hold up this hot pink card with the number one signifying that you have one minute remaining. If you do not finish your remarks in three minutes, you are welcome to take place in line again. But again when at the mike, please introduce yourself again for our record. The meeting and the public comments will be recorded by our certified court reporter for the official meeting documents.

So the ground rules laid, again please I ask you now to please turn your attention to the Intake Project Managers for the overview. But again, I ask that we offer all speakers today courtesy and respect. Thank you.

David.

MR. TRIMPE: All right. This is a little history of the Lower Yellowstone Project. It was authorized with the Reclamation Act of 1902. It was a single-purpose irrigation project, meaning that all the water users pay for the O&M of the District. Construction occurred from 1905 to 1908 by reclamation and the first water was delivered using the Main Canal in 1909.

As you can see on the left, the Project does encompass four Irrigations Districts: Intake, Savage, Lower Yellowstone Districts 1 and 2. The facilities include the Intake Diversion Dam, the new screened headwaters, 72 miles of Main Canal, 225 miles of laterals, three pumping stations and the Project covers about 58,000 acres.

All the O&M is performed by the Lower

Yellowstone Board of Control and the diversion rate is 1,374 cfs, which is also the full water right.

So the pallid sturgeon, which is the reason why we are here tonight, was listed by the U.S. Fish & Wildlife Service in 1990. It is considered endangered through its entire range. It is native to both the Yellowstone and Missouri Rivers. Primary threats include construction of dams, bank stabilization projects, entrainment at the water intakes, disease and predation as well as commercial fishing.

So in the Yellowstone River, the majority of the pallid sturgeon are found just below Intake Diversion Dam. But historically, they were found to go upstream of Cartersville and they also have been known to use Tongue and Powder Rivers. So if we provide fish passage at Intake Diversion Dam, that will provide approximately 165 miles of spawning, rearing and drift habitat.

The next likely impediment to pallid sturgeon may be Cartersville Dam, which is located on River Miles 237. There are a total of six diversion dams on Yellowstone River, Billings Big Ditch Dam being the most upstream and Intake Diversion Dam being the most downstream.

So shortly after the pallid sturgeon was listed in 1990, Reclamation started studying the effects of the Lower Yellowstone Project on pallid sturgeon. Best available science says that there is a lack of passage over the existing dam, and there was entrainment into the Main Canal, which has since been fixed with the new screened headworks.

2005 is a big milestone for this Project, as a big Value Planning Study was completed and 110 alternatives were looked at for providing fish passage and entrainment protection. In 2007, the Water Resources Development Act authorized the Corps to assist Reclamation with design and implementation of the Lower Yellowstone Project.

So we have been through a couple environmental studies. The first one was back in 2010 with the initial Environmental Assessment. In that assessment, the agencies identified the Rock Ramp and the Screened Headworks as the preferred alternatives. In 2012, the new screened headworks was put into operation and then in 2015, the agency released a Supplemental Environmental Assessment identifying the Bypass Channel as the preferred alternative.

In 2016, which is today, we are currently undertaking a new Environmental Impact Statement. So the Draft EIS, there was a Notice of Availability published in the Federal Register on June 3rd. Shortly after the release of the Draft EIS, the agencies released a Technical Addendum that did address four alternatives that were not identified in the Draft EIS. Because of that Addendum, the public comment period has been expended to July 28th.

The Draft EIS does look at six alternatives, one of them being the No Action. So the purpose of the Project is to improve passage for pallid sturgeon and other native species, as well as the continued viable and effective operation of the Lower Yellowstone Project and also to contribute to the ecosystem restoration.

Prior to the release of the Draft EIS, we did go through a public scoping period, which occurred from January 4th to February 18th. We did hold one public scoping meeting here in Glendive on the 21st.

There on the right is just a breakdown of the comments that we did receive and the majority of them were concerning the alternatives, economics, as well as threatened endangered species.

Also part of the scoping period, we did receive several alternatives. Just a couple of them were Remove Dam with Pumping, Implementation of Conservation Measures, Wind Power, Utilizing the Trust Fund, Low Hydropower as well as physically relocating the sturgeon upstream with a diversion dam.

So the alternatives that we have chosen to carry forward in the Analysis are the No Action, Rock Ramp and Bypass Channel, which have been previously analyzed. And then we added three new ones: The Modified Side Channel, the Multiple Pump Stations and the Multiple Pumps with Conservations Measures.

So the No Action, which is also considered the baseline from which to measure benefits and impact, would be the continued operation and maintenance of the project as occurs today. This would include the annual placement of rock on the dam crest. And because no passage would be provided under this alternative, the federal agencies would be required to consult with the Fish & Wildlife Service.

Construction costs would be zero because there would be no construction under this alternative. The annual O&M for the the Lower Yellowstone District, the total O&M costs for that year would be 2.6 million and an annual O&M per acre would be $46.53. This is higher than current assessments because this does take under consideration replacement of the rock trollies as well as Endangered Species Act monitoring for passage over the dam. That annual O&M per acre of $46.53 would be paid by each individual farmer.

Now it's important to remember that these are just estimates and not actual costs. So just keep in mind that's estimated and not what assessments would actually be.

So the Rock Ramp was looked at in 2010 and 2015. It does include the construction of a new concrete weir just upstream of the existing diversion dam. It does incorporate a 1500-foot shallow-sloped boulder and cobble rock ramp. The Diversion Dam does allow the District to divert their full water right of 1,374 cfs down to Yellowstone River flows of 3,000 cfs. Because the Rock Ramp does cut off the existing boat ramp, the boat ramp would likely have to be relocated downstream.

Construction is estimated at about $90.4 million, annual O&M for the District would be about 2.8 and then a cost per acre of about $50 or 7.5 percent greater than the No Action cost.

The Bypass Channel, which is also the agency's preferred alternative, includes an 11,100-foot-long Bypass Channel. The entrance would be located just downstream of the existing Diversion Dam. This alternative does also include a new concrete weir that would allow the District to divert their full water right down to 3,000 cfs. All excavated material from the Bypass Channel would be placed in the existing side channel to help stabilize that upstream entrance.

Construction costs are estimated at about $57 million and annual O&M cost of $2.8 million and a per-acre cost of $49.27 or about 5.9 percent greater than the No Action.

So these are the alternatives we have previously analyzed and are analyzing again. So for the new alternatives, I will turn it over to Tiffany.

TIFFANY VANOSDALL: So one of the new alternatives that was considered in this EIS was based on some feedback that we had gotten associated with the fact that we have gotten some passage by a few fish in the existing side channel that's out at Intake, as well as some people who wondered why we weren't looking at anything that maybe didn't replace the existing weir.

So the Modified Side Channel is one way to address some of those concerns. What it is is an existing side channel would be excavated so that it would flow to meet the velocities and depths for pallid sturgeon, the same flow split as the Bypass Channel.

So about 15 percent of the main river flow would now go down the existing side channel, but it would be modified so that it could take that much flow. So in essence, it would flow a lot more of the year and it would provide passage opportunities all throughout the year for the pallid sturgeon.

It would not replace the existing weir. The Irrigation District would continue to rock that weir. In order to facilitate that, there would be a span bridge over the high flow channel so that they could get out there and do that annual rocking that they do.

The entrance for the fish to this alternative is down where it is right now so it's about a mile and a half downstream of the existing dam. And the reason that the Bypass Channel is right at the dam is that a lot of research indicates that it's easier for a fish to find its passage route if it's right at the obstruction. So this one is further down so that it is less for this alternative but it does utilize a route that some pallids have taken already.

Construction of this alternative is about $54 million. Annual O&M is a little over 2.9 million so that's a per-acre cost for the Irrigation District of about $51 per acre. That's around 10 percent over the No Action Alternative.

So another alternative that's new to this EIS is the Multiple Pump Stations. This alternative would remove the existing intake weir and would construct five pumping stations along the Yellowstone River with four pumps at each site, which is a total of 20 pumps. The total capacity of this alternative would deliver the full water right to the Irrigation District.

We would need to upgrade the existing power structure. We have met with the Montana utilities and worked with them to come up with cost estimates for upgrading the infrastructure for that electricity in order to run those pumps.

The pumps themselves would be set off the river with a canal that goes to them, and inside the canal would be a fish screen to deal with a lot of the fish that might get into that canal and ensure that they don't get entrained into these pumps.

There would be gravity diversion from the existing headworks about 17 percent of the time when the river is above 30,000 cfs. That would offset some of the O&M costs of running a pump. So sometimes you could divert from the existing headworks into that newly-constructed headworks, and then the rest of the time, about 83 percent of the time, you would have to run the pumps.

It would require relocation of the Intake

Fishing Access site, which is that state-run facility, because one of the pumping stations likely would have to be located at that location.

Construction of that alternative is around $132 million. Annual O&M is a little over 5 million for an annual O&M per acre of $88, which is an increase of about 90 percent over the No Action.

We have some schematics of the Multiple Pump Stations that show the canal that goes through the pump, the V-shaped fish screens that will be utilized within the canal, and those are in the documents if anybody wants to check them out closer.

So one of the things people ask us is we don't really understand what these pumping stations might look like, how big they might be. And in comparison, some of you might be familiar with the Savage Pumping Plant that exists. That has a capacity of 60 cfs so that's 38 million gallons per day.

The Intake withdrawal right now is 888 million gallons per day so Savage delivers about four percent of what the Intake facilities would need to deliver so it would require about 20 stations of the size of the Savage Pumping Plant.

In addition, the Savage Plant doesn't have the same screening requirements and so it would likely have to be a little bit bigger. So the comparison isn't quite apples-to-apples but it gives you the idea of the size of those facilities.

So the last alternative that's in the EIS is Multiple Pumping with Conservation Measures. This also would remove the existing weir facility, construction of seven pump sites with six Ranney Wells at each site. Total capacity is 608 cfs. So that is around half, a little bit below half of the existing water right that's withdrawn.

And to make up for that change, there would be conservation measures that would be established within the Irrigation District, both on farm and as part of the Main Canal system. You could utilize gravity diversion with a combination of pumping about 60 percent of the time so you would still utilize the existing headworks as much as possible to offset the amount of time you have to run the pumps. But 40 percent of the time would be pumping only.

It does include implementation of conservation measures, and I have the next slide to talk about what those would be. It does require a redesign of the Main Canal since the Main Canal was designed to carry 1,374 cfs. It would have to be redesigned in order to function at that lower withdrawal rate.

It also includes relocation of the Intake Fishing Access Site. One of the Ranney Well facilities would need to be located at that location. Construction of this alternative is around 477 million. Annual O&M is about 4.4 million, which is a per acre cost of $77 approximately for the Irrigation District, and that's an increase of about 66 percent.

So some of the conservation measures that would be considered to be implemented with this lower withdrawal is additional check structures within the canal, flow measuring devices, converting some of the laterals to pipes, sprinkler systems, lining the Main Canal in some of the laterals, control over-checking and ground water pumping.

If you have read the document, you will see that there has been a determination that even if we were able to save this much water with conservation measures that it likely could not deliver the Irrigation District's need with only that 608 cfs. If you look at the crop requirements, 608 would not be enough for that crop requirement. But that is in the document for you to look at.

This is a schematic of the Multiple Pumps with Conservation Measures that utilizes Ranney Wells. If you know anything about Ranney Wells, they are essentially kind of a, more of a ground water withdrawal of the alluvium of the river so you can see there is kind of a lateral pipe at the bottom part. You can't actually see it from where you are sitting but there is a lateral pipe at the bottom of the pump that withdraws some of the alluvium from the bottom of the river.

So cost estimates for all the alternatives, we kind of went over them. This just shows some of the things that actually go into the cost estimates themselves. There is the construction costs. We also take into consideration how long a given alternative takes to construct but they are looking for ecosystem benefits.

If an alternative takes 10 years to construct, you are waiting that long before you are actually getting benefits from that alternative; if it takes two years, you are getting benefits earlier. So we do take things like that into consideration.

The design of the alternative is part of the cost estimate. Construction management is part of the cost estimate. We usually just use percentages because in general, a more expensive alternative costs equivalently more to design, more to do construction management.

Real estate, the Rock Ramp and the Bypass Channel are all on federally-owned land. The Modified Side Channel, Multiple Pump and Multiple Pump with Construction Measures would require some private land acquisition in order to implement.

And that completes what we call the total first costs, which is kind of what costs you might be looking at for implementation. We also factor in the annual O&M costs, and we take the total cost estimate of construction and we annualize that with an annual O&M cost.

And the reason that we do that is to make an apples-to-apples comparison so that if a project has a really high construction cost and reasonably low O&M versus a project that has a really low construction cost and really high O&M, you want to make sure that you are taking that into consideration, as opposed to just the initial construction cost.

So we analyze those, the cost of each alternative over a 50-year period because that's what we call our planning window. We analyze those costs and the Corps is required to do an analysis called Cost Effectiveness Incremental Cost Analysis.

And the purpose of that is when we do things like flood projects, there are monetary benefits that we can measure. And in general, you don't invest in a project unless the benefits outweigh the costs. When you do an ecosystem project, it's hard to monetize the benefits that you get out of the ecosystem.

So what we do is we do an analysis of how cost-effective the habitat we are getting is. And I am not going to get into how the analysis works. If somebody wants to catch me afterwards, I will absolutely talk through it with you.

But in essence, what it does is it looks at all the alternatives and it says if I can get the same or more habitat for less cost than a different alternative, that alternative gets eliminated, and I don't consider it anymore.

And through that analysis, you get two

alternatives at the end that you need to compare their costs per habitat unit. And that's the Bypass Channel and the Multiple Pumping.

And what the CEIC gives you is it says for the Bypass Channel, you can get about 70 percent of your benefits for around $700 per habitat unit. To get the rest of your benefits, which is another 30 percent through the Multiple Pumping, it costs you approximately $1,400 per habitat unit. So the question that gets before the decision maker is is that $1,400 per habit unit worth enough to spend these additional funds? So that is the decision that gets in front of the decision maker.

Just in summary, the impact from the Environmental Impact Statement, we looked at major resources of hydrology and hydraulics, ground water hydrology, geomorphology, aquatic communities, federally-listed species and state species of concern, lands and vegetation, recreation, noise, social and economic conditions, and historic properties.

I am not going to go over the impact of each. It's in the document. What I can say is none of the alternatives had any significant negative long-term impact on the environment. If anybody wants to talk about any of these special things, we can talk about it outside what the impacts were.

So the preferred alternative determined by the Bureau of Reclamation, Corps of Engineers, in coordination with Fish & Wildlife Service is the Bypass Channel. It does meet the requirements, the physical and biological requirements that we were given by Fish & Wildlife Service and all of the agencies are comfortable that it will pass fish.

It's a cost-effect of means of providing fish passage. It's expected to have the lowest annual O&M of all the alternatives considered and it would not result in significant long-term adverse environmental impacts.

So that leads us to your role in what we are doing here and that's how you can comment. We are taking spoken or written comments tonight. If you step up to the mike, if you signed up, the court reporter will record all of your comments and they will be made part of the Project record.

If you want to fill out one of the comment cards, you can come up and hand it to any one of us afterwards. You can also mail those comments, either from the comment sheet or one that you write out or type out yourself and it goes to that address up there, and I know that address is out in the hall as well.

You won't get a response that says hey, we got your comment if you sent it in the mail. If you want that, you can send it certified. There is also an e-mail address that you can e-mail your comment, and you will get a response from Jennifer Salak. She will respond and say, 'Hey, we got your comment and I am forwarding it to the PM.'

The due date for comments, they must be

postmarked or received by July 28th so if you e-mail them, we have to get them by July 28th. If you send them through the mail, they can be postmarked by July 28th. If you need any additional information, if you have any questions, if you want to talk about the project, you can contact either David or myself. We have our phone numbers and our e-mail addresses, and this presentation will be posted so you can get them off of there if you need to.

This is also the Project website where you can access all of the documents from this EIS, as well as the previous EAs because some of those documents are referenced within this one. So you can go and look at all of those documents as well.

So we are ready to move into spoken comments by you all. Just a reminder, we will call people up. I will call four at a time so you can go to whichever microphone is more convenient. When we get through those four, I will call the next four just to try to make it most efficient.

Try and limit comments to three minutes. Kayla will hold up a sheet that says "1", and you will have one minute left, if you can try and wrap up your comment within a minute. You will be allowed, once everyone has spoken, to come back up and have more comments. But we just want to make sure that everyone is heard from.

The court reporter will keep track of all the comments and will record them and the agency staff will be available after the meetings to answer any questions that you might have or if you want to talk further. And then all comments received both verbal, written, e-mail, however you get them to us, will be considered by the agencies in finalizing the EIS and will be made part of the Final EIS.

And we will go ahead and call the first group of people and we will start with elected officials. So first up is Senator Matt Rosendale, Duane Mitchell and Scott Staffanson. Before you step up to the mike, make sure that you state your name and then who you represent.

TG-01

MATT ROSENDALE: Good evening. Senator Matt Rosendale. I represent Senate District 18 for the State of Montana that falls in Richland and Wibaux Counties and I am also on the Board of Directors for the Intake Irrigation Project.

I would like to make a couple comments. First of all, that we need to keep in mind as we go through this process that first of all, the farmers did not request a single alternative or upgrade to this entire facility. I just want to

1

make sure that the Corps keeps in mind, while I know that you are aware of it, so it's reflected in the public record that the public knows that these farmers did not ask for a single alternative or upgrade of this facility. This is all as a direct result of the Endanger Species Act as you guys are aware.

That being said, Congress passed the Endangered Species Act and the people of this nation feel this

1 Cont

fish is worth preserving. Then the people of this nation have got to absorb the expense associated with it, not 350 farmers and their families and the communities that they support in eastern Montana. The people of this nation have to support those costs associated with preserving this fish and that also includes the extensive operation and maintenance of the facilities as we go forward.

2

The next thing I would like to say is that when the new head gates were installed three years ago, this community was sold a bill of goods and that bill of goods included the rock ramp. They were not just sold and went through hearings to approve the new head gates and screens that were placed in front of them. As part of that project, they were supposed to have the Rock Ramp alternative constructed within the next year after the head gates were. And then we were told that that had fallen out of the equation because of the cost associated with it. So there is already a lot of folks walking around feeling like they were sold a bill of goods.

3

The next thing I would like to say is that the Multiple Pump Stations are unrealistic. Right now our small Irrigation Project provides water to about 900 acres and there is two small pumps, as you can image, to provide that water and there is not enough reliable electricity to even run those pumps. We just had those voltages on those turned down so that we can actually make them function throughout the season.

The only realistic and reliable method for delivering this water is by gravity flow assisted by the diversion
4 and the Bypass Channel so they can provide the fish passage. So I would like to go on record and say that I support the Bypass Channel alternative.

Thank you very much for coming out.

TG-02 (Applause.)

DUANE MITCHELL: I am Duane Mitchell. I am a Richland County Commissioner from Sidney. I want to thank everybody for being here, especially for you people being here working on this.

Genesis 1:28 says, "God blessed them and said unto them be fruitful and multiply and replenish the earth and subdue it and have dominion over the fish of the sea, over the fowl of the air, and over every living thing that moveth upon the earth."

I have a couple of questions and then a couple comments. This past Sunday after church, my wife was asked
1 by a young lady, a college freshman, if the Intake Diversion Dam has been in operation over a hundred years, why are the pallid sturgeon not extinct? They must be doing something correct if they have been able to last this long.

And with this perceived threat of climate
2 change, global warming and carbon print, how much of a carbon print has the Lower Yellowstone Project created over the last

2 Cont 107 years that has been providing water that the valley.

Today Sidney Sugars employs 130 full-time
employees and during the campaign of around 300 employees for an
annual payroll of around $10 million. And according to the
Chamber of Commerce, every dollar that's earned in the community
is retuned six to seven times. Now, add the $7 million of
operating expense that Sidney Sugars pays through our economy
annually and you now are talking about a serious impact to our
city, county and state. That will not only affect Sidney but the
other cities and counties around Sidney.

I called the Montana Department of Revenue
to see how much this could affect the tax base of Richland County.
The appraisal value for one acre of irrigated land is $664.62, one
3 acre of wild hay land is $175.98, one acre of grazing land is
$39.30. The taxable value--and this is what the other
commissioners and I worry about--one acre of irrigated land is
$14.34, one acre of wild hay land is $2.80 and one acre of grazing
land is 84 cents.

Let it be known that the Richland County
Commissioners Shane Gorder, Loren Young and Duane Mitchell agree
4 that the Bypass Channel is the best solution to keep our farmers
and the fish living on and in the Yellowstone River.

Thank you.

TG-03 SCOTT STAFFANSON: Scott Staffanson; I am
Representative for Montana's House District 35, which encompasses

Richland County and also encompasses the majority of the acres that are irrigated by this project.

1 We live on one side of the canal and we irrigate on both sides of the canal. There is about a half mile of canal--or a little more than that, three-fourths of a mile runs through our property and provides habitat, it turn, so it turns the section of land into sub-irrigated hay land that otherwise would, would be dry pasture land and provides a lot of habitat for everything from pheasants to grouse to sandhill cranes that nest on the place.

I have got 140 acres that I irrigate out of the well. That well would probably not be near as productive if it weren't for the canal raising the ground water so that I have water through my pivot.

2 Looking forward, I think this project needs to stay in place. It's already there. It's very efficient. There is nothing more efficient than gravity irrigation when it comes to expanse and the water is, none of us wastes it. I mean, you talk about wasting water but it goes back into the ground water, it goes back into the river and it provides so many things for this community between hunting and agriculture and a place to raise a family.

I am the third generation that's irrigated on that farm where we live and got two more generations living there now but I hope will continue to shovel mud and make water run downhill on our land.

Chelsea, my daughter, is home irrigating right now while I am here. And I'd just like to say I am in favor 3 of the Bypass. I think it's the best alternative to keep our Irrigation Project in place. And from what I studied, I believe it will do a great job of preserving the habitat and in increasing the habitat for the pallid sturgeon.

Thank you.

TG-04 TIFFANY VANOSDALL: So next up, Cathy, Kirkpatrick, Art Gehnert, Max Schwartz, William Hier and Leon Stevenson, and Ron Etzel.

CATHY KIRKPATRICK: Good evening. Thank you for being here this evening and for your very good study that you provided for us. I am here as a representative of Dawson County Economic Development, Cathy Kirkpatrick, Executive Director.

The Lower Yellowstone Project was authorized by the Secretary of the Interior on May 10, 1904. The Project was designed to provide a dependable supply of irrigation water to support approximately 54,000 acres of land located on the west side of the Yellowstone River, approximately two-thirds of the irrigated land in Montana with the remaining lands located in North Dakota.

Construction of the Project Dam began in 1905, which includes Intake Diversion Dam, also known as the Yellowstone River Diversion Dam, a wood and stone diversion dam that spans the Yellowstone River and is submerged under water year round.

The U.S. Fish, Wildlife & Parks Service listed the pallid sturgeon as endangered under the Endangered Species Act in 1990. The best available science suggested that the Intake Diversion Dam impedes upstream migration of pallid sturgeon and their access to the potential spawning and larval drift habitat. The Lower Yellowstone River is considered to be one of the best opportunities for recovery of the pallid sturgeon.

The Pallid Sturgeon Recovery Plan was identified providing passage at Intake Diversion Dam to protect
1 and restore pallid sturgeon populations. By providing passage at Intake Diversion Dam, approximately 165 river miles of potential spawning and larval drift habitat would become available in the Yellowstone River.

The U.S. Army Corps of Engineers and Reclamation as joint lead agencies have made available for public review and comment the Lower Yellowstone River Intake Diversion Dam Project Draft. The Draft EIS analyzes and discloses potential effects associated with the proposed federal action to improve passage for endangered pallid sturgeon and other native fish at Intake Diversion Dam in the Lower Yellowstone River while continuing to affect viable opportunities of the Lower Yellowstone River Project.

2 Dawson County Economic Development stands

2 Cont

today to support the Bypass Channel Alternative, the preferred alternative, which includes abandonment of the existing concrete weir; construction, operation and maintenance of a two-mile long bypass channel for fish passage along the weir; placement of fill in the upstream portion of the existing side channels for stabilization; continued diversion of 1,374 cfs through the screened headwaters; and continued operation and maintenance of the irrigation distribution facilities and pumps.

3

It is the opinion of Dawson County Economic Development Board of Directors that the removal of the Intake Dam will create an economic impact, adverse economic impact on communities in eastern Montana and ultimately, the entire State of Montana. Agriculture is the foremost business in Dawson County and Richland County. If the ability to irrigate the Lower Yellowstone River is compromised, businesses will be lost, leaving the residents' lives in turmoil.

In closing, we support the conclusion that the Endangered Species Act passed by the U.S. Congress in 1973 was never intended to put people out of business. It was intended to save the species.

Respectfully submitted, Cathy Kirkpatrick, Executive Director, Dawson County Economic Development.

Thank you.

(Applause.)

TG-05

ART GEHNERT: Good evening. My name is Art

Gehnert. I have been a resident of Dawson County for 77 years. I have lived on the Yellowstone River all those years.

I've boated on the river, I've played on the river and I have fought the river. The river is a natural being thing. It's living; it moves. It's there for everyone to see and to enjoy and to utilize; not to misuse, not to harm, and not to desecrate.

We have enlisted the U.S. Army Corps of Engineers to conduct an Irrigation Study. In Dr. Tuthill's book, he writes very clearly the Lower Yellowstone River in the Glendive area is probably the most dangerous, life-threatening river in the United States of America.

The ice jam conditions alone are enough to make your hair stand on end. Ice flows can changed within 15 seconds of being okay or bad. And if it goes bad, you have to run, and run in the right direction or you will be killed. There has been loss of life in Dawson County right in my neighborhood. There were people playing at the red barn. They were killed trying to leave the red barn to get back to Glendive.

The slope of the land because of natural river secretion, the channel is actually higher than the surrounding land. They ran toward town, ran into the deeper water. It took the poor ladies that were with them. Other ladies were left in the trees and used suspenders to tie themselves into the trees. They died. Those people there were deaths in Dawson

County. Nobody remembers these bad things.

In 1936, we had a horrible flood in Dawson County. Ice jam conditions just as recently as 2014 caused things that I never expected to see happen. A natural river left its natural channel and migrated over next to railroad track and covered a highway for three solid days. The ice flow and water that crossed into my property caused extensive damage and I had no control.

Anyone that thinks they can build something in the Yellowstone River and have no maintenance or have no responsibility needs to take a second look at nature. Nature is what we live in and the history of this river is emphatically very dangerous and hard to cope with.

If you are going to build something in the river, to maintain that project alone is your responsibility and no one else's. If you are going to do it, you better have
1 property values that exceed the value of the project you are building.

And I don't know, the maintenance on this project is understated because of the lack of knowledge of the Yellowstone River's natural characteristics. And I do pray that you some day will be able to understand that the river is there for us to enjoy and share with nature. And history shows that we have mismanaged the river at Intake because everything at Intake has been destroyed and is continuously having to be rebuilt almost

1 Cont every year to accomplish--you can't go fishing there without crossing that slough, you can't hunt down there--that's time. Thank you for your time so much.

(Applause.)

TG-06 MAXWELL SCHWARTZ: My name Maxwell Schwartz. I am a ditch rider in District 6 for the Lower Yellowstone Irrigation Project.

First off, I would like to say it's amazing how openly people voice their opinions on things that have very little to do with their lives or very little impact or adversely affect their livelihood.

1 Every day I drive this ditch line and I have been all over the eastern side of the state, the western side of North Dakota. And there is nowhere else in this region that I have seen such wildlife and it's all created by the canal system. And, I mean, to obstruct that or change it in any way and divert water, you are creating another wildlife issue. I mean there is an entire ecosystem that runs off this canal system.

2 So to say you are changing this for wildlife is completely incorrect because you will be adversely affecting other wildlife in the same area. So I am in favor of the Bypass Channel and that's about all I have to say.

Thank you.

(Applause.)

TG-07 RON ETZEL: My name is Ron Etzel and I have been with the Project for many years. I am an equipment operator. But tonight I am reading a letter from a local Sidney business owner, Ross Rosaaen, owner of Niehenke Welding.

And his letter goes: "To the people who want to destroy a community: I am a business owner in Sidney, Montana. My company was established in 1921 because of the Irrigation Project. It supplied water for a large number of farms in the valley.

My company is an agriculture welding and repair shop. My livelihood for my wife and three kids is dependent on the agriculture community. That is one of the reasons why I had to write a letter because I couldn't come to the meetings. I have a family and business to run.

1 My business relies on the survival of the farms and the survival of Sidney so I bet most of you environmentalists are thinking we have the oil to keep us going. Wrong. The farmers were here before the oil and they will be here after the oil. This is why I never chased the oil field. Farmers come first in my welding shop. When they break down, I am there to get them fixed so they can harvest the food everyone needs.

Montana and North Dakota are one of the leading producers of wheat, corn, sugar and barley. Our food just doesn't magically appear in the stores. It has to be planted. It needs water to grow and lots of it. Because of this irrigation, we produce some of the best crops.

If the dam is taken out, the water table in Sidney will drop and the town will have to go on restrictions of
2 use. The animals that flourish in our area like deer, sage grouse, pheasants and the birds all can survive because of our irrigation.

This fight doesn't just affect the farmers. It affects the entire Yellowstone Valley from Williston, North Dakota to Billings, Montana. Thousands of people will be affected. Land value will drop and people will have to leave.

This irrigation is the lifeblood of the entire economy and life in our area. When did human life stop mattering?

I understand we need to work together and I have been told that the people that want our dam gone don't care about the people's survival. All they care about is the fish. We have more conservation in our state than most of the rest of the country. Come on, let's have some common sense. Human lives matter.

So I want people fighting our Irrigation Project to think and not just jump on a bandwagon because it looks good or they want money to back them for further fights. So are you going to tell my wife and three children that we have to close up and leave their homes and change their lives? No, I won't.

I have to do it because what I gather is that you don't care about us. This is just a game to you so I am going to tell you I will fight you tooth and nail. I will fight anyone that gets in the way of my livelihood and my family and right now, you environmentalists are--we all need to work together and that is what we have been trying to do from the beginning.

Let the Fish Bypass get built so the fish
3 survive. So do the people. Again, human lives matter.
Ross Rosaaen, Niehenke Welding."

(Applause.)

Also for myself that--

KAYLA ECKERT UPTMOR: Sir, it's time.

RON ENTZEL: Okay.

KAYLA ECKERT UPTMOR: Thank you. Feel free to come back up though.

TG-08

WILLIAM HIER: My name is William Hier and I am here with Leon Stevenson and I will be reading a comment that he has prepared.

"I am a life-long resident of this area and have lived on the Lower Yellowstone Irrigation Project all of my life except for the time in the Army. I only irrigated the farmland above the Main Canal that is supplied by secondary water right.

Currently, farming this land and the
1 irrigation is essential to my livelihood. Having made my living as a machinist as a owner-operator for over 30 years, I do machine

work for Sidney Water Users Project on the east side of the Yellowstone River on machine parts for the pumps on that project that are taking water directly out of the river to irrigate about 5,000 acres.

1 Cont

Maintaining these pumps in the river has developed many problems from the silt, trash and gravel that is inducted into the pumps from the river coming in through the intakes and causes many problems in the pump housing and drive system. The cost of the machine work to fix these pumps and the fact that not all local machine shops are willing to deal with this type of machinery causes a problem. At one point in the summer, we had three different machine shops working on the pumps for the Sidney water users and there still wasn't enough people to go around.

The current gravity flow system has served the water users on the Lower Yellowstone Project for over a hundred years now. With the exception of two pumping stations, the majority of the land is under irrigation delivered by gravity and works quite well considering the age of the system, and it would be a disservice to the farmers to replace this system with unreliable electrically-driven pumps.

2

I am in favor of the current Bypass Channel preferred alternative to save both the farmers and the pallid sturgeon."

Thank you.

TG-09

LEON STEVENSON: I think you really underestimated the cost of pumping out of that river just from my experience of trying to keep their pumps running. They are fighting it right now even while this is going on trying to get water to just 5,000 acres.

1

Thank you.

(Applause.)

TIFFANY VANOSDALL: Next is Samree Reynolds, Leslie Messer and Richard Cayko.

TG-10

SAMREE REYNOLDS: Hi. I am Samree Reynolds and I work at Sidney Sugars. And I thank you so much for the hard work and for all of your dedication in finding a single way to save our fish and our community.

With your presentation that you guys had last night and tonight, you have shown us that there is a way to save the fish and a solution that will work for everybody. You have also shown us that because of the Irrigation Diversion Dam, we have a community that is thriving and growing and continues to do so.

I really highly strongly support this Bypass Channel and I just hope that you guys put this through and just not delay it because I think that with this delay--this is all about saving the pallid sturgeon and I am thinking with this delay, we are endangering them further by doing this so I think we have got a perfect solution so let's please support the Bypass

1

1 Cont Channel and get this through and get it going.

Thank you so much.

TG-11 (Applause.)

LESLIE MESSER: Good evening. My name Leslie Messer and I am the Executive Director of the Richland Economic Development in Richland County.

And I want to say thank you to these agencies for all the hard work and the expedited work that you did to get this EIS done so we could look at it. So I want to thank you for all of your work.

In consideration of why we are all here tonight, the Intake Project is one example where the government
1 came in to help and it actually worked. The thoughtful investment from the Teddy Roosevelt era provided the money to construct this structure to make this vast dry area bloom.

The results over the past century have created stability in our economies, the production of our crops being grown for the state, the nation, and the world, the increasing wildlife and aquatic populations as well as the preservation of our heritage and our culture.

2 Over the past century, generations of LYIP Board of Control members have reliably delivered affordable and equitable irrigation water to address the Endangered Species Act. They have also taken measures to try to save the pallid sturgeon. They have made modifications to the system to improve the fish

2 Cont passage and to deter the fish entrainment. They have demonstrated that they have been good stewards with our precious resources, the fish and the water and they will continue to do so.

The EIS does an amazing job of giving us projections of the six alternatives' cost of construction, the annual operation and maintenance and the annual O&M per acre to get that water to the fields. But I ask that you also take into consideration the other costs that every grower must bear given
3 the current expenses of seed, fuel, equipment, fertilizer, labor, transportation to the markets. The local farms are struggling to break even.

If the cost to get this water increases anywhere from 10 to 60 percent, farming in this Mondak Region will cease to exist. And in addition, the annual property taxes that will no longer be generated in the Mondak will no longer be injected into our communities and will negatively impact our cities, counties, schools, states, budgets and services provided.

The removal of the weir and implementation of the pumps would likely cause disruption and disturbances all along the canal system, could ruin habitats, harm aquatic wildlife populations, could significantly reduce drinking water levels and cause unprecedented hardship or the complete extinction of our family farms.

We have been told that the mature wild sturgeon have a time deadline to be considerate of. The further and deliberate delays by the environmental groups with copious funding resources of this construction, the delays of the construction in modifications to the weir and the Bypass Channel to provide passage for the sturgeon will cause them more harm than good.

Furthermore, all of the work that the many North Dakota and Montana congressional leaders did to keep and maintain the federal funding for the Intake Project has been a historic event like none other.

We support and agree with the agency's recommendation of the Bypass Channel and the weir as the best
4 solution to preserve the sturgeon and other fish species, the wildlife and the habitats, the economies in the Mondak Region and the generations of families who live, work, play, conserve and protect our precious resources for the future.

Invest that money now, let the construction begin. Let's save the fish, let's save the farmers and let's safe the habitat.

Thank you.

TG-12 (Applause.)

RICHARD CAYKO: I am Richard Cayko. I am the Lower Yellowstone Irrigation Project Board of Control Chairman and also I am the Chairman of the MacKenzie County, North Dakota County Commissioners.

I have a little different saying tonight than I did last night. I want to talk a little bit different. My family and I have benefited from the Lower Yellowstone Irrigation Project since 1929. My family came here from Colorado to raise sugar beets for Holly Sugar. Lots of families were brought here for that reason. Each family had 160 acres so the valley was very populated from Intake to Nohly. Many businesses started up in all the little towns along the Yellowstone River. Supply and demand trimmed the population and the businesses to a sustainable level, and we are there now.

1 The Irrigation Project must be allowed to function with an elevation level of water that will gravity flow through our canal and lateral systems. The Bypass Channel will allow the pallid sturgeon and other specious to travel upstream. This would be the most efficient and cost-effective alternative.

Thank you for your time.

TIFFANY VANOSDALL: The next group is Steve Forrest, Tim Koffkey, and Matt Skoglund.

TG-13

STEVE FORREST: Steve Forrest, Defenders of Wildlife. I will be submitting detailed comments on the EIS so anything I say here tonight will just be in addition.

I want to say that thank you for coming to Montana. Good to see you here. I want to say I agree with pretty much everything I have heard tonight. I don't think anybody wants to see irrigation stop on the lower Yellowstone.

We think this is a chance for a win-win in the truest sense. we can save the fish; we can get the water to the crops.

But I want to go back to something that Senator Rosendale said about the Rock Ramp and being sold a goods--a bill of goods. That's our opinion about this Bypass Channel. We just don't think it's going to work.

We are supported in that view by the Montana
1 Fisheries Association. It's a professional organization of all the fishery biologists in the State of Montana, both agency biologists, academics and private consultants.

They agree. They think the uncertainties with this Bypass Channel are so great that it's unlikely to work. And if it does work, it's probably not going to work in the way that we are all hoping it might work.

But who is going to bear the cost of failure in this case? I don't think the Corps is intending to bear the
2 cost of failure. It's going to fall on the Irrigation District. We want to make sure that if we are going to spend the millions of dollars--and I agree again with Senator Rosendale--I think this is a question for the American people.

I think we need the time to find those additional resources to make up that gap. If it's a little more
3 expensive, let's find the funds. Let's do the project right. Let's provide secure electric supply sources, if it's pumps. Let's upgrade systems as needed. Let's get renewable energy to

3 Cont drive the Project. But let's find that money. Let's not, let's not rush into a solution that's, that's likely to fail.

I think that we have heard a lot of things about delay. Our organizations and other organizations that I have worked with who have concerns about this alternative share your views and concerns that the sturgeon is perhaps on its last days. We don't want to say delay either but we don't want to see a project done that's not going to do the job and be a waste of taxpayer money.

Thank you.

(Applause.)

TG-14 TIM KOFFKEY: My name is Tim Koffkey. I am a ditch rider for the Lower Yellowstone Irrigation Project District 1.

1 And for the record, I spent the last 22 1/2 years as a pastor so I am not good at following time limits. I am here to speak in favor of the Fish Bypass Channel. However, I would also like to address some concerns that I have with this process and the agenda of the environmentalists.

2 First of all, I would like to say having a meeting in Billings to avoid a larger face-to-face interaction with the farmers on the environmentalists is an act of cowardice. I would like to challenge each of you, while I commend you for coming here to Glendive, where were you last night in Sidney?

(Applause.)

Come to the community that you are desiring to destroy. Come to us and meet us face to face.

Secondly, you environmentalists state that the pallid sturgeon has been around for millions of years, which leads me to think that you believe in Darwin's hypothesis of evolution.

3 If that is the case, then according to Darwin's system, natural selection is the law of the land that only the strong will survive. If the pallid sturgeon has not managed to evolve to adapt to the changes, perhaps it is not meant to live according to the natural selection process.

I would then propose we exert our superior strength and dominion over the sturgeon and have a giant community-wide fish fry and end this discussion's problem altogether.

(Applause and laughter.)

Sorry, I like joking around a little bit.

Thirdly, it's been stated that the fish do not like or will not use manmade bypasses to get upstream. I
4 would like to suggest you take a look at the Hiram M. Chittenden Locks located in Ballard, Washington, a manmade concrete structure for a salmon fish ladder, which the salmon thrive and bypass and get through from Lake Washington out to the Puget Sound and back and forth.

(Applause.)

This leads me to ask the very fundamental question: What is this really all about? Is it really about the pallid sturgeon? I don't believe so. I believe that there is more to it and it all begins with the dehumanization of people.

Ingrid Newkirk, the president of PETA once said, "A rat is a pig is a dog is a boy," essentially saying we are all the same. Humans are not any better than any other animal that exists on the earth.

Finnish Green Party activist Pentti Linkola goes so far as to say he has more sympathy for failing insect species than for children dying of hunger in Africa.

For the environmentalists, enough is never enough. Go back to the 80's, paper versus plastic at the grocery store. We moved to plastic for the sake of the environmentalists but now for the environmentalists, that's not good enough.

So is this really going to be enough or is there more to this? You would rather destroy our communities than to see us live peacefully and respectfully, taking care of the environment of eastern Montana.

On a side note, the proposed wind energy to power the pump stations is an environmental joke as wind turbines have long been shown to kill thousands of birds, as well as bald eagles, which happen to be in the Endangered Species Act as a protected wildlife animal. Yet the wind turbine companies do not face any fine if they kill a bald eagle. And we have lots of bald eagles. I have seen them just about every day on my run.

I guess it goes to show the hypocrisy of the environmentalist agenda. Scientific facts are valid as long as they will fit within the framework of their agenda.

I support the Bypass Channel as it will allow our communities, schools, local businesses and farmers to continue to thrive. Our farmers and irrigation employees are hard workers who put in long hours so that people can enjoy the convenience of buying food in a grocery store.

They do not do it for personal recognition or for any amounts of money. They do it for the love of the outdoors and a love of what they are doing and for the opportunity to serve their community.

This is why I support the protection of this endanger species, the hard-working farmer before they too become extinct.

(Applause.)

To you environmentalists, I would like to suggest that you come and put in the hard work and hours of the farmers and ditch riders and walk in our shoes for one year. Not one day, not one week, not one month. One year; put in your time. Then perhaps you might have a greater appreciation for what we do.

Thank you and God bless our farmers and God bless Richland and Dawson County.

(Standing ovation.)

TG-15

MATT SKOGLUND: Good evening. My name is Matt Skoglund. I am here on behalf of the Natural Resources Defense Council.

And first, thank you for the opportunity to comment and thank you for the presentation, in sitting up there, listening to comments tonight, and I really appreciate the comments.

I have listened closely and would acknowledge that what folks have said and just appreciate hearing everything I have heard. We will also be submitting detailed written comments with the Defenders of Wildlife and I'll keep it brief but I would like to highlight a few key points.

1 Our goal is for a win-win solution that accomplishes two things: one, providing farmers of the Lower Yellowstone Irrigation Project with the water that they need; and removing the existing dam and opening up the river for fish passage of the pallid sturgeon and other native fish. We do not see this as an either or choice between fish and irrigation. We really believe a viable win-win solution is achievable here. We are also not wedded to any specific plan. So long as the irrigators get their water, the river stays open, we will support it. We need to think creatively here, both for the river and for funding options in finding a way to achieve that win-win solution we so desperately want for the river and this part of Montana.

You know, given the great uncertainty of an

1 Cont artificial Bypass Channel, investing the resources now and finding those funding options to open the river up, it makes the most sense in the long run for everyone. You know, what happens if we spend the money, build a new Bypass Channel and it doesn't work, which could so easily be the case? Where does that leave us in a few years?

I don't--I think it's really, really, really, it could be a bad situation for everyone. So I just think what's the prudent thing now? What is the best win-win solution

2 to keep the river open, provide the water for irrigation? I generally think it's the best, most sensible long-term decision we can make that really would be the best for everyone. But thanks again for the opportunity to comment.

(Applause.)

TIFFANY VANOSDALL: Next is David Garland, James Brower and Mike Newton.

TG-16

DAVID GARLAND: My name is David Garland. I am the General Manager for Sidney Sugars.

I was going to come up and speak on kind of the same theme I did last night in Sidney. I kind of would like to shift my thoughts now to the last few comments from those that I guess we consider environmentalists.

I am not here to judge but I fully support--

1 Sidney Sugars fully supports the Bypass Channel. When you look at things that migrate, things that both come to mind are the monarch

1 Cont

butterfly. It travels thousands of miles, I believe, down to Mexico. I may not have all the facts but it is a very delicate animal. If it was up to man to make sure that every monarch butterfly made it to Mexico, I don't think one would make it there. God has put it into that particular animal to make that migration, to know how to manifest, how to get down there on its own.

Providing this bypass, to me, it is just an extension of the river and I believe it is fully wide enough, it's deep enough. It's my opinion that the pallid sturgeon will see that's the route it needs to take to get around the diversion weir.

I will just leave it at that. Thanks.

(Applause.)

TG-17

JAMES BROWER: My name is James Brower, and I hate to admit it, for the first time in a long time I feel speechless. Those last few comments were very insightful, very optimistic, and I feel they deal with the passions of those people's heart.

1

You are saying you are looking for a win-win situation and that you don't want an option that's only been studied for a couple years. But the truth is that the Fish Bypass Channel has been thought about, studied, analyzed three different times, in, I believe, the last 15 years.

But the important part is part of your

suggested options, all of your suggested options involve removing
1 Cont the dam. And that, I want to ask, what is your scientific evidence that removing a dam has ever helped a pallid sturgeon before?

The other part of removing the dam is the only way I know of, after 25 years of designing irrigation in three different states of bringing water into the Irrigation District without a dam, and these aren't real dams. Most people think of concrete structures that stick above the water. I believe that's what you thought before you came to Intake, if you have visited Intake and seen our dam.

But the truth of the matter is a diversion dam is below the water 90 percent of the year. The nice thing about this concrete structure that is going to be added to an existing dam that's been in the river for 108 years is that it is an improvement to an existing dam that is only under water 90 percent of the year.

And by adding that concrete weir to raise the elevation just enough to deliver water to the Fish Bypass so that the Fish Bypass will have 15 percent of the Yellowstone River
2 flowing though it to attract the fish, it also raises it just enough to add water. And the purpose for it to add water into the irrigation canal is so farmers still have water without the need to add rock to the river.

Because some of the pictures you see on the internet were taken during a historically low flow in August 2012, and they show the rock above the river, and I have to admit when I saw it, I could admit those rocks look like it would hold me from migrating upstream.

(Laughter.)

But I know that fish do swim a hell of a lot better than I do. But here we have an opportunity by adding this fish-friendly concrete weir that has a fish notch in it at the lower elevation so that that fish notch will have water in it even when the Irrigation Project is having less water.

2 Cont

That fish notch and the concrete forces all the water up above the existing weir. And with that concrete, all the water going up above the concrete so it's submerged 100 percent of the year will keep--we no longer have to have the rocks stacked on top of the wooden structure. So the rock will be placed into a short and steep rock ramp that guides the water and the fish up over the concrete.

But the point of the matter is that by installing the concrete weir in itself, it forces all the water above the wood. No longer are there going to be exposed boulders, and that in itself improves fish passage for other fish species.

And because pallid sturgeon can't take the velocities, according to human research, because they can't take the shallow depths that might be above that concrete during the low flow time of the year when the pallid sturgeon aren't usually

2 Cont

in our part of the river, we have designed--I am sorry, the Corps of Engineers designed, and I have helped review and the Bureau of Reclamation has designed, a Fish Bypass Channel mimicking, with the help of Montana Fish & Wildlife's recommendations a couple years ago studying the existing Bypass Channels that the pallid sturgeon seem to use.

3

This artificial channel that's proposed now mimics natural channels that are proven the pallid sturgeon already use. The point of the matter is we have got a win-win situation.

Right now, less than 25 miles away, Buffalo Rapids has two pumping stations. Both of those pumping stations have either one-third of their pumps down to mechanical failure or half their pumps down to mechanical failure.

4

The Fallon Pumping Station has been out this entire season and we are about to trip into July. There are crops that have been lost and there is a significant amount of crops that are damaged and they are going into rationing, which is a word that scares many farmers, in order to survive with their electrical pumps designed by engineers.

And what we have now has been reliable for 108 years. And when there has been a failure, every 20 or so years, our guys know how to fix it and it's repaired by locals and it's done quickly, okay. Why trade in the reliability of a system that Teddy Roosevelt dreamed up, our greatest conservationist, why trade in that reliability for pumps that are proven to fail all over the nation?

Thank you very much.

TG-18 (Applause.)

MIKE NEWTON: Good evening. My name is Mike Newton. I am here on behalf of Fisher Sand and Gravel Company located here in Glendive, Walleyes Unlimited of Montana, and I sit as the President of the Montana Contractors Association.

This Bypass Channel to us, to the F.W.P. and the F.W.P. has proven this by tracking pallids up the slough for those of us in this group that know about the slough, they have tracked them all way to the Powder River. This Bypass Channel, I have walked it. I have been involved with it directly or indirectly for the past six to seven years. I have visited with the Corps about it. I have talked to Lower Yellowstone about it,
1 the county commissioners, our state legislators, our senators, and our Congressmen.

One of our biggest questions is these environmental groups come forward and they--I won't get into the environmental groups in Montana. I have done battle with them for many, many years. But these two groups that came in unheard of, unknown of, claim all this support from other groups that originate on the east coast. They know absolutely nothing about the Yellowstone River. They know nothing about fish.

The pallid sturgeon, yes, they need to be saved. I agree with that 100 percent. Bottom line, I was fortunate enough to grow up here in eastern Montana farming and ranching. I know most of these people that irrigate.

A food supply is way more important than a fish. This bypass and where it's located at and the way it works and the way it is built, the guarding and everything about it, says it will work. If they will use that slough, they will use this bypass. But it won't just be pallid sturgeon; it will be
1 Cont many others.

And where they begin to come in at this, at the mouth of it, and I have walked this project, we were a huge contributor with Ames Construction on this project. The money is there. The EAs have been done three different times, as Mr. Brower said. The Corps is not at fault here; the judge in Great Falls is.

You need to look at the big picture here. Get this thing done, get it built, help the fish, put a bunch of Montana people to work in eastern Montana for a little while, two years approximately, and develop our counties and our communities in eastern Montana. We need this.

I know you guys support it. To heck with environmental groups in eastern Montana or any other part of Montana. We need this here now.

Thank you very much for your time.

(Applause.)

TIFFANY VANOSDALL: So that's everyone that has signed up on the sheets. If you did not sign up and you would like to make a comment, feel free to step up to one of the mikes or if you made your comment and have more comments, feel free to step up to the mike. We will step back for a few minutes and let anyone that wants to step forward.

Make sure you give your name and who you represent so that the court reporter can get it.

TG-19 BLAINE GIFFORD: My name is Blaine Gifford, more commonly known as Chip. I am one of the owners of Johnson Hardware & Furniture in Sidney. It's a business that's been there 101 years. My wife is third generation. It's there so you can see the time frame of it. With the Irrigation Project, the area grew and financially. If we lose, if we lose any of this irrigation, it will cripple, it will cripple the economy, put people out of work.

1 But one of the things that I did want to comment, since this is really a comment on the Environmental Impact Statement, is probably the most environmentally-friendly system is a gravity system. There is no carbon footprint to speak of.

2 The multiple pumps will have to be powered somehow. That will either be a carbon footprint from fossil fuels that have to supply power or if you try wind turbine and wind turbine--I was actually just driving down here. We are in a

2 Cont scenic corridor. If you come down the Yellowstone Valley, you would have visual pollution. That's a consideration that's always been taken into an Environmental Impact Statement also. So wind turbines will be, again, sad.

As far as this being just considered for a couple of years, back in 1990 when the pallid sturgeon were put on the list as endangered, one of the things that they have in that original document is a bypass around some of the dams. So it's been thought of for the last 25 years. This is not something new. And you see it repeatedly in many of the literature by scientists and others.

3 In fact, I question about that every biologist in Montana supports saying the bypass wouldn't work. I don't have his name, I need to write it down, but in 2013, the head of the Pallid Sturgeon Recovery Program actually specifically mentioned the bypass and said that this was a good way for the pallid sturgeon to help them recuperate so they could go up the river. And he seemed to have the opinion that this would work. So I argue with some of the statistics that have been mentioned here.

4 But again, I am in favor of the bypass system. It is a weir and water flows over it. People are picturing this as a dam. It's not literally a dam; it's a weir. That's all I've got to say.

Thanks. Bye.

(Applause.)

TG-20

TAMI CHRISTENSEN: Good evening. Thanks for being here. I am Tami Christensen. I am a co-owner of Tri-County Implement in Sidney, Montana.

I have been in the ag business for almost 40 years. I'm going to date myself a little bit here. My family moved here almost 30 years ago, started a business, learned about irrigation. I am a second generation business owner. We now have the third generation in our business. Hopefully, some day, we will have the fourth generation.

1 We are here because we definitely support the bypass and the weir. And like some other groups that serve on the State, I do not see why having pump stations, it is not going to look nice. It's going to leave a carbon footprint. The pollution is going to be worse and we need to go forward with this bypass and get this project done.

2 We talked about spending way too much money. We have spent way too much money studying this. But I think we missed an opportunity last night, and I would like everybody in this room, and I would like this on the record with the--I notice the photographer is in here somewhere. How many people in this room, please stand up if you are in favor of this bypass.

(Majority stand. Applause.)

And on the same--other hand, I would like all the people who are against this bypass to please stand up and

I'd also like that on the record.

2 Cont (Two attendees stand.)

And that will be it. Thanks.

(Applause.)

KAYLA ECKERT UPTMOR: I'd just like to say I'm not trying to be a drill sergeant on the time but we need to keep it moving and so we kind of have to monitor the statements. But I did stop Ron so if you still had a few comments you wanted to add, please come right back up.

Thanks.

TG-21

JERRIT SCHMIERER: My name is Jerrit Schmierer. I am a--my parents farm in Savage. I am a mechanical engineer for the natural gas company here in Glendive.

I just wanted to address the couple gentleman that were from the environmental groups. Their big point here tonight is what if it doesn't work? What if it doesn't work, who does it fall on? Where do we go from there? My comment is what if it does work?

(Applause.)

If this works, it's a template for every compromise of dam and fish everywhere. If this works, it's a solution for the next hundred years. 1 If it works, this is going to be a great thing for fish everywhere and for farmers and electric power everywhere. If this works, this is going to be a much greater victory than failure if it doesn't.

TG-22 Thank you.

BARRY RAKES: I am Barry Rakes with the Buffalo Rapids Irrigation District 2 in Terry. I am president of the Board.

You don't want pumps. We have 11 of them.

(Laughter and applause.)

1 They break down for any reason. Rock in the the impellers, low water, um, and you have moss that gets into the pumps and tear the pump's impellers up. I wish I could have a natural inflow of water without pumps.

And we have cheaper power and we are still--we just went to $46 an acre on 11,000 acres is all we farm in our district, eleven five. And believe me, pumps would be a nightmare for you people.

2 And wherever they got that you could run Sidney Sugars or the Irrigation Project on 600 acre feet of water in that many acres, it's common sense you are not going to. I mean, I don't know who come up with that but it ain't going to work.

I am in favor of this bypass. You can't
3 tell me fish are that stupid, they are not going to go down in there. Really.

(Laughter and applause.)

We'll just have to stop them right there and tell them to turn left.

That's the end of my comments.

TG-23 (Applause.)

RON ETZEL: Ron Etzel for the Lower Yellowstone Irrigation Project. I just wanted to reiterate what Mr. Rakes said about pumps. They are expensive. They are a pain in the butt to work on and we don't have as many pumps as they do or as much capacity but we are working on them a lot for what we do.

And I do feel sorry for Buffalo Rapids that
1 they have to pump like that. I mean we--our costs are high but it's because we got a little better equipment than they do. We spend a lot of money on our machinery and even on the labor.

We had a lot of issues with labor during the oil boom and that--we are, right now we are running shorthanded. I mean, it's hard to get people sometimes. You know, there is always other jobs that look better to people and they jump over there so--but I agree. Like I said, pumps are expense. Gravity still works and it doesn't break down.

Thank you.

TG-24 (Applause.)

WALT MCNUTT: I am Walt McNutt from Sidney. I am retired from the implement dealership. My daughter just spoke a little bit ago.

I spent sixteen years of my life in the State Legislature. And in that timeframe, I did a lot of work on water issues and natural resource issues, chaired the Water Policy Committee, that sort of thing.

The one thing that has always bothered me when we had an issue and we have our own environmental groups in this state, and they are welcome to their opinion. We live in America and everybody is welcome to that.

But the solutions often paralleled the comment that was made tonight. I want a win-win situation as long as you take the dam out. This is what we get all the time. We
1 are going to play ball with you if you do it according to us. Not what you want, not what you need, not what you live with and not what you built in this system that has worked for over a hundred years but we want a win-win--I want you to listen to that--as long as you take the dam out.

Now that doesn't sound to me like we want to work together at all. We are either going to play their ball game or they are not going to play.

(Applause.)

TG-25

MIKE RUDDY: Yes. I am Mike Ruddy. I am a candidate, Democratic side, for the District 36.

1 I am an environmentalist and I am also an evolutionist. But I support this Project. I support this dam.

A lot of times, we are taking a lot of bad hits here: Democrats, environmentalists and it's not what they say it is. I believe this is a good project. It's the only common-sense solution to the problem. People say that we've got to study. There are some environmentalists I know their favorite game is to delay the project. I will tell you, in my life, no decision is worse than wrong decisions. You have got to make the commitment and find out you are wrong.

2 If it doesn't work, the Corps of Engineers, the Bureau of Rec, they will soon recognize it real quick and we will get it modified or we can change it to do something else. But we have to make a decision. We have to go forward.

A lot of these people that say, well, we have got to do more studying, that's their game. They just like to play that game. They make study after study after study and that's what they do for a living.

The trouble in Montana, we have too many intense bureaucrats that don't want to make a decision that want--delay on a railroad. I used to work on the railroad. We had a tool house built. People that go to the tool house, they can talk about how much time they put in or how many rail they laid.

But in all reality, they never got the motor car on the track. We need to get the motor car on the track. We got to unload the steel. We have got to put in the time. We can't just keep talking about it. I don't care how many engineers you send out to tell us this way or that way.

This is the best alternative. If it's

wrong, I know it's probably going to be a little bit ineffective. Some of the pallids still ain't going to make it. But for the majority; and the greatest percentage of them will and they will be able to survive.

That's it for me. Thank you.

TG-26 (Applause.)

ART GEHNERT: I am Art Gehnert and I'd like to speak once again.

I have spoke about the nature of the project and now I'd like to speak about the history of the project. And the history of the project is that it has worked.

it's worked for all these years with quite extensive maintenance and quite a loss of river in the valley because of the Rock Ramp being in there, the fish cannot go upstream as they would like to do.

And the first proposal that we had when I first attended meetings on this Intake Project, which was about 20-plus years ago, is that we would build a Bypass Channel from upstream to deliver water at the required 1500 cfs for the
1 complete irrigation system to have and that Bypass Channel would bring water from five river miles upstream, which gives it enough head to operate the screen structure as presently constructed.

It could operate. It could work to protect some people's property, including the railroad and the highway system that's in there. It could work to bring water to the irrigators and return the larval drift that will occur if the spawning does occur upstream of Intake.

1 Cont The larval drift needs to be accounted for. They would go by the screens and a portion of the water that we took out upstream would go past the screens and carry the larval drift back into the river. Any other fish would be in the remaining 85 percent of the river at normal pull rate.

Now, if we take 1500 cfs out when we are trying to build a dam, they are trying to build a bypass structure, when we do all this work on dry land and build this levy alongside the railroad track and the highway system and some personal property to protect those properties and deliver the water to the irrigators with one head gate at the bottom end and

2 one head gate at the top end, one to control the flow at the screens to allow the larval drift to pass underneath that head gate and another head gate upstream to control the flow into the canal, it would work. It was one of our very first proposals on fixing Intake and I was there. I made that proposal. And it's still has not ever been scientifically studied or engineer-wise studied.

Thank you for your time again. I appreciate it.

TG-27 (Applause.)

MAXWELL SCHWARTZ: My name is Max Schwartz. I spoke earlier.

one of the negative comments that I heard earlier was what if we do do this and it doesn't work? Okay, so how about another what-if? We put in the pumps, we tear out the dam and how about that doesn't work?

A VOICE: Yeah.

1 MAXWELL SCHWARTZ: What happens then? You just wash your hands and say, "Oh well, I tried," but what about the people that negatively affects, that ruins their life and their livelihood? Where do you go from there when you just washed your hands and said, "Well, that's it for me. I will go back to my regular life like I always do," and just leave the farmer out there with nothing?

That's it.

TG-28 (Applause.)

SAMREE REYNOLDS: My name is Samree Reynolds. I talked earlier.

My thing, I guess, is the time and the study. You spend more time studying this and more money studying this, by the time you get done, there may not be any pallid
1 sturgeon to worry about. So I think we need to support something that we know is going to work, that has already been proven, that is already there. Let's go ahead and go with it. And yeah, what if it does work? Let's just go with it.

Thank you.

(Applause.)

TIFFANY VANOSDALL: Is there anybody else that would like to comment?

Steve is going to take a few minutes to give you some closing comments. The agency staff will be out in the hall if you would like to talk to any of us.

STEVE DAVIES: Hi. My name is Steve Davies with the Bureau of Reclamation.

On behalf of the Bureau of Reclamation and the Corps, thank you everybody for showing up tonight, taking the time to come and speak to all of us your input, your comments, your verbalizing these or provided comments on any of these matters. Any of these meetings are critical for us to make an informed decision.

Thanks, Tiffany and David, for making this presentations tonight and standing for the whole time while everybody was doing that. Thank you.

Thanks to our recorder recording every word that's been spoken tonight.

Last but not least, thank you for the staff of this wonderful facility for setting this facility up. The lighting, the acoustics, everything. We really appreciate being able to come into a facility like this and conduct a meeting like this.

As Tiffany said, we are going to remain as long as necessary. If anybody has any questions, we are going to be hanging around outside for a while.

This is the second of three meetings. Tomorrow night we have a meeting in Billings, Montana. That will be our third and final meeting. That's in the Lincoln Center in downtown Billings. The format is exactly the same as it was tonight, as it was in Sidney last night. It will be the same presentation, the same opportunities for people to come up and talk.

How to comment, I really want to stress we have recorded every word that everybody has said tonight. You can mail comments. You can e-mail comments. Please have these in or at least postmarked, if you are mailing in, by July 28th; really critical.

The documents are all available on the Montana area office website. This is the Project website that's listed at the bottom of this slide. This presentation will also be there. The entire Draft Environmental Impact Statement and all associated, all supporting documentation and Appendices are all posted there.

We do have a limited number of CDs available should anybody want one with those documents on it. Please see Mr. David Trimpe or ask any one of us and we will try to get you one. We don't have enough for everybody and I apologize for that. But again, these are available online.

With that, I am going to conclude our

comments tonight. Thanks again everyone for coming. Your participation in this is really indicative of the interest and importance of this project.

So thanks everybody.

(Applause.)

(End of Public Proceedings.)

WRITTEN COMMENTS

TG-29

1 I support the by-pass channel plan. This plan, devised by the Army Corps of Engineers and the Bureau of Reclamation, will work for the farmers, area businesses, local water wells, & all plants & animals who depend on a reliable water source, as well as the pallid sturgeon to use the Yellowstone River if the fish chooses to. This river diversion weir at Intake has been in existence and operational for over 100 years. Yet, the fish survives. Humans, plants, animals & fish need the water for life!

Linda Nelson
Valley Garage Inc.
PO Box 177
Savage, MT 59262

TG-30

1 The bypass channel will allow fish to navigate the river (as they have done for the 100+ years Intake diversion dam has been operational. The livelihood of citizens in this Yellowstone River valley depends on the reliable water source not only for irrigation of crops, but all ag related businesses that feed the local economy. Please don't underestimate the catastrophic effects on people, plants & wildlife if our beautiful valley is forced to become a dry prairie with very little life being able to exist. The irrigation project allows our area to be productive.

Our area contributes to the State and federal finds, through taxes. Take the irrigation away and government programs will have less cash to operate. We, the people, the taxpayers of this area support the bypass channel.

Gary Nelson

Business owner, Valley Garage Inc.

PO Box 177

Savage, MT 59262

CERTIFICATE OF REPORTER

I, JOSLYN CUMMINGS, Official Court Reporter,

Do hereby certify that I reported in machine shorthand the foregoing proceedings at the time, place and with the appearances hereinbefore noted.

I further certify that the transcript transcribed from my original shorthand notes by means of computer-assisted transcription, is a full, true, and correct transcript of the oral statements adduced therein, to the best of my ability.

I further certify that I am not of counsel for, nor in any way related to, any of the parties in this matter, nor am I in any way interested in the outcome thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this 18th day of July, 2016.

____
JOSLYN CUMMINGS
Official Court Reporter

Trimpe, David <dtrimpe@usbr.gov>

Fwd: Comment for Reclamation

1 message

Conner, John (Jack) <jconner@usbr.gov> Fri, Jun 3, 2016 at 11:20 AM
To: David Trimpe <dtrimpe@usbr.gov>, Gerald Benock <gbenock@usbr.gov>

David/Jerry - please see below comment regarding Intake. Collection for these; how should/do we do this? Jack
---------- Forwarded message ----------
From: **Johnson, Tyler** <tjohnson@usbr.gov>
Date: Wed, Jun 1, 2016 at 9:07 AM
Subject: Fwd: Comment for Reclamation
To: "John (Jack) Conner" <jconner@usbr.gov>

Jack,

Here is a Lower Yellowstone comment that came in from the national site.

Thanks,

Tyler
---------- Forwarded message ----------
From: **Soeth, Peter** <psoeth@usbr.gov>
Date: Wed, Jun 1, 2016 at 9:03 AM
Subject: Fwd: Comment for Reclamation
To: Tyler Johnson <TJohnson@usbr.gov>

Here is another one.

Peter Soeth | Public Affairs | Commissioner's Office | Bureau of Reclamation | 303-445-3615 (o) | 303-910-7473 (c)

---------- Forwarded message ----------
From: <lmmabba@wao.com>
Date: Tue, May 31, 2016 at 7:46 PM
Subject: Comment for Reclamation
To: lmeredith@usbr.gov, rgabour@usbr.gov, psoeth@usbr.gov

From Elana & Avner Levy (lmmabba@wao.com) on 05/31/2016 at 07:05:15MSGBODY:
People an their planned, engineered projects are clearly far more flexible than the 78mil. Year Sturgeon - they are also much more creative in finding solutions, hitherto unthought of - or tried.
we would not give our consent to spending 60 mil dollars to exacerbate the problem!
1 The annual loss of 2/3 reds of the water sucked up from the river is another indication of either tightness usage or primitive ingineering, which should be addressed promptly - seems clear to us.
Thar matters of importance are "decided" by sufferance, acceding to lobby pressures (which fish - no matter how old - cannot put together.... Is patently wrong - ether coming generations will suffer the unthinkable results,,,
please help prevent the farther abuse of habitat and those creatures living in its watery environs.

Previous Page: http://www.usbr.gov/main/comments.cfm

--
Tyler Johnson
Bureau of Reclamation

Great Plains
Public Affairs
(406) 247-7609

--

Jack Conner
Administrative Officer
Bureau of Reclamation
Montana Area Office
U.S. Department of Interior
tele: (406) 247-7300, cell: (406) 670-3778

BP-2

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, June 13, 2016 6:45 PM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Fw:PUBLIC comment ON FEDERAL REGISTER

-----Original Message-----
From: Jean Public [mailto:jeanpublic1@yahoo.com]
Sent: Friday, June 10, 2016 3:23 PM
To: TIFFANY.K.VANOSDAL@USACE.ARMY.MIL
Cc: CENWO-Planning <CENWO-Planning@usace.army.mil>; INFO@TAXPAYER.NET
Subject: [EXTERNAL] Fw:PUBLIC comment ON FEDERAL REGISTER

ITS TOO LATE TO CHANGE WHAT THE STURGEON WILL DO. ITS BEEN TOO LONG WITH THE DAMN THERE. I OBJECT
STRENUOUSLY FOR THE TAXPAEYRS TO PAY FOR THIS EXPENSIVE WORK. THE USACE HAS BEEN CALLED INTO NJ TO
DOTHE SAME THING. OBVIOUSLY THIS IS ANOTHER MAKE WORK PROJECT FOR OUR FEDERAL AGENCIES ALL OVER THIS
COUNTRY WHERE ALL OF A SUDDEN SOME MUKY MUK THINKS THEY CAN TAKE AWAY 200 YEARS OF ENVIRONMENTAL
1 DESTRUCTION AND DAMAGE BY TAKING DOWN A DAM. IT WONT WORK. ITS STUPID THINKING. ITS MAKE WORK. ITS
GOUGING THE AMERICAN TAXPAYER FOR SOMETHIGN NOT WORTH DOING. THIS IS OUTRAGEOUS. WHO IS PUSHING
THIS -NATURE CONSERVANCY AND THE GOVT AGENCY FALLS FOR IT SO NATURE CAN MAKE SOME MNONEY?
SOMETHING IS STRANGE AND CORRUPT ABOUT THIS ALL OF A SUDDEN. I THINK IT MAKES NO SENSE ACROSS THIS
NATION. WE HAVE GONE TOO FAR IN WIPING OUT STURGEON TO THINK THEY WILL COME BACK. TOO MANY PEOPLE,
TOO MUCH HUMAN DESTRUCTION. YOU NEED TO START BY SAVING THE LAND FIRST. THAT WOULD MAKE MORE SENSE
INSTEAD OF CONTINUING TO LET MORE AND MORE LAND BE LOST TO DEVELOPMENT. THAT WOULD BE GOOD USE OF
OUR TAX DOLLARS, NOT THIS STUPIDITY.THIS CMOEMNT IS FOR THE PUBILC RECORD. THIS IS NOTHING BUT PURE
WASTE. THIS COMMENT IS FOR THE PUBLIC RECORD. PLEASE RECEIPT. JEAN PUBLIEE JEANPUBLIC12YAHOO.COM

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> Federal Register Volume 81, Number
> 107 (Friday, June 3, 2016)]
> [Notices]
> [Pages 35754-35756]
> From the Federal Register Online via the Government
> Publishing Office [Blockedwww.gpo.gov]
> [FR Doc No: 2016-13079]
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> DEPARTMENT OF DEFENSE
>
> Department of the Army, U.S. Army Corps of Engineers
>
> DEPARTMENT OF THE INTERIOR
>
> Bureau of Reclamation
>

>
> Notice of Availability of the Draft Environmental Impact
> Statement for the Lower Yellowstone Intake Diversion Dam
> Fish Passage
> Project, Dawson County, Montana
>
> AGENCIES: Department of the Army, U.S. Army Corps of
> Engineers, DoD;
> Bureau of Reclamation, Interior.
>
> ACTION: Notice.
>
> ---
>
> SUMMARY: The U.S. Army Corps of Engineers (Corps) and
> Reclamation, as
> joint lead agencies, have made available for public review
> and comment
> the Lower Yellowstone Intake Diversion Dam Fish Passage
> Project Draft
> Environmental Impact Statement (Draft EIS). The Draft EIS
> analyzes and
> discloses potential effects associated with the proposed
> Federal action
> to improve passage for endangered pallid sturgeon and other
> native fish
> at Intake Diversion Dam in the lower Yellowstone River while
> continuing
> the effective and viable operation of the Lower Yellowstone
> Project.
>
> DATES: Submit written comments on the Draft EIS on or before
> July 18,
> 2016.
>   Two public meetings to share information and for the
> public to
> provide oral or written comments will be held on:
>   Tuesday, June 28, 2016, 5:30 p.m. to 9:00 p.m., in
> Sidney,
> MT and
>   Wednesday, June 29, 2016, 5:30 p.m. to 9:00 p.m., in
> Glendive, MT.
>
> Each meeting will begin with an open house at 5:30 p.m.
> followed by a
> formal presentation at 6:00 p.m.
>
> ADDRESSES: Send written comments, requests to be added to
> the mailing
> list, or requests for sign language interpretation for the
> hearing
> impaired or other special assistance needs to U.S. Army

> Corps of
> Engineers Omaha District, ATTN: CENWO-PM-AA, 1616 Capitol
> Ave, Omaha,
> NE 68102; or email to cenwo-planning@usace.army.mil.
> The public meetings will be held at the following
> locations:
> Richland County Fair Event Center, 5th Street SW.,
> Sidney,
> MT.
> Dawson County High School Auditorium, 900 N. Merrill
> Ave.,
> Glendive, MT.
>
> FOR FURTHER INFORMATION CONTACT: Ms. Tiffany Vanosdall, U.S.
> Army Corps
> of Engineers, 1616 Capitol Ave, Omaha, NE 68102, or
> tiffany.k.vanosdall@usace.army.mil.
>
> SUPPLEMENTARY INFORMATION: The Corps and Reclamation are
> issuing this
> notice pursuant to section 102(2)(c) of the National
> Environmental
> Policy Act of 1969 (NEPA), as amended, 42 U.S.C. 4321 et
> seq.; the
> Council on Environmental Quality's (CEQ) regulations for
> implementing
> the procedural provisions of NEPA, 43 CFR parts 1500 through
> 1508; the
> Department of the Interior's NEPA regulations, 43 CFR
> part 46.
> Background Information. Reclamation's Lower
> Yellowstone Project is
> located in eastern Montana and western North Dakota. Intake
> Diversion
> Dam is located approximately 70 miles upstream of the
> confluence of the
> Yellowstone and Missouri rivers near Glendive, Montana. The
> Lower
> Yellowstone Project was authorized by the Secretary of the
> Interior on
> May 10, 1904. Construction of the Lower Yellowstone Project
> began in
> 1905 and included Intake Diversion Dam (also known as
> Yellowstone River
> Diversion Dam)--a wood and stone diversion dam that spans
> the
> Yellowstone River and diverts water into the Main Canal for
> irrigation.
> The Lower Yellowstone Project was authorized to provide a
> dependable
> water supply sufficient to irrigate approximately 54,000
> acres of land

> on the benches above the west bank of the Yellowstone River.
> Water is
> also supplied to irrigate approximately 830 acres in the
> Intake
> Irrigation Project and 2,200 acres in the Savage Unit. The
> average
> annual volume of water diverted for these projects is
> 327,046 acre-
> feet.
>   The U.S. Fish and Wildlife Service (Service) listed the
> pallid
> sturgeon as endangered under the Endangered Species Act
> (ESA) in 1990.
> The best available science suggests Intake Diversion Dam
> impedes
> upstream migration of pallid sturgeon and their access to
> spawning and
> larval drift habitats. The lower Yellowstone River is
> considered by the
> Service to provide one of the best opportunities for
> recovery of pallid
> sturgeon.
>   Section 7(a)(2) requires each Federal agency to consult
> on any
> action authorized, funded, or carried out by the agency to
> ensure it
> does not jeopardize the continued existence of any
>
> [[Page 35755]]
>
> endangered or threatened species. Reclamation has been in
> formal
> consultation with the Service to identify potential
> conservation
> measures to minimize adverse effects to pallid sturgeon
> associated with
> continued operation of the Lower Yellowstone Project. The
> Pallid
> Sturgeon Recovery Plan specifically identifies providing
> passage at
> Intake Diversion Dam to protect and restore pallid sturgeon
> populations. By providing passage at Intake Diversion Dam,
> approximately 165 river miles of spawning and larval drift
> habitat
> would become accessible in the Yellowstone River.
>   Section 3109 of the 2007 Water Resources Development Act
> authorizes
> the Corps to use funding from the Missouri River Recovery
> and
> Mitigation Program to assist Reclamation in the design and
> construction
> of Reclamation's Lower Yellowstone Project at Intake,

> Montana for the
> purpose of ecosystem restoration. Planning and construction
> of the
> Intake Project is a Reasonable and Prudent Alternative for
> the Corps in
> the 2003 Missouri River Amended Biological Opinion as
> amended by letter
> exchange in 2009, 2010, and 2013. The Reclamation
> Act/Newlands Act of
> 1902 (Pub. L. 161) authorizes Reclamation to construct and
> maintain the
> facilities associated with the Lower Yellowstone Project,
> which
> includes actions or modifications necessary to comply with
> Federal law
> such as the ESA.
>   This notice announces the availability of the Draft EIS
> for the
> Lower Yellowstone Intake Diversion Dam Fish Passage Project
> and begins
> a 45-day public comment period on the range of alternatives
> and effects
> analysis. Analysis in the Draft EIS will support a decision
> on the
> selection of an alternative. Current and past project
> information and
> analyses can be accessed at: Blockedwww.usbr.gov/gp/mtao/loweryellowstone.
>   The Corps and Reclamation are serving as joint lead
> Federal
> agencies for the NEPA analysis process and preparation of
> the Draft
> EIS. The Corps is the administrative lead for NEPA
> compliance
> activities during the preparation of the Draft EIS. State,
> Federal, and
> local agencies with specialized expertise or jurisdictional
> responsibilities are participating as cooperating agencies.
> Cooperating
> agencies include the U.S. Fish and Wildlife Service; Western
> Area Power
> Administration; Montana Fish, Wildlife and Parks; Montana
> Department of
> Natural Resources and Conservation; and the Lower
> Yellowstone
> Irrigation Project.
>   The purpose of the Lower Yellowstone Intake Diversion
> Dam Fish
> Passage Project is to improve passage for the endangered
> pallid
> sturgeon while continuing the effective and viable operation
> of the
> Lower Yellowstone Project. The Draft EIS analyzes six

> alternatives
> which includes a No Action Alternative.
>   The No Action Alternative would continue the ongoing
> operations,
> maintenance, and rehabilitation of the Lower Yellowstone
> Project
> including diversion up to 1,374 cubic feet per second (cfs)
> of water
> through the screened headworks; rocking of the weir as
> needed to
> continue diversions during low flow periods; routine
> maintenance of the
> headworks, weir, and irrigation distribution facilities and
> pumps;
> rehabilitation of the trolley; and associated activities to
> comply with
> state and Federal law.
>   The Rock Ramp Alternative includes abandonment of the
> existing
> weir; construction of a new concrete weir and shallow sloped
> rock ramp
> to improve instream fish passage; maintenance of the new
> weir and rock
> ramp, continued diversion up to 1,374 cfs through the
> screened
> headworks; and continued operation and maintenance of the
> irrigation
> distribution facilities and pumps.
>   The Bypass Channel Alternative (Preferred Alternative)
> includes
> abandonment of the existing weir; construction of a new
> concrete weir;
> construction, operation, and maintenance of a two-mile long
> bypass
> channel for fish passage around the weir; placement of fill
> in the
> upstream portion of existing side channel for stabilization;
> continued
> diversion up to 1,374 cfs through the screened headworks;
> and continued
> operation and maintenance of the irrigation distribution
> facilities and
> pumps.
>   The Modified Side Channel Alternative includes
> operation,
> maintenance, and rehabilitation of the existing weir and
> trolley;
> construction, operation, and maintenance of a 4.5-mile long
> bypass
> channel created by modifying the existing high-flow channel
> for fish
> passage around the weir; continued diversion up to 1,374 cfs

> through
> the screened headworks; construction, operation, and
> maintenance of an
> access bridge spanning the high-flow bypass channel; and
> continued
> operation and maintenance of the irrigation distribution
> facilities and
> pumps.
>   The Multiple Pump Alternative includes the construction,
> operation,
> and maintenance of 5 screened surface pumping stations;
> removal of the
> existing weir; improved power infrastructure to increase
> capacity; land
> acquisition as necessary for power infrastructure and pump
> stations;
> continued diversion up to 1,374 cfs through the screened
> headworks; and
> continued operation and maintenance of the irrigation
> distribution
> facilities and existing pumps.
>   The Multiple Pumps with Conservation Measures
> Alternative includes
> the construction, operation, and maintenance of seven
> pumping stations
> each with six Ranney Wells (total of 42 Ranney Wells);
> removal of the
> existing weir; construction, operation, and maintenance of
> wind
> turbines and infrastructure to provide power to pumping
> stations; land
> acquisition as necessary for power infrastructure and pump
> stations;
> diversion up to 608 cfs through the screened headworks or by
> pumping
> depending upon river flow; reconstruction of the Main Canal;
>
> installation of water conservation measures such as
> conversion of flood
> irrigation to sprinkler, lining canals, and piping laterals;
> and
> continued operation and maintenance of the irrigation
> distribution
> facilities and existing pumps.
>   The Draft EIS evaluates the potential effects on the
> human
> environmental associated with each of the alternatives.
> Issues
> addressed include: Land use and vegetation; social and
> economic
> conditions; recreation; visual resources; water resources;
> air quality;

> climate change; biological resources; cultural resources;
> geomorphology; utilities and infrastructure; noise; Indian
> trust
> assets; and environmental justice.
>   Schedule. A 45-day public comment period will begin June
> 3, 2016.
> Comments on the Draft EIS must be received by July 18, 2016.
> The Corps
> and Reclamation will consider and respond to all comments
> received on
> the Draft EIS when preparing the Final EIS. The Corps and
> Reclamation
> expect to issue the Final EIS in fall 2016, at which time a
> Notice of
> Availability will be published in the Federal Register. A
> Record of
> Decision is expected in winter 2016.
>   The public meeting date or location may change based on
> inclement
> weather or exceptional circumstances. If the meeting date or
> location
> is changed, the Corps and Reclamation will issue a press
> release and
> post it on the web at Blockedwww.usbr.gov/gp/mtao/loweryellowstone
> to announce
> the updated meeting details.
>   Special Assistance for Public Meeting. The meeting
> facility is
> physically accessible to people with disabilities. People
> needing
> special assistance to attend and/or participate in the
> meeting
>
> [[Page 35756]]
>
> should contact: U.S. Army Corp of Engineers Omaha District,
> ATTN:
> CENWO-PM-AA, 1616 Capitol Ave, Omaha, NE 68102; or email to
> cenwo-planning@usace.army.mil.
> To allow sufficient time to process special
> requests, please contact no later than one week before the
> public
> meeting.
>   Public Disclosure Statement. If you wish to comment, you
> may mail
> or email your comments as indicated under the ADDRESSES
> section of this
> notice. Before including your address, phone number, email
> address, or
> any other personal identifying information in your comment,
> you should
> be aware that your entire comment--including your personal

> identifying
> information--may be made available to the public at any
> time. While you
> can request in your comment for us to withhold your personal
>
> identifying information from public review, we cannot
> guarantee that we
> will be able to do so.
>
> Arlo J. Reese,
> Major, Corps of Engineers, Deputy District Commander.
> John F. Soucy,
> Deputy Regional Director, Great Plains Region, Bureau of
> Reclamation.
> [FR Doc. 2016-13079 Filed 6-2-16; 8:45 am]
> BILLING CODE 3720-58-P
>
>
>

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Tuesday, June 14, 2016 8:57 PM
To: Vanosdall, Tiffany K NWO
Subject: FW: Yellowston Intake Diversion Fish-Bypass project

-----Original Message-----
From: Garth Kallevig [mailto:GKallevig@StockmanBank.com]
Sent: Tuesday, June 14, 2016 3:29 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Yellowston Intake Diversion Fish-Bypass project

1 Dear Sirs, I am writing to voice my 100% support to keep the Intake Dam Diversion in place for the benefit of the Lower Yellowstone Irrigation participants. I have read/studied the proposed By-Pass proposal to allow the Pallid Sturgeon safe passage up-stream and think this is the best option for all concerned.

Thank you,

Garth N. Kallevig (resident of Sidney, Montana and President of Stockman Bank)

BP-4

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Tuesday, June 14, 2016 8:57 PM
To: Vanosdall, Tiffany K NWO
Subject: FW: LYIP

-----Original Message-----
From: Lyle Peters [mailto:lpeters@horizonresources.coop]
Sent: Tuesday, June 14, 2016 2:36 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] LYIP

To whom it may concern:

1 I would like to voice my support for the Lower Yellowstone Irrigation Project in the prompt installation of the fish friendly weir and bypass channel. Our area is dependent upon the water that is supplied by the project not only for raising some of the safest and finest food but for recharging rural water systems and maintain a diverse ecosystem that has become dependent upon the irrigation. This project needs to be started and completed as soon as possible so we can ensure a safe and reliable form of water for our areas producers.

Lyle Peters

Agronomist

Horizon Resources Agronomy

In regard to Intake Dam,
It seems every year rules
and regulations, the E.P.A. Fish
and Game, etc., are making more
and more decisions that make
it more difficult for the
people who are trying to put
food on peoples tables.
Its a miracle how they got
the exact count on the
pallid sturgeon in so many
miles of river.
The dam has been in over
a hundred years. I would
think it would be historical and
The sturgeon are still in the
river so whats the probm?
and if they were planted 1
they have no business being
there, and also not impossible
to cross with the native
sturgeon and eliminate them-
selves. Has this crossed anyones

mind?

Farmers have no bargaining power. They are told what we are to pay for what we buy and told what we will get for what we raise, now we are to battle a fish for affordable water for irrigation.

The irrigation has made this valley a place of beauty along with the millions of dollars of food produced.

Birds and wildlife thrive on the trees, and berry bushes here because of the drainage ditches.

I've personally seen robins, meadow larks, owls, rails, blue heron, wood ducks, mallards, squirrels, eagles fox, deer, cayotes, beavers, musk-rats, pheasants and many more different birds.

Maybe next on the extinction list is the farmer, but who would care, you can just go to the grocery store.   Virginia Dardis

BP-6

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, June 20, 2016 7:20 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Intake Dam - Glendive, Montana

-----Original Message-----
From: Ken Martin [mailto:km12724@yahoo.com]
Sent: Sunday, June 19, 2016 11:28 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Intake Dam - Glendive, Montana

cenwo-planning@usace.army.mil
US Army Engineer District, Omaha
Planning

Subject: Intake, Montana - Intake Dam EIS

I take this opportunity to voice my concern about the impending decision that may conclude with the decision to remove the Irrigation weir on the Yellowstone River above Glendive, Montana. I was born in Sidney, Montana in 1949 and grew up in the Lower Yellowstone Valley at the confluence. My family still farms irrigated land there.

I reference National Environmental Policy Act - NEPA excerpt:
" If no significant impacts to the environment or human health and welfare are anticipated as a result of a federal action, then an Environmental Assessment is completed and a Finding of No Significant Impact is used to document findings."
Note the words "human health and welfare" in the NEPA statement.

The COE and BOR have produced a very thick visually impressive report that discusses pretty much only fish, with fancy
computer generated maps, satellite photos, and reams of numbers. I forced myself to read it with great boredom and
ad nauseum. It seems the huge volume is intentionally created to do this so that the average layman cannot understand
a bit of it. I have helped create these types of reports. The first rule of Engineering is to document so that the average
layman "can" understand it. In this report I did not see an equal amount of analysis of the people of the area, the
1 history, their way of life, the condition of the land prior to irrigation, what it will be like after irrigation, what are
alternate water sources available for these people, no analysis of the economics of the area, supported businesses,
2 (including the constant oil production boom and bust). There is no discussion on historic water tables and the effect on
them of irrigation water. No discussion on alternate river pumping problems such as ice, channel fluctuation, and level.
3 Will pumping be allowed? Will permits be granted or will this be a lever to kill off the whole irrigation project? What are
the condition and level history of ground water? Will pumping ground water support crops? With such a huge and
national decision, maybe a group of Sociologists should have been employed to visit the area and document human life
4 there and the impact you are proposing to happen. Consideration should also have been given to the way this land was
prior to the implementation of the Lower Yellowstone Irrigation District. It was very arid sagebrush-strewn ranching
area. How can an informed unbiased decision be made without all this information?

I see no pictures of what the area looked like prior to irrigation, no description of human life then and now. There are
pictures, paintings, and history available if one researched. Have there been agricultural studies done on what crops will
5 work on these acres without irrigation? Are there alternate crops. Where is the Agricultural Department and it's
Experiment Stations in this decision? I see no report from the Sidney Montana Station.

There is media news of global climate change and addition of Co2 to the atmosphere. Yet, these acres have probably
6 increased the surface area of Co2 consuming greenery by thousands of times due to irrigation. No study or discussion
was presented of this.

The Lower Yellowstone Irrigation project most surely recharges shallow groundwater wells in the area. What will be the
effect on city water supplies, farm wells? The area has always had really bad alkali soil. Many, many farmers have
7 installed surface water drainage systems (called tiling) to remove excess irrigation seepage and thus control the alkali.
What effect will not irrigating have on these farms and the alkali content of the soil?

I must tell you of growing up as a young teenager helping my father farm his small 160-acre farm. I can remember very
large fish, including the paddlefish, gold eye fish, bullheads, AND the sturgeon coming down the field irrigation ditches
and shutting off irrigation tubes. This was usually a very rare occasion. I'm sure many of the fish proceeded past the
field laterals and ended up going back into the river at the end of the main canal.   I see no interviews or studies
concerning how in the past fish survived and exist to this day. Could it be that no one knows? Could it be that the
8 increased advertising and the influx of city people fishing on the Yellowstone could possibly be adversely affecting
perceived fish numbers? How many actually poach and remove sturgeons for trophies? I see no studies on this.

I urge the US Army Corps of Engineers, the Bureau of Reclamation. The EPA and all parties to reconsider this poorly slanted idea of removing one of our nation's oldest and most vibrant agricultural enhanced areas of the country by closing down its water source to possibly affect a couple of fish species. Will Garrison Dam be next? We must plan for a nation with a doubled population in the not so far future. The earth, its resources, and its life are going to change drastically with massive human population expansion and domination of all other species. There is not much we can do about it until we control population. It is inevitable.

9 I again urge you to not approve the removal of the Intake Dam. A fish passage structure will surely suffice and balance
both sides of this debate as previously approved.

Ken Martin
Retired - US Army Corps of Engineers
PO Box 117
Chinook, Montana
km12724@yahoo.com

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Wednesday, June 22, 2016 6:47 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Bypass Channel

-----Original Message-----
From: Kathryn Garland [mailto:colven2@hutchtel.net]
Sent: Tuesday, June 21, 2016 3:48 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Bypass Channel

To Whom It May Concern:

1 My name is Herbert Garland. I live in Litchfield, MN and would like to express my support for the Bypass Channel Alternative. This project would be a win for both the growers that rely on the irrigation waters and a win for the pallid sturgeon, by providing them with a passage around the diversion dam.

Sincerely,
Herbert Garland

BP-8

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Wednesday, June 22, 2016 6:49 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] bypass channel

-----Original Message-----
From: Kathryn Garland [mailto:colven2@hutchtel.net]
Sent: Tuesday, June 21, 2016 6:31 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] bypass channel

To Whom It May Concern:

1 My name is Kathryn Garland. I live in Litchfield, MN and would like to express my support for the Bypass Channel Alternative. This project would be a win for both the growers that rely on the irrigation waters and a win for the pallid sturgeon, by providing them with a passage around the diversion dam.

Sincerely,
Kathryn Garland

609 South Central
P.O. Box 885
Sidney, MT 59270
(406) 482-2616

BIG SKY
SIDING AND WINDOWS

Fax: (406) 482-3814
Toll Free: 1-866-482-2616
(701) 572-9423

BP-9

6-15-2016

RECEIVED 21Jun16

To Whom it May Concern:

We at Big Sky Siding and Windows Inc. are in full support of the proposed irrigation project weir and improved fish bypass. We, like all other businesses in the project area have relied on the agricultural industry to support us and the ag industry is why we are here. Anything short of keeping the irrigation project operating as they have would devastate the economy in this entire area, and have an adverse effect on wildlife habitat in the project area.

1 The study recently completed clearly defines the bypass as the best option for all parties concerned including the pallid sturgeon. There is no legitimate reason for holding the project hostage any longer

Craig Averett

President, Big Sky Siding And Windows Inc.

KATHARINE AVERETT
11991 HWY 16 SOUTH
SIDNEY, MT 59270

BP-10

U.S. ARMY CORPS OF ENGINEERS OMAHA DISTRICT,
ATTN: CENWO-PM-AA; 1616 CAPITOL AVE
OMAHA, NEBRASKA 68102

RECEIVED 21Jun16

JUNE 15, 2016

I AM IN FULL SUPPORT OF THE PROPOSED FISH BYPASS WHICH THE RECENT STUDY
CLEARLY STATES IS THE BEST OPTION FOR ALL PARTIES CONCERNED. FOLLOWING
THOUGH WITH THE BYPASS AS IT IS PLANNED WILL BE BENEFICIAL TO THE PALLID
1 STURGEON, AND WILDLIFE IN THE AREA, AS WELL AS THE COMMUNITIES WHO
DEPEND ON OUR AGRICULTURAL BASE WHICH IS 100% DEPENDENT ON OUR
IRRIGATION PROJECT.

THERE IS NO REASONABLE EXPLANATION FOR HOLDING THIS PROJECT BACK ANY LONGER

Kathy Averett

KATHY AVERETT

Tim Averett
PO Box 885
Sidney, MT 59270

BP-11

June 15, 2016

RECEIVED 21 Jun 16

U.S. Army Corps of Engineers Omaha District,
Attn: CENWO-PM-AA; 1616 Capitol Ave
Omaha, Nebraska 68102

1 I support the irrigation project. It stabilizes our local economy and has helped our communities for over 100 years. I support this proposed concrete weir. I support the proposed fish bypass so it can improve fish passage.

The study clearly show this is the best option for all concerned including the pallid sturgeon.

This project needs to be done now for the good of the fish and the wildlife in this area, and more importantly, for the good of the communities.

Tim

Tim Averett

Vanosdall, Tiffany K NWO

From:	Salak, Jennifer NWO
Sent:	Monday, June 27, 2016 8:31 AM
To:	Vanosdall, Tiffany K NWO
Subject:	FW: Intake Fish Passage

-----Original Message-----
From: Don Badt [mailto:dbadt@crystalsugar.com]
Sent: Wednesday, June 22, 2016 2:27 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Intake Fish Passage

To whom it may concern: My name is Don Badt. I am a lifelong resident of Montana and Richland County. I have been employed at Sidney Sugars for 45 years and currently serve as the Safety/Training Manager. Having been born and raised in the Sidney community and growing up on a farm, I am well aware of the benefits of the life giving and sustaining qualities of the water from the Lower Yellowstone river. Each year these waters provide the life blood to this area and provides an abundance of opportunities to all people either being a farmer, sportsman or community business
1 leader. I fully support the fish bypass channel that is proposed at the Intake Diversion Dam. Farmers, sportsman and fish have formed a partnership among themselves that only God fully understands. Any interruption of his life plan can only bring about devastating circumstances that will continue to have adverse effects to the generations of people that will make this community their own little piece of heaven. Other alternatives that are being considered will eventually impact EVERYONE, not only financially but also by upsetting the natural course that has been laid out before us as God's
2 people. I am asking that your involvement in this decision regarding the bypass channel ultimately involves a great deal of thought and attention to not creating another endangered species, God's PEOPLE. Thank You for your time and attention.

Diane Binder
1697 Crocus Drive
Sidney, MT 59270

BP-13

U.S. Army Corps of Engineers Omaha District,
Attn: CENWO-PM-AA; 1616 Capitol Ave
Omaha, Nebraska 68102

RECEIVED 21Jun16

June 16, 2016

1 I support the proposed fish bypass which the most recent study states is the best option for both the irrigation system and the fish.

Going though with the bypass as it is planned will be beneficial to the pallid sturgeon, the wildlife in the area, as well as the communities who depend on agricultural and the irrigation project.

There is no excuse to hold up this project up any longer.

Diane Binder

6-16-2016

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, June 27, 2016 8:30 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: In Favor of the Intake Dam Diversion Project

-----Original Message-----
From: SidneyService [mailto:SidneyService@StockmanBank.com]
Sent: Wednesday, June 22, 2016 1:37 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] In Favor of the Intake Dam Diversion Project

1 I am writing this letter to defend the diversion project for the Intake Dam on the Yellowstone River. I have grown up in Sidney and know this area WOULD be affected by the removal of this dam. This area's economy would deteriorate, jobs lost, businesses failed, farmers gone. It is sad to think that a group of so called environmentalists would even consider not doing the diversion project. One of the letters from the people pursing this law suit said that they come to visit the area it wouldn't be the same. Well my nieces and nephews that come back every summer to this are, their visits wouldn't be the same without the dam. Their families still live, breath and die here. Please, do not let a few ruin the lives of many, vote for the diversion project.

Luann Cooley

2085 Crocus Dr

Sidney, MT 59270

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, June 27, 2016 8:28 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: Pallis Sturgeon

-----Original Message-----
From: Frank Cundiff [mailto:fcundiff@crystalsugar.com]
Sent: Wednesday, June 22, 2016 12:52 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Cc: Frank Cundiff <fcundiff@crystalsugar.com>
Subject: [EXTERNAL] Pallis Sturgeon

1 I am Frank Cundiff and I live in Sidney, Montana and I am in favor of the Bypass Channel option at Intake, The Pallid sturgeon will prosper with this improvement and the crop land to the north will receive plentiful amounts of moisture to grow their crops.

2 The sugar Beet Factory in Sidney, will not survive with a reduction in the amount of water in the canal.

Thank You.

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, June 27, 2016 8:41 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Lower Yellowstone diversion dam at Intake Mt

-----Original Message-----
From: Dale Danielson [mailto:daled5333@yahoo.com]
Sent: Sunday, June 26, 2016 3:34 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Lower Yellowstone diversion dam at Intake Mt

As an Irrigation farmer for fifty-eight years and board member of the Lower Yellowstone Irrigation Project I am strongly
1 in favor of replacing the dam and adding a fish bypass channel.
The idea of pumping the water for Irrigation would be so costly the farmers could not afford to continue farming.

Pumps that pump the silt laden water of the Yellowstone must be rebuilt every several years at great cost.
This year Pumps at another irrigation project on the Yellowstone River have been down for unexpected repairs and
2 many acres of crops have suffered.
With the ever changing channels and large ice jams that occur on the Yellowstone River, pump sites would be costly to maintain.
The COE and BOR have a very impressive Environmental report that discusses the fish and I would hope that the many farmers and all people in the are also taken into consideration.
Without Irrigation this semi arid region of MT and ND would suffer to the extent that many farms and business would be lost.

D Danielson

BP-17

In regard to the Intake dam Controversy. I'm an 84 year old woman who owns a small farm under the project. It's been in the family since the beginning of irrigation. My taxes now take a third of what I recive from the farm, add the insurance one is forced to carry and there is not much left. We now have highly educated enviromentalists, from who knows where, who know exactly how many fish are in the river. How do they know how many were there in 1910? and were they pallid sturgeon? I understand, very few people know the difference. When was it decided they were endanged when they don't know how many was there to begin with.

I feel those against the dam have no idea of the impact

1

it will have in this area
or really care, as long as
they win, and another cause
to be against.
My farm has a drainage ditch
running through it, with trees,
choke cherry and current bushes
Russian Olives all with berries
that feed wild life, deer that
bed down in the grass, summer
and winter near the water
in the ditch. Right now I see
baby ducks and phesants
scurring to hide when I go
by.
This project has been here over
a hundred years and the
sturgeon are still here, you 2
are trying to take away a
historical project for the sake
of a fish thats hardly edible
I wonder what Teddy Roosevelt
would have said.
This proposed change can 3
be so costly, it will once again

bite into the cost of owning and operating these farms and we are still at the mercy of those who tell us what to pay for what we buy, and how much we will get for what we have to sell.

We have always been labled "dumb farmers" and we are, for trying to feed the very people who call us that. Why we keep on working so hard, for so little appreciation is beyond me, especially when you get a group of people who can come in an do away with your way of life. Is that fish really worth it.

Virginia Dardis
a farm girl and proud to be. 3

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, June 27, 2016 8:29 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] LYIP Fish Passage EIS

-----Original Message-----
From: Rita Hoch [mailto:darihoch@yahoo.com]
Sent: Wednesday, June 22, 2016 12:59 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] LYIP Fish Passage EIS

Attn: CENWO-PM-AA:

I have seen posts on facebook with a picture of a Sturgeon saying “Kill the dam, save the fish” and many people have
followed their instructions and signed and shared this post. I believe that these people mean well but have no idea what
1 they are really asking for. There has to be a way to save the fish but also save the dam which in turn keeps the factory,
the irrigated farms and in turn the businesses and the entire community. I do NOT believe it is necessary to kill the dam
to save the fish.

Rita Hoch

35448 County Road 131

Fairview, MT 59221

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, June 27, 2016 8:32 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: Lower Yellowstone Irrigation Project

-----Original Message-----
From: Garth Kallevig [mailto:GKallevig@StockmanBank.com]
Sent: Wednesday, June 22, 2016 4:15 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Lower Yellowstone Irrigation Project

Dear Sirs: I have been researching and attending meetings with regards to the subject of the Pallid Sturgeon Endangerment and the proposed Fish By-Pass.

My comment today is this: It seems to me that the best possible solution for the fish, the Irrigation Project and the
communities, farms, and business that will be impacted, is a solution that has a high percentage of succeeding, and is
1 cost effective—the research and information that I have read indicates to me that the Fish By-Pass solution fits this
description. The really great thing about this solution is that once it is in place, it can be closely monitored to prove that
it is working as designed.

Thank you for considering these comments.

Garth N. Kallevig

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, June 27, 2016 8:34 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: Lower Yellowstone Irrigation Project

-----Original Message-----
From: Garth Kallevig [mailto:GKallevig@StockmanBank.com]
Sent: Thursday, June 23, 2016 9:03 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Lower Yellowstone Irrigation Project

Dear Sirs: First a comment and followed by a concern: 1. (Comment) With the EIS completed and supported by the Corp.
1 and Bureau of Reclamation it makes sense to me that the proposed Fish By-Pass option is the best option.

2 2. (Concern) If the method of getting water to our farmers changes to pumps, the increased costs will be an unsustainable hardship and will cause the majority of our farmers to go out of business.

Thank you,

garth

BP-21

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, June 27, 2016 8:52 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: Lower Yellowston Irrigation Project

-----Original Message-----
From: Garth Kallevig [mailto:GKallevig@StockmanBank.com]
Sent: Monday, June 27, 2016 8:43 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Lower Yellowston Irrigation Project

Dear Sirs: I have a question with regards to the environmentalists proposing to take out the Intake Diversion Dam and replace it with pumps. My question is if they have done a thorough EIS? Other research indicates that the there will be negative consequences:

1

1. Removal of the Intake Diversion Dam will drop the river by several feet drying up two (2) significant water side channels that scientific study has proven are important to Yellowstone Fish species.

2. The City of Sidney relies on the irrigation project each year to supply it's "shallow aquifer" which is a major source of water for drinking wells and would be an added expense and burden to the community

Vanosdall, Tiffany K NWO

From:	Salak, Jennifer NWO
Sent:	Monday, June 27, 2016 8:33 AM
To:	Vanosdall, Tiffany K NWO
Subject:	FW: LYIP Fish Passage

-----Original Message-----
From: Joslin Steppe,Theresa L [mailto:Theresa.JoslinSteppe@edwardjones.com]
Sent: Wednesday, June 22, 2016 4:37 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] LYIP Fish Passage

1 I believe we need the fish passage at intake. I think both the fish and human lively hood are important. We should not exclude either.

I hope you are having a great day!
Theresa JoslinSteppe

____

Theresa Joslin Steppe
Senior Branch Office Administrator
Edward Jones
611a S Central Ave
Sidney, MT 59270
(406) 433-3600
Blockedwww.edwardjones.com

Vanosdall, Tiffany K NWO

From:	Salak, Jennifer NWO
Sent:	Monday, June 27, 2016 8:40 AM
To:	Vanosdall, Tiffany K NWO
Subject:	FW: [EXTERNAL] LYIP

-----Original Message-----
From: Cory Wheeler [mailto:wheeler@midrivers.com]
Sent: Thursday, June 23, 2016 11:52 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] LYIP

I think it is ridiculously audacious what is happening to the irrigation district, a foundation that built a community,
wealth, and prosperity for over a century is under attack. This organization and construction should be considered a
historic point of interest rather than a nuisance to the environment. Because of the irrigation district, habitats have
1 been created throughout the valley for various types of wildlife. The Irrigation District provides various habitats for
various types of wildlife, such as wetlands, wooded areas for shelter, better grasses for protection, not to mention the
access to water for all types of wildlife.

Please, take a drive through the valley during the fall or winter months, and also again in the Spring or Summer months.
When driving, take note of the wildlife that is dead on the side of the road. Generally speaking, there are fewer deer
2 crossing incidents in the spring and summer months while the canal is being utilized. For a good portion of the valley,
the canal runs on the west side of Highway 16. I contend that the reason there are fewer deer incidents is that while the
irrigation is in operation, the wildlife is not required to cross the busy highway in order access water.

I also have concerns about the reliability of irrigation pumps and wind powered generators. Both of these methods are
historically known to be unreliable. Without reliability, the risk of farming increases exponentially. As such, many cost
intensive crops will not be as enticing. This is going to create a scenario whereby many things will happen. First,
3 incomes will decrease, reducing the availability to the state for income tax purposes. As incomes reduce, so will
purchases, destroying the local economies. Additionally, land values within the area will plummet. Farmers in the area
have always prided themselves with the idea that they are cash poor and asset rich. The drop in property values will
make them cash poor and asset poor; annihilating their retirement prospects.

So, at this point, we have destroyed the wildlife, damaged the economy, and destroyed the retirements form hundreds
of individuals. What we haven't discussed are the defaults to banks. Many loans were issued with the current prices of
land, equipment, and crop production. By single-handedly destroying all three of those means for repayment, bank
4 defaults will increase drastically. This will impact every business in the area. There are two industries that keep this
area operating; Oil production and agriculture. Agriculture is the only reliable industry throughout the valley, and it, too,
is now at risk.

5 I strongly encourage the Bypass Channel as a means to live in harmony with nature, while still providing for a living.

C Wheeler

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, June 27, 2016 8:36 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: Lower Yellowstone Intake Diversion Fish Passage Draft EIS and Public Meetings

Importance: High

-----Original Message-----
From: Lisa Ziler [mailto:lziler@crystalsugar.com]
Sent: Thursday, June 23, 2016 10:43 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Lower Yellowstone Intake Diversion Fish Passage Draft EIS and Public Meetings
Importance: High

1 As an employee of Sidney Sugars and Holly Sugar for the past 20 years, I feel that removing the damn would be very detrimental for our community. Our entire town is built on the livelihood of the farming community. Without the irrigation system, this entire area would become a ghost town. Everything would dry up, the factory would close and the community of Sidney would be in a world of hurt. This would not only hurt the farmers, and the employees of Sidney Sugars but also all the business owners that depend on those people living and raising their families in this community. The Yellowstone Valley Farmers have irrigated the farm land in our community for over 100 years.

2 I vote for the bypass that would help both the farmers, the community, the employees that depend on the crops to be harvested and processed each and every year.

Please vote to keep our community alive, profitable and a place where people can continue to live and raise their children and be proud of our heritage.

<Blockedhttp://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjKrLej1s_MAhUJw4MKHU25AqwQjRwIBw&url=http://www.firstcovers.com/user/991996/thyroid+cancer+butterfly+ribbon.html&bvm=bv.121421273,d.amc&psig=AFQjCNHdJtT3TpjMDYseG4-i-AgsEODtQQ&ust=1462975409405685>

Thank you,

Lisa Ziler, Production Planner/Tech Writer

Sidney Sugars Inc.

406-433-9352

406-433-4133 –fax

Trimpe, David <dtrimpe@usbr.gov>

BP-25

Fwd: Comment for Reclamation

1 message

Johnson, Tyler <tjohnson@usbr.gov> Tue, Jul 5, 2016 at 7:00 AM
To: David Trimpe <dtrimpe@usbr.gov>

---------- Forwarded message ----------
From: Soeth, Peter <psoeth@usbr.gov>
Date: Fri, Jul 1, 2016 at 12:04 PM
Subject: Fwd: Comment for Reclamation
To: Tyler Johnson <TJohnson@usbr.gov>, Buck Feist <BFEIST@usbr.gov>

fYI.

Peter Soeth | Public Affairs | Commissioner's Office | Bureau of Reclamation | 303-445-3615 (o) | 303-910-7473 (c)

---------- Forwarded message ----------
From: <butchr13@gmail.com>
Date: Thu, Jun 30, 2016 at 10:14 PM
Subject: Comment for Reclamation
To: lmeredith@usbr.gov, rgabour@usbr.gov, psoeth@usbr.gov

From William (Butch) Renders (butchr13@gmail.com) on 06/30/2016 at 10:06:21MSGBODY:
Lower Yellowstone Intake Diversion Dam Fish Passage Project
1 message
Butch Renders <butchr13@gmail.com> Thu, Jun 30, 2016 at 10:12 PM
To: cenwo-planning@usace.army.mil
I am writing this in support of the Lower Yellowstone Intake Diversion Dam Fish Passage Project

1 As a life long (69 years) resident of Richland County and fisherman of the Missouri & Yellowstone rivers, I urge you to PLEASE go ahead with the fish passage project and leave the weir in place for the use of the area farmers and the continued infusion of our ground water supply.

This is a decision that was reached by a group of much better educated and much smarter persons than me, BUT it does make sense. and most of all QUIT delaying this project just because people keep coming up with

more questions. I have to believe we could question this forever and
the only thing we would accomplish is to kill more fish IF that is
2 really happening. I would think we would be trying to get this
solution in place sooner than later?
Thank you

William C. Renders
1311 S Central Ave
Sidney, Mt. 59270

FYI
Emailed 063016

Previous Page: http://www.usbr.gov/main/comments.cfm

--
Tyler Johnson
Bureau of Reclamation
Great Plains
Public Affairs
(406) 247-7609

BP-26

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 7:58 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Yellowstone Irrigation Project

-----Original Message-----
From: Bryce Baker [mailto:goldenprairieinn@midrivers.com]
Sent: Tuesday, June 28, 2016 3:57 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Yellowstone Irrigation Project

To whom it may concern,

I appreciate the ability to voice my opinion in this matter.

A few points I would like to make in my support for the continuation of the Yellowstone Irrigation Project and the continuation of the dam:

1. Increased cost of Maintaining pumps will drive farmers, Sidney Sugars plant, Anheuser Busch out of business and
hurt the businesses that are supported by them and their employees. This will significantly reduce city and county tax
1 income that pays for necessary government services like police, fire departments, ambulances, road repair, and city
sewer repair. This is a vital business in Sidney and will further damage an area that has already seen a drastic shift in
business due to the bakken and oil prices. I urge you to remember all of the families that will be negatively impacted by
this.

2. Increased cost of Maintaining and operating large pumps will drive farmers out of business and the LYIP will no
longer be able to maintain and operate the expensive pumps. This will stop the existing irrigation of 58,000 acres which
2 will stop the irrigation recharge of the shallow aquifers that supports the stream, riparian habitat, and wetlands that
support a lot of important species of concern and Recharge local drinking wells including the cities.

The items listed above are 2 of the 15 that I could list. I sincerely hope you will make the decision to great a by-way
3 around the damn for the fish to move along while the dam is fixed and replaced. This by-way has been proven to be
successful in the last several projects like these.

Again I sincerely appreciate the ability to have my opinion heard and thank you for your time.

Bryce Baker

General Manager/Vice President of Operations – Eastern Region

BEST WESTERN Golden Prairie Inn and Suites

Richland Inn & Suites

Lone Tree Inn

TapHouse Bar & Grill

Sidney, MT 59270

406.868.6586 (Cell)

406.433.4560 (Office)

BP-27

6-29-16

Dear Ms. Vanosdall,

1 I am writing to you regarding the weir and fish bypass at Intake MT. The bypass channel is the
best option for the endangered species and the people of Montana and North Dakota. This
2 decision affects many jobs and industries such as Sidney Sugars, Anheuser Busch, our Research
Stations and the Irrigation Project. These entities provide many jobs for the people in our area
and therefore forward tax money to the State of Montana. Any other decision will also hurt the
agricultural industry. This water is necessary for the irrigation of crops. Agriculture is a large
part of our economy in this area of Montana and is important to many more people around the
state, country, and world. The Environmental Impact Study agrees that the Bypass Channel is
the best alternative. When you make the decision, please remember the thousands of people
and jobs affected, not the wishes of an out of state special interest group.

Thank you,
Duane and Nikki Berube

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Friday, July 01, 2016 11:03 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: Lower Yellowstone River Intake Diversion Fish Passage

-----Original Message-----
From: Butch Bratsky [mailto:BBratsky@StockmanBank.com]
Sent: Friday, July 01, 2016 10:53 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Lower Yellowstone River Intake Diversion Fish Passage

1 Farming and Agriculture in general CAN NOT afford any increased expenses and the recommended BYPASS CHANNELS option appears to be the BEST alternative not only to help the Pallid Sturgeon and other fish species, but also keeps the costs to a manageable level for production agriculture.. Please follow the recommendations made by the Army Corp of Engineers and do the right thing!! If you choose to do what the Environmentalists want and propose, the costs are escalated greatly to agriculture and irrigated farming will most certainly be hurt!! And in the end, farming and farmers could easily be the next on the Endangered Species List!! Thank you..

B. Bratsky

BP-29

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 8:12 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] By pass channel

-----Original Message-----
From: Brian [mailto:btbuxbaum@msn.com]
Sent: Wednesday, June 29, 2016 4:13 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] By pass channel

I would like to express my concern for the removal of the intake weir. I am a young farmer and could not bear the
1 financial stress from losing irrigation on my farm or the increased cost of a pumping alternative. It seems the by pass
channel would be the best solution for all parties involved in this matter. Thank you, Brian Buxbaum
Sent from my iPhone

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, June 27, 2016 2:02 PM
To: Vanosdall, Tiffany K NWO
Subject: FW: Lower Yellowstone Intake Diversion Comment

-----Original Message-----
From: Raymond Carlson [mailto:raymond-carlson@hotmail.com]
Sent: Monday, June 27, 2016 10:55 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Lower Yellowstone Intake Diversion Comment

To Whom It May Concern,

I have reviewed the Draft Lower Yellowstone Intake Diversion Dam Fish Passage Project EIS and have concluded that
1 Bypass Channel option best fullfills the needs of the pallid sturgeon and guarantees the availability of irrigation water for
growers. The Multiple Pump option is not economically viable in my opinion and does not provide enough water to
sustain the habitat that has evolved with the irrigation system to include many species of animals and birds, some of
which are endangered as well. The concept of the Bypass Channel providing fish passage is proven with the fact that
2 pallid sturgeon have been observed in the existing side channel at higher river flows. The Multiple Pump option would
require a lot of energy and long term cost to the area in either purchasing power or maintaining wind turbines to
produce the electricity, not to mention the expense of maintaining the pumps themselves to make sure there isn't a loss
for the growers. The weir provides the same result without wasting a lot of resources and the Bypass Channel ensures
that the pallid sturgeon can safely move further upstream.

I feel the EIS was thorough which led me to this conclusion.

Sincerely,

Raymond Carlson

2338 3rd Street NW

Sidney, MT 59270

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 8:01 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Intake diversion dam

-----Original Message-----
From: Terry Cayko [mailto:tcayko@midrivers.com]
Sent: Tuesday, June 28, 2016 5:18 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Intake diversion dam

Dear Sirs:

I'm in support of the original alternative that I felt was approved previously twice. This has been studied and gone over
and the best alternative was agreed upon that the cement weir for the pallad sturgeon and all fish species in the
1 Yellowstone River would work. I'm a life time resident of 64 years and I live next to the Yellowstone River near the
confluence with the Missouri River. Our farmers in this irrigated valley will not survive with taking the Intake Dam out
and putting in pumps would be so costly we couldn't afford it. This effects the whole community don't make us extinct.
2 We live to pass on our farms to our children and their children. The people who want to take the dam out are not
effected economically.

Farmers are the best environmentalist out there. We aren't going to do anything that harms our land or environment. This dam has been in for over a hundred years and has done more for the environment in this area than imaginable.

Terry Cayko

15852 36th St NW

Fairview, MT 59221

BP-32

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Tuesday, July 05, 2016 7:10 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: Lower yellowstone irrigation project

-----Original Message-----
From: conststeve1952@comcast.net [mailto:conststeve1952@comcast.net]
Sent: Monday, July 04, 2016 9:05 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Lower yellowstone irrigation project

1 I was born and raised in Sidney Montana, married a farm girl from there and started our family there. Please help me
understand how after 100 years of the placid sturgeon being extinct how is it still thriving?? Does it make sense to
2 destroy farming and make them extinct? I think our priorities need to be food and shelter. Please consider the diversion
plan for irrigation and saving the sturgeon, nothing is perfect but compromise is important.

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 8:15 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] (no subject)

-----Original Message-----
From: ELLISPAUL4@aol.com [mailto:ELLISPAUL4@aol.com]
Sent: Thursday, June 30, 2016 7:06 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] (no subject)

1 I am in full support of the US Corps of Engineers' preferred plan to construct new weir similar to the existing weir.

Paul Ellis
8345 Camp Creek Road
Manhattan, MT 59741
406-581-2717 <Blockedhttp://www.sundaycreekoutfitters.com/>

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Tuesday, June 28, 2016 12:39 PM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] EIS statement

-----Original Message-----
From: Arthur W. Gehnert [mailto:artge@midrivers.com]
Sent: Tuesday, June 28, 2016 12:24 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] EIS statement

Thank you again, for the opportunity to provide input on the Intake project. As proposed, the design is not considering the history or the nature of the Yellowstone river, nor using the best scientific data to complete the project.

1 Some of the history of the river as recorded by the USACE Cold Regions study, documents extreme ice jam events, loss of life and extensive loss of property which do occur frequently.. If the project as designed is constructed without protection from ice events to the one hundred year level, it will be destroyed and require extensive funding to maintain and operate. High summer flows cause extreme bank erosion, channel migration is recorded and occurs continually, work done in the flood plain should have a maintenance protection plan with associated costs considered.

The river is a natural river, uncontrolled flows, sedimentation, weather events, adding human considerations and economic values brings science into the equation, science defines what should be done to avoid historically recorded dangers.

2 The recovery of the endangered pallid sturgeon may be possible on the Yellowstone river, if the project is constructed using the best available science, please reference “The Final Science Report” dated November 30, 2009. Reference page 11, it clearly states that removal of the rock structure is desired. Page 30 Item 1b was apparently not considered in the planning of the new proposed concrete weir. The issue of larval drift and impingement on the screens suggests a one meter difference is needed. One meter would allow larval drift and small fish to pass below the screens, sedimentation levels are to monitored and corrected to prevent entrainment.

I understand if and when the proposed concrete weir and the fish bypass are constructed, the USACE will not be responsible for the endangered pallid sturgeon recovery. The possibility of some recovery on the Missouri river should not be negated, the construction of the main stem dams caused the endangerment of the sturgeon, all recovery efforts are needed. Funding of proposed structure maintenance if given to the irrigation district, may cause loss of their water due to high operational costs. 3 Funding of species recovery efforts should not become the responsibility of the local residents upstream or downstream of the project,

4 Restoration to full access of the entire river for fish species and historic uses may not be possible but infringement on the flood plain and work in the river corridor should not endanger the nature of the Yellowstone river. A water delivery canal with inlet and outlet gates, constructed parallel to the BNSF RR grade, could provide flood control to the 100 year flood level for the railway and the screen structures. The canal could leave the flood plain at the upstream creek crossing to access an abandoned highway right of way. The old roadway extends upstream to the proposed inlet gate structure.

Removal of the present rock timber weir would provide a natural river for pallid sturgeon upstream migration, the removed rocks could be utilized as stream bank protection on the proposed delivery canal.

I feel the lack of response to address the alternatives proposed may result with possible project failure and must be considered prior to any modification of the present river channel. Operation and maintenance of the project as proposed must be defined prior to further construction, who will be responsible for the success of the project and the recovery of the pallid sturgeon.

Thanks, Arthur W Gehnert

June 21
BP-35

re: Intake Dam

I'm a concerned
citizen of Richland Co. MT.
I think the Army
corp of Engineers impact
study - that shows
1 immediate construction
of the fish by-pass
channel in the
E. I Study is the
best alternative.

Irene Johnson
429 3rd St SE
Sidney. Mt.
59270

06/21/16

U.S. Army Corp. of Engineers Omaha District
Attn: CENWO-PM-AA;
1616 Capital ave
Omaha, Nebraska 68102

RECEIVED 27 Jun 16

I am a Sidney, Mont. business
man. I am very concerned about
the welfare of my customers and
farmers in this area. I went to the
west coast - Portland oregon this
spring stopping to tour the dams
on the columbia river and looked
1 at the fish ladders that are in
place to allow the fish to go up and
down the rivers. These units have
been in place a long time. I feel
that the bypass channel or fish
ladder recommended for Intake dam
is the best alternative. I agree with
the environmental impact study that the
bypass channel is the best alternative
2 for the fish and the farmer and my
customers and the community.

a Concerned Citizen

Russell L. Solum
510 10th ave SE
Sidney Mont. 59270

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Tuesday, June 28, 2016 7:00 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Concerns

-----Original Message-----
From: Jeff Jorgensen [mailto:jnkinc5@gmail.com]
Sent: Monday, June 27, 2016 4:14 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Concerns

We, Jeff and Keri Jorgensen, owners of JnK, Inc. are in favor of the channel bypass. We are very concerned about the
1 option of pumping. With the cost to incorporate that into the irrigation project and the cost to maintain, it would be
economically unfeasible for a farmer or a farming corporation to make any profit. Therefore, making the irrigation
2 project a complete fail. Thank you for your time.

Jeff and Keri Jorgensen

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 8:07 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: Comment

-----Original Message-----
From: Garth Kallevig [mailto:GKallevig@StockmanBank.com]
Sent: Wednesday, June 29, 2016 10:17 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Comment

Dear Sirs: This comment has to do with an obvious question and answer with regards to the Pallid Sturgeon. The Intake
1 diversion dam has been in existence since approximately 1909 (107 years), if the Intake Diversion Dam was the only
culprit to the decline of pallid sturgeon, would they not already be extinct?

Thank you,

Garth Kallevig

BP-39

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 8:11 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Say no to Weir removal on the Yellowstone River

-----Original Message-----
From: Lake Farms, Inc. [mailto:jlake@ronan.net]
Sent: Wednesday, June 29, 2016 3:31 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Say no to Weir removal on the Yellowstone River

To whom it may concern:

This comment is concerning an irrigation weir on the Yellowstone River.

The US Corps of Engineers' preferred plan includes a new weir similar to
the original that was constructed in 1906 but would include a fish
1 bypass to make it easier for all fish including the pallid sturgeon to
go upstream.
This would be a great solution for all of those involved including the
ranchers and farmers in that area.

There are some groups that are trying to get the weir eliminated
entirely, forcing irrigators to pump the water out of the river instead.
2 This will of course increase the cost of water substantially among other
issues.
The irrigation project involves 58,000 acres of farmland with much of it
producing hay and grain for livestock. The Defenders of Wildlife, one of
the groups who support eliminating the weir,
3 have publicly stated that they will also work to eliminate five other
diversion weirs upstream. This threatens tens of thousands of acres of
productive farm land with debatable outcomes.

The US Corp has come up with a solution that protects both the fish and
the ag land. That seems like a win win for everyone who values a safe
and bountiful food supply and all of us who also support a healthy
environment.

Susan Lake
59969 Hwy 93
Ronan, Montana 59864
406-676-4297

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Tuesday, June 28, 2016 12:37 PM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Intake Diversion Dam.

-----Original Message-----
From: Dan Lannen [mailto:d.lannen@frontlineag.com]
Sent: Tuesday, June 28, 2016 12:18 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Intake Diversion Dam.

1 I am in full support of the Yellowstone river intake diversion dam
--

<Blockedhttps://mail.google.com/mail/u/0/?ui=2&ik=301c0678c3&view=fimg&th=14d598b0ba271b34&attid=0.1&disp=emb&realattid=d964cfdef17205d3_0.1&attbid=ANGjdJ9fkIXHPSX491NmzYiC8T0RbYyBRCuVf9K88z6qy1F1h_j0y6LJ5t2WEw4tgTyybFRBK8dvA9zK-syzEKk1i-fiKZASFFfDVBx4rW9DbjAK4_l0gvCFkWLzxYs&sz=w302-h172&ats=1431726498383&rm=14d598b0ba271b34&zw&atsh=1>

Dan Lannen
Sales Dept.
406-466-5741
Cell 406-590-4488
d.lannen@frontlineag.com <mailto:d.lannen@frontlineag.com>

BP-41

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Friday, July 01, 2016 7:29 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: Intake dam

-----Original Message-----
From: Thomas A. Lee [mailto:talee@westernsugar.com]
Sent: Thursday, June 30, 2016 4:24 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Intake dam

1 Removing the damn would substantially impact the aquifer in terms of it's width and volume. This would not only impact farm and ranch operations but also house wells that rely on the ground water as it is currently.

T Lee

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Tuesday, June 28, 2016 7:01 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL]

-----Original Message-----
From: Tami [mailto:kirby@midrivers.com]
Sent: Monday, June 27, 2016 5:16 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL]

Dear Sir or Madam:

I am writing about the upcoming meetings regarding the weir and fish bypass at Intake MT. The Bypass Channel is the
1 best chance to help the endangered species in the river. This is extremely important for all Eastern Montana and
Western North Dakota. This affects all of our jobs and industry. The Irrigation Project, Sidney Sugars, Anheuser Busch,
and the Research Stations supply jobs for people who pay taxes to the State of Montana. Local fisherman also tell me
the pallid sturgeon are more numerous than the Defenders of Wildlife would like to admit. Many fishermen throw the
2 fish back in the river every day. Please do not believe the special interest groups and agree that the Bypass Channel is
the best alternative. The Environmental Impact Study agrees that the Bypass Channel is the best alternative. Remember
when making your decision the thousands or tens of thousands of people and jobs your decision will impact. This will
also impact the larger cities in Montana such as Billings. These people will not spend their money in their malls,
restaurants, and hotels. This will be a decision for Montana and not for an out of state special interest group. Thank you
for your support.

Tami Maltese

Sidney, Montana

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Friday, July 01, 2016 7:31 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Subject: Crane MT farmer supports Intake Fish BYPASS and opposes removing Diversion Dam

-----Original Message-----
From: Gordon Myron [mailto:gordon.myron@gmail.com]
Sent: Thursday, June 30, 2016 6:03 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Subject: Crane MT farmer supports Intake Fish BYPASS and opposes removing Diversion Dam

Attention: Tiffany Vanosdall, project manager.

Subject: Crane MT farmer supports Intake Fish BYPASS and opposes removing Diversion Dam
Hello Army Corp of Engineers;
I understand that there is a meeting in Billings, MT on June 30, 2016 to collect public comments on the current situation at Intake Diversion Dam, Intake, Montana. I am not able to attend the meeting and therefore here is my input.

It is important to reach a decision that will benefit both sides of the discussion. We want the paddlefish to succeed and we want the farmers, family's and businesses to
survive and have a continued prosperous life.

1

A decision that makes it uneconomical for business to survive is the same as not providing for the paddlefish. We must have a decision that is economically equal
to the cost we have now to get our irrigation water. Plus, we do not want our water level to change in our ground water.

Our Crane farm has been our family for 3 generations and it exists, pure and simple, because of the Lower Yellowstone
2 Irrigation Project's ability to provide reliable irrigation water at a economical price. Using pumping or other ideas for diverting irrigation water will make farming NOT economical in the Lower Yellowstone valley and will turn this valuable region of the USA into ghost towns.

Best regards,
Gordon Myron, PMP
PS: I too am a project manager, 18yrs.

--

Gordon Myron
303-886-5933 cell

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 8:10 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Crane MT farmer supports Intake Fish BYPASS and opposes removing Diversion Dam

-----Original Message-----
From: James MYRON [mailto:jrmyron@airmail.net]
Sent: Wednesday, June 29, 2016 1:43 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Crane MT farmer supports Intake Fish BYPASS and opposes removing Diversion Dam

Hello Army Corp of Engineers;

I understand that there is a meeting in Billings, MT on June 30, 2016 to collect public comments on the current situation at Intake Diversion Dam, Intake, Montana. I am not able to attend the meeting and therefore here is my input.

I am owner of a irrigated farm (half section) at Crane, MT whose irrigation water comes directly out of the Yellowstone
River at Intake Montana via the Diversion Dam and this has been done successfully for over 100 years. I also value
American wildlife species and therefore support that you build the Fish Bypass Channel as a good solution for the Pallid
1 Sturgeon Endangered Species problem while still providing Lower Yellowstone irrigated farmers with water for our crops
at a reasonable price. Removing the Intake Diversion dam, if this is being considered, will kill the viable Economic
Lifeblood in the Lower Yellowstone Valley from the towns of Intake, MT to Fairview MT and turn this part of our state
into economic shambles.

Our Crane farm has been our family for 3 generations and it exists, pure and simple, because of the Lower Yellowstone
Irrigation Project's ability to provide reliable irrigation water at a economical price. Using pumping or other ideas for
2 diverting irrigation water will make farming NOT economical in the Lower Yellowstone valley and will turn this valuable
region of the USA into ghost towns.

Best regards, James R. Myron

From:	Salak, Jennifer NWO	BP-45
To:	Vanosdall, Tiffany K NWO	
Subject:	FW: [EXTERNAL] Intake Dam/Diversion	
Date:	Thursday, June 30, 2016 8:03:34 AM	

-----Original Message-----
From: Grant Parker [mailto:grant.parkerlaw@gmail.com]
Sent: Wednesday, June 29, 2016 8:28 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Intake Dam/Diversion

I am writing to object to the choice of the untested bypass channel as the preferred alternative for protection and
1 enhancement of the pallid sturgeon and other native fish. The EIS correctly identifies the need to improve fish
passage. However there is too much risk for putting the untested bypass in place. The proposed alternative could
2 block the pallid sturgeon from moving up and down river. Instead, the alternative of multiple pumps plus
conservation measures should be selected.

Thank you for the opportunity to comment.

Grant

Parker Law Firm
655 East Beckwith
Missoula, MT 59801
406.370.0524
grant.parkerlaw@gmail.com <mailto:grant.parkerlaw@gmail.com>

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Tuesday, July 05, 2016 9:25 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: LYIP Intake

-----Original Message-----
From: Lyle Peters [mailto:lpeters@horizonresources.coop]
Sent: Tuesday, July 05, 2016 8:57 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] LYIP Intake

To whom it may concern:

I would like to voice my support for the Lower Yellowstone Irrigation Project in the prompt installation of the fish
1 friendly weir and bypass channel. Our area is dependent upon the water that is supplied by the project not only for
raising some of the safest and finest food but for recharging rural water systems and maintain a diverse ecosystem that
has become dependent upon the irrigation. While attending all public information meetings in June numerous points
were raised as to why the project should be constructed right away. However, one stuck in my head from a fish biologist
2 at Montana State University. She was quoted on record stating how the pallid sturgeon do NOT prefer the Yellowstone
River and only about 5% of the population actually use it for breeding purposes. The rest of the population prefer to use
the Missouri river as it is a larger river and they are large river fish.

This project needs to be started and completed as soon as possible so we can ensure a safe and reliable form of water for our areas producers.

Lyle Peters

Agronomist

Horizon Resources Agronomy

406-480-5999

Blockedwww.horizonresources.coop <Blockedhttp://www.horizonresources.coop/>

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 1:52 PM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] crane montana farm owner supports Intake Fish BYPASS

-----Original Message-----
From: Patti Prevost [mailto:pattiprevost@yahoo.com]
Sent: Thursday, June 30, 2016 1:31 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] crane montana farm owner supports Intake Fish BYPASS

Greetings to Army Corp of Engineers....I was not able to attend the meetings on the Intake Diversion Dam....As a farmer
1 and owner of a farm in Crane, Montana I support the Intake Fish BYPASS....Our farm has been in the family for over 3 generations, and hopefully will be passed to future generations of our family to come, without irrigation from the Diversion Dam this would not be possible for our future family generations....We have always irrigated with water from the Intake Diversion Dam....I'm for protecting the fish and wildlife, as well as protecting all the people this issue affects....People that have been raised, (as I have) and live in this affected area are well aware of the fact of protecting the wildlife, it has always been our way of life.....we have to be smart about making decisions that affect people now and in the future.... IT IS TIME FOR "COMMON SENCE" INSTEAD OF ALL THIS "NONSENCE" .....Sincerely, Patricia R. (Myron) Prevost

Shelby Reidle
1013 Lincoln Ave NW
Sidney, MT 59270
(406) 488-5422
shelbyreidle@gmail.com

BP-48

June 28, 2016

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

Dear U.S. Army Corps of Engineers: Omaha District:

I am writing to express my support of the bypass channel proposal for the Intake Diversion Project. I see
1 this proposal as a solution that would benefit both the Yellowstone Valley agricultural community and the
pallid sturgeon population.

As the daughter of a sugarbeet farmer, I have seen first-hand how important the Yellowstone Irrigation
Project is to farmers and ranchers in the area. Having a reliable water supply is vital to having a successful
crop in Eastern Montana and agriculture is the backbone to the Sidney community. Especially now that the
2 oil industry is experiencing a downturn, any threat to agriculture would have a devastating effect on the
area. Removing the current weir would cause our area to become a high acre cost pumping district, as
farmers and ranchers would lose their access to water from the river. Along with being expensive, this is
also an unreliable source of water as water outages are likely to occur. Keeping the concrete weir in place
is essential for our agricultural community and the city of Sidney itself.

I understand the environmentalists' concern for the well-being of the pallid sturgeon and other aquatic life
in the Yellowstone River. However, I believe that they have lost sight of the actual threats to the species.
Since the weir was put in place in 1909, the pallid sturgeon and other fish have been able to swim through
3 it and have been spotted in canals in the Sidney area for decades. The weir has never been a threat to the
pallid sturgeon, so removing it would be a fruitless endeavor. By creating a bypass channel, the fish will
have an easier way to get around the weir and continue their journey north.

In closing, I support the bypass channel proposal because it allows agriculture to continue to be the heart of the Yellowstone Valley and helps the endangered pallid sturgeon.

Sincerely,

Shelby Reidle

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

US Army Corps of Engineers®
Omaha District

BP-49

Comment Form

Intake Diversion Dam Fish Passage Project

COMMENTS must be received by FEBRUARY 18, 2016

Please PRINT clearly

Name Lincoln Reisig

Organization Sidney Sugers

Address 311 11th Street SE

Sidney — MT — 59270
CITY — STATE — ZIPCODE

Phone (406) 480-2255 **Fax** ( )

Email lreisig@crystalsugar.com

Narrative Comments:

1 I support the by-pass channel alternative. I believe it will work and can be built to operate at a reasonable cost.
2 I don't want to see any eagles killed by windmills. Farmers are spending too much money on water delivery as it is.

- Attach additional sheets if necessary -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Friday, July 01, 2016 11:04 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Lower Yellowstone Intake Diversion Dam Fish Passage Project

-----Original Message-----
From: Butch Renders [mailto:butchr13@gmail.com]
Sent: Thursday, June 30, 2016 11:12 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Lower Yellowstone Intake Diversion Dam Fish Passage Project

I am writing this in support of the Lower Yellowstone Intake Diversion Dam Fish Passage Project
1 As a life long (69 years) resident of Richland County and fisherman of the Missouri & Yellowstone rivers, I urge you to PLEASE go ahead with the fish passage project and leave the weir in place for the use of the area farmers and the continued infusion of our ground water supply.
This is a decision that was reached by a group of much better educated and much smarter persons than me, BUT it does make sense. and most of all QUIT delaying this project just because people keep coming up with more questions. I have to believe we could question this forever and the only thing we would accomplish is to kill more fish IF that is really happening. I would think we would be trying to get this solution in place sooner than later?
Thank you

William C. Renders
1311 S Central Ave
Sidney, Mt. 59270

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 8:06 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] fish passage needs to be built
Attachments: To the people who want to destroy a community.docx

-----Original Message-----
From: Ross Rosaaen [mailto:niehenkewelding@gmail.com]
Sent: Wednesday, June 29, 2016 9:04 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] fish passage needs to be built

I have attached a letter to this e-mail in support of the irrigation project and the fish passage, it needs to be built, do not destroy a community for a few fish. our heritage and children who are our legacy needs this irrigation and the fish passage is the most viable way to get it thanks

Ross Rosaaen

Niehenke Welding sidney mt

To the people who want to destroy a community

I am a business owner in Sidney, MT. My company was established in 1921 because of the
irrigation project, it supplied water for a large number of farms in the valley. My company is an
agricultural welding and repair shop, my livelihood for my wife and three kids are dependent on the
agricultural community. That is one of the reasons why I had to write a letter because I couldn't come to
the meetings. I have a family and a business to run. My business relies on the survival of the farms and
the survival of Sidney so I bet most of you environmentalists are thinking we have the oil to keep us
going, wrong! The farmers were here before oil and they will be here after the oil. That is why I never
chased the oil field, farmers come first in my welding shop. When they break down, I am there to get
them fixed up so they can harvest the food everyone eats. Montana and North Dakota are one of the
leading producers of wheat, corn, sugar and barley. Our food just doesn't magically appear in the
stores, it has to be planted. It needs water to grow and lots of it! Because of this irrigation, we produce
some of the best crops. If the dam is taken out, the water table in Sidney will drop and the town will
have to go on restrictions of use. The animals that flourish in our area like the deer, sage grouse,
1 pheasants, and the birds all can survive because of the irrigation. This fight doesn't just affect the
farmers, it affects the entire Yellowstone valley from Williston, ND to Billings, MT. Thousands of people
will be affected, land value will drop and people will have to leave. This irrigation is the life blood of the
entire economy and life in our area. When did human life stop mattering? I understand we need to
work together, and I have been told that the people that want our dam gone don't care about the
people's survival. All they care about is the fish! We have more conservation in our state than most of
the rest of the country. Come on, let's have some common sense, HUMAN LIVES MATTER. So I want
the people who are fighting our irrigation project to think and not just jump on a band wagon because it
looks good or want the money to back them for further fights. So are you going to tell my wife and 3
children that we have to close up and leave their homes and change their lives? No, you won't! I will
have to do it because what I gather is that you don't care about us, this is just a game to you so I am
going to tell you I will fight you tooth and nail. I will fight anyone that gets in the way of my livelihood
2 and my family and right now you environmentalists are. We all need to work together and that is what
we have been trying to do from the beginning let the fish bypass get built so the fish survive and so do
the people. Again HUMAN LIVES MATTER!!!!!

Ross Rosaaen

Niehenke Welding

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Friday, July 01, 2016 7:33 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Irrigation Dam at Intake.

-----Original Message-----
From: Stan Rosaaen [mailto:ssrosaaen@gmail.com]
Sent: Thursday, June 30, 2016 6:11 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Irrigation Dam at Intake.

1 I Had a welding business in Sidney for 40 years and someone else had before me and we relied on the irrigation to make the business work,The row crop creates a lot of work in this area and for a lot of other Businesses.common sense has to prevail here on this issue. Where do the Environmentalist think our food comes from the Pallid Sturgeon and not the thin air for sure. This water system does more good then they realize.

Thank You for your time
Stan Rosaaen

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 8:14 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Yellowstone weir

-----Original Message-----
From: Janette [mailto:janette@ronan.net]
Sent: Wednesday, June 29, 2016 8:23 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Yellowstone weir

I support the irrigators who depend on the Yellowstone River to acquire their irrigation water. I understand the corp has
1 a plan that works for the irrigators and sturgeon fish. Please do not allow the out side groups to interrupt the Montana Farmers/ranchers in the Yellowstone River valleys means to make a living and life style that is recognized here in Montana. We need to stand up to these groups who only come to disrupt our life styles and enforce what they feel is the only and right way to deal with our environment and possibly extinguished animals. Preserve our Montana rights. Send them to ten buck two. I bet several of them have come to central Montana from the Mission Valley. Janette Rosman in support of Yellowstone Irrigators.

Sent from my iPhone

BP-53

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, June 27, 2016 2:03 PM
To: Vanosdall, Tiffany K NWO
Subject: FW: By-Pass Channel support at Intake Diversion

-----Original Message-----
From: Kevin Roth [mailto:kroth@crystalsugar.com]
Sent: Monday, June 27, 2016 11:05 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] By-Pass Channel support at Intake Diversion

To Whom it May Concern:

My name is Kevin Roth and I live in Sidney, Montana. I am writing this in support of the by-pass channel as the best alternative at Intake, and the one preferred by the Corp of Engineers as the best alternative in the EIS. Being the Controller for Sidney Sugars Inc. my reasoning stems from the cost of this alternative, which is presently fully funded with a project contractor ready to start construction, as opposed to others that are not funded and would be far most
1 costly to implement. No one is talking on how the multiple pump alternative would get funded if accepted, but my belief would be the cost would either fall on our local taxpayers and local growers to cover the cost as the huge initial cost estimate would most likely not be approved in any federal or state budget going forward. Presently we have a low cost to operate, low cost to maintain, and efficient canal system in place. To enhance our present irrigation system we now have an alternative for a fish friendly By-Pass Channel, that has sufficient funding, and is fully supported and
2 approved by the Corp of Engineers through the environment impact study. This appears to me to be a win/win scenario. It's a win for all the fish that swim the Yellowstone River and a win for our local economy which depends on low cost water flowing through our present canal system which irrigates all the crops grown in our valley.

Yours truly,

Kevin D. Roth

Controller, Sidney Sugars Inc.

35140 County Road 125

Sidney, MT 59270

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 9:27 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Yellowstone weir

-----Original Message-----
From: Nancy Rude [mailto:deanrude1@msn.com]
Sent: Thursday, June 30, 2016 9:19 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Yellowstone weir

1 From what I have read regarding the weir, I am in support of what the Corps of Engineers have come up with as a solution. It appears to work for the Farmers, Ranchers and Fish.
N. Rude

BP-55

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, June 27, 2016 2:55 PM
To: Vanosdall, Tiffany K NWO
Subject: FW: In Support of Intake Dam Bypass Channel

Importance: High

-----Original Message-----
From: Steinbeisser,Rita [mailto:ritas@sidneyhealth.org]
Sent: Monday, June 27, 2016 2:27 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] In Support of Intake Dam Bypass Channel
Importance: High

June 27, 2016

To whom it may concern;

1 I am writing in support of the Bypass Channel for the Intake Dam that will help not only the pallid sturgeon but every other aquatic species in the river. The Bypass Channel is the best chance to help the endangered species while still keeping the Irrigation Project, Sidney Sugars, Anheuser Busch, Feed lots, and the research stations viable!

As a wife and mother of farmers living and working in Richland County, I am frustrated that a viable solution is not being utilized. We continue to waste money in the court system when a solution to the problem has been identified that benefits the pallid sturgeon and sustains the local economy of the MonDak region with the installation of a Bypass Channel.

2 To my understanding, there is now a recommendation to install pumps to irrigate the valley. This appears to be cost-prohibitive from an economic standpoint as well as disruptive to the environment on several levels. The pump solution runs the risk of disrupting other wildlife, possibly creating a city water problem and affecting the livelihood of people living and working in the MonDak region.

3 If you are not concerned about 58,000 acres of irrigated farming land, I urge you to think about all the businesses in our community that rely on agriculture to sustain their economy. Through the oil booms and busts, agriculture has thrived for more than 100 years thanks to an innovative irrigation project that was built with the land and our environment in mind.

I feel the Lower Yellowstone Irrigation Project has done their due diligence to find a solution that is mindful of the fish habitat. Now I encourage you to do the same and be considerate of the economic welfare of agriculture in the MonDak region as well as ample water supply for residents living in this area.

Best regards,

R. Steinbeisser

Vanosdall, Tiffany K NWO

From:	Salak, Jennifer NWO
Sent:	Thursday, June 30, 2016 10:07 AM
To:	Vanosdall, Tiffany K NWO
Subject:	FW: [EXTERNAL] U. S. Corps of Engineers

-----Original Message-----
From: rob [mailto:gutentag7@me.com]
Sent: Thursday, June 30, 2016 10:00 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] U. S. Corps of Engineers

Sirs, I support the compromise plan for replacement of the weir on the Yellowstone River. The plan protects the
1 sturgeon without punishing the irrigators. R. A. Sterling, (3rd generation Montanan, dating to 1864.)

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 8:02 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Attention CENWO-PM-AA

-----Original Message-----
From: Kaitlyn Hardy [mailto:kaitlyn.v.hardy@gmail.com]
Sent: Tuesday, June 28, 2016 8:20 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Attention CENWO-PM-AA

My statement is: Where do these government officials that are making these decisions reside? I'm sure that they don't
reside here. They are making decisions from a desk somewhere in a concrete jungle where there is no wildlife. Why are
1 people surrounded by concrete, making decisions for people who live with wildlife every day? My living is made from
doing radio ad sales, my background like most people here is farming. I have seen the oil boom come and go. Funny
thing is, there are still people here after the oil has gone spending money, and proud to spend their dollars here . Ask
any one of those people left about their background... It's more than 75% of the time a farming background. I say let the
people living here call the shots. Plus, my dad has 3 daughters, one niece and 2 great granddaughters... If one of us has a
boy you'll kill his dream of having someone to take over our farm because there won't be anything left.

Kaitlyn & Mathew Vitt
Sidney, MT

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Friday, July 01, 2016 7:36 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Fwd:

-----Original Message-----
From: Danny Wyrwas [mailto:dwyrwas@gmail.com]
Sent: Thursday, June 30, 2016 9:18 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Fwd:

---------- Forwarded message ----------
From: "Danny Wyrwas" <dwyrwas@gmail.com <mailto:dwyrwas@gmail.com> >
Date: Jun 30, 2016 6:37 PM
Subject: Dam, damm
To: "Danny Wyrwas" <Dwyrwas@gmail.com <mailto:Dwyrwas@gmail.com> >
Cc:

Hi, thank you for your consideration. Your decision isn't easy as you weigh nature versus man. In my opinion, MT is the most beautiful state in the freest country in the world. We are just over 1,000,000 people. Based on population MT is a small city however we are the 4th largest land mass state with an immensely diverse landscape. Residents across this state are family and friends. My brother, by another mother, Shane Gorder, who was born and raised in Sidney, asked me to share a few words.

I understand that saving the pallid sturgeon is vital. I am an avid fisher, hunter and outsdoorsman, with an
1 understanding of ecosystems and nature. Conservation is how I am able to fill my freezer and eat. I also understand that my family and friends lives may be impacted by an impulsive decision.

Salmon on either coast of this great country have been decimated in years past by a variety of factors; one being dams. In the Pacific NW their reclaimation efforts are actually paying off. Yes dams were a big factor in the decline of salmon and yes the removal of many dams especially along the Columbia have helped boost their numbers, but those dams were turbine power generating dams which killed the fingerings by the 1,000's. This dam does not have the destructive nature as those ones. This is a 100% natural irrigation system.

Upon looking at the combined efforts of those involved to save the salmon, both governmant and non-government it has been widely documented that latter's or weir's have played a huge role in the success of the Salmon. The Pacific NW and all the ecosystems that were effected continue to show promise as salmon populations are moving up and to the
2 right. Those involved are seeing that it is both complicated and quite simple. The simplicity came when they created a passage for the salmon. This project also has a passage system in place.

The complexity came because as societies try to solve problems they create bigger and worse problems. An example from the salmon. Over fishing is also a culprit, so farmed fishing started to become an option. Sadly as researchers studied their effects they found that feeding farmed fish wild sardines, mackerel, and herring actually competed with and caused wild fish to starve. Also it was found that it was taking 6 pounds of fish to get 1 pound of flesh. Our efforts to help actually hurt.

MONTANA is home to more Superfund Sites then any other state in the country as we have allowed big companies to come exploit our lands then leave us with a mess. We are land and resources. We know that they are not expendable.

Fish n Game have documented sturgeon above the dam. We have a proven later system that can be installed. We have a zero emmission, zero maintenance irrigation system in place.

So I have to ask why would we create waste- by putting in a fuel eating pump system that could cause problems that
3 could resemble those of the City of Laurel when flows are less then normal. Why would we put our selves at risk of a
disaster that could happen to the Yellowstone river like that which happened as one of our refineries had a pipe leak
1,000's of gallons of fuel into the river. Why would we create expense when we Montanan's are known for being
conservative? Look into audience, these are primarily farmers from Glendive to Fairview. They are innovators and
creators, in my opinion they could build the bypass better and at half the cost of the government. That statement isn't
4 meant to be disrespectful. These people know that preserving waterways, game, Fish and land directly dictate their
lives. They know how to rub two sugar beets together and make a dollar.

My brother from another mother, Kevin Murphy, who lives in Colstrip, may be out of a job in the near future as the EPA restricts CO_2 output by coal fired power, yet the solution here is to put in a CO_2 creating pump. This doesn't make sense. Just like New Orleans doesn't make sense yet we tax payers pay to keep that town above water even though it was built on the coast 20 feet below sea level.

Why are we creating a problem where there is no problem?? One last thing- as you weigh this, please remove Bias, the inability to see the other persons point of view and I release Wisdom.

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 8:09 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: Support the fish bypass channel

-----Original Message-----
From: Margo Zadow [mailto:margoz@lyrec.coop]
Sent: Wednesday, June 29, 2016 11:48 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Support the fish bypass channel

US Army Corps of Engineers Omaha District:

I am writing in to support the fish bypass channel for the Intake Dam. This option benefits the fish and the farmers. But it

Isn't just the fish and the farmers. What will happen if you decide on another option will have far reaching effects on whole towns

1 And cities and all the people that live and work there.

I cannot imagine our town without Sidney Sugars running efficiently. This would affect our schools, grocery stores, hardware stores

And any kind of business here. Please stick to the fish bypass channel plan. We thought that was ready to go.

Thank you for listening,

M Zadow

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Tuesday, July 05, 2016 9:42 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: Intake Diversion Dam Fish Passage Project

-----Original Message-----
From: Tom Erskine [mailto:Tom.Erskine@interstateeng.com]
Sent: Tuesday, July 05, 2016 9:34 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Intake Diversion Dam Fish Passage Project

I am the retired ag loan officer that gave testimony at the public meeting in Billings on Thursday June 30.

I did not talk about the decreased land, machinery and real estate values in communities in the Lower Yellowstone area
if either multiple pumps or multiple pumps with conservation measures is the chosen alternative. Farm appraisals are
1 based on a return on investment (capitalization approach). Simply it is gross income less expenses equals return to the
land. If either high electricity cost for irrigation or high electric costs and reduced yields occur, land values will be
decreased by a significant amount-as much as 40%. This reduced farmer earning ability affects his money to live and
operate on.

On the government level, taxable value declines, so taxes go down. This affects state, county and local government
2 services. On the federal level, income taxes will go down because of less taxable income.

3 Any way one looks at it either of these two alternatives is NOT acceptable. The bypass channel is the best alternative.

It is time to quit studying and to build the bypass channel.

Thomas M. Erskine

Senior Funds Administrator

Interstate Engineering, Inc.

1211 Grand Avenue

PO Box 20953

Billings, MT 59104

406-256-1920 phone

406-256-9178 fax

406-855-2934 cell

Tom.Erskine@interstateeng.com <mailto:Tom.Erskine@interstateeng.com>

Professionals you need, people you trust

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, July 11, 2016 2:33 PM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] I Do Not Support the multiple pumps alternative

-----Original Message-----
From: islandgirl59262 [mailto:islandgirl59262@yahoo.com]
Sent: Monday, July 11, 2016 2:25 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] I Do Not Support the multiple pumps alternative

My name is Samree Reynolds, I work at Sidney Sugars. I would like to say that I do not support the multiple pumps
1 alternative for the simple fact that they do not work. The cost of putting them in is astronomical, not to mention the
cost of maintaining them. We already have a cost effective, no maintenance system of irrigation. It does not get any
cheaper than gravity driven flow. If all the fuss is about the pallid sturgeon and saving them from going extinct, then why
fight so hard to take out the Diversion only to put pumps in, which could endanger them further; when a perfectly fish
2 friendly alternative has been found. Please, please do not let them destroy the Intake Diversion, please do not let them
put electric pumps in. Thank you so much.

Sent from my Verizon, Samsung Galaxy smartphone

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, July 07, 2016 7:17 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Bypass Sidney Montana

-----Original Message-----
From: Melissa Appelberg [mailto:mra7173@gmail.com]
Sent: Wednesday, July 06, 2016 10:59 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Bypass Sidney Montana

1 I Melissa Appelberg of Sidney Montana do here by support the bypass for the lower Yellowstone valley.

I feel its the best choice for our town and for the fish.

Melissa Appelberg
410 7th ave sw
Sidney Mt 59270
(406)-480-3672

BP-63

RECEIVED 22JUL16

RAN'S RANCH
406-855-5994

To whom it may concern,

1 We are writing this letter in support of the Bypass Channel Alternative for LYIP. Just the thought of removing the diversion dam is devastating.

2 We are landowners and farm on the east side of the Yellowstone River under Sidney Water Users Irrigation District serving only 4,500 acres. Even though we do not receive our irrigation water from LYIP this would still have a major impact on us. If their water would become non affordable to the farmer, this would jeopardize our markets, making it non feasible to grow sugar beets and malt barley. These companies would be forced to close down due to lack of irrigated acres.

Based on our small irrigation districts pumping expenses, pumping is not even an option for the massive
3 acres LYIP covers. We have lost crops when pumps go down midseason during critical irrigating times. They have a great system in place that has been working for over 100 years.

We find it hard to believe that in a time when we are all trying to do our part to stimulate the economy and create jobs, that the idea of removing the diversion is even being entertained.

Agriculture has been the driving force of this community for over 100 years. If you remove that, you remove this town and eventually all that goes with it. This one decision would have a devastating effect that would trickle down to everyone in this area one way or another.

Again, we are in support of the Bypass Channel Alternative, which not only saves the farmer, but also the fish.

Respectfully submitted,
Randy and Carla Bell Family Trust
7225 Jellison Rd.
Billings, MT 59101

BP-63

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, July 11, 2016 7:51 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] LYIP EIS

-----Original Message-----
From: Raymond Bell [mailto:rayb@midrivers.com]
Sent: Sunday, July 10, 2016 9:11 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Cc: 'James Brower' <jbrower@midrivers.com>
Subject: [EXTERNAL] LYIP EIS

To: Whom it may concern:

1 We are writing this letter in support of the Bypass Channel Alternative for LYIP. Just the thought of removing the Diversion dam is devastating.

2 We are landowners and farm on the east side of the Yellowstone River under the Sidney Water Users Irrigation District serving only 4,500 Acres. Even though we do not receive our irrigation water from LYIP this would still have a major impact on us. If their water would become non affordable to the farmer this would jeopardize our markets making it non feasible to grow sugar beets and malt barley. These companies would be forced to close down due to lack of irrigated acres.

3 Based on our small irrigation districts pumping expenses, pumping is not even an option for the massive acres LYIP covers. We have lost crops when pumps go down in midseason during critical irrigating times. They have a great system in place that has been working for over 100 years.

We find it hard to believe that in a time when we are all trying to do our part to stimulate the economy and create jobs that a we are even entertaining the idea of removing the diversion.

Agriculture has been the driving force of this community for over 100 years. If you remove that, you remove this town and eventually all that goes with it. This one decision would have a devastating effect that would trickle down to everyone in this area one way or another.

Again, we are in support of the bypass channel alternative, which not only saves the farmer but the fish.

Respectfully Submitted,

Raymond and Patricia Bell

1101 11th ST SW

Sidney, MT 59270

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, July 11, 2016 7:52 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Lower Yellowstone Irrigation Project

-----Original Message-----
From: Brian Bouchard [mailto:big_b_97@hotmail.com]
Sent: Sunday, July 10, 2016 9:48 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Lower Yellowstone Irrigation Project

To whom it may concern,
Please do not let this irrigation project that has been in operation for over a century be shut down!
1 The positives of keeping this system in place far exceed the negatives.
AGRICULTURE, that should say enough. Agriculture is what feeds people, and that is what should be at the top of everyone's minds when this project comes to mind. Seems like that has become a side thought in today's way of thinking. Reminds me of a saying an older gentleman told me once "show me a man with a full stomach and i'll show you a man with multiple problems, show me a man with an empty stomach and i'll show you a man with one problem". PLEASE DO LET THIS PROJECT BE SHUT DOWN!

Thank you
Brian Bouchard

U.S. DEPARTMENT OF THE INTERIOR
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BP-65

US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

RECEIVED 8Jul16

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name RUSSELL & HARRIET CARICO

Organization

Address PO BOX 232

FAIRVIEW | MT | 59221
CITY | STATE | ZIPCODE

Phone (406) 478-0699 **Fax** ( )

Email rhcarico@midrivers.com

Narrative Comments:

The water from the Yellowstone River that is used for irrigation is crucial to the economies of Dawson & Richland counties. Irrigated crops in
1 these two counties provide the main economies that so many depend on. Losing this water will result in hundreds if not thousands of lost jobs. Valley farming will essentially come to an end, as will the majority of businesses in Glendive, Savage, Sidney, and Fairview. Please do not eliminate this water supply.

- Attach additional sheets if necessary -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

6 Jul 16

BP-66

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Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project
Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Jacklyn Damm

Organization Farmer

Address 15891 30th ST NW

Fairview MT 59221

CITY STATE ZIPCODE

Phone (406) 489-2779 **Fax** ( )

Email damfamle@gmail.com

Narrative Comments:

1 I Support the by pass Channel.

- **Attach additional sheets if necessary** -

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Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, July 11, 2016 7:48 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Support for Bypass Channel

-----Original Message-----
From: Kristan Haugen [mailto:khaugenphotography@gmail.com]
Sent: Sunday, July 10, 2016 11:02 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Support for Bypass Channel

1 I am in support of the Bypass Channel.

Thank you,

Kristan Haugen
Alexander, ND

U.S. DEPARTMENT OF THE INTERIOR
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BP-68

US Army Corps
of Engineers ®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Rae Jean Kimble

Organization Mother in law of a farmer

Address 1370 22nd ave NW
Sidney (CITY) MT (STATE) 59270 (ZIPCODE)

Phone (406) 488-7244 **Fax** ( ) ______

Email rkimble43@gmail.com

Narrative Comments:

1 I Support the bypass channel. Save the farmers

\- **Attach additional sheets if necessary** -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

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http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, July 11, 2016 2:33 PM
To: Vanosdall, Tiffany K NWO
Subject: FW: Intake Montana

-----Original Message-----
From: Kathy Mclane [mailto:kmacinmt@hotmail.com]
Sent: Monday, July 11, 2016 12:44 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Intake Montana

1 I attended two of the 3 meetings scheduled by the USACE and I am extremely proud of the region's farmers who expressed willingness to pay for the Preferred Alternative as proposed by the USACE IF that will help the pallid sturgeon and appease the enviros.

I found it very interesting and telling to see the photos of early 1900's when the Intake diversion dam and irrigation ditches were first installed. The area was truly a high plains desert. Water and excellent farming practices brought economic prosperity to the region and beautiful wildlife habitat now exists all along the river and into the countryside. I would hate to see that change with stupidity.

2 Three interesting facts: 1) the pallid sturgeon are still alive after over 100 years of the dam and 2) around 90% of the pallid sturgeon split at the confluence of the Yellowstone and Missouri Rivers and only 10% even go up the Yellowstone 3) pallid sturgeon with the same genetic makeup as their wild counterparts are being raised in a hatchery.

I understand that it is the environmentalist's desire to return all U.S. rivers to their pristine state by removing all dams however, I believe they are simply using the pallid sturgeon as their reason to remove the dam and install a $144 million pump alternative, possibly with wind and solar technology—even if federal dollars are used to pay for it since it is far outside the capabilities of those 300 or fewer farmers to financially make a case for and remain solvent.

3 I am totally opposed to the pump with ground source water option due to concerns with the inefficiencies of that system and expense to operate those pumps. Wind turbines have not proven cost effective and are also proved to be detrimental to bird populations. The Fox Hills Sands underground water aquifer in that area does not refill easily. I emphatically oppose this as an option.

I will be supportive of the USCE's 'preferred option', only if it appeases the environmental concerns and affords the farmers a chance to succeed.

Kathy Newton McLane

377 FAS 254

Glendive, MT 59330

406-987-3777

BP-70

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Omaha District

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Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

RECEIVED 8 Jul 16

Please PRINT clearly

Name Donna L Nevins

Organization Nevins Farms, Inc.

Address 12689 CR 336

Sidney (CITY) MT (STATE) 59270 (ZIPCODE)

Phone (406) 774-3724 **Fax** ( )

Email

Narrative Comments:

1 I support the fish by-pass - leave the dam as is -

- Attach additional sheets if necessary -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

June 28, 2016

1 I strongly support the Diversion project as it has been presented and built by the Fish and Game, the Lower Yellowstone Irrigation Project, and the corps of engineers with the diversion dam, the fish screens and the rock ramp.

I am a land owner at the northern end of the project. The project has been running efficiently for over 100 years, providing farmers with the necessary water to grow their crops and the local businesses with the income from the farmers.

I can't understand why people would want to ruin the lives of so many people by trying to close or alter this proven system that will allow the pallid sturgeon access to the rest of the Yellowstone river.

Rex A. Niles

329 jib Ct

Lakeside Mt 59922 rexniles@hotmail.com 406-480-2569

U.S. DEPARTMENT OF THE INTERIOR
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BP-72

US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Roger Kimble

Organization father in law of a farmer

Address 1370 22nd ave NW

Sidney (CITY) mt (STATE) 59270 (ZIPCODE)

Phone (406) 488-7244 **Fax** ( )

Email rkimble@gmail.com

Narrative Comments:

1 I Support the by pass Channel. Save the farmer's

- Attach additional sheets if necessary -

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Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, July 11, 2016 7:48 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Pallid Sturgeon

-----Original Message-----
From: Penelope Plumb [mailto:pplumb@mac.com]
Sent: Saturday, July 09, 2016 6:51 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Pallid Sturgeon

Hello. I received an alert and plea to ask for protection for this endangered species, but their link required a lot of personal info, but I found this site, and woukd like to add my support to their efforts. Thank you for forwrding this to the proper dept. Below is what I received:

Thank you for the opportunity to comment on the Lower Yellowstone Fish Passage Project in Montana. I support an
1 open river alternative for the Lower Yellowstone Fish Passage Project. Your own analysis shows that the best outcome
for the endangered pallid sturgeon from this project is to remove the outdated Intake Dam, open the river and allow full
river passage. I do not support building a new dam and artificial bypass, as the likelihood that endangered pallid
sturgeon will use it is slim. The pallid sturgeon needs all the help it can get. Please adopt an alternative that removes the
2 dam, provides pumps or other means to get irrigators water and gives the pallid sturgeon a fighting chance. Spending
taxpayer dollars on an alternative that won't work will cost more money in the future - pay to do this right the first time.
Penelope Plumb
pplumb@mac.com

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Tuesday, July 05, 2016 11:25 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Support of Bypass Channel

-----Original Message-----
From: islandgirl59262 [mailto:islandgirl59262@yahoo.com]
Sent: Tuesday, July 05, 2016 10:36 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Support of Bypass Channel

1 I would like to voice my support of the Bypass Channel Alternative. My name is Samree Reynolds, I work at Sidney Sugars.
Thank you again for this opportunity to be heard. At the 1st meeting, I spoke about not saving 1 species from being extinct at the cost of another more important species, last night I spoke about the delays endangering the pallid sturgeon even further, both times I voiced my support of the bypass channel as the most viable, cost effective, environmentally safe alternative.
At these 2 meetings, everyone who had come up to speak all said they grew up in this area, was born and raised here, with lots of history and family here. I'm not from around here, I am a city girl, was not born and raised here so I knew nothing about farm life and irrigation but since having worked at the sugar factory for going on 19 yrs, I do know the
2 concept of how the pumps are supposed to work. I know it takes a lot of time and money to maintain them.
When you compare the cost of the bypass channel at 57,044,000 to the multiple pumps at 477,925,000 it is a no-brainer which one is the best solution. If a simple city girl like me can see that, I pray the powers that be who makes the decision on this can see it too.
So I believe that supporting the bypass channel along with keeping the Diversion dam or underwater speedbump as james brower calls it, will be a win-win for all of us, fish and humans alike. Thank you.

Sent from my Verizon, Samsung Galaxy smartphone

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Wednesday, July 06, 2016 6:57 PM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Bypass Channel Alternative

-----Original Message-----
From: islandgirl59262 [mailto:islandgirl59262@yahoo.com]
Sent: Wednesday, July 06, 2016 10:20 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Bypass Channel Alternative

My name is Samree Reynolds and I work for Sidney Sugars.
First of all I would like to thank the Corps, the Reclamation, Richland Economic development and everyone who is
involved in fighting so hard to save our fish and our community, Thank you so much for your hard work and dedication.
With your presentation, you have shown us the best possible solution to saving not only the pallid sturgeon but all the
other species of fish that are in the river. You have also shown how our community, the wildlife and the environment
1 have flourished and grown over the years due to the Intake Diversion that was built over 100 years ago and that is still
working to this day. With that said, from what I understand, the main concern and what this fight is all about, is saving
the dinosaur fish, so my question is, why are they being endangered further by all these delays when there is a viable,
cost effective, low maintenance, environmentally safe alternative which is the bypass channel? Please let the bypass
2 channel go thru without any further delays. Thank you.

Sent from my Verizon, Samsung Galaxy smartphone

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

RECEIVED
6 Jul 16

BP-76

US Army Corps of Engineers ®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Duxter Thiel

Organization Agricultural Enterprises

Address 1807 S Central Ave

Sidney (CITY) MT (STATE) 59270 (ZIPCODE)

Phone (406) 433 3278 **Fax** (406) 488 3278

Email thielbro@midrivers.com

Narrative Comments:

1 The diversion dam must be maintained so irrigation can continue. The families and people's livelyhood would be to adverstly impacted by Removing the dam. The 100+ years of history of the project has shown the canal improves the land's ability to Produce food & support human exsistance.

- Attach additional sheets if necessary -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

BP-77

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Monday, July 11, 2016 7:49 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] intake diversion dam

-----Original Message-----
From: Harold Schlothauer [mailto:hdfarms@gmail.com]
Sent: Sunday, July 10, 2016 3:35 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] intake diversion dam

to whom it may concern,
I attended all three public meetings about the Intake dam. I think it is very important that this project be allowed to
1 proceed with the plan for a new weir and fish bypass. It appears it is the plan approved by all three government agencies
and I see no reason it won't work. I have lived next to the Yellowstone River for 70 years and have seen sturgeon in all
sorts of drainage ditches and low water areas. I am quite sure they will find the bypass. I think any further delay could be
very detrimental to both the irrigators and the fish. I urge the courts to let the project proceed.

Thank You
Harold Schlothauer
15922 30th st nw
Fairview Mt 59221
701 744 5741

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Friday, July 08, 2016 12:28 PM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] pallid sturgeon

-----Original Message-----
From: Flip-Side Fabrics [mailto:flipside@midrivers.com]
Sent: Friday, July 08, 2016 12:23 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] pallid sturgeon

Pat Neiss

803 3rd St NE

Sidney, Montana 59270

406-482-2177

U.S Army Corps of Engineers Omaha District

Attn: CENWO-PM-AA; 1616 Capitol Ave

Omaha, Nebraska 68102

July 8, 2016

1 PLEASE, seriously consider the fish bypass as the most reasonable solution to fix the pallid sturgeon situation and
improve our irrigation system that has worked for over a century. The proposed pumping system would be expensive to
implement and maintain in the muddy waters of the Yellowstone River. The potential is great for equipment damage or
2 failure. Wasn't that a major problem with the system at the Buffalo Rapids, Fallon Pump site? Have they recovered yet
from their crop damage/loss?

Eastern Montana has taken so many hits recently, from our own state government ignoring our need for infrastructure updates, the downturn of oil prices and now this threat to our agricultural industry. We are hanging on to our economy by a thread that is rapidly failing.

Our farmers need a reliable source of irrigation, and we need our farmers. You need our farmers.

With great concern,

Pat Neiss

Trish
Blockedwww.flipsidefabrics.com <Blockedhttp://www.flipsidefabrics.com>

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Friday, July 08, 2016 7:01 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: Letter of Support for the LYIP and Intake Modifications

-----Original Message-----
From: Josh Johnson [mailto:Josh.Johnson@interstateeng.com]
Sent: Tuesday, July 05, 2016 5:48 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Letter of Support for the LYIP and Intake Modifications

To Whom it may Concern;

1 I support the reliable delivery of water to the irrigators provided by the rock ramp alternative. The proposed rock ramp alternative and durable fish passage, will provide cost effective, reliable water to the irrigators in this large region, and greatly improve the fish passage over the existing stacked boulder diversion dam. This project needs to be completed immediately for the good of the endangered species and all the local communities.

2 The loss of the existing reliable and economical irrigation water to the surrounding farms would devastate our regional economics, towns and communities.

Josh Johnson

Sidney Area Office Manager

Interstate Engineering, Inc.

P.O. Box 648/425 E. Main

Sidney, MT 59270

Cell: (406) 489-2512

Office: (406) 433-5617

Fax: (406) 433-5618

Email: Josh.Johnson@interstateeng.com <mailto:Josh.Johnson@interstateeng.com>

Professionals you need, people you trust.

BP-80

US Army Corps of Engineers
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project
Dawson County High School

900 N. Merrill Avenue • Glendive, MT 59330

Wednesday, June 29, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name VERNON C. HEINRICH [signature]

Organization Retired taxpayer

Address 502 Fir Street

Glendive (CITY) Montana (STATE) 59330 (ZIPCODE)

Phone (406) 377-3437 **Fax** ( )

Email dvhein@midrivers.com

Narrative Comments:

As a former water user of LYIP, and as a tax payer, I am concerned about Intake Diversion dam and fish passage. I have checked into wind energy as opposed

1 to our traditional sourse of energy. Wind towers are expensive to construct, and by the same token, not

- **Attach additional sheets if necessary** -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:
U.S. Army Corps of Engineers Omaha District ATTN: CENWO-PM-AA
1616 Capitol Avenue, Omaha, NE 68102

Or email comments to:
cenwo-planning@usace.army.mil

NOTES:

2 Very efficient. Pumps along the river to supply water to irrigate would almost double the cost of water. Now show me the win-win situation in that. It is all about the so called environmentalists controlling the water. It has nothing to do with saving the fish. The Bypass Channel would be quite capable of doing that at a far less cost. I believe
3 the most feasable alternative is to build a new concrete wier and construct a new By pass Channel on Joe's Island.

Thank You

[signature]

Vernon C. Heinrich

DECEIVE
13 Jul 14

BP-81

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RECEIVED 12 Jul 16

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Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project
Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Cathy Basta

Organization farmer/rancher

Address 33630 Rd 103

Savage (CITY) Mt (STATE) 59262 (ZIPCODE)

Phone (406) 798-3642 **Fax** ( )

Email bastaranch@midrivers.com

Narrative Comments:

I support the Intake fish passage. To get it
1 built as soon as possible will save much stress on
us farmers as well as the fish.

- **Attach additional sheets if necessary** -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

BP-82

4/1

My name is Brent Coon and I live in Sidney Mt.

I think the fish Bypass channel is the Best way

1 for cost and not needing more power lines or some windmill to look at. and the cost of power to Run pumps.

thank you

Brent Coon

410 4^th ST NE
Sidney mt
59270

BP-83

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

RECEIVED 12Jul16

US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

COMMENTS must be received by FEBRUARY 18, 2016

Please PRINT clearly

Name MIKE DUNN

Organization SIDNEY SUGARS INC.

Address 925 3RD AVE SE

SIDNEY MT 59270
CITY STATE ZIPCODE

Phone (406) 489-2254 Fax ( )

Email mdunn@gmail.com

Narrative Comments:

I have worked at Sidney Sugars for 35 year, I am a fourth
generation sugar tramp. I have 3 boys, 2 of which was at the factory
and my wife also work here. I also am a avid out doors man and
love to fish and hunt. I want my 3 grand children to enjoy everything
1 in Montana that I have enjoyed. It is very important to my
family that all fish + wild life live for ever. But we also need the

- Attach additional sheets if necessary -

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Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

1 Irrigation project going in our valley. Without it
there are no beets, no beets no factory, no factory no jobs,
2 No jobs no reason to live here. I think the fish by pass
is, a fair solution to the problem. In todays world it
seems we put everything before people and their lives.
Its getting harder to feed our world all the time and
yet we want to slow down or stop crop production
Please consider this while making your decision.

Thank You
Mike Dunn

U.S. DEPARTMENT OF THE INTERIOR
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BP-84

US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Steve JosLin

Organization Farmer

Address 12751 CR 353

Sidney (CITY) Montana (STATE) 59270 (ZIPCODE)

Phone (406) 482-4190 **Fax** ( )

Email

Narrative Comments:

1 By Pass Channel best alternative

\- **Attach additional sheets if necessary** -

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http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

RECEIVED 8Jul16

July 8, 2016

Dear Sir,

1 Thank you for the opportunity to comment on the Lower Yellowstone Fish Passage Project in Montana. I
support an open river alternative for the Lower Yellowstone Fish Passage Project. Your own analysis
2 shows that the best outcome for the endangered pallid sturgeon from this project is to remove the
outdated Intake Dam, open the river and allow full river passage. I do not support building a new dam
3 and artificial bypass, as the likelihood that endangered pallid sturgeon will use it is slim. The pallid
sturgeon needs all the help it can get. Please adopt an alternative that removes the dam, provides
pumps or other means to get irrigators water and gives the pallid sturgeon a fighting chance. Spending
taxpayer dollars on an alternative that won't work will cost more money in the future - pay to do this
right the first time.

Yours,

Kevin Winter

8791 Silverberry Ave

Elk Grove, CA 95624

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RECEIVED 18 Jul 16

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BP-86

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Melissa Boyer

Organization

Address 808 3rd Ave SE

Sidney (CITY) MT (STATE) 59270 (ZIPCODE)

Phone (406) 488-4248 Fax ( )

Email

Narrative Comments:

1 I am in full support of the fish passage project. Without the irrigation project, Richland County would be devastated.

- Attach additional sheets if necessary -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

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http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

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1616 Capitol Avenue
Omaha, NE 68102

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Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

RECEIVED

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Heather Cotter

Organization

Address 219 3rd Ave NE

Sidney MT 59270
CITY STATE ZIPCODE

Phone ( ) **Fax** ( )

Email

Narrative Comments:

1 I am in full support of the fish passage project

- **Attach additional sheets if necessary** -

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Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

BP-88

To begin with I want to say if changes are made [RECEIVED 16 Jul 16] the diversion "weir" at Intake, I would hope it will be the by-pass. If the decision to go to pumps is made, what I get in rent from my farm, wouldn't cover my water taxes. 1

Over $400 million for a fish doesn't make sense, when we recently watched lives and homes being destroyed by fire in California, floods in Virginia, tornados, every where. Is this what the normal is? fish first, people second? If these are large river fish, put them where they belong. 2

It amazes me the habitat of animals and birds these so called defenders of wildlife are willing to destroy, plus the many acres that produce abundant food, also the livelyhood of farmers, schools factories, businesses, all that create jobs are at the mercy of one fish, that has already survived for over a hundred years.

another question: why did they hold a meeting in Billings when it was a $4\frac{1}{2}$ to 5 hr. drive for the people that are the most concerned. Every farmer is more of an enviormentalist, than those who claim to be one. They have to take care of their land to survive

It really makes me wonder what is really behind this so called problem. 3

Virginia Wardi
11757 Hywy 16
Savage, Mt. 59262

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Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

18 Jul 16

Please PRINT clearly

Name Donny Dillman

Organization Friend of Farmer

Address

Crane MT 59270
CITY STATE ZIPCODE

Phone ( )

Fax ( )

Email

Narrative Comments:

1 I support the fish bypass. think about all the people we'd hurt without the dam.

- Attach additional sheets if necessary -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Tuesday, July 12, 2016 10:40 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Save the Endangered Pallid Sturgeon

-----Original Message-----
From: delivery@actionsprout.com [mailto:delivery@actionsprout.com]
Sent: Tuesday, July 12, 2016 10:22 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Save the Endangered Pallid Sturgeon

Thank you for the opportunity to comment on the Lower Yellowstone Fish Passage Project in Montana. I support an
1 open river alternative for the Lower Yellowstone Fish Passage Project. Your own analysis shows that the best outcome
for the endangered pallid sturgeon from this project is to remove the outdated Intake Dam, open the river and allow full
river passage. I do not support building a new dam and artificial bypass, as the likelihood that endangered pallid
sturgeon will use it is slim. The pallid sturgeon needs all the help it can get. Please adopt an alternative that removes the
2 dam, provides pumps or other means to get irrigators water and gives the pallid sturgeon a fighting chance. Spending
taxpayer dollars on an alternative that won't work will cost more money in the future - pay to do this right the first time.

____

<Blockedhttp://email.actionsprout.com/wf/open?upn=E6K3XnVUJA3Kuu7ICMSp9kIfXbu3LzKPbxkoyEevJO7Sa2mvLfAjwx76iZcavYfph6kfSpVQZydGinzEKWaXctwWsIU7391-2F94TXZ-2FUqT-2B9pMnk14WpRUtied11Kl7n9rQ8N0GfFVPwMW-2BX-2BdHU4kit3jXoLGa2gUDvIf8LDmiqkO4G9SK8kAbANcaSqWBxQoLgXF8-2FCa5vrCN2POiGYAUNuWLkRau17IE1Jgfes7uA-3D>

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BP-91

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Comment Form

Intake Diversion Dam Fish Passage Project
Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016
Please PRINT clearly

Name Debra Gilbert

Organization Local Citizen

Address 221 3rd Ave. SW

Sidney, Montana 59270
CITY STATE ZIPCODE

Phone (406) 489-1486 **Fax** ( ) NA

Email Tikasmom.debra@gmail.com

Narrative Comments:

1 I support the bypass. I feel a lot of families may face financial difficulties should this not pass. These people have made farming their lives and should they incur added operating costs, this could devastate a farm operation. Tax base is also imperative to sustain the county roads, bridges, etc.

2 My understanding is irrigated land hold more value than non irrigated land. Please consider the impacts this may cause all the way around in all the communities along the river. Thanks for your time.

- Attach additional sheets if necessary -

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http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

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BP-92

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Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Gina Heckey Gina Heckey

Organization

Address 209 3rd Ave SW
Sidney MT 59270
CITY STATE ZIPCODE

Phone ( ) **Fax** ( )

Email

Narrative Comments:

1 I am in full support of the intake Diversion Dam Fish Passage Project. It is vital to the livlihood of our region.

- **Attach additional sheets if necessary** -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

BP-93

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BUREAU OF RECLAMATION

Comment Form

Intake Diversion Dam Fish Passage Project
Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Harold Helland

Organization

Address 13359 Hyw 200

Fairview MT 59221
CITY STATE ZIPCODE

Phone (406) 742-5656 **Fax** ( )

Email

Narrative Comments:

1 This faceless organization has no idea what problems they create to satisfy their whims. There are more fish in the Missouri River that are stopped by Fort Peck Dam but they can't take that down so to satisfy themselves they pick on the Yellowstone River. This foolish agenda affects hundreds of peoples lives - the farms, water wells and total income

\- **Attach additional sheets if necessary** -

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http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

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BUREAU OF RECLAMATION

BP-94

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Comment Form

Intake Diversion Dam Fish Passage Project
Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM
COMMENTS must be received by JULY 28, 2016

RECEIVED 15Jul16

Please PRINT clearly

Name Maci Holst

Organization County Employee

Address 1201 W Holly Suite #1

Sidney | MT | 59270
CITY | STATE | ZIPCODE

Phone (406) 480-4689 **Fax** ( )

Email mholst@gmail.com

Narrative Comments:

1 I support the bypass. For the farmers & for the community of rural Montana.

- **Attach additional sheets if necessary** -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

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ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

RECEIVED 15 Jul 16

US Army Corps of Engineers ®
Omaha District

BP-95

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Vernon Klose

Organization Klose Lands LLLP

Address 3032 160th Ave NW
Fairview | MT | 59221
CITY | STATE | ZIPCODE

Phone (701) 744-5310 **Fax** ( ) ________

Email ________

Narrative Comments:

1 the environmental impact study showed the Bypass Channel to be the best alternative. the cost of pumping to to costly. I am sure the fish will use the bypass channel.

Vernon Klose partner

- Attach additional sheets if necessary -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

July 10, 2016

BP-96

To whom it concerns:

We are writting in favor of the Intake bypass. We have lived in the Fairview area all of our lives. Without the bypass many of our family members and life long friends are in danger of loosing their livelihood. The sugar beet farmers are a big majority of Fairview n Sidney. In Fairview we have recently gained a family restaurtant, motel and a newly owned grocery store. We need to make sure these business's continue to grow or our town will die.

1 The fish are known to have used bypass's before. Common sence people, feed our people or save the fish population. You can have both with the bypass.

Robert n Renee Sundheim
35194 Hwy 201
Fairview, MT 59221

U.S. DEPARTMENT OF THE INTERIOR
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BP-97

US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Alex McPherson

Organization McPherson Farms Inc.

Address 82 Road 555

Glendive (CITY) MT (STATE) 59330 (ZIPCODE)

Phone (406) 480-3034 **Fax** ( )

Email alexkmcp@Hotmail.com.

Narrative Comments:

I am a 4th generation farmer that relies on the Intake Project. My great grandfather homesteaded on our current farm after helping complete work on the
1 canal. I fully support the proposed construction of the fish by-pass channel. Without out the Dam it will complety ruin my operation as well as the communities.

- Attach additional sheets if necessary -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

BP-98

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

RECEIVED 15 Jul 16

US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project
Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Zach McPherson

Organization Farmer

Address 86 RD 555

Glendive MT 59270
CITY STATE ZIPCODE

Phone (406) 480-0272 **Fax** ( )

Email z_mcpherson@hotmail.com

Narrative Comments:

1 I support the bypass. Without this we will lose everything
my family has worked for.

- **Attach additional sheets if necessary** -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

---------- Forwarded message ----------
From: <kathy.bouvier@yahoo.com>
Date: Tue, Jul 26, 2016 at 3:29 PM
Subject: Inquiry To GP Region BP-99
To: gpwebmaster@usbr.gov

From Kathy Bouvier (kathy.bouvier@yahoo.com) on 07/26/2016 at 03:07:59MSGBODY:
[The letter below was written to submit to the Bureau of Reclamation during the Public Comment period (extended to), but the link provided on their website was dysfunctional. I hope that you can forward this to the appropriate place. Thank you!]

To whom it may concern:

I am writing regarding the Intake Diversion Dam in Montana.

1 My concern is for the pallid sturgeon, whose eradication would surely result from its construction; it would no longer have a healthy place for its eggs to develop if it were trapped between this dam and the Fort Peck Dam.

2 But I do not neglect the farmers who need the water in these dams for their crops. I am not alone in believing that their needs and those of the palled sturgeon could be met by adopting an alternate proposal made in concert by the Bureau of Reclamation, the United States Fish and Wildlife Service, and the Army Corps of Engineers. They have proposed replacing the Intake Diversion Dam with a dam which has a bypass channel to allow the fish to get past it to spawn. It is the least we can -- and should -- do to preserve such an ancient species.

Thank you for giving this matter your serious attention.

Kathy Bouvier

BP-100

From: Theodore Burger
To: CENWO-Planning
Subject: [EXTERNAL] Comments on Docket Number EPA-HQ-OAR-2016-0004
Date: Sunday, July 17, 2016 8:23:55 AM

Dear U.S. Army Corps of Engineers,

1 Remove Dam and replace with Irrigation Pump. Save the fish.

Sincerely,

Theodore Burger

BP-100a

From: Steve Irwin
To: CENWO-Planning
Subject: [EXTERNAL] All God"s Creatures Matter
Date: Sunday, July 17, 2016 8:24:37 AM

Dear U.S. Army Corps of Engineers,

1 Take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Steve Irwin

BP-101

From: Steve Brown
To: CENWO-Planning
Subject: [EXTERNAL] Dam
Date: Sunday, July 17, 2016 8:23:21 AM

Dear U.S. Army Corps of Engineers,

1 Take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Steve Brown

From: Kathleen Hogan
To: CENWO-Planning
Subject: [EXTERNAL] Dam removal
Date: Sunday, July 17, 2016 8:25:52 AM

Dear U.S. Army Corps of Engineers,

1 Please take out the dam! Thank you for considering this petition.

Sincerely,

Kathleen Hogan

From: Alan Shute
To: CENWO-Planning
Subject: [EXTERNAL] dam
Date: Sunday, July 17, 2016 8:25:54 AM

Dear U.S. Army Corps of Engineers,

1 Please remove Intake dam.

Sincerely,

Alan Shute

From: Theodore Bahn
To: CENWO-Planning
Subject: [EXTERNAL] Dams on Yellowstone River
Date: Sunday, July 17, 2016 8:23:45 AM

Dear U.S. Army Corps of Engineers,

1 I am baffled why the U.S. Army Corps of Engineers would want to propose a dam on a critical river. Data shows that these dams are never able to facilitate passage by fish species. When those fish are endangered it is even more egregious.

Sincerely,

Theodore Bahn

From: Boyce Booth
To: CENWO-Planning
Subject: [EXTERNAL] DAMS
Date: Sunday, July 17, 2016 8:31:21 AM

Dear U.S. Army Corps of Engineers,

1 Man made dams may be beneficial when they are built, but when they become injurious to humans and other animals, they should be removed.

Sincerely,

Boyce Booth

From: Katrin Rosinski
To: CENWO-Planning
Subject: [EXTERNAL] endangered sturgeon
Date: Sunday, July 17, 2016 8:28:20 AM

Dear U.S. Army Corps of Engineers,

1 Please help these sturgeon not get over fished.

Sincerely,

Katrin Rosinski

From: sylviane mahaux
To: CENWO-Planning
Subject: [EXTERNAL] Environment
Date: Sunday, July 17, 2016 8:25:55 AM

Dear U.S. Army Corps of Engineers,

1 Please, take out Intake Dam and replace its function with an irrigation pump system. It will protect native fish.

Sincerely,

sylviane mahaux

BP-108

From: Carol Devoss
To: CENWO-Planning
Subject: [EXTERNAL] Go Back to the Drawing Board for the ACF Basin Plan
Date: Sunday, July 17, 2016 8:44:05 AM

Dear U.S. Army Corps of Engineers,

1 As someone who cherishes free-flowing rivers and all the benefits they provide to people and wildlife, I urge the Corps to select one of the “open river” alternatives in the DEIS on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River.

2 For more than a century, Intake Diversion Dam has blocked upstream passage for federally endangered pallid sturgeon and dozens of other native fish species in the Lower Yellowstone River. Removing the dam not only would open up 165 miles of the mainstem Lower Yellowstone River to migrating fish, but it would also give fish access to hundreds of additional miles of tributaries such as the Powder and Tongue rivers.

3 While I strongly favor restoring a free-flowing river to benefit native fish, I believe it’s also vital that the Corps address the needs of farmers who currently rely on Intake Dam to divert river water to irrigate 54,000 acres of crops in the Lower Yellowstone Project. Based on the information presented in the DEIS, these needs can reasonably be met by constructing irrigation pumps along the river that would be powered by clean, renewable, locally-produced energy such as wind power.

4 This would not be the first time that a dam has been removed and its function replaced with irrigation pumps. A very similar project to what is being considered on the Lower Yellowstone recently was implemented at Savage Rapids Dam on the Rogue River in Oregon. That project resulted in a win-win-win for fish, farmers, and taxpayers.

In closing, I urge the Corps to select an alternative that has a high probability of meeting the needs of native fish, meeting the needs of farmers in the Lower Yellowstone Project, and costs taxpayers the least amount of money over the long term. The only alternatives that meet those criteria are the two open river alternatives that involve removing Intake Dam from the river and replacing its function with a reliable irrigation pump system powered by clean energy.

Thank you for considering my comments.

Sincerely,

Carol Devoss

From: Elise Adibi
To: CENWO-Planning
Subject: [EXTERNAL] I don"t support hydropower"s misleading “Unlock Hydro” campaign
Date: Sunday, July 17, 2016 8:55:01 AM

Dear U.S. Army Corps of Engineers,

1 As someone who cherishes free-flowing rivers and all the benefits they provide to people and wildlife, I urge the Corps to select one of the “open river” alternatives in the DEIS on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River.

2 For more than a century, Intake Diversion Dam has blocked upstream passage for federally endangered pallid sturgeon and dozens of other native fish species in the Lower Yellowstone River. Removing the dam not only would open up 165 miles of the mainstem Lower Yellowstone River to migrating fish, but it would also give fish access to hundreds of additional miles of tributaries such as the Powder and Tongue rivers.

3 While I strongly favor restoring a free-flowing river to benefit native fish, I believe it’s also vital that the Corps address the needs of farmers who currently rely on Intake Dam to divert river water to irrigate 54,000 acres of crops in the Lower Yellowstone Project. Based on the information presented in the DEIS, these needs can reasonably be met by constructing irrigation pumps along the river that would be powered by clean, renewable, locally-produced energy such as wind power.

4 This would not be the first time that a dam has been removed and its function replaced with irrigation pumps. A very similar project to what is being considered on the Lower Yellowstone recently was implemented at Savage Rapids Dam on the Rogue River in Oregon. That project resulted in a win-win-win for fish, farmers, and taxpayers.

In closing, I urge the Corps to select an alternative that has a high probability of meeting the needs of native fish, meeting the needs of farmers in the Lower Yellowstone Project, and costs taxpayers the least amount of money over the long term. The only alternatives that meet those criteria are the two open river alternatives that involve removing Intake Dam from the river and replacing its function with a reliable irrigation pump system powered by clean energy.

Thank you for considering my comments.

Sincerely,

Elise Adibi

From: Katie Harris
To: CENWO-Planning
Subject: [EXTERNAL] Important! Comment on Intake Diversion Dam DEIS
Date: Sunday, July 17, 2016 9:05:43 AM

Dear U.S. Army Corps of Engineers,

Hello,

1 I'm writing you today as a fly fisherman, kayaker, and lover of public lands. I cherish free-flowing rivers and all the benefits they provide to people and wildlife. Therefore, I urge the Corps to select one of the “open river” alternatives in the DEIS on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River.

2 For more than a century, Intake Diversion Dam has blocked upstream passage for federally endangered pallid sturgeon and dozens of other native fish species in the Lower Yellowstone River. Removing the dam not only would open up 165 miles of the mainstem Lower Yellowstone River to migrating fish, but it would also give fish access to hundreds of additional miles of tributaries such as the Powder and Tongue rivers. The importance if that access should not go overlooked!

3 While I strongly favor restoring a free-flowing river to benefit native fish, I believe it’s also vital that the Corps address the needs of farmers who currently rely on Intake Dam to divert river water to irrigate 54,000 acres of crops in the Lower Yellowstone Project. Based on the information presented in the DEIS, these needs can reasonably be met by constructing irrigation pumps along the river that would be powered by clean, renewable, locally-produced energy such as wind power.

4 This would not be the first time that a dam has been removed and its function replaced with irrigation pumps. A very similar project to what is being considered on the Lower Yellowstone recently was implemented at Savage Rapids Dam on the Rogue River in Oregon. That project resulted in a win-win-win for fish, farmers, and taxpayers.

In closing, I urge the Corps to select an alternative that has a high probability of meeting the needs of native fish, meeting the needs of farmers in the Lower Yellowstone Project, and costs taxpayers the least amount of money over the long term. The only alternatives that meet those criteria are the two open river alternatives that involve removing Intake Dam from the river and replacing its function with a reliable irrigation pump system powered by clean energy.

Thank you for considering my comments.

Sincerely,

Katie Harris

From: A Bonvouloir
To: CENWO-Planning
Subject: [EXTERNAL] improving fish passage on the lower Yellowstone River
Date: Sunday, July 17, 2016 8:28:17 AM

Dear U.S. Army Corps of Engineers,

1 Take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

A Bonvouloir

BP-112

From: Grace Strong
To: CENWO-Planning
Subject: [EXTERNAL] Intake dam
Date: Sunday, July 17, 2016 8:25:48 AM

Dear U.S. Army Corps of Engineers,

1 I urge you to remove Intake Dam and replace it with an irrigation pump system.

Sincerely,

Grace Strong

From: Jeffrey Freilich
To: CENWO-Planning
Subject: [EXTERNAL] Intake Dam
Date: Sunday, July 17, 2016 8:22:29 AM

Dear U.S. Army Corps of Engineers,

1 U.S. Army Corps to take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Jeffrey Freilich

From: Charity Moschopoulos
To: CENWO-Planning
Subject: [EXTERNAL] Intake Dam
Date: Sunday, July 17, 2016 8:23:17 AM

Dear U.S. Army Corps of Engineers,

1 Take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Charity Moschopoulos

From: Elaine Donovan
To: CENWO-Planning
Subject: [EXTERNAL] Intake Dam
Date: Sunday, July 17, 2016 8:25:47 AM

Dear U.S. Army Corps of Engineers,

1 The needs of the pallid sturgeon and other native fish will be met by taking out the dam. An irrigation pump system will guarantee their survival.

Sincerely,

Elaine Donovan

From: susan thompson
To: CENWO-Planning
Subject: [EXTERNAL] Intake Dam
Date: Sunday, July 17, 2016 8:28:18 AM

Dear U.S. Army Corps of Engineers,

1 The above-subject to be replaced with an irrigation pump system guarantee to meet the needs of pallid sturgeon and other native fish.

Sincerely,

susan thompson

From: Sharon S. Porter
To: CENWO-Planning
Subject: [EXTERNAL] intake dam
Date: Sunday, July 17, 2016 8:26:10 AM

Dear U.S. Army Corps of Engineers,

1 Take it out to meet needs of native fish.

Sincerely,

Sharon S. Porter

From: Deb Adler
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam: PLEASE!
Date: Sunday, July 17, 2016 9:14:01 AM

Dear U.S. Army Corps of Engineers,

1 please save endangered species and choose one of the “open river” alternatives in the DEIS on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River.

2 For more than a century, Intake Diversion Dam has blocked upstream passage for federally endangered pallid sturgeon and dozens of other native fish species in the Lower Yellowstone River. Removing the dam not only would open up 165 miles of the mainstem Lower Yellowstone River to migrating fish, but it would also give fish access to hundreds of additional miles of tributaries such as the Powder and Tongue rivers.

3 While I strongly favor restoring a free-flowing river to benefit native fish, I believe it’s also vital that the Corps address the needs of farmers who currently rely on Intake Dam to divert river water to irrigate 54,000 acres of crops in the Lower Yellowstone Project. Based on the information presented in the DEIS, these needs can reasonably be met by constructing irrigation pumps along the river that would be powered by clean, renewable, locally-produced energy such as wind power.

4 This would not be the first time that a dam has been removed and its function replaced with irrigation pumps. A very similar project to what is being considered on the Lower Yellowstone recently was implemented at Savage Rapids Dam on the Rogue River in Oregon. That project resulted in a win-win-win for fish, farmers, and taxpayers.

In closing, I urge the Corps to select an alternative that has a high probability of meeting the needs of native fish, meeting the needs of farmers in the Lower Yellowstone Project, and costs taxpayers the least amount of money over the long term. The only alternatives that meet those criteria are the two open river alternatives that involve removing Intake Dam from the river and replacing its function with a reliable irrigation pump system powered by clean energy.

Thank you for considering my comments.

Sincerely,

Deb Adler

From: Anne5112480000617660 Craig
To: CENWO-Planning
Subject: [EXTERNAL] Irrigation Pump System for Lower Yellowstone River
Date: Sunday, July 17, 2016 8:25:51 AM

Dear U.S. Army Corps of Engineers,

1 In the interests of protecting pallid sturgeon and other native fish who live in the Lower Yellowstone River, I ask you to replace the Intake Dam with an irrigation pump system. Thank you.

Sincerely,

Anne5112480000617660 Craig

From: Jane Steinberg
To: CENWO-Planning
Subject: [EXTERNAL] It"s a shared resource and a shared future
Date: Sunday, July 17, 2016 8:31:16 AM

Dear U.S. Army Corps of Engineers,

1 Every species imperiled and lost diminishes all of those that remain, including us humans. Please help keep these native species survive. Don't build the dam; pump the water.

Sincerely,

Jane Steinberg

From: Randolph Schoedler
To: CENWO-Planning
Subject: [EXTERNAL] Lower Colorado
Date: Sunday, July 17, 2016 8:23:43 AM

Dear U.S. Army Corps of Engineers,

1 Take out the Intakle Dam and allow native species to live.

Sincerely,

Randolph Schoedler

From: Dale Danielson
To: CENWO-Planning
Subject: [EXTERNAL] Lower Yellowstone diversion dam at Intake Mt
Date: Sunday, July 17, 2016 9:37:37 AM

---

1 As a wife, mother and grandmother, I am in favor of replacing the diversion dam and installing a fish bypass channel.

2 My husbands father settled in the semi arid Lower Yellowstone Valley in 1917 and started farming because of irrigation water, we are now 4th generation farmers with my husband, three sons and two grandsons farming under this irrigation project. This entire irrigation project is made up of family farms like ours. The thought of not having irrigation is causing much stress on our family and all others in the valley.

3 Before the fish screens were installed at Intake it was common to find fish including pallid sturgeon in our irrigation ditches, so some were making it over the diversion dam.

If the dam is removed, the cost of pumping from the ever changing Yellowstone River will make irrigation unaffordable.

The meeting at Billings was at the very worst time of the year and many irrigators could not attend to voice there concerns .

Diane D

From: tammy king
To: CENWO-Planning
Subject: [EXTERNAL] lower yellowstone rive
Date: Sunday, July 17, 2016 8:31:11 AM

Dear U.S. Army Corps of Engineers,

1 protect the yellowstone river by removing the lower dam on this river

Tammy King

Sincerely,

tammy king

From: Bonnie Mc Cune
To: CENWO-Planning
Subject: [EXTERNAL] LOWER YELLOWSTONE RIVER
Date: Sunday, July 17, 2016 8:26:32 AM

Dear U.S. Army Corps of Engineers,

1 Please take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Bonnie Mc Cune

From: Glenn Letourneau JR
To: CENWO-Planning
Subject: [EXTERNAL] Lower Yellowstone River Sturgeon.
Date: Sunday, July 17, 2016 8:28:09 AM

Dear U.S. Army Corps of Engineers,

1 In a time of world wide species decline, mostly at the hands of human activity, it behooves us to do whatever actions we can to protect the species that are threatened or endangered, to the best of our abilities. Please protect the Sturgeon in the Lower Yellowstone river!

Sincerely,

Glenn Letourneau JR

From: Martha Novak
To: CENWO-Planning
Subject: [EXTERNAL] Lower Yellowstone River
Date: Sunday, July 17, 2016 8:28:13 AM

Dear U.S. Army Corps of Engineers,

1 Please take out the diversion dam and add an irrigation pump system. This will be the best and, indeed, only solution to help native fish in the lower Yellowstone River.

Thank you.

Sincerely,

Martha Novak

From: Julie McCarroll
To: CENWO-Planning
Subject: [EXTERNAL] Lower Yellowstone River
Date: Sunday, July 17, 2016 8:28:02 AM

Dear U.S. Army Corps of Engineers,

1 Take out the Intake Dam and replace its function with an irrigation pump system. It's the only solution that is gauranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Julie McCarroll

From: Leslie Leslie
To: CENWO-Planning
Subject: [EXTERNAL] Lower Yellowstone
Date: Sunday, July 17, 2016 8:32:00 AM

Dear U.S. Army Corps of Engineers,

1 Please take out Intake Dam across the lower Yellowstone and replace its function with an irrigation pump system. It is the only way to guarantee the safety and meet the needs of the pallid sturgeon and other native fish. Dams are a relic of the last century. We have learned that from all the safer solutions.

Please be wise with all our resources.

Sincerely,

Leslie Leslie

From: Barton Grimm
To: CENWO-Planning
Subject: [EXTERNAL] Nature
Date: Sunday, July 17, 2016 8:23:19 AM

Dear U.S. Army Corps of Engineers,

1 Undo the damage that your greed has caused.

Sincerely,

Barton Grimm

From: Michael Eichenholtz
To: CENWO-Planning
Subject: [EXTERNAL] No diversion dam
Date: Sunday, July 17, 2016 8:31:16 AM

Dear U.S. Army Corps of Engineers,

1 Please remove any new concrete dam across the Yellowstone River and consider using an irrigation pump instead. Both farmers and the pallid sturgeon will benefit.

Thank you,
Michael Eichenholtz

Sincerely,

Michael Eichenholtz

From: Sherri Hancock
To: CENWO-Planning
Subject: [EXTERNAL] Pallid sturgeon
Date: Sunday, July 17, 2016 8:31:17 AM

Dear U.S. Army Corps of Engineers,

1 Please remove the intake dam on the Yellowstone and replace it with an irrigation pump system. The Sturgeon are counting on you to do the right thing and so are the American people. A bypass channel may not work.

Sincerely,

Sherri Hancock

From: Sara & Norm Bell
To: CENWO-Planning
Subject: [EXTERNAL] Pallis Sturgeon - Yellowstone River
Date: Sunday, July 17, 2016 8:33:15 AM

Dear U.S. Army Corps of Engineers,

1 Important decisions require careful consideration of all stakeholders. You know that. The pallid sturgeon is not able to sit in negotiations and plead for it's survival. Intake Dam can be removed and an irrigation pump system installed that provides agricultural water AND critical habitat for this endangered species.
. Unintended consequences and collateral damage are terms that apply to planning without vision.Please reconsider your Yellowstone River Intake Dam plans and plan WITH all stakeholders in mind

Sincerely,

Sara & Norm Bell

From: Carol Facey
To: CENWO-Planning
Subject: [EXTERNAL] Please Help Close Guantanamo
Date: Sunday, July 17, 2016 8:31:09 AM

Dear U.S. Army Corps of Engineers,

1 The only thing that Guantanamo has revealed, is mans inhumanity to his fellow men. It's "time" to close this dark chapter in our story!

Sincerely,

Carol Facey

From: Connor Wilkinson
To: CENWO-Planning
Subject: [EXTERNAL] Please protect our natural world
Date: Sunday, July 17, 2016 8:25:46 AM

Dear U.S. Army Corps of Engineers,

1 This issue correlates with the bigger issue we have of human and wild interaction in a developed society. Please let us do our part in restoring, protecting, and valuing the natural world that we need deeply to continue surviving as humans.

Sincerely,

Connor Wilkinson

From: Kristi Johnson Michiels
To: CENWO-Planning
Subject: [EXTERNAL] Please remove the dam!
Date: Sunday, July 17, 2016 8:25:48 AM

Dear U.S. Army Corps of Engineers,

1 Restore a more natural solution to save these important fish and the river system.

Sincerely,

Kristi Johnson Michiels

From: Meryl Pinque
To: CENWO-Planning
Subject: [EXTERNAL] Please restore the Lower YELLOWSTONE RIVER
Date: Sunday, July 17, 2016 8:25:49 AM

Dear U.S. Army Corps of Engineers,

Dear Madam, dear Sir,

Most people know the Yellowstone River as the longest free-flowing river in the lower 48 states. While that's technically true, there are six low-head diversion dams on the river between Billings and its confluence with the Missouri River that divert water for irrigation. These diversion dams have had serious consequences for the 52 fish species that inhabit the lower river.

Last month, the U.S. Army Corps of Engineers and U.S. Bureau of Reclamation released a draft plan for improving
fish passage on the lower Yellowstone River. The agencies' preferred alternative is to build a new concrete dam
1 across the width of the Yellowstone River and construct an artificial bypass channel in hopes that pallid sturgeon
and other native fish will use it. But most fisheries scientists are deeply skeptical of this plan. There has never been a
fish passage project built that has been shown to successfully pass pallid sturgeon.

The best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower
2 Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been in
other areas across the country, including along the Yellowstone River.

I tell the U.S. Army Corps to take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Meryl Pinque

From: Larry Sanazaro
To: CENWO-Planning
Subject: [EXTERNAL] Protect an irreplaceable national treasure
Date: Sunday, July 17, 2016 9:20:08 AM

Dear U.S. Army Corps of Engineers,

1 As someone who cherishes free-flowing rivers and all the benefits they provide to people and wildlife, I urge the Corps to select one of the “open river” alternatives in the DEIS on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River.

2 For more than a century, Intake Diversion Dam has blocked upstream passage for federally endangered pallid sturgeon and dozens of other native fish species in the Lower Yellowstone River. Removing the dam not only would open up 165 miles of the mainstem Lower Yellowstone River to migrating fish, but it would also give fish access to hundreds of additional miles of tributaries such as the Powder and Tongue rivers.

3 While I strongly favor restoring a free-flowing river to benefit native fish, I believe it’s also vital that the Corps address the needs of farmers who currently rely on Intake Dam to divert river water to irrigate 54,000 acres of crops in the Lower Yellowstone Project. Based on the information presented in the DEIS, these needs can reasonably be met by constructing irrigation pumps along the river that would be powered by clean, renewable, locally-produced energy such as wind power.

4 This would not be the first time that a dam has been removed and its function replaced with irrigation pumps. A very similar project to what is being considered on the Lower Yellowstone recently was implemented at Savage Rapids Dam on the Rogue River in Oregon. That project resulted in a win-win-win for fish, farmers, and taxpayers.

In closing, I urge the Corps to select an alternative that has a high probability of meeting the needs of native fish, meeting the needs of farmers in the Lower Yellowstone Project, and costs taxpayers the least amount of money over the long term. The only alternatives that meet those criteria are the two open river alternatives that involve removing Intake Dam from the river and replacing its function with a reliable irrigation pump system powered by clean energy.

Thank you for considering my comments.

Sincerely,

Larry Sanazaro

From: George Sidoti
To: CENWO-Planning
Subject: [EXTERNAL] Protect the River and its inhabitants
Date: Sunday, July 17, 2016 8:22:15 AM

Dear U.S. Army Corps of Engineers,

1 All Rivers Matter!

Sincerely,

George Sidoti

From: Briana Amberger
To: CENWO-Planning
Subject: [EXTERNAL] Protection
Date: Sunday, July 17, 2016 8:26:12 AM

Dear U.S. Army Corps of Engineers,

1 Please protect our natural, God-given resources.

Sincerely,

Briana Amberger

From: Patricia DeLuca
To: CENWO-Planning
Subject: [EXTERNAL] Pumping Needed
Date: Sunday, July 17, 2016 8:26:11 AM

Dear U.S. Army Corps of Engineers,

1 To the U.S. Army Corps , take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Patricia DeLuca

From: James Ulness
To: CENWO-Planning
Subject: [EXTERNAL] reclamation
Date: Sunday, July 17, 2016 8:28:04 AM

Dear U.S. Army Corps of Engineers,

1 Please restore the Lower Yellowstone River.

Sincerely,

James Ulness

From: Nancy Smith
To: CENWO-Planning
Subject: [EXTERNAL] Remove Intake Dam
Date: Sunday, July 17, 2016 8:28:17 AM

Dear U.S. Army Corps of Engineers,

1 Please take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Nancy Smith

From: Kimberly Hart
To: CENWO-Planning
Subject: [EXTERNAL] Remove Intake Dam
Date: Sunday, July 17, 2016 8:32:30 AM

Dear U.S. Army Corps of Engineers,

1 I agree with fisheries scientists that the intake dam on the Yellowstone River should be removed and replaced it with an irrigation pump system. We are already losing so much biodiversity on this planet and it's in our own best interest to preserve and protect the species we still have.

Thank you.

Sincerely,

Kimberly Hart

BP-144

From: Gavin Dillard
To: CENWO-Planning
Subject: [EXTERNAL] Remove Intake Dam
Date: Sunday, July 17, 2016 8:21:52 AM

Dear U.S. Army Corps of Engineers,

1 Time to take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish. This has been a success in other areas across the country, including along the Yellowstone River.

Sincerely,

Gavin Dillard

From: Debi Holt
To: CENWO-Planning
Subject: [EXTERNAL] Remove the Lower Yellowstone River Dam
Date: Sunday, July 17, 2016 8:31:02 AM

Dear U.S. Army Corps of Engineers,

1 Please remove the Lower Yellowstone River Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Debi Holt

From: John and Rose Martin
To: CENWO-Planning
Subject: [EXTERNAL] Restore lower Yellowstone River
Date: Sunday, July 17, 2016 8:27:59 AM

Dear U.S. Army Corps of Engineers,

1 we urge you to take out the Intake Dam and replace with an irrigation pump system. The fish must live too. We urge you.

Sincerely,

John and Rose Martin

From: Sharron Stewart
To: CENWO-Planning
Subject: [EXTERNAL] Restore lower Yellowstone river
Date: Sunday, July 17, 2016 8:31:15 AM

Dear U.S. Army Corps of Engineers,

1 COE, & BOR

Sincerely,

Sharron Stewart

From: Joseph Candelaria
To: CENWO-Planning
Subject: [EXTERNAL] Restore the lower Yellowstone River
Date: Sunday, July 17, 2016 8:23:32 AM

Dear U.S. Army Corps of Engineers,

1 Please rethink this. Dams are not the answer.

Sincerely,

Joseph Candelaria

From: Margaret Richards
To: CENWO-Planning
Subject: [EXTERNAL] RESTORE THE LOWER YELLOWSTONE RIVER
Date: Sunday, July 17, 2016 8:25:52 AM

Dear U.S. Army Corps of Engineers,

Since the lowermost diversion dam on the river was built over a century ago, no wild pallid sturgeon have
1 successfully reproduced in the river. Pallid sturgeon need long stretches of free-flowing river in which to migrate up, spawn, and let their larvae drift downstream until they mature. Right now, their larvae drift into a downstream reservoir where they perish.

2 The best option to restore native fish including the pallid sturgeon would be to remove Intake Dam and provide an open river for lower Yellowstone River.

Please do it!!!

Sincerely,

Margaret Richards

From: Martha Adams
To: CENWO-Planning
Subject: [EXTERNAL] Restore the lower Yellowstone River
Date: Sunday, July 17, 2016 8:28:10 AM

Dear U.S. Army Corps of Engineers,

The Yellowstone River diversion dams have had serious consequences for the 52 fish species that inhabit the lower river, especially on the pallid sturgeon.

1 The best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been in other areas across the country, including along the Yellowstone River.

Please, U.S. Army Corps, take out the Intake Dam and replace its function with an irrigation pump system.

It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Martha Adams

From: Lisa Hughes
To: CENWO-Planning
Subject: [EXTERNAL] RESTORE THE LOWER YELLOWSTONE RIVER
Date: Sunday, July 17, 2016 8:23:49 AM

Dear U.S. Army Corps of Engineers,

1 The best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been in other areas across the country, including along the Yellowstone River. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Lisa Hughes

From: Mary McGaughey
To: CENWO-Planning
Subject: [EXTERNAL] Restore the Yellowstone lower River.
Date: Sunday, July 17, 2016 8:31:19 AM

Dear U.S. Army Corps of Engineers,

1 Engineers, find a way to restore the lower Yellowstone river. Find a way to engineer supporting all life forms AND the integrity of the Yellowstone River.

Sincerely,

Mary McGaughey

From: Angeline Albright
To: CENWO-Planning
Subject: [EXTERNAL] River
Date: Sunday, July 17, 2016 8:25:51 AM

Dear U.S. Army Corps of Engineers,

1 As more & more of God's creatures are disappearing let us work wisely to keep those remaining.

Sincerely,

Angeline Albright

From: Audrey Moskowitz
To: CENWO-Planning
Subject: [EXTERNAL] Rivers
Date: Sunday, July 17, 2016 8:28:16 AM

Dear U.S. Army Corps of Engineers,

1 Remove the Intake Dam.
Many thanks.

Sincerely,

Audrey Moskowitz

From: Camie Rodgers
To: CENWO-Planning
Subject: [EXTERNAL] Save Sturgeon
Date: Sunday, July 17, 2016 8:28:20 AM

Dear U.S. Army Corps of Engineers,

1 Please take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Camie Rodgers

From: Jill Orsatti
To: CENWO-Planning
Subject: [EXTERNAL] Save the fish and river
Date: Sunday, July 17, 2016 8:22:33 AM

Dear U.S. Army Corps of Engineers,

1 Yellowstone is amazing and needs to be preserved as much as possible. Please help reverse the damage.

Sincerely,

Jill Orsatti

From: Laura Pitt Taylor
To: CENWO-Planning
Subject: [EXTERNAL] Save the Gila River once and for all.
Date: Sunday, July 17, 2016 9:04:07 AM

Dear U.S. Army Corps of Engineers,

1 As someone who cherishes free-flowing rivers and all the benefits they provide to people and wildlife, I urge the Corps to select one of the “open river” alternatives in the DEIS on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River.

2 For more than a century, Intake Diversion Dam has blocked upstream passage for federally endangered pallid sturgeon and dozens of other native fish species in the Lower Yellowstone River. Removing the dam not only would open up 165 miles of the mainstem Lower Yellowstone River to migrating fish, but it would also give fish access to hundreds of additional miles of tributaries such as the Powder and Tongue rivers.

3 While I strongly favor restoring a free-flowing river to benefit native fish, I believe it’s also vital that the Corps address the needs of farmers who currently rely on Intake Dam to divert river water to irrigate 54,000 acres of crops in the Lower Yellowstone Project. Based on the information presented in the DEIS, these needs can reasonably be met by constructing irrigation pumps along the river that would be powered by clean, renewable, locally-produced energy such as wind power.

4 This would not be the first time that a dam has been removed and its function replaced with irrigation pumps. A very similar project to what is being considered on the Lower Yellowstone recently was implemented at Savage Rapids Dam on the Rogue River in Oregon. That project resulted in a win-win-win for fish, farmers, and taxpayers.

In closing, I urge the Corps to select an alternative that has a high probability of meeting the needs of native fish, meeting the needs of farmers in the Lower Yellowstone Project, and costs taxpayers the least amount of money over the long term. The only alternatives that meet those criteria are the two open river alternatives that involve removing Intake Dam from the river and replacing its function with a reliable irrigation pump system powered by clean energy.

Thank you for considering my comments.

Sincerely,

Laura Pitt Taylor

From: Doug Mishler
To: CENWO-Planning
Subject: [EXTERNAL] Sturgeon (and other Native Fish)
Date: Sunday, July 17, 2016 8:34:46 AM

Dear U.S. Army Corps of Engineers,

1 We have been through this cycle of trying to alter Nature enough times to have (hopefully) learned our lesson. When we screw with Nature, she screws back. And never to our benefit.

Sincerely,

Doug Mishler

From: Dirk Rogers
To: CENWO-Planning
Subject: [EXTERNAL] Sturgeon
Date: Sunday, July 17, 2016 8:31:11 AM

Dear U.S. Army Corps of Engineers,

1 Most fisheries scientists are skeptical of the plan to dam and construct an artificial bypass channel on the Yellowstone River.The best solution would be to take out the diversion dam and add an irrigation pump system. We can't continue to destroy our natural inheritance without terrible consequences.

Sincerely,

Dirk Rogers

From: elizabeth treat
To: CENWO-Planning
Subject: [EXTERNAL] take out diversion dam
Date: Sunday, July 17, 2016 8:31:19 AM

Dear U.S. Army Corps of Engineers,

1 U.S. Army Corps take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

elizabeth treat

From: Joe Muscara
To: CENWO-Planning
Subject: [EXTERNAL] take out Intake Dam and replace its function with an irrigation pump system
Date: Sunday, July 17, 2016 8:28:07 AM

Dear U.S. Army Corps of Engineers,

1 Please take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Joe Muscara

From: sonja chan
To: CENWO-Planning
Subject: [EXTERNAL] Take out intake dam on lower Yellowstone River
Date: Sunday, July 17, 2016 8:31:12 AM

Dear U.S. Army Corps of Engineers,

The best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower
1 Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been in
other areas across the country, including along the Yellowstone River. Preserving species is vitally important and
should be the first priority to be considered.

Sincerely,

sonja chan

From: Chris Joslyn
To: CENWO-Planning
Subject: [EXTERNAL] Take out Intake Dam
Date: Sunday, July 17, 2016 8:31:20 AM

Dear U.S. Army Corps of Engineers,

1 Please reconsider your plan to build a fish passage for the pallid sturgeon and other native fish. Basing a plan on a hope is not cost efficient or based on evidence that it will work. Please look carefully at what has been done with irrigation pump systems in other parts of the country to find a better solution for both fish species and the irrigation needs of farmers. Thank-you.

Sincerely,

Chris Joslyn

From: Vic Bostock
To: CENWO-Planning
Subject: [EXTERNAL] Take out Intake Dam
Date: Sunday, July 17, 2016 8:28:17 AM

Dear U.S. Army Corps of Engineers,

1 Tell the U.S. Army Corps to take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon, other native fish and farmers.

Sincerely,

Vic Bostock

From: Sean Sellers
To: CENWO-Planning
Subject: [EXTERNAL] Take out the Intake Dam
Date: Sunday, July 17, 2016 8:21:54 AM

Dear U.S. Army Corps of Engineers,

The best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower
1 Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been in
other areas across the country, including along the Yellowstone River.

Sincerely,

Sean Sellers

From: Anthony Capobianco
To: CENWO-Planning
Subject: [EXTERNAL] TELL THE CORPS TO RESTORE THE LOWER YELLOWSTONE RIVER
Date: Sunday, July 17, 2016 8:23:17 AM

Dear U.S. Army Corps of Engineers,

1 Tell the U.S. Army Corps to take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Anthony Capobianco

From: Paul Kerman
To: CENWO-Planning
Subject: [EXTERNAL] The Lower Yellowstone River
Date: Sunday, July 17, 2016 8:26:16 AM

Dear U.S. Army Corps of Engineers,

1 Take out the Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Paul Kerman

From: Matt Woolery
To: CENWO-Planning
Subject: [EXTERNAL] WIld AMerica
Date: Sunday, July 17, 2016 8:25:49 AM

Dear U.S. Army Corps of Engineers,

1 America is not America without wild America. And this kind of action serves only the people who do not care about wild America, and whose greed is off the charts.
That is too mean for the people.

Sincerely,

Matt Woolery

From: Erin Parker
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone Dam
Date: Sunday, July 17, 2016 8:28:21 AM

Dear U.S. Army Corps of Engineers,

1 Please consider the livelihood of the endangered species that already rely on the Yellowstone River before placing a dam on the river. As noted above, irrigation pumps can better serve these species and the farmers nearby than a dam could.

Sincerely,

Erin Parker

From: William Skirbunt-Kozabo
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone Intake Dam
Date: Sunday, July 17, 2016 8:31:06 AM

Dear U.S. Army Corps of Engineers,

I am writing to urge you to remove Intake Dam from the Yellowstone River and replace it with an irrigation pump
1 system. This is the only solution that is guaranteed to meet the needs of endangered pallid sturgeon and other native
fish. There has never been a fish passage project built that has been shown to successfully pass pallid sturgeon.

Sincerely,

William Skirbunt-Kozabo

From: Joan Bailey
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone river
Date: Sunday, July 17, 2016 8:31:09 AM

Dear U.S. Army Corps of Engineers,

1 take out the intake dam an replace it with a suitable pump system. We must save this river and the fish that call it home.

Sincerely,

Joan Bailey

From: pat delapena
To: CENWO-Planning
Subject: [EXTERNAL] yellowstone river
Date: Sunday, July 17, 2016 8:25:53 AM

Dear U.S. Army Corps of Engineers,

1 restore

Sincerely,

pat delapena

From: Marilyn Lee
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone River
Date: Sunday, July 17, 2016 8:23:31 AM

Dear U.S. Army Corps of Engineers,

1 U.S. Army Corps please take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Marilyn Lee

From: Barbara OConnor
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone River Intake Dam
Date: Sunday, July 17, 2016 8:31:10 AM

Dear U.S. Army Corps of Engineers,

1 Take out Intake Dam and replace it's function with an irrigation pump system.

Sincerely,

Barbara OConnor

BP-175

From: Paul Maiden Mueller
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone River project
Date: Sunday, July 17, 2016 8:31:08 AM

Dear U.S. Army Corps of Engineers,

I would like to ask you to change plans to build a new diversion dam and bypass channel at the Intake Dam on the
1 Lower Yellowstone River and replace the planned dam with an irrigation pump system. This is the only thing that
will allow species such as the pallid sturgeon to successfully pass upstream.
Thank you for your consideration of my opinion.

Sincerely,

Paul Maiden Mueller

BP-176

From: Tanya Roland
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone River
Date: Sunday, July 17, 2016 8:25:47 AM

Dear U.S. Army Corps of Engineers,

1 It should be the task of the Corp. to purify and restore every river in the nation making it healthy for their native species and for us - including the Yellowstone.

Sincerely,

Tanya Roland

From: Elizabeth Duvert
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone River
Date: Sunday, July 17, 2016 8:25:49 AM

Dear U.S. Army Corps of Engineers,

1 Please do everything you can to protect the sturgeon and other native fish that live in the Yellowstone. Keep those waters flowing.

Sincerely,

Elizabeth Duvert

From: tia pearson
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone River
Date: Sunday, July 17, 2016 8:28:06 AM

Dear U.S. Army Corps of Engineers,

Last month, the U.S. Army Corps of Engineers and U.S. Bureau of Reclamation released a draft plan for improving fish passage on the lower Yellowstone River. The agencies' preferred alternative is to build a new concrete dam
across the width of the Yellowstone River and construct an artificial bypass channel in hopes that pallid sturgeon
1 and other native fish will use it. But most fisheries scientists are deeply skeptical of this plan. There has never been a fish passage project built that has been shown to successfully pass pallid sturgeon. Also, dams have been shown to mess up the environment.

The best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower
2 Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been in other areas across the country, including along the Yellowstone River.

Please take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

tia pearson

From: David Henning
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone River
Date: Sunday, July 17, 2016 8:28:00 AM

Dear U.S. Army Corps of Engineers,

1 There must be a better way to provide water for irrigation!

Sincerely,

David Henning

From: Julie Griffith
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone River
Date: Sunday, July 17, 2016 8:42:07 AM

Dear U.S. Army Corps of Engineers,

1 Please take out the dam in the lower river and replace an irrigation pump system.?you are doing irreparable harm to the fish there, especially the sturgeon.
Do the right thing!

Sincerely,

Julie Griffith

From: Ronis Bollinger
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone River
Date: Sunday, July 17, 2016 8:31:20 AM

Dear U.S. Army Corps of Engineers,

Take out the Intake Dam and replace it with an irrigation pump system! Save the pallid sturgeon and other native
1 fish! Humans must cease being so myopic and think instead of the future.
Thank you.
Sincerely,
Roni Bollinger

Sincerely,

Ronis Bollinger

From: Linda Hartman
To: CENWO-Planning
Subject: [EXTERNAL] YELLOWSTONE RIVER
Date: Sunday, July 17, 2016 8:31:10 AM

Dear U.S. Army Corps of Engineers,

1 PLEASE take out the Intake Dam and replace its function with an irrigation pump system on the Yellowstone River. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.

Sincerely,

Linda Hartman

From: J A Loving
To: CENWO-Planning
Subject: [EXTERNAL] Your Plan for Concrete Dam across Lower Yellowstone River
Date: Sunday, July 17, 2016 8:37:50 AM

Dear U.S. Army Corps of Engineers,

I understand that the U.S. Army Corps of Engineers, together with the U.S. Bureau of Reclamation have recently
released a draft plan for ostensibly improving fish passage on the lower Yellowstone River. I believe the plant's
1 preferred alternative--to build a new concrete dam across the width of the Yellowstone River and construct an
artificial bypass channel in hopes that pallid sturgeon and other native fish will use it--is seriously flawed.

Most fisheries scientists are deeply skeptical of this plan. There has never been a fish passage project built that has
2 been shown to successfully pass pallid sturgeon. In addition, a concrete dam will be expensive and a failure if the
fish aren't able to overcome the obstacles the dam will present. Urgent consultation with the departments with
3 expertise in fish and wildlife management and in assessing environmental impacts of the proposed alternative is
certainly essential before a final decision.

I believe the best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower
4 Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been done in
other areas across the country, including along the Yellowstone River.

This approach is a balanced approach, one that should be considerably cheaper than the concrete dam, and the only solution guaranteed to meet the needs of pallid sturgeon and other native fish and the farmers who use the river to irrigate their crops.

I ask both agencies to reconsider the current proposed alternative and proceed with removal of the diversion dam & installation of an irrigation pump system.

Sincerely,

J A Loving

From: Chris Lish
To: CENWO-Planning
Subject: [EXTERNAL] Save the endangered pallid sturgeon by providing access to their breeding grounds -- Environmental Impact Statements; Availability, etc.: Lower Yellowstone Intake Diversion Dam Fish Passage Project, Dawson County, MT (ID: COE-2008-0037-0002)
Date: Monday, July 18, 2016 9:50:00 AM

Monday, July 18, 2016

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Ave
Omaha, NE 68102

Subject: Save the endangered pallid sturgeon by providing access to their breeding grounds -- Environmental Impact Statements; Availability, etc.: Lower Yellowstone Intake Diversion Dam Fish Passage Project, Dawson County, MT (ID: COE-2008-0037-0002)

Dear U.S. Army Corps of Engineers and Bureau of Reclamation,

Thank you for the opportunity to comment on the Lower Yellowstone Fish Passage Project in Montana. I support an open river alternative for the Lower Yellowstone Fish Passage Project.

“Our duty to the whole, including to the unborn generations, bids us to restrain an unprincipled present-day minority from wasting the heritage of these unborn generations. The movement for the conservation of wildlife and the larger movement for the conservation of all our natural resources are essentially democratic in spirit, purpose and method.”
-- Theodore Roosevelt

1 Your own analysis shows that the best outcome for the endangered pallid sturgeon from this project is to remove the outdated Intake Dam, open the river and allow full river passage. I do not support building a new dam and artificial bypass, as the likelihood that endangered pallid sturgeon will use it is slim. The pallid sturgeon needs all the help it can get.

“Every man who appreciates the majesty and beauty of the wilderness and of wild life, should strike hands with the farsighted men who wish to preserve our material resources, in the effort to keep our forests and our game beasts, game-birds, and game-fish—indeed, all the living creatures of prairie and woodland and seashore—from wanton destruction. Above all, we should realize that the effort toward this end is essentially a democratic movement.”
-- Theodore Roosevelt

2 Please adopt an alternative that removes the dam, provides pumps or other means to get irrigators water and gives the pallid sturgeon a fighting chance. Spending taxpayer dollars on an alternative that won't work will cost more money in the future--pay to do this right the first time.

“A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.”
-- Aldo Leopold

Thank you for your consideration of my comments. Please do NOT add my name to your mailing list. I will learn about future developments on this issue from other sources.

Sincerely,
Christopher Lish
San Rafael, CA

From: Craig Keiser
To: CENWO-Planning
Subject: [EXTERNAL] Comment on Draft Yellowstone Intake Diversion Dam
Date: Tuesday, July 19, 2016 1:35:15 PM

Hello,
Thank you for allowing comments on this proposed project. To summarize my thoughts in a short message as I
1 know you've received many detailed comments are ultimately this. Much more needs to be researched and
determined regarding the migration of pallid sturgeon upstream and the struggle for them of getting beyond this
intake dam to spawn. For them to accomplish this feat, I would modify the pumping option proposed as there are
other choices available that would be inexpensive, simple, and durable option to the current alternatives. The use of
“Hydraulic Ram Pumps” that require very low hydraulic head pressure, no expensive electrical supply, and minimal
2 maintenance for farmers would seem to be an excellent alternative that has many years of proven efficiency and
reliability behind its design. The technology behind these pumps has also greatly improved since they originated
almost 200 years ago. Thank you for taking my comments into consideration.

Craig Keiser

BP-185a

From: Jerald Bergman
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam Fish Passage Project Comments
Date: Tuesday, July 19, 2016 2:10:08 PM

Dear Sirs:

This is to support the Bypass Channel Alternative for the best option for both the Irrigated Farmers of the Lower
1 Yellowstone Valley River area and for the pallid sturgeon passage. This modification will improve the co-existence
of the upstream migration of the pallid sturgeon and at the same time supply a dependable water supply for the
irrigation of the 55,000 acres of irrigable lands. A fish hatchery dedicated to the hatching and increase of pallid
sturgeon and the release of the young pallid sturgeon in the upper reaches of the Yellowstone River would also
likely assure that the pallid sturgeon will no longer be an endangered species. Fish Biologist Brittany Trushel's
2 testimony that the diversion dams are not the real issue for pallid sturgeon's survival and the ability to raise pallid
sturgeon for release to assure their survival should also support the Bypass alternative as the best option available. It
is my opinion that the livelihood and future generations of irrigated farmer of the lower Yellowstone is as
threatened as the pallid sturgeon.

Jerry Bergman

Director, Williston Research Extension Center

North Dakota State University

Williston Research Extension Center

14120 Highway 2

Williston, ND 58801

Phone: (701) 774-4315

Mobile: (701) 770-0933

Fax: (701) 774-4307

jerald.bergman@ndsu.edu <mailto:jerald.bergman@ndsu.edu>

From: Gerry Entzel
To: CENWO-Planning
Subject: [EXTERNAL] Lower Yellowstone Project-Intake, Montana
Date: Tuesday, July 19, 2016 4:50:11 PM

I am Geraldine Entzel, born and raised in Sidney, Montana, along with my four siblings. My mother was born here in 1916 and my Granddad was a homesteader in Richland County. My husband and I have also raised five children here and we have five of our grandchildren being raise in this area. My husband was a hard working business owner and I still am employed full time at our local Credit Union.

The farmers and ranchers who own the land and use the water, not only in the Yellowstone River Valley, but throughout the United States, are true conservationists. They have to manage the land and water well because it is their livelihood, their heritage and they are feeding the nation and the world.

The information sheet I received at the meeting in Sidney, Montana June 28, 2016, states "…the Intake diversion dam has likely impeded upstream navigation…" The term, "likely", means it's just as likely it does NOT impede the pallid sturgeon.

1

There is "much ado" regarding an unremarkable fish. Other fish, including the shovelnose sturgeon, seem to be thriving in the Yellowstone River. For over 100 years the irrigation project has made our valley come alive. And the pallid sturgeon is still here and the river is still clean!

I question the motives of those who are trying to obstruct irrigation in the Yellowstone Valley and in essence kill our way of life. I question their understanding of this irrigation diversion project. There is not a huge concrete structure such as the Hoover Dam on the Colorado or the Yellowtail Dam on The Big Horn or even the earthen Fort Peck Dam on the Missouri. The Intake Diversion Project has been operating in an efficient and eco-friendly manner all of these years with about as much impact to the river or the fish as a log in the water-only better controlled.

Those who are trying to obstruct the Yellowstone Irrigation Project have no "skin in the game." Lives and livelihoods will be destroyed if they have their way. Agriculture is the number one industry in the Lower Yellowstone Valley. Those who own the land and use the water should be the voices to whom you listen. Please give full consideration to their statements and those of the Irrigation Project management as well as the employees who work with the farming community and the whole system.

I have two grandsons who hope to continue their family farming tradition as the fourth generation in the Yellowstone Valley. Please don't deny them this opportunity by making irrigation economically unfeasible or not available at all. We have chosen to live here. This is our home. The organizations who continue to bring these frivolous (in my opinion) lawsuits have more money than common sense.

Respectfully,

Geraldine Entzel

2333 S. Central Ave.

Sidney, MT 59270

406-488-3671

BP-186

From: Garth Kallevig
To: CENWO-Planning
Subject: [EXTERNAL] Lower Yellowstone Irrigation Project--Comment
Date: Wednesday, July 20, 2016 11:22:47 AM

1 Dear Sirs: I attended the public meetings several weeks ago and have been reviewing my notes and articles written with regards to these hearings. I did also testify at the Sidney and Billings meetings. My comment today has to with the lady that testified in Billings—she testified that she had studied the Pallid Sturgeon for several years in both the Yellowstone and Missouri Rivers---she testified that only 5% of the Pallid Sturgeon used the Yellowstone River and 95% used the Missouri River and the reason was that they are a “Big River” fish and the Missouri fits their spawning cycle much better than the Yellowstone River.

2 If this information was accurate, my first choice would be the “No Action” option and my second choice would be the “Fish Bypass”. The projected cost of the Fish Bypass @ approx. $50 million seems to be a ton of money for only 5% of the Pallid Sturgeon population.

Thank you,

Garth N. Kallevig

From: Pat Davis
To: CENWO-Planning
Subject: [EXTERNAL] Attn:CENWO-PM-AA
Date: Wednesday, July 20, 2016 10:54:52 AM

To Whom It May Concern,

After attending the public meeting that were held concerning the Intake Diversion Dam Fish Passage
1 Project in Glendive and Billings we would like to submit our letter of support for the fish bypass. We believe that
the fish bypass is the only feasible alternative for the project. We fully support the Bypass Channel.

Pat Davis

Secretary/Bookkeeper

Buffalo Rapids Irrigation District No. 2

From: Butch
To: CENWO-Planning
Subject: [EXTERNAL] Comment on the alternatives for the Lower Yellowstone Irrigation Project
Date: Thursday, July 21, 2016 8:07:35 AM

I live in the Lower Yellowstone Valley, and own a farm that has been irrigated by the Lower Yellowstone Irrigation Project Main Canal since it was built in the early 1900's. A good portion of my retirement income is derived from this irrigated farm land. My family has been raised and nurtured by the existence of this irrigation project since 1915. My paternal grandfather worked as a stable boy on the canal project. My father farmed land on the project in the early 1950's. And I was raised on that irrigated farm.

1 I would like to state for the record that I favor the Fish-By-Pass proposal that would divert a portion of the river channel around Joe's Island. I believe it is the best option and eventual solution to enable the pallid sturgeon's to travel further upstream to spawn, as well as continuing to deliver sufficient irrigation water to the Lower Yellowstone farming communities.

2 This is a gravity system that has proven itself to work well over a period of 100 years. It has a very low carbon footprint as compared to some of the proposals to remove the diversion dam and pump the water to the canal. The installation of new pumps on the river itself would raise the carbon footprint of our current irrigation system substantially with new power lines, construction equipment, and loss of riverine habitat for the many different types of wildlife.

Thank you for allowing me to comment.

Lynn B. Peterson
2822 3rd St NW
Sidney MT 59270

From: Garth Kallevig
To: CENWO-Planning
Subject: [EXTERNAL] Comment on the Lower Yellowstone Irrigation By-Pass proposal
Date: Thursday, July 21, 2016 2:36:20 PM

Dear Sirs---During the public meetings, Mr. Richard Cayko testified and made a few comments that really opened my eyes to the resiliency of the Pallid Sturgeon. As a farmer/irrigator and prior to the installation of “protective screens” at Intake, they encountered several Pallid Sturgeons in their lateral irrigation ditches. Because the diversion of water is upstream from the diversion dam, these fish had to have made over/under/ or through the diversion dam in order to end up in these lateral. So, #1. A certain % of the Pallid Sturgeon make it up-stream through the natural
1 By-Pass or over/under/through the diversion dam itself and #2, constructing an improved “Fish By-Pass” will increase the % of Pallid Sturgeon making it up-stream. The studies that have been done and submitted also recommend the “Fish By-Pass” option

Thank you,

garth

From: Tracy Simard
To: CENWO-Planning
Subject: [EXTERNAL] Intake inversion dam
Date: Thursday, July 21, 2016 2:54:05 PM

Dear Sirs:
I am wondering if the environmentalists have ever considered that maybe with more bald eagles, pelicans and other
birds that fish in the Yellowstone River may have something to do with the lower numbers of pallid sturgeon or if
they just automatically assume it's due to humans. We have been using this way of irrigating over 100 years now
1 and the sturgeon are not extinct. Maybe the lower numbers just have to do with mother nature. Why are they over
here causing problems once again in the first place. Didn't they do enough damage when they put a halt to clear
cutting and logging in the United States and are now killing forests full of trees and all the animals that resided
there. They haven't saved many spotted owls and whatever else they came up with to try and save. Instead they are
making the air quality across states be unhealthy for all the people living across all the states that have nothing but
smoke filled air. They destroy all the wildlife in the forests they thought they were helping. They seem to create
2 more problems than they solve. Destroying the American farmer would not be a good idea. Their pump system
would be too costly to use. It would destroy most every farmer over here.
Sincerely,

Tracy Simard

From: delivery@actionsprout.com
To: CENWO-Planning
Subject: [EXTERNAL] Save the Endangered Pallid Sturgeon
Date: Thursday, July 21, 2016 8:01:23 PM

Thank you for the opportunity to comment on the Lower Yellowstone Fish Passage Project in Montana. I support an open river alternative for the Lower Yellowstone Fish Passage Project. Your own analysis shows that the best outcome for the endangered pallid sturgeon from this project is to remove the outdated Intake Dam, open the river
1 and allow full river passage. I do not support building a new dam and artificial bypass, as the likelihood that endangered pallid sturgeon will use it is slim. The pallid sturgeon needs all the help it can get. Please adopt an alternative that removes the dam, provides pumps or other means to get irrigators water and gives the pallid sturgeon a fighting chance. Spending taxpayer dollars on an alternative that won't work will cost more money in the future - pay to do this right the first time.

From: Gabriel Furshong
To: CENWO-Planning
Subject: [EXTERNAL] Pallid Sturgeon
Date: Friday, July 22, 2016 6:14:17 PM

To Whom It May Concern:

Seventy million years ought to count for something. Please put the Yellowstone River and the ancient Pallid Sturgeon first by choosing an alternative that:

1

* Allows for a free-flowing Yellowstone River and unimpeded upstream passage for fish.
* Accommodates irrigators during low flow months with a series of pumps
* Use agency funding and additional federal appropriations, above what is currently in hand, to pay for the project as well as a trust fund to pay for pumping and maintenance costs.

Thanks,

Gabriel Furshong
Helena, MT

From: Philip Naro
To: CENWO-Planning
Subject: [EXTERNAL] The Problems at the Intake Diversion on the Yellowstone River - Fish and Irrigators Need YOUR Support
Date: Friday, July 22, 2016 1:04:41 PM
Importance: High

To Whom It May Concern:

I'm writing to you today to provide my comments about the proposed Intake Diversion dam on the Yellowstone
1 River. It's my opinion, along with many fishery professionals that this dam proposal will seriously impair spawning
for rare and endangered pallid sturgeon as well as other fish in the Yellowstone River.

The current rock weir spanning the river at Intake blocks upstream movement of sturgeon and, at times, many other species. The result: spawning and recruitment for sturgeon has failed, contributing to the diminishment of this remarkable species, which has been around for 70 million years and which includes adults that reach nearly six-feet-in length.

The successful passage at Intake will allow the fish, listed as endangered, to reach another 165 miles of river for spawning and providing significantly more drift distance for larval sturgeon, which is key to survival of newly hatched fish. I wholeheartedly oppose the construction of a permanent, concrete-capped dam at Intake, which would completely prevent upstream passage for sturgeon and all other fish species. Corps of Engineers' proposal to build a two-mile-long engineered bypass channel around the dam won't be successful as there is no evidence that sturgeon or other river fish will use constructed bypass channels.

I support an alternative solution that leaves the river free-flowing, so that sturgeon and other fish can migrate
upstream as they have for millennia, and delivering water to irrigators using a system of pumps. This would reduce
2 the period of need for the current head-gate which is trapping hatched sturgeon and other fish. I believe the water
users should be accommodated in this way, and that costs associated with changing the water delivery system should
be met using federal appropriations and a trust fund that could be established to cover pumping and future
maintenance costs.

I've heard from various fishery professionals that the agencies preferred $60 million alternative, is a risky experiment and is likely to fail for sturgeon.

Please select an alternative for pallid sturgeon that:

*	Allows for a free-flowing Yellowstone River and unimpeded upstream passage for fish.
*	Accommodates irrigators during low flow months with a series of pumps
3 *	Use agency funding and additional federal appropriations, above what is currently in hand, to pay for the project as well as a trust fund to pay for pumping and maintenance costs.

Please use common sense, listen to your constituents and stakeholders, act on behalf of the pallid sturgeon…and fix the problems at the Intake diversion on the Yellowstone River using an alternative solution that works for fish and irrigators. Thank you for your time and consideration.

Best regards,

Philip Naro

21 Crescent Point Road

Bozeman, MT 59715

From: Kurt Voight
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone diversion options
Date: Friday, July 22, 2016 3:04:28 PM

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1 Hi, I support the use of pumps for irrigation water in place of any of the alternatives being proposed at Intake in Glendive on the Yellowstone River. Kurt Voight box 543 Buffalo Jump Ranch Nye MT. 59061 kvoight@nemont.net

<Blockedhttps://www.avast.com/sig-email?utm_medium=email&utm_source=link&utm_campaign=sig-email&utm_content=emailclient&utm_term=icon> Virus-free. Blockedwww.avast.com <Blockedhttps://www.avast.com/sig-email?utm_medium=email&utm_source=link&utm_campaign=sig-email&utm_content=emailclient&utm_term=link>

From: Kirk Evenson
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone Intak
Date: Friday, July 22, 2016 12:29:41 PM

I have reviewed an Action Alert from Montana Trout Unlimited. I whole heartedly agree with MTU's assessment. The Army Corps and BuRec, should absolutely protect the pallid sturgeon by:

1
* allowing for a free-flowing Yellowstone River and unimpeded upstream passage for fish.
* Accommodate irrigators during low flow months with a series of pumps
* Use agency funding and additional federal appropriations, above what is currently in hand, to pay for the project as well as a trust fund to pay for pumping and maintenance costs.

Kirk Evenson.

Kirk D. Evenson

Marra, Evenson & Bell, P.C.

2 Railroad Square, Suite C

P.O. Box 1525

Great Falls, MT 59403-1525

Telephone: (406) 268-1000

Facsimile: (406) 761-2610

From: Mark Peterson
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone River Intake Diversion/Pallid Sturgeon
Date: Friday, July 22, 2016 1:05:50 PM

To Whom It May Concern,

1 Please support an option for the intake diversion on the Lower Yellowstone River that allows for a free-flowing Yellowstone River and unimpeded upstream passage for fish while accommodating irrigators during periods of low flows with a series of pumps. To accomplish this use Agency funding and additional federal appropriations, above what is currently in hand, to pay for the project as well as a trust fund to pay for pumping and maintenance costs.

Thank You for your consideration.

Regards,

Mark Peterson

621 N 17th Ave.

Bozeman, MT 59715

From: Scott Greer
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone River project
Date: Friday, July 22, 2016 3:37:48 PM

To Whom It May Concern,

1 I would like to voice my opinion that the Yellowstone River should remain free-flowing, allowing sturgeon and other fish species to migrate as they have for thousands of years. Please do not construct a dam at Intake or engineer a bypass for fish species, as there is no evidence this will be successful for sturgeon.

Sincerely,

Scott Greer

From: Doug Broadie
To: CENWO-Planning
Subject: [EXTERNAL] Intake diversion dam.
Date: Saturday, July 23, 2016 12:05:13 PM

Dear sirs;

1 I feel strongly that the Yellowstone does not need any more permanent diversion dams. We need to keep the Yellowstone free flowing. (In fact, I would prefer that the existing dams be taken out).

2 In the long run, it will most likely be cheaper to put in pumps for the irrigation that the farmers need for their crops, although I would like to see less field corn and more crops that will actually feed our nation, but that is another discussion for another day. There is no evidence that a bypass channel would actually work, while a free flowing river has for millions of years.

I worked for a very good company that the CEO stated, "Do it right the first time, every time" and in this situation, I believe that removal of the rock dam would be proper.

--
Doug Broadie
Miles City, MT
Soccer & Fly Fishing Forever

From: Buzz Mattelin
To: CENWO-Planning
Subject: [EXTERNAL] Intake project
Date: Saturday, July 23, 2016 4:24:04 PM

I'm writing in support of the preferred alternative for the Intake project.
The age of the naturally occurring pallid sturgeon in this region (60-70) years of age suggests that recruitment
1 occurred after the Intake diversion was constructed in 1907. Recruitment continued to occur after the construction
of Fort Peck in the 1930's, some 80 years ago. It was only after Garrison Dam was built and filled that recruitment
ended. This idea is in agreement with the hypothesis that the lacking element to recruitment is river miles needed
for larval drift.
Why should the irrigators of the Lower Yellowstone bear the brunt of the expense for a problem they did not cause.
2 The preferred alternative has a good chance of success, keeps the irrigators in business, and is more acceptable than
removal of Fort Peck or a draw down of Garrison.
Milo Mattelin

From: Clarence Sanders
To: CENWO-Planning
Subject: [EXTERNAL] Lower Yellowstone Project -- Sturgeon Passway
Date: Saturday, July 23, 2016 1:38:29 PM

Dear Sir or Madam:

I am writing to comment on the Lower Yellowstone Project – Pallid Sturgeon Passway.

I strongly support the alternative that restores the lower Yellowstone River as a free flowing river.
That alternative provides for the following:
1 >Allows for a free-flowing Yellowstone River and unimpeded upstream passage for pallid sturgeon and other fish species.
>Accommodates irrigators during low flow months with a series of pumps.
>Allocates agency funding and federal appropriations, along with a dedicated trust fund, to finance pumping and maintenance costs.

Please adopt the free flowing alternative – it is the only option available to save pallid sturgeon, and at same time would dramatically expand project benefits by restoring the lower Yellowstone aquatic ecosystem.
Thus, the free lowing option is not only sound environmental policy, but also is sound economic policy, as it would encompass ecosystem-wide benefits associated with the underlying cost/benefit analysis for this project.

Thank you for your careful consideration of my comments.

Sincerely,
Clarence Sanders
4416 Morning Sun Drive
Bozeman, MT 59715
406-587-9218

From: taycro5@comcast.net
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone River Diversion
Date: Saturday, July 23, 2016 8:50:00 AM

I fully support keeping the Yellowstone River free flowing for benefit of fish migration. The selected alternative should:

1 * allow for a free-flowing Yellowstone River and unimpeded upstream passage for fish.
* Accommodates irrigators during low flow months with a series of pumps
* Use agency funding and additional federal appropriations, above what is currently in hand, to pay for the project as well as a trust fund to pay for pumping and maintenance costs.

Thank you.

Howe Crockett
16004 NE 43rd Street
Vancouver, WA 98682

360-903-1860

From: admin
To: CENWO-Planning
Subject: [EXTERNAL] Pallid Sturgeon & Free Flowing Yellowstone
Date: Sunday, July 24, 2016 2:43:41 PM

To Whom It May Concern,

1 Respectively I am emailing to voice my support for "Montana TU proposal of an alternative that leaves the river free-flowing, so that sturgeon and other fish can migrate upstream as they have for millennia, and delivering water to irrigators using a system of pumps. This would reduce the period of need for the current headgate which is trapping hatched sturgeon and other fish. Montana TU strongly believes the water users should be accommodated, and that costs associated with changing the water delivery system should be met using federal appropriations and a trust fund that could be established to cover pumping and future maintenance costs."

Thank you,
Julie Gandulla
Bozeman, MT

From: Douglas Rohn
To: CENWO-Planning
Subject: [EXTERNAL] Proposed dam at Intake on the Yellowstone River
Date: Sunday, July 24, 2016 1:13:31 PM

To Whom It May Concern,

Thank you for accepting comments from the public on the above.

I support both the needs of irrigators and wildlife, who are directly impacted by this decision, as well as the rest of
1 us who are indirectly affected. It seems that when there is a proposal that benefits all stakeholders, it is wise to
choose this alternative. The idea of building a dam and bypass channel with no evidence that it will allow wildlife
to navigate this section of the river, specifically pallid sturgeon, appears ill-advised. If the irrigators' needs can be
met by breaching the current weir and delivering water as needed by pumping, and giving sturgeon and other fish
the chance to use the river as they have for far longer than any of us has been around, why not choose it? As
2 Montana Trout Unlimited has proposed, federal appropriations and a trust fund can be used to pay for this solution
as needed. And with the projected cost of $60M for the proposed dam and bypass, there are a lot of dollars available
to pump water.

Sincerely,

Douglas Rohn, DVM, Diplomate ACVS
lymfatic@me.com

From: Dee Jorgensen
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion dam Fish passage project
Date: Monday, July 25, 2016 11:29:14 AM
Attachments: whooping crane.docx

Hello, attached is my letter to recommend the new weir and fish passage.
Thanks
Dee jorgensen

U.S Army Corps of Engineers Omaha District

ATT:CENWO-PM-AA

1616 Capitol Avenue

Omaha, NE 68102

Dear U.S. Army Corps of Engineers,

I live on the banks of the Yellowstone river South of Crane, MT; and appreciate the wildlife, pheasants, turkeys and migratory birds that make their homes and stop to rest on their migration in the wetlands of the Yellowstone River.

The Weir and Fish bypass channel is the best choice for the Pallid sturgeon, farmers and surrounding
1 communities. Removing the dam altogether and putting in pumps is not an option. The last 106 years of river levels has made an abundance of wetlands, both near the river and throughout the irrigation canals and ditches. If the dam was taken out the river level would drop 2 ft. and the wetlands would no longer be in existence.

The whooping Crane, which is also on the endangered species list, migrates through eastern Montana and uses the wetlands of the Yellowstone on its' flight. Why endanger another endangered animal, when the fish bypass would protect both the pallid sturgeon and Whooping crane.

2 Whooping Cranes

"However their biggest threat- loss of wetlands-persists. Though the acres that the birds frequent are protected, they are isolated and make the entire population vulnerable to any disastrous ecological event or change."

Website: animals.nationalgeographic.com/animals/birds/whooping cranes

Section 7(a)(2) requires each Federal agency to consult on any action authorized, funded, or carried out
3 by the agency to ensure it does not jeopardize the continued existence of any endangered or threatened species.

Transmission wires from pumps, windmills or electricity are also dangerous to the whooping Cranes.

Please keep the fish bypass as the best option for the Pallid sturgeon and other fish, farmers, communities and the whooping cranes!

Thank You

D. Jorgensen

BP-204

From: VanEverys
To: CENWO-Planning
Subject: [EXTERNAL] Comments to Intake Diversion Dam Fish Passage Project
Date: Monday, July 25, 2016 11:27:23 PM

To: U.S. Army Corps of Engineers Omaha District

1 We support the Bypass Channel as proposed by the Bureau of Reclamation and the US Army Corps of Engineers for the Lower Yellowstone Irrigation Project at Intake, Montana. The other alternatives are too expensive. We want to keep the cost of food production as low as possible. That is more important, and will still help the Pallid Sturgeon.

Sincerely, Wade & Cheryl VanEvery
Land Owner and Irrigator

12877 CR 353
Sidney, MT 59270
(406)488-5034
vanevery@midrivers.com <mailto:vanevery@midrivers.com>

From: Susan Herman
To: CENWO-Planning
1 **Subject:** [EXTERNAL] I am writing you to state that I support the Intake Diversion Dam
Date: Monday, July 25, 2016 12:22:30 PM

Susan Herman
Richland County / Accounts Payable

From: Shane Gorder
To: CENWO-Planning
1 **Subject:** [EXTERNAL] I Shane Gorder support the bypass channel alternative for the intake diversion.Thank You .
Date: Monday, July 25, 2016 3:34:57 PM

--

Commissioner Shane Gorder
Phone: 406-433-1708
Fax: 406-433-3731

From: Julie Brodhead
To: CENWO-Planning
Subject: [EXTERNAL] I Support the Intake Diversion Dam
Date: Monday, July 25, 2016 12:57:30 PM

---

1 I Support the Intake Diversion Dam in order for the survival of our county and others along the river that thrive on the use of the canal system for food and economic growth!

Julie Brodhead, RN

Communicable Diseases
Emergency Preparedness
RCHD
1201 W Holly Suite # 1
Sidney, MT 59270
406-433-2207
Fax toll free 1-866-926-3985 or 406-433-6895
24/7 Cell # 406-480-9221
Blockedwww.richland.org <Blockedhttp://www.richland.org>

<Blockedhttp://www.richland.org/images/pages/N548/rchdlogo.jpg>

BP-208

From: Duane Mitchell
To: CENWO-Planning
Subject: [EXTERNAL] Intake By Pass
Date: Monday, July 25, 2016 10:00:28 AM

Ladies and Gentlemen,

Or maybe I should say dear judge, I am not sure.

1 At any rate Richland county has enjoyed the benefits of the Lower Yellowstone Irrigation Project for the last one hundred seven years. We have been blessed with water that has been provided from the Intake Diversion Dam. The "project" and all the water ways have been instrumental in providing an abundant habitat not only for wildlife but humans as well.

2 It would be a devastating blow the the entire region to remove the diversion dam not only economically but to humanity as well. Without a reliable source of water the valley will dry up and blow away.

As a county Commissioner I urge you all to allow the Channel By Pass too be built.

Thank you,

Duane Mitchell

From: Dee Jorgensen
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam Fish Passage Project
Date: Monday, July 25, 2016 1:22:36 PM
Attachments: Big water Fish.docx

My Comments are attached.
Thanks
D. Davies

U.S Army Corps of Engineers Omaha District

ATT: CENWO-PM-AA

1616 Capitol Avenue

Omaha, NE 68102

Dear U.S. Army Corps of Engineers,

1 I am in favor of the Fish-bypass and weir. The pallid Sturgeon is a big water fish, Missouri River, and is
not native to the Yellowstone River as stated by a marine Biologist at the Billings Montana Draft EIS
Public Meeting. The pallid sturgeon is smart as they have found their way into the Yellowstone River
system and through a slew by the Intake Diversion Dam to move upstream. There are many more dams
2 on the Missouri River that obstruct the pallid Sturgeon so why are the Defenders of Wildlife and those
opposed to the Intake Diversion Dam attacking it, when they should be concerned with the Missouri
River. The opponents that want the dam removed have a hidden agenda and are using the endangered
pallid sturgeon to reach their goal. The weir and fish by-pass will be beneficial for all fish in the
Yellowstone River, the wildlife, the wetlands, the communities and the farmers.

Thank you

D Davies

Bullhead City, AZ

From: Dee Jorgensen
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam Fish Passage Project
Date: Monday, July 25, 2016 1:22:03 PM
Attachments: Veterans.docx

My Comments are attached.
Thanks
B Davies

U.S Army Corps of Engineers Omaha District

ATT: CENWO-PM-AA

1616 Capitol Avenue

Omaha, NE 68102

Dear U.S. Army Corps of Engineers,

As a veteran of the United States of America, I am appalled at the amount of money the defenders of
1 Wild Life have put into obstructing the fish bypass and weir at Intake Dam. The Veterans are also on the
endangered species list and the money would be better used to help the veterans as the Pallid Sturgeon
will find its way through the fish by-pass as fish #36 has in the test results.

Thank you

B Davies

Bullhead City, AZ

From: Rob Neihart
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam Fish Passage Project Public Comment
Date: Monday, July 25, 2016 3:00:09 PM
Attachments: Intake Diversion Public Comment.pdf

To Whom It May Concern:

Attached is a written public comment from Performance Engineering & Consulting for the Intake Diversion Dam Fish Passage Project. Thanks.

Robert D. Neihart, P.E., CFM

Senior Project Manager

rob@performance-ec.com <mailto:rob@performance-ec.com>

Office: (406) 384-0080

Mobile: (307) 752-3870

7100 Commercial Ave., Ste. 4 • Billings, MT 59101

Blockedwww.performance-ec.com <Blockedhttp://www.performance-ec.com/>

PERFORMANCE
ENGINEERING & CONSULTING

7100 Commercial Ave., Suite 4 • Billings, MT 59101 • 406-384-0080

July 25, 2016

U.S. Army Corps of Engineers, Omaha District
CENWO – PM – AA
1616 Capitol Avenue
Omaha, Nebraska 68102

Regarding: Intake Diversion – Comments Supporting Preferred Alternative

To Whom It May Concern:

The following comments are presented by Performance Engineering & Consulting, PLLC (PEC). PEC is an independent, multi-disciplinary, professional engineering firm specializing in civil engineering, land development, water resources engineering, environmental engineering, and oil and gas services. In providing these comments PEC stands in complete support of the Lower Yellowstone irrigators and the nearly 100-year-old Intake Diversion. PEC has worked with a number of irrigation districts and water users in Montana for a number of years and specifically within the Yellowstone River Basin.

PEC stands in strong support of the 100 percent design complete, shovel ready,
and twice determined preferred alternative concrete weir and fish friendly bypass. There
1 have been a number of studies and reports that have clearly stated this alternative will
benefit the farmer and Pallid Sturgeon. Biologists have stated the Pallid Sturgeon will be
extinct by the year 2018 unless this project moves forward hastily and is constructed
before this year. Any other alternative other than the preferred alternative would push
construction beyond 2018 and the Pallid Sturgeon would become extinct.

PEC works with a number of irrigation districts who pump water from the
Yellowstone River. These pumping systems routinely fail throughout the irrigation season
due to a number of different circumstances from electrical outages, pump failure, etc. This
2 drives up the cost of operation and maintenance of the system which trickles all the way
down to each farmer. These irrigation districts have expressly stated that pumping
systems have enormous negative effects on the irrigation system and that a gravity fed
system would be much more sustainable as a water delivery method.

The Preferred Alternative will provide the irrigators with a long-term viable and economical solution of delivering water from the Yellowstone River. The Preferred Alternative will also provide the Pallid Sturgeon a scientifically proven solution to migrate upstream of the Intake Diversion. This is a win-win solution for all entities involved and should not be delayed any longer.

PEC extends our appreciation of the Army Corps of Engineers and Bureau of Reclamation for all their time spent on this project. The timeframe imposed on both these agencies was nearly unthinkable and in the end they produced a fact based EIS that scientifically proves the Preferred Alternative will benefit all.

Sincerely,

Robert Neihart, PE
Senior Project Manager

From: Molly Hilton
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam Fish Passage Project Comment Form
Date: Monday, July 25, 2016 9:11:35 AM
Attachments: pm_public_comment_form_0616.pdf

Greetings,

Attached you will find my comment on the dam proposal.

Thank you,

Molly Hilton

"History never repeats itself, but it often rhymes."

– Mark Twain

BP-212

US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Molly Hilton

Organization ______

Address 5052 Christy Court

Troy | Michigan | 48098
CITY | STATE | ZIPCODE

Phone (616) 293-5657 **Fax** ( ) ______

Email ee7307@wayne.edu

Narrative Comments:

1 I do not support the initiative as proposed. Today, we must make decisions that support out biosphere in the long term. For too long we have prioritized short-term outcomes. I am sympathetic to agricultural concerns and believe agriculture will ultimately benefit from the preservation of our environment. As a taxpayer, I support the more costly pumping and no dam. Thank you.

- **Attach additional sheets if necessary** -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

BP-212

PLACE STAMP HERE

U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

Please fold on dotted line, staple, stamp and mail

Fold to inside

From: John Dynneson
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam
Date: Monday, July 25, 2016 1:22:47 PM

---

1 I as a resident of Richland County, support the Intake Diversion Dam.
Thank you,
--

John K. Dynneson
Richland County
RCL&JC
300 12th Ave NW Suite #1
Sidney, Mt
406-433-2919

BP-213a

Dorothy Mitchell
11843 Highway 16
Sidney MT 59270

July 19th 2016

RECEIVED 25 Jul 16

U.S. Army Corps of Engineers
Omaha District
Attn:CENWO-PM-AA
1616 Capitol Ave.
Omaha,NE 68102

I was born in Sidney in 1927. Spent my youth on a dry land farm in northwestern Richland county. I know how it is to rely on God for much needed moisture to have a successful harvest.

My late husband, Calvin, and I purchased this irrigated farm in 1980 because it was part of the Lower Yellowstone Irrigation project. We have been blessed that we have never suffered a crop failure because there wasn't enough moisture. We have enjoyed all the wild life that is being supported by all the "valley" farms that can rely on having water.

Speaking of wildlife I have deer, pheasants, bald eagles and a whole host of birds that come by the
1 house regularly.

I would sincerely ask that the By Pass Channel be allowed to be built, thus preserving our way of life and our continued support of all the wildlife that is in the "valley".

Sincerely,

Dorothy Mitchell

From: Sandy Houston
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam
Date: Monday, July 25, 2016 5:57:53 PM

Hello,

1 I just wanted to take a quick moment to let you know that I am in support of the Intake Diversion Dam. I feel this measure is very important for our farmers and the fish would still be okay.

Thank you for the opportunity to have my voice heard.

Sincerely,

Sandra J. Houston
117 8th Street SE
Sidney, MT 59270

BP-215

From: Stephanie Verhasselt
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam
Date: Monday, July 25, 2016 5:02:37 PM

To whom it may concern,

1 I am in support of the Intake Diversion Dam.

Thank you,
Stephanie

--

Stephanie Verhasselt
Richland County Clerk & Recorder/Election Administrator
201 West Main
Sidney, MT 59270
Office Phone:406-433-1708
Direct Line 406-433-6551
Fax: 406-433-3731

From: Debra Gilbert
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam
Date: Monday, July 25, 2016 4:44:36 PM

1 I am in support of the bypass. Many families could be impacted financially should this not pass. Many families have made farming their livelihood and if they incur added operating costs, this could devastate the farm operation. Not only will it decimate the family farm operation, it will be a big detriment to the county as far as tax revenues. I encourage you to vote yes on the diversion dam to protect the communities who rely on the water source for their livelihood.

--

Debra L Gilbert
Richland County DES
123 West Main
Sidney, MT 59270
406-433-2220 (office)
406-489-1486 (Cell)

"You cannot do a kindness too soon, for you never know how soon it will be too late"
Ralph Waldo Emerson (1803-1882)

From: Katie O"Clair
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam
Date: Monday, July 25, 2016 4:09:26 PM

To Whom It May Concern,

1 I am writing to state the I am in support of the Intake Diversion Dam. Losing the ability to irrigate farm land out of the Yellowstone River would completely devastate the economy and communities in the area. Nearly all businesses and jobs in our communities are tied to agriculture, be it processing crops, or providing support for the various needs of the farmers and their land. Every business in this area is reliant on successful agriculture. If farms are not able to irrigate, they will become dust. People will move elsewhere for work, businesses will close, and our communities will cease to exist.

Sincerely,

Katie O'Clair
Richland County Treasurer's Office
201 W Main
Sidney, MT 59270
406-433-1707

From: Laura Anderson
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam
Date: Monday, July 25, 2016 4:00:00 PM

---

1 I am in full support of the Intake Diversion Dam. It not only helps the fish spawning and passage, but also allows the farmers to continue irrigation which is needed by many farmers.This would be a win win situation which is ideal.

Laura M Anderson

From: Heather Luinstra
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam
Date: Monday, July 25, 2016 3:46:10 PM

To Whom It May Concern,

As a Richland County resident, I would like to show my support for the Intake Diversion Dam. The dam is vital to
every citizen along the Lower Yellowstone River. Agriculture is the backbone of the entire valley and the
1 commodities produced support, provide jobs for, and influence every facet of our way of life. Without the precious
resource that the diversion dam provides, agricultural operations would cease to exist which in turn would devastate
the local economies of all the surrounding communities.

Again, I would like to express my support for the diversion dam, my local farmers and ranchers, my neighbors, and my community!

Thank you,
--

Heather Luinstra, RS
Richland County Sanitarian
406-433-2207
hluinstra@richland.org <mailto:hluinstra@richland.org>

From: Candice Kraemer
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam
Date: Monday, July 25, 2016 2:58:59 PM

1 I support the Intake Diversion Dam.

Thank you,

--

Candice Kraemer
Richland County / Election Clerk

From: Joseph A Bradley
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam
Date: Monday, July 25, 2016 12:23:10 PM

To whom it may concern.

1 Please count me as a supporter of the Intake Diversion Dam project. Without this project the economy and overall survivability of Northeastern Montana is seriously in doubt.

Respectfully.

Joe Bradley

Sidney, MT

From: Adam Smith
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam/Fish Bypass
Date: Monday, July 25, 2016 4:27:01 PM

To Whom It May Concern,

1 I would like to state my support for the proposed fish bypass and continued use of the diversion dam. I believe this is the most responsible option that is currently presented for consideration. There are a couple of considerations I made to arrive at this result:

2 1. The construction costs, O&M, replacement costs, etc. of the pumps proposal does not seem feasible when compared with the low costs of the existing system. This existing system was constructed in the early 1900's and has been functioning as designed for over 100 years. The system has worked wonderfully in supporting agriculture development within the Richland County and McKenzie County areas.

3 2. If a more cost prohibitive solution is arrived at, we will all suffer. It is my fear that farmers will move their land out of irrigated crop production and into dryland or rangeland operations. This bears a huge impact on Richland County's opportunity to provide essential services to its constituents. The irrigated agriculture land is what supports this area. It takes about 16.5 acres of non-irrigated farmland to equal 1 acre of irrigated farmland in terms of taxable value.

4 3. I read that a biologist that attended the public meeting in Billings stated that only about 5% of the pallid sturgeon in the Missouri and Yellowstone rivers inhabit the Yellowstone river. This is somewhere around ten (with a conservative estimate). I thought I had read that wrong. We are affecting thousands of people for the benefit of a small fraction of the pallid sturgeon population. I'm wondering if someone has researched how the addition of this bypass or any other option to allow the pallid sturgeon up river is expected to help the population greatly? Are the sturgeon suddenly going to change that proportion and start migrating up the Yellowstone to spawn? I think we may actually be wiser spending the money along one of the primary rivers that the fish habitat.

With all of that said, I think we need to take small steps that have minimal affect on the human population before we move to more drastic measures. Installing mechanical systems to deliver water cost money and fail, gravity is a universal constant.

Thank you for your consideration.

Adam Smith
, PE
Asst. Director
Richland County Public Works

2140 W Holly Street
Sidney, MT 59270
406.433.2407 <tel:406.433.2407> (Office)
406.480.9244 <tel:406.480.9244> (Cell)
asmith@richland.org <mailto:asmith@richland.org>

From: Carolyn Iversen
To: CENWO-Planning
Subject: [EXTERNAL] Intake
Date: Monday, July 25, 2016 3:49:21 PM

---

1 I support the Intake Diversion Dam.

Thank You,
Carolyn

--

<Blockedhttp://mt-richlandcounty.civicplus.com/images/pages/N548/rchdlogo.jpg>

Carolyn Iversen
Office Manager
Richland County Health Department
Sidney, Montana 59270
Phone - 406-433-2207 <tel:406-433-2207>
Fax - 406-433-6895 <tel:406-433-6895>

From: Katy DeMangelaere
To: CENWO-Planning
Subject: [EXTERNAL] Intake
Date: Monday, July 25, 2016 1:03:26 PM

---

1 I am in full support for the Intake Diversion Dam.

From: Heidi Ananthakrishnan
To: CENWO-Planning
Subject: [EXTERNAL] Pallid Sturgeon and Lower Yellowstone Project
Date: Monday, July 25, 2016 8:09:24 PM

Hello,
I wanted to express my opinion regarding the ideas being debated about the future of the pallid sturgeon and the
1 Lower Yellowstone Project. With severely dwindling numbers, the endangered pallid sturgeon is unlikely to survive
as a species unless aggressive conservation measures are taken.

I strongly support removing the Intake Diversion Dam to allow the fish to spawn successfully and replacing it with
2 an irrigation system using pumps, as was done on the Sacramento River. If we look at the larger picture rather than
at short-term economic gains, we will see that we need not squander our ecological wealth to leave a legacy of
destruction.

The pallid sturgeon has no say in the matter. The responsibility is ours alone to protect the biodiversity of the Missouri River.

Respectfully,
Heidi Ananthakrishnan

From: Kurt Lieber, Ocean Defenders Alliance
To: CENWO-Planning
Subject: [EXTERNAL] Public comment: Pallid Sturgeon Passage and Entrainment Project
Date: Monday, July 25, 2016 11:55:02 AM

Hello,

1 After reviewing the options for how best to help the pallid sturgeon return to a healthy population, the ONLY way to assure their existence is to remove the dams that impede their historic migration routes. With only 125 animals left in the wild, there is no time to experiment with fish passageways. Take down the existing dams and install pumps that will get water to the farmers.

Thank you,

Kurt Lieber
Executive Director / Founder
Ocean Defenders Alliance (ODA)
kurt@oceandefenders.org <mailto:kurt@oceandefenders.org>
Cell: 714-875-5881
Blockedwww.oceandefenders.org <Blockedhttp://www.oceandefenders.org>
Blockedhttp://www.facebook.com/OceanDefenders

From: Lyons Communications
To: CENWO-Planning
Subject: [EXTERNAL] Remove the Intake Diversion Dam
Date: Monday, July 25, 2016 5:34:58 PM

---

1 Please remove the Intake Diversion Dam. Thanks -rob jones

--

Lyons Communications, LLC
PO Box 1403
Lyons, CO 80540

Customer: 303-823-5656
Corporate: 720-210-3210

From: Rosaaen, Melissa
To: CENWO-Planning
Subject: [EXTERNAL] support intake
Date: Monday, July 25, 2016 1:17:12 PM

1 Sending my email in support of the intake/diversion dam

Melissa Rosaaen

Richland County Justice Court/Sidney City Court

300 12th Ave NW Suite 6

Sidney, MT 59270

From: Mohr, Gregory
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone Irrigation Dam
Date: Monday, July 25, 2016 1:06:09 PM

7-25-16

1 I support the Intake Diversion Dam and proposed fish ladder to benefit the pallid sturgeon and continued irrigation of the lower Yellowstone River valley. Gregory P. Mohr 1809 14th St SW Sidney Montana 59270 phone 406-488-1166.

BP-230

From: Steve Arnold
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone irrigation
Date: Monday, July 25, 2016 12:36:44 PM

Hi,

1 I have lived this community for about 44 years, and worked for the sugar company here in Sidney. The company
brings jobs and puts money back into the economy. I cannot believe a handful of people can control future of this
valley. I am in favor of the channel bypass. The environmentalist are so worried about the sturgeon, what if the
farmers would put diesel pumps in to pump their water for irrigating. What is this going to do to global warming?
2 Intake has been around since the 30's or 40's and the fish have had no problem. Thank you for allowing me to
comment on this very important matter for this community. If the sugar plant closes, and the oil activity here has
almost shut down, the economy in Sidney would suffer tremendously.

Thank you,

Steve Arnold

US Army Corps of Engineers
Omaha District

BP-230a

Comment Form

Intake Diversion Dam Fish Passage Project
Dawson County High School
900 N. Merrill Avenue • Glendive, MT 59330
Wednesday, June 29, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

28 Jul 16

Please PRINT clearly

Name Don Steinbeisser

Organization Irrgator + Commissior LYIP

Address ______________________

CITY STATE ZIPCODE

Phone ( ) ______________ **Fax** ( ) ______________

Email ______________________

Narrative Comments:

1 I am in favor of the concrete weir and fish by-pass channel because of the wild life habitant for pheasants, ducks + other wild life habitant around the spillways of the main canals will no longer be there.

- **Attach additional sheets if necessary** -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:
U.S. Army Corps of Engineers Omaha District ATTN: CENWO-PM-AA
1616 Capitol Avenue, Omaha, NE 68102

Or email comments to:
cenwo-planning@usace.army.mil

From: Alison Kellom
To: CENWO-Planning
Subject: [EXTERNAL] By pass channel
Date: Tuesday, July 26, 2016 12:37:23 PM

To whom it may concern:

1 I support the bypass channel on the diversion dam along the Yellowstone River between Sidney, MT and Glendive MT. It makes the most sense environmentally and economically. It allows the fish to swim around and continue upstream and allows for irrigation with a much lower carbon footprint than proposed alternatives.   To change to pumping stations would not only be unreliable but also asinine in terms of extra pollution and wasted water.

Alison Kellom

July 26, 2016

BP-231a

To: U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

RECEIVED 28 Jul 16

From: William M. Gardner
624 NE Washington St.
Lewistown, MT 59457

Re : Lower Yellowstone Intake Diversion Dam Fish Passage Project DEIS Comments

Dear Intake Dam Passage EIS staff:

I support either of the dam removal alternatives because this action is the only two
alternatives that would clearly achieve the goals and objectives of the project. As stated in
1 Appendix E 2016 of DEIS 2016 (Adaptive Management) p. 2 **Objective 2:** "Upstream and
downstream passage of pallid sturgeon:
- Upstream Passage 1) Greater than or equal to 85% of motivated adult pallid sturgeon (fish that
move up to the weir) annually pass upstream of the weir location during the spawning migration
2 period (April 1 to June 15) within a reasonable amount of time without substantial delay (≥0.19
miles/hour)". **These project goals and objectives should be listed in the main body of
the EIS in the purpose and need section where the various alternatives can be
more readily measured with consideration of the goals and objectives in mind.** I
disagree with the passage duration being limited to the spawning period of April 1 to June 15.
Pallid sturgeon passage over Intake Dam should be provided year-round. Pallid sturgeon adults
3 and sub-adults are mobile and require long segments of open-river to fulfill their seasonal
habitat requirements. By having year-round access throughout the lower 235-mile lower
Yellowstone River (above and below Intake) pallids will be able to repopulate this section
throughout the lower Yellowstone River further insuring their recovery here.

I don't believe the Bypass Channel Alternative will succeed in meeting the goals and objectives
for pallid sturgeon passage based on the Fish Passage Connectivity Index (FPCI) model results.
Table 2-27 (page 2-99 of the DEIS) shows the fish passage connectivity index and habitat units
for each alternative. The two dam removal alternatives scored the maximum,11,949 average
4 habitat units (AHU) compared to the Bypass Channel Alternative which scored 8,054 AHU. The
Bypass Alt. AHU is only 67% of potential maximum (pallid) habitat. The objective states
"greater than or equal to 85% of motivated adult pallid sturgeon" will pass over Intake Dam. So
if the Bypass Alt is yielding only 67% of the habitat, then probably less than 85% of the pallids
(the objective) are projected to make passage over Intake Dam. The Bypass Channel
Alternative may be the "Best Buy" but it is not going to meet the objective of the proposed
project. Therefore, the Bypass Channel Alternative should be rejected and the dam removal
alternatives should be accepted.

5 The Fish Passage Connectivity Index (FPCI) model has minimal value for comparing alternatives because input data is too subjective and open for scrutiny and therefore unreliable. For example the Fs value (channel size) of 2 for the Bypass Channel Alt. (p. 10 Apdx D of the DEIS 2016) seems high since the average flow split for the Bypass Channel is more like 13% (p. 2-48 DEIS) instead of 15%; maybe Fs should have been ranked a 1 instead. Also, the U (use) value for the Bypass Alternative should have been ranked 4 or less instead of 5 (p. 12 Apdx D). Pallid sturgeon travel behavior preference for the main channel would make pallids less likely to use the artificial (side)channel compared to the open channel condition of the dam removal alternatives. Should the no dam (channel width= 700 ft) and bypass channel (channel width of 100 ft) alternatives be ranked equally in terms of pallid usage here? This is obviously incorrect scoring of the input values.

6 On page 10 of the FPCI Appendix D of DEIS (2016) document it states that "For the Yellowstone River, Corps (2014) used the recommendation by the BRT that fish passage alternatives should be capable of conveying up to 30% of river flow". This is a confusing statement. Does it mean that a channel split of 30% is recommended or does it mean that the passage channel should convey 1-30 % of the river flow? Could you confirm that this statement is correct and not taken out of context? This sentence doesn't seem to make sense. This is a fairly important statement and therefore the BRT report should be cited if there was one written.

7 I do not agree that the irrigators should have to pay for the extra O&M costs of the dam removal alternatives. This disfavors these alternatives and makes them less likely to be considered. Of the action alternatives, the Bypass Channel Alternative is expected to have the lowest annual O&M costs (see Table 2-26) (DEIS 2016 p.2-105). The O&M costs for the Multiple Pumps is 2x that of the Bypass Channel Alt. and the Multiple Pumps with Conserv. Alt. O&M costs are 5x that of the Bypass Alt., so clearly the two dam removal alternatives would cost the irrigators much more O&M. But I do not agree that the irrigators should have to pay the extra O&M costs of the dam removal alternatives. For the dam removal alternatives the irrigators should not have to pay O&M for getting the water into the main canals. The US government (i.e. Western Area Power Authority- WAPA) should assist with the costs of supplying water to the main canals. WAPA should partner-in with this project because they will have much to gain indirectly from the Intake project as far as pallid sturgeon recovery obligations are concerned. Pallid sturgeon mitigation for the US COE is being shifted from Ft Peck Dam (where WAPA generates hydropower) to Intake Dam for passage. WAPA benefits because they will not loose power generation at Ft. Peck Dam. What would be a cost estimate to have the US Government supply water to the main canals? WAPA should formally be invited to assist financially with the project.

Could you please notify me that this DEIS comment letter was received (billanne@midrivers.com). I will also send a hard copy to you via USPS.

Sincerely,

William M. Gardner

William M. Gardner

From: billanne
To: CENWO-Planning
Subject: [EXTERNAL] Comments to the Draft, Environmental Impact Statement for, the Lower Yellowstone Intake, Diversion Dam Fish Passage Project, MT
Date: Tuesday, July 26, 2016 5:28:04 PM

July 26, 2016

To: U.S. Army Corps of Engineers Omaha District

ATTN: CENWO-PM-AA

1616 Capitol Avenue

Omaha, NE 68102

From: William M. Gardner

624 NE Washington St.

Lewistown, MT 59457

Re : Lower Yellowstone Intake Diversion Dam Fish Passage Project DEIS Comments

Dear Intake Dam Passage EIS staff:

I support either of the dam removal alternatives because this action is the only two alternatives that would clearly
1 achieve the goals and objectives of the project. As stated in Appendix E 2016 of DEIS 2016 (Adaptive Management
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- Upstream Passage 1) Greater than or equal to 85% of motivated adult pallid sturgeon (fish that move up to the
2 weir) annually pass upstream of the weir location during the spawning migration period (April 1 to June 15) within a
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readily measured with consideration of the goals and objectives in mind. I disagree with the passage duration being
limited to the spawning period of April 1 to June 15. Pallid sturgeon passage over Intake Dam should be provided
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seasonal habitat requirements. By having year-round access throughout the lower 235-mile lower Yellowstone
River (above and below Intake) pallids will be able to repopulate this section throughout the lower Yellowstone
River further insuring their recovery here.

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4 Cont 8,054 AHU. The Bypass Alt. AHU is only 67% of potential maximum (pallid) habitat. The objective states "greater than or equal to 85% of motivated adult pallid sturgeon" will pass over Intake Dam. So if the Bypass Alt is yielding only 67% of the habitat, then probably less than 85% of the pallids (the objective) are projected to make passage over Intake Dam. The Bypass Channel Alternative may be the "Best Buy" but it is not going to meet the objective of the proposed project. Therefore, the Bypass Channel Alternative should be rejected and the dam removal alternatives should be accepted.

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Could you please notify me that this DEIS comment letter was received (billanne@midrivers.com <mailto:billanne@midrivers.com>). I will also send a hard copy to you via USPS.

Sincerely,

William M. Gardner

From: John Doe
To: CENWO-Planning
Subject: [EXTERNAL] EIS comments - Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana
Date: Tuesday, July 26, 2016 5:06:54 PM

Thank you for allowing me to comment on your EIS regarding the lower Yellowstone intake diversion dam fish passage project.

I urge that a fully open river alternative be chosen and the current dam be removed, as this will give the pallid
1 sturgeon the best chance to start to recover, as well as help other species. Your own analysis in the EIS documents
that an option that fully restores an open flowing river provides the best chance for sturgeon. The dams we have
built over the years have almost completely destroyed the pallid's habitat, and it is unacceptable to keep trying half
measures that may or may not work (by your own admission, your preferred alternative - a bypass channel - may not
work.). Do not waste taxpayer money on measures that may not work, and that perpetuate the gross habitat
destruction that has already occurred. You have been evaluating and making various proposals for years, while the
2 population plummets. THERE ARE LESS THAN 200 INDIVIDUALS LEFT IN THIS POPULATION!!! You
wanted to build a rock ramp, but then decided that may not work. You then proposed the channel, but then you say
that may not work. It is not fair to play with a species very existence just so we can grow crops in the desert. You
discount the proposed pumps-plus-conservation option because you say it doesn't meet the current demand right
away - but why should the humans (whose population is doing fine last time I checked) not have to endure any
inconvienience, while the various other species risk going extinct. What right do you have? The sturgeon were here
long before us, and they have an intrinsic right to exist. Unblock the river before it is too late and the liability for
another lost species will be on you.

Removing all the dams will also benefit humans who want to navigate the river. It will benefit the entire
ecosystem. There are options to remove all dams and keep the same water volume flowing to humans, and there are
also even better options where human use is curtailed, as it should be. The time to act is now - do the right thing and
3 fully remove all dams and allow the river to flow free, the way it did for the millions of years the pallid did fine,
before the US government destroyed its habitat in a hundred or so years. It is your obligation to choose an
alternative that does not create jeopardy for the species, but you are recommending an option that by your own
admission may not work - even when you have many options that will fully open the river and so completely
remove jeopardy. Please remove all the dams and let the river flow freely, to give the pallid sturgeon a chance for
once.

Thank you so much for your time and consideration.

BP-231c

From: Rhonda Cayko
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam Fish Passage Project
Date: Tuesday, July 26, 2016 11:04:37 AM

To Whom it may concern,

1 This letter is in support of the bypass at Intake on the Yellowstone River. The livelihood of our family farm, 4 C
Sons, is dependent on irrigation. The option of pumping stations would be a danger to the environment, not to
mention very expensive to install and maintain. This added cost could eventually put us out of business. The bypass
2 option will allow us to continue farming and carry on a four generation tradition.
One hundred years ago when these canals were established, it changed the valley and nature adapted and many
species thrived. The ditches have become safe habitat for a large variety of animals and plants such as whooping
cranes, mink, otter, and the endangered monarch butterflies who feed on the ditch banks milkweed just to mention a
3 few. Closing down these canals and the subsequent ecosystems would adversely affect many other species besides
the pallid sturgeon. Will we then have a group of environmentalists protesting that?
The bypass gives not only the pallid sturgeon but other fish and many other species the ability to survive in our valley. It would be the least invasive and least costly option to all parties involved. Opponents don't believe the fish will use the bypass. We believe pallid sturgeon have the innate ability to adapt as well especially with allowances like the diversion are in place and specialist are monitoring for their success and survival. Isn’t it a fact that as time goes by and frivolous meetings and protests take place more and more fish are dying? We need to move on with this bypass and follow up with a careful survey of its ramifications.
Please support the bypass channel option as it is the best choice for our environment and all of God’s creatures.

4 C Sons, Inc.
Fairview, MT
Tim and Rhonda Cayko
Adam and Anna Cayko
Ethan Cayko

BP-231d

From: Gail Staffanson
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam
Date: Tuesday, July 26, 2016 9:41:18 AM

To Whom It May Concern,

1 I am writing in support of the Intake Diversion Dam Bypass Channel. My family has been farming our little piece of the Yellowstone Valley for over 100 years. In fact since before the dam was built. The bypass is the best choice to save the farmers and the fish in this area. Sincerely, Gail Staffanson

BP-231e

From: conststeve1952@comcast.net
To: CENWO-Planning
Subject: [EXTERNAL] irrigation project
Date: Tuesday, July 26, 2016 8:27:44 PM

I was born and raised on a farm in Sidney, Montana. My father and his family moved to the area to farm, provide
for their families, and to provide agricultural products for others. I am dismayed to hear the future of agriculture in
1 the Yellowstone valley is in jeopardy due to "findings" of recent studies on impending extinction of the sturgeon in
the local river. It doesn't make sense to me to cut off the water supply to farms in this fertile valley and to prevent
families from earning a living along with contributing to the nation's food basket. Please consider further study on
this issue to reach a resolution that is mutually beneficial.

Thank you for your consideration.

Wanda J DeTienne

BP-231f

From: Dylan Flather
To: CENWO-Planning
Subject: [EXTERNAL] Lower Yellowstone Project and Sturgeon
Date: Tuesday, July 26, 2016 5:42:39 PM

---

1 I would like to voice my support for the removal of the Yellowstone River Diversion Dam. A bypass channel has never been shown to be functional for wild sturgeon and therefore is an inadequate response to Endangered Species Act protections for the Pallid sturgeon. Instead, I support the removal of the Dam and replacement with a series of pumps for agricultural uses.

Thank you for reading my letter,

Dylan Flather

BP-231g

From: 1st Choice Collision
To: CENWO-Planning
Subject: [EXTERNAL] LYIP
Date: Tuesday, July 26, 2016 9:51:31 AM

To Whom It May Concern,

As a small business owner in Richland County, the debate on the LYIP has become a concern to us. We are very
concerned that the lively hood of the residents affected by the LYIP could be at jeopardy. I understand that the fish
1 are an important part of the environment, however, it is disturbing that the lives of the residents of these
communities would be discarded over fish. The fish have lived hundreds of years with the current situation. We are
in support of whatever decision has to be made to protect the people that will be negatively affected by shutting
down the irrigation canal.

Thank you,

Cory & Jean Washechek

Owners of 1st Choice Collision

Sidney, MT

From: Howard Langeveld
To: CENWO-Planning
Subject: [EXTERNAL] Please remove the dam and save the fish
Date: Tuesday, July 26, 2016 1:07:28 PM

Howard Langeveld

1912 8th Ave W.

Seattle, WA 98119

1 Extinction is forever. Extra dollars for pumps is just money and is easily printed.

Thank you.

BP-231i

From: Tommy
To: CENWO-Planning
Subject: [EXTERNAL] Sturgeon
Date: Tuesday, July 26, 2016 11:31:19 AM

To whom it may concern,

1 I would like to express my disappointment in this project if it means condemning this Sturgeon as a species to extinction. We must take responsibility for the future. I do not want to see this project move forward without due consideration to that.

Thank you,

Thomas L Ley

Sent from Mail <Blockedhttps://go.microsoft.com/fwlink/?LinkId=550986> for Windows 10

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

BP-232

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Jessica Kwasney

Organization

Address PO Box 582

Circle MT 59215
CITY STATE ZIPCODE

Phone (406) 485-3474 **Fax** ( )

Email cenwo-planning@usace.army.mil

I have an interest in the land below the dam that will be affected by this.

Narrative Comments:

1 WE FAVOR the BY-PASS CHANNEL TO SAVE the PALLID STURGEON AND TO MAKE PASSAGE EASIER FOR OTHER FISHES IN THE YELLOWSTONE RIVER.

2 A SYSTEM USING PUMPS AND CONSTRUCTING NEW ELECTRICAL DELIVERY WOULD BE UNRELIABLE AND COSTLY, THE CURRENT GRAVITY FLOW SYSTEM WORKS VERY WELL AND HAS A MUCH SMALLER CARBON FOOTPRINT

Attach additional sheets if necessary

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

BP-233

From: Katelyn Dynneson
To: CENWO-Planning
Subject: [EXTERNAL] Comments on LYIDD EIS
Date: Wednesday, July 27, 2016 8:17:51 PM

I am in favor of the bypass channel. My family has been farming in the Sidney area for 5 generations and without
1 irrigated land, I would not be allowed the opportunity to farm with my family. With other alternatives, our cost of
irrigating would rise too high for it to continue to be feasible. Our irrigated land allows us to operate a feedlot and is
a large portion of our overall operation. Without the irrigated land and subsequently our feedlot, there would not be
2 enough work to support our whole family. Without keeping irrigation costs feasibly, many farmers, young and old
will be forced out of business. The LYIP is incredibly important to our area and especially to young farmers like
myself and future generations.

Katelyn Dynneson
Dynneson Ranch

From: Del Nollmeyer
To: CENWO-Planning
Subject: [EXTERNAL] Fish bypass
Date: Wednesday, July 27, 2016 9:44:45 PM

BP-234

I am writing to support the concrete weir and the fish bypass. We have heard many proposals from electric pumps
1 to wind turbines. Electric pumps break down and sometimes the wind doesn't blow. How many times has gravity
failed to work? It is the most economical way to move water, that is why this system has worked for over 100 years.
D Nollmeyer.

Sent from my iPad

From:	Kim Nollmeyer
To:	CENWO-Planning
Subject:	[EXTERNAL] Intake Dam
Date:	Wednesday, July 27, 2016 11:37:06 PM

BP-235

I am writing to express my support for the concrete weir and fish bypass in the Yellowstone river.

1 As a wildlife photographer, I have spent many hours photographing the wildlife that live along the Yellowstone river. On any given day, I may see birds, pheasants, ducks, deer, coyotes, skunks, raccoons, beavers, eagles, and hawks. I've even seen a blue heron and a badger. The concrete weir and fish bypass will allow the farmers to have the water needed to grow crops that the wildlife feed on. The water in the irrigation ditches is home to many water fowl in this area. The irrigated crops in this area provided the ground cover necessary for our pheasant population to thrive.

2 Other options that have been proposed, such as wind generators, will greatly change the landscape of the valley. They also will have a negative affect on our wildlife. I'm afraid we would see a significant loss of our bird population. Wind generators are not the answer.

The best option is the concrete weir and fish bypass.

K. Nollmeyer

From: Lanette Jorgensen
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam Fish Passage Project
Date: Wednesday, July 27, 2016 10:44:02 PM

To Whom it may concern:

I am in favor of the fish bypass channel for the Intake Diversion Dam Fish Passage Project

1 Out of all the possibilities, I feel this is the best for the fish and all other wildlife habitats that live along the Yellowstone river bottoms and the nearby communities. It is best for the environment and the best when considering costs.

2 If the dam were to be replaced by using pumps, it would be too costly to maintain and would drive out farmers and many other businesses that rely on irrigation of crops. This in turn, significantly reduces the city and county tax income that pays for necessary services within communities. This would, therefore, extinct several communities that have been built up because of the intake dam.

Sincerely,
L. Jorgensen

Sent from my iPad

From: Michael Backhaus
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam Fish Passage Project
Date: Wednesday, July 27, 2016 4:22:15 PM

Dear Sirs:

I am in favor of the channel by-pass for this project. The people of this valley need the irrigation waters for crops.
1 Many jobs would be lost if the canal is closed. Please use the channel by-pass plan to keep our economy stable .
Thanks for your time in this matter.

Sincerely,

Michael Backhaus

From: Viola Mitchell
To: CENWO-Planning
Subject: [EXTERNAL] INTAKE DIVERSION DAM FISH PASSAGE PROJECT
Date: Wednesday, July 27, 2016 2:44:00 PM

Everett & Viola Mitchell

Country Cross Ranch, LLC

PO Box 388

Glendive, Montana 59330

Phone: 406-687-3230 FAX: 406-687-3240

Email: countrycrossranch@hotmail.com

COMMENTS:

1 Our greatest desire is that NO ACTION be taken at all!!

Our SECOND choice would be for the Bypass Channel.

2 We most certainly agree with what Mike Carlson has written and also in view of other comments that were made at the meetings from very knowledgeable sources that the number of fish involved is very minor in comparison to where the most of them are living and migrating to, therefore, it is cost prohibitive to do anything for the few that are affected.

Thank you,

Everett & Viola Mitchell

From: Wayde Mitchell
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam
Date: Wednesday, July 27, 2016 8:04:18 PM

Wayde & Lisa Mitchell
Highground Services
P.O. Box 963
Baker, Montana 59313
Phone:1 406 778 3218 Cell: 1 406 939 1124
Email wayde398@gmail.com <mailto:wayde398@gmail.com>

Dear Omaha district:

We here in eastern Montana have been dealing with this issue for awhile. The people say
1 that we need it for the sturgeon, but I heard that a fish and game person said that only 5% use the Yellowstone river. The use of pumps would be very costly and would drive food costs up considerably. It would put an extra burden on the farmer when they are already having trouble making ends meet.

Other then NO ACTION the only option I think is to put in the bypass channel.
2 Please be more considerate of the people and their jobs then a few fish and the channel would still be less ongoing expense.

Thanks for your time.

PS: At all the meetings here in MT they were represented mostly by our concerned citizens so please vote with them and not with a few special interest people.

Thanks again.

Wayde & Lisa Mitchell

From: Alan Artim
To: CENWO-Planning
Subject: [EXTERNAL] Lower Yelllowstone project comment
Date: Wednesday, July 27, 2016 8:12:01 PM

Dear Army Corp of Engineers

1 Please remove lower yellowstone dams and replace with intakes to save the endangered Sturgeon. This is one of the best habitats still available to help with the restoration left to do so. Hope you decide to move forward with the restoration.

thanks
Alan

Alan Artim
8700 Pershing Drive #5301
Playa del Rey, CA 90293

From: Stoecker Ecological
To: CENWO-Planning
Cc: yellowstonerivercoordinator@fws.gov; George_Jordan@fws.gov; margaret.e.oldham@usace.army.mil; Vanosdall, Tiffany K NWO; fwprg72@mt.gov
Subject: [EXTERNAL] Public Comment: DEIS Intake Diversion Dam- Yellowstone River
Date: Wednesday, July 27, 2016 2:40:35 PM

Hello,

I write to urge the Army Corps and other permitting agencies to support the removal of the Intake Diversion Dam
1 and pursue existing and effective damless diversion alternatives to achieve unimpeded fish and other wildlife
migration along the Yellowstone River.

Below are a few examples of damless diversions already in operation on the Yellowstone and other rivers. Several of these damless diversion facilities were built following removal of a problematic dam, ineffective fishway, and specifically for the purpose of providing effective fish passage along with water diversion.

I request that you review, consider, and describe these damless diversion examples, and others, within the EIS as viable technologies and alternatives to retaining an unnecessary dam on the Yellowstone.

Dam Removal and Damless Diversion Examples:

- Savage Rapids Dam Removal and Pump Station Installation, Rogue River, OR:

Blockedhttp://www.slayden.com/savage-rapids-dam-removal-and-replacement-pumping-plant/
<Blockedhttp://www.slayden.com/savage-rapids-dam-removal-and-replacement-pumping-plant/>

2 - Elwha River Dam Removal and Damless Diversion project. WA

Blockedhttps://afs.confex.com/afs/2015/webprogram/Paper22423.html
<Blockedhttps://afs.confex.com/afs/2015/webprogram/Paper22423.html>

- Yellowstone R. damless diversion example:

Blockedhttp://missoulian.com/news/state-and-regional/giant-screens-to-save-fish-installed-on-yellowstone-river/article_23083d26-da99-11e2-87cf-0019bb2963f4.html

- Sacramento River, Red Bluff Pumping Station and Fish Screen:

Blockedhttp://www.bbiius.com/projects/ajax/bbii/red_bluff.html

- Stanford University damless diversion and pump station: San Francisquito Creek Pump Station:

Blockedhttps://lbre.stanford.edu/sem/surfacewater <Blockedhttps://lbre.stanford.edu/sem/surfacewater>

3 Considering the dire status and significant migration limitations of pallid sturgeon, is unreasonable to pursue any alternative that retains a dam in the river channel and which impedes fish passage to any degree when damless diversion technology is readily available, proven, and already in use on the Yellowstone and other large river systems.

Thank you for considering and recording my comments in the public record,

Matt Stoecker

Fish Biologist
Stoecker Ecological

From: Ellen Wznick
To: cenwo-planing@usace.army.mil; CENWO-Planning
Subject: [EXTERNAL] SAve the Farmer
Date: Wednesday, July 27, 2016 2:22:28 PM

---

1 SAVE our valley

Ellen Wznick
Advertising Rep

Sidney Herald

310 2nd Ave. NE, Sidney, MT 59270

406.433.2403 <tel:406.433.2403> | fax 406.433.7802 <tel:406.433.7802>
heraldsales@sidneyherald.com <mailto:Heraldsales@sidneyherald.com>

From: Mary Louise Whitlow
To: CENWO-Planning
Subject: [EXTERNAL] Save the pallid sturgeon
Date: Wednesday, July 27, 2016 3:39:34 PM

---

1 Please do not build a new dam but replace the irrigation system with pumps.
Thanks
Mary Louise Whitlow

Sent from my iPhone

From: Jacklyn Damm
To: CENWO-Planning
Subject: [EXTERNAL] SUPPORT OF THE INTAKE DIVERSION DAM
Date: Wednesday, July 27, 2016 9:33:14 AM

1 I am writing today in support of the Intake Diversion Dam, not only as a Richland County Employee but also as a farmers wife.
Thank you,
Jacklyn Damm

<Blockedhttp://mt-richlandcounty.civicplus.com/images/pages/N548/rchdlogo.jpg>
Jacklyn Damm
Chronic Disease Prevention Specialist
Richland County Health Department
1201 W Holly ST, Suite #1
(P) 406.433.2207
(F) 406.433.6895
Blockedwww.richland.org/health <Blockedhttp://www.richland.org/health>

From: Dave Strunk
To: CENWO-Planning
Subject: [EXTERNAL] Yellowstone Diversion Dam
Date: Wednesday, July 27, 2016 5:44:42 PM

US Army Corps of Engineers, Omaha District:

Please remove and replace the Intake Diversion Dam (also known as Yellowstone River Diversion Dam) with a damless diversion that enables endangered sturgeon and other species to freely migrate along the river. Such damless diversions already exist elsewhere on the Yellowstone.

Kind regards,
Dave Strunk
Phoenixville, PA

From: Lindsay
To: CENWO-Planning
Subject: [EXTERNAL] ATTN: CENWO-PM_AA Lower Yellowstone Weir Project
Date: Wednesday, July 27, 2016 2:36:51 PM

BP-245a

To whom it may concern

1 I would like to submit a comment in favor of the construction of a channel to guide the fish downstream. This plan is much more economically viable than complete removal of the weir, which would farmers to spend even more money to grow their crops.

It is not economically feasible to expect them to shoulder the $500 million burden that a system built on pumps would create. Not to mention lost downtime from pumps as our neighboring water districts experience. Ultimately this would lead to many farmers being put out of business, and local economies would suffer.

2 Environmentally, those pumps and generators required would create an even larger negative impact. More land would need to be accessed and dedicated to construction and maintenance of such an elaborate system, this is more land taken out of agricultural production.

Please do not punish these farmers for trying to work within a system they did not create. I have yet to hear one of them say that they don't want to save the fish. They can appreciate this ancient species just as much as those opposed to the diversion.

The only plan that could guarantee the best chance for survival of both endangered species is the construction of a channel.

Additionally, I would hope local comments from those directly impacted by such a change would be taken more seriously than those from foreign countries and other interests who could not possibly understand what these local communities stand to lose. There are many people who fail to consider what it takes to feed our world, and don't understand the meaning of compromise when it comes to the intersection of animals and humans.

Thank you
Lindsay Smith
242 Red Wing Rd
Sidney MT 59270
701-863-6729

Sent from Outlook

From:	Dan Crockett
To:	CENWO-Planning
Subject:	[EXTERNAL] Fwd: comment on Intake Diversion
Date:	Thursday, July 28, 2016 9:49:15 AM

BP-245b

Dear Madam/Sir,

I realized that I had neglected to provide my address in the Intake Diversion comments I submitted last night (below). That address is:

Dan Crockett
7015 Siesta Drive
Missoula, MT 59802
406-546-9482
dancrockett63@gmail.com <mailto:dancrockett63@gmail.com>

My apologies for the oversight and thanks again for your consideration.

---------- Forwarded message ----------
From: Dan Crockett <dancrockett63@gmail.com <mailto:dancrockett63@gmail.com> >
Date: Wed, Jul 27, 2016 at 10:59 PM
Subject: comment on Intake Diversion
To: cenwo-planning@usace.army.mil <mailto:cenwo-planning@usace.army.mil>

U.S. Army Corps of Engineers

Omaha District

ATTN:CENWO-PM-AA

1616 Capitol Avenue

Omaha, NE 68102

RE: NEPA scoping for Intake Diversion DEIS

Dear Madam/Sir:

1 Thank you for the opportunity to comment on the draft environmental impact statement that will weigh options for fish passage at the Intake Diversion on the lower Yellowstone River in Montana. Over the past 27 years, I have floated the Yellowstone from Paradise Valley to Intake, including an ill-advised but successful pitch-black descent of the Intake weir itself one October night. I've spent dozens of days on the 25 miles from Intake upstream. In all that time, I may never have shared the river with a pallid sturgeon. It doesn't have to be this way. With fewer than 200 likely left in the entire upper Missouri/lower Yellowstone system, we're fast running out of time to get it right and find a solution that will meet the needs of both the farmers whose livelihoods depends on water drawn from the Yellowstone and the needs of this ancient fish whose life depends on water flowing freely in that same river.

2 The preferred solution, replacing the virtually impassable low-head rock weir with a completely impassable concrete dam, stakes everything on a 2- mile-long bypass channel around the dam. Despite costing roughly $60 million of public money, the bypass is a gamble without precedent. There are no examples of pallid sturgeon navigating such a constructed channel. The great majority of fishery professionals who have examined the proposal and understand the

needs of critically endangered pallid sturgeon give the project abysmal odds of success. What has the best chance of succeeding: removing the dam and letting these fish flow up and down the river as they did for millions of years.

I urge you to develop and select an alternative that requires removing the existing weir to allow unimpeded upstream passage for pallid sturgeon and other important sport fish species. Choose instead an alternative that allows for the removal of the weir and doesn't require a replacement while meeting the needs of traditional agricultural water use
3 during crucial low-flow months by building a series of irrigation pumps. Invest in conservation measures in the existing canal to improve efficiency by lining, piping, and modifying the headgate. Powering these irrigation pumps using a wind generator, or if feasible, low-head hydro in the main canals.

This work should use agency funding and additional federal appropriations, above what is currently in hand, to pay for the project as well as create a trust fund to pay for pumping and maintenance costs. Economic analysis for alternatives mandating a weir/dam should include long-term annual estimated costs of maintaining all structures and
4 the bypass channel, and clearly identify where and how these funds will be generated.

Finally, biological criteria must be the primary determinant for which alternative has the highest probability of success, and for determining if pallid sturgeon succeed in passing upstream. The Corps should assume fully responsibility for funding all such monitoring.

Again, I appreciate the opportunity to comment and hope you'll give the pallid sturgeon of the upper Missouri the best chance of swimming freely into 160 miles of the Yellowstone and perpetuating the species there.

Sincerely,

Dan Crockett

WWC ENGINEERING

1275 Maple Street, Suite F - Helena, MT 59601 - (406) 443-3962
Fax (406) 449-0056 - Email: infohln@wwcengineering.com

July 28, 2016

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

RE: Comments Regarding the Lower Yellowstone Intake Diversion Dam Fish Passage Project Draft Environmental Impact Statement

To Whom This May Concern:

On behalf of the Lower Yellowstone Irrigation Project (LYIP), WWC Engineering is submitting comments regarding the Intake Diversion Dam Project Draft EIS. The comments are as follows:

1

1. Upon a thorough review of the EIS, the Bypass Channel is the only Alternative that successfully meets the project purpose and need, which is to improve fish passage, contribute to ecosystem restoration, **AND** provide for the continued viable and effective operation of the LYIP, which supplies dependable irrigation water to nearly 58,000 acres of productive cropland. The Bypass Channel has been carefully designed to strictly adhere to US Fish & Wildlife Service's recommendations for fish passage. The Biological Review Team (BRT), comprised of the nation's foremost pallid sturgeon experts, was set up in 2006 by the US Fish and Wildlife Service specifically to develop criteria for Pallid Sturgeon that would facilitate successful fish passage based on science and known characteristics and behavior of the Pallid Sturgeon. The Bypass Channel alternative complies with those criteria; therefore, the Bypass Channel is a viable alternative. Furthermore, the Corps has committed to adaptive management to ensure pallid sturgeon use of the Bypass Channel. Therefore, the Bypass Channel alternative provides a high level of certainty for successful fish passage.

2

2. The dam removal alternatives result in a significant impact on the LYIP users by increasing their Operation and Maintenance costs by over double what they are currently paying. Such an increase in costs to the LYIP will render it economically unviable; therefore, the open river alternatives will not achieve the project purpose and cannot be implemented.

3. A minority of public comments received at the public meeting held in Billings, MT on June 30, 2016 represented an interest in a wild and free flowing river as the primary purpose of their intent. There were incidental references to the number of diversion dams on the Yellowstone River as well as the Fort Peck Dam on the Missouri River. It seems apparent that the intent is to remove these dams, not for the protection of Pallid Sturgeon, but for the over-reaching goal of a free flowing river system.

However, it is the Agency's responsibility under federal NEPA requirements to
evaluate the alternatives under the primary project purpose need. Although
3 comments advocating a free-flowing river system may be directed toward the
ecosystem restoration portion of the project purpose, such restoration cannot be
made at the expense of the other elements of the project purpose, specifically the
continued viable and effective operation of the LYIP. Additionally, a free-flowing river
approach is a policy decision that Congress has not made. Rather, Congress has
specifically authorized and continuously supported operation of the LYIP to provide
4 dependable and economic irrigation water to more than 58,000 acres of cropland.
Furthermore, the LYIP has valid, long-standing water rights that must be honored.
Any alternative that provides less than the full water right to the LYIP or requires
marketing of the water right or use of the water right for anything other than irrigation
is prohibited because there is no authority or precedent for such action.

4. Implementation of the Multiple Pump Alternative will invoke unknown Geomorphology
effects caused by 5 new artificial inlet channels and their required bank stabilization.
5 The amount of bank stabilization required would result in significant new physical
constraints within the Yellowstone River Channel Migration Zone in multiple areas
where the pump stations are proposed. Impacts of the new bank stabilization will
likely include increased water velocity, potential for localized erosion that will require
even more bank stabilization, restriction of the river's natural migration corridor, and
changes in the river's sediment loading. These impacts will extend for several river
miles beyond the project area and will impact fishery habitat over a greater distance
than the changes to the river resulting from the Bypass Channel alternative.

5. Implementation of the Multiple Pump Alternative will have significant impacts from
6 access roads, pump stations, inlet channels, power lines, power sub-stations,
discharge lines and other infrastructure required for implementation of this
alternative. The placement of this infrastructure may not be feasible due to the
required MDT Highway and BNSF Railroad crossings, as well as landowner access
concerns, and easements that would be necessary to be negotiated with the
landowners who are not willing to cooperate.

6. 7 The water rights for the LYIP require diversion specifically at the diversion dam.
Changing the system as outlined in the Multiple Pump Alternative may require
applications to change the water right point of diversion, adding yet another level of
uncertainty and complication to the Multiple Pump Alternative.

7. The Multiple Pump Station Alternative erroneously indicates that the alternative
8 retains a viable LYIP project. However, the O&M is over double what they are
currently paying, which will bankrupt some of the farmers. Studies performed by
Sidney Sugar (**attached**) clearly show that an increase in operating expense of more
than 15% will result in a "break-even" point for the LYIP sugar beet farmers, requiring
them to shut down operations. The 2013 Lower Yellowstone Irrigation Project crop
survey shows that sugar beets account for the project's largest use, with over 20,000

9 acres in production. This is over 1/3 of the entire project. The Lower Yellowstone Irrigation Project users currently pay a rate of $40 per acre for irrigation water from the project. The implementation of the Multiple Pump Alternative would increase user fees to approximately $90 per acre, which is more than twice as expensive as any other irrigation district's user fees in the State of Montana. Our experience on numerous irrigation projects within the State of Montana suggests that the crops currently being grown within the Lower Yellowstone Irrigation Project could not withstand this type of user fee increase, and would result in the dissolution of the Lower Yellowstone Irrigation Project. Modern agriculture typically has a very low margin, and this type of substantial increase in cost will put the LYIP farmers out of business, thus rendering the LYIP unviable.

10 8. The Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative require additional power and operational infrastructure that could present a significant hazard to listed species and species of concern. Noise and vibration from Pump operations will disturb other species of concern in adjacent wildlife habitats. **Please see our attached biological report.**

11 9. LYIP water provides important water recharge to groundwater which is used for domestic and municipal drinking water supplies as well as riparian and wetland habitat. Implementing conservation measures would severely restrict the water available for groundwater recharge and negatively impact drinking water supplies as well as riparian and wetland habitat.

12 10. Implementation of conservation measures violates Congress' clear intention that the LYIP provide dependable irrigation water and endangers the existing water rights. Congress has not authorized the LYIP to provide less water or to support fewer acres; therefore, any change in the scope of the LYIP, including changes resulting from limiting the amount of water available, are prohibited. Further, conservation measures that require changes to personal property and individual farming practices are beyond the scope of this project and outside the authority of the federal agencies.

13 11. Alternatives that require removal of the dam will remove the most popular Paddle Fish fishing area on the lower Yellowstone and Missouri Rivers. The Montana FWP generally sets an annual limit of approximately 1,000 fish harvested, with approximately 800 coming from the area below the Intake Diversion (a vast majority). This impact has far reaching effects from both a social and economic standpoint.

14 12. The Multiple Pump Station Alternative cannot be viably protected from Ice Jam Events that occur on the Yellowstone River. Ice Jam events on the Yellowstone River have had significant impacts to pumping facilities on other irrigation districts such as the Buffalo Rapids Irrigation District and the Sidney Water Users. In 2012, the Buffalo Rapids Irrigation District's Fallon Pump Station was nearly destroyed by ice flows. These ice flows tore the wing walls, made of reinforced concrete, completely off the Pump Station building, exposing the foundation and threatening the stability and

integrity of the building. This pump station is located at the end of a long inlet channel exactly as proposed in the alternative described in the draft EIS, but substantial damage still occurred. It is important to understand the magnitude of these types of events, that can be over 25 feet in height and result in large chunks of ice that are the size of a car or small truck. **Attached is a photo of the ice jam remnants from the 2012 ice event that impacted Buffalo Rapids.**

15 13. The Multiple Pump Station and Multiple Pump with Conservation Alternatives result in a significant change to the overall LYIP irrigation system. The existing system runs by gravity flow, and is not subject to power interruptions, pump failures, discharge line ruptures, or the many other factors that can cause a disruption in service. The equipment required for maintenance of these alternatives would be very specialized, and would not be "off the shelf" equipment that can be acquired on short notice. This equipment would require long lead times and would result in long-term disruption in flow to the LYIP users, which could severely impact crop production and viability of the users.

14. At the Glendive public meeting, the President of the Buffalo Rapids Irrigation Project, Barry Rakes, commented that the Lower Yellowstone Irrigation Project does not want pumps. He explained that the pumps are expensive to use and are not reliable. He also stated that “You can lose an entire crop before the pumps are fixed and running again”. Public comments from Raymond Bell, the Sidney Water Users manager, states “We have lost crops when pumps go down in midseason during critical irrigating times”. Pumping in many locations does make sense and is an efficient way
16 of providing irrigation water to crops. However, the Lower Yellowstone River contains a significant amount of sediment that becomes extremely problematic for pumping systems. Input from both the Buffalo Rapids Irrigation Project and the Sidney Water Users (who both use pump stations to supply their irrigation water and are in close proximity to the Lower Yellowstone Irrigation Project) have explained the hardships that they have endured from the sediment laden waters and the unstable nature of the Yellowstone River. Both of these irrigation projects spend a considerable amount of time, energy and money each year to protect the inflow to their pumping stations as well as to maintain their pumps. Both of these irrigation projects have expressed their opinion that pumping in lieu of a gravity diversion will not be the best alternative for the Lower Yellowstone Irrigation Project from a cost, operation and maintenance and reliability standpoint. The Yellowstone River is an unregulated river that often changes course throughout its floodplain. This results in significant efforts to ensure that inflow is able to be directed to the pump stations through dredging and sediment removal. The heavily sediment laden waters of the lower Yellowstone River provide a constant source of abrasive material to pumps within the area, requiring a much more frequent maintenance schedule than would be seen at irrigation pump stations where the water is not laden with sediments. Although the draft EIS adequately captures the operation and maintenance activities and cost of the pumping
17 alternatives, there is no discussion of the reliability concerns and associated impacts that will be a reality if either of these alternatives are implemented. These impacts

17 would include unpredictable extreme water rationing, crop losses and economic losses within the region. The LYIP would no longer be able to deliver dependable, economical irrigation water and would therefore become unviable.

We sincerely appreciate the opportunity to provide comments on the draft EIS. If you have any questions regarding these comments, please contact us at your convenience

Sincerely,

Shawn Higley, P.E., P.H.
Helena Branch Manager

SH/mh

cc: Victoria Marquis, Crowley Fleck
Mark Stermitz, Crowley Fleck
James Brower, LYIP

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Sidney Sugars
INCORPORATED
35140 County Road 125 • Sidney, Montana 59270
Agriculture: 406-433-3309 • Operations: 406-433-3303
Accounting: 406-433-3301

July 8, 2016

Lower Yellowstone Irrigation Project (LYIP)
2327 Lincoln Ave SE
Sidney, MT

BP-247

Bureau of Reclamation
Montana Area Office
PO Box 30137
Billings, MT 59107-0137

To Whom It May Concern:

From: Sidney Sugars Incorporated

In our 90 plus years of operations, working hand and hand with our beet growers, we have analyzed the economic feasibility for our growers to continue sugar beet production. Below is a chart showing that our growers cannot withstand any significant increase to their operation and maintenance costs. Sidney Sugars cannot remain economically viable with any significant reduction to sugar beet acres planted due to increased O&M costs passed on to our growers.

Sidney Sugars Analysis on Feasibility of Cost Increase on Sugar Beets

	15%	25%
New Cost of Production/Acre >	$ 1,334.00	$ 1,450.00
500 acres	$ 667,000.00	$ 725,000.00
1 Addt'l Cost/Acres to Producer >	$ 87,000.00	$ 145,000.00
15,000 tons delivered	$ 5.80	$ 9.67
Income/Acre	$1,470.00	$1,470.00
2015 Cost of Production/Acre	$1,160.00	$1,160.00
Income/Ton @ Beet Payment/Ton of >>	$49.00	$49.00
Cost of Production/Acre	$38.67	$38.67
Additional Expense/Ton	$5.80	$9.67
Per Ton Income>	$4.53	$0.67
Total New Farm Income Would Be >	$ 68,000.00	$ 10,000.00
Lost Income to Original Income Projection >	$ (87,000.00)	$ (145,000.00)
(This does not include a cost of living increase)		
Original Farm Income Was >	$ 155,000.00	$ 155,000.00
Lost Income Percent >	**-56.1%**	**-93.5%**

Already supplementing their other crops which are presently operating at a loss

To reiterate, Sidney Sugars could not remain viable with any significant reduction to sugar beet acres planted due to increased O&M costs passed onto our growers.

Sincerely,

David Garland

General Manager, Sidney Sugars Incorporated
35140 County Road 125
Sidney, MT 59270

BP-248

WWC Biological Report

Biological Resources Evaluation Report for the Non-Weir Alternatives - Intake Diversion Dam Fish Passage Project

Prepared for:
Crowley Fleck
490 N 31st Street, Suite 500
Billings, MT 59101

WWC ENGINEERING

July 2016

Biological Resources Evaluation Report for the Non-Weir Alternatives - Intake Diversion Dam Fish Passage Project

Prepared for: Crowley Fleck
490 N 31st Street, Suite 500
Billings, MT 59101

Prepared by: WWC Engineering
1849 Terra Avenue
Sheridan, WY 82801
(307) 672-0761
wwcengineering.com

Principal Author: John Berry, CWB, Project Manager

John Berry has over 40 years of experience in natural resources related wildlife/reclamation issues and environmental permitting. John has acted as wildlife/reclamation coordinator for projects associated with Wyoming and Montana surface coal mining and is familiar with both Wyoming and Montana surface mining regulatory policy. He also has extensive experience with developing and reviewing NEPA documents such as Environmental Impact Statements and Environmental Assessments for natural resource development.

Reviewed by: Shawn Higley, P.E., Branch Manager

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1.0 INTRODUCTION

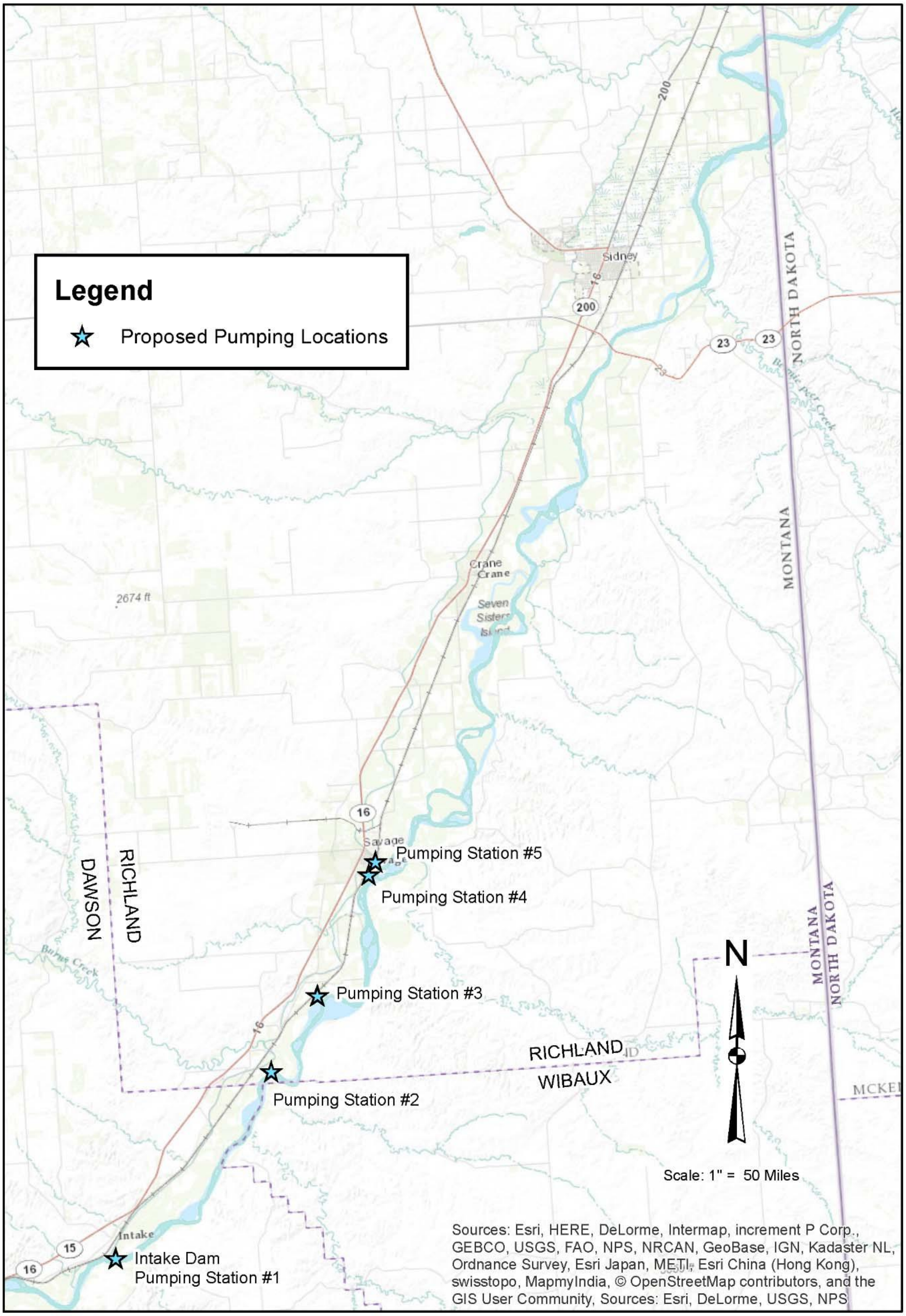
The Non-weir Alternatives (Multiple Pump Station and Multiple Pump Station with Conservation Measures Alternatives) consists of numerous radial collector wells or surface pump stations installed at multiple locations adjacent to the Yellowstone River to supply irrigation water to the Main Canal. The Non-weir Alternatives would require the installation of power lines for the primary source of power to the pumps and wind turbines may be installed to provide reserve or backup energy for the proposed new primary power source. Water would be carried from the pumps to the Main Canal by several buried discharge pipelines. The goal of using radial collector well type systems or surface pump stations with fixed pumps would be to eliminate the need for a diversion structure within the Yellowstone River. The Multiple Pump with Conservation Measures Alternative is based on a significant reduction in water used by the Lower Yellowstone Irrigation Project. The biological impacts from this reduction in water use under this Alternative are addressed within this report.

For the purposes of this report, biological resources include wetlands (aquatic resources), vegetation, and wildlife species. The objective of this report is to assess the existing biological conditions and provide a path for evaluating the impacts of the Non-Weir Alternatives to biological resources. This includes identification of habitats in the Non-weir Alternatives area of concern (AOC) that could and do support special aquatic features, vegetative, and wildlife threatened, endangered, candidate and proposed (T&E) species and other high value resources.

Appropriate state and federal agencies, including the Montana Fish, Wildlife and Parks (MFWP), Montana Department of Natural Resources and Conservation (DNRC), the U.S. Army Corps of Engineers (USACE), and the U.S. Fish and Wildlife Service (USFWS) should be consulted on the scope of work for the proposed ecological surveys and presence or absence of species of special concern (SOC).

2.0 STUDY AREA

The Non-Weir Alternatives project is located in northeast Montana within Dawson, Wibaux, and Richland counties (**Map 1**). The impacts of the Non-Weir Alternatives extend approximately 50 miles downstream (and approximately 2 miles upstream) from the Intake Diversion, which is approximately 15 miles north of Glendive, Montana. Impacts from the Non-Weir Alternatives would likely be confined to limited sites within a relatively narrow corridor along the Yellowstone River AOC. These sites include the Intake Diversion location, the pumping stations (and associated infrastructure), and corridors for the buried pipelines installed to carry water from the pumping stations to the Main Canal. Potential pumping station locations are included on **Map 1** for illustration purposes only as the actual locations for the pumping stations and buried pipelines have not yet been determined.



Map 1. General Location Map with Proposed Pumping Station Locations.

The habitats included in the Non-Weir Alternatives AOC are predominantly associated with riparian areas on both sides of the Yellowstone River and also include extensive areas of cultivated lands.

3.0 METHODS

3.1 Wetlands (Aquatic Resources)

Since the actual locations for the pumping stations and buried discharge pipelines have not yet been determined, detailed wetlands surveys have not been performed. For the purposes of this report, waters of the U.S. (WUS) and other waters of the U.S. (OWUS) within the Non-Weir Alternatives AOC were assessed using USFWS National Wetland Inventory (NWI) mapping data. NWI mapping was accessed from the USFWS National Wetland Inventory website (USFWS 2016a). This mapping is not intended to be used in place of detailed on-the-ground inspection of any particular site, but does indicate the presence of aquatic features in the area and is an essential part of wetlands inventories. Terminology follows classifications included in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979).

3.2 Vegetation

Vegetation data have not been collected specifically for the Non-Weir Alternatives. Supplemental information on general vegetation cover types was obtained from several sources, including the Montana Land Cover Atlas (Fisher et al. 1998) and the Montana Natural Heritage Program (MTNHP).

3.3 Wildlife

Wildlife monitoring data have not been collected specifically for the Non-Weir Alternatives. Supplemental information on species occurrence and habitat use in the wildlife survey area was obtained from several sources, including the MTNHP, the MFWP, and the Bureau of Land Management (BLM). The categories of wildlife evaluated in this report include big game, other mammals, raptors, upland game birds, waterfowl and shorebirds, migratory birds (passerine and breeding birds), reptiles and amphibians, fish and aquatic life, T&E and SOC.

4.0 RESULTS

The following sections provide results from file searches along with relevant figures, tables, and maps. **Appendix A** provides a list of vegetation species that have the potential to occur in the Non-weir Alternatives AOC. **Appendix B** provides a list of wildlife species that have the potential to occur in the Non-weir Alternatives AOC.

4.1 Wetlands/Aquatic Resources

According to NWI mapping, 22 subclasses of wetlands are present within the area evaluated for the Non-Weir Alternatives (**Table 1**). In the future, all potential WUS and OWUS within the projected disturbance areas associated with the Non-Weir Alternatives AOC will need to be delineated during site-specific aquatic resources inventories. The wetland delineations should be conducted in accordance with the USACE Wetland Determination Data Forms – Great Plains Region, Version 2.0 (USACE 2010). Baseline soil mapping for the Non-Weir Alternatives AOC should be reviewed for general soils information to determine if hydric soils are present.

Table 1. NWI Wetlands - Non-Weir Alternatives

Wetland Classification[1]
Freshwater Emergent
PEMA (palustrine, emergent, temporary flooded)
PEMC (palustrine, emergent, seasonally flooded)
PEMAx (palustrine, emergent, temporary flooded, excavated)
PEMAh (palustrine, emergent, temporary flooded, diked/impounded)
PEMCx (palustrine, emergent, seasonally flooded, excavated)
PEMF (palustrine, emergent, semi permanently flooded)
PEMCh (palustrine, emergent, seasonally flooded, excavated)
Freshwater Scrub-Shrub
PSSA (palustrine, scrub-shrub, temporary flooded)
PSSC (palustrine, scrub-shrub, seasonally flooded)
Freshwater Pond (Aquatic Bed)
PABF (palustrine, aquatic bed, semi permanently flooded)
PABFh (palustrine, aquatic bed, semi permanently, diked/impounded)
Freshwater Pond Unconsolidated Shore
PUSA (palustrine, unconsolidated shore, temporary flooded)
PABFx (palustrine, unconsolidated shore, semi permanently, diked/impounded)
PUSC (palustrine, unconsolidated shore, seasonally flooded)
PUSAh (palustrine, unconsolidated shore, temporary flooded, diked/impounded)
PUSCh (palustrine, unconsolidated shore, seasonally flooded, diked/impounded)
Riverine Lower Perennial
R2USA (riverine, lower perennial, unconsolidated shore, temporary flooded)
R2USC (riverine, lower perennial, unconsolidated shore, seasonally flooded)
R2UBFx (riverine, lower perennial, unconsolidated bottom, semi permanently flooded, excavated)
R2UBG (riverine, lower perennial, unconsolidated bottom, intermittently exposed)
Riverine Intermittent
R4SBC (riverine, intermittent, streambed, seasonally flooded)
R4SBCx (riverine, intermittent, streambed, seasonally flooded, excavated)

[1] From Cowardin et al. (1979)

4.2 Vegetation

The ecological system primarily associated with the Non-Weir Alternatives is the Great Plains/Wetland and Riparian/Floodplain Ecological System, as defined by the MTNHP (2016a). The Great Plains/Wetland and Riparian/Riparian ecological system occurs along smaller tributaries of the Yellowstone (MTNHP 2016b).

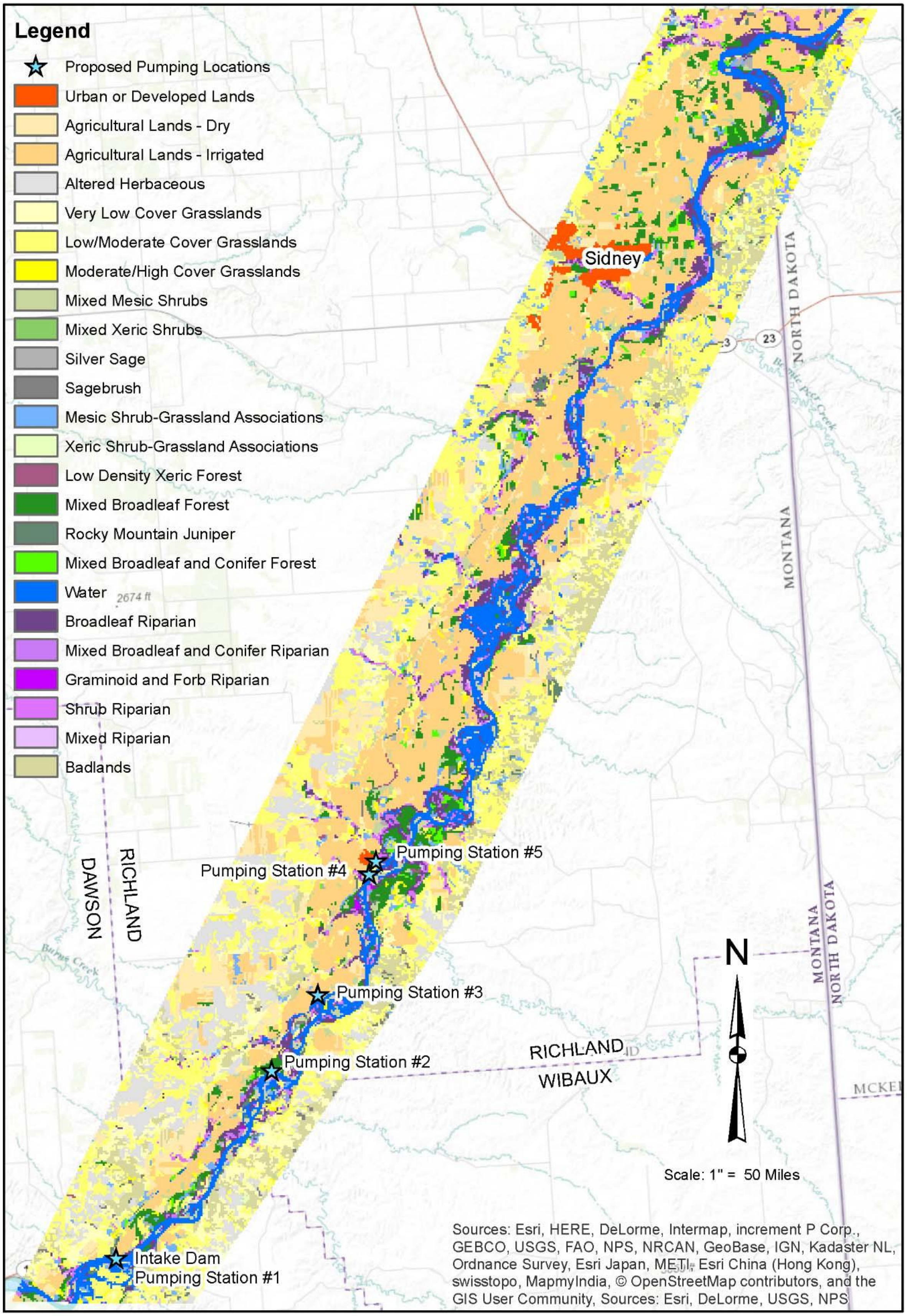
The dominant overstory species within the Floodplain Ecological System include the narrowleaf cottonwood *(Populus angustifolia)* and Plains cottonwood (*Populus deltoides).* Willows (*Salix species*), redosier dogwood (*Cornus sericea*) and common chokecherry (*Prunus virginiana*) form a thick, multi-layered shrub understory in relatively undisturbed stands, with a mixture of cool and warm season grasses. Box elder (*Acer negundo*) and green ash (*Fraxinus pennsylvanica*) can be common in older stands. Floodplain systems are often subjected to overgrazing and/or agriculture and can be heavily degraded, with salt cedar (*Tamarix ramosissima*) and Russian olive (*Eleagnus angustifolia*) replacing native woody vegetation and regrowth. Groundwater depletion and lack of fire have resulted in additional species changes.

Dominant species within the Riparian Ecological System are similar to those found in the Great Plains Floodplain System. In the Non-Weir Alternatives AOC, the dominant overstory species are narrowleaf cottonwood and Plains cottonwood. In wetter systems, the understory is typically willow and redosier dogwood with grasses such as western wheatgrass (*Pascopyrum smithii*) and forbs like American licorice (*Glycyrrhiza lepidota*). In areas where the channel is incised, the understory may be dominated by big sagebrush (*Artemisia tridentata*) or silver sagebrush (*Artemisia cana*). Like floodplain systems, riparian systems are often subjected to overgrazing and/or agriculture.

Map 2 indicates the land cover types associated with the AOC, as determined from the Montana Land Cover Atlas (Fisher et al. 1998). Vascular plant species likely to occur with the Floodplain and Riparian Ecological Systems as determined from MTNHP information are listed in **Appendix A** (MTNHP 2016a, 2016b, and 2016c).

4.3 Wildlife

The ecological systems primarily associated with the Non-Weir Alternatives AOC are the Great Plains/Wetland and Riparian/Floodplain ecological systems, as defined above. The area also includes open water associated with the Northwestern Great Plains Valley River Ecological System (MTNHP 2016c). As indicated in **Appendix B**, these systems support a large variety of terrestrial and aquatic wildlife species.



Map 2. Montana Land Cover Types Associated with the Non-Weir Alternatives.

4.3.1 Big Game

The big game species associated with these systems are included in **Appendix B**. According to data from the MTNHP, there are six big game species associated with the AOC (MTNHP 2016a and 2016b). According to MTNHP information, pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), and white-tailed deer (*Odocoileus virginianus*) have the potential to occur within the Non-weir Alternatives AOC MTNHP (2016a and 2016b). While not indicated in the MTNHP database as occurring in the eastern portion of Montana, moose (*Alces americanus*) have been observed in the area (MTNHP 2015c). Two species (bison [*Bos bison*] and elk [*Cervus canadensis*]) had been documented in the AOC but are no longer found in the area. No big game species with the potential to occur within the AOC are listed as T&E species (USFWS 2016b) but one of the species is a SOC (MTNHP 2016a and 2016b). There are no critical habitats for big game species associated within the AOC. SOC species are discussed in Section 4.3.10.

Literature indicates that pronghorn are common, year-round residents in the Non-weir Alternatives AOC (MTNHP 2016d). The Non-weir Alternatives AOC is within Region 7, Pronghorn Hunt District 703 and, based on the most current annual big game herd information from MFWP, the estimated Region 7 pronghorn population in 2015 was 40,395 animals (MFWP 2016a). Pronghorn are most often associated with sagebrush communities, particularly in winter (Sundstrom et al. 1973, Fitzgerald et al. 1994). Since the predominant habitats within the Non-Weir Alternatives AOC are riparian and cultivated lands, pronghorn may be encountered if the Non-Weir Alternatives option is selected but their occurrence would likely be minimal and limited to agricultural lands.

Mule deer are very common, year-round residents in the Non-weir Alternatives AOC and the MFWP classifies the area as winter/general range (MTNHP 2016e). The Non-weir Alternatives AOC is within Region 7, Mule Deer Hunt District 703 and, based on the most current annual big game herd information from MFWP, the estimated Region 7 mule deer population in 2015 was 297,231 animals (MFWP 2016b). Mule deer use a wide variety of habitats, but typically prefer sagebrush-grassland, rough breaks, and riparian bottomland. Given the abundance of these habitat types within and adjacent to the Non-Weir Alternatives AOC, mule deer can be expected to be encountered if the Non-Weir Alternatives option is selected.

White-tailed deer are common, year-round residents in the Non-weir Alternatives AOC and the MFWP classifies the area as winter/general range (MTNHP 2016f). The Non-weir Alternatives AOC is within Region 7, White-tailed Deer Hunt District 703 and, based on the most current annual big game herd information from MFWP, the estimated Region 7 white-tailed deer population in 2015 was 12,154 animals (MFWP 2016c). White-tailed deer use a wide variety of habitats, but typically prefer riparian bottomland where leaves, twigs, fruits, and berries of browse plants such as chokecherry (*Prunus virginiana*), serviceberry (*Amelanchier* sp.), snowberry (*Symphoricarpos* sp.), and dogwood (*Cornus* sp.) are easily available. Given the abundance of this habitat type within and adjacent to the Non-Weir Alternatives AOC, white-tailed deer can be expected to be encountered if the Non-Weir Alternatives option is selected.

While moose have been observed in the Non-weir Alternatives AOC, they are not common and the area has not been classified for use by the MFWP (2016g) and the discussion of this species is not carried forward.

4.3.2 Other Mammals

The ecological systems primarily associated with the Non-Weir Alternatives are the Great Plains/Wetland and Riparian/Floodplain ecological system, as defined above. The other mammal species (predators, bats, and small mammals) associated with these systems are included in **Appendix B**. According to data from the MTNHP, there are 50 other mammal species associated with the AOC (MTNHP 2016a and 2016b).

One other mammal species is listed as T&E species within the AOC (USFWS 2016b) and 15 of the species are listed by MTNHP as SOC or PSOC (MTNHP 2016a and 2016b). T&E, SOC, and PSOC species are discussed in Section 4.3.10.

4.3.3 Raptors

The raptors potentially occurring in the Non-Weir Alternatives AOC, as indicated in MTNHP information for the Floodplain and Riparian ecological systems are included in **Appendix B**. Twenty-three raptor species have the potential of occurring within the AOC. The overstory species associated with these ecological systems include narrowleaf and Plains cottonwoods, both of which are large enough to support raptor nests. A review of National Agriculture Imagery Program (NAIP) color infra-red imagery shows that the AOC has a significant number of large trees capable of supporting raptor nests and there is a significant likelihood of encountering nesting raptors under the Non-Weir Alternatives.

No raptor species with the potential to occur within the AOC are listed as T&E species (USFWS 2016b) but five of the species are SOC or PSOC (MTNHP 2016a and 2016b). SOC and PSOC species are discussed in Section 4.3.10.

4.3.4 Upland Game Birds

According to the MTNHP database, there are four species of game birds that have the potential of occurring within the AOC. These include greater sage-grouse (*Centrocercus urophasianus*, hereafter GRSG), sharp-tailed grouse (*Tympanuchus phasianellus*), wild turkey (*Meleagris gallopavo*), and mourning doves (*Zenaida macroura*).

No game bird species with the potential to occur within the AOC are listed as T&E species (USFWS 2016b) but two of the species are SOC (MTNHP 2016a and 2016b). SOC and PSOC species are discussed in Section 4.3.10.

On September 22, 2015, USFWS determined that listing the GRSG as an endangered or threatened species under the Endangered Species Act (Act) was not warranted (USFWS 2015a). Recent documents regarding GRSG include the Montana Greater Sage-Grouse Amendment (BLM 2015a), the Approved Resource Management Plan and Final Environmental Impact Statement for the Miles City Field Office Planning Area (Miles City RMP/FEIS) (BLM 2015b), and the State of Montana, Office of the Governor, Executive Order No. 12-2015 (Office of the Governor 2015). The documents include management procedures to consolidate GRSG protection within the state of Montana in light of the federal government's recent decision not to list the GRSG under the ESA. According to mapping information included in the Greater Sage-Grouse Habitat Conservation Strategy, the Non-Weir Alternatives AOC is not within an area classified as a core, general, or connectivity habitat management area for GRSG (Office of the Governor 2015) and there are no GRSG leks within 2 miles of the AOC (MFWP 2016d).

According to MTNHP, sharp-tailed grouse habitat primarily consists of grasslands interspersed with shrub and brush-filled ravines (MTNHP 2016h). They prefer stands of inter-mixed tree and shrub grasslands. With high population, they spread into islands of native grassland, usually along drainages surrounded by grain fields. The MFWP provided information indicating one sharp-tailed grouse dancing ground is located approximately 1.8 miles from the current Intake Diversion (MFWP 2016e). No other sharp-tailed grouse dancing grounds have been identified within 2 miles of the AOC

MTNHP information indicates that the AOC is within occupied wild turkey habitat (MTNHP 2016i). Wild turkeys utilize open ponderosa pine forest in rugged terrain, interspersed with grassland, and brushy draws as their preferred habitat. Canyon bottoms at lower elevations, grain fields and livestock feeding areas are utilized in late fall and winter (MTNHP 2016i). In the state of Montana, wild turkeys are considered exotic/introduced species and are year round residents within the AOC (MTNHP 2016i).

According to MTNHP, mourning doves generally shun deep woods or extensive forest and select woodlands that are more open and edges between forest and prairie habitats for nesting (MTNHP 2016j). Human alteration of original vegetation is generally beneficial for this species, with creation of opening in extensive forest and plowing of grasslands for cereal-grain production. Mourning doves are summer residents within the AOC (MTNHP 2016j).

4.3.5 Waterfowl and Shorebirds

According to the MTNHP database, there are 77 species of shore birds/waterfowl that have the potential of occurring within the AOC (**Appendix B**).

Four species of waterfowl or shorebirds with the potential to occur within the AOC are listed as T&E species (USFWS 2016b). There are no critical habitats for these species associated within the AOC. Eighteen shore bird/waterfowl species are SOC or PSOC (MTNHP 2016a and 2016b). T&E, SOC, and PSOC species are discussed in Section 4.3.10.

4.3.6 Migratory Birds (Passerine and Breeding Birds)

A total of 105 migratory bird species (perching and breeding birds) have the potential of occurring within the AOC (**Appendix B**). No migratory bird species with the potential to occur within the AOC are listed as T&E species (USFWS 2016b) but 16 of the species are SOC or PSOC (MTNHP 2016a and 2016b). SOC and PSOC species are discussed in Section 4.3.10.

4.3.7 Non-Game

A total of six non-game bird species have the potential of occurring within the AOC (**Appendix B**). None of the species is considered SOC or PSOC (MTNHP 2016a and 2016b).

4.3.8 Reptiles and Amphibians

A total of 23 reptile or amphibian species have the potential of occurring within the AOC (**Appendix B**). No reptile or amphibian species with the potential to occur within the AOC are listed as T&E species (USFWS 2016b) but nine are SOC (MTNHP 2016a and 2016b).

4.3.9 Fish and Aquatic Life

The portion of the Yellowstone River within the Non-weir Alternatives AOC is described by the MTNHP as a “large, warm-water river with a low to moderate gradient with origin in the intermontane basins of Montana” (MTNHP 2016c). Within this portion of the river, elevations range between 2,000 feet and 1,900 feet and the river is characterized by long deep runs and pools with depths less than 2 meters (6.5 feet), numerous mid-stream islands, side channels, and interspaced riffles. Cobble in the riffles, sand and gravel in runs and pools, with gravel and/or finer-textured side channels characterize the substrate (MTNHP 2016c).

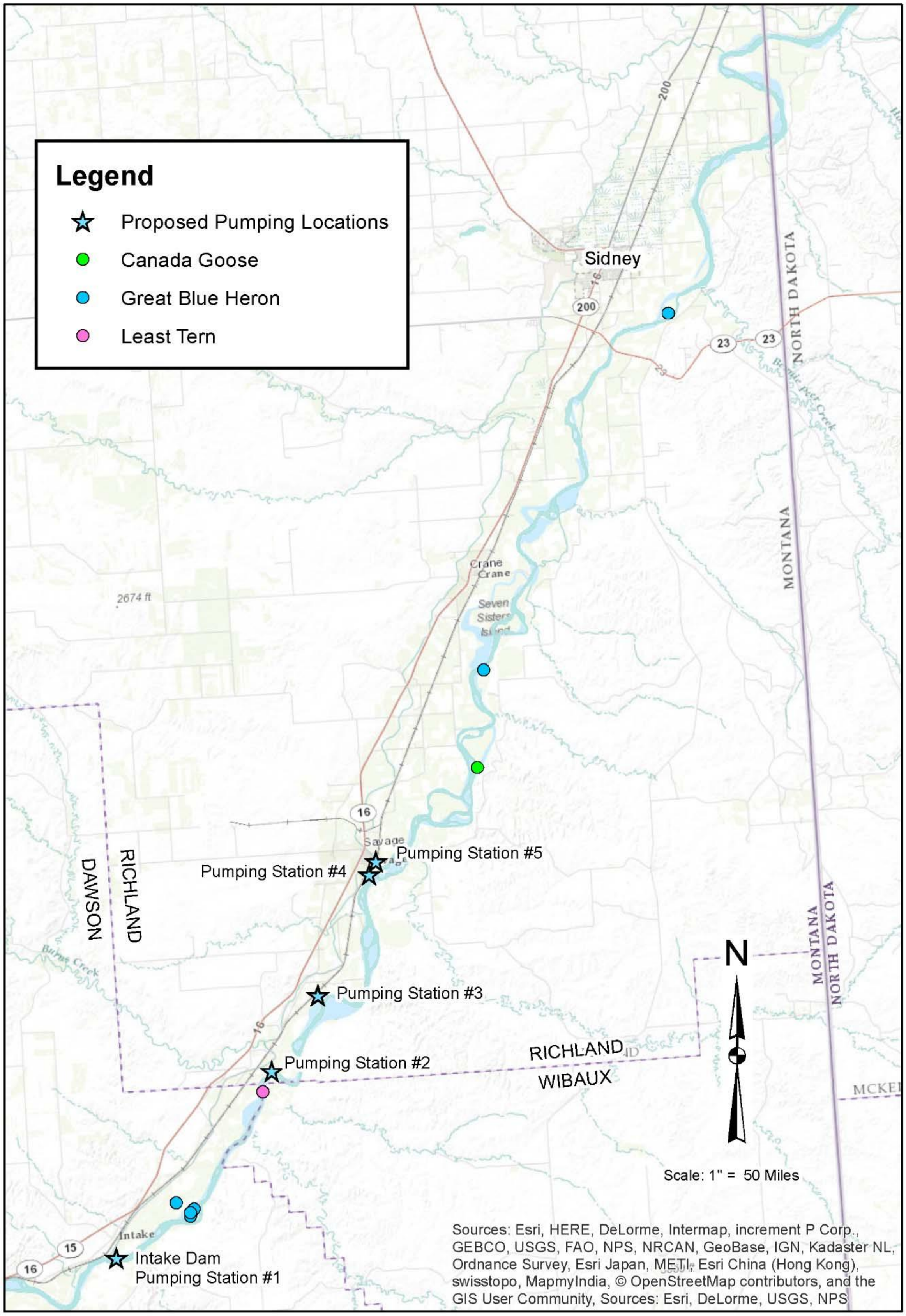
A total of 17 fish species have the potential of occurring within the AOC (**Appendix B**). One fish species with the potential to occur within the AOC is listed as a T&E species (USFWS 2016b) and four others are SOC (MTNHP 2016c). T&E and SOC species are discussed in Section 4.3.10.

The Northwestern Great Plains Valley River ecological system is also home to a number of invertebrate aquatic species. A total of seven invertebrate species have the potential of occurring within the AOC (**Appendix B**). No invertebrate species with the potential to occur within the AOC are listed as T&E species (USFWS 2016b) but three are PSOC (MTNHP 2016a, 2016b, and 2016c).

4.3.10 Threatened, Endangered, and Candidate Species and MTNHP Designated Species of Concern

As indicated in **Appendix B**, five USFWS-designated T&E vertebrate species have the potential to occur in the Non-weir Alternatives AOC (USFWS 2016b). The USFWS has not designated critical habitat for any T&E species in the vicinity of the Non-weir Alternatives AOC at this time. The five T&E species include the least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*), whooping crane (*Grus americana*), pallid sturgeon (*Scaphirhynchus albus*), and the northern long-eared bat (*Myotis septentrionalis*) (USFWS 2016b). There are no critical habitats for these species associated within the AOC. On April 5, the USFWS determined that the Sprague's pipit (Anthus spragueii) did not warrant listing on the ESA at this time (U.S. Government Publishing Office (GPO) 2016).

In Montana, the least tern (endangered) is a summer resident and generally confined to the Lower Yellowstone River and the Missouri River (downstream of Fort Peck Reservoir) (MTNHP 2016k). Least Terns nest on barren sand-pebble beaches and islands of large reservoirs and rivers in northeastern and southeastern Montana. As determined from MTNHP information (MTNHP 2016k) at least one least tern nest site has been confirmed within the AOC (**Map 3**).



Map 3. Waterfowl/Shore Birds Nest Observations Associated with the Non-Weir Alternatives.

The piping plover (threatened) is migratory over the eastern two-thirds of the state and summer resident in the northern portion of the state, including the Lower Yellowstone River and Missouri River (MTNHP 2016l). Piping Plovers primarily select barren sand or pebble beaches on shorelines or islands in freshwater wetlands (MTNHP 2016l). No nesting sites have been confirmed in the AOC but specific surveys for the piping plover have not been conducted within the AOC.

According to the MTNHP, the whooping crane (endangered) is listed as migratory within Montana, including the AOC (MTNHP 2016n). Observations of individual birds could occur within the AOC, associated with marshes and grain and stubble fields, as well as wet meadows, wet prairie habitat, and freshwater marshes that are usually shallow and broad with safe roosting sites and nearby foraging opportunities (MTNHP 2016n).

The pallid sturgeon (endangered) is listed as a year round resident in the AOC (MTNHP 2016o). Pallid Sturgeon use large, turbid rivers over sand and gravel bottoms, usually in strong current and also in impoundments of these rivers. While more common in the Missouri River, the pallid sturgeon has been documented in the AOC (MTNHP 2016o).

According to the MTNHP, Northern long-eared bats/Northern Long-eared Myotis (threatened) have been located hibernating in an abandoned mine in river breaks habitat in Richland County (MTNHP 2016p). The location is north of the AOC. These bats prefer cool hibernacula and selects narrow crevices for hibernation. Summer day roosts are often in cavities or crevices behind peeling bark in trees, usually in tall, wide-diameter and partially dead hardwoods (MTNHP 2016p).

Appendix B includes a list of the 75 MTNHP designated vertebrate and invertebrate SOC (including T&E species) or PSOC that could occur in the Non-weir Alternatives AOC (**Table 2**). A total of 66 species have been designated by MTNHP as SOC and 25 species have been designated as PSOC.

Table 2. Summary of SOC and PSOC with the Potential to Occur in the AOC

Category	Species of Concern (SOC)	Potential Species of Concern (PSOC)	Total
Mammals	10	6	16
Avian	31	10	41
Reptiles/Amphibians	9	0	9
Fish	5	0	5
Invertebrates	0	2	3
Total	**57**	**18**	**73**

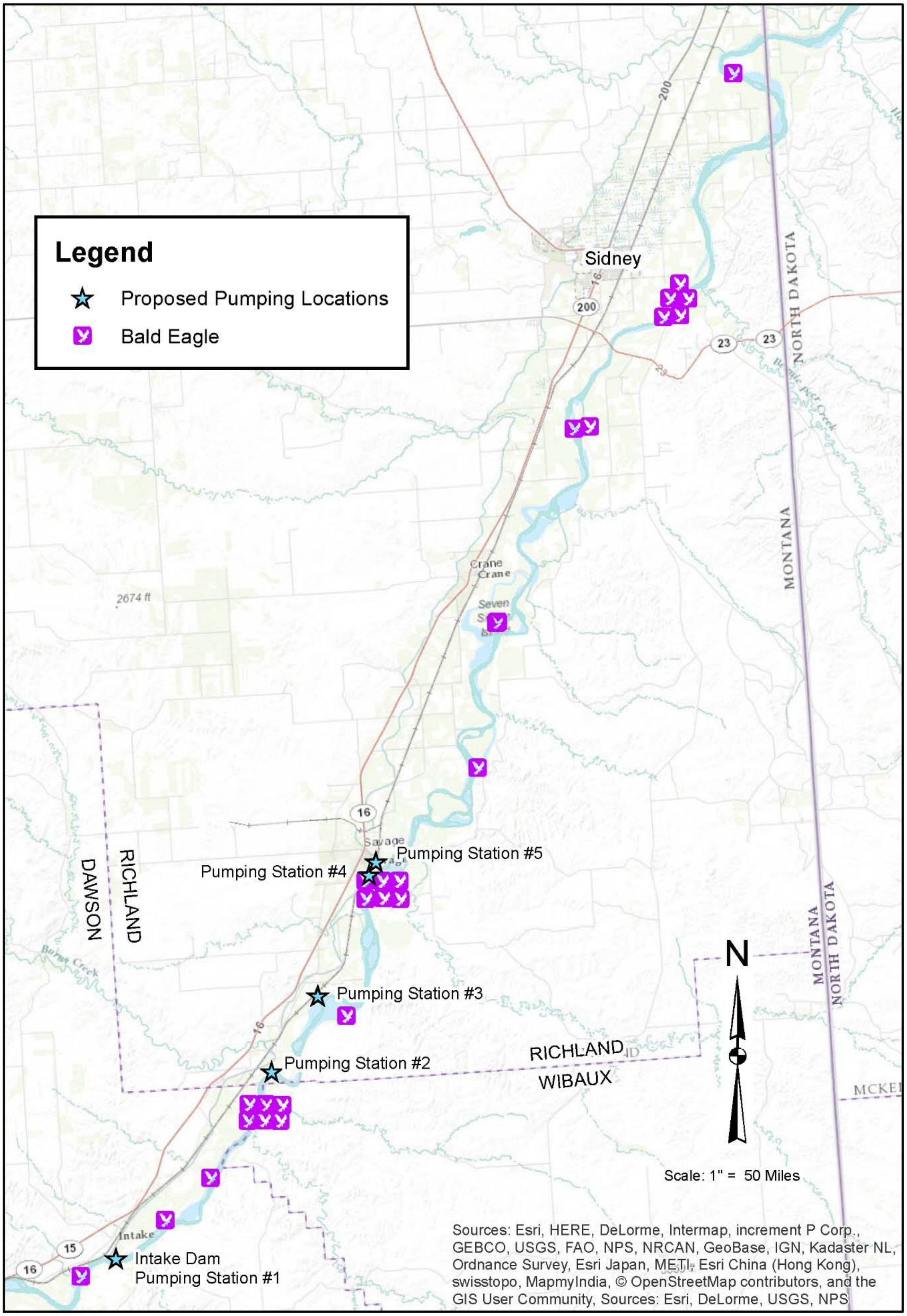
According to data from the MTNHP (2016q), there are 26 bald eagle (*Haliaeetus leucocephalus*) nests located within the AOC (**Map 4**). These nests likely represent multiple nests within specific territories and are not all used for nesting each year. The MTNHP data also indicate that a number of great blue heron (*Ardea herodias*) nests (**Map 3**).

5.0 IMPACTS

5.1 Wetlands/Aquatic Resources

Wetlands and associated riparian areas would l likely be significantly impacted by the Non-Weir Alternatives. Once potential disturbance areas have been determined, aquatic resource inventories will need to be completed for disturbance within the AOC and verified by the USACE. Depending on the actual disturbance areas involved, direct impacts to aquatic resources could occur resulting from construction of pump station, access roads, electric power lines, discharge lines and other infrastructure. Indirect impacts could result from removal of the Intake Diversion and the subsequent change in the amount of water diverted and delivered throughout the LYIP (Multiple Pumps with Conservation Measures Alternative), which would reduce the areas currently inundated and which sustain wetlands upstream and/or downstream of the diversion. Additional indirect wetlands/aquatic resources impacts would result from the implementation of conservation measures within the Lower Yellowstone Irrigation Project (LYIP) system, which would severely reduce the amount of water that sustains wetlands/aquatic resources along the irrigation supply routes and reduce the amount of groundwater recharge that is a water source for some of these aquatic resources. Wetlands/aquatic resources delineations would be required and directly and indirectly impacted aquatic resources would require mitigation if impacts are greater than 0.1 acre due to the number of pumps and/or pump stations and associated infrastructure. Notification to the USACE under the applicable USACE permit obtained prior to disturbance would provide authorization for the project. Wetland and riparian resource mitigation would be incorporated into final reclamation plans since permanent wetland impacts would likely be greater than 0.1 acre. Disturbed non-jurisdictional wetlands may need to be restored as required by the authorized federal or state agency or private surface land owner.

During the period of time after construction and before replacement of wetlands, all functions of disturbed wetlands would be lost. The replaced wetlands may not duplicate the exact function and landscape features of the pre-existing wetlands, but replacement plans would be evaluated by the USACE and replacement would be in accordance with the requirements of Section 404 of the CWA as determined by the COE. Impacts to wetlands/aquatic resources from Non-weir Alternatives would be significantly greater over the long term than alternatives that continue



Map 4. Locations of Bald Eagle Nests Associated with the Non-Weir Alternatives.

to utilize the weir. Mitigating the loss of wetlands would likely add significant costs to the project.

5.2 Vegetation

Vegetation would be impacted by construction related to the Non-Weir Alternatives. Short-term effects associated with this vegetation disturbance would include increased soil erosion and, depending on the actual disturbance limits, habitat (forage) loss for livestock and wildlife. The application of best management practices for reclamation and stabilization of disturbance, in addition to compliance with regulatory programs and project-specific reclamation plans, would minimize or mitigate these impacts over both the short and long terms.

Any decrease in plant diversity resulting from construction and reclamation would not adversely affect productivity of the reclaimed areas, regardless of the alternative selected and the proposed post-mining land use (wildlife habitat and cultivated land) would be achieved even with the changes in vegetative species composition and diversity. Impacts to vegetation would be greater with the Non-Weir Alternatives than alternatives that continued to utilize the weir but they should not be significant over the long term as a result of the Non-weir Alternatives.

5.3 Wildlife

Local wildlife populations would be directly and indirectly impacted by the Non-Weir Alternatives. These effects are both relatively short term (until successful reclamation is achieved) and long-term (persisting beyond successful completion of reclamation). The direct effects of construction on wildlife occur during construction and are therefore short-term. They include restrictions on wildlife movement created by noise and human activity. While relatively insignificant, displacement of animals would occur. Displaced animals would find equally suitable habitat that is not occupied by other animals, occupy suitable habitat that is already being used by other animals, occupy poorer quality habitat than that from which they were displaced, or the animals may perish due to lack of suitable habitat in which they can inhabit. In the second and third situations, the animals may suffer from increased competition with other animals and are less likely to survive and reproduce. The indirect effects are long-term and may include a reduction in wildlife carrying capacity and microhabitats on reclaimed land due to less diverse vegetative cover. Wildlife investigations have provided data showing that big game, other mammals, raptors, upland game birds, waterfowl/shore birds, migratory birds, reptiles and amphibians, and fish and aquatic life are utilizing the AOC.

Big game animals are highly mobile and can move to undisturbed areas. Therefore, big game should not be significantly impacted over the long term as a result of the Non-weir Alternatives.

Other mammals likely would be displaced to other habitats by construction, potentially resulting in increased competition and mortality. Direct losses of less mobile mammals would be higher than for other wildlife. Turbine-related bat deaths have been reported at wind facilities (USFWS 2015b). A recent study also indicated that bats will avoid foraging in areas with intense broadband noise (Schaub et al. 2008). The tests were conducted at a sound pressure level of 80 dB (approximately 71 dBA [A-weighted scale]). As stated in Section 4.15.4.5 of the draft Lower Yellowstone Intake Diversion Fish Passage Project EIS, noise levels from the pumping station operations would be 77 dBA at 50 feet, without noise reduction mitigation (BOR/USACE 2016). Most other mammals should not be significantly impacted over the long term as a result of the Non-weir Alternatives but impacts to bats could be significant over the long-term due to collisions with wind-turbine blades and bats could be significantly impacted (restricted from foraging) in the areas near pump stations due to the impacts of noise on foraging.

Construction of the Non-weir Alternatives may impact localized raptor nesting activities. Local populations including individual birds or pairs may be impacted. Surveys for nesting raptors would be required prior to construction. Physical destruction of most inactive raptor nests/nest sites is not, in and of itself, a violation of the Migratory Bird Treaty Act (MBTA). However, any activity that results in the destruction of eggs or death of birds (including nestlings) constitutes a 'take', and is a violation of MBTA. The Bald and Golden Eagle Protection Act (BGEPA) prohibits "knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing." Construction and maintenance activities could be a threat to nesting raptors. In particular, the construction of numerous new power lines and wind turbines to serve the proposed pump stations would present a hazard to raptors. The USFWS has jurisdiction over issuing raptor nest take/relocation permits.

The overall effects on upland game birds are expected to be minimal. No historical breeding grounds are associated with the AOC and upland game birds are highly mobile and can move to undisturbed areas.

The primary threat to migratory birds is impacts to nesting birds. Physical destruction of most inactive migratory bird nests/nest sites is not, in and of itself, a violation of the MBTA. However, any activity that results in the destruction of eggs or death of birds (including nestlings) constitutes a 'take', and is a violation of MBTA. Losses would also occur when habitat disturbance coincides with egg incubation and rearing of young. Effects of habitat loss would be short term for grassland species but would last longer for tree- and shrub-dependent species. Impacts could also occur as a result of collisions with wind-turbine blades. The USFWS estimates that wind turbines may kill an estimated half a million birds a year in the U.S. (2015b), a majority of which are song birds (USFWS 2015c). As with raptors, most migratory birds are protected by the Migratory Bird Treaty Act, which prohibits the taking, killing, possessing, transporting, and importing of migratory birds, their eggs, parts, and nests, except as authorized under by permit. Effects of wind turbines on wildlife would be long term for raptors and other migratory birds.

Fisheries and aquatic life would be significantly impacted during the removal of the Intake Diversion and the operations and maintenance process, which is a component of the Non-weir Alternatives. The application of best management practices for avoidance, mitigation, and restoration, in addition to compliance with regulatory programs and project-specific permit provisions, would minimize or mitigate any impact to fish and aquatic life.

T&E wildlife species that could potentially occur in the area include the least tern, piping plover, Sprague's pipit, whooping crane, pallid sturgeon, or Northern long-eared bat. The least tern and pallid sturgeon have been confirmed within the AOC. The application of best management practices for avoidance, mitigation, and reclamation, in addition to compliance with regulatory programs and project-specific permit provisions, would minimize or mitigate any impact to T&E species. According to data from the MTNHP (2016q), there are 26 bald eagle (Haliaeetus leucocephalus) nests located within the AOC (**Map 4**). These nests likely represent multiple nests within specific territories and are not all used for nesting each year.

Regarding impacts to SOC, 73 SOC or PSOC have been identified that could occur in the AOC (**Table 2**). Approximately 56 percent majority of these SOC or PSOC are avian species. The primary impacts to these avian species would be related to nesting. As indicated above, the physical destruction of most inactive migratory bird or raptor nest sites is not, in and of itself, a violation of the MBTA. However, any activity that results in the destruction of eggs or death of birds (including nestlings) constitutes a 'take', and is a violation of MBTA or the BGEPA.

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APPENDIX A

Vascular Plant Species Associated with the Non-Weir Alternatives

Common Name	Scientific Name	Species of Concern	Global Rank	State Rank
Poison Suckleya	*(Suckleya suckleyana)*			
Bittersweet	*(Celastrus scandens)*	PSOC	G5	SH
Narrowleaf Cottonwood	*(Populus angustifolia)*		G5	S4
Plains Cottonwood	*(Populus deltoides)*		G5	S5
Yellow Willow	*(Salix lutea)*		G4G5	S4S5
Planeleaf Willow	(*Salix planifolia*)		G5	S4
Peachleaf Willow	(*Salix amygdaloides*)		G5	S4
Redosier Dogwood	(*Cornus sericea*)		G5	S5
Common Chokecherry	(*Prunus virginiana*)		G5	S5
Serviceberry	(*Amelanchier alnifolia*)		G5	S5
Currant	(*Ribes* spps)		Species Dependent	
Box Elder	(*Acer negundo*)		G5	S5
Green Ash	(*Fraxinus pennsylvanica*)		G5	S5
American Elm	(*Ulmus americana*)		G5	SU
Sandbar Willow	(*Salix exigua*)		G5	S5
Shrubby Cinquefoil	(*Dasiphora fruticosa*)		G5	S4S5
Western Snowberry	(*Symphoricarpos occidentalis*)		G5	S5
Rose	(*Rosa* species)		Species Dependent	
Silverberry	(*Elaeagnus commutata*)		G5	S4
Thinleaf Alder	(*Alnus incana*)		G5	S4S5
Drummond's Willow	(*Salix drummondiana*)		G4G5	S4S5
Big Bluestem	(*Andropogon gerardii*)		G5	S4
Wooly Sedge	(*Carex pellita*)		G5	S4S5
Streamside Wild Rye	(*Elymus lanceolatus*)		G5	S5
Old Switch Panicgrass	(*Panicum virgatum*)		G5	S3S4
Western Wheatgrass	(*Pascopyrum smithii*)		G5	S5
Little Bluestem	(*Schizachyrium scoparium*)		G5	S4S5
Sand Dropseed	(*Sporobolus cryptandrus*)		G5	S4S5
Drummond's Dryad	(*Dryas drummondii*)		G5	S4
Yarrow	(*Achillea millefolium*)		G5	S5
Starry Solomon's Seal	(*Maianthemum stellatum*)		G5	S5
Aster	(*Symphyotrichum* species)		Species Dependent	
Russian Olive	(*Elaeagnus angustifolia*)	Exotic	GNR	SNA
Cheatgrass	(*Bromus tectorum*)	Exotic	GNR	SNA
Leafy Spurge	(*Euphorbia esula*)	Exotic	GNR	SNA
American Licorice	(*Glycyrrhiza lepidota*)		G5	S4
Big Sagebrush	(*Artemisia tridentata*)		G5	S5
Silver Sagebrush	(*Artemisia cana*)		G5	S5
Salt Cedar	(*Tamarix ramosissima*)	Exotic	GNR	SNA
Diamondleaf Willow	(*Salix planifolia*)		G5	S4

Common Name	Scientific Name	Species of Concern	Global Rank	State Rank
Woods Rose	(Rosa woodsii)		G5	S5
Fresh Water Cordgrass	(*Spartina pectinata*)		G5	S4
Porcupine Needlegrass	(Hesperostipa spartea)		G5	SU
Northern Dropseed	(Sporobolus heterolepis)		G5	SU
Panic Grass	(Panicum virgatum)		G5	S3S4
Canada Goldenrod	(Solidago canadensis)		G5	S5
Creeping Bentgrass	(*Agrostis stolonifera*)	Exotic	G5	SNA
Quackgrass	(Agropyron repens)	Exotic	GNR	SNA
Canada Thistle	(Cirsium arvense)	Exotic	GNR	SNA
Clovers	(*Melilotus* species)		Species Dependent	
Common Dandelion	(*Taraxacum officinale*)	Exotic	G5	SNA

Notes:

Species of Concern	Global/State Rank
PSOC = Potential Species of Concern Exotic = Exotic Species	S3 = Potentially at risk because of limited and/or declining numbers, range and/or habitat. G4/S4 = Apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining. G5/S5 = Common, widespread, and abundant (although it may be rare in parts of its range). SU = Unrankable - Species currently unrankable due to lack of information. SNA = A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities as a result of being: 1) not confidently present in the state; 2) exotic or introduced; 3) a long distance migrant with accidental or irregular stopovers; or 4) a hybrid without conservation value. G#G# or S#S# = Indicates a range of uncertainty about the status of the species. S#, S# = Indicates that populations in different geographic portions of the species' range in Montana have a different conservation status. S#B =Breeding - Rank refers to the breeding population of the species in Montana. S#M = Migratory - Species occurs in Montana only during migration.

APPENDIX B

Wildlife Species Associated with the Non-Weir Alternatives

Common Name	Scientific Name	Species of Concern	Global Rank	State Rank	Seasonal Range	Species Category
Mammals						
Dwarf Shrew	*(Sorex nanus)*	SOC	G4	S2S3	Year-round	OM
Merriam's Shrew	*(Sorex merriami)*	SOC	G5	S3	Year-round	OM
Little Brown Myotis	*(Myotis lucifugus)*	SOC	G3	S3	Year-round	OM
Hoary Bat	*(Lasiurus cinereus)*	SOC	G5	S3	Summer	OM
Spotted Bat	*(Euderma maculatum)*	SOC	G4	S3	Summer	OM
Townsend's Big-eared Bat	*(Corynorhinus townsendii)*	SOC	G3G4	S3	Summer	OM
Grizzly Bear	*(Ursus arctos)*	SOC	G4	S2S3	Historic	Pred
Bison	*(Bos bison)*	SOC	G4	S2	Historic	BG
Hayden's Shrew	*(Sorex haydeni)*	PSOC	G4	S3S4	Year-round	OM
Silver-haired Bat	*(Lasionycteris noctivagans)*	PSOC	G5	S4	Year-round	OM
Eastern Red Bat	*(Lasiurus borealis)*	PSOC	G5	SU	Summer	OM
White-footed Mouse	*(Peromyscus leucopus)*	PSOC	G5	S4	Year-round	OM
Meadow Jumping Mouse	*(Zapus hudsonius)*	PSOC	G5	SU	Year-round	OM
Porcupine	*(Erethizon dorsatum)*	PSOC	G5	S4	Year-round	OM
Masked Shrew	*(Sorex cinereus)*				Year-round	OM
Long-eared Bat	*(Myotis evotis)*	Th			Year-round	OM
Long-legged Myotis	*(Myotis volans)*				Year-round	OM
Western Small-footed Myotis	*(Myotis ciliolabrum)*				Year-round	OM
Big Brown Bat	*(Eptesicus fuscus)*				Year-round	OM
Eastern Cottontail	*(Sylvilagus floridanus)*				Year-round	OM
Mountain Cottontail	*(Sylvilagus nuttallii)*				Year-round	OM
Desert Cottontail	*(Sylvilagus audubonii)*				Year-round	OM
White-tailed Jack Rabbit	*(Lepus townsendii)*				Year-round	OM
Least Chipmunk	*(Tamias minimus)*				Year-round	OM
Thirteen-lined Ground Squirrel	*(Ictidomys tridecemlineatus)*				Year-round	OM
Eastern Fox Squirrel	*(Sciurus niger)*				Year-round	OM
Northern Pocket Gopher	*(Thomomys talpoides)*				Year-round	OM
Olive-backed Pocket Mouse	*(Perognathus fasciatus)*				Year-round	OM

Common Name	Scientific Name	Species of Concern	Global Rank	State Rank	Seasonal Range	Species Category
Ord's Kangaroo Rat	*(Dipodomys ordii)*				Year-round	OM
Beaver	*(Castor canadensis)*				Year-round	OM
Western Harvest Mouse	*(Reithrodontomys megalotis)*				Year-round	OM
Deer Mouse	*(Peromyscus maniculatus)*				Year-round	OM
Northern Grasshopper Mouse	*(Onychomys leucogaster)*				Year-round	OM
Bushy-tailed Woodrat	*(Neotoma cinerea)*				Year-round	OM
Southern Red-backed Vole	*(Myodes gapperi)*				Year-round	OM
Meadow Vole	*(Microtus pennsylvanicus)*				Year-round	OM
Prairie Vole	*(Microtus ochrogaster)*				Year-round	OM
Sagebrush Vole	*(Lemmiscus curtatus)*				Year-round	OM
Muskrat	*(Ondatra zibethicus)*				Year-round	OM
Coyote	*(Canis latrans)*				Year-round	Pred
Gray Wolf	*(Canis lupus)*				Historic	Pred
Red Fox	*(Vulpes vulpes)*				Year-round	Pred
Raccoon	*(Procyon lotor)*				Year-round	Pred
Least Weasel	*(Mustela nivalis)*				Year-round	OM
Long-tailed Weasel	*(Mustela frenata)*				Year-round	OM
American Mink	*(Mustela vison)*				Year-round	OM
Badger	*(Taxidea taxus)*				Year-round	OM
Striped Skunk	*(Mephitis mephitis)*				Year-round	OM
Bobcat	*(Lynx rufus)*				Year-round	Pred
Mountain Lion	*(Puma concolor)*				Year-round	Pred
Elk	*(Cervus canadensis)*				Historic	BG
Mule Deer	*(Odocoileus hemionus)*				Year-round	BG
White-tailed Deer	*(Odocoileus virginianus)*				Year-round	BG
Pronghorn	*(Antilocapra americana)*				Year-round	BG
Black-tailed Prairie Dog	*(Cynomys ludovicianus)*	SOC	G4	S3	Year-round	OM
Swift Fox	*(Vulpes velox)*	SOC	G3	S3	Year-round	Pred

Common Name	Scientific Name	Species of Concern	Global Rank	State Rank	Seasonal Range	Species Category
Avian						
Bald Eagle	*(Haliaeetus leucocephalus)*				Year-round	Rap
Burrowing Owl	(Athene cunicularia)	SOC	G4	S3B	Summer	Rap
American Bittern	*(Botaurus lentiginosus)*	SOC	G4	S3B	Summer	SB
Great Blue Heron	*(Ardea herodias)*	SOC	G5	S3	Summer	SB
Black-crowned Night-Heron	*(Nycticorax nycticorax)*	SOC	G5	S3B	Migratory	SB
White-faced Ibis	*(Plegadis chihi)*	SOC	G5	S3B	Migratory	SB
Ferruginous Hawk	*(Buteo regalis)*	SOC	G4	S3B	Summer	Rap
Golden Eagle	*(Aquila chrysaetos)*	SOC	G5	S3	Year-round	Rap
Peregrine Falcon	*(Falco peregrinus)*	SOC	G4	S3	Year-round	Rap
Greater Sage-Grouse	*(Centrocercus urophasianus)*	SOC	G3G4	S2	Year-round	GB
Sharp-tailed Grouse	*(Tympanuchus phasianellus)*	SOC	G5	S1, S4	Year-round	GB
Whooping Crane	*(Grus americana)*	SOC/E	G1	S1M	Migratory	SB
Piping Plover	*(Charadrius melodus)*	SOC/Th	G3	S2B	Summer	SB
Franklin's Gull	*(Leucophaeus pipixcan)*	SOC	G4G5	S3B	Migratory	SB
Common Tern	*(Sterna hirundo)*	SOC	G5	S3B	Migratory	SB
Least Tern	*(Sternula antillarum)*	SOC/E	G4	S1B	Summer	SB
Black-billed Cuckoo	*(Coccyzus erythropthalmus)*	SOC	G5	S3B	Summer	MB
Yellow-billed Cuckoo	*(Coccyzus americanus)*	SOC	G5	S3B	Summer	MB
Red-headed Woodpecker	*(Melanerpes erythrocephalus)*	SOC	G5	S3B	Summer	MB
Pinyon Jay	*(Gymnorhinus cyanocephalus)*	SOC	G5	S3	Year-round	MB
Veery	*(Catharus fuscescens)*	SOC	G5	S3B	Summer	MB
Loggerhead Shrike	*(Lanius ludovicianus)*	SOC	G4	S3B	Summer	MB
Baird's Sparrow	*(Ammodramus bairdii)*	SOC	G4	S3B	Summer	MB
Bobolink	*(Dolichonyx oryzivorus)*	SOC	G5	S3B	Summer	MB
Barrow's Goldeneye	*(Bucephala islandica)*	PSOC	G5	S4	Migratory	WF
Hooded Merganser	*(Lophodytes cucullatus)*	PSOC	G5	S4	Migratory	WF
Eastern Screech-Owl	*(Megascops asio)*	PSOC	G5	S3S4	Year-round	Rap
Short-eared Owl	*(Asio flammeus)*	PSOC	G5	S4	Year-round	Rap
Common Poorwill	*(Phalaenoptilus nuttallii)*	PSOC	G5	S4B	Summer	MB
Chimney Swift	*(Chaetura pelagica)*	PSOC	G5	S3S4B	Summer	MB
Eastern Bluebird	*(Sialia sialis)*	PSOC	G5	S4B	Summer	MB
Black-and-white Warbler	*(Mniotilta varia)*	PSOC	G5	S4B	Summer	MB
Ovenbird	*(Seiurus aurocapilla)*	PSOC	G5	S4B	Summer	MB
Dickcissel	*(Spiza americana)*	PSOC	G5	S4B	Summer	MB

Common Name	Scientific Name	Species of Concern	Global Rank	State Rank	Seasonal Range	Species Category
Red-necked Grebe	*(Podiceps grisegena)*				Migratory	WF
Eared Grebe	*(Podiceps nigricollis)*				Summer	WF
Double-crested Cormorant	*(Phalacrocorax auritus)*				Summer	WF
Snowy Egret	*(Egretta thula)*				Migratory	SB
Canada Goose	*(Branta canadensis)*				Year-round	WF
Wood Duck	*(Aix sponsa)*				Summer	WF
Green-winged Teal	*(Anas crecca)*				Summer	WF
Mallard	*(Anas platyrhynchos)*				Year-round	WF
Northern Pintail	*(Anas acuta)*				Summer	WF
Blue-winged Teal	*(Anas discors)*				Summer	WF
Cinnamon Teal	*(Anas cyanoptera)*				Summer	WF
Northern Shoveler	*(Anas clypeata)*				Summer	WF
Gadwall	*(Anas strepera)*				Summer	WF
American Wigeon	*(Anas americana)*				Year-round	WF
Redhead	*(Aythya americana)*				Summer	WF
Ring-necked Duck	*(Aythya collaris)*				Migratory	WF
Lesser Scaup	*(Aythya affinis)*				Summer	WF
Long-tailed Duck	*(Clangula hyemalis)*				Migratory	WF
Common Goldeneye	*(Bucephala clangula)*				Winter	WF
Bufflehead	*(Bucephala albeola)*				Summer	WF
Common Merganser	*(Mergus merganser)*				Year-round	WF
Red-breasted Merganser	*(Mergus serrator)*				Migratory	WF
Ruddy Duck	*(Oxyura jamaicensis)*				Summer	WF
Turkey Vulture	*(Cathartes aura)*				Summer	Rap
Osprey	*(Pandion haliaetus)*				Summer	Rap
Northern Harrier	*(Circus cyaneus)*				Year-round	Rap
Cooper's Hawk	*(Accipiter cooperii)*				Summer	Rap
Broad-winged Hawk	*(Buteo platypterus)*				Migratory	Rap
Swainson's Hawk	*(Buteo swainsoni)*				Summer	Rap
Red-tailed Hawk	*(Buteo jamaicensis)*				Summer	Rap
Rough-legged Hawk	*(Buteo lagopus)*				Winter	Rap
American Kestrel	*(Falco sparverius)*				Summer	Rap
Merlin	*(Falco columbarius)*				Year-round	Rap
Gyrfalcon	*(Falco rusticolus)*				Winter	Rap
Prairie Falcon	*(Falco mexicanus)*				Year-round	Rap
Wild Turkey	*(Meleagris gallopavo)*	Exotic	G5	SNA	Year-round	GB

Common Name	Scientific Name	Species of Concern	Global Rank	State Rank	Seasonal Range	Species Category
Virginia Rail	*(Rallus limicola)*				Summer	SB
Sora	*(Porzana carolina)*				Summer	SB
American Coot	*(Fulica americana)*				Summer	WF
Sandhill Crane	*(Grus canadensis)*				Summer	MB
Black-bellied Plover	*(Pluvialis squatarola)*				Migratory	SB
American Golden-Plover	*(Pluvialis dominica)*				Migratory	SB
Semipalmated Plover	*(Charadrius semipalmatus)*				Migratory	SB
Killdeer	*(Charadrius vociferus)*				Summer	SB
American Avocet	*(Recurvirostra americana)*				Summer	SB
Greater Yellowlegs	*(Tringa melanoleuca)*				Migratory	SB
Lesser Yellowlegs	*(Tringa flavipes)*				Migratory	SB
Solitary Sandpiper	*(Tringa solitaria)*				Migratory	SB
Willet	*(Tringa semipalmata)*				Summer	SB
Spotted Sandpiper	*(Actitis macularius)*				Summer	SB
Upland Sandpiper	*(Bartramia longicauda)*				Summer	SB
Whimbrel	*(Numenius phaeopus)*				Migratory	SB
Marbled Godwit	*(Limosa fedoa)*				Summer	SB
Semipalmated Sandpiper	*(Calidris pusilla)*				Migratory	SB
Western Sandpiper	*(Calidris mauri)*				Migratory	SB
Least Sandpiper	*(Calidris minutilla)*				Migratory	SB
White-rumped Sandpiper	*(Calidris fuscicollis)*				Migratory	SB
Baird's Sandpiper	*(Calidris bairdii)*				Migratory	SB
Pectoral Sandpiper	*(Calidris melanotos)*				Migratory	SB
Dunlin	*(Calidris alpina)*				Migratory	SB
Stilt Sandpiper	*(Calidris himantopus)*				Migratory	SB
Long-billed Dowitcher	*(Limnodromus scolopaceus)*				Migratory	SB
Wilson's Snipe	*(Gallinago delicata)*				Summer	SB
Wilson's Phalarope	*(Phalaropus tricolor)*				Summer	SB
Red-necked Phalarope	*(Phalaropus lobatus)*				Migratory	SB
Bonaparte's Gull	*(Chroicocephalus philadelphia)*				Migratory	SB
Ring-billed Gull	*(Larus delawarensis)*				Migratory	SB
California Gull	*(Larus californicus)*				Migratory	SB
Thayer's Gull	*(Larus thayeri)*				Migratory	SB
Glaucous Gull	*(Larus hyperboreus)*				Migratory	SB
Rock Pigeon	*(Columba livia)*				Year-round	NG
Eurasian Collared-Dove	*(Streptopelia decaocto)*				Year-round	NG
Mourning Dove	*(Zenaida macroura)*				Summer	GB

Common Name	Scientific Name	Species of Concern	Global Rank	State Rank	Seasonal Range	Species Category
Great Horned Owl	*(Bubo virginianus)*				Year-round	Rap
Snowy Owl	*(Bubo scandiacus)*				Winter	Rap
Long-eared Owl	*(Asio otus)*				Year-round	Rap
Common Nighthawk	*(Chordeiles minor)*				Summer	MB
Ruby-throated Hummingbird	*(Archilochus colubris)*				Summer	MB
Belted Kingfisher	*(Megaceryle alcyon)*				Summer	MB
Downy Woodpecker	*(Picoides pubescens)*				Year-round	MB
Hairy Woodpecker	*(Picoides villosus)*				Year-round	MB
Northern Flicker	*(Colaptes auratus)*				Year-round	MB
Olive-sided Flycatcher	*(Contopus cooperi)*				Migratory	MB
Western Wood-Pewee	*(Contopus sordidulus)*				Summer	MB
Willow Flycatcher	*(Empidonax traillii)*				Summer	MB
Least Flycatcher	*(Empidonax minimus)*				Summer	MB
Say's Phoebe	*(Sayornis saya)*				Summer	MB
Western Kingbird	*(Tyrannus verticalis)*				Summer	MB
Eastern Kingbird	*(Tyrannus tyrannus)*				Summer	MB
Horned Lark	*(Eremophila alpestris)*				Year-round	MB
Purple Martin	*(Progne subis)*				Migratory	MB
Tree Swallow	*(Tachycineta bicolor)*				Summer	MB
Violet-green Swallow	*(Tachycineta thalassina)*				Summer	MB
Northern Rough-winged Swallow	*(Stelgidopteryx serripennis)*				Summer	MB
Bank Swallow	*(Riparia riparia)*				Summer	MB
Cliff Swallow	*(Petrochelidon pyrrhonota)*				Summer	MB
Barn Swallow	*(Hirundo rustica)*				Summer	MB
Blue Jay	*(Cyanocitta cristata)*				Year-round	MB
Black-billed Magpie	*(Pica hudsonia)*				Year-round	NG
American Crow	*(Corvus brachyrhynchos)*				Summer	NG
Common Raven	*(Corvus corax)*				Year-round	NG
Black-capped Chickadee	*(Poecile atricapillus)*				Year-round	NG
White-breasted Nuthatch	*(Sitta carolinensis)*				Year-round	MB
Rock Wren	*(Salpinctes obsoletus)*				Summer	MB
House Wren	*(Troglodytes aedon)*				Summer	MB
Marsh Wren	*(Cistothorus palustris)*				Summer	MB
Mountain Bluebird	*(Sialia currucoides)*				Summer	MB

Common Name	Scientific Name	Species of Concern	Global Rank	State Rank	Seasonal Range	Species Category
Swainson's Thrush	*(Catharus ustulatus)*				Migratory	MB
American Robin	*(Turdus migratorius)*				Year-round	MB
Gray Catbird	*(Dumetella carolinensis)*				Summer	MB
Northern Mockingbird	*(Mimus polyglottos)*				Summer	MB
Brown Thrasher	*(Toxostoma rufum)*				Summer	MB
Bohemian Waxwing	*(Bombycilla garrulus)*				Winter	MB
Cedar Waxwing	*(Bombycilla cedrorum)*				Year-round	MB
Northern Shrike	*(Lanius excubitor)*				Winter	MB
European Starling	*(Sturnus vulgaris)*				Year-round	NG
Warbling Vireo	*(Vireo gilvus)*				Summer	MB
Red-eyed Vireo	*(Vireo olivaceus)*				Summer	MB
Orange-crowned Warbler	*(Oreothlypis celata)*				Migratory	MB
Nashville Warbler	*(Oreothlypis ruficapilla)*				Migratory	MB
Yellow Warbler	*(Setophaga petechia)*				Summer	MB
Chestnut-sided Warbler	*(Setophaga pensylvanica)*				Migratory	MB
Magnolia Warbler	*(Setophaga magnolia)*				Migratory	MB
Cape May Warbler	*(Setophaga tigrina)*				Migratory	MB
Palm Warbler	*(Setophaga palmarum)*				Migratory	MB
Blackpoll Warbler	*(Setophaga striata)*				Migratory	MB
American Redstart	*(Setophaga ruticilla)*				Summer	MB
MacGillivray's Warbler	*(Geothlypis tolmiei)*				Migratory	MB
Common Yellowthroat	*(Geothlypis trichas)*				Summer	MB
Canada Warbler	*(Cardellina canadensis)*				Migratory	MB
Yellow-breasted Chat	*(Icteria virens)*				Summer	MB
Rose-breasted Grosbeak	*(Pheucticus ludovicianus)*				Migratory	MB
Black-headed Grosbeak	*(Pheucticus melanocephalus)*				Summer	MB
Lazuli Bunting	*(Passerina amoena)*				Summer	MB
Indigo Bunting	*(Passerina cyanea)*				Migratory	MB
Spotted Towhee	*(Pipilo maculatus)*				Summer	MB
American Tree Sparrow	*(Spizelloides arborea)*				Winter	MB
Clay-colored Sparrow	*(Spizella pallida)*				Summer	MB
Field Sparrow	*(Spizella pusilla)*				Summer	MB
Vesper Sparrow	*(Pooecetes gramineus)*				Summer	MB
Lark Sparrow	*(Chondestes grammacus)*				Summer	MB
Lark Bunting	*(Calamospiza melanocorys)*				Summer	MB
Savannah Sparrow	*(Passerculus sandwichensis)*				Summer	MB

Common Name	Scientific Name	Species of Concern	Global Rank	State Rank	Seasonal Range	Species Category
Grasshopper Sparrow	*(Ammodramus savannarum)*				Summer	MB
Song Sparrow	*(Melospiza melodia)*				Summer	MB
White-throated Sparrow	*(Zonotrichia albicollis)*				Migratory	MB
Harris's Sparrow	*(Zonotrichia querula)*				Migratory	MB
Lapland Longspur	*(Calcarius lapponicus)*				Winter	MB
Snow Bunting	*(Plectrophenax nivalis)*				Winter	MB
Red-winged Blackbird	*(Agelaius phoeniceus)*				Summer	MB
Western Meadowlark	*(Sturnella neglecta)*				Summer	MB
Yellow-headed Blackbird	*(Xanthocephalus xanthocephalus)*				Summer	MB
Rusty Blackbird	*(Euphagus carolinus)*				Migratory	MB
Brewer's Blackbird	*(Euphagus cyanocephalus)*				Summer	MB
Common Grackle	*(Quiscalus quiscula)*				Summer	MB
Brown-headed Cowbird	*(Molothrus ater)*				Summer	MB
Orchard Oriole	*(Icterus spurius)*				Summer	MB
Baltimore Oriole	*(Icterus galbula)*				Summer	MB
Bullock's Oriole	*(Icterus bullockii)*				Summer	MB
House Finch	*(Haemorhous mexicanus)*				Year-round	MB
Common Redpoll	*(Acanthis flammea)*				Winter	MB
Hoary Redpoll	*(Acanthis hornemanni)*				Winter	MB
American Goldfinch	*(Spinus tristis)*				Summer	MB
Horned Grebe	*(Podiceps auritus)*	SOC	G5	S3B	Migratory	WF
Black-necked Stilt	*(Himantopus mexicanus)*	SOC	G5	S3B	Migratory	SB
Long-billed Curlew	*(Numenius americanus)*	SOC	G5	S3B	Summer	SB
Caspian Tern	*(Hydroprogne caspia)*	SOC	G5	S2B	Migratory	SB
Forster's Tern	*(Sterna forsteri)*	SOC	G5	S3B	Migratory	SB
Black Tern	*(Chlidonias niger)*	SOC	G4	S3B	Summer	SB
Sage Thrasher	*(Oreoscoptes montanus)*	SOC	G5	S3B	Summer	MB
Sprague's Pipit	*(Anthus spragueii)*	SOC	G4	S3B	Summer	MB
Brewer's Sparrow	*(Spizella breweri)*	SOC	G5	S3B	Summer	WF
Tundra Swan	*(Cygnus columbianus)*				Migratory	WF
Pacific Loon	*(Gavia pacifica)*				Migratory	WF
Canvasback	*(Aythya valisineria)*				Summer	WF
Sharp-shinned Hawk	*(Accipiter striatus)*				Summer	Rap
Red-breasted Nuthatch	*(Sitta canadensis)*				Year-round	MB
Yellow-rumped Warbler	*(Setophaga coronata)*				Summer	MB
Northern Saw-whet Owl	*(Aegolius acadicus)*				Winter	Rap
Wilson's Warbler	*(Cardellina pusilla)*				Migratory	MB

Common Name	Scientific Name	Species of Concern	Global Rank	State Rank	Seasonal Range	Species Category
Chipping Sparrow	*(Spizella passerina)*				Summer	MB
Lincoln's Sparrow	*(Melospiza lincolnii)*				Migratory	MB
Reptiles						
Snapping Turtle	*(Chelydra serpentina)*	SOC	G5	S3	Year-round	Rep
Spiny Softshell	*(Apalone spinifera)*	SOC	G5	S3	Year-round	Rep
Greater Short-horned Lizard	*(Phrynosoma hernandesi)*	SOC	G5	S3	Year-round	Rep
Plains Hog-nosed Snake	*(Heterodon nasicus)*	SOC	G5	S2	Year-round	Rep
Western Milksnake	*(Lampropeltis gentilis)*	SOC	G4G5	S2	Year-round	Rep
Smooth Greensnake	*(Opheodrys vernalis)*	SOC	G5	S2	Year-round	Rep
Painted Turtle	*(Chrysemys picta)*				Year-round	Rep
Common Sagebrush Lizard	*(Sceloporus graciosus)*				Year-round	Rep
North American Racer	*(Coluber constrictor)*				Year-round	Rep
Gophersnake	*(Pituophis catenifer)*				Year-round	Rep
Plains Gartersnake	*(Thamnophis radix)*				Year-round	Rep
Common Gartersnake	*(Thamnophis sirtalis)*				Year-round	Rep
Prairie Rattlesnake	*(Crotalus viridis)*				Year-round	Rep
Amphibians						
Great Plains Toad	*(Anaxyrus cognatus)*	SOC	G5	S2	Year-round	AM
Plains Spadefoot	*(Spea bombifrons)*	SOC	G5	S3	Year-round	AM
Northern Leopard Frog	*(Lithobates pipiens)*	SOC	G5	S1,S4	Year-round	AM
Western Tiger Salamander	*(Ambystoma mavortium)*				Year-round	AM
Woodhouse's Toad	*(Anaxyrus woodhousii)*				Year-round	AM
Boreal Chorus Frog	*(Pseudacris maculata)*				Year-round	AM
Fish						
Emerald Shiner	*(Notropis atherinoides)*				Year-round	Fish
Channel Catfish	*(Ictalurus punctatus)*				Year-round	Fish
Mooneye	*(Hiodon alosoides)*				Year-round	Fish
Sauger	*(Sander canadensis)*	SOC	G5	S2	Year-round	Fish
Flathead Chub	*(Platygobio gracilis)*				Year-round	Fish
Carp	*(Cyprinus carpio)*	Exotic	G5	SNA	Year-round	Fish

Common Name	Scientific Name	Species of Concern	Global Rank	State Rank	Seasonal Range	Species Category
White Sucker	*(Catostomus commersoni)*				Year-round	Fish
Shorthead Redhorse	*(Moxostoma macrolepidotum)*				Year-round	Fish
Sand Shiner	*(Notropis stramineus)*				Year-round	Fish
Longnose Sucker	*(Catostomus catostomus)*				Year-round	Fish
Longnose Dace	*(Rhinichthys cataractae)*				Year-round	Fish
Mountain Sucker	*(Catostomus platyrhynchus)*				Year-round	Fish
Pallid Sturgeon	*(Scaphirhynchus albus)*	SOC/E	G2	S1	Year-round	Fish
Sturgeon Chub	*(Macrhybopsis gelida)*	SOC	G3	S2S3	Year-round	Fish
Sicklefin Chub	*(Macrhybopsis meeki)*	SOC	G3	S1	Year-round	Fish
Blue Sucker	*(Cycleptus elongatus)*	SOC	G3G4	S2S3	Year-round	Fish
Invertebrates						
Prairie Bluet	*(Coenagrion angulatum)*	PSOC	G5	S1S3	Year-round	INV
Horned Clubtail	*(Arigomphus cornutus)*	PSOC	G4	S2S4	Year-round	INV
Variable Darner	*(Aeshna interrupta)*				Year-round	INV
Variable Dancer	*(Argia fumipennis)*				Year-round	INV

Notes:

Species of Concern SOC = Species of Concern PSOC = Potential Species of Concern Exotic = Exotic Species E = T&E Endangered Th = T&E Threatened	**Global/State Rank** G1/S1 = At high risk because of extremely limited and/or rapidly declining population number, range and/or habitat. G2/S2 = At risk because of very limited and/or potentially declining population numbers, range and/or habitat. G3/S3 = Potentially at risk because of limited and/or declining numbers, range and/or habitat. G4/S4 = Apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining. G5/S5 = Common, widespread, and abundant (although it may be rare in parts of its range).
Species Category Pred = Predators BG = Big Game OM = Other Mammals Rap = Raptor SB = Shore Bird WF = Waterfowl MB = Migratory Bird GB = Game Bird NG = Non Game Rep = Reptile AM = Amphibian INV = Invertebrates	SU = Unrankable - Species currently unrankable due to lack of information. SNA = A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities as a result of being: 1) not confidently present in the state; 2) exotic or introduced; 3) a long distance migrant with accidental or irregular stopovers; or 4) a hybrid without conservation value. G#G# or S#S# = Indicates a range of uncertainty about the status of the species. S#, S# = Indicates that populations in different geographic portions of the species' range in Montana have a different conservation status. S#B =Breeding - Rank refers to the breeding population of the species in Montana. S#M = Migratory - Species occurs in Montana only during migration.

Buffalo Rapids Ice Jam Photos

BP-249

From: steve rone
To: CENWO-Planning
Subject: [EXTERNAL] Comment on proposed intake diversion -Montana dam, Yellowstone River
Date: Thursday, July 28, 2016 1:40:10 PM

1 I would like to take this time to express my opposition to the Corp's draft proposal re the above intake diversion to montana dam as being wholly inadaquate for the pallid sturegeon fish's survival. Only if the Montana dam is removed can the fish have a fighting chance at survival. Our country is better than allowind short-sighted greed to trump a remarkable animal''s survival sucess. Haven't we dumped on our biosphere enough? Farmers depending on the water to grow crops can embrace another occupation- the fish sure can't! Thank you. Steve Rone

From: Georgia Peterson Hensley
To: CENWO-Planning
Cc: Georgia Peterson Hensley
Subject: [EXTERNAL] Comment on the Intake Diversion Project
Date: Thursday, July 28, 2016 11:34:30 PM

BP-250

To whom it may concern,

1 Small family farms are a dying breed. Larger corporate farms buy multiple smaller farms when family farms lose their ability to compete in a free market due to massive natural disasters that alter natural resources or when government entities change longstanding policies which govern these resources.

2 Critical habitat for fish and wildlife is of utmost concern to agencies that are given the responsibility to manage and protect habitat, often to the detriment of those humans whose livelihood is dependent upon those decisions. Solutions should always balance the needs of every species impacted by habitat change.

In the interest and the welfare of all critical populations and breeds, it is my opinion that decisions necessarily allow for the survival and well being of all species involved. Within the species of homosapiens there is a community of humans whose activity and habitat is subject to increased pressure from larger communities and outside forces. This breed is referred to as "small family farmers." This group has been around since man first started to plant and harvest. Within the United States this population is in serious decline and at the current rate of failure to thrive, small farm families will soon disappear from society.

3 I believe all decisions related to this project should consider the negative impact such decisions have upon small farm populations. Any final decision that is made should also protect the human families whose survival is dependent upon habitat and resources that could be jeopardized or removed as a consequence.

4 I would not support a program that threaten the survival of plaid sturgeon nor do I feel that impact upon human populations is of secondary importance. Please accept the project that was developed and is now being challenged by outside populations that have no concern for every aspect and consequence and who appear to single-mindedly hold human consequences with lower regard.

Very Sincerely,
Georgia Hensley
Fourth Generation Eastern Montana Survivor

a

From:	Jack Stanford	BP-251
To:	CENWO-Planning	
Subject:	[EXTERNAL] Comment	
Date:	Thursday, July 28, 2016 12:47:46 AM	

1 I write to urge the Army Corps and other permitting agencies to support the removal of the Intake Diversion Dam and pursue existing and effective damless diversion alternatives to achieve unimpeded fish and other wildlife migration along the Yellowstone River.

Sincerely,
Jack Stanford
Emeritus Professor of Ecology
University of Montana

From: Tori Burns
To: CENWO-Planning
Subject: [EXTERNAL] Comments - Lower Yellowstone Project - Pallid Sturgeon Passage and Entrainment Project
Date: Thursday, July 28, 2016 12:55:35 PM

To Whom It May Concern:

1 Please accept my comments on the Pallid Sturgeon Passage and Entrainment Project. After spending time on rivers and seeing these magnificent historic animals in their native habitat I strongly urge the dam not be reconstructed and the use of irrigation pumps be implemented to save the Pallid Sturgeon from probable extinction. Although this option will cost more, it is the only reliable way to ensure the sturgeon get through the passage, therefore not a waste of expenditures. The risky expensive option of a bypass channel should not be considered, bypass channels have not worked for sturgeon.

2 In summary, I strongly urge the option of pumps be implemented for the Pallid Sturgeon Passage and Entrainment Project as the only reliable option to save this rare species and avoid wasteful expenditures of the tax payers money on a dam and bypass channel that will not work for this animal.

Thank you for your consideration.

Tori Burns, MSPH CIH

From: Hugh Zackheim
To: CENWO-Planning
Subject: [EXTERNAL] Draft Environmental Impact Statement for the Lower Yellowstone Intake Diversion Dam Fish Passage Project, Dawson County, Montana
Date: Thursday, July 28, 2016 3:53:40 PM

I submit the following comments on the DEIS for the Lower Yellowstone Intake Diversion Dam Fish Passage Project in Dawson County, Montana.

1 I strongly oppose the proposal to build a river-wide weir, accompanied by a bypass channel, on the Yellowstone River. Montanans do not want your dam on the Yellowstone River, no matter what you call it.

Moreover, your plan is completely untested and the results are unknown. It is simply rampant and hopeful speculation that this would achieve any fishery goals. Rather, it appears more likely to be the death knell for the pallid sturgeon. It is unconscionable that agencies required by law to protect and recover the exceptionally rare population of this fish are proposing actions that may turn this endangered fish into an extinct fish.

This, of course, is In addition to your proposal repreenting a colossal waste of taxpayer dollars.

2 We need to adopt an alternative for the Lower Yellowstone that does not involve damming the Yellowstone River, does not depend on hopes for an untested bypass channel, and does in fact sustain the natural flow of the river in its existing river channel. An undammed river is the flow regime under which the pallid sturgeon evolved and formerly thrived. Any design to support irrigation must be based on a free-flowing Yellowstone River, and must be constructed in a way that allows pallid sturgeon and other fish species to move upstream in the natural river channel, without simply hoping that they'll use an expensive and untested bypass. It is your obligation to Montanans, to American citizens, and the to laws of this country to take the best steps to accomplish the goal of pallid sturgeon conservation and recovery. Your current proposal is not the way to proceed.

3 Moreover, if you use your dollars wisely, you can readily accommodate the Lower Yellowstone water users with a properly designed and operated system of pumps to serve the irrigation infrastructure. Couple the pumps with sensible development of renewable energy development to power them, and further add investments in water conservation and improved irrigation efficiency, and you can achieve both fishery and irrigation goals.

Your present proposal falls well short of this on all counts, and is unacceptable.

Hugh Zackheim
315 Ming Place
Helena, MT 59601
email: montanazac@mac.com

From:	Jamie Ramsay
To:	CENWO-Planning
Subject:	[EXTERNAL] Intake Diversion Dam Fish Passage Project Public Comment
Date:	Thursday, July 28, 2016 2:53:06 PM

BP-254

To Whom it may concern,

1 I think that the best solution for both the farmers and the Pallid Sturgeon is to completely remove the diversion dam and replace it with multiple fish safe water pumps. Ideally the water pumps could be wind powered since wind is hardly a rarity in this area.

2 I do not think that the bypass channel alternative will work with Sturgeon. Fish ladders rarely work with any species, and have never worked with Sturgeon (New York TImes, Sept, 3, 2015 and July 25, 2016). The Multiple Pump solution, with or without conservation is the only way to insure that the Pallid Sturgeon has a chance to survive. The cost differential is not significant in the long term. Given that the Bypass Channel will likely not work for Sturgeon their population will continue to collapse. When the population is critical and their genetic diversity is drastically reduced not only will they have less chance to survive long term but we have to step in and spend the extra money in a heroic effort to save the species. It is much better to to spend a little of that money now while the population of Pallid Sturgeon is still relatively strong and diverse. Please remove the diversion dam and provide water to the farmers with a multiple pump system.

3 The multiple pump solution would not only benefit the Pallid Sturgeon but the farmers in the area as well. As we have unfortunately learned petroleum pipeline ruptures and rail car accidents in the Yellowstone Basin can and do occur. Shutting off and cleaning a contaminated canal system is a slow process. Simply shutting down pumps in the event of an oil spill could save both time and money.

Thank you for time. If you need any further information from me, or have any questions please let me know.

Sincerely,

James Ramsay

From: Patti Mann BP-255
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam Fish Passage
Date: Thursday, July 28, 2016 8:41:11 PM

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1 I am contacting you to comment on the alternatives being considered for the Intake Diversion Dam. Personally, I
would like to see either no action or possibly the rock ramp. The bypass is a waste of effort and money as there is no
2 way to know if the sturgeon will even use it. I am stating an emphatic “NO” to the pumps. Are you really going to
spend millions of dollars on an unreliable system that demands more power than there even is in the area? Do we
even know if this will be successful for the 5% of the sturgeon population supposedly using it? I know who it’s not
going to work for. Farmers. I have worked in a welding shop for a local contractor for 17 years around all kinds of
3 equipment including pumps. Mechanical failure is 100% guaranteed at some point. Most likely, at a critical time for
the farmers. They are not the only ones dependent on water getting through. There is plenty of other wildlife and
vegetation not to mention the communities of eastern Montana. Pumps fail. Gravity does not.

I am a believer in conservation and I am a lover of animals. I cannot, however, get on board with some of these alternatives. If it is true that only 5%of the population is using the Yellowstone, then the pallid sturgeon is not as threatened as the Defenders of Wildlife would have us believe. None of these measures guarantees success for that 5%. So why are there proposals of spending millions of dollars and putting communities all along eastern Montana at risk?

Please leave the Intake Dam as is.

Thank You,
Patti Mann
pmann@midrivers.com

From:	Chris Fryer
To:	CENWO-Planning
Subject:	[EXTERNAL] Intake Diversion Dam
Date:	Thursday, July 28, 2016 2:20:31 PM

BP-256

To The USACE:

Re: The Lower Yellowstone Intake Diversion Dam Fish Passage Project

We are writing to voice our concern that the above project could further endanger the pallid sturgeon, of which only about 125 currently survive.

Fish passages, such as the one proposed, have indeed worked for some species of fish but never for sturgeon.

1

We strongly support following California's example where the Red Bluff Diversion Dam on the Sacramento River was removed for the passage of salmon.

We believe that the Intake Diversion Dam on the Lower Yellowstone should be removed and the current irrigation system replaced with pumps.

Please consider our email as part of your public comments.

Thank you.

Christopher Fryer

Desly Movius

From: Carey P
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam
Date: Thursday, July 28, 2016 5:49:02 AM

BP-257

To whom it may concern,

It is critical that we prevent the extinction of this ancient and fascinating species, the Pallid Sturgeon. Because its
1 extinction is preventable, it would be to our species great shame should we cause it to disappear from our shared
planet.

There are other proven ways to irrigate farmland. Let us use them. US Agricultural special interests have gotten a free pass for far too long. Corn is not more important than this unique species. Bypass channels have not proven successful.

Please stop wasting time as it is of the essence. Remove the dam and let this fish population swim freely and have a fighting chance to continue to exist.

Sincerely,

Carey Peterson
+1 970 462 6667

From: mike carlson
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam/Bypass Comments
Date: Thursday, July 28, 2016 5:37:16 PM

BP-258

Dear Sirs,

1 I would like to continue to comment on the draft EIS for the proposed Intake diversion dam and bypass project. Any selected alternative must not deprive the LYIP of their irrigation water for 58,000 acres and 350 farm in this region. It is the lifeblood of our agricultural economy.

I still feel the old rock and concrete base diversion structure has continued to function very well and lets water flow through it.

2 There is a huge cost to replace what has worked fine with a minimum of maintenance by the LYIP. I am still opposed to the new bypass channel and it's huge cost and feel opening up the slough is still the cheapest and best alternative for a fish bypass. 100 years ago 75% of the Yellowstone River's water flowed through the slough channel along the east side. The river should have the ability to flow this way again during high runoff events and is the most natural way to use the existing flood plain. Both the proposed bypass and the slough work are highly over engineered and way too costly. It is hard to believe both would each cost $54-$55 million. Widening and deepening the slough channel represents the best alternative and supported fish passage in the past. Costs for contractors are down now in this region and construction bids should reflect this and save money for the govt. and taxpayers.

3 I have not seen any mention of the effects of the new concrete diversion and the proposed bypass to paddle fishing. Please provide me a link or report/study of the possible negative effects to this important fishery. Paddlefishing is important to our region's economy each spring.

I am strongly opposed to any alternative which would result in the loss of the diversion dam and force LYIP to pump this huge amount of water.

4 This is based on experience with pumping along the Yellowstone River above Intake. Buffalo Rapids District 1 (BRIP) provides water to 16,500 acres plus another 1,000 acres of rural and urban users in West Glendive. These acres are about ¼ the of what the Lower Yellowstone Project irrigates. Buffalo Rapids pumps all of their water (about 450 CFS) which is about 16% of what the Lower Yellowstone Irrigation Project directly pulls out of the Yellowstone River (3,000 CFS).

BRIP has done many water delivery improvements because it has to pay for power and has large continuing expenses for its 5 pumps. It is extremely expensive to pump these huge volumes of water out of the Yellowstone River. Also the water must be lifted 110 feet up the hill to the main canal.

5 BRIP has 2 pumping stations. Pump station #1 has three 2,500 HP GE motors and Worthington pumps. The motors were replaced 15 years ago at a cost of $1.5M. Every 10 years they must be taken out and rebuilt - $150,000. Every 5 years the pumps must be rebuilt with new bearings, seals, fittings. It cost at least $25,000/ year to keep the 100 year old pumps going. BRIP contracts with Sulzer, Inc. of Gillette Wy. who do monthly pump and motor analysis for vibration, heat, and bearing wear, etc. Cost is $25,000/year. The entire pump #1 station and the 5 story concrete building has a replacement value of $10 Million. This station is in the flood plain and has been flooded 3 times.

5 Pump Station #2 half way between Glendive and Fallon has 2 – 800 HP motors and Gould pumps. 80 CFS is pumped for a ½ mile 120 feet up a hill to refill the main canal. This pump station cost $2.5 Million in 1978. Yearly operating costs are $25,000.

Other costs include a power bill $50,000 year at .05 cents per KWH. BRIP gets electricity from Ft Peck dam from WAPA. BRIP gets low cost power because of a law when FT Peck dam was built in the 1930"s called the Pick Sloan Plan. The federal govt agreed to develop irrigated land to replace that which was flooded by the dam with new irrigation projects along the Yellowstone River. All of the irrigation projects from Billings to Glendive get this cheap power. LYIP does not have access to this power because it was built in the early 1900's before Ft Peck dam.

6 The costs for the LYIP to convert to electric power pumps would be astronomical. Based on our costs I would estimate the cost of a huge new pumping plant at Intake to be at least $150 -200M with at least $1 to 1.5 M/ year for maintenance costs. Debris in the river is a constant problem especially after heavy rain upstream. Pine cones and moss constantly plug screens. Sand and silt in the Yellowstone River destroy pumps every 10 years or less. Pumps must be pulled and constantly rebuilt. A new power line from Glendive to Intake would need to be built at a huge cost. Also a substation would be needed. LYIP would have to install other smaller pumping stations between Intake and Fairview to refill the canal. Each of these could cost $5M plus transmission and substation costs. Direct diversion of water from the river at Intake is by far the cheapest way to divert irrigation water. Any other method such as pumping would easily quadruple the cost of water to farmers, saddle the farms with a huge debt and cost the federal government 100's of million dollars in expenses. Pumping out of the river is a huge expense and headache.

Thanks

Mike Carlson – BRIP Manager 2000 - 2014

BP-259

From: mcjmh@nemont.net
To: CENWO-Planning
Subject: [EXTERNAL] Lower Yellowstone Irrigation Project Input
Date: Thursday, July 28, 2016 2:39:00 PM

To Whom This Concerns:

My family was present at the hearing in Billings, MT concerning this business with the LYIP. While observing the audience, I thought about all those who are older or younger than I am, and how they have in the past, and will in the future, work hard to be careful stewards of the irrigated land of the Yellwostone Valley. The past and present farmers have put thier hearts and souls into making this area a fantastic and productive agriculture land.

Just a bit of history for you: my grandfather, A.H. Swenson, was one of the original members of the irrigation board. Have any of you folks stopped to think about the wisdom and the future insight these men had to design the gravity flow ditch system? And yes, this was all done without computer engeneering proglrams and the equipment available today. The countless meetings were not subsidzed nor payed for by special interest groups either. All the folks working on this project to bring it to fruitation did so because they saw a future to make farming better for themselves and for generations after them.

From what I gathered at the Billings hearing is that wealthy special interest groups are concerned for the survival of the sturgeon. As one person commented, the sturgeon has survived well over 100 years already as things are with the irrigation project, and they will continue to survive. I found the comment from Mrs. Schlothaurer very interesting how the two species of sturgeons have interbred for years and years, and there is no true palid sturgeon anyway. Also, there are hundreds of sturgeons in other parts of the world.

A legal court determination had already been made concerning the future plans for the dam, and this decision had the approval of the agricultural community. Now the highly funded political/environmental interest groups are determined to cause problems. What good is our justice system if rich special interest groups can block a decision that serves the best interest of the people and the area involeved? The whole irrigation project system had worked for a long time and agreed on an acceptable method to solve any problem.

I cannot imagine how a proposed pump system, with five or more pumps
placed strategically along the way, can be anywhere enviromentally
better than the system now. Presently, the whole enviroment for all
animals is virtually undisturbed---the wildlife have an abundant
1 supply of water and living conditions, and the quiet of the flowing
water does not disturb the environment whereas the noisy pumps will
be a continuous noise pollution for every living creature. Now the
nightime irrigators will hear the roaring pumps instead of the
quietness of the night---also, any wildlife will be forever plagued
with the noise day and night. The concept of pumps to save
underwater fish does not equate to the noise problems of the
environment above water, and the expenses to operate them.

2 The noise pollution is not the ponly problem----testimony was given several times as to the enormous expenses invlolved with pumps-----the purchasing of pumps, the installation of them, the expense of bringing electricity to the pumps, the general maintenace of pumps and the replacement expense of them, and the numerous unforeseen problems. And yes, every time there is an electricity outage, the pumps go down, the water stops flowing and the farmer is unable to lirrigate as needed. The proposed ideas of the special interest groups has the potential to burden the farmers with horrendous expenses in their operations.

3 I urge you to stick with the plan already approved by the judge and approved by the LYIP, too. Don't beat the farmers down again---give them the respect they have worked so hard to earn and to already accommodate all the demanding changes they have had to make in order to feed you and me.

Thank you,

Janice M. Hunter
Former citizen of the Yellowstone Valley from the old Dore, ND community.

From: steve gil
To: CENWO-Planning
Subject: [EXTERNAL] Lower Yellowstone Project comments
Date: Thursday, July 28, 2016 12:10:11 PM

Dear U.S. Army Corps of Engineers and Bureau of Reclamation,

I am writing in support of an open river alternative for the Lower Yellowstone Fish Passage Project. The pallid sturgeon has survived for over 70 million years. It is appalling that just in the last century, river management has caused its habitat to change to the point that this unique species could be lost forever.

I am strongly opposed to the construction of a new dam that includes an artificial bypass. Your own analysis
confirms that the chances of the pallid sturgeon would use it and be able to survive are minimal. Therefore, the
1 construction of a new dam is an irresponsible use of tax money because it ensures the pallid sturgeon would remain
endangered and the cost of constructing and maintaining a new dam with a bypass, both costing taxpayers tens of
millions of dollars when a better alternative is available.

The best option for the survival of the endangered pallid sturgeon is to remove the Intake Dam and choose the open
2 river alternative, providing pumps or other means to get irrigators water and ensures the survival of the pallid
sturgeon. Spending millions of taxpayer dollars on the bypass that has a slim chance of success is reckless and short
sighted.

It is costly for a species to remain on the endangered list. The removal of the dam and the open river alternative is the most responsible use of tax money and best option for managing human needs with sustaining biological diversity. Scientific studies on marine species in the area have proven that it is the dams that are the biggest problem for the survival of the pallid sturgeon. Therefore I support the open river alternative to ensure its survival does not end in our lifetime.

Sincerely,

Steve Gil

136 Eager Ct

Evansville WI 53536

stevegil3@gmail.com <mailto:stevegil3@gmail.com>

From: Scott Burger
To: CENWO-Planning
Subject: [EXTERNAL] Lower Yellowstone
Date: Thursday, July 28, 2016 6:09:23 AM

BP-261

To whom it may concern,

1 Remove and replace the Intake Diversion Dam (also known as Yellowstone River Diversion Dam) with a damless diversion that enables endangered sturgeon and other species to freely migrate along the river. Such damless diversions already exist elsewhere on the Yellowstone.

Sincerely,
Scott Burger

612 S. Laurel Street
Richmond, VA 23220

From: Picture Perfect BP-261a
To: CENWO-Planning
Subject: [EXTERNAL] LYIP Intake Fish Passage Project EIS
Date: Thursday, July 28, 2016 4:56:59 PM

I am a small business owner located in Sidney, Montana, and also have a dry land farm with a few irrigated acres in Savage, Montana.

1 A biologist in Billings spoke at the meeting, stating that the pallid sturgeon is not native to the Yellowstone River, not to the Missouri River, so I believe this is all very much a waste of time. They use the river, great, and we can assist them in the efforts to get upstream. I am all for assisting them. but to wipe out the irrigation system, which in turn will wipe out the eastern Montana economy in our area is absurd.

I will be forwarding some pictures of the area before the irrigation project, and after the irrigation project. The increased vegitiation and trees is very beneficial to the pheasants, grouse, deer, and other wildlife in the area. The area was very bare prior to the irrigation.

2 Pumps will not work. If one breaks down, there will be a problem in the entire system. What about the ugly sight and noise 20 of the pumps would pose onto the environment? They are destructive to the environment, not reliable, and expensive. Ask Buffalo Rapids farmers how it is working out for them.

The Lower Irrigation workers left "divots" in the dam to make it easier for the fish to go upstream, and the bypass is an ever larger way for the fish to head upstream. The dam is not a huge wall, it is made of large rocks that they can swim over in the spring. I believe people who have jumped on the bandwagon against the bypass have no idea what the dam looks like and what it's function is.
Environmentalists say the fish will not find the bypass. Are there not studies that show they have found a way already? And how does one know that they won't find it? It has to be tried....it is the only economical proposal there is.

3 Closing of the irrigation systeme will shut down Sidney Sugars, which will have a huge trickle down effect for Sidney/Savage/Fairview. With those wages and jobs no longer in the community, our stores and our hosptial would be less busy, Which will affect our schools. Personally, without our irrigated land, we will have to cut back on the size of our herd for lack of feed in the winter. Purchasing alfalfa elsewhere is too expensive as well, again have sell some of the herd.

4 The fish have been surviving for 117 years....why would they die out now? I am 100% for saving the fish AND the farmer...they bypass HAS to be tried. Environmentalists are extremists, not willing to work with others. If they keep succeeding in their efforts, the world is going to get hungry and the government, corporations, and the rich will be the only landowners in the United States. My son is heading off to college at Monana State Universty to study Livestock Management. He will be the 4th generation to run our ranch/farm. Please give the bypass a chance and him a chance as well.

Thank you.

Jan Bloesser

From: Ted Paschke
To: CENWO-Planning
Subject: [EXTERNAL] open comments about the "Intake question"
Date: Thursday, July 28, 2016 4:29:29 PM

BP-262

:::Is there any way for you to send me a confirmation that you did, in fact, receive this?

July 28, 2016

To whom it may concern:

I am writing about the question of the Intake Project in the Lower Yellowstone Valley, in Montana. Today is the last day to submit comments, so I am "in time."

My observations are as follows:

1) My preference is that nothing be done, i.e. none of the suggested options that are spoken of for Intake, i.e. "by-pass channel", "pumps", etc.

Study shows the pallid sturgeon exist in both the Missouri and the Mississippi River. Why does anything need to be done? Clearly, NOTHING needs to be done.

This is reinforced by the fact the Fish & Wildlife Department permits "catch and release" at Intake. IF there was really was a real, legitimate concern for the fish, "catch and release" would be banned, and no fishing of any kind would be permitted in the area where the pallid sturgeon are.

The fact "catch and release" is permitted indicates something is "up."

So, my question is this: In light of the above, why are you even considering altering the Intake facility? Is there some sort of hidden agenda by people who want to do a project, or to even eliminate the existing facility? That is an honest question.

2) Then, I wish to ask you a second question. It is based in the following from Wikipedia:

"Pallid sturgeon are actively being raised in a dozen hatcheries <Blockedhttps://en.wikipedia.org/wiki/Fish_hatchery> and the offspring are being released back to the wild every year."

Other material indicates this hatchery program and fish release back to the wild is proving successful.

If there truly is a valid need to nurture these fish, the simplest solution to do so---if one really wishes to so---is to operate hatcheries and release the young fish UPSTREAM of the existing Intake weir, without making any changes to it.

This is done with several types of fish, in a multitude of fish hatcheries all over the United States.

I suggest you use that approach at Intake, if you feel you "must do something."

Yet, when I asked a government employee in Montana about utilizing that fish hatcheries and releasing, he was quick to respond 'the government is not going to do that.'

WHY NOT?

3) I was recently in the Buford, North Dakota area, at the Fort Union historic facility, for tourism. That is on the

Missouri River, within fifty miles of Intake. On the wall of the museum there was a picture of a pallid sturgeon. I had seen the Intake Facility the previous afternoon, so it was interesting to see the picture. So, I asked the "park attendant" on duty if there were pallid sturgeon in the river by the fort. The woman's quick response was, "Yes, they are in the river here."

Further reading shows there are pallid sturgeon in various places, in the Missouri River and Mississippi River systems.

I do not believe there really is a risk to the pallid sturgeon at Intake, in light of the fact they are found elsewhere, in various places.

So, again, I oppose making any change at Intake. There is no need for it. And, the country's present debt should dissuade us from doing anything like the proposals at Intake. Quite simply, we don't have the money, least of all, to spend on unneeded projects.

4) IF those granted the power to make the decisions regarding Intake feel they MUST do something------and ONLY in that situation-----I fully support ONLY the proposed fish bypass. I categorically oppose the so-called "pumping option", as well as the other options proposed.

I state that due to the cost----economic considerations.

But, even more so, the so-called "pumping" option is totally impractical, and unfeasible economically-speaking.

And, it will impose unjust, unnecessary, tremendous suffering upon all those who live in the area served by the Intake facility. I understand they number about 54,000. They, as one man, will suffer greatly if you do anything improper. The government was to be "...of he people, by the people, for the people", not against the people's welfare.

Sincerely,

From:	Willie O"Laughlin	BP-263
To:	CENWO-Planning	
Subject:	[EXTERNAL] Pallid Sturgeon	
Date:	Thursday, July 28, 2016 12:01:17 PM	

To The Army Corps of Engineers, Omaha District,

I am writing regarding he proposal for retrofitting the Intake Diversion Dam on the Yellowstone river.

1 I believe the best option is to install pumps to bring the agricultural water to the farms, and remove the dam, in order to satisfy the needs of the farmers while not compromising the ability of the endangered Pallid Sturgeon from reproducing and continuing to survive in a healthy flowing river.

Thank you,

Will O'Laughlin
160 Brayton Road
Boston, MA 02135

Sent from my iPhone

From: Daniel Davis
To: CENWO-Planning
Subject: [EXTERNAL] Remove and replace the Intake Diversion Dam
Date: Thursday, July 28, 2016 10:11:54 AM

BP-264

1 Please! Remove and replace the Intake Diversion Dam (also known as Yellowstone River Diversion Dam) with a damless diversion that enables endangered sturgeon and other species to freely migrate along the river. As you know, such damless diversions already exist elsewhere on the Yellowstone River.

Dam removal will bring back fisheries and recreational opportunities which will pay us all back for your efforts.

Thank you for your consideration,
Daniel Davis
SoC Design Engineer, Intel. And a concerned citizen, USA :)

From: lauren ramsay
To: CENWO-Planning
Subject: [EXTERNAL] Remove the Dam from the Lower Yellowstone Project
Date: Thursday, July 28, 2016 2:48:37 PM

Hello,

1 Remove the dam from the Lower Yellowstone Project and use pumps instead. The cost is not that much greater and the fish ladders have never worked well for almost any species, and never at all with Sturgeon. They are amazing fish and deserve to survive.

Thank you,

Lauren Ramsay

From: Dede Draper
To: CENWO-Planning
Subject: [EXTERNAL] Remove Yellowstone River Diversion Dam
Date: Thursday, July 28, 2016 8:37:36 AM

BP-266

To Whom it May Concern,

I am writing to request that you remove and replace the Intake Diversion Dam (also known as Yellowstone River
1 Diversion Dam) with a damless diversion that enables endangered sturgeon and other species to freely migrate along
the river. Such damless diversions already exist elsewhere on the Yellowstone, and this would be a good solution for
this location.

Thank you for your consideration.

Dede Draper
3618 Hwy 32
Ashton, ID 83420

RECEIVED 1 Aug 16

US Army Corps of Engineers ®
Omaha District

BP-267

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Jerry Rice

Organization Farmer Rancher

Address 122 Rd 555

Glendive Montana 59330
CITY STATE ZIPCODE

Phone (406) 681-3762 **Fax** ( )

Email

Narrative Comments:

Please for once use Common Sense
1 leave the dam in place so we and
Our fourth generation family can continue
farming without irrigation this area will dry
up and grow to weeds — Just to save a fish —
We support the bypass

Attach additional sheets if necessary -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

By the way, you
2 do know they are
catching pallid Sturgeon in the Powder river So they can
Guess the fish are smarter than you! get over the dam
Ha!!

Jerry

RECEIVED 1 AUG 16

US Army Corps of Engineers
Omaha District

BP-268

Comment Form

Intake Diversion Dam Fish Passage Project
Dawson County High School
900 N. Merrill Avenue • Glendive, MT 59330
Wednesday, June 29, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name George Rice

Organization Farmer Rancher

Address 122 Rd 555

Glendive Montana 59330
CITY STATE ZIPCODE

Phone (406) 687-3762 **Fax** ( )

Email

Narrative Comments:

1 Lets Use Some Common Sense And Your Kid Given brains and leave our Water Alone However I guess you could then lock our gates For you Couldnt irrigate anyways. So we would support the by Pass. Now leave us alone and the heck with the fish

Attach additional sheets if necessary

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

2 They are catching Pallid Sturgeon in the Powder River by Terry so you cant tell me they arent getting over the Dam! where are your Brains???

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:
U.S. Army Corps of Engineers Omaha District ATTN: CENWO-PM-AA
1616 Capitol Avenue, Omaha, NE 68102

Or email comments to:
cenwo-planning@usace.army.mil

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

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Omaha District

BP-269

Comment Form

Intake Diversion Dam Fish Passage Project
Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Jacquelyn Free

Organization

Address 3592 159th Ave NW

Fairview MT 59221
CITY STATE ZIPCODE

Phone (701) 744 9015 **Fax** (406) 742 5260

Email jfree@sidneyhealth.org

Narrative Comments:

1 I support the bypass channel allowing water to our farmers.

- Attach additional sheets if necessary -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

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U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

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BUREAU OF RECLAMATION

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1 AUG 16

BP-270

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Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Chris Free

Organization

Address 3592 159th Ave NW

Fairview MT 59221
CITY STATE ZIPCODE

Phone (406) 480 3470 **Fax** ( )

Email Chrisfree33@hotmail.com

Narrative Comments:

1 I support the bypass channel at Intake
I support the FARMER

- **Attach additional sheets if necessary** -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

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U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

RECEIVED 1 Aug 16

US Army Corps of Engineers
Omaha District

BP-271

Comment Form

Intake Diversion Dam Fish Passage Project
Dawson County High School

900 N. Merrill Avenue • Glendive, MT 59330

Wednesday, June 29, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Jim Hard

Organization H & H Ag Production LLP

Address 2162 168? N NW

Fairview | MT | 59221

CITY | STATE | ZIPCODE

Phone (406) 480-1155 **Fax** ( )

Email JHard@fschool.org

Narrative Comments:

1 I Support Construction of a fish Bypass around The intake Diversion Dam. This would Supply water as well as take care of the 90 fish

- **Attach additional sheets if necessary** -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

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1616 Capitol Avenue, Omaha, NE 68102

Or email comments to:
cenwo-planning@usace.army.mil

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BP-272

Comment Form

Intake Diversion Dam Fish Passage Project
Dawson County High School

900 N. Merrill Avenue • Glendive, MT 59330
Wednesday, June 29, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Mary Hardy

Organization H & H. Ag Production, LLP

Address 3164 160th Ave NW

Fairview | MT | 59221
CITY | STATE | ZIPCODE

Phone (701) 744-5006 **Fax** ( )

Email

Narrative Comments:

1 I support construction of a fish Bypass Channel around the intake Diversion Dam.

- **Attach additional sheets if necessary** -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

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Or email comments to:
cenwo-planning@usace.army.mil

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BP-273

Comment Form

Intake Diversion Dam Fish Passage Project
Dawson County High School
900 N. Merrill Avenue • Glendive, MT 59330
Wednesday, June 29, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name J. W. Hardy, Jr.

Organization H & H Ag Production, LLP

Address 3162 160th Ave. ~~NW~~ N.W.

FAIRVIEW MT 59221
CITY STATE ZIPCODE

Phone (701) 744-5864 **Fax** ( )

Email jklin@midrivers.com

Narrative Comments:

1 I support construction of a fish Bypass Channel around the Intake Diversion Dam. This alternative plan would facilitate improved fish migration, delivery of 1,374 cfs of water to irrigators, and economic stability to our communities. This plan relies on gravity flow.

- **Attach additional sheets if necessary** -

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http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

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Or email comments to:
cenwo-planning@usace.army.mil

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Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center

2118 W. Holly Street • Sidney, MT 59270

Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

BP-274

Please PRINT clearly

Name Bill and Sheri Madison

Organization ____________________

Address 641 Cinnamon Cr. Rd.

Sidney | Montana | 59270
CITY | STATE | ZIPCODE

Phone (701) 565-2245 **Fax** ( ) ____________

Email ____________________

Narrative Comments:

See attached letter

- **Attach additional sheets if necessary** -

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http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

To whom it may concern -

When will this lunacy end !!
First it was the spotted owl, then the
snail darter - next the wolf reintroduction -
the prairie dog - and now the pallid
sturgeon. Each year thousands of
1 acres are being paved over, denied water
to irrigate, or letting rodents destroy
acre after acre of land in our country.
The productivity of this land is being lost
forever. I might also add that very
few people alive today have never
experienced going to bed hungry!!!

Wake up America

Sincerely,
Bill & Sheri Madison

Army Corps of Engineers, Omaha District
Attn: CENWO-PM-AA
1616 Capitol Ave.
Omaha, NE 68102

BP-275

RECEIVED
1 Aug

Dear sirs,

I attended the Billings meeting on the diversion dam issue and I would like to go on record as
1 being in favor of the bypass channel around the proposed diversion dam near Intake, MT. It is
the most cost effective and best way to insure the farmers there have reliable water to
produce food for this nation.

The other options like pumping the water are too expensive and would put many farmers that
have been there for generations out of business. Plus, the huge costs of installing and
maintaining these pumps on an electrical grid that is already overloaded makes that idea
2 undesirable. One power blip can shut down the whole system; waiting for a critical repair part
for a motor or pump could cause not only delays and more work but loss of crops, etc.
Irrigated crops need water at the proper time! Plus, river channels can change. For example,
the city of Laurel, MT has had problems for several years getting water to the pumps that
supply water to the city. Would big equipment be allowed in the river to dig out and maintain
pump basins? All at more cost, work and inconvenience and government interference.

There are many complicated issues here and some are mandated by law, such as ESA. But in
this case I wonder if a few fish that most people, including some of the biologists working on
3 the recovery project for them have never seen, more important than hundreds of farm
families that have been here for generations producing food for our nation and the people
that benefit from that food. In my opinion, the human environment is more important than a
few fish that only a few people will ever see.

There are only about 125-150 pallid sturgeon in the whole Missouri River system and the U.S.
government is spending hundreds of millions of dollars to try and save them (i.e. increase their
numbers). But this number is only a guess by the biologists who are also guessing that the fish
4 bypass will work. They have only tagged about 5 pallids near the Intake diversion dam that
they hope will find the bypass and go upstream on the Yellowstone and spawn and "live
happily ever after". However, I just read that a female pallid had been caught spawning at the
mouth of Powder River upstream of the bypass recently. So is the bypass unnecessary as
there are already pallids upstream?

In the meantime, we taxpayers will pay the bill for the bypass at approximately $12 million per fish! WOW! And with a $20 trillion-dollar deficit we are spending millions on projects like this?! Just more government waste of taxpayer dollars by unelected bureaucrats who can't be held accountable or fired for inefficiency or incompetence; but, they are guaranteed a big salary with lots of perks, accolades and a great retirement while people in the real world are actually working and paying taxes for more government waste. Many of us taxpayers are getting sick of this crap!!

Now take the animal rights extremists! They are in favor of a free flowing river. Sounds great and makes one feel warm and fuzzy but it would actually push a viable farming community into financial ruin and destroy generations of farm culture and hard work – something these fringe fanatics know nothing about. Also they have no common or practical knowledge of business or agriculture and the huge increase in costs of some of their ideas. What's worse is they don't care! Their political agenda is more important <u>and</u> by constant litigation (with pro bono lawyers) and being funded by national and international interests they sue under the Equal Access to Justice Act and get their lawyers' fees paid by the U.S. government, i.e. the U.S. taxpayer! All this $$ goes into their coffers to fund more projects. Plus, they have no stake in the game, no risk, no monetary loss or consequences if their programs don't work out. They just get the courts and government agencies to do their dirty work for them.

This is just another toe in the door attempt to take out all 5 irrigation weirs on the Yellowstone
5 River using government forces to accomplish their goals of people and land control. We need
reform in our county and establishment politicians and bureaucrats are not doing it. A good
start would be repeal of the ESA and EAJA!!

Sincerely,

C.T Ripley

C.T. Ripley
P.O. Box 186
Huntley, Montana
406/348-3322

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

US Army Corps of Engineers
Omaha District

BP-276

Comment Form

Intake Diversion Dam Fish Passage Project
Dawson County High School
900 N. Merrill Avenue • Glendive, MT 59330
Wednesday, June 29, 2016 • 6:30 PM – 9:00 PM

RECEIVED 1 Aug 16

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name LINDA HARDY

Organization Plainview Farms

Address 3162 160th Ave. N.W.

Fairview MT 59221
CITY STATE ZIPCODE

Phone (701) 744-5864 **Fax** ( )

Email jklin@midrivers.com

Narrative Comments:

1 I support construction of a fish Bypass Channel around the Intake Diversion Dam. This alternative plan would facilitate improved fish migration, delivery of 1,374 cfs of water to irrigators, and economic stability to our communities. This plan relies on gravity flow.

- **Attach additional sheets if necessary** -

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Please mail comments to:
U.S. Army Corps of Engineers Omaha District ATTN: CENWO-PM-AA
1616 Capitol Avenue, Omaha, NE 68102

Or email comments to:
cenwo-planning@usace.army.mil

July 27, 2016 BP-277

To: U.S. Army Corps of Engineers Omaha District,
Attn: CENWO-PM-AA; 1616 Capital Avenue
Omaha, Nebraska 68102

Re: Lower Yellowstone Irrigation Project

From: A. Sundsted

I am a 80 year old son of a 1906 Homesteader. The people of that generation were about developing natural resources and not to destroy. They developed an irrigation system that is efficient has worked for over 108 years and will continue far into the future.

1 The main canal and irrigation water for land has changed this valley over the years for the better. Many more ever changing varieties of crops are being raised for both domestic and livestock uses. The overall results are that more people have food produced efficiently which after all is what is important.

2 Lifting water is very expensive verses letting it free flow. The water would have to be lifted to the highest points to utilize the exciting system of distributing the water to the land. This alternative is just not economic ley feasible. Also the environmental impact would be horrendous.

3 The pallid sturgeon must be very adaptable to have existed since prehistoric days. I believe they will use a bypass channel as proposed if they so benefit from going up the river. Furthermore I am told there are over one thousand planted juvenile pallid sturgeon that are swimming in the Yellowstone river. There is not any evidence I have seen that they will not use a bypass.

The American people eat for less of their income than anywhere else in the world. This did not happen by accident. It is because of projects like this and many others developed by our forefathers.

4 I am in favor of the bypass channel for these brief reasons and many more as the best alternative as proposed and recommended by all three federal agencies involved. I hope common sense will prevail and that the bypass cannel alternative is built as soon as possible without further delay.

Thanks

U.S. DEPARTMENT OF THE INTERIOR
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US Army Corps of Engineers®
Omaha District

BP-278

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Boyd Hardy

Organization Farmer Rancher

Address 13265 Hwy 200

Fairview (CITY) MT (STATE) 59221 (ZIPCODE)

Phone (406) 742-5381 **Fax** (—) ——

Email ——

Narrative Comments:

To destroy The diversion dam because envirormentalists
want To help The pallid sturgeon is The most
1 unreasonable position I have ever heard and completly
absurd. The dam is To help supply water To approximitely 60,000
acres for food + feed production and has worked beautifully for
over 100 yrs.

- **Attach additional sheets if necessary** -

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U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

BP-279

US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

COMMENTS must be received by FEBRUARY 18, 2016

Please PRINT clearly

Name Olivia Sifuentes

Organization ~~w~~ Sidney Sugars

Address

Sidney — Mt. — 59270

CITY STATE ZIPCODE

Phone ( ) **Fax** ( )

Email chinks@midrivers.com.

Narrative Comments:

1 I have worked at Sidney Sugars for 36 years and plan on working here till retirement. The irrigation project I believe is the best way to go. We need irrigation for the farmers. without the farmers Sidney Sugars would not be here. It has been proven that the Sturgeon still can make with ~~pro~~ the project they have proposed. Why not save the Farmers and the Sturgeon both. Thanks.

Attach additional sheets if necessary

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U.S. Army Corps of Engineers Omaha District
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1616 Capitol Avenue
Omaha, NE 68102

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RECEIVED
29 Jul 16

BP-280

US Army Corps of Engineers
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Kelly Fellman

Organization Small business owner

Address 309 2nd Ave SW

Sidney MT 59270
CITY STATE ZIPCODE

Phone (406) 488-1256 **Fax** ( )

Email

Narrative Comments:

1 I support the bypass channel that permits irrigation to the lower Yellowstone Valley.

- Attach additional sheets if necessary -

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1616 Capitol Avenue
Omaha, NE 68102

U.S. DEPARTMENT OF THE INTERIOR
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RECEIVED 29 Jul 16

US Army Corps of Engineers ®
Omaha District

BP-281

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Kirby Feldman

Organization Small Business Owner

Address 309 2nd Ave SW
Sidney (CITY) MT (STATE) 59270 (ZIPCODE)

Phone (406) 433-2948 **Fax** ( )

Email

Narrative Comments:

1 I support the bypass channel as irrigated farm land is vital to our area's economy.

- Attach additional sheets if necessary -

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1616 Capitol Avenue
Omaha, NE 68102

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

RECEIVED 29JUL16

US Army Corps of Engineers
Omaha District

BP-282

Comment Form

Intake Diversion Dam Fish Passage Project
Dawson County High School
900 N. Merrill Avenue • Glendive, MT 59330
Wednesday, June 29, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Don Steinbeisser

Organization Irrigator and Commissioner of LYIP

Address ______________________________

CITY STATE ZIPCODE

Phone ( ) ____________ **Fax** ( ) ____________

Email ______________________________

Narrative Comments:

I am in favor of the purposed Concrete weir and fish
1 by-pass channel because putting in pumps would lower
the water table the whole length of the lower yellowstone
irrigation project and dry up many water wells that families
depend on for household use and livestock water.

- Attach additional sheets if necessary -

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1616 Capitol Avenue, Omaha, NE 68102

Or email comments to:
cenwo-planning@usace.army.mil

BP-283

RECEIVED 4Aug16

Sidney, Mt.
July 14, 2016

U.S. Army Corps of Engineers Omaha Dist.
attn: CENWO-PM-AA; 1616 Capitol Ave.
Omaha, Ne. 68102

Dear Sirs,

My ~~causes~~ reasons for the Intake Bypass Channel as proposed are: that it is very much needed to keep the endangered
1 Pallid Sturgeon alive, they have survived for over 100 yrs the way it is. The new weir will make it better for the fish. Also it gives the farmers enough water for the many acres irrigated, so they can make a living.

The economy of the whole area would be affected, there are about 58,000 A, many [illegible], the area has much wildlife because of the irrigation. Also affected would be in Sidney are Anhauser Busch, [illegible], feed lots, etc.

Using pumps has proved to be costly,
2 ineffective, air & noise polluting. So lets save the fish, farmer & every other person that would be affected.

Sincerely,
[redacted]utt Sundsted

From: Loren Young
To: CENWO-Planning
Subject: [EXTERNAL] Intake bypass
Date: Friday, July 29, 2016 3:55:44 PM

I believe the bypass for the fish is the best option, please do this so the lives of the people can get back to normal.
1 Any other option would be harder on the Environment This bypass is common sense.
Thank you. Loren H. Young
Sent from my iPhone

From: valerie preston
To: CENWO-Planning
Subject: [EXTERNAL] Pallid Sturgeon
Date: Saturday, July 30, 2016 12:46:15 AM

1 The article starts out, "Pallid Sturgeon were once abundant along the Missouri River". Please do every you can to protect the 125 of them that are left and help them multiply. We need biodiversity, we must not kill web of life on earth. Protect the Pallid Sturgeon. Valerie Preston

BP-288

U.S. DEPARTMENT OF THE INTERIOR
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US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

Cenwo planning @usace.army.mil

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Lynell Odenbach

Organization Land Owner Irrigated Farm = Savage, MT

Address 604 Rock Spring Road
Naperville ~~IL~~ IL
CITY STATE ZIPCODE

Phone (~~406~~ 630) 251-1226 **Fax** ( )

Email

Narrative Comments:

1 Use bypass Channel

- **Attach additional sheets if necessary** -

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Omaha, NE 68102

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

BP-289

US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Randi Hass

Organization

Address PO Box 172

Sidney — MT — 59270
CITY — STATE — ZIPCODE

Phone (406) 480 0141 **Fax** ( )

Email renii1@hotmail.com

Narrative Comments:

1 I'm still not convinced changing the dam is worth saving the fish. The farmers are worth more than the fish. If the fish are truely worth improving the dam, build the bypass.

- **Attach additional sheets if necessary** -

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Omaha, NE 68102

BP-290

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Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Gene Baxcel

Organization BXL Inc

Address 34494 County Road 110
Savage mt 59262
CITY STATE ZIPCODE

Phone (406) 480-9666 **Fax** ( )

Email wowcon@midrivers.com

Narrative Comments:

1 Bypass Channel as recomneded with this EIS as well as past, should be clear to be the best option as the preferred alternative

- **Attach additional sheets if necessary** -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

BP-291

US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Seth Buxcel

Organization

Address 10499 County Road 340

Savage — MT — 59262

CITY — STATE — ZIPCODE

Phone (406) 480-4559 **Fax** ( )

Email seth.buxcel@gmail.com

Narrative Comments:

1 Bypass channel / The preferred alternative

- Attach additional sheets if necessary -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

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Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name KEN BUCKLES

Organization SIDNEY SUGARS

Address 402 7th AVE S/E

SIDNEY — MT — 59270
CITY — STATE — ZIPCODE

Phone (406) 480 9386 **Fax** ( )

Email

Narrative Comments:

THE BEET FACTORY CANNOT SURVIVE ON LESS WATER OR
LOWER SUGAR BEET PRODUCTION — CONSERVATION MEASURES SUCK AS
1 WIND TURBINES WILL HAVE VERY HIGH MAINTENANCE COST —
OVERALL ECONOMY WILL TAKE A DOWN TURN WITH OUT AMPLE
CROP PRODUTION

- Attach additional sheets if necessary -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

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Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Ross Rosaaen

Organization Niehenke Welding

Address 312 North Central AVE

Sidney (CITY) MT (STATE) 59270 (ZIPCODE)

Phone (406) 433-1007 **Fax** ( )

Email Niehenke welding@gmail.com

Narrative Comments:

1 We Need TO Keep the Dam + Build the Fish by pass our community Depends on It, 1,000's of Lives depend on IT Human Lives Matter Too!!!

\- **Attach additional sheets if necessary** -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

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Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name William NANKIVEL

Organization Landowner

Address 13107 Highway 200
Fairview (CITY) Mt (STATE) 59221 (ZIPCODE)

Phone ( )

Fax ( )

Email wnankive@hotmail.com

Narrative Comments:

1 Any alternative to the present system that makes farming either impossible or unaffordable is not acceptable! The fish go before the entire Lower Yellowstone Valley.

- Attach additional sheets if necessary -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

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1616 Capitol Avenue
Omaha, NE 68102

BP-295

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Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Char Jonsson

Organization Jonsson Farms

Address 34494 County Road 110
Savage (CITY) MT (STATE) 59262 (ZIPCODE)

Phone (406) 480-1088 **Fax** ( )

Email charj@midrivers.com

Narrative Comments:

1 Use bypass Channel

- **Attach additional sheets if necessary** -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

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1616 Capitol Avenue
Omaha, NE 68102

BP-296

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Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Leonard Odenbach

Organization retired farmer

Address 11051 County Road 344
Savage MT 59262
CITY STATE ZIPCODE

Phone (406) 776-3465 **Fax** ( )

Email widup@midrivers.com

Narrative Comments:

1 Use the by-pass Channel

\- **Attach additional sheets if necessary** -

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1616 Capitol Avenue
Omaha, NE 68102

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Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Elaine & Harold Emly

Organization

Address 34992 Hwy 23

Sidney MT 59270
CITY STATE ZIPCODE

Phone (406) 488-1149 **Fax** ( )

Email

Narrative Comments:

1 We suggest the no action
We use the irrigation water and need it.

- **Attach additional sheets if necessary** -

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1616 Capitol Avenue
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BP-298

Comment Form

Intake Diversion Dam Fish Passage Project
Lincoln Center

415 N. 30th Street, Billings MT 59101
Thursday, June 30, 2016 – 5:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Clyde Zimmerman

Organization Sidney Sugars

Address P.O. Box 317

Sidney (CITY) MT (STATE) 59270 (ZIPCODE)

Phone (402) 224-0031 **Fax** ( )

Email

Narrative Comments:

1 IF you dont Go with the Bi-pass you will put hundreds out of work and you destroy the farmers Keep that in mind Bipass Is the Best option

- Attach additional sheets if necessary -

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http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:
U.S. Army Corps of Engineers Omaha District ATTN: CENWO-PM-AA
1616 Capitol Avenue, Omaha, NE 68102

Or email comments to:
cenwo-planning@usace.army.mil

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BP-299

Comment Form

Intake Diversion Dam Fish Passage Project
Dawson County High School

900 N. Merrill Avenue • Glendive, MT 59330
Wednesday, June 29, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name WALTER L McNUTT

Organization TRI COUNTY IMPLEMENT

Address 110 12th AVE SW

SIDNEY (CITY) MT. (STATE) 59270 (ZIPCODE)

Phone (406) 488-4966 **Fax** ( )

Email Walt@midrivers.com

Narrative Comments:

AFTER 3 MEETINGS & A GOOD UNDERSTANDING
OF YOUR PREFERED ALTERNATIVE OF BY PASS CHANNEL
1 & NEW CONCRETE WEIR I AM IN FULL SUPPORT OF
THE PREFERED ALTERNATIVE TO do JUST THAT
NO PUMPS! Walter L McNutt

\- **Attach additional sheets if necessary** -

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http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:
U.S. Army Corps of Engineers Omaha District ATTN: CENWO-PM-AA
1616 Capitol Avenue, Omaha, NE 68102

Or email comments to:
cenwo-planning@usace.army.mil

US Army Corps of Engineers
Omaha District

BP-300

Comment Form

Intake Diversion Dam Fish Passage Project
Lincoln Center

415 N. 30th Street, Billings MT 59101
Thursday, June 30, 2016 – 5:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Russ Cumin

Organization Big ditch Co.

Address ~~Billings~~ 1555 campus way

~~Ad.~~ Billings MT 59119
CITY STATE ZIPCODE

Phone (406) 861-2659 **Fax** ( )

Email

Narrative Comments:

If the interstates work with wildlife passage's
1 beneath them then it seems the river would work
with a fish bypass.
the alternative is to remove the interstate?

- Attach additional sheets if necessary -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:
U.S. Army Corps of Engineers Omaha District ATTN: CENWO-PM-AA
1616 Capitol Avenue, Omaha, NE 68102

Or email comments to:
cenwo-planning@usace.army.mil

Terry Cayko

From: Terry Cayko <tcayko@midrivers.com>
Sent: Tuesday, June 28, 2016 4:18 PM
To: 'cenwo-planning@usace.army.mil'
Subject: Intake diversion dam

Dear Sirs:

I'm in support of the original alternative that I felt was approved previously twice. This has been studied and gone over and the best alternative was agreed upon that the cement weir for the pallad sturgeon and all fish species in the Yellowstone River would work. I'm a life time resident of 64 years and I live next to the Yellowstone River near the confluence with the Missouri River. Our farmers in this irrigated valley will not survive with taking the Intake Dam out and putting in pumps would be so costly we couldn't afford it. This effects the whole community don't make us extinct. We live to pass on our farms to our children and their children. The people who want to take the dam out are not effected economically.

Farmers are the best environmentalist out there. We aren't going to do anything that harms our land or environment. This dam has been in for over a hundred years and has done more for the environment in this area than imaginable.

Terry Cayko
15852 36th St NW
Fairview, MT 59221

BP-302

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Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project
Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Brian Bieber

Organization B. B. Electric

Address PO Box 246

Fairview — MT — 59221
CITY — STATE — ZIPCODE

Phone (406) 742-5181 **Fax** ( )

Email bbe@midrivers.com

Narrative Comments:

I run a small business in Fairview MT. All of use that live here depend on the health of our farmers. Losing our
1 irrigation project here would make a lot of us extinct. We need our water at an affordable price. The fish bypass seems like the most sensible option for the people and the fish.

- **Attach additional sheets if necessary** -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

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BP-303

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Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project
Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016
Please PRINT clearly

Name Julie Brodhead

Organization food Consumer / Resident of Richland Co. (Sidney)

Address 12291 Goss Ave
Sidney MT 59270
CITY STATE ZIPCODE

Phone (406) 488 6331 **Fax** ( ) NA

Email jbhealth@hotmail.com

Narrative Comments:

1 I support the bypass Channel proposal for the Intake Area Dam in order to preserve the water supply to the several counties that Benefit from using the Canal system for their crops. Save the farmer.

- **Attach additional sheets if necessary** - Julie Brodhead

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http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

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U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

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Omaha District

BP-304

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Mark A Brodhead

Organization Resident

Address 12291 Goss Ave

Sidney (CITY) MT (STATE) 59270 (ZIPCODE)

Phone (406) 488-6331 **Fax** ( )

Email markallan1983@gmail.com

Narrative Comments:

I have lived and worked in this valley all of my life. This irrigation project is what has made our
1 area a prosperous place to be. I believe the bypass will work for the fish and should be tried. I
2 also believe a better study should be done since the Sturgeon are being caught very often when fishing here.

- Attach additional sheets if necessary -

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http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

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Omaha District

BP-305

Comment Form

Intake Diversion Dam Fish Passage Project
Lincoln Center

415 N. 30th Street, Billings MT 59101

Thursday, June 30, 2016 – 5:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Curt Cotton

Organization

Address 35 Althoff Rd

Bridger (CITY) MT (STATE) 59014 (ZIPCODE)

Phone (406) 662-5144 **Fax** ( )

Email

Narrative Comments:

1 Thank you for the opportunity to comment on the Lower Yellowstone Intake diversion Dam fish passage. I believe you have come up with a good solution for both the fish and the irrigators with the by pass channel. It is the alternative with the least cost + most chance of success. Curt Cotton

- **Attach additional sheets if necessary** -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:
U.S. Army Corps of Engineers Omaha District ATTN: CENWO-PM-AA
1616 Capitol Avenue, Omaha, NE 68102

Or email comments to:
cenwo-planning@usace.army.mil

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BP-306

Comment Form

Intake Diversion Dam Fish Passage Project
Lincoln Center

415 N. 30th Street, Billings MT 59101

Thursday, June 30, 2016 – 5:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Phyllis Dahl, President

Organization Victor Buxbaum, Inc.

Address 12295 Hwy 200

Sidney | MT | 59270
CITY | STATE | ZIPCODE

Phone ( ) 406-433-2085 **Fax** ( )

Email

Narrative Comments:

My father's family moved from Germany to this specific area because of the excellent opportunities to grow crops. Irrigation is essential to our family's livelihood and ubiquitous to this community. My family has relied upon irrigation for raising crops for over sixty (60) years. Those crops include sugar beets and corn (silage for feeding our cattle). This has been our family's sole livelihood since settling south of Sidney in 1940's. Without irrigation, our livelihood would cease to exist. The sugar beet
1 factory was supported by the crops and has provided income to so many families. Where would the
2 valley be without irrigation? It would be devastating and have a dramatic negative impact. We have talked to people who have fished at Intake and it seems the pallid sturgeon are surviving fine as is.

- Attach additional sheets if necessary -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

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Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by **JULY 28, 2016**

Please PRINT clearly

Name: Eldon Flynn

Organization: Flynn Farms

Address: 2641 Cherry Cr. Road
Cartwright (CITY) N.D (STATE) 58838 (ZIPCODE)

Phone (701) 744-3446 Fax ( )

Email

Narrative Comments:

Why can someone with no
Back ground in fish say No I
1 don't like it [meaning the fish
Lader] ~~L~~ let's try it and go forward
And try it.

- Attach additional sheets if necessary -

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http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

horizonresources
Solutions for your success.

BP-308

RECEIVED 25Jul16

U.S. Army Corps of Engineers Omaha District

To whom it may concern:

Horizon Resources is a farm supply cooperative established in 1929, we serve agricultural growers in Northeastern Montana and Northwestern North Dakota. Since our inception in 1929 we have worked for and with the producers that are involved with and will be affected by decisions made in regard to the Lower Yellowstone Intake Diversion Project.

This region is made up of agricultural producers that have weathered everything thrown at them in regards to weather, crop prices, diseases in their crops, land values etc. yet they continue to persevere, which consequently drives a vibrant retail sector in the valley. The one thing that a producer cannot control is bureaucracy that comes in many different forms; this is one of those situations.

1 We, the Board of Directors and Management of Horizon Resources submit the following in support of the Bypass Channel Alternative as the only choice that makes sense; it fills the need of all involved including the pallid sturgeon, wetlands, wildlife and most importantly the lively hood of the agricultural producers and their families, in addition to the job creation that is dependent on their continued success.

2 The rest of the proposals create greater expenses, potential long term environmental concerns and increased operating cost to growers with the potential risk of more expensive and potentially less volumes of water.

Support our region by supporting the Bypass Channel Alternative, the one clear choice that is best for the environment and the people.

Thank you for your consideration,

Wagner Harmon

Chairman of the Board

Horizon Resources

Jeff Wagner

CEO/President

Horizon Resources

209 Washington Ave. Williston, ND 58801
T 701-572-2171 F 701-572-0601
1-800-247-1584
www.horizonresources.coop

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Comment Form

Intake Diversion Dam Fish Passage Project
Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Dennis Kittleson

Organization Farmer & Rancher

Address 33993 Co Rd 146

Culbertson MT 59218
CITY STATE ZIPCODE

Phone (406) 798-3997 **Fax** ( )

Email

Narrative Comments:

1 Me & my 3 brothers own some land in both MT & ND irigated under LYIP. I feel the best solution for the fish & the farmers would be the prefered alteranative would be the Bypass Chanel If land were no longer Irigated it would Devasate the tax Base of the Countys involved or Pumping would be unafordabe

- **Attach additional sheets if necessary** -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

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Comment Form

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Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016
Please PRINT clearly

Name Judy LaPan

Organization citizen

Address 517 4th St SE

Sidney MT 59270
CITY STATE ZIPCODE

Phone (406) 488-7463 **Fax** ( )

Email mzjlapan@gmail.com

Narrative Comments:

1 I support the bypass for the yellowstone river. The area will be devastated without the bypass!

- Attach additional sheets if necessary -

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ATTN: CENWO-PM-AA
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Omaha, NE 68102

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Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Dorene McDonald

Organization

Address 319 7th Ave SW

Sidney (CITY) MT (STATE) 59270 (ZIPCODE)

Phone (406) 488-5011 **Fax** ( )

Email

Narrative Comments:

I believe the bypass is the best alternative for the 5% of the pallid sturgeon in the Yellowstone River. This will have the
1 least impact on the people of our area and will be a viable route for the sturgeon. The other option I agree with is to leave it as is and repair it so that has been working **Attach additional sheets if necessary** - for years + years.
Dorene McDonald

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

RECEIVED 25 Jul 16

US Army Corps of Engineers
Omaha District

BP-312

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Diane Miller

Organization

Address PO Box 550

Fairview (CITY) Mt (STATE) 59221 (ZIPCODE)

Phone (406) 742-3579 **Fax** ( )

Email dynamo@midrivers.com

Narrative Comments:

1 I live in the farming Community of Fairview. It would be devastating to loose the irrigation. If we loose the irrigation we will loose a lot of farmers & businesses. Which also puts a lot of people out of work. Seems like Human lives Should be more important than a fish. It takes farming to keep the human food chain going

Attach additional sheets if necessary

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

2 I Support the Intake By Pass Channel

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

BP-313

Dorothy Mitchell
11843 Highway 16
Sidney MT 59270

July 19th 2016

RECEIVED
25 Jul 16

U.S. Army Corps of Engineers
Omaha District
Attn:CENWO-PM-AA
1616 Capitol Ave.
Omaha,NE 68102

I was born in Sidney in 1927. Spent my youth on a dry land farm in northwestern Richland county. I know how it is to rely on God for much needed moisture to have a successful harvest.

My late husband, Calvin, and I purchased this irrigated farm in 1980 because it was part of the Lower Yellowstone Irrigation project. We have been blessed that we have never suffered a crop failure
11 because there wasn't enough moisture. We have enjoyed all the wild life that is being supported by all the "valley" farms that can rely on having water.

Speaking of wildlife I have deer, pheasants, bald eagles and a whole host of birds that come by the house regularly.

I would sincerely ask that the By Pass Channel be allowed to be built, thus preserving our way of life and our continued support of all the wildlife that is in the "valley".

Sincerely,

Dorothy Mitchell

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

RECEIVED 25 Jul 16

BP-314

US Army Corps of Engineers ®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name CASEY SCHLOTHAUER

Organization ______

Address 2851 160th Ave NW

FAIRVIEW | MT | 59221
CITY | STATE | ZIPCODE

Phone ( ) ______ **Fax** ( ) ______

Email ______

Narrative Comments:

1 I support the fish bypass channel alternative. There has been very little science supporting the idea that the irrigation system is wholly responsible for the pallid's decline. The community and farmers have consistently shown their support of improved fish habitats with continued irrigation. The stalling must stop.

- **Attach additional sheets if necessary** -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

RECEIVED 26 Jul 16

BP-315

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name KENNETH SCHLOTHAUER

Organization FARMER

Address 2891 160th AVE. NW

FAIRVIEW (CITY) MT. (STATE) 59221 (ZIPCODE)

Phone (701) 744 5811 **Fax** ( ) NONE

Email NONE

Narrative Comments:

1 THE FISH ARE DOEING WELL
NOTHING NEED BE DONE.

- **Attach additional sheets if necessary** -

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

BP-316

RECEIVED 26 Jul 16

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name STEPHANIE SCHLOTHAUER

Organization BLUE CARRIAGE FARM

Address 2891 160th Ave N.W
FAIRVIEW MT. 59221
CITY STATE ZIPCODE

Phone (701) 744-5811 **Fax** ( )

Email

Narrative Comments:

1 ONCE AGAIN: A LETTER of Affirmation for the PREFERRED ALTERNATIVE of THE BYPASS CHANEL. I have written ~~ENCLOSED~~ A COPY of the statements I wish to MAKE. They will be in

- Attach additional sheets if necessary another envelope.

Before including your address, phone number, email address or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

RECEIVED 25 Jul 16

US Army Corps of Engineers
Omaha District

BP-317

Comment Form

Intake Diversion Dam Fish Passage Project
Dawson County High School

900 N. Merrill Avenue • Glendive, MT 59330

Wednesday, June 29, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Joe G. Steinbeisser

Organization Land owner & irrigator

Address 690 22nd Ave NW

Sidney (CITY) Mont. (STATE) 59270 (ZIPCODE)

Phone (406) 433-2185 **Fax** (   )

Email jmstein@midrivers.com

Narrative Comments:

1 The concrete weir with a bypass channel is an excelent idea. The sooner it is installed the better.

2 Fish & Game is now paying land owners to let their river banks erode. There for making it very difficult to install permenant energy using pumps.

Attach additional sheets if necessary

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:
U.S. Army Corps of Engineers Omaha District ATTN: CENWO-PM-AA
1616 Capitol Avenue, Omaha, NE 68102

Or email comments to:
cenwo-planning@usace.army.mil

From: delivery@actionsprout.com
To: CENWO-Planning
Subject: [EXTERNAL] Save the Endangered Pallid Sturgeon
Date: Tuesday, July 19, 2016 10:16:43 AM

1 Thank you for the opportunity to comment on the Lower Yellowstone Fish Passage Project in Montana. I support an open river alternative for the Lower Yellowstone Fish Passage Project. Your own analysis shows that the best outcome for the endangered pallid sturgeon from this project is to remove the outdated Intake Dam, open the river and allow full river passage. I do not support building a new dam and artificial bypass, as the likelihood that endangered pallid sturgeon will use it is slim. The pallid sturgeon needs all the help it can get. Please adopt an alternative that removes the dam, provides pumps or other means to get irrigators water and gives the pallid sturgeon a fighting chance. Spending taxpayer dollars on an alternative that won't work will cost more money in the future - pay to do this right the first time.

From: Phillip Leija
To: CENWO-Planning
Subject: [EXTERNAL] Comment on Intake Diversion Dam DEIS
Date: Sunday, July 17, 2016 11:58:43 PM

Dear U.S. Army Corps of Engineers,

As someone who cherishes free-flowing rivers and all the benefits they provide to people and wildlife, I urge the Corps to select one of the “open river” alternatives in the DEIS on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River.

For more than a century, Intake Diversion Dam has blocked upstream passage for federally endangered pallid sturgeon and dozens of other native fish species in the Lower Yellowstone River. Removing the dam not only would open up 165 miles of the mainstem Lower Yellowstone River to migrating fish, but it would also give fish access to hundreds of additional miles of tributaries such as the Powder and Tongue rivers.

While I strongly favor restoring a free-flowing river to benefit native fish, I believe it’s also vital that the Corps address the needs of farmers who currently rely on Intake Dam to divert river water to irrigate 54,000 acres of crops in the Lower Yellowstone Project. Based on the information presented in the DEIS, these needs can reasonably be met by constructing irrigation pumps along the river that would be powered by clean, renewable, locally-produced energy such as wind power.

This would not be the first time that a dam has been removed and its function replaced with irrigation pumps. A very similar project to what is being considered on the Lower Yellowstone recently was implemented at Savage Rapids Dam on the Rogue River in Oregon. That project resulted in a win-win-win for fish, farmers, and taxpayers.

In closing, I urge the Corps to select an alternative that has a high probability of meeting the needs of native fish, meeting the needs of farmers in the Lower Yellowstone Project, and costs taxpayers the least amount of money over the long term. The only alternatives that meet those criteria are the two open river alternatives that involve removing Intake Dam from the river and replacing its function with a reliable irrigation pump system powered by clean energy.

Thank you for considering my comments.

Sincerely,

Phillip Leija

Estergard, Scott

From: Salak, Jennifer NWO <Jennifer.Salak@usace.army.mil>
Sent: Tuesday, October 18, 2016 10:14 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] LYIP and intake

-----Original Message-----
From: Brad Franklin [mailto:bfranklin@yellowstonebank.com]
Sent: Friday, July 15, 2016 4:32 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] LYIP and intake

I am writing in support of the fish by-pass channel and modified weir for the Lower Yellowstone Intake Project near
Sidney MT. The current gravity flow system is the most environmentally friendly system I can think of. Other systems of
1 irrigation will have a much larger carbon footprint. Other irrigation systems will also be more expensive and may make
irrigation not feasable. The irrigated valley has been very beneficial to a wide range of plants and animals. Any decrease
would be detrimental to our local ecosystem.

Brad Franklin

449 12 Ave SW

Sidney, MT 59270

406-480-4274

Estergard, Scott

From: Salak, Jennifer NWO <Jennifer.Salak@usace.army.mil>
Sent: Tuesday, October 18, 2016 10:35 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Intake diversion dam

Tiffany,

Here is one more that came in on the 16th before all the form letters came in on the 17th.

Jennifer

-----Original Message-----
From: Barbara Reidle [mailto:oasis@midrivers.com]
Sent: Saturday, July 16, 2016 2:59 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Intake diversion dam

1 I would like to go on record as being in favor of the Intake diversion dam as proposed by the Corp of engineers and the
Bureau of reclamation. As a long time resident of this area and a long time farmer in this same area, I know first hand
how important a dependable supply of water is to all of us. I can tell you from experience that pumping is not a viable
2 solution. Machinery tends to break down and repairing it can be very time consuming at a time when time and water
are of utmost importance. Our crops will not wait for parts to shipped to us and repairmen to utilize those parts. The
diversion dam is the only way to be sure we have the water when it is needed.

Barbara Reidle
3341 Hwy 58
Fairview, Mt 59221-9357
701-744-5752

July 16, 2016

To Whom it may Concern,

1 We support the reliable delivery of water to the irrigators provided by this proposed concrete weir. This proposed concrete weir and durable fish passage, will provide reliable water to the irrigators in this large region, and greatly improve fish passage over the existing stacked boulder diversion dam. This proposed project needs to be completed immediately for the good of the endangered species and all the local communities.

The loss of the existing reliable irrigation water to the surrounding farms would devastate our regional economies and communities.

Duane Peters
1148 Safflower Lane
Sidney, MT 59270

Estergard, Scott

From: Salak, Jennifer NWO <Jennifer.Salak@usace.army.mil>
Sent: Tuesday, October 18, 2016 10:14 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Environmental Study on LYIP & Intake

-----Original Message-----
From: Diahn Ruffatto [mailto:druffatto@yellowstonebank.com]
Sent: Friday, July 15, 2016 5:29 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Environmental Study on LYIP & Intake

To Whom it may Concern:

1 I believe the best outcome for the environment and local community should be the fish by-pass and modified weir. This
seems the most sensible regarding the environment, allowing fish spawning to continue uninterrupted, while permitting
the local farmers the use of the irrigation canal. The alternative suggestion generates undue cost needed to tear out the
current weir(s), install pumps and build wind machines that will still need to be powered. In response to the alternative
2 route, the wind machines impact will be the expense to construct and run, at a much larger cost, while taking away from
the natural beauty of our surrounds. The wind machines would be detrimental to the area birds, like our National
symbol the Bald Eagle, which is also endangered.

Wouldn't the fish by-pass be the intelligent and responsible way to remedy the situation without detracting from the beauty of our area and causing undue financial burden on the locals, while still allowing the fish the ability to spawn?

Thank you for your time and consideration.

Sincerely,

Diahn Ruffatto

Sidney, MT

Diahn Ruffatto
Yellowstone Bank
120 2nd Street NW
Sidney, MT 59270
Phone (406) 433-3212
Fax (406) 433-3235

Estergard, Scott

From: Salak, Jennifer NWO <Jennifer.Salak@usace.army.mil>
Sent: Tuesday, October 18, 2016 10:13 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: [EXTERNAL] Endangered Pallid Sturgeon and Lower Yellowstone Irrigation Project
Attachments: Fish Bypass Channel.docx

-----Original Message-----
From: Mark & Kathy Iversen [mailto:mkinc@midrivers.com]
Sent: Friday, July 15, 2016 2:05 PM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Cc: James Brower <irrigation4u@gmail.com>
Subject: [EXTERNAL] Endangered Pallid Sturgeon and Lower Yellowstone Irrigation Project

To whom it may concern;

1 After taking many hours out of our busy irrigating season to attend all three meetings in Sidney, Glendive and Billings, it is quite apparent to me that the Bypass Channel for the Intake Dam is the only reasonable solution to help the endangered pallid sturgeon and keep the Lower Yellowstone Irrigation Project viable. The facts and figures have been presented over and over again and anyone with an ounce of common sense should be able to see that the concrete weir and bypass channel is the only way to go!

2 We sat in Billings and listened to the Fish Biologists, who fly in from Massachusetts, tell us that there is no proof that the endangered pallid sturgeon will use the bypass, while another biologist tells us that the pallid sturgeon is only native to the Missouri River. How in the world did these fish ever wind up in the Yellowstone River let alone in our main canals before the screens were in place? You can bet these educated people didn't pay their own way to get to Billings and probably don't even know where the Yellowstone River is, let alone the Intake Dam.

3 My grandfather homesteaded here in this valley like many others in the early 1900's. In those days the government knew people needed to work in order to feed the people. The government also knew it was important to use the land God has given us to its fullest potential. I was raised and worked in this valley my 70 plus years as a farmer and rancher. I have served on several boards in this community and am currently Chairman of District 1 on the Lower Yellowstone Irrigation Project. I now have grandsons (5th generation farmers) who are optimistic about farming and are willing to work hard.

4 This continual battle between the Wildlife Federation, the Fish and Game Department, the Bureau of Reclamation and the U. S. Army Corp of Engineers has resulted in the Lower Yellowstone Irrigation project having to hire lawyers to fight for our livelihood. This added expense is cutting into the already shrinking profit margin of agriculture in this valley.

5 Furthermore, the stress of this ongoing battle is detrimental to the health of all of us as farmers, merchants, employers, employees and residents of the MonDak region. I urge you to put an end to this uncertainty that has been ongoing for many years by building the concrete weir and Bypass Channel. It is the only reasonable and fiscally responsible option on the table!

Thank you for your kind consideration,

M. Iversen

Bradley B. Shepard
65 Ninth Street Island Drive
Livingston, Montana 59047

U.S. Army Corps of Engineers July 15, 2016
Omaha District
ATTN: CENWO-PM_AA
1616 Capitol Avenue
Omaha, NE 68102 NOTE: Sent via email to cenwo-planning@usace.army.mil

Dear Sir or Madame,

I am commenting on the draft Environmental Impact Statement (DEIS) for the Intake Dam project on the Yellowstone River proposed by the Bureau of Reclamation (BoR) and U.S. Army Corps of Engineers (Corps). I have organized my comments on this DEIS into five broad areas: 1) failure of the DEIS to address issues I raised in my scoping comments (letter from B. Shepard dated February 12, 2016, sent via email – copy enclosed); 2) my recommendation for a preferred alternative and my concerns regarding the preferred alternative proposed in the DEIS; 3) my review of the "Connectivity" analysis (Appendix D); 4) my review of the Monitoring and Adaptive Management appendix (Appendix E); and 5) the fact that the proposed independent peer-review of the DEIS methods and conclusions will not occur until after the deadline for public comments. I provide some additional specific editorial and review comments in a supplemental attachment.

1 The DEIS failed to address several of the issues I raised in in my scoping comments (letter from B. Shepard to U.S. Army Corps of Engineers dated February 12, 2016, sent via email [copy enclosed]). Specifically, I requested that the DEIS explicitly provide the initial recommendation from the Biological Review Team's (BRT) Comments (Jordan 2006 and 2008) - to use pumping to supply water to irrigators and either remove Intake Dam or allow it to naturally degrade (Jordan 2006). I also requested that the Corps and BoR address the rationale used for rejecting this scientific recommendation. Instead of doing this, the DEIS provided a very brief summary of the BRT recommendations on specific actions (DEIS, p. 2-31), the DEIS did not mention the original preferred alternative from the BRT and the fact that a group consisting of the BoR, the Corps, the Nature Conservancy (TNC), and Montana Department of Fish, Wildlife & Parks (MFWP; termed the MOU group in Jordan 2006) determined that dam removal and pumping was not a viable alternative because maintenance of a large pump facility was deemed at that time to be "too burdensome for irrigators" (Jordan 2006). This rationale should be clearly displayed in the DEIS so the public can see why the alternative best supported by the science and best pallid sturgeon scientists was rejected. The question in my mind, is, "Can a group of irrigators reject a scientific alternative because it is 'too burdensome', and does that meet 'reasonable and prudent' criteria used to administer the Endangered Species Act?". The fact remains that this was a preferred biological alternative that offered the highest likelihood that pallid sturgeon would pass above the Intake site, and it still remains the "best scientific" solution. This fact should be acknowledged in the final EIS. In my opinion the irrigators' demands are neither reasonable nor prudent and the expenditure of public funds to support unreasonable demands by this group of irrigators needs to be further evaluated. I commend the BoR for putting both BRT's Comment reports (Jordan 2006 and 2008) on their web site so they can be found via a search. This is something I also requested in my scoping comments.

Bradley B. Shepard
65 Ninth Street Island Drive
Livingston, Montana 59047

2 I asked that the DEIS incorporate recommendations that are to be made in a report tentatively titled "Science and Adaptive Management Plan" for the Missouri River system that the Corps and their collaborators are currently preparing. I asked that this Intake Dam project and EIS be delayed until that Management Plan is completed. The DEIS does not address this request other than to state that the Management Plan is being prepared. I stand by my statement in my scoping letter that suggests "this plan should be completed prior to spending additional public funds on specific projects such as Intake Diversion Dam project". This is important because the public and our state and federal agency and political representatives need to understand how the Intake project will help to meet the objectives of this broader plan.

3 I specifically requested that any pumping alternative that included abandonment of the current Intake Diversion structure include an analysis of an alternative that did NOT physically remove the entire diversion structure from the river, but instead removed rock from several slots in the existing structure and then allowed the river's natural processes (ice and high flows) to degrade this structure through time. The fact that constant maintenance of the existing rock irrigation is required to keep it in place indicates that without this constant maintenance natural river processes will likely remove this structure over time. The length of time it would take depends upon the magnitude and frequency of ice and high flow events. The DEIS did not consider this option. In my opinion, this is a fatal flaw in the DEIS and, consequently, economic analyses that include total removal of the current Intake Diversion are inflated way too high. We need to see a dam abandonment and pumping alternative without the costs of diversion removal.

4 I applaud BoR and the Corps for considering an irrigation efficiency and pumping alternative, but believe costs for this alternative are inflated. I discuss the inflated cost of diversion removal above. In addition, I did not see any annual value placed on the estimated 765.9 cfs water savings (DEIS estimate) that was included in this alternative in the economic analyses, nor did I see any consideration or assessment of how this saved water might be used as in-river flow to augment flows for natural processes and commercial barge traffic down-river. Something I specifically requested in my scoping comments. Why were these not included? If 765.9 cfs of water has no value, why are we spending so much money to deliver water to irrigators?

5 I now shift my focus onto the DEIS and the preferred alternative. I do not believe that there is a reasonable certainty that the preferred alternative will meet the Purpose and Need for the project for pallid sturgeon or ecosystem function. I contend that 1) a concrete cap on the existing irrigation diversion to make it an actual dam will further limit passage of fish both up and downstream in the Yellowstone River past this diversion, including pallid sturgeon; 2) much uncertainty exists as to whether the proposed By-Pass Channel will provide up-river passage to pallid sturgeon and other fish species; and 3) that larval pallid sturgeon will suffer high losses into the irrigation canal, even with the existing screening structure. I expand on these three contentions below.

6 First, a concrete cap on the existing rock diversion will further reduce fish passage over this diversion from the existing condition. This concrete cap will actually make things worse for fish passage and river ecosystem function. In my opinion, the existing condition is better than a concrete capping of the existing diversion. The assumption being made by the Corps and BoR is that all fish species will use the By-Pass channel. I will expand on the problems with this assumption in the next paragraph.

The Corps and BoR (and indirectly, the U.S. Fish and Wildlife Service) are assuming that if you
design and construct a By-Pass channel with physical characteristics (water velocities and water
depths) that adult pallid sturgeon have been found to use in the wild, that adult pallid sturgeon
7 will use that By-Pass channel and successfully move upstream through it. There are likely many
additional factors besides water velocities and water depths that regulate whether adult pallid
sturgeon will successfully migrate up-river. There is no evidence that By-Pass channels are
successful in allowing adult sturgeon to move up-river past diversion or dam structures. I have
reviewed the literature and can find no evidence that any By-Pass channel constructed to pass
adult sturgeon have been successful in passing high proportions of spawning adult White,
Atlantic, or Pallid Sturgeon. There is just no evidence that this will work.

Consequently, I suggest that ***if*** the DEIS preferred alternative is selected in the final EIS that the
project be constructed in two phases. The first phase would construct the By-Pass channel, but
not do anything at the diversion (i.e., no concrete cap would be placed on the diversion). The
By-Pass channel could be evaluated for some reasonable period of time (i.e., three to five years)
using the "Monitoring and Adaptive Management" (Appendix E) criteria. If the By-Pass channel
meets the success criteria detailed in this appendix, then the concrete cap could be installed on
8 the existing diversion. If it does not meet those criteria, then no cap would be installed and other
alternatives would receive further consideration, including diversion abandonment and pumping
water to irrigators. I suggested this in my "Expert Declaration" prepared for Defenders of
Wildlife and used in their injunction to legally delay this project until a better environmental
review was conducted. I still believe this course of action is the only "reasonable and prudent"
course of action ***if*** a By-Pass Channel alternative is selected. This will reduce the probability
that the preferred alternative will actually make things much worse than they currently are for
fish in the Yellowstone River. After all, much of the funding for this project was to help provide
up-river passage to adult pallid sturgeon and to help restore river ecosystem function. Spending
this money without ensuring that these objectives have a reasonable chance of occurring seems
like a misappropriation of these funds to me.

Another major assumption being made by the Corps and BoR is that the By-Pass Channel can be
maintained at a relatively low cost to continue to provide the designed water velocities and water
depths configured in this channel. I suggest that this assumption is faulty in a large gravel and
sand bed river, such as the Yellowstone in this location. We have so many examples of rip-rap
9 and hardening structures failing up and down the Yellowstone River, that I was amazed that the
Corps and BoR actually suggested that this channel could be maintained and that the costs for
this were relatively low. Will the irrigators be stuck with a major By-Pass channel renovation in
a few years, or will the U.S. taxpayers again be stuck with this cost? Unfortunately, the way I
read the record, the Corps will walk away from this project a year or two after its construction
and leave the BoR (and us as U.S. taxpayers) and the irrigators to deal with design and
maintenance problems in the By-Pass Channel.

Reducing mortality of larval pallid sturgeon is an extremely difficult objective to meet for any
alternative that relies on maintaining any type of diversion structure in the river channel. Adding
a concrete cap and raising the height of the existing diversion structure will probably increase
10 mortality of larval pallid sturgeon in the river by increasing the vertical water drop, water
velocities, and turbulence at the diversion site. Unfortunately, the screening of the irrigation

Bradley B. Shepard
65 Ninth Street Island Drive
Livingston, Montana 59047

headworks will not prevent larval pallid sturgeon from moving onto and through these screens so that they are lost to the system. These facts need to be explicitly addressed in the EIS.

I contend that the only alternative that has a reasonable expectation of meeting the Purpose and Need for passing adult pallid sturgeon upstream past this diversion are the two alternatives that abandon the existing diversion structure and use pumps or a combination of pumps and conservation practices to deliver water to the irrigators. I also believe that pumps offer the best
11 chance to limit entrainment of larval pallid sturgeon during their downstream drifting phase. While I understand that the monetary costs associated with the pumping alternatives are higher, I suggest that these additional costs are justified to provide the best chance for pallid sturgeon to persist in the Yellowstone River portion of their range. I believe that long-term costs to both the BoR and irrigators will be much higher than the DEIS estimates if the By-Pass channel does not work as designed or as predicted. Failure of the By-Pass channel to pass adult pallid sturgeon upstream and the preferred alternative's likely failure to protect enough larval pallid sturgeon, should they be produced, will result in necessary modifications or re-construction that will end up costing much more than the current Pumping or Pumping with Conservation Measures alternatives. In addition, the DEIS failed to adequately consider the potential impacts of the proposed concrete dam on passage of other fish species in the Yellowstone River.

I will now address the Fish Passage Connectivity analyses presented in Appendix D. First of all, this appendix states, "For an ecosystem restoration project such as this fish passage project, there is no monetary measure of benefits to compare alternatives in a traditional cost-benefit ratio." I agree with that statement and also point out that this has been called "an ecosystem restoration
12 project". I suggest that the preferred alternative is NOT consistent with the "ecosystem restoration" objective. Secondly, I understand the need to develop a Fish Passage Connectivity Index and support the use of any attempt to quantify connectivity. However, two key criteria in judging the relative merits of a particular index method are: 1) has the method been reviewed and evaluated by a non-biased, independent peer group with expertise (i.e., such as that which occurs during publication in a peer-reviewed journal); and 2) can the method be consistently applied such that the rationale for assigning the index metrics are clear and different evaluators would likely assign the same metrics in repeated trials. Unfortunately, it appears to me that neither of these criteria are met by the Corps connectivity assessment. First, there has been no peer review of this Fish Passage Connectivity Index as evidenced by the lack of citations, other than Corps citations, for the method or its application. While there are good scientific literature citations for some of the habitat criteria contained within the Connectivity Index, there are no citations on the development of the Connectivity Index methodology or on its application. This Connectivity Index method was originally developed for 30 fish species, but pallid sturgeon was not included in those 30 species. Consequently, the Corps added pallid sturgeon in 2014 when they conducted their initial EA supplement analysis (2015).

The portion of the Fish Passage Connectivity Index that quantified the likely additional habitat available to the various fish species above the Intake Diversion Dam site appeared reasonable to
13 me. However, I think some assumptions the Corps made regarding the opportunity for upstream fish passage are much less tenable. The Corps assumed that "…the duration of available [appeared to be missing a word here] for fish passage would be 100% during all flows for the bypass channel, modified side channel, and dam removal alternatives because depths and velocities are suitable at most times,…." (Appendix D, p. 6 and Table 1-3 on p. 8). I suggest that

it is unreasonable to assume that an open river channel has the same likelihood as a side channel
or bypass channel for fish passage. I suggest that the proportion of total river flow that flows
13 down each channel be used as the modifier here for probability that fish would pass this site. I
know there are other index values that relate to probability of finding a side channel, but the
overall assumption that a side channel or bypass channel are equal to an open main river channel
for this index value appears seriously flawed.

I found that the migratory timing portion of the analysis appeared reasonable. However, I found
14 little justification or rationale for how values for the "Probability that Fish Encounter Fish
Passage Alternative (E_i)" were computed and why it appeared that this value changed from the
analysis done in 2015 (index value of 3; Intake Diversion Dam Modification, Lower
Yellowstone Project, Supplemental EA 2015, Appendix E, Attachment 1, Table 6, p. 16) to the
current analysis in Appendix D (index value of 4, Appendix D, Table 1-7, p. 11). No
justification was provided for why this index value changed. I suggest that the consequences of
this change on subsequent alternative comparisons might be significant. A preliminary
assessment by Defenders of Wildlife indicates the change of this single index value from 3 to 4
had significant effects on the Incremental Cost Analysis (see comment letter by Defenders of
Wildlife). I also point out that changes in index values for this criterion between these two
different analyses indicate serious flaws with this methodology. Why did it change?

For the Fish Passage Alternative Size index, the Corps used the BRT recommendation that 30%
of flow in a bypass channel might allow some adult sturgeons to move past the diversion
(Appendix D, p. 10). Consequently, the Corps assigned the highest index value for Fish Passage
15 Alternative Size (5), but no reasonable biological rationale were used to set any of the remaining
index values. The BRT suggested that some, not most or even a significant number of adult
sturgeons, might successfully pass upstream through a diversion structure with 30% of flow.
Appendix D states that more recent tracking of pallid sturgeon passing upstream of Intake
Diversion in 2014 and 2015 indicated that passage in the river side channel occurred when that
side channel passed only 2 to 6% of the river's flow. It must be pointed out that a very few adult
sturgeons passed upstream through this side channel in 2014 and 2015, and that relatively
extreme high flows occurred and triggered movements.

The indices among the various alternatives for the "Potential (U_i) for Fish to Use Alternative
Fish Passage Measures" seems totally unreasonable to me. I cannot understand how all index
values assigned to this criterion are "5" for every alternative except the "No Action" or "Rock
Ramp" alternatives. It is illogical to suggest that every fish species evaluated, including pallid
16 sturgeon, have the same potential to use either the proposed By-Pass or High-Flow Channel at
the same probability as they would pass through an open river channel with the diversion
removed. This criterion appeared to be based on the upper critical swimming speed "for the
majority of alternative", but I suggest that the proportion of the alternative that does not exceed
this threshold water velocity would be a much more reasonable criterion. Again, this appears to
me to be a fatally flawed analysis.

Finally, I suggest that a Connectivity Index Analysis be conducted separately for pallid sturgeon
since this is the primary species of concern. I think that conducting Connectivity Index Analyses
17 for the other species are important too, but suggest that pallid sturgeon should be a focus species
for this analysis. I think lumping all species together within a single analysis reduces the likely

Bradley B. Shepard
65 Ninth Street Island Drive
Livingston, Montana 59047

17 realized potential effects on pallid sturgeon. I also suggest that the Corps and BoR did not adequately display the uncertainty of their Connectivity and Incremental Cost Analysis and the unknown factors that motivate adult sturgeon to migrate up through a river system. It seems to me when we are evaluating the expenditure of this much federal funding, we should be reasonably confident that what we propose to do will actually work. I have serious doubts that the preferred alternative will work, and am worried about future costs to fix a potentially costly mistake.

18 As an aside, the Corps states that for the purposes of the Fish Passage Connectivity Index assignment of preferred habitat types for pallid sturgeon that "… pallid sturgeon was included and shown with a habitat preference for main channel and main channel border habitats similar to habitat preferences provided for shovelnose sturgeon." (Appendix D, p. 3). If the Corps believes pallid sturgeon prefer main channel habitats, as I suggest is a reasonable assumption and is supported by the literature, why do they assume pallid sturgeon will select and move through a By-Pass channel? The rationale that the DEIS uses to support the By-Pass Channel alternative appears flawed and points to the uncertainty that a By-Pass Channel will actually provide up-river passage to adult pallid sturgeon. If adult pallid sturgeon actually prefer main river habitats, as I believe the literature and research supports, then the only alternatives that make any biological and economic sense are ones that abandon the existing diversion structure and open up the main river channel.

19 I did not feel qualified to evaluate the "Cost Effectiveness and Incremental Cost Analysis", but I caution that the flawed analyses for the Connectivity Analysis above calls into question the validity of the Cost Analysis because index values assigned by criteria developed in the Connectivity Analyses were carried forward into the Cost Analysis. Please see an independent evaluation of the Cost Analysis by the Defenders of Wildlife, who retained an economist to review the Cost Analysis (comment letter from Defenders of Wildlife).

20 In my opinion the DEIS was biased towards the preferred alternative in all analyses, especially the Cost and Connectivity analyses. Even with those biases, the Connectivity Analysis suggests that the pumping alternatives were superior to the DEIS's preferred alternative of the By-Pass Channel in the amount of additional habitat that would be available to pallid sturgeon. Since passage of pallid sturgeon to access more suitable habitat is one of the primary objectives of this project and explicitly identified in the funding authorization for the Corps to spend money for this project, I suggest that any alternative that meets that need should be weighted higher, not lower, than other alternatives.

21 I now want to comment specifically on the Monitoring and Adaptive Management appendix (Appendix E). I believe this analysis is much improved over the 2015 amendment to the EA. I believe that the discussion of the success criteria and monitoring of those criteria was reasonable. I applaud the Corps and BoR for these criteria and methods. I believe that it is particularly important to monitor larval pallid sturgeon survival past the Intake Diversion structure, should adult pallid sturgeon successfully move upstream past the site and spawn. Unfortunately, the DEIS did not explicitly identify how the monitoring will be funded, who will conduct each phase of the monitoring, and include a contractual commitment by the different agencies to conduct the monitoring over a minimum time period (i.e., 10 years). The final EIS must include these monitoring assignments and commitments by all agencies that will conduct this monitoring.

Bradley B. Shepard
65 Ninth Street Island Drive
Livingston, Montana 59047

If the By-Pass Channel alternative does not work as predicted, what will be done and how will it
be funded? These question has been repeatedly asked by the state of Montana (several letters
from Montana Fish, Wildlife & Parks [Nov 13, 2012; Feb 5, 2013; May 20, 2013]and Montana
22 Department of Natural Resources and Conservation [Oct 29, 2013; Jan 9, 2015]) and has never
been adequately addressed by the Corps or BoR. The final EIS must detail a contingency plan
and adequate funding to implement the contingency plan should the preferred alternative fail to
meet the success criteria. Without the details and commitments for both the monitoring and
contingencies should monitoring indicate the constructed alternative does not meet the success
criteria, I believe the DEIS is fatally flawed. Costs of contingency actions should also be
considered in Cost Analyses that compare the alternatives (i.e., no contingency costs to diversion
abandonment or removal [Pumping alternatives], but potential costs for all other alternatives).

I suggest a reasonable contingency plan is that if monitoring indicates that the success criteria are
23 not met in 7 years out of the next 10 years, that the multiple pump and dam abandonment
alternative be implemented. The risks inherent in implementing the preferred alternative is that
we might delay the best option to recover pallid sturgeon in the Yellowstone River (abandoning
or removing the diversion) by 10 years (or whatever minimum time period is deemed necessary
for monitoring results to demonstrate success or failure of the "as-built" project) and that we will
have wasted the funds used to implement the preferred alternative if it does not work. Those
risks should be made clearer in the final EIS.

I believe that scientific peer-review is critical for projects such as this proposed project,
especially when significant public funds are being committed and desired outcomes are so
uncertain. I acknowledge and support the planned peer-review that will be done for this DEIS,
24 but was surprised and appalled that this peer-review was not done prior to the release of the
DEIS so that the public could use this peer-review to help evaluate the proposals within the
DEIS. I contend that failure of the DEIS to provide this peer-review in the DEIS renders this
DEIS as incomplete because I could not use this peer-review information to evaluate the
alternatives. I know that Defenders of Wildlife asked that this peer-review be included prior to
the deadline for public comment on this DEIS. I believe this was a necessary piece of
information that the public should have had access to prior to the deadline for our comments.

In conclusion, I found that the DEIS was incomplete and fatally flawed. I suggest that some of
the analyses were biased and that the preferred alternative selected by the DEIS was not
supported by the information provided. The two alternatives that abandon or remove the existing
diversion are the only alternatives that have a reasonable chance of meeting the intended Purpose
25 and Need for this project. While the initial costs for both these alternatives are higher than other
alternatives, there is so much uncertainty associated with the DEIS's preferred alternative that a
prudent person would conclude that this alternative will likely not function as desired.
Consequently, additional funds will have to be spent later to meet the Purpose and Need
objectives. If the BoR and Corps insist on constructing the DEIS's preferred alternative, I
believe the only reasonable and prudent course of action would be to implement this alternative
in two phases. First, construct the By-Pass Channel (but do NOT construct the concrete cap on
the diversion structure) and use proposed monitoring data and success criteria to prove that this
By-Pass Channel successfully allows all fish species to move upstream and that larval pallid
sturgeon are moving and surviving down past the project site BEFORE constructing the concrete
cap. The second phase of re-constructing the diversion by adding the concrete cap would only

be done after demonstrating the success of the By-Pass Channel using the Monitoring and Adaptive Management success criteria over a reasonable time-frame (i.e. five or ten years).

Thank you for your consideration.

Sincerely,

Bradley B. Shepard

Email: shepard.brad@gmail.com

CC: Montana Chapter of the American Fisheries Society
Defenders of Wildlife
Montana Trout Unlimited
Senator Jon Tester
Governor Steve Bullock

ENCs: Supplemental Editorial and Review Comments by B. Shepard
Scoping Comment letter of B. Shepard dated February 12, 2016

Bradley B. Shepard
65 Ninth Street Island Drive
Livingston, Montana 59047

Supplemental Editorial and Review Comments by B. Shepard

26 Seems to me that this EIS is biased toward preferred alternative. Language used for all other alternatives have a very negative tone, but language used for the preferred alternative is positive. I suggest that EIS evaluations should all be as objective as possible.

27 Why is no concrete shown on Figure 2-5 for the "Rendering of the Replacement Weir". This omission seems deceptive to me. It just shows cobble and rock. Are you proposing "no concrete" on this weir?

28 Power costs for the Multiple Pump alternative (p. 2-76) are shown at $500,000, but text says could possibly get power for $163,000 to $294,000 per year from Pick Sloan Missouri Basin Program. Why inflated number used in the table for annual costs (Table 2-17). How many other costs are over-inflated in this economic analysis of the multiple pump alternative?

29 I could not find actual cost estimates used for dam removal under either of the pump alternatives. Why do they need to spend money to totally remove this dam? Why can't Corps and BoR remove a couple slots and let the ice and high flows remove the rest of the dam? I made this suggestion during scoping and it was not addressed in the draft EIS. Why not?

30 Why is fish passage and entrainment monitoring so high for the multiple pumping alternative ($277,867) compared to the channel by-pass alternatives ($138,934 for both by-pass and modified side channel alternatives)? Seems to me need to have entrainment monitoring for canal headworks in side channel alternatives that should be a comparable cost.

31 Water loss rates estimated from other studies seems low (p. 2-93), but need better review.

32 Annual costs for additional ditch riders ($583,200) under Multiple Pumps with Conservation Measures alternative seems excessive (Table 2-23, p. 2-95).

33 Appendix on "Fish Passage Connectivity Index" was mis-labeled as "Appendix E" when referenced in DEIS main text, it is actually Appendix D.

ATTN: CENWO–PM–AA
U.S. Army Corps of Engineers
Omaha District
1616 Capitol Avenue
Omaha, NE 68102

B.B. Shepard
65 9th Street Island Drive
Livingston, MT 59047
February 12, 2016

emailed to: cenwo-planning@usace.army.mil

Dear Sir or Madame,

I am writing to provide comments for the scoping phase of the Intake Diversion Dam Fish Passage Project, Dawson County, Montana. I am providing both my personal comments as a citizen of Montana and the U.S. who lives on the Yellowstone River, near Livingston, Montana, and as a professional fisheries biologist with over 30 years of experience in fish conservation and management in the west. I will clearly identify when I am speaking as a private citizen with my opinion versus when I am speaking as a scientist reviewing scientific information by saying so in the topic sentence of each paragraph.

I have reviewed many documents, including reports, past environmental assessments, letters, and peer-reviewed journal articles associated with the proposed project. I will cite these as appropriate, but provide the full list I have reviewed as Appendix A. I focused my review on documents prepared by the U.S. Army Corps of Engineers (Corps), U.S. Bureau of Reclamation (BoR), U.S. Fish and Wildlife Service (FWS), and Montana Department of Fish, Wildlife & Parks (MFWP). I understand that a Pallid Sturgeon Recovery Biological Review Team (BRT) of Pallid Sturgeon experts was convened to provide scientifically sound recommendations for recovering Pallid Sturgeon in the Upper Missouri River system. I found documentation that identified the scientific recommendations of this BRT (Jordan 2008), but no summary documentation for the responses to these recommendations from the FWS, Corps, BoR, or other proponents of this project. I am formally requesting that documentation for the rationale used by the FWS, Corps, and BoR for accepting or rejecting the BRT recommendations be provided as part of the public record for the upcoming environmental analysis. I am also requesting that the following document be made available for public review.

> Biological Review Team. 2006. Summary of the Biological Review Team's comments on Lower Yellowstone River Intake Dam Fish Passage and Screening Preliminary Design Report. US Fish and Wildlife Service. Billings, Montana.

I searched for this document and could not find it. Please make this part of the public record with easy access (preferably via a viable web link) so those reviewing the record can see what the scientists recommended. It was apparent from the record of letters from MFWP to the FWS, Corps, and BoR that MFWP was concerned about the issue of transparency and application for the use of the best available science to make ESA-related decisions (FWP letters 2012 to 2013; particularly FWP letter to FWS 2013). I share this concern.

Lastly, it is my understanding that the Corps is preparing a "Science and Adaptive Management Plan" for the Missouri River system. In my personal and scientific opinion this plan should be completed prior to spending additional public funds on specific projects such as Intake Diversion Dam project. This is important because the public and our state and federal agency representatives need to understand how the Intake project will help to meet the objectives of this broader plan. Ideally this plan will have clearly stated: management objectives, criteria for meeting these objectives, methods to monitor these criteria, and contingencies that can be implemented if these criteria are not met by currently proposed actions.

In my personal opinion, the best course of action would be to provide irrigation water by pumping it using sustainable energy sources such as wind or solar power, modifying the existing irrigation system to make it as water efficient as feasible, and abandoning the existing diversion structure in the Yellowstone River. Since the Pallid Sturgeon BRT's initial recommendation was removal of the diversion structure (MFWP letter to FWS, February 5, 2013; Jordan 2008), it appears to me that this is the alternative with the highest probability for helping to recover Pallid Sturgeon. I believe this could be done in conjunction with upgrading the existing irrigation system to make it much more efficient so less water is needed to irrigate the land. I support agricultural use of the land, but question whether we can subsidize these private farmers to produce sugar beets in this arid environment. My understanding is that irrigators on this project pay much less for their water than any other irrigators in this area. While I believe that these irrigators have a right to water and have an early water right that should be honored, I do not condone using public resources to supply this water when it harms public resources, such as native fish and the Yellowstone River ecosystem. We in Montana are justifiably proud of the fact that the Yellowstone River is one of the largest un-dammed, free flowing rivers in the U.S. and I think we need to take this opportunity to provide irrigation water that allows us to remove the existing diversion structure.

My personal opinion is that I strongly urge the Corps and BoR to consider incorporating irrigation efficiency in this project. I suggest that water saved by increasing irrigation efficiency be transferred from irrigators and re-allocated to the federal government. I support the right of irrigators to provide water to their existing crops, but do not believe the public should subsidize any additional acres of irrigated land. This "saved" water could be used to augment instream (in river) flows to support ecosystem function, fish, and commercial barge traffic that operates in the lower Missouri and Mississippi rivers. The federal government could protect this water right through a federal reserved water right and ensure that these benefits are realized. This strategy would be a win-win in my opinion and could set the stage for future water allocation efforts in the Missouri-Mississippi basin in the face of a changing climate.

I personally do not care whether the entire existing diversion structure is removed as part of the project. Rather, I think one could remove rock from several slots across the structure to provide fish and water passage now, and then let nature take its course to remove the remaining structure. I believe that without constant maintenance of the structure, the rocks making up this structure would be moved down river over time by natural processes (i.e., ice and flood flows). This alternative would save money and allow natural processes to operate, while providing immediate fish passage opportunities. It might be worth maintaining the existing inlet canal structure for use only when the Yellowstone River flows are at or near bank full flows (i.e., flood flows). This strategy could provide flood irrigation water when the river is near flood stage and help saturate soils when water is abundant. This alternative should be further analyzed.

In my review of the original EIS and its supplement for this project I noted that the water pumping alternative using wind and solar power was considered, but rejected as too expensive. However, part of the expense was due to the irrigators saying it was unacceptable to have any interruption of power to the pumps. Consequently, a series of huge propane or gas generators were included in the project. I am sorry, but in my personal opinion I think the irrigators are being unreasonable and it makes it very hard for me to be sympathetic to their concerns when they make these kind of demands. I believe that the "reasonable and prudent" criteria that are applied to native species conservation under the Endangered Species Act should also be applied to federal irrigation subsidies. I find it hard to believe that the irrigators' crops would fail with the type of power interruptions typically encountered with a wind-solar power system as that which was originally proposed.

Additionally, irrigation water conservation measures were not considered in the original EIS supplement. I am not sure why irrigation efficiency was not considered. I believe this lack of consideration for water delivery efficiency indicated that the scope of analysis in the original EIS supplement was too narrow. I think that if the funding that was earmarked for the dam was instead used to make the irrigation system more efficient, such as reducing water loss by using pipes and impervious liners in canals, it would be feasible to use pumps to supply the water. Let's take this opportunity to actually make this a good project, rather than a reason to pour concrete into a river. This alternative must be fully explored and, in my opinion, should be the preferred alternative.

In my professional opinion, I agree with the BRT's original recommendation that the dam should be abandoned and that this will provide the lowest risk to the native fish of the Yellowstone River system, including Pallid Sturgeon (Jordan 2008). This alternative provides the highest assurance that adult Pallid Sturgeon will move upstream past the site and that larval sturgeon will not become entrained in the canal system. There is really no good way to reduce risk to drifting larval Pallid Sturgeon to an acceptable level with the current system, or any system that diverts water in a surface diversion. Screening will not work to protect these small drifting larval fish or prevent them from being lost into the diversion canal. While some larval Sturgeon might be lost to pumps, I believe the technology to reduce impacts at pump stations is much better developed and pumps are less likely to impact drifting larval Sturgeon. I also believe that all other native fish species in the Yellowstone River, like Sauger and Blue Suckers, will benefit from removal of the dam and open canal structure.

My professional opinion is that larval Pallid Sturgeon will suffer very high mortality in any open canal system, even one that is screened. There is no evidence that I am aware of that indicates any currently available canal screen system (even the rotating screen system that is now on the Intake Canal) can effectively prevent larval Sturgeon from either dying on screens or passing through screens. This fact needs to be acknowledged in the upcoming assessment.

My professional opinion is that if you must consider any alternative that uses or modifies the existing rock structure, you also must include funding for monitoring and research to ensure that your assumptions about likely effects of your actions on fish in the river are validated, or if not, that there is a contingency (including adequate funding) for protecting these valuable fish resources. In my personal opinion, it would be much less expensive to maintain pumps than to spend money to continually maintain a dam, diversion canal, diversion screens, and a by-pass channel. I recommend implementing and funding the monitoring of fish passage and recruitment success for all alternatives.

I found it difficult to follow the rationale used by the FWS for how they will recover Pallid Sturgeon in the upper Missouri River system (including the Yellowstone River). The original recovery plan (FWS 1993) by the FWS and its 2000 Biological Opinion (BiOp; FWS 2000) for the Corps' Fort Peck Dam appeared that to be a reasonable effort to recover Pallid Sturgeon. However, since 2000, when the FWS first revised this original BiOp (FWS 2003) through the period 2008 to 2015 when the FWS informally amended the 2003 BiOp through numerous letters between the FWS and Corps (see FWS to Corps and BoR letters 2008 to 2015), these original recommendations were incrementally weakened. During this consultation process the Corps continually asked for changes in the Reasonable and Prudent Alternatives (RPA) that the FWS requested to recover pallid sturgeon. In most cases, it appeared that the FWS granted these revised conditions to the Corps with little scientific support for these changes. My personal opinion is that this informal revision process that relaxed original FWS requirements has placed a higher risk and much greater uncertainty for the recovery of Pallid Sturgeon in the upper Missouri River system. FWS requirements that might have improved Pallid Sturgeon populations, or at least have allowed for better testing of what factors were limiting Pallid Sturgeon numbers, were not implemented. My questions are:

1. What kind of scientific review was conducted to assure that changes in the 2003 BiOp allowed by the FWS through these 2008 to 2015 letters will aid in the recovery of Pallid Sturgeon?
2. What constitutes "reasonable and prudent" measures and alternatives for recovery of Pallid Sturgeon by the FWS, how is that decision balanced with the "best science available", and what level of peer-review and economic analysis is considered reasonable for decision-support in this project?
3. What level of biological and economic statistical certainty is used to measure trade-offs between financial costs versus recovery risk for a species?
4. How will the FWS, Corps, and BoR evaluate the entire Pallid Sturgeon population segment that inhabits the Missouri-Yellowstone river system from North Dakota upriver and the effects that this Intake Diversion Dam has directly on that population, along with all implications if the FWS allows the Corps' involvement in this Intake project to satisfy their BiOp obligations for their Fort Peck Dam operations?
5. What amount of government funds will be spent to subsidize delivery of irrigation water to the private irrigators and how will the level of expenditure be evaluated as to whether demands made by irrigators are "reasonable and prudent"? In my opinion, expenditure of no government funds on this project might solve the fish passage issue. I don't think fish passage would be an issue if public funds were not spent on this project because the irrigators would use a cheap, and porous, rock diversion as

they did in the past. The analysis needs to make it clear that this is an irrigation subsidy project, not a fish passage subsidy project.

I would like to see an honest and clear appraisal of these trade-offs in the next analysis.

In my professional opinion, using physical criteria (i.e., depth and velocity criteria for the by-pass channel in the previous EA; BoR and Corps 2015) to measure success of a project to pass fish upstream without an actual assessment of fish passage past the structure using radio-telemetry or other acceptable fish migration assessment and recruitment methods does not constitute acceptable success criteria. Monitoring of success criteria must be tied directly to the goals and objectives of the project.

My professional opinion is that funding must be allocated to adequately monitor reasonably developed biological success criteria. Lastly, I would like to see an analysis of the proposed project's effects on all native fishes of the Yellowstone River that inhabit this area of the river, either year-round or seasonally during their migrations.

In conclusion, my personal opinion is that abandonment of the existing diversion structure, implementing water efficiency measures throughout the irrigation system, and pumping water using sustainable energy sources makes the most sense for this project and should be the preferred alternative. It might be reasonable to retain the existing canal head structure with its fish screen for use during flood flows without an associated diversion structure in the river, but this option needs further evaluation. I recommend negotiating with the irrigators to transfer water rights for this "saved" or "salvaged" water to the federal government for protection as instream (in river) flows.

Thank you for your consideration!

Peace,

Brad Shepard, PhD.
65 9th Street Island Drive
Livingston, MT 59047
Email: shepard.brad@gmail.com

CC: Bureau of Reclamation, Montana Office
Montana Chapter of the American Fisheries Society
Montana Department of Fish, Wildlife and Parks
Governor Steve Bullock, Montana
Defenders of Wildlife, Denver, Colorado

Appendix A - Literature, Reports, Letters, Opinions, and EISs Reviewed

Aaland, L. 2010. Reconnecting rivers: natural channel design in dam removals and fish passage. Minnesota Department of Natural Resources.

Adams, S. R., J. J. Hoover, and K. J. Killgore. 1999. Swimming performance of juvenile pallid sturgeon, *Scaphirhynchus albus*. Copeia 1999: 802-807.

Battelle Memorial Institute. 2013. Final Independent External Peer Review Report for the Intake Diversion Dam Modification, Lower Yellowstone Project, Montana: Draft Supplement to the 26 April 2010 Environmental Assessment and Appendices. Contract Number W912HQ-10-D-0002, Task Order 0035. Prepared for Department of the Army U.S. Army Corps of Engineers, Ecosystem Restoration Planning Center of Expertise for the St. Paul District.

(BoR and Corps) Bureau of Reclamation and U.S. Army Corps of Engineers. 2015. Intake Diversion Dam Modification, Lower Yellowstone Project, Montana: Final Supplement to the 2010 Final Environmental Assessment. Billings, Montana and Omaha, Nebraska.

(BoR and Corps) Bureau of Reclamation and U.S. Army Corps of Engineers. 2015. Finding of No Significant Impact: Intake Diversion Dam Modification, Lower Yellowstone Project. http://www.usbr.gov/gp/mtao/loweryellowstone/FSEA/final_fonsi.pdf.

Braaten, P. J., D. B. Fuller, L. D. Holte, R. D. Lott, W. Viste, T. F. Brandt, and R. G. Legare. 2008. Drift dynamics of larval Pallid Sturgeon in a natural side channel of the Upper Missouri River, Montana. North American Journal of Fisheries Management 28:808-826.

Braaten, P. J., D. B. Fuller, R. D. Lott, M. P. Ruggles, and R. J. Holm. 2010. Spatial distribution of drifting Pallid Sturgeon larvae in the Missouri River inferred from two net designs and multiple sampling locations. North American Journal of Fisheries Management 30:1062-1074.

Braaten, P. J., D. B. Fuller, R. D. Lott, T. M. Haddix, L. D. Holte, R. H. Wilson, M. L. Bartron, J. A. Kalie, P. W DeHaan, W. R. Ardren, R. J. Holm, and M. E. Jaeger. 2012, Natural growth and diet of known-age pallid sturgeon (*Scaphirhynchus albus*) early life stages in the upper Missouri River basin, Montana and North Dakota. Journal of Applied Ichthyology, 28: 496–504

Braaten, P. J., D. B. Fuller, R. D. Lott, M. P. Ruggles, T. F. Brandt, R. G. Legare, and R. J. Holm. 2012. An experimental test and models of drift and dispersal processes of Pallid Sturgeon (*Scaphirhynchus albus*) free embryos in the Missouri River. Environmental Biology of Fishes 93:377-392.

Braaten, P. J., C. M. Elliott, J. C. Rhoten, D. B. Fuller, and B. J. McElroy. 2015. Migrations and swimming capabilities of endangered pallid sturgeon (*Scaphirhynchus albus*) to guide passage designs in the fragmented Yellowstone River. Restoration Ecology 23:186-195.

Bramblett, R.G. and R.G. White. 2001. Habitat use and movements of Pallid and Shovelnose Sturgeon in the Yellowstone and Missouri Rivers in Montana and North Dakota. Transactions of the American Fisheries Society 130:1006-1025.

Bullock to Lower Yellowstone Irrigation District. 2014. May 16, 2014 letter from Montana Governor Steve Bullock to the Lower Yellowstone Irrigation District.

Corps to FWS. 2008. December 11, 2008 letter from the U.S. Fish and Wildlife Service to the U.S. Army Corps of Engineers.

Corps to FWS. 2009. May 20, 2009 letter from the U.S. Army Corps of Engineers (W. Anderson) to U.S. Fish and Wildlife Service (S. Guertin), ACE08356.

DNRC to Corps and BoR. 2013. October 29, 2013 letter from from Montana Department of Natural Resources and Conservation (J. Tubbs) to Montana the U.S. Army Corps of Engineers (D. Ponganis) and U.S. Bureau of Reclamation (M. Ryan).

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
www.epa.gov/region08

FA-1

JUL 28 2016

Ref: 8EPR-N

Tiffany Vanosdall, Project Manager
US Army Corps of Engineers, Omaha District
1616 Capitol Ave.
Omaha, NE 68102

David Trimpe, Project Manager
Bureau of Reclamation, Great Plains Regional Office
P.O. Box 36900
Billings, MT 59107-6990

Re: Lower Yellowstone Intake Diversion Dam Fish Passage Project Draft Environmental Impact Statement, CEQ # 20160117

Dear Ms. Vanosdall and Mr. Trimpe:

The U.S. Environmental Protection Agency Region 8 has reviewed the Draft Environmental Impact Statement (Draft EIS) developed by the US Army Corps of Engineers (USACE) and Bureau of Reclamation (Reclamation) for the Lower Yellowstone Intake Diversion Dam Fish Passage Project. In accordance with our responsibilities under Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act (CAA), the EPA has reviewed and rated this Draft EIS.

Background

The project is located on the Yellowstone River at the Lower Yellowstone Intake Diversion Dam in Dawson County, Montana. The proposed action is designed to restore historical spawning migration patterns of the endangered pallid sturgeon and other native aquatic organisms by developing a bypass around the existing dam while maintaining the current water diversions for agricultural irrigation. The existing weir dam structure was constructed in 1905, and the project additionally proposes to replace the timber weir structure with a concrete weir.

Recommendations for consideration

The EPA acknowledges that many of its comments during scoping have been addressed in the Draft
EIS. The increased detail in the Draft EIS provides greater insight into the decision process, and the
1 expanded range of alternatives is informative to the public and decision makers. The EPA supports the
efforts to recover the pallid sturgeon population in the Yellowstone River and understands the necessity
for timely action to meet that goal. Below are the EPA's comments and recommendations for the Final
EIS.

Climate Change

The Draft EIS does not thoroughly evaluate the effects of climate change on the competing purposes for
this project: pallid sturgeon recovery and continued irrigation water supply for agriculture. Specifically,
2 the EPA recommends that the Final EIS evaluate in the main body of the EIS and Adaptive Management
Strategy how any diminished flows to the Yellowstone River as a result of climate change could result
in constraints in meeting the demands necessary for both purposes and what measures or strategies
would be implemented to mitigate the effects.

Adaptive Management and Monitoring

The Draft Adaptive Management Strategy is useful for understanding the approach that the USACE and
Reclamation will take to evaluate the effects of the project on pallid sturgeon. The strategy identifies
that monitoring of the pallid sturgeon will continue for 6+ years as part of its long-term monitoring
3 timeline. During that time, Reclamation will present annual status reports on the effectiveness of the
project. It is not specified how long the monitoring or the status reports will continue. As we
commented in our scoping letter, it is likely that 15-20 years of monitoring will be necessary to evaluate
long-term recruitment success. We continue to recommend that a minimum long-term monitoring effort
be specified as part of the strategy.

Closing

Consistent with Section 309 of the CAA, it is the EPA's responsibility to provide an independent review
and evaluation of the potential environmental impacts of this project. Based on the procedures the EPA
uses to evaluate the adequacy of the information and the potential environmental impacts of the
4 proposed project, the EPA is rating the Draft EIS Preferred Alternative (Bypass Channel) as Lack of
Objections (LO). The "LO" rating indicates that the EPA review has not identified any potential
environmental impacts requiring substantive changes to the preferred alternative. A description of the
EPA's rating system can be found at: https://www.epa.gov/nepa/environmental-impact-statement-rating-
system-criteria.

We appreciate the opportunity to participate in the review of this project, and are committed to working with you as you prepare the Final EIS. If we may provide further explanation of our comments during this stage of your planning process, please contact me at 303-312-6704, or your staff may contact Matt Hubner at 303-312-6500 or hubner.matt@epa.gov.

Sincerely,

Philip S. Strobel
Director, NEPA Compliance and Review Program
Office of Ecosystems Protection and Remediation

June 7, 2016

RECEIVED 24Jun16

EO-1

To whom it may concern,

1 The McKenzie County Board of Commissioners are writing this letter in support of the concrete weir and improved fish passage for the Lower Yellowstone Irrigation Project. This concrete weir and durable fish passage will provide reliable water to over 58,000 acres for the next 100 years and beyond and greatly improve fish passage over the current stacked boulder diversion dam. This fish passage would enable the Pallid Sturgeon and other species the opportunity to migrate upstream.

2 The current LYIP diversion dam, along with the recently installed fish screens were designed to be a gravity flow system. The alternatives suggesting installation of pumping plants along the river to provide irrigation water would be very costly to the irrigators and would add to climate change, while making the newly installed multimillion dollar gravity fish screens useless most of the season. Low head gravity flow systems are pollution free and a more efficient way of diverting water.

3 Removal of the existing 107 year old diversion dam could lead to catastrophic economic losses in the McKenzie County area and beyond. The cost to pump water from the Yellowstone River is not feasible. This cost would have to be passed on to the land owners at a cost not feasible for sustainable/profitable production. This reduction in economy would reduce tax dollars that are necessary to provide services to all of McKenzie County citizens.

4 The possible loss of reliable delivery of water for the Lower Yellowstone Irrigation Project (LYIP) would affect the entire region. The LYIP water recharges the Glacieral Aquifer that provides both the residents of City of Sidney and the Town of Fairview with drinking water. Rural residents in the Yellowstone Valley also rely on the shallow water table for both domestic and stock water sources. Loss of this necessary recharge would require new water sources for the towns and rural communities.

The LYIP is environmentally beneficial by recharging the aquifers during the driest times of the year. In addition, the loss of reliable irrigation or extreme conservation would negatively affect the shallow aquifer recharge that supports hundreds of acres of wetlands and wildlife.

The McKenzie County commissioners feel the proposed concrete weir and the durable fish passage are the best solution for the Pallid Sturgeon and other endangered species while continuing to supply affordable and reliable water for irrigation, and improve accessibility for water enthusiasts.

Sincerely,

Richard Cayko

Richard Cayko, Chairman
McKenzie County Board of Commissioners

McKenzie County Commissioners
201 5th ST NW, Suite 543 Watford City, North Dakota 58854
Telephone:(701) 444-3616 Fax: (701) 444-4113

Montana State Senate

E0-2

SENATOR TAYLOR BROWN
SENATE DISTRICT 22

HELENA ADDRESS:
PO BOX 200500
HELENA, MONTANA 59620-0500
CAPITOL, RM 328
PHONE: (406) 444-4800

HOME ADDRESS:
775 SQUAW CREEK ROAD
HUNTLEY, MT 59037
PHONE: (406) 252-6661 EXT. 21

The Big Sky Country

June 30, 2016

U.S. Army Corps of Engineers - Omaha District
Attn: CENWO-PM-AA
1616 Capitol Avenue
Omaha, Nebraska 68102

To Whom it May Concern:

1 As a Montana State Senator whose Senate District includes a portion of the Yellowstone River Valley, I stand today in strong support of the Environmental Impact Study that showed the Bypass Channel to be the best Alternative both for agriculture and for aquatic species.

2 At the outset of my remarks I would like to reqister my objection to the location and the scheduling of this particular meeting in Billings, Montana on the evening of June 30th. I think we all know why this meeting was scheduled tonight, and I do not question your authority to do so. I only want to register my complaint, first that you would schedule such an important meeting over 200 miles away from the location in question, and second, that you would schedule it at one of the very worst times of the year for irrigators to try to attend.

I think the nature of this location is precisely why you will hear a much different kind of testimony tonight, that you heard the past two nights from people who actually live and work in the affected area. The sacrifices that were made by many in this crowd to travel to be here tonight were immense. Please give significant weight to their comments, because I fear that there are many here tonight that could not have even pointed to the Intake Weir on a map until this week.

3 My comment is that the proposed EIS has used real science and sound reasoning to arrive at the right solution. Our two biggest industries, Agriculture and Travel/Tourism desperately need you to get this decision right. I believe you have done that with this proposed Alternative.

Please do the right thing here, and trust the process on which we have all have spent so many months. Our state's economy cannot afford conitnued uncertainty about this critical issue. Thank you for your time this week.

Sincerely,

Taylor Brown

Senator Taylor Brown
Senate District 28

Vanosdall, Tiffany K NWO

From: Salak, Jennifer NWO
Sent: Thursday, June 30, 2016 11:14 AM
To: Vanosdall, Tiffany K NWO
Subject: FW: Yellowstone River Irrigation

-----Original Message-----
From: Brad Tschida [mailto:brad@themilkywhey.com]
Sent: Thursday, June 30, 2016 11:04 AM
To: CENWO-Planning <CENWO-Planning@usace.army.mil>
Subject: [EXTERNAL] Yellowstone River Irrigation

To Whom it May Concern:

1 It appears that there is a common sense solution to the irrigation issues on the Yellowstone River, which you, The US Corp of Engineers prefers, However, groups such as Defenders of Wildlife, are aggressively pursuing action to eliminate the preferred weir solution. This is neither preferred nor practical.

2 Please reach a decision that is: A) conducive to the fish population in the Yellowstone; 2) supportive of farmers/ranchers/irrigators who use the Yellowstone; 3) advantageous to those persons (consumers) who benefit from wise and appropriate use of the natural resources of the State to feed and provide for her citizens.

Respectfully,

Rep. Brad Tschida

Montana House of Representatives – District 97

Credo – Facio – Amo

Mobile: (406) 546-4349

RICHLAND COUNTY CONSERVATION DISTRICT

EO-4

July 14, 2016

2745 W Holly ST
Sidney, MT 59270

Phone: 406-433-2103x101
Fax: 406-433-7351
E-mail: julie.goss@mt.nacdnet.net

US Army Corps of Engineers
Omaha District
Attn: CENWO-PM-AA
1616 Capital Avenue
Omaha, NE 68102

RE: Intake Diversion Dam Fish Passage Project

RECEIVED 19 Jul 16

To whom it may concern:

1 The Richland County Conservation District Board of Supervisors continues to support the By Pass Channel as the preferred alternative to meet the concerns of the Endangered Species Act for the Pallid Sturgeon. The By Pass Channel is the best solution to meet the physical and biological criteria to provide the river miles needed for the Pallid Sturgeon to spawn.

2 The By Pass Channel alternative is the most cost effective means of providing the pallid sturgeon the river miles needed to spawn while allowing the irrigators to continue operating the gravity flow system that has been in operation of over 106 years.

3 The idea of removing the diversion and placing pumps in the river is neither cost effective nor "green". In a world concerned with climate change, emissions from pumps along with the noise from the motors this alternative is full of issues that the gravity flow system does not have to address. Putting pumps in the river at seven different points of diversion changes the water right for the project. The cost of this alternative and future costs to the irrigators makes this alternative not at all practical.

4 The Ranney Well alternative is of concern to the Conservation District. We have several years of data collected by the MT Bureau of Mines and Geology, this idea will require several more years of study to assure that the aquifer could sustain the irrigation season and not jeopardize the water right holders using the aquifer currently. I.e. the city of Sidney, the Town of Fairview and the residents of the Yellowstone Valley.

After looking at the suggested alternatives we continue to support the Fish By Pass as the best alternative for the spawning of the Pallid Sturgeon and other native fish, the irrigators and the recreation enthusiast.

Thank You

Dan Young

Dan Young, Chairman
Richland County Conservation District

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

SA-01

STEVE BULLOCK, GOVERNOR

1625 ELEVENTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE (406) 444-2074
FAX: (406) 444-2684

PO BOX 201601
HELENA, MONTANA 59620-1601

P. O. Box 200701
Helena, MT 59620-0701
406-444-3186
FAX: 406-444-4952

July 28, 2016

Mr. David Ponganis David.J.Ponganis@USACE.Army.mil
Director of Programs
US Army Corps of Engineers
1125 NW Couch Street, Suite 500
Portland, OR 97209

Ms. Noreen Walsh Noreen_Walsh@fws.gov
Regional Director of Ecology Services MS-60120
US Fish and Wildlife Services
Denver Federal Center
PO Box 25486
Denver, CO 80225

Mr. Michael Ryan mryan@usbr.gov
Great Plains Regional Director
US Bureau of Reclamation
PO Box 36900
Billings, MT 59107-6900

Dear Directors Ponganis, Walsh and Ryan:

The State of Montana (state), represented by the Department of Fish, Wildlife & Parks (FWP) and the Department of Natural Resources & Conservation (DNRC), provides this letter addressing the draft Environmental Impact Statement (EIS) for the Lower Yellowstone Intake Diversion Dam Fish Passage Project (Intake Project). This letter is organized into three sections: 1) the state's position on the bypass alternative and associated key issues; 2) a bulleted list of additional concerns surrounding the project; and 3) an appendix listing specific edits or comments to the draft EIS.

As articulated in previous letters, the state continues to support the Intake Project and the bypass channel
alternative as long as the following conditions are achieved: 1) there is a secure and affordable water
supply for irrigation into the future; 2) the bypass channel provides effective upstream and downstream
1 passage for Pallid Sturgeon and other native fish species; and 3) that federal partners (i.e., the U.S. Bureau
of Reclamation [Bureau] and the U.S. Army Corps of Engineers [Corps]) remain financially committed
(directed through a Biological Opinion [BO] from the U.S. Fish & Wildlife Service [Service]) to the
project until the first two conditions are achieved.

The state has a significant stake in the outcome of the Intake Project and bypass channel alternative, as it impacts both agencies' abilities to achieve their respective mission statements. Montana Fish, Wildlife & Parks provides for the stewardship of the fish, wildlife, parks, and recreational resources of Montana, while contributing to the quality of life for present and future generations. The Water Resources Division of DNRC is responsible for managing Montana's water for the present and future needs of its people. Failure of this federally-mandated project through the Endangered Species Act will challenge the state to achieve its responsibilities to the current citizens of Montana, future generations, and the aquatic resources.

The state has supported the bypass channel alternative from its inception because assurances were
2 provided through the BO that federal partners would be financially responsible for monitoring and
adaptive management for a minimum of 8 years following completion of the project. If the project was
not successful in 8 years, the Corps was required to return to Fort Peck Dam and provide additional
measures to address jeopardy to Pallid Sturgeon on the Missouri River. However, this point of obviation
is counter to the overall conservation of Pallid Sturgeon in Montana, and credit for technical oversight
and construction in the Intake Project should not be counted as credit for avoiding jeopardy to the
3 population of Pallid Sturgeon in the Missouri River. Furthermore, through this project's use of Pallid
Sturgeon recovery dollars; there is implied commitment to Pallid Sturgeon recovery and adaptive
management that considers the Missouri River and Yellowstone River as a system in concert. Moreover,
assurances tying federal partners to the Intake Project are necessary to ensure responsibility for expenses
(e.g., operation and maintenance, repairs, and adaptive management). In this, the Bureau should be
required to further describe the implementation process as part of the adaptive management or alternative
measures at Intake Diversion Dam. Without these financial assurances the success of the entire Intake
Project and associated financial obligations fall to the irrigation district. The cost to operate, maintain and
repair a new diversion dam and bypass channel is beyond their expertise and funding realities. Federal
responsibilities and assurances through a BO are necessary until effective Pallid Sturgeon passage and
avoidance of jeopardy is demonstrated through the bypass channel hydraulic success criteria are achieved,
and long-term structural stability of the bypass channel is met.

Research throughout the range of Pallid Sturgeon continues to document the genetic purity and
uniqueness of the population in the Great Plains Management Unit (encompassing the upper Missouri
River basin of Montana, North Dakota and South Dakota). In downstream states, hybridization of
Shovelnose Sturgeon and Pallid Sturgeon has been acknowledged, and efforts to determine the prevalence
and extent of this introgression are ongoing. Additional research is needed to determine if this
4 introgression began recently due to anthropogenic alterations of the Missouri River or if it has perpetuated
naturally in the lower basins of the Missouri and Mississippi rivers for generations. Nonetheless, this
genetic disparity demonstrates the importance of recovery efforts and decision-making regarding
genetically pure Pallid Sturgeon, and underlines the fact that the species could be dependent upon the
relatively small population of Pallid Sturgeon that reside in Montana and North Dakota. This is relatively
new information which needs to be incorporated into every Pallid Sturgeon project such as the Intake
Project, management plans, and any decisions regarding Pallid Sturgeon recovery efforts.

The state suggests that adding and analyzing the previously disqualified alternative of removal of the dam
and moving the diversion upstream will make the EIS more defensible. This concept continues resurface
5 in public comment periods. While the state does not support this alternative, we believe that a detailed
explanation of why it is not preferred would help address public concerns and strengthen the EIS.

The following includes a list of additional state concerns regarding the Intake Project and avoidance of jeopardy to Pallid Sturgeon. Most of these issues have been expressed before in written correspondence or during meetings. The state requests a response from federal partners for each of the following issues regarding implementation or at least additional explanation as to why these issues are not being implemented as part of the Intake Project and the avoidance of jeopardy to Pallid Sturgeon.

6 • **Adaptive Management and Monitoring Plan** - Success criteria and specific triggers should be identified for when adaptive management options are initiated. The duration, in years, for how long fish and hydraulic monitoring will occur and specific duties should be included so stakeholders and agencies understand and can plan accordingly. For example, depending on when the project is completed will dictate if fish monitoring efforts will include adult Pallid Sturgeon or soon-to-sexually-mature juvenile Pallid Sturgeon. The most recent projection for the longevity of remaining adult pallid sturgeon is thought to expire by 2021. See appendix for details.

7 • **Larval drift** - In 2016, a multi-agency Pallid Sturgeon larval drift study was completed on the Missouri River below Fort Peck Dam to evaluate larval drift distance and larval residualization upstream of Lake Sakakawea. Using this understanding and study design, a similar experiment using Pallid Sturgeon larvae or surrogate beads should occur in the near future to evaluate larval drift distances and routes used by drifting larvae on the Yellowstone River.

8 • **New Weir Height** - Correct the potentially inaccurate statement in the draft EIS (Executive Summary, page 2-46, section 2.3.5; also found on page xxix in second paragraph under Bypass Channel) regarding the height of the new weir to deliver water into the canal and bypass channel. The state was assured multiple times during construction and designs conference calls or meetings that the height of the new weir did not have any impact on water flows into the bypass channel. Because of the distance between the weir and upstream end of the bypass channel there will be no flow diversions into the bypass channel. Please provide an explanation regarding the realities of weir height impacts on bypass channel flows.

9 • **Resurfacing of Access Road to Intake Fishing Access Site** - Although identified within the draft EIS, it is very difficult to find. The state recommends that this aspect of the Intake Project be reinforced in an obvious location under each alternative. See appendix for more details.

Thank you for your consideration and response to these concerns. We look forward to moving this project forward and working with all stakeholders to protect the future of Montana's aquatic resources.

Sincerely,

John Tubbs, Director
Montana Natural Resources & Conservation

M. Jeff Hagener, Director
Montana Fish, Wildlife & Parks

cc: Tiffany Vonasdahl, USCORPS
Tim Baker, Governor's Office
Tim Davis, DNRC
Jodi Bush, USFWS
Doug Lay, USFWS
George Jordan, USFWS
Steven Daves, USBOR
David Trimpe, USBOR
Don Skaar, MTFWP
Zach Shattuck, MTFWP
James Brower, Lower Yellowstone Irrigation Project

APPENDIX:

*Comments and suggestions reference the digital page designations for each of the main documents and accompanying appendices, respectively.

Draft Environmental Impact Statement for the Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana

- 10 Pg. 28; "The purpose of the proposed action is to improve fish passage for pallid sturgeon and other native fish at the Intake Diversion Dam, continue the viable and effective operation of the Lower Yellowstone Project, and contribute to ecosystem restoration." This draft EIS underestimates the ecosystem impairment caused by the existing dam and the effect of adding a concrete weir. Bi-directional passage of migratory fish is needed to restore ecosystem services.

- 11 Pg. 28; "Therefore, the proposed project is needed to allow fish passage at this structure. Pallid sturgeon recovery is not within the scope of this project, but improving passage for pallid sturgeon at the Intake Diversion Dam would provide access to a large area of the sturgeon's historical range that has been mostly inaccessible since the LYP was built in 1909." While this may be true, recovery dollars spent on this project mean that they won't subsequently be spent on recovery actions elsewhere; thus, the relationship includes degrees of complexity. Nonetheless, if the quoted point is to be deemed true, recovery language throughout the document needs to remain consistent with the overall objective of avoiding jeopardy to Pallid Sturgeon.

- 12 Pg. 28; "Habitats upstream of the Intake Diversion Dam appear to be suitable for spawning and rearing of pallid sturgeon juveniles, but few pallid sturgeon have been observed upstream of the dam." Please provide a citation for this statement, as there appears to be a lot of speculation regarding where, and if Pallid Sturgeon can spawn. What we actually know about Pallid Sturgeon spawning habitat from confirmed spawning is very limited.

- 13 Pg. 29; "The U.S. Fish and Wildlife Service has identified the lower Yellowstone River as an area of priority for pallid sturgeon recovery because sturgeon are still in the area, there is suitable habitat remaining in the river to assist in recovery, and the Yellowstone River exhibits a natural hydrograph." This should read "…near-natural hydrograph."

- 14 Pg. 29; "The U.S. Fish and Wildlife Service has identified the lower Yellowstone River as an area of priority for pallid sturgeon recovery…" The Fish and Wildlife Coordination Act (FWCA, 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) Section 2 states that fish and wildlife conservation shall receive equal consideration with other project purposes (p. 1-15). Agencies that construct, permit, or license projects impacting a water body must consult with the Service and the state agency having jurisdiction over fish and wildlife resources, in this case MFWP. Full consideration must be given to the recommendations made through this consultation process. This draft EIS intends to meet water delivery requirements, while providing some unquantifiable improvement in fish passage for ESA-listed pallid sturgeon and other fish species. Whereas the no-dam alternatives solve for fish passage by restoring the natural channel morphology, those alternatives were deemed too expensive, and would not meet the project purpose and need, because the water supply would be insufficient to keep the Lower Yellowstone Project viable (p. 2-77). The preferred bypass channel alternative meets requirements for water delivery, and places the risk on migratory fish species. Reclamation and the Corps have identified the Bypass Channel Alternative as the preferred alternative, because 1) the bypass "could be constructed, operated, and maintained to meet the physical and biological criteria identified by the Service's BRT, and therefore would provide passage for pallid sturgeon", 2) the bypass "is a cost-effective means of providing fish passage", 3) "The Bypass Channel Alternative is expected to have the lowest annual O&M costs", and 4) the bypass "would not result in significant long-term adverse environmental impacts". However, the draft EIS and Reclamation's Adaptive Management Plan (Appendix E) focus primarily on successfully passing upstream migrating fish. Upstream passage alone is insufficient to complete the fish life cycles of migratory fish species. A sufficient number of downstream migrating larvae and juvenile fishes must also survive passage through the diversion structure.

15
- Pg. 29; Regarding the expected extirpation of Pallid sturgeon, current adult Pallid Sturgeon estimates are 110 fish (no longer 158), with extirpation by 2021 (not 2018 as mentioned in the text). Furthermore, this only applies to mature, WILD individuals. There are currently, and will continue to be, more mature, hatchery-reared individuals in the system. To this effect, if not for progeny introduced by conservation hatcheries the species would likely be close to extinction. There are now approximately 43,000 surviving progeny that will begin reaching maturity at age 15. Roughly 18,000 individuals are expected to reach spawning age within the next 2-5 years.

16
- Pg. 29; We recommend adding a paragraph with basic life history and background of the species to convey to folks why this project is important (e.g., historic distribution, unimpeded river reaches, long-lived, large migrations etc.). Language should also be added to describe the genetically distinct population of Pallid Sturgeon that exist in Montana/North Dakota; one that differs from those found further downstream in the basin. Pallid Sturgeon in RPMA 1 and 2 represent the most genetically intact population throughout their current range; thus, they are critical for future hatchery propagation to prevent extinction.

17
- Pg. 29; "As these fish are only beginning to reach maturity, they are not yet contributing to population viability or sustainability." This should reflect that, currently, no Pallid Sturgeon –wild or hatchery– are currently contributing to the sustainability.

18
- Pg. 31; Regarding the Bypass Channel Alternative, define how much higher (vertically) the new dam will be compared to the historic wood crib dam. Additionally, language regarding the impact from plugging the existing historic side channel appears to be missing. This is an important aspect that needs to be in the forefront of the alternative analysis.

19
- Pg. 31; There are a lot of places that assume actions will undoubtedly improve "fish passage,". However, nobody actually knows that the outcome of any of the structures will look like in terms of fish passage but we do know that we currently have over and around passage of multiple species. So, assuming that anything will be better than what we have now is probably a bad assumption. This highlights the need for providing explicit rationale behind future monitoring and adaptive management to ensure that the improved passage stated here

can be empirically proven in the future.

- 20 Pg. 32; Regarding the Modified Side Channel Alternative, assuming that any of these alternatives will improve Pallid Sturgeon passage, or passage of any species for that matter, may be a false assumption. We know that we currently have some passage of all species we have tracked; however, there is potential that any alternative may have no or decreased passage of certain species. Again, monitoring and adaptive management need to establish current conditions of fish passage in order to subsequently document any improvement.

- 21 Pg. 32; Though upstream movement of radio-tagged Pallid Sturgeon in the historic high flow channel occurred in 2014 and 2015 at 69,800 cfs and 60,500 cfs, respectively, actual passage occurred at much lower discharges (~45,000 cfs). As written, it implies that the river needs to reach 60k or 70k cfs for Pallid Sturgeon passage, which is inaccurate. Furthermore, the side channel would not need to convey water year round to increase fish passage; improving flows, as the Biological Review Team has recommended, is only needed when river exceeds 20,000 cfs.

- 22 Pg. 38; In Table ES-2, Operational Effects under Bypass Channel, "Side channel plug would limit passage," should be changed to "Side channel plug would permanently eliminate fish passage via the side channel."

- 23 Pg. 65; Under Decisions to be Made, "If Reclamation decides to proceed with the proposed action, the Corps will decide whether to assist Reclamation with the proposed action, or a reasonable alternative to it, and provide funding for design and construction activities needed to modify the Intake Diversion Dam for the purpose of improving fish passage and assisting in restoration of the lower Yellowstone River ecosystem." The interconnected Pallid Sturgeon population and the ecosystem in the Yellowstone and Missouri rivers should be treated as a whole.

- 24 Pg. 69; "The five pallid sturgeon that passed the Intake Diversion Dam in 2014 were documented in the Powder River and spawning appears to have occurred." This statement is only partially correct. It should read "Three of the five Pallid Sturgeon that passed the Intake Diversion Dam in 2014 were documented in the Powder River and spawning appears to have occurred."

- 25 Pg. 83; In the section discussing the Pick Sloan Missouri River Basin Program Power, there is a citation missing that is important to support a statement about how Pick Sloan Power may not be used in context of some kinds of pumping. Please include a citation to support this statement.

- 26 Pg. 91; "Reclamation intends to work cooperatively with the state of Montana to identify funding resources for monitoring and adaptive management, as appropriate." Regarding Biological Criteria for Success (p. 4-153, downstream criterion 2). To minimize mortality in drifting Pallid Sturgeon larvae, we need to understand the pathways in which larvae drift downstream. Flow conditions that larvae experience at different river stages can be examined using 3D hydraulic mapping, bathymetry and bottom texture at various river stages. Each

26 route could be assigned an estimate of mortality under differing flow conditions. Drift paths from the thalweg upstream through the various routes at Intake can be verified by releasing neutrally-buoyant beads and recapturing the beads at various points downstream. Results would inform remedial actions to guide larvae toward routes that minimize passage mortality.

- 27 Pg. 92; "While head requirements could theoretically be met through rock placement, a permanent structure provides more reliable flows into the bypass channel, reduces the amount of fill placed into the Yellowstone River…" This is an incorrect statement. The new dam crest height will not impact flows into the bypass channel. Furthermore, riprap at the upstream end of the bypass channel, in a southwesterly direction, could reduce the risk of flanking; however, this material must be placed on river bank rather than buried revetment to insure adequate construction of toe and slope.

- Pg. 97-98; "In addition, the road between Highway 16 and Intake Fishing Access Site will be
28 resurfaced. Existing access roads to Joe's Island would be improved as needed to facilitate construction access." This point needs explanation elsewhere to ensure implementation, even for other alternatives (missing from modified side channel alternative).

- Pg. 98; As part of the Bypass Channel operations and maintenance, a full span pre-stressed
29 concrete bridge similar to what is included in the modified side channel alternative should be added to the bypass channel alternative in order to provide access for OM&R.

- 30 Pg. 146; "The No Action, Bypass Channel, Modified Side Channel and Multiple Pump alternatives were identified as cost effective. The Rock Ramp alternative is not cost effective because the Bypass Channel alternative provides greater output for less cost. The Multiple Pumps with Conservation Measures alternative is not cost effective because the Multiple Pump Stations alternative provides the same level of output for less cost." How are average annual habitat units (AAHU) calculated?

- 31 Pg. 149; Under the Environmental Impacts comparison of Rock Ramp vs. Bypass, etc. in Table 2-30, there appears to be wording regarding the level fish passage provided; however, many professionals agree that this qualification it is extremely uncertain. Here the rock ramp provides "partial fish passage" whereas the bypass channel has "fish passage provided". Some of these semantics appear to support a preconceived notion that the EIS would demonstrate that the bypass was the best option rather than a complete evaluation of all alternatives.

- Pg. 153; "These monitoring results suggest a bypass channel with the general geomorphic
32 and flow characteristics of existing side channels in the river could best pass adult pallid sturgeon." The current status of Pallid Sturgeon passage at Intake is not acceptable. However, modeling the new bypass channel to mimic the existing side-channel "could best pass Pallid Sturgeon"? Clarify that this modeling is not just based on the existing high flow side channel.

- 33 Pg. 153; "A fish passage efficiency study could provide critical research information to correct the Muggli bypass channel and to inform the design of future bypasses for shovelnose (and pallid) sturgeon." This seems to indicate that that little is known about upstream passage requirements for Pallid Sturgeon, and even if passage is achieved, and adults ultimately spawn upstream, there was insufficient discussion of downstream passage of larval Pallid Sturgeon to complete the lifecycle required for recruitment.

34

- Pg. 154-155; River discharge was approximately 47,000 cfs when Pallid Sturgeon were documented ascending the existing natural side channel. The 1D HEC-RAS model provides an average channel velocity, and cannot estimate the lateral distribution of water velocities (2D column velocities) or the vertical distribution (3D, lateral, vertical and longitudinal velocities). The proposed Bypass Channel Alternative design has been modeled to have mean velocities of 3 ft/sec at lower flows (7,000 cfs river flow) and 4-5 ft/sec at higher river flows (15,000, 30,000, and 54,000 cfs river flow). We recommend 3D hydraulic mapping of the various possible migration routes for upstream and downstream movements under varying channel discharges. Monitor the irrigation canal downstream of the screens and the river immediately downstream of the boulder field below the Intake Diversion Dam to assess potential injury and mortality to free-embryo, larvae and young-of-year sturgeon. Experiments should be undertaken including the release of free-embryo Pallid Sturgeon or Shovelnose Sturgeon (or neutrally buoyant beads) upstream of the dam to assess entrainment or impingement at the screens, and injury from drift over the dam crest and through the boulder field. We also recommend developing decision criteria to trigger adaptive management options to improve passage for juveniles if the lack of juvenile passage is demonstrate to result in negative population level effects (mentioned on p. 2-6). Additionally, a concrete replacement weir is proposed just upstream from the existing rock weir at elevation 1990.5 feet (p. 2-50) with a 125 foot wide and two feet deep notch to facilitate in-river upstream and downstream fish passage. The replacement weir crest will include at least one low-flow channel (elevation 1,988 ft) for fish passage (p. 2-51, 4-44). The draft EIS provided inadequate consideration to downstream migrating larvae and juveniles that must pass over the notched weir. Furthermore, the fish passage analysis (p. 2-99) is based on a Fish Passage Connectivity Index described in Appendix D. This index contains no parameters related to downstream passage of larvae or bi-directional passage of juveniles. Little is known about upstream passage requirements for Pallid Sturgeon, and even if passage is achieved, and adults ultimately spawn upstream, there was insufficient discussion of downstream passage of larval Pallid Sturgeon to complete the lifecycle required for recruitment.

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- Pg. 155; Please add the details for duration of monitoring; 8 years from Appendix E. Furthermore, it is strongly held that monitoring should be based on fish passage success and not a rigid timeframe.

36

- Pg. 206-208; Pallid Sturgeon fingerlings inhabit Zones 2 (transition) and 3 (warm water). Stocking did not begin until 1997. See White and Bramblett (1993).

37

- Pg. 210; Shovelnose Sturgeon are not part of the Backwater Species category; they are a main channel species. This categorization of this species may change the way alternatives are analyzed.

38 • Pg. 236; Please provide reference regarding Pallid Sturgeon genetic purity and differences with genetic hybrid swarms downstream. Additionally, include this information in Pallid Sturgeon – Status discussion. This elevates public awareness and need for focused efforts on RPMA 1 & 2.

39 • Pg. 238; Under the Life History section for Pallid Sturgeon, juvenile male Pallid Sturgeon demonstrate first maturity around 15 years old, not 5, as included in the text.

40 • Pg. 277-278; Eliminate all references to specific details of paddlefish contracts. "…Chamber is authorized to issue a 3-year concession permit…" to "issue an annual concession permit. "The concessionaire typically ~~pays a $750 permit fee,~~ sells food and drinks, and offers fishing tackle for rent or purchase."

41 • Pg. 388; "In order to maintain a diversion of 1,374 cfs when Yellowstone River flows are at a low flow of 3,000 cfs (measured at Sidney gage), the headworks structure requires 0.7 feet more head in the river (rounded to 1 foot of head) than was required prior to construction of the screens and gates (p. 4-36)." If so, why was the concrete replacement weir proposed to be built at an elevation of 1990.5 feet (p. 2-50)?

42 • Pg. 396; "…slightly reduced flows in the river from the split flows will result in depths over the weir about 0.5 feet lower at flows of 7,000 cfs and about 1 foot less at flows of 30,000 cfs."(p. 4-44). Constructed side channel would reduce depth over the weir by 0.5 to 1 ft, compared to the existing condition.

43 • Pg. 397; "…O&M actions are expected periodically… to ensure fish passage." O&M actions likely require a temporary cofferdam be placed at the upstream entrance of the bypass channel completely shutting off flows to the engineered channel during the summer base flows. The timing of this maintenance procedure is critical, because downstream migration of larval fish occurs during summer and it may be necessary to direct larvae into the side channel at this time to reduce mortality. Fall would be a better time to close the channel for O&M, after larvae drift from upstream spawning locations.

44 • Pg. 398; Mean column velocity (2D) does not allow examining hydraulic conditions at the depths fish travel. 3D hydraulic mapping should be conducted in the engineered side channel, notched weir, top of weir, and associated with the rubble field.

45 • Pg. 400; "The hydraulic analyses of this channel configuration indicates that it would meet the BRT depth and velocity criteria … except for average velocity at the upstream fish exit, where flows were estimated to be 6.7 fps." These velocities exceed the observed velocities when Pallid Sturgeon ascended the natural side channel during 2014 and 2015.

46 • Pg. 406; "With the dam removed, the main river channel would generally have average velocities of 3.1 fps at 15,000 cfs and 4.4 fps at 30,000 cfs. Average channel depths would be about 9 feet at low flows (7,000 cfs or less). At flows above 30,000 cfs, average channel depths would be greater than 13.5 feet, which is similar to depths and velocities in the

upstream/downstream river channel." Depths differ from those on p. 4-52; 7 ft at 15,000 cfs vs. 9 ft, and 11ft at > 30,000 cfs vs. 13.5 ft. Why the disparity?

47 • Pg. 407; "Removal of the Intake Diversion Dam would likely substantially improve fish passage through the main river channel, as depths and velocities would be similar to those found in upstream and downstream reaches of the river." Agreed. Removal of the dam would remove risk to upstream and downstream passage of all life cycle stages of migratory fish.

48 • Pg. 409-410; "All of the alternatives that would maintain the Intake Diversion Dam whether in its existing condition or with installation of a new concrete weir (Rock Ramp, Bypass Channel, Modified Side Channel) would provide a suitable surface water route for fish passage during most flows. There would be some flows with depths or velocities not be suitable for passage for the rock ramp, but the overall cumulative effect would be an improvement for the aquatic ecosystem and fish passage." This statement ignores downstream movement of larvae and bi-directional movements of subadult Pallid Sturgeon. This grossly underestimates the impairment caused by the existing dam and the effect of adding a concrete weir. Furthermore, only 3 actions are listed to alleviate impacts. Other remedial actions should be considered here and in Appendix E. Monitoring and Adaptive management Plan.

49 • Pg. 470; "When cofferdams are in place for the replacement weir, it is likely that velocities at the headworks screens could decrease when the cofferdam is on the north half of the river, but could increase when the cofferdam is on the south half of the river. Increased velocities could increase the number of fish impinged on the screens of the new headworks." Understanding the pathways of downstream drifting larvae and juveniles (see previous recommendations) would inform methods for guiding fish through the lease harmful routes.

50 • Pg. 487; "Reclamation will implement a monitoring and adaptive management plan to evaluate the success of any of the alternatives if they were constructed and implement measures to improve success if problems are identified" (p. 4-135). A revised Monitoring and Adaptive Management Plan is being developed to address the physical and the biological criteria that would indicate success of the project (p. 2-5 and Appendix E). If $\geq$ 85% of telemetered fish passed upstream without substantial delay the passage way would be considered successful (Service 2016). The Service recommended that adult Pallid Sturgeon passing downstream of the Intake Diversion Dam be monitored for injury or evidence of adverse stress to ensure that mortality of adults passing downstream does not exceed 1% during the first 10 years of project implementation (p. 2-6). They also recommended that experiments be undertaken, including the release of free-embryo pallid or shovelnose sturgeon upstream of the dam to assess entrainment or impingement at the screens and injury from drift over the dam crest and through the boulder field. They also recommended to document if native fish are able to migrate upstream and downstream of the Intake Diversion Dam.

• Pg. 504; "Although pallid sturgeon recovery is not an objective of this project, the project
51 could have an effect on recruitment" (p. 4-152). "Velocities over the existing Intake Diversion Dam are 8 feet per second, with depths of about 2.1 to 2.9 feet during flows of

52 15,000 cfs (median flows for the spring pallid sturgeon migration period (April through June)" (p. 4-39). The April to June time period coincides with upstream migration and spawning. Downstream drift of larvae occurs during late June and July. "Downstream of the boulder field, average velocities are typically 3 to 4 feet per second" (p. 4-39). Given these velocities, larvae drifting over the weir and through the boulder field would experience harmful turbulence and rock strikes, causing larval mortality in addition to the 5% estimated to be lost due to entrainment through the screens (p. 4-163). The authors repeatedly suggest that entrainment mortality would have a negligible effect to Pallid Sturgeon recruitment, because the species evolved to produce very large numbers of eggs to compensate for the low survival of eggs/free embryos. However, estimating 5% entrainment of drifting larvae by percent of flow diverted, does not account for mortality on the remaining 95% that are not entrained, but are injured or killed by turbulence and rock strikes while passing over the weir and rubble field. Downstream drift will become increasingly important when hatchery progeny reach maturity and begin to spawn. "...an estimated 43,000 juvenile hatchery-derived Pallid Sturgeon are estimated to be present in the Upper Missouri River (Rotella 2015)" (p. 4-164).

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- Pg. 504; "...the Yellowstone River appears to offer the best chance of potentially successful spawning and recruitment for the Great Plains Management Unit and would rapidly help to identify if 250 miles is sufficient drift distance for successful recruitment. At a 5% rate of decline of wild adult pallid sturgeon, if 125 may have been remaining in 2008 (Jaeger et al. 2009), there may be fewer than 90 wild adults still alive in 2016, rapidly diminishing the potential for successful recruitment or recovery of these fish if passage is not provided soon." It is important to note here that flows and temperatures in the Missouri River can be controlled by modifying Fort Peck Dam, whereas flows and temperatures in the Yellowstone River can only be slightly modified by humans.

53

- Pg. 505; "1. For the Intake passage project to be successful, mortality of adult pallid sturgeon that encounter Intake Diversion Dam or other design alternative while migrating downstream cannot annually exceed 1% during the first 10 years of project implementation. Adults passing downstream should be monitored for injury or evidence of adverse stress." Include juvenile Pallid Sturgeon and other fish species.

54

- Pg. 505; "2. The Service recommends that post-project monitoring be conducted both at the intake screens, in the irrigation canal, and immediately below the Intake Diversion Dam boulder field to assess potential injury and mortality to free embryos, larvae and young-of-year sturgeon." To minimize mortality in drifting Pallid Sturgeon larvae, we need to understand the pathways in which larvae drift downstream. Flow conditions that larvae experience at different river stages can be examined using 3D hydraulic mapping, bathymetry and bottom texture in each migration route, at various river stages. Each route could be assigned an estimate of mortality under differing flow conditions. Drift paths from the thalweg upstream through the various routes at Intake can be verified by releasing neutrally-buoyant beads and recapturing the beads at various points downstream. Results would inform remedial actions to guide larvae toward routes that minimize passage mortality.

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- Pg. 510; "...there will be a period of time of at least two years, when the bypass channel is not completed and the existing side channel is also blocked, which would likely prevent pallid sturgeon passage upstream of the Intake Diversion Dam." For this reason, infilling the existing side channel should be delayed, if possible, until bi-directional fish passage is confirmed through the engineered bypass channel and/or notched weir.

56

- Pg. 514; "During removal of the dam, passage could be inhibited over the Intake Diversion Dam as coffer dams divert flow from one side of the river to the other and have increased depths and velocities, but this should be short-term, lasting only a few months, thus resulting in only a minor adverse effect." Dam removal could be accomplished less expensively by breaching the weir in a few places, and allowing the river to gradually flush the remainder.

57

- Pg. 517-518; The authors argue longer drift distance in the Yellowstone River (Cartersville to Lake Sakakawea = 250 mi) as compared to the Missouri River (Ft Peck to Lake Sakakawea = a little over 200 mi). This argument does not consider that river discharge controls drift speed and channel complexity controls drift paths. Hydraulic mapping (3D) has demonstrated how complex currents create areas of convergence and areas of divergence where particles/larvae in the thalweg are forced into low velocity areas. Also, Fort Peck discharge can be controlled to extend drift times, whereas Yellowstone River flows can only be slightly modified by Yellowtail Dam operations and smaller catchments upstream. Yellowtail Dam regulates 28 percent of the base flows upstream of Sidney, and reservoir operations can alter the flow regime (Corps 2006, P. 3-20).

58

- Pg. 518; Estimates of age 1 progeny produced under the alternatives (see pages 4-166, 4-169, 4-170 and 4-175) differ for various assumptions. For example, the Multiple Pump alternative assumes completion by 2022 (as opposed to completion in 2019 for the rock ramp or bypass alternatives) so there are only 66 wild fish left (as compared to 77 wild fish remaining in 2019). The Multiple Pump with conservation measures alternative assumes completion by 2025, so there are only 57 wild fish left. While the assumptions used for these comparisons might be reasonable, we need to consider the large differences that would occur when the 43,000 hatchery fish recruit to spawning age. The approximated 90% passage efficiency with the dam removed appears low (as compared to the assumed 85% passage efficiency through the bypass channel, or 50% efficiency assumed for the rock ramp and modified side channel). Regardless of these assumptions of relative passage efficiency (e.g., 90% versus 85% versus 50%), differences between the number of age 1 offspring produced by each alternative would accumulate far more rapidly after the number of spawners increase due to prior hatchery releases or improved natural recruitment. Also, this analysis does not consider different rates of survival in downstream migrating larvae (e.g., The estimated 5% loss due to entrainment, plus additional losses due to turbulence and rock strikes in the rubble field, as compared to natural mortality under the no-dam, natural channel alternatives).

59

- Pg. 520-521; Regarding the Bypass Channel Alternative being evaluated using the FPCI, the FPCI contains no parameters for downstream larval drift or bi-directional movements by subadult Pallid Sturgeon. Estimates of adult passage represent only one phase of the life cycle. Additionally, if the bypass channel was functional by 2019, then assumptions similar to the assumptions for the rock ramp, except the authors assumed 50% of females would ascend the rock ramp (producing 35-161 age 1 offspring), compared to the assumption that 85% of the females would ascend the bypass channel (producing 50-230 age 1 offspring), may be valid regarding the wild fish.

60
- Pg. 522; "Typical mortality of age-0 pallid sturgeon is likely to be 99.9% and the fish have evolved to produce very large numbers of eggs to compensate for the low survival of eggs/free embryos, so the potential entrainment of pallid sturgeon larvae is likely to be a negligible effect to pallid sturgeon recruitment." The authors repeatedly suggest that entrainment mortality would have a negligible effect to Pallid Sturgeon recruitment, because the fish evolved to produce very large numbers of eggs to compensate for the low survival of eggs/free embryos. However, increased mortality caused by the Intake Diversion Dam is additive to natural mortality. In this case, 50% of the females = 6 wild adult females might spawn (producing 30-138 age 1 offspring), whereas on P. 4-166 the rock ramp assumption was 50% of the females = 7 wild adult females might spawn (producing 35-161 age 1 offspring). Why do these assumptions differ?

61
- Pg. 554; Referring to the Multiple Pumps Alternative, overall construction would take about 3 years, but dam removal would take about 6 months. If dam removal would take 6 months, why are the completion dates (and estimates of remaining spawning adults in the above assumptions) set at 2019 for the dam-in-place alternatives and 2022 and 2025 for the no-dam, natural channel alternatives? Presumably, these time lines differ because the dam must be left in place until the pump installations and/or conservation measures are complete to ensure water delivery while fish migrations remain blocked during the interim. This does not appear consistent with the Fish and Wildlife Coordination Act, Section 2.

62
- Pg. 559; The entire section appears to minimize the benefits of two-way boat traffic under the no-dam, natural channel alternatives. For example, "Overall, the operational effects of the Multiple Pump Alternative on recreation would be significant in the short terms due to loss of the Intake boat FAS, with potential for long-term beneficial effects with the replacement of the boat ramp facility at a new location and increased opportunities for fishing along a larger portion of the river. This would result in less-than-significant effects." It is unclear why this would result in less-than-significant effects. How many boaters navigate over the existing weir?

63
Appendix D – Fish Passage Connectivity Index…
- Pg 8; Though the use of the Fish Passage Connectivity Index appears to be recently approved (2016) for use in Corps planning of fish passage projects, the original model plainly stated the applicability was limited to the Upper Mississippi River basin. To this point, the "minor" adjustments made to the model in order to demonstrate passage benefits specific to the Yellowstone River were not made clear. Furthermore, the reference citing the approval of applied-use is not included in the references of the appendix. Without the full methodology in this index, too much uncertainty exists regarding the success of the project. This model and the subsequent information included therein needs to be thoroughly vetted through peer-review. The model must also utilize the best available science and rely on contemporary information specific to the Action Area.

64 • Pg. 8; In the index calculation, there is no mention of the relation of the index to downstream passage of Pallid Sturgeon larvae or bi-directional passage of juvenile Pallid Sturgeon.

65 • Pg 9; Neither Wilcox et al. (2004) nor Pitlow & Rasmussen (1995) were included in the references of the appendix. This is troubling, considering the two sources allege to provide the primary metric for evaluating swimming speed (Ucrit) and subsequently comprise a large portion of the overall evaluation of connectivity. After searching outside of the document for the references, the Ucrit models included in Wilcox et al. (2004) for Pallid Sturgeon were based on 9 individual Shovelnose Sturgeon as surrogate, with a calculated Ucrit Model of 1.6 SL cm/sec and an estimated Ucrit for adult Pallid Sturgeon at 79 cm/sec and 82 cm/sec for Shovelnose Sturgeon. Furthermore, the values used in Wilcox et al. (2004) were based on trials conducted by Tunink (1975) and Schmulbach et al. (1981) and occurred over 10-minute trials; 35-41 years ago. We suggest using more contemporary information to provide the biological criteria of passage connectivity. Additionally, the reference of Pitlow & Rasmussen 1995 could not be found. We assume this was an error in the citation and it should be included as Pitlow et al. 1995.

66 • Pg 10; Table 1-1 lists a Ucrit for Pallid Sturgeon of 3.2 (no units are mentioned but it is assumed to be in ft/sec). This differs from the published value in Wilcox et al. (2004) that indicates (with Shovelnose Sturgeon as a surrogate) adult Pallid Sturgeon have a Ucrit of 2.6 ft/sec. Furthermore, both of these values starkly contrast those included in 30-minute swimming trials conducted with actual individuals of both species in Adams et al. (2003). Adams et al. (2003) lists the highest average Ucrit for Pallid Sturgeon at 35.93 cm/sec and 36.98 cm/sec for Shovelnose Sturgeon. This is less than half of what was reported in Wilcox et al. (2004); perhaps underlining their advice to use the reported Ucrit estimates with "extreme caution". Adams et al. (2003) help explain that the critical swimming speeds of Pallid Sturgeon and Shovelnose Sturgeon are "low relative to most speeds reported for teleosts." Adams et al. (2003) go on to attribute this lower Ucrit to the functional limits of a heterocercal caudal fin and drag-inducing scutes.

• Pg 10; If Pitlow et al. (1995) is going to be used in Table 1-1 to populate the column of
67 "Species" found in the Yellowstone River, it needs to be revised to only include species actually found in the system. For example, Silver Lamprey is probably very "uncommon" in the Yellowstone River, as it has never been recorded in the Upper Missouri River basin.

• Pg 11; While the use of Corps data in estimating acreages of available preferred habitat in the
68 Yellowstone River is helpful, the subsequent habitat preference and relative abundance information borrowed from Pitlow et al. (1995) is irrelevant to the Action Area. More contemporary information would be helpful in providing an accurate assessment of potential habitat units. Furthermore, qualitative relative abundance data from the Action Area is strongly advised, as information from select bends in the Upper Mississippi River basin is inappropriate, and unnecessary, to use here.

69 • Pg. 16;"Guilds of fish species...addition of pallid sturgeon and are shown in Table 1.5." This should be in reference to Table 1.6.

70 • Pg. 16; "To assign an Fl value to each guild, the Corps (2014) used the best professional judgment of federal and state biologists working on the Yellowstone River (Table 1.6)." This should be in reference to Table 1.7

71 • Pg. 16; "The size of fishway for each alternative is listed in Table 1.7." This should be in reference to Table 1.8.

72 • Pg. 18; "Scores for Ui can be found in Table 1.8." This should be in reference to Table 1.9.

73 • Pg. 19; "Table 1.9 identifies when fish passage alternatives are available to fish..." This should be in reference to Table 1.10

74 • Pg. 20-21; Pallid Sturgeon should be spelled out on both Table 1.9 and 1.10. There should also be separate rows for Pallid Sturgeon and Shovelnose Sturgeon. Furthermore, why were no values included for other alternatives in the estimation of potential use and availability of fishway types other than no action and rock ramp?

Appendix E – Monitoring and Adaptive Management Plan

75 • Pg. 5; Regarding Objective 1, the hydraulic conditions are a fine starting point for this project, but at some point they become irrelevant. The decision tree alludes to actions that may be taken if physical criteria are met but passage is not, or if physical criteria are not met but passage does occur. However, we need to quantify what this means. For example, how many fish have to pass under deficient hydrological conditions in order to change or abandon the hydrological conditions? Would 1 year of good passage initiate a reassessment of hydrological criteria? This is probably going to be an unpopular comment; however, we have documented 2 successive years of some Pallid Sturgeon passage via the existing side-channel. Are we now going to define success as a passage rate at some level above that of which we've seen in the last 2 years (~50% of the individuals moving up to Intake passed in 2014, ~20% in 2015)? If not, what would be the objective in assessing passage criteria if it's reasonable to believe that Pallid Sturgeon have had an ability to pass Intake in some capacity since the dam's construction in the early 1900's, yet we've seen little or no evidence of those upstream movements resulting in recruitment? Similarly, how many years of poor or no passage would initiate a reassessment of hydrological criteria? How many years with no passage should pass if hydrological conditions are being met before those hydrological criteria are changed or abandoned?

76 • Pg. 7; Project Uncertainties – All of these uncertainties are for fish passage issues. Is there no uncertainty of how the project will affect water delivery for irrigators? If there is no uncertainty, then does the adaptive management plan preclude any adaptive management actions if water delivery is not met (e.g., if the bypass is conveying more than the anticipated 13-15% of the river discharge and is passing fish, yet not providing enough irrigation water)? To this effect, what can LYIP do and what process do they need to go through in order to do

it, and what entity will be responsible for paying for adaptive management to ensure that the irrigators receive a secure and affordable water supply as a result of the preferred alternative?

77 • Pg. 7; Under the section that mentions "other native fish"; the "other" native species are completely omitted from the decision tree at the end of the document. We need to describe how they are incorporated into the decision making, especially since actions are likely to affect species differently (e.g., passage may improve for several species but decline for others). One species in particular, Blue Sucker, resembles the Pallid Sturgeon in that it is a large, long-lived, riverine species that we tend to see very few juveniles of while sampling. They currently navigate over the existing structure regularly. The new, flat concrete weir may cause velocity/abrasion issues with them passing. What actions are taken, if any, if they don't pass?

78 • Pg. 8; How frequently during spring, peak runoff, and summer baseline will ADCP instruments be deployed? Flow conditions can change dramatically daily during this time period. It will be difficult to plan when ADCP units should be deployed, and there will likely need to be equipment and personnel that easily mobilized. In the event that Pallid Sturgeon are using the bypass, I think it would be prudent to have ADCP units deployed as quickly as possible to capture conditions under which passage did occur.

79 • Pg. 8; In monitoring the hydraulics of the structure, years 1 to 6 should probably include the same frequency of ADCP monitoring. Three years is definitely not long enough to capture the variability in flows. Additionally, why in what was called the intermediate time (3-6 years) is the spring runoff period not being monitored? This is the time period when fish are moving and we most want to know how the bypass channel is functioning.

80 • Pg. 9; In monitoring of adult Pallid Sturgeon, what if USGS/FWP/USFWS efforts to implant transmitters, recapture adults, track adults, and to analyze blood samples do not continue? Who is responsible for ensuring that they do? There is a good probability that current funding for these efforts will be scaled back, and some probability that they will be eliminated. Additional logging telemetry receivers (at least 3 total in the bypass) will be needed to determine that status of passage in the bypass, and these will only allow for gross movement monitoring. For a more precise determination of movement, we will need to track individuals with manual receivers by boat or by foot on shore. This would allow us to document any specific areas that are impeding passage and assess whether hydraulics or substrate or other aspects are at fault. Furthermore, there should be discussion about how far downstream Pallid Sturgeon can detect the effects of Intake Dam. Does anyone really know how far downstream Pallid Sturgeon can detect what is upstream of them (i.e., there may be effects of altered flow at Intake that are seen downstream further than 1 mile)?

81 • Pg. 10; Under Downstream Adult Monitoring, it should be noted that dead fish flow downstream too; that is, just because a transmitter is detected moving downstream past the station located 1 mile downstream of the project, does not mean that downstream passage was successful. Further monitoring within that year or in future years will determine if it was successful or not. The Decision tree at the end of the document is extremely vague, but it seems like it is referencing upstream movements only. It should be expanded to include or

clarify, how successful/unsuccessful downstream passage is incorporated into the decision making process.

82 • Pg. 10; Under Downstream Larval Monitoring, the funding sources and amount of effort going towards this project should not be expected to continue without dedicated funding. Currently, the monitoring of these movements is a collaborative effort between FWP, USGS, USFWS, SIU, etc. Funding needs to be in place for blood work, egg work, larval genetic ID, staffing, etc. If any adult Pallid Sturgeon get above Intake, Reclamation should be notified and this would give several weeks lead time, this is realistically the max lead time you will get. It is suggested that experimenting with different anchor types that could potentially hold a boat with larval nets in place in the rocky substrate. Attempts were made in spring 2015 to sample larvae in the mainstem of the Yellowstone above Intake Diversion Dam. Several anchor types were used, including up to 100 lbs of anchors, with no success at holding in the thalweg. How will you determine if larvae are successfully passing downstream? The collected larvae are killed when preserved in ethanol. You will be able to tell if they do indeed pass downstream, but not if it was successful. Downstream trawling within year or netting in subsequent years for juveniles will tell you if downstream passage was successful. Genetic analysis will need to be done to determine the origin of any captured Pallid Sturgeon. Furthermore, it should be noted that the potential to capture a Pallid Sturgeon larvae at Intake is a difficult endeavor. Experience crews on the Missouri River near the confluence rarely catch Pallid Sturgeon larvae, even when they are sampling with multiple crews immediately downstream of known spawning sites. We would not conclude that the absence of Pallid Sturgeon larvae captured downstream of the new weir meant that they were unsuccessful at passing over the dam. We think a well planned experimental release is the only realistic way to answer downstream passage over the new weir and entrainment into the canal questions.

83 • Pg. 10; The study design for placement of logging stations should be reevaluated. As with the project currently ongoing, a control section in an unimpeded section must be included to compare movements. For example, what conclusions do you make if a fish does not pass the bypass structure, but hangs out in the area immediately downstream? Was that fish unable to pass the structure, did it choose to stay in that habitat, is it's behavior such that it's not going to make an upstream movement whether or not it is able to?

84 • Pg. 11; Under Adaptive Management Measures, the wording makes it seem as though the below listed items are the only actions that may be taken. This should be reworded to clarify that other measures, currently unforeseen, may be enacted.

85 • Pg. 16; Under Section 3(b), no text was found. If this is the case, this should be removed.

86 • Pg. 16; Under Section 3(c), the layout of yeas of monitoring (Baseline, Intermediate, and long-term) is confusing. During the Baseline years sampling needs to be more specific by identifying a period of time; the "spring moderate" should be April 1-May 15 when flows are between 7,000-14,999 cfs, "high runoff" in June should be from May 15-June 15 when flows are between 15,000-63,000 cfs and "summer low flow" in August.; During the Intermediate years

87 • Pg. 16; Under the Upstream Adult Monitoring, these efforts are likely to decrease, and potentially decrease dramatically, depending on funding for the PSPAP, WAPA, etc. Crews on the Missouri River get most of the hatchery radios out, and Braaten (and formerly Fuller) maintained the monitoring of the radio-tagged population of adults.

88 • Pg. 16; Regarding Upstream Adult Monitoring and in relation toUSBR supplying telemetry stations, telemetry stations require some amount of maintenance throughout the year. Who will ensure that the stations are running properly and continuously? In sections above, the agency responsible for the efforts is included (i.e. USGS, Service, MFWP tags pallids, USBR will locate telemetry stations); however, it doesn't say who will fund or complete the tracking.

89 • Pg. 16; The original "Baseline" time-frame included physical monitoring during the summer baseline flow period. Historically, the Yellowstone reaches base flows mid August; thus, July 15 would typically be the lower end of the descending limb of the hydrograph.

90 • Pg. 17; Please define "tagged". We assume it means fish implanted with radio transmitters. For the record, there are also adults without radios that have other "tags".

91 • Pg. 17; Under Downstream Adult Monitoring, how will successful downstream passage be determined? Potential mortalities could also" move downstream". Furthermore, there are questions as to how individuals will be actively tracked and recaptured. Currently, FWP crews on the Yellowstone River do very little tracking of the downstream movements of Pallid Sturgeon once spawning has suspected to have happened. Any additional mobile tracking or netting would require additional personnel.

92 • Pg. 17; Under Downstream Embryo and Larval Sampling, this could be a substantial amount of work for the small FWP crew if the project is successful and multiple fish are upstream spawning. We saw how difficult it was to try to monitor the spawning movements of 3 Paddlefish, all within a relatively close proximity this year. If multiple Pallid Sturgeon move upstream and are any distance apart from one another, FWP won't have the man power to actively track movements, nor try to recapture to assess individuals, nor track individuals downstream, nor larval sample, etc.

93 • Pg. 17; The section describing Downstream Embryo and Larval Sampling needs to be thoroughly described. This is an aspect that is surrounded by a number of confounding variables and will be difficult to define.

94 • Pg. 37; More detail is needed in the flow chart diagram included. For example, the stated objectives of this project as a whole are to promote fish passage and to continue to provide irrigation water. The first box in this decision chart is whether or not Pallid Sturgeon pass Intake. What if the physical and biological criteria are being met but water delivery needs are not being met? There are many other scenarios not included in this flow chart. The conceptual decision tree needs to be expanded upon to include all objectives and quantified triggers that may lead to an adaptive action. The structure of the document leads one to believe that the hydraulic criteria are going to be driving adaptive management actions. The

overall goal is correctly stated as "Pallid Sturgeon passage"; however, the hydraulics are the first specific objectives and monitoring approaches. Hydraulics may be an appropriate starting point for monitoring, but eventually the hydraulic criteria are meaningless. This chart needs to incorporate how and when (quantifiably) we convert from depth and flow criteria to biological criteria.

North Dakota State Water Commission

SA-02

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
(701) 328-2750 • TTY 1-800-366-6888 • FAX (701) 328-3696 • http://swc.nd.gov

RECEIVED 25 Jul 16

July 19, 2016

U.S. Army Corps of Engineers Omaha District
Attn: CENWO-PM-AA
1616 Capital Avenue
Omaha, NE 68102

Dear Sir or Madam,

The North Dakota State Water Commission has reviewed the *Draft Environmental Impact Statement for the Lower Yellowstone Intake Diversion Dam Fish Passage Project* and provides the following comments regarding the U.S. Army Corps of Engineers' and the U.S. Bureau of Reclamation's plan to provide fish passage for the endangered pallid sturgeon, and other species, on the Yellowstone River.

1 The intent of the Lower Yellowstone Intake Diversion Dam Fish Passage Project is to reconnect some of the Yellowstone River's segmented reaches, providing the opportunity for fish to migrate upstream of the diversion dam, while maintaining the dam's beneficial use, irrigation. This project could prove to be vital for the pallid sturgeon upstream of Lake Sakakawea. Allowing the pallid sturgeon to pass the diversion dam would increase the travel time of their larvae, which could lead to improved survival rates.

2 There are several alternatives that maintain the dam's beneficial use, to its existing capacity, while increasing the likelihood of fish passage upstream. I support the preferred alternative because it's the most cost effective alternative that accomplishes both.

Thank you for the opportunity to review and provide comments on this project.

Sincerely,

Garland Erbele

Garland Erbele, P.E.
Chief Engineer-Secretary

GE:CO:CK:LA:ph/1396

Estergard, Scott

From: Trimpe, David <dtrimpe@usbr.gov>
Sent: Thursday, July 14, 2016 6:48 AM
To: Vanosdall, Tiffany K NWO; Estergard, Scott
Cc: Laux, Eric A NWO; Douglas Epperly; Jennifer Beardsley; Gerald Benock
Subject: Fwd: Cooperating Agency Comments
Attachments: LYIP Cooperating Agency Comments on DRAFT EIS.xlsx

Scott and Tiffany,

Here are LYIP's and WWC's comments on the draft EIS. As you can see below they are also planning to submit comments from one of their biologist.

David Trimpe
Natural Resource Specialist - ESA Coordinator
Bureau of Reclamation - Great Plains Region
P.O. Box 36900 - Billings MT - 59107-6900
Office 406.247.7717 - Cell 406.647.5254

---------- Forwarded message ----------
From: **Shawn Higley** <shigley@wwcengineering.com>
Date: Thu, Jul 14, 2016 at 7:37 AM
Subject: RE: Cooperating Agency Comments
To: "Trimpe, David" <dtrimpe@usbr.gov>
Cc: James Brower <jbrower@midrivers.com>, John Berry <jberry@wwcengineering.com>

David,

Here are the basic comments. I will send you our biological report on Friday that will provide a reference for some of the comments in Chapter 4. Thanks and let us know if you have any questions,

Shawn

WWC ENGINEERING

Shawn Higley, P.E. | Branch Manager

1275 Maple Street, Suite F | Helena, MT 59601

LA-01
LYIP Cooperating Agency Comments on DRAFT EIS *(title and comment numbers added by project staff)*

Comment	Page Number	Heading	Comment
1	xxviii	No Action	Third paragraph -- change "Dammaintenance would include placement of 1 to 2 feet of rock" to "Dam maintenance would include the annual replacement of rock". This comment was included in the prior red flag review, but was not incorporated. We suggested "replacement of rock removed by annual ice flow".
2	xxxii	Table ES-2	The groundwater section of this table appears to be lacking. See discussion in EIS and comments below.
3	xxxv	Table ES-2	There will be impacts to geomorphology due to the new inlet channels and stabilization of the river channel in these areas for the Multiple Pump Alternative
4	XXXVI, 4-26, 4-8	Table ES-2	Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative Weir Removal will decrease existing water surface multiple feet affecting Aquatic Communities in existing Side channels upstream of diversion dam.
5	2-36	2.3.2.2	First paragraph -- refers to 5 supplemental river pumps and 79 miles of main canal when on page 2-24 the reference is to 4 supplemental river pumps and 72 miles of main canal. The correct answer is 4 supplemental river pumps and 72 miles of main canal. Please correct this inconsistency as it appears several times throughout the document.
6	2-45	Table 2-4	The O&M Costs for the Rock Ramp seem very low. The annualized amounts do not add up to the total that occurs every 10 years? This doesn't make sense.
7	2-64	General	Multiple Pump Station Atlernative does not appear to be at a 30% level design. Where are the discharge lines going to be? Power line locations, sizes, etc? The location of these stations needs to be fixed and the actual impacts assessed for the EIS.
8	2-67	2.3.7.2	First paragraph -- use of 480V motors is not practical based on the flowrate and the total dynamic head with exception to pump site #1. We have passed this through several electrical engineers and pump suppliers and the use of 480V motors does not appear to be feasible for Pumps 2-5.
9	2-67	2.3.7.2	First paragraph -- Refers to three submersible pumps, but in Appendix A refers to vertical turbine pumps. The reference to three pumps should also be changed to include a fourth pump for redundancy. Figure 2-12 also shows four pumps.
10	2-69	2.3.7.2	First paragraph -- discharge pipeline lengths from 300 to 5,600 feet in length. Was the length of the discharge pipeline considered in the total dynamic head calculation (head loss).
11	2-69	2.3.7.2	Discharge lines will cross BNSF and MDT Highway 16. What will be the implications of crossing these facilities? Are Existing Culverts Under Railroads Large enough and in good enough shape to handle the specified discharge pipe size And storm water runoff or irrigation flow they were originally installed for? What is the significant annual cost for BNSF Mandated Liability Insurance Riders demanded for under track crossings?
12	2-70	2.3.7.3	Again, use of 480V power is not viable for pump sites 2-5.
13	2-70	2.3.7.3	Last paragraph -- 48-hour fuel supply for a generator with this capacity would be quite large. This would likely require an SPCC plan And Structure to comply with EPA requirements and would add to the annual O&M costs for this alternative. There are no details on this.
14	2-73	2.3.7.5	States that pumping from the main canal is preferable for laterals AA, BB, CC, DD and FF because it is less costly than raising the water levels. Was this included in the capital cost of this alternative?
15	2-75	2.3.7.7	Sediment accruals in the upper portion of the main canal will be much higher than currently exist, as less water will be flowing into the canal via gravity and velocities will be much lower, resulting in significant sediment deposition. O&M records from the LYIP clearly recorded increased sediment deposition in the upper portion of the main canal when diversion rates were less.
16	2-77 & 2-78	2.3.8.1	It is important to realize that conservation measures can save significant amounts of water during certain periods within the irrigation season, but are not nearly as effective during other periods. This depends highly on the amount of checking, the turbidity of the water, soil saturation, and other factors. As LYIP records show, the main canal losses are much higher during the early and late irrigation season, but are minimal during the time of peak demand. Thus, the use of generic values for savings in cfs (an instantaneous measure) for water conservation measures is not a valid metric for reducing the diversion rate of an irrigation system.

17	2-80	2.3.8.1	Convert Laterals from Ditches to Pipe. 1st Paragraph. 234 miles of laterals as referenced on pages 2-36 and 2-24. Reference here is for 225 miles. Please correct.
18	2-81	2.3.8.1	Line Open Canals. 1st paragraph. 234 miles of laterals as referenced on pages 2-36 and 2-24. Reference here is for 225 miles. Please correct.
19	2-81	2.3.8.1	Line Open Canals. 1st paragraph. Need to delete "and is estimated to reduce the diversion requirements by 160 cfs or more."
20	2-81	Figure 2-18	There is insufficient cover over the top of the pipe and insufficient excavation quantity. The new pipes will likely not follow the existing ditch lines. Typical bury depth on irrigation pipe is 30 inches over the top of pipe.
21	2-83	2.3.8.1	Pumping groundwater. 1st paragraph. Need to delete "This is proposed to reduce diversions by 49.5 cfs."
22	2-92	2.3.8.7	2nd paragraph, end of last sentence. Refers to 51,158 acres, but the 2013 crop survey and Table 2-22 reflect 55,158 acres.
23	2-97, 4-247	Table 2-24, 4-34	Multiple Pump Station Alternative indicates that the alternative retains a viable LYIP project. However, the O&M is over double what they are currently paying, which will bankrupt some of the farmers. Suggest changing this to No with an asterisk, explaining that the severe increase in O&M rates will significantly harm the farmers. Please refer to the July 8, 2016 letter analysis from Sidney Sugar emailed from James Brower.
24	2-99	Table 2-27	Change in habitat units doesn't compute? Shouldn't the change in habitat units match the Net AAHUs column in Table 2-28?
25	2-103	Table 2-30	Table is incomplete. Multiple Pump, Constructability. A large number of issues identified in the previous description such as right-of-way issues, isolation of work zones for feeder canals, in-river work zones for removal of the dam, etc that would impede construction progress. This alternative is also one of the highest for O&M and is rated as a "Best Buy" alternative. Please include the O&M analysis in the "Best Buy" determination. Please include all information from new feasibility sections in this table and update table for revised analysis.
26	4-7	Climate- No Action	Please remove "Risk of not reliably providing irrigation water right in some years due to climatic conditions." The LYIP has 108 years of records that show they have reliabilty provided water.
27	4-14	Table 4-2 Air Quality	The known production of carbon emmissions for Electrical Generation will adversly effect air quality.
28	4-16	Table 4-3	Please include the xxcavation and disposal of thousands of yards or dirt and material due to Inlet canal excavation
29	4-60	4.5.2	No mention of the effects on local groundwater levels from the implementation of conservation measures. This would have a significant impact by removing a large source of recharge.
30	4-79	4.5.5.9	No mention of the effects on local groundwater levels from the implementation of conservation measures. This would have a significant impact by removing a large source of recharge.
31	4-81	4.5.6.6	It may be prudent to add a engineering study to evaluate the effects of the alternative in terms of removing recharge zones to the shallow aquifers through implementation of conservation measures.
32	4-82	4.6.2, Table 4-20	Multiple pump alternative would have minor impacts from bank stabilization measures required to stabilize the intake channels to each pump station. This would limit the river's natural changes within the CMZ.
33	4-101 & 102	Table 4-24	Both Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative both list under operational effects "improving fish passage could remove 303(d) listing for nonsupport of aquatic life (beneficial)". Does this really go here in the water quality section?
34	4-154	Table 4-27	Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative-- Additional power infrastructure could present a significant hazard to listed species and species of concern.
35	4-154, 4-235	Table 4-27, 4-32	Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative-- Noise and Vibration from Pump operations will disturb other species of concern in adjacent wildlife habitat.
36	4-155	Table 4-27	Multiple Pumps with Conservation Measures Alternative -- Will have impacts to listed species and species of concern from wind turbines.
37	4-181	Table 4-28	Multiple Pump Alternative -- Will have significant impacts to crop land (permanent) as well as native vegetation (temporary & permenant) from installation of pump stations, intake canals, discharge lines, power lines, substations, access roads, etc.

38	4-198	Table 4-29	Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative-- Removal of the dam will remove the most popular Paddle Fish fishing areas on the lower Yellowstone and Missouri Rivers. The Montana FWP generally sets an annual limit of approximately 1,000 fish harvested, with approximately 800 coming from the area below the Intake Diversion (a vast majority).
39	4-213	Table 4-30	Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative -- Will have significant impacts to visual resources from installation of pump stations, well locations, intake canals, discharge lines, power lines, access roads, etc. Tetra Tech appeared to assumed mostly underground power, but I don't think given the voltage that the power company will allow this. It will likely be overhead power to each well or pump station due to the inability of buried conducters to dissipate heat.
40	4-264	Under Table 5-57	The economic impact of increased Multiple Pump O & M paid by the farmer isnt explained as a harmful condition to the farmers, but is described as a benefit to the local economy? It should be pointed out that if the farmer cannot pay, there are no benefits to the local economy, only harmful effects.
41	4-291+	Table 4-61	Add Power Generation to air quality effects. Add drying up upstream side channel to surface water & aquatic communities. Add effects on recharge to local wells with conservation measures. Add operational Noise Disturbance to Adjacent species of concern by pumps
42	4-291+	Table 4-61	Update to include above
43	Chapter 4	Wetlands	Due to the indicated importance of wetlands throughout the ESA & the EIS (water quality and aquatic and terrestrial species, etc.), it would seem appropriate to have a separate category for Wetlands/Aquatic Features in chapters 3 and 4. As it is in the EIS, wetlands are a subset of Land and Vegetation.
44	Chapter 4	Wetlands	General discussions of wetlands impacts appear to be insufficient, specifically related to alternatives that remove the diversion structure. The loss of wetlands resulting from the removal of the diversion structure (reducing inundation and the resulting reduced contributions to shallow groundwater levels) may not have been adequately addressed.
45	Chapter 4	Wetlands	Any impacts assessments from projects that excavate/convert more than 0.1 acre of wetlands would require mitigation, as required by the CWA, which would significantly increase cost. In addition, mitigation efforts typically require monitoring. Who will be responsible for this cost? A more detailed discussion on the requirements for equivalent compliance with the 404(b)(1) guidelines and other substantive requirements of the CWA would also aide in impacts assessments.
46	Chapter 4	Federal and State Species of Concern	Table ES-2 (Summary of Environmental Effects) should include the effects of wind turbines on federal and state Species of Concern under the appropriate alternatives
47	Chapter 4	Wildlife	Since *Wildlife* is included as a distinct category in chapters 3 and 4, Table ES-2 (Summary of Environmental Effects) should include the effects on wildlife
48	Chapter 4	Threatened & Endangered Species	The Judge explained on page 10 and 11 that he wanted analysis on the anticipated success of the bypass channel for recovery of the pallid sturgeon. “This Court cannot analyze the “intensity” of the Project to determine whether significant effects will occur without knowing whether the proposed bypass channel would prevent the establishment of a viable population of pallid sturgeon. This Court cannot, in turn, determine the degree to which the Project would adversely affect pallid sturgeon or whether the Project would violate the ESA unless the Court possesses more information about the anticipated success of the proposed bypass channel.” “…the Project would have significant impacts on the pallid sturgeon with the analysis provided. Added uncertainty regarding whether sufficient drift distance would exist above the weir to allow pallid sturgeon larvae to develop before reaching the low oxygen zones raises additional concerns. These circumstances—the lack of analysis regarding adversely affecting pallid sturgeon recovery and uncertainty regarding possible effects on the viability of pallid sturgeon larvae—require the Federal Defendants to prepare an EIS. The new analysis should include the anticipated effects of the Project on the recovery of pallid sturgeon. Nat’l Wildlife Fed’s, 524 F.3d at 931-932.” This information needs to be addressed in Chapter 4 in detail, with a summary in Chapter 2 under the description of the preferred alternative.
49	Chapter 4	All Sections	The existing diversion dam is commonly referred to as an alternative effect, but should be addressed as a point of reference for all other alternatives.

50	Entire EIS	General	One point of consideration is that Tetra Tech commonly uses the fact that the Bypass Channel Alternative has been 100% designed as a "crutch" to form the basis of their opinion that the Bypass Channel Alternative is the preferred alternative. I am concerned that since the Multiple Pump Alternative has not been flushed out to the same level of design scrutiny and that there are numerous design considerations that can make this alternative much more costly and reduce the feasibility considerably that have been overlooked.
51	Appendix A	3.1.5	Multiple Pumping Station Alternative -- Assumption that only sand size and larger particles would deposit in the feeder canals. However, it is anticipated that velocities will be low in the feeder canals. Sediment transport in this portion of the Yellowstone River is very high, and the feeder canals will provide an avenue for sediment fallout due to low velocity flow.
52	Appendix A	Table 3.3	Multiple Pumping Station Alternative -- Pumps 2-5 shows a gravity flow as well as flow from Pump No. 2, but the discussion and analysis states in multiple areas in text that the headgate needs to be closed when Pumps No. 1 and/or 2 are on. This needs to be resolved.
53	Appendix A	4.3.3	Again the analysis uses a reference to 480V power. Many of the major pump suppliers for vertical impeller pumps have indicated that 480V powerwill not be sufficient given the head and flow conditions. Please verify that 480V power will be adequate as the cost for both installation as well as long term O&M is significantly impacted by increases in the voltage.
54	Appendix A	4.3.3.1	Multiple Pumping Station Alternative -- Finished floor elevation of pump stations needs to be at least 2' above the 100 year floodplain, not 1'.
55	Appendix A		Multiple Pumping Station Alternative -- Design recognizes the requirement for ice protection around the pump stations and fish screens, but shows only a very conceptual plan view with no detail. It is not certain how the fish screens will be protected by the berm and/or what type of protection would be placed in front of the fish screens. This detail could substantially effect the capital cost and the long term O&M of the alternative.
56	Appendix A	Attachment 2	Multiple Pumping Station Alternative -- Page 15-16, paragraph 2 of the Recommendation section of the Intake Alternative Selection memo provided by Tetra Tech provides a very solid viewpoint on the implementation of Ranney Wells that should be transferred and/or referenced in the Multiple Pumping Station Alternative with Conservation Measures Alternative. There is somewhat of a conflict between the text in this section and Section 4.3.1, Appendix A, Mulitple Pumping Station with Conservation Measures Alternative.
57	Appendix A		Multiple Pumping Stations with Conservation Measures Alternative -- Under Section 1.0, Alternative Description, at the end of this section, please add the text found in the main body of the EIS, Section 2.3.8 on page 2-77 to clarify the intent of the Appendix.
58	Appendix A		Multiple Pumping Station Alternative and Multiple Pumping Stations with Conservation Measures Alternative -- Both of these alternatives would require a SCADA system for operation and maintenance of these facilities. Please include in the capital cost as well as the long term O&M for these alternatives.
59	Appendix A	4.2	Multiple Pumping Stations with Conservation Measures Alternative -- 2nd paragraph on page 16 identifies that 1,100 cfs would be required to support the mix of crops current grown. However, this number should be 1,150 cfs.
60	Appendix B	3.7	The current quoted fuel prices are very low and near a 5-year low. The fuel prices should be based on a more current rate or a 3-year running average to ensure an accurate estimate.
61	Appendix B		Multiple Pump Station Alternative QTO Line Items -- Quantity take offs. The pump station standby generators for Sites 2-5 require 1250 kW through 2000 kW. This indicates that supply of 480V power to each of these sites will be difficult to achieve.

Upper Basin Pallid Sturgeon Workgroup

1420 E. 6th Ave.
P.O. Box 200701
Helena, MT 59620-0701
(406) 444-1231

28 July 2016

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AA
1616 Capital Ave.
Omaha, NE 68102
cenwo-planning@usace.army.mil

(sent via electronic mail)

Re: Comments on the draft Environmental Impact Statement for the Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana

As the advisory body for Pallid Sturgeon recovery implementation in the upper Missouri River basin, the Upper Basin Pallid Sturgeon Workgroup (Workgroup) would like to provide comment to the draft Environmental Impact Statement (EIS) for the Lower Yellowstone Intake Diversion Dam (Intake) Fish Passage Project. The Workgroup appreciates the opportunity to provide input as the U.S. Army Corps of Engineers (Corps) and U.S. Bureau of Reclamation (Bureau) jointly prepare this EIS.

Foremost, the Workgroup supports the process of earnestly reviewing alternatives at Intake that
best suit the recovery of Pallid Sturgeon and the sustainability of the lower Yellowstone River
aquatic community. We believe the most beneficial alternative for Pallid Sturgeon would involve
1 removing the existing barrier to provide full-river passage and investing in more contemporary
methods of water delivery. Improved efficiencies and updated technologies in irrigation practices
would serve an agreeable compromise between socioeconomic viability and ecological integrity;
a cornerstone of the vision and mission of the Missouri River Recovery Program (MRRP).
2 Although the EIS reiterates that recovery of Pallid Sturgeon is not within the scope of this
project, the Workgroup feels strongly that aspects of recovery are implicit with the project's use
of funding tied in-part to the MRRP. As such, more emphasis should be placed on the aspect of

2 fish passage in the alternative analyses, rather than ensuring water delivery while merely
cont'd providing conditions thought to be sufficient to avoid jeopardy to Pallid Sturgeon.

To this point, the improvement of fish passage for Pallid Sturgeon and other native fishes under
the preferred Bypass Channel Alternative is purely theoretical and assurances for successful
3 passage are unfounded. Across North America, sturgeon species have exhibited little success
with fish passage structures; where the only examples of consistent passage include projects that
were designed specifically for sturgeon species and projects that provided passage upstream and
downstream. Although upstream passage of adult Pallid Sturgeon has garnered much of the
attention in the EIS, it is imperative that this project account for the needs of all life-stages of
Pallid Sturgeon amongst other fish species. The design in the preferred Bypass Channel
Alternative fails to incorporate adequate passage in the downstream drift of Pallid Sturgeon
4 larvae, and subsequently the criteria for the entire project fails to address the potential impacts to
larval Pallid Sturgeon take during downstream passage until post-project. The success of the
preferred Bypass Channel Alternative, with regard to fish passage, relies only on conjecture and
claims of improved connectivity, in comparison to the No Action Alternative, cannot be made.
Currently, the No Action Alternative offers more documented passage than any other alternative
that includes a weir in the design. While the preferred Bypass Channel Alternative confidently
5 assures passage to some degree, the only proven pathway for passage for Pallid Sturgeon is
planned to be used as a fill site as part of bypass construction.

While the Workgroup commends the close collaboration with the Biological Review Team in
developing metrics for success, more explicit monitoring objectives whose criteria are rooted in
the biology of Pallid Sturgeon and the lower Yellowstone River aquatic community are needed
to meaningfully evaluate fish passage and jeopardy to Pallid Sturgeon. As currently written, the
6 monitoring and adaptive management of fish passage success and the avoidance of jeopardy to
Pallid Sturgeon does not sufficiently account for bi-directional passage, nor does it provide
details of future management given documented performance of the project. In developing
criteria for improving fish passage, the Workgroup feels “the development of decision criteria to
trigger adaptive management options” needs to be thoroughly established prior to an alternative
being preferred. To this regard, the Workgroup suggests a more expansive commitment from
federal partners in evaluating the project pre- and post-development to ensure greater
connectivity is truly attained in the lower Yellowstone River.

Undoubtedly, the Yellowstone River offers important habitat for Pallid Sturgeon and may
provide a potential for recruitment success with improved connectivity; however, its role in the
upper Missouri River basin should not be overstated. The Yellowstone and Missouri rivers are
two components to one system and the Workgroup remains opposed to the idea that
7 modifications at Intake should serve as a suitable credit for operational changes at Fort Peck
Dam. While successful fish passage at Intake may allow access to additional upstream habitat for
Pallid Sturgeon and other native fishes, it is the health of the Yellowstone and Missouri rivers
that will ultimately yield recovery of Pallid Sturgeon and long-term resiliency of the entire
aquatic community. In order to restore a self-regulating upper Missouri River system that
functions more naturally, engaged federal partnerships are imperative.

The Workgroup appreciates the consideration of these comments and we look forward to the committed, thoughtful development at Intake.

Sincerely,

Zachary R. Shattuck, Chair
Upper Basin Pallid Sturgeon Workgroup

From:	Shattuck, Zachary
To:	CENWO-Planning
Cc:	Vanosdall, Tiffany K NWO
Subject:	[EXTERNAL] Yellowstone Intake EIS
Date:	Wednesday, July 27, 2016 8:21:15 PM
Attachments:	image001.png UBPSW Comment to Intake EIS DRAFT_7-28-16.pdf

To Whom It May Concern:

Please accept these comments from the Upper Basin Pallid Sturgeon Workgroup for consideration in the development of fish passage at Intake Diversion Dam.

Respectfully,

Zach Shattuck

____

Zachary R. Shattuck

Native Species Coordinator

Fisheries Division

1420 East 6th Avenue

Helena, Montana 59620

office: (406) 444-1231

Upper Basin Pallid Sturgeon Workgroup

1420 E. 6th Ave.
P.O. Box 200701
Helena, MT 59620-0701
(406) 444-1231

5 August 2016

U.S. Army Corps of Engineers–Omaha District
ATTN: Tiffany Vanosdall
1616 Capital Ave.
Omaha, NE 68102
tiffany.k.vanosdall@usace.army.mil

(sent via electronic mail)

Re: Request for retraction of comments on the draft Environmental Impact Statement for the Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana

The Upper Basin Pallid Sturgeon Workgroup (Workgroup) submitted a letter of comment on the draft Environmental Impact Statement for the Lower Yellowstone Intake Diversion Dam Fish Passage Project dated 28 July 2016. However, in the process of submitting comment the Workgroup inadvertently omitted established aspects of review, as outlined in the *Upper Basin Pallid Sturgeon Recovery Workgroup Operating Procedures* (2012). Subsequently, the Workgroup feels it would be most appropriate to formally request a retraction of the previously submitted letter of comment. The Workgroup appreciates the consideration of this matter and we look forward to participating in the collaborative conservation of Pallid Sturgeon moving forward.

Sincerely,

Zachary R. Shattuck

Zachary R. Shattuck, Chair
Upper Basin Pallid Sturgeon Workgroup

LA-03

US Army Corps of Engineers®
Omaha District

Comment Form

Intake Diversion Dam Fish Passage Project

Richland County Fairgrounds Event Center
2118 W. Holly Street • Sidney, MT 59270
Tuesday, June 28, 2016 • 6:30 PM – 9:00 PM

COMMENTS must be received by JULY 28, 2016

Please PRINT clearly

Name Greg Anderson

Organization City of Sidney

Address 115 2nd. St. SE

Sidney MT 59270
CITY STATE ZIPCODE

Phone (406) 433-2809 **Fax** (406) 433-7509

Email sidneyutilities@midrivers.com

Narrative Comments:

1 As utilities manager of the City of Sidney, MT I am very strongly in favor of the by-pass channel alternative for the LYIP, as it will continue to deliver water via the existing canal, which recharges our aquifer when it is needed most.

- Attach additional sheets if necessary -

Additional information can be found on the Lower Yellowstone, Intake website at:
http://www.usbr.gov/gp/mtao/loweryellowstone/index.html

Please mail comments to:

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

From:	Water Cashier
To:	CENWO-Planning
Subject:	[EXTERNAL] Bypass Channel Alternative
Date:	Wednesday, July 27, 2016 3:16:04 PM
Attachments:	20160727152236.pdf

Comment Form completed by Greg Anderson the Utilities Manager here at the City of Sidney, thank you!

BreeAnn Messer
Water Clerk
City of Sidney
115 2nd St SE
Sidney, MT 59270
sidneywaterdept@hotmail.com <mailto:sidneywaterdept@hotmail.com>
Phone: 406-433-1117
Fax: 406-433-7509

Rockies and Plains Office
535 16th Street, Suite 310 | Denver, Colorado 80202 | tel 303.825.0918
www.defenders.org

OR-1

June 7, 2016

David Trimpe
Bureau of Reclamation, Great Plains Region
P.O. Box 36900, Billings, MT 59107-6900
dtrimpe@usbr.gov

Re: A request for an extension of the public comment period for the Draft Environmental Impact Statement for the Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana

Dear Mr. Trimpe,

Defenders of Wildlife and the Natural Resources Defense Council are writing to request an extension of the public comment period for the Draft Environmental Impact Statement for the Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana.

Defenders is a nonprofit organization dedicated to the protection and restoration of wildlife and plants in their natural communities, with 1.2 million members and supporters nationwide. There is intense interest in this project by our members and the general public due to the impacts to the Yellowstone River, the endangered pallid sturgeon, and the upper Missouri River ecosystem.

The Natural Resources Defense Council is a national conservation organization with over 2.4 million Members and Online Activists. NRDC and our Members and Activists have a strong interest in protecting and conserving wild pallid sturgeon.

There is some urgency to modify Intake Dam to avoid the extirpation of the wild pallid sturgeon as soon as possible. However, it's also critical that the agencies get this right and that the decision is supported by science and the public. Forty-five days is insufficient for members of the public to read through the nearly 700 page NEPA document and its associated appendices to determine how this proposal has changed from the 2014 Environmental Assessment, evaluate any new information that was developed in the intervening

1 time, and evaluate the new alternatives considered but rejected by the Corps and Bureau. We therefore respectfully request an additional 45-day extension of the comment period on the Draft EIS. We would appreciate hearing from you early in the comment period regarding whether you intend to grant this request.

Thank you for your consideration.

Sincerely,

Steve Forrest
Rockies and Plains Senior Representative
Defenders of Wildlife
535 16th St, Suite 310
Denver, CO 80202
sforrest@defenders.org
720 943-0459

Matt Skoglund
Director, Northern Rockies Office
Natural Resources Defense Council
317 East Mendenhall Street, Suites D & E
Bozeman, MT 59715
mskoglund@nrdc.org
406 556-9301

Cc: Tiffany Vanosdall, U.S. Army Corps of Engineers, 1616 Capitol Avenue, Omaha, NE 68102
tiffany.k.vanosdall@usace.army.mil

Jennifer Madgic, Bozeman Field Director, US Senator John Tester, jennifer_madgic@tester.senate.gov

Montana
Water Resources
Association

P.O. Box 4927 • Helena, Montana 59604 • (406) 235-4555
Email: mwra_h2o@msn.com

OR-2

June 30, 2016

U.S. Army Corps of Engineers, Omaha District
CENWO – PM – AA
1616 Capitol Avenue
Omaha, Nebraska 68102

Regarding: Intake Diversion – Comments Supporting Preferred Alternative.

To Who It May Concern:

The following comments are presented by the Montana Water Resources Association (MWRA) on behalf of our member irrigation districts, irrigation associations and private ditch companies and the respective several thousand farm and ranch families from throughout Montana, including those located on the Lower Yellowstone Irrigation Project. In providing these comments MWRA stands in strong support of the Lower Yellowstone irrigators and the century old Intake Diversion, paramount to the economic viability of the agricultural community, property values, businesses, and the rural cities and towns of Eastern Montana.

MWRA stands in strong support of the 100 percent design complete, shovel ready,
and twice determined preferred alternative concrete weir and fish friendly bypass.
1 The preferred alternative is scientifically determined to be the best environmental
and economic alternative to provide a balanced win-win result. The improved
concrete weir and fish bypass provide for a continued viable and cost effective
water delivery system for the irrigation community and provides the endangered
Pallid Sturgeon with the best opportunity for survival while benefiting all Lower
Yellowstone fisheries. Other alternatives, such as removing the existing dam and
2 forcing the irrigators to pump their water from the river and assume an extremely
expensive and far less reliable power dependent pumping process, would also
result in adverse environmental impacts.

The proposed preferred alternative, concrete weir and fish bypass, is based upon an extensive and thorough scientific evaluation of impacts that culminate with an opportunity to enhance the long term viability and stability of the farm and ranch community, agriculture dependent businesses and rural communities while addressing the needs of the Pallid Sturgeon and other fisheries and wildlife in the Lower Yellowstone. Legal maneuvering to oppose the economically viable and environmentally friendly preferred alternative leaves the fate of the Pallid Sturgeon in jeopardy and is clearly a costly effort by some environmental groups to push a much broader and disturbing agenda supporting removal/elimination of dams or diversions from our rivers. The agenda is promoted irrespective of the cost or impact to agriculture, local communities or even fish and wildlife dependent sportsmen and women, and ignores other adverse environmental impacts.

Finally, we extend our appreciation to the Army Corps of Engineers and Bureau of Reclamation for all of their hard work and diligent assessment of the possible alternatives and a win-win solution.

Sincerely,

Michael E. Murphy

Michael E. Murphy
Executive Director
Montana Water Resources Association

OR-3

Mr Joe Gutkoski
Pres Montana River Action
304 N 18th Ave
Bozeman, MT 59715-3114

Dear Corps of Engineers;
following are our recommendat.
on Intake Dam Fish Passage Proj.

Your plan for a new concrete
dam below Glendive on the Y. river
1 with a 2 mile by pass channel
will result in just more blockage
for upriver migrating Pallid Sturg.

The lower Yellowstone River
is especially important habitat for
the fish.

US Army Corps of Engineer
Omaha Dist.
Attn: CENWO-PM-AA
1616 Capitol Ave.
Omaha NE 68102

Montana River Action recommends → over

2

removing the exist. ; rock dam and
provide the irrigators with a pomping
system to get water to irrigators.

This will save some $ 60,000,000
of tax payers money on your plan
3 to construct a massive dam that
is doomed to failure in the long term.

Sincerely

Joe Gutkoski Pres.
Montana river Action
406 587-9181

RECEIVED
12JUL16

From: Jason Brothen
To: CENWO-Planning
Subject: [EXTERNAL] Comment on the Bypass Channel
Date: Wednesday, July 27, 2016 6:07:14 PM
Attachments: LYREC Bypass Support Letter.docx

Please find attached a letter on behalf of Lower Yellowstone Rural Electric Cooperative Board of Directors, Staff, and membership.

Thank you,

Jason Brothen

Jason A. Brothen

CEO

Email - jasonb@lyrec.com <mailto:jasonb@lyrec.com>

Cell - 701.609.2111

Work Main - 406.488.1602

Work Direct – 406.488.6830

3200 West Holly St.

PO Box 1047

Sidney, MT 59270

OR-04

LYREC
lyrec.com
LOWER YELLOWSTONE
RURAL ELECTRIC COOPERATIVE
Your Touchstone Energy® Cooperative

PO Box 1047
3200 West Holly Street
Sidney, MT 5927
Phone: (406) 488-1602
Fax: (406) 488-6524
www.lyrec.com

7/1/2016

U.S. Army Corps of Engineers Omaha District,
Attn: CENWO-PM-AA; 1616 Capitol Avenue
Omaha, Nebraska 68102

Dear U.S. Army Corps of Engineers:

1 On behalf of the Board of Directors, and Lower Yellowstone Rural Electric Cooperative (LYREC) membership, I am writing this letter to support the bypass channel. As a cooperative we feel strongly about saving the farmer and the fish.

As a member-owned rural electric cooperative we are unique in that our core business happens to be the farmers, and the power supplied to them come from Western Area Power Administration (WAPA). The power allocation for Thomas Point, Drain 27, and Crane on the main channel all flow through LYREC power substations and distribution line. The agricultural industry is the core of the electric cooperative and without the Yellowstone River Diversion Dam our famers would not have the ability to supply the country with vital crops and commodities that all Americans rely on.

2 One major concern as an electrical distributor, is the power supply. We understand what it takes to pump water and it is a lot of power. It would take the correct mix of renewable, hydro, gas, and carbon based electrical resources to maintain the level of power needed to run the proposed pumps. Renewable resources alone cannot generate enough power at peak times to maintain the pumps and for this reason they need to have backup power to fill in for those times when the renewables are offline. With the current direction of the United States baseload power grid, it is uneasy to think of what could happen if the power supply were not adequate for the proposed pumps. There is a potential for the famers to lose farms, the American taxpayers to lose millions in projects, and destroy a portion of the backbone in this country. Because of this the bypass channel is the best option for the farmer and the fish; just as it has been since 1904 and will continue to be in the future.

In closing please consider the thousands of acres of land that tirelessly supports the economy, our communities, and our nation all through an irrigation system that is proven since the early 1900’s.

Sincerely,

Jason Brothen
CEO
Lower Yellowstone Rural Electric Cooperative

July 26, 2016

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM_AA
1616 Capitol Avenue
Omaha, NE 68102

Re: Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana Draft environmental Impact Statement

Dear U.S. Army Corps of Engineers Officials:

On behalf of the Montana Stockgrowers Association (MSGA), we are writing this letter in regards to the Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana Draft Environmental Impact Statement.

MSGA was founded in 1884 to represent ranchers and promote a positive business environment for our members. Throughout our history, MSGA has been dedicated to finding proactive solutions to the most difficult challenges facing Montana's cattle ranching families. MSGA has continued to be an active participant in the decision making process for the Intake Diversion Dam project, because of the potential impacts to our members within the affected four irrigation districts serviced by the diversion dam. A potential decision that would greatly increase the operational costs or any reduced deliveries to the main irrigation canal, would significantly influence those cattle ranching families and a substantial region of the state.

Due to the critical importance of this Intake Dam modification project to the agricultural community,
MSGA has reviewed the Draft EIS and supports the **Bypass Channel Alternative.** This alternative is a
1 balanced approach to improving conditions for migration of pallid sturgeon and other native fish and at
the same time ensuring the water delivery system for the Intake Diversion Dam is protected.

Farm Characteristics

In this section it is stated that "*Using recent crop yields and prices from the National Agricultural
Statistics Service, a production value (gross revenue) of about $51.2 million dollars may be estimated
for lands irrigated by the LYP*." This estimate is factored to account for about 15% of market value of
2 agricultural products sold in the three county area. MSGA supports the assessment that "*value of the
LYP to the agricultural industry of the counties, and of the region, is substantial*." It is vitally important
in this decision making process to account for the economic impacts the selected alternative will have on
the affected area.

ESA Consultation and Cooperating Agencies

In reviewing the Draft EIS, it is apparent there has been a long history of Bureau of Reclamation and the U.S. Army Corps of Engineers working with other agency partners in looking at ways to improve the

irrigation structure and address concerns over the pallid sturgeon. Through this coordination, this Draft
EIS has addressed many of the concerns indicated in the 2015 Biological Assessment, such as the need
for an alternate passage route during the 2-3 years of construction and the potential future
entrainment/impingement of free embryos and larvae at the headworks screens. In addition, since 2010,
cooperating agencies have had an integral part in developing the most sophisticated scientific
approaches to resolving the sturgeon concerns. Each one of the of those agencies: Montana Fish,
3 Wildlife and Parks, Montana Department of Natural Resources and Conservation, Lower Yellowstone
Project Board of Control, U.S. Fish and Wildlife Service and the Western Area Power Administration,
has a unique expertise and have provided valuable information through the years. This collaboration has
resulted in more thorough analysis and development of alternatives for the Draft EIS. In our view, this
input from these agencies has resulted in the Bypass Channel alternative that meets the needs of the
community and a successful fish passage.

<u>Operating Costs</u>

In addition to the Bypass Channel alternative being one of the best conservation options, it is also one of
the most cost effective. In reviewing Table ES-1 Annualized Costs, the Bypass Channel is equivalent to
the Modified Side Channel alternative, but significantly lower than the others in terms of Average
Annual Cost. This alternative also is shown to have the lowest annual O&M and annual O&M per acre
costs, reflected in table 4-37. Just as important as the construction and O&M costs, are the change in
4 farm income statistics reflected in Table 4-58. Once again the Bypass Channel shows the lowest
reduction in Annual Change in Net Farm Income and % Change in Net Farm Income in the alternatives.
These tables are significant indicators that the preferred Bypass Channel is the most efficient means to
meet the purpose to construct a project to improve passage of pallid sturgeon and other native fish at the
Lower Yellowstone Project Intake Diversion Dam while continuing a viable and effective operation of
the Project.

On behalf of MSGA, we would like to thank the BOR and Corps for taking time to review our comments. Agriculture continues to be the number one industry in Montana and is also one of leading industries in this affected region. MSGA believes the Bypass Channel alternative will allow your agencies to adequately address the fish migration concerns, while protecting our important agricultural industry.

Sincerely,

Jay Bodner
Natural Resource Director
Montana Stockgrowers Association

From:	Jay Bodner
To:	CENWO-Planning
Subject:	[EXTERNAL] Intake Diversion Dam Comments
Date:	Wednesday, July 27, 2016 5:24:34 PM
Attachments:	2016 Lower Yellowstone Bypass Comments.pdf

U.S. Army Corps of Engineers Officials,

On behalf of the Montana Stockgrowers Association, I am submitting comments regarding the Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana Draft environmental Impact Statement.

Thank you for reviewing our comments, if there are any questions regarding these, please contact me.

Jay Bodner

Natural Resource Director

Montana Stockgrowers Association

Office: (406) 442-3420

AMERICAN FISHERIES SOCIETY
MONTANA CHAPTER

July 25 2016

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM_AA
1616 Capitol Avenue
Omaha, NE 68102

RE: Draft Lower Yellowstone Intake Diversion Dam Fish Passage Project

To whom it may concern,

Thanks very much for the opportunity to comment on the DRAFT Intake Dam EIS. The Montana Chapter of the American Fisheries Society is an organization/collection of fisheries biologists. The scientific method is fundamental to biologists training and decision making processes. As biologists, decisions on management of fisheries resources should focus only on biological principles, sound research, and valid statistical analysis of said research.

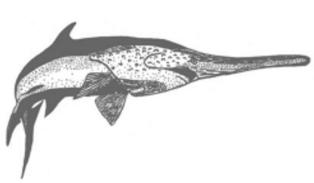
The current EIS uses a “Connectivity Index Analysis” to base recommendations of passage of
Pallid Sturgeon. It is clear this index is weakly connected to conditions at the Intake site.
Moreover, no firm biological criteria were used develop bypass channel dimensions, velocities,
depths, etc. Any index by which decisions are made on passage of Pallid Sturgeon cannot be
1 validly based on data from other rivers and species of fish. As biologists we know that site
specific variables as well as temporal and spatial uncertainty must be addressed to increase
confidence of predictions in any predictive model. Given the large number of assumptions used
to develop the “Connectivity Index Analysis” we have very little confidence that predictions on
bypass use by Pallid Sturgeon or other species are scientifically valid.

Larval drift post spawning has been identified as an important factor in survival of Pallid
2 Sturgeon. In the event Pallid Sturgeon use the engineered bypass, construction of a dam
across the entire Yellowstone River will necessarily negatively impact this important life stage.

Given the vast number of unknowns related to potential use by fish of the bypass, a contingency
and monitoring plan must be very specific as to who will do the work and where funding will be
obtained for the work. Should objectives of the bypass channel not be met - what solutions are
3 proposed? We strongly suggest that contingency plans be highly detailed with alternatives for
remedy spelled out with costs and responsible parties. Essentially, the lack of biological criteria
and unknowns on which the preferred alternative was based makes it absolutely necessary that
contingencies, should passage goals not be met, are highly detailed with funding guaranteed.

Sincerely,

David Moser
President, Montana Chapter of the American Fisheries Society



From:	moser.wct@gmail.com
To:	CENWO-Planning
Subject:	[EXTERNAL] Intake EIS
Date:	Wednesday, July 27, 2016 10:32:07 PM
Attachments:	MTAFS_Intake_DRAFT.docx

Please accept these comments from the Montana Chapter of the American Fisheries Society. Dave

--
Sent from myMail app for Android

From: Scott Bosse
To: CENWO-Planning
Subject: [EXTERNAL] American Rivers comments on Intake Diversion Dam DEIS
Date: Wednesday, July 27, 2016 12:53:38 PM
Attachments: American Rivers comments on Intake Diversion Dam DEIS.pdf

---

Dear Army Corps of Engineers:

Please find attached American Rivers' comments on the Intake Diversion Dam DEIS. I would appreciate an email confirming that you have received our comments and were able to open the file.

Thanks so much,

Scott

Scott Bosse
Northern Rockies Director
American Rivers
321 E. Main St., Suite 408
Bozeman, MT 59715
Cell Ph: (406) 570-0455

Rivers connect us. Show your support for clean water and healthy rivers at Blockedwww.AmericanRivers.org/Donate

American Rivers
Rivers Connect Us

July 27, 2016

Scott Bosse
Northern Rockies Director
American Rivers
321 East Main, Suite 408
Bozeman, MT 59715
Email: sbosse@americanrivers.org

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Ave.
Omaha, NE 68102
Email: cenwo-planning@usace.army.mil

RE: Lower Yellowstone River Intake Diversion Dam Fish Passage Project DEIS

Dear Ms. Vanosdall:

On behalf of American Rivers, thank you for providing us with the opportunity to comment on the U.S. Army Corps of Engineers' (Corps) and U.S. Bureau of Reclamation's (BOR) Draft Environmental Impact Statement (DEIS) on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River. American Rivers represents 200,000+ members and supporters from all 50 states, many of whom live along, make their living from, and/or recreate on the Yellowstone River. We have a longstanding interest in protecting and restoring the Yellowstone River due to the fact that it flows through one of our priority geographies and it is considered the longest free-flowing river in the lower 48 states.

After carefully reading the DEIS and reviewing the comments provided to us by David Marcus
(see Appendix A), whose analysis was partially funded by American Rivers, we strongly urge
the Corps and BOR to abandon the preferred alternative in the DEIS (Bypass Channel) and
instead select a variation of the Multiple Pumps Alternative in the Final EIS and Record of
1 Decision (ROD). We support a variation of the Multiple Pumps Alternative because we believe it
is the only alternative that offers federally endangered pallid sturgeon a reasonable chance of
recovering to self-sustaining levels, and it can reasonably be implemented in a way that meets
the needs of farmers in the Lower Yellowstone Project. No other alternative in the DEIS has a
high probability of achieving these two goals in a cost-effective manner.

American Rivers opposes the agencies' preferred alternative (Bypass Channel) for the following
2 reasons, which we will elaborate on later in these comments: (1) the purpose and need in the
DEIS are insufficient to meet the requirements of the Endangered Species Act; (2) the scientific
assumptions supporting the Bypass Channel are fatally flawed; (3) the Bypass Channel alter-

native lacks a robust and sufficiently funded adaptive management plan in the event that it fails;
2 and (4) the cost of the Bypass Channel is significantly understated and the cost of the Multiple
cont'd Pumps Alternative is significantly overstated.

1. The Purpose and Need of Project are Legally Insufficient

The DEIS states that the purpose and need of this project is to "(1) improve fish passage for
pallid sturgeon and other native fish at the Intake Diversion Dam; (2) continue the viable and
effective operation of the Lower Yellowstone Project; and (3) contribute to ecosystem restoration
3 (DEIS Executive Summary, p. xxvi)." While we agree that all three of these components are
valid from a conceptual standpoint, the first component is insufficient to meet the basic legal
requirements of the federal Endangered Species Act, which is the primary driver in this NEPA
process.

Instead of striving merely to "improve fish passage...," the DEIS should have identified a range
of alternatives that have a high probability of recovering pallid sturgeon to the point that they
meet recovery goals and ultimately can be removed from the endangered species list. The final
EIS should clearly define what the recovery goal is for pallid sturgeon in numeric terms
4 (According to the USFWS's 2014 Recovery Plan, the goal is a self-sustaining population of
5,000 adult fish in the upper Missouri River basin); discuss in detail the probability that each
alternative will achieve that recovery goal based on hard evidence (as opposed to subjective
conjecture); and discuss how improving fish passage at Intake Diversion Dam can achieve
recovery goals for pallid sturgeon without also addressing dam operations at Fort Peck Dam. The
DEIS makes no mention of the fact that the Corps is willing to fund a project at Intake Diversion
Dam only in return for abandoning future recovery efforts on the Missouri River below Fort
Peck Dam. Nor does it explain how recovery goals can be met when only roughly one-quarter of
5 the wild adult pallid sturgeon in the upper Missouri River system, or 32 fish, migrate up the
Yellowstone River to Intake Dam to spawn each year. Finally, recent federal court rulings have
made it clear that improving passage for endangered fish species alone does not meet the
requirements of the Endangered Species Act. The way the DEIS is currently written, if the
number of pallid sturgeon making it past Intake Diversion Dam were to increase from one fish to
two fish, that would be deemed a success based on a positive trend toward recovery.

2. The Scientific Assumptions in the DEIS are Fatally Flawed

The Corps and BOR justify their selection of the preferred alternative based on the assumption that is the most cost-effective alternative that can achieve the three goals identified in the Purpose and Need section. In the DEIS, cost effectiveness is determined by dividing the annualized cost of each alternative by the increase in habitat units (HUs) for that alternative. To calculate the increase in habitat units of each alternative, the DEIS relies on a Fish Passage Connectivity Index, or FPCI (DEIS, Appendix D). The FPCI for each alternative is the number of acres of new upstream habitat that would be made available to pallid sturgeon and 13 other native fish species multiplied by the probability that these fish will make it upstream past Intake Diversion Dam. For each alternative, the number of upstream habitat units that would be made available is the same – 12,637 acres. Only the probability of fish making it past Intake Diversion Dam varies with each alternative.

Under the Multiple Pumps Alternative, in which the existing diversion dam would be removed
from the river, the probability of the 14 native fish species making it past Intake Diversion Dam
is 1.0, which translates to 100 percent probability. Under the preferred alternative (Bypass
Channel), the FPCI is estimated at .67, meaning there is only a 67 percent chance that the 14
selected fish species will make it past Intake Diversion Dam. Not only is this number arbitrary
and subjective due to the fact that there has never been an artificial bypass channel or fishway
constructed that has been documented to have successfully passed pallid sturgeon or shovelnose
sturgeon (DEIS, p. 2-105), but it is also based on a more favorable model input than was used in
the 2015 Environmental Assessment (EA). That model input, F1, represents the probability of
6 fish finding the entrance to the proposed bypass channel. It varies on a scale of 1-5, with 1 being
the lowest probability and 5 being the highest probability. In the DEIS, the agencies used an F1
of 4, whereas in the 2015 EA, the agencies used an F1 of 3. There is no acknowledgement or
explanation in the DEIS as to why the F1 was upgraded from a 3 to a 4. This is concerning
because the upgrade resulted in a dramatically improved FPCI for the Bypass Channel
alternative. In the 2015 EA, the FPCI for pallid sturgeon was .5, meaning there was only a 50
percent chance that pallid sturgeon would make their way upstream past Intake Diversion Dam.
In the DEIS, the FPCI for pallid sturgeon is .6. Yet even when this number is used, it still fails to
meet the FPCI target of .85 that was set by the Biological Recovery Team (BRT). Had the
agencies used an F1 value of 3 in the DEIS as they did in the 2015 EA, the Multiple Pumps
Alternative would be the most cost effective alternative per habitat unit gained, according to the
agencies' own methodologies.

Finally and importantly, in calculating the cost effectiveness of each alternative, the DEIS used
an FPCI of .67 for the preferred alternative (DEIS Appendix D, Table 1-11, p. 16), when it
would have been more appropriate to use an FPCI of .60. The former represents the probability
that all 14 selected native fish species make it upstream past Intake Diversion Dam, while the
7 latter represents the probability of pallid sturgeon making it past the dam. Using this same flawed
methodology, an alternative could pass 13 of the selected native fish species but not pass a single
pallid sturgeon, and the number of habitat units that would be made available would be reduced
by only 1/14, or 7 percent, thus barely affecting the cost effectiveness of such an alternative. The
bottom line should be that if an alternative does not have at least an 85 percent likelihood of
providing upstream fish passage for pallid sturgeon (the standard set by the BRT), it should be
disqualified from further consideration because it does not meet that statutory requirements of
the Endangered Species Act, which is the primary driver of this NEPA process.

3. The Preferred Alternative Lacks a Robust and Sufficiently Funded Adaptive Management Plan

Given that there is a high degree of scientific uncertainty as to whether the Bypass Channel
alternative will provide upstream passage to at least 85 percent of the pallid sturgeon that arrive
at its base (the biological standard set by the BRT), combined with the fact that climate change
and more frequent and severe flood and drought events could profoundly alter the flow and
8 morphology of the lower Yellowstone River in the immediate vicinity of Intake Diversion Dam,
it is imperative that a robust and well-funded adaptive management plan be in place prior to the
signing of a Record of Decision. Yet the adaptive management plan in the DEIS only considers
tweaks to the proposed dam and bypass channel, including making modifications to the bypass
channel, removing fill from the existing natural channel, removing the existing boulder field

8 cont'd immediately downstream from the diversion dam, modifying the notch in the new dam, and modifying the headworks. The DEIS fails to discuss more drastic and expensive actions that may need to be taken should the bypass channel fail to perform as hoped, including removing the new dam and replacing its function with an irrigation pump system (such as the one contemplated in the Multiple Pumps alternative) and modifying the operation of Fort Peck Dam in an effort to restore pallid sturgeon in the Missouri River below the dam. Not only does the DEIS fail to discuss these realistic adaptive management actions, but it also makes clear that after its one-year warranty period is over, the Corps will not provide any additional funding to remedy the situation. This is unacceptable and very likely a violation of the Endangered Species Act.

4. The Costs of the Bypass Channel are Understated and the Costs of the Multiple Pumps Alternative are Overstated

9 Based on our read of the DEIS and the information contained in David Marcus' analysis, we believe the Corps and BOR significantly understated the costs of the preferred alternative (Bypass Channel), significantly overstated the costs of the Multiple Pumps Alternative, and failed altogether to consider less expensive variations of the Multiple Pumps Alternative that could satisfy the biological needs of pallid sturgeon and other native fish while also meeting the needs of farmers in the Lower Yellowstone Project virtually 100 percent of the time.

10 The DEIS understates the costs associated with the preferred alternative (Bypass Channel) in the following ways. First, by using an FPCI of .67 for all 14 selected native fish species instead of an FPCI of .60 for pallid sturgeon alone, or, more appropriately, an FPCI of .50 (for pallid sturgeon alone using the F1 value of 3 in the 2015 EA), the DEIS overstates the pallid sturgeon-specific HUs for the preferred alternative by 20 percent. Were the agencies to use an FPCI of .5 instead of .67, the cost per habitat unit would increase from $727 to $876, making the preferred alternative less cost-effective than the Multiple Pumps Alternative (using three or five pump sites). Considering that there has never been a bypass channel or fishway constructed that has been documented to have passed pallid sturgeon or shovelnose sturgeon, it would be entirely reasonable for the agencies to use an FPCI of less than .5. If one were to use an FPCI of .4, for example, the cost per habitat unit for the preferred alternative would jump to $1,110.

11 The second way the DEIS understates the cost of the preferred alternative is by excluding any costs that would be incurred to implement adaptive management actions should the preferred alternative fail to accomplish its goal of passing pallid sturgeon following the expiration of the Corps' one-year warranty. These costs could be relatively modest if the actions taken are limited in scope (e.g., modifying the bypass channel, removing fill from the existing natural channel, removing the existing boulder field downstream from the diversion dam, modifying the notch in the new dam, or modifying the headworks); or they could far exceed the total cost of the preferred alternative if they include removing the new dam, installing an irrigation pump system to replace its function, or modifying operations at Fork Peck Dam in an effort to restore pallid sturgeon to the Missouri River downstream of the dam.

12 Conversely, the DEIS overstates the cost of the Multiple Pumps Alternative by making several false assumptions and miscalculations (see Appendix A, pp. 15-23). Among these, it overstates pumping loads by more than 28 percent; overstates capital costs such as the length of pipe needed, the cost of unnecessary backup equipment, and the costs of planning engineering, design

12 cont'd

and construction management; overstates the interest charges that would be incurred during construction; and overstates the price of energy to run the pumps. Together, these overstated costs add up to \$8.97 million, or 6.476 percent of the total cost of this alternative (see Appendix A, p. 22). Furthermore, the DEIS fails to consider a variation of the Multiple Pumps Alternative that would include only three pump sites instead of five (see Appendix A, pp. 25-37). Such an alternative would deliver at least 1,100 cfs of water to the Lower Yellowstone Project 97 percent of the time. To put that in perspective, that's more than the historical average monthly and annual diversions that have actually occurred at Intake. The total cost savings of building three pump sites instead of five is estimated at \$42.76 million, which is 30.85 percent of the total estimated cost of the Multiple Pumps Alternative in the DEIS (see Appendix A, p. 34). We strongly encourage the Corps and BOR to explore this alternative in greater detail in the FEIS in order to fully assess how and to what extent it might affect farmers in the Lower Yellowstone Project.

5. Conclusion

American Rivers commends the Corps and the BOR for taking a harder look at the alternatives for improving fish passage at Intake Diversion Dam by producing a draft environmental impact statement (DEIS), and particularly for evaluating two "open river" alternatives (Multiple Pumps and Multiple Pumps w/Conservation Measures) that would remove the existing diversion dam from the river to provide unimpeded passage for pallid sturgeon and 13 other native fish species. That being said, after scrutinizing the scientific underpinnings of the DEIS and discovering that the biological benefits of the preferred alternative were almost certainly overstated and its costs were understated, we are more convinced than ever that a variation of the Multiple Pumps Alternative is the *only* alternative that can satisfy the purpose and need of the project and meet the legal requirements of the Endangered Species Act in a cost effective manner. Therefore, we encourage the Corps and BOR to abandon their preferred alternative in the Final EIS and Record of Decision and instead select a more cost-effective variation of the Multiple Pumps Alternative that includes fewer pump sites.

Thank you for considering our comments.

Sincerely,

Scott Bosse
Northern Rockies Director

Appendix A

13 Comments on the Intake Dam DEIS
David Marcus
7/21/16

I. Introduction

The Draft Environmental Impact Statement (DEIS) examines six alternatives: 1) No Action, 2) Rock Ramp, 3) Bypass Channel, 4) Modified Side Channel, 5) Multiple Pumps, and 6) Multiple Pumps with Conservation Measures. Of those, the No Action Alternative does nothing to improve fish passage. According to the DEIS, the Rock Ramp Alternative and Modified Side Channel Alternative are each either more expensive than or environmentally inferior to the Bypass Channel Alternative, and the Conservation Measures Alternative produces the same level of fish passage benefits as the Multiple Pumps alternative but at more than twice the cost.[1] Thus, the DEIS rejects each of those four alternatives as inferior to at least one of the other alternatives.

The remaining two alternatives, the Bypass Channel Alternative and the Multiple Pumps Alternative, involve tradeoffs. According to the DEIS, the Multiple Pumps Alternative produces 55% more fish passage benefits than the Bypass Channel Alternative,[2] but costs 105 percent more.[3] The rest of this analysis will focus on those two Alternatives, identify adjustments that should be made to the DEIS cost numbers that should change these conclusions, and highlight other potential ways of reducing the costs of the Multiple Pumps Alternative. This analysis does not address the wisdom or the legal implications of choosing an alternative based on the chosen cost/benefit analysis. Rather, this analysis only addresses the validity of the inputs used and the DEIS's conclusions regarding the relative costs of these two alternatives.

II. Summary of conclusions

The DEIS identifies the Bypass Channel Alternative as the preferred alternative primarily based on the conclusion that it is the most cost-effective alternative. However, the DEIS's cost/benefit analysis relies on unsubstantiated assumptions that undermine its conclusions. Once

[1] Appendix D, p. 20, Table 2-3.
[2] Ibid. 11,011/7,116 = 1.547, or a 54.7% difference.
[3] Ibid. $10,594/$5,170 = 2.047, or a 104.7% difference.

the costs for the Bypass Channel Alternative and Multiple Pumps Alternative are adjusted to reflect these erroneous assumptions, the cost per habitat unit – the DEIS's measurement of benefits to pallid sturgeon – is **lower** for the Multiple Pump Alternative than the Bypass Channel Alternative. Thus, the agencies' basis for choosing the Bypass Channel Alternative is not supported by the information provided in the DEIS.

As described in more detail below and in the accompanying spreadsheet, the DEIS's economic conclusions are undermined in the following ways:

(1) The DEIS's conclusion overstates the economic benefits of the Bypass Channel Alternative (section III) in several significant ways, including:

- The DEIS lumps the benefits of the Bypass Channel Alternative for pallid sturgeon with 13 other species of fish to obtain a Fish Passage Conductivity Index (FPCI, the key measure in the DEIS for benefits to fish) average value (0.67) that is higher than the FPCI for pallid sturgeon alone (0.6) (sections III.B and C);
- There is a crucial inconsistency between the April 2015 Final Supplement to the 2010 Final Environmental Assessment ("Supplemental EA") and the DEIS, the former of which gave the Bypass Channel Alternative an FPCI value of only 0.5 (section III.D.1). The increase in the FPCI for sturgeon between the 2015 EA and the DEIS results from manipulation of the Fl variable, which was changed between the documents from a "3" to "4" value, with no acknowledgement or justification for the change (section III.D.1);
- This in turn affects the value/increased habitat unit profoundly. Using the F1 variable from the Supplemental EA renders the Bypass Channel Alternative more expensive on a cost/habitat unit basis (a key cost criterion in the Draft EIS) than the Multiple Pumps Alternative (section III.D.1).

(2) The DEIS understates the capital and operating and maintenance (O&M) costs of the Bypass Channel Alternative (section IV.A).

(3) The DEIS overstates the capital and O&M costs of the Multiple Pumps Alternative (section IV.B).

(4) Quantifying most of the overstated cost of the Multiple Pumps Alternative (and some of the understatement of the cost of the Bypass Channel Alternative), the incremental cost of the fish passage benefits from going from No Action to the Bypass Channel Alternative is

still less than the incremental cost of the benefits gained by going from the No Action Alternative to the Multiple Pump Alternative (section V.B). However, the DEIS fails to note that the sensitivity results of its model are based entirely on the assignment of an upwardly-revised numeric value to fish attractiveness for the Bypass Channel Alternative, and that using that most optimistic assignment of attractiveness in turn results in a lower cost/habitat unit improvement than the Multiple Pumps Alternatives. Using the 2015 EA assignment value for F1, and more accurate adjustments for cost, results in the conclusion that the Multiple Pumps alternative is superior on a cost/habitat unit basis.

(5) The DEIS further overstates costs of the Multiple Pumps Alternative by failing to analyze ways that using fewer pump sites might reduce the cost substantially (sections VI and VII).

(6) The DEIS contains a number of other analytical errors that ignore costs associated with the Bypass Channel Alternative, including rock removal, and tend to inflate the cost of the Multiple Pumps Alternative (sections IV.A.1., VIII.C-D).

III. DEIS benefit/cost methodology

A. Compares levelized cost to increase in annual average habitat units (AAHUs)

The DEIS measures the benefits to fish of improved passage at Intake in "habitat units" or "HUs," which are also referred to as "annual average habitat units" or "AAHUs." A habitat unit is simply the number of acres of habitat upstream of Intake times the likelihood that the alternative in question will provide access to them. For every alternative, the number of acres of upstream sturgeon habitat is the same, 12,637 acres,[4] and thus the maximum possible number of sturgeon HUs for any alternative is 12,637. The probability that an alternative will allow fish to pass upstream of Intake is measured by what the DEIS calls the "Fish Passage Connectivity Index," or FPCI. The FPCI varies by alternative, from 1.0 (100%) for the no-weir alternatives[5] to

[4] Appendix D, p. 4, Table 1-1.
[5] DEIS, p. 2-99, Table 2-27.

a minimal 0.0252 for the No Action Alternative.[6] Thus the number of sturgeon HUs varies from a low of 318 for the No Action Alternative to a high of 12,637 for the no-weir alternatives. Variations in HU between alternatives are driven entirely by the variation between alternatives of the FPCI component of the HU calculation.

The DEIS then calculates how much each alternative will increase the number of HUs as compared to the No Action Alternative. Thus, the no-weir alternatives would increase the number of pallid-sturgeon specific HUs by 12,319.[7]

The DEIS then divides the annualized cost of each alternative by the increase in HUs for that alternative to produce a cost per AAHU for each alternative. Thus, the Multiple Pump Alternative, using DEIS numbers, would have a cost for improved sturgeon habitat of $10.595 million for an HU increase of 12,319, or a cost per AAHU of $860.

B. The HU numbers reported in the DEIS inappropriately all but ignore pallid sturgeon

The DEIS methodology as described above used examples based on the DEIS data for sturgeon. But the DEIS itself inappropriately measures HUs and cost per AAHU differently. Even though the reason for the proposed action is to "improve pallid sturgeon fish passage,"[8] the DEIS lumps sturgeon in with 13 other species in calculating HUs and cost per AAHU.[9] Sturgeon benefits thus get a weight of only 1/14 in calculating HU benefits.[10]

The fallacy of the DEIS approach, as a statistical matter, can be seen by imagining what would happen if the proposed action, the Bypass Channel Alternative,[11] would not allow any pallid sturgeon passage whatsoever, but passage for other species was unaffected. In that case, the HUs for the Bypass Channel Alternative would be reduced by about 1/14, since the sturgeon-specific HU would drop to zero but the HUs for the other 13 species would stay the same. That would increase the cost per AAHU for the Bypass Channel Alternative by about 1/14, or about 7

[6] Calculated from parameters for sturgeon in Appendix D, pp. 11-12 and 14-15. [(2+5)/2]*1*0.18/25 = .0252. See the attached spreadsheet, "Cost per AAHU" tab.
[7] 12,637 (sturgeon HUs for the no-weir alternatives) minus 318 (sturgeon HUs for the No Action Alternative) equals 12,319.
[8] DEIS, p. 1-1.
[9] Appendix D, p. 4, Table 1-1.
[10] Appendix D, p. 2, formula showing that the HUs for each species are weighted equally.
[11] DEIS, p. 2-105.

percent. The DEIS methodology would still conclude that the Bypass Channel Alternative is the most cost-effective![12]

A methodology in which an Alternative that provided no sturgeon passage could be rated the most cost-effective is an absurd methodology. The DEIS should have used sturgeon-specific data to calculate HUs and costs per AAHU, with any impacts on other species identified as required by NEPA, but not used to drive the policy choice. The analysis below uses sturgeon-specific data whenever it calculates HUs or costs per AAHU.

C. Focusing HU measurement on sturgeon reduces the HU benefit of the Bypass Channel Alternative relative to the Multiple Pumps Alternative

As described above (section IV.A), variations in HU between alternatives are driven entirely by variations in the FPCI between alternatives. For the Multiple Pump Alternative, the FPCI is 1 for all fourteen species, and thus the sturgeon FPCI of 1 is the same as the composite FPCI reported in the DEIS. For the Bypass Channel alternative, however, the sturgeon FPCI is lower than the all-species FPCI. The DEIS calculates an FPCI for all fourteen species together of 0.674.[13] But the sturgeon-specific FPCI for the Bypass Channel Alternative, using the data in the DEIS, is 0.600.[14] Thus, using a sturgeon-specific FPCI reduces the HU for the Bypass Channel Alternative by some 11 percent.[15]

With an FPCI of 0.6, the Bypass Channel Alternative produces only 60 percent as many HUs as the no-weir alternatives with their FPCI of 1.0. The net improvement in fish passage is even less than that, because (according to the DEIS), there is already some fish passage occurring under the No Action Alternative. When the small sturgeon passage the DEIS attributes to the No Action Alternative is considered, the net benefits of the Bypass Channel Alternative

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[12] DEIS, p. 2-100, showing a Bypass Channel cost per AAHU of $727. Increasing that number by 7 percent would increase it to $778/AAHU, which would still be less than the cost of the next cheapest alternative. Thus the Bypass Channel Alternative would remain the most cost-effective, according to the DEIS's flawed methodology.
[13] DEIS, p. 2-99, Table 2-27, showing average HUs of 8,054 for the Bypass Channel Alternative and 11,949 for the two no-weir alternatives. 8,054/11,949 = .6740, which the DEIS rounds off to .67 for display purposes (while using the .674 figure for calculation purposes).
[14] Appendix D, pp. 2 and 10 (formulas for calculating FPCI), and pp. 11-12 and 13-14 (sturgeon-specific values for the inputs into the FPCI formula). The resultant sturgeon-specific FPCI is [(2+4)/2]*5*1/25 = .6.
[15] 0.600/0.674 = .890 = 89%, for a reduction of 11 percent.

are even smaller, only 59 percent of the net benefits of the Multiple Pump Alternative, using DEIS data.[16]

D. The DEIS may be overstating the benefits to sturgeon of the Bypass Channel Alternative when it says they will have a FPCI of 0.600

1. DEIS vs. Supplemental EA

Just last year, the 2015 Supplemental EA said the FPCI for pallid sturgeon of the Bypass Channel alternative was only 0.5,[17] or only half of the FPCI in the DEIS for Multiple Pumps.[18] The DEIS neither acknowledges nor explains why it now shows an FPCI for sturgeon 20% larger than the Supplemental EA of 2015. Comparing the two documents, the basis for the higher FPCI in the DEIS is an increase in the forecast value for Fl. Fl is a variable which represents the probability of sturgeon finding the proposed bypass, with 1 lowest, 5 highest, and 3 corresponding to a 50 percent probability.[19] Fl was 3 (out of a maximum of 5) in the Supplemental EA,[20] but has been increased by 33 percent, to 4, in the DEIS.[21] That single change raises the overall FPCI for sturgeon from 0.5 in the Supplemental EA to 0.6 in the DEIS. The DEIS neither acknowledges nor explains why it now shows an Fl value for sturgeon that is 33% larger than the value in the Supplemental EA of 2015. Instead, the DEIS claims that it is using a value from "Corps (2014),"[22] a date earlier than the Supplemental EA, which used a value of 3. If the FPCI for the Bypass Channel Alternative should have remained at 0.5, then the DEIS has overstated the sturgeon-specific HUs for the Bypass Channel Alternative by 20 percent.[23]

The impact of this arbitrary conversion is profound in terms of the results of the analysis. If the FPCI resulting from the choice of F1 of 3 instead of 4 is 0.5, as was used in the 2015 EA,

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[16] See the attached spreadsheet, "Cost per AAHU" tab, calculating sturgeon-specific HUs and the increase in HUs (compared to the No Action Alternative). The Bypass Channel Alternative produces 7,264 sturgeon HUs more than the No Action Case, while the no-weir alternatives produce 12,319 more HUs than the No Action Alternative. 7,264/12,319 = .5897 = 58.97 percent.

[17] Supplemental EA, Appendix E, Attachment 1, "Fish Passage Benefits Analysis," p. 23, Table 10.

[18] See the attached spreadsheet, "Cost per AAHU" tab, line 3, for the FPCI for the Multiple Pump Alternative as calculated using DEIS data and DEIS methodology.

[19] Appendix D, p. 10.

[20] Supplemental EA, Appendix E, Attachment 1, "Fish Passage benefits Analysis," p. 16, Table 6.

[21] Appendix D, p. 11, Table 1-7.

[22] Appendix D, p. 10.

[23] 0.6 / 0.5 = 1.20, or an increase of 20 percent.

then the cost per AAHU jumps to $876, less cost effective than the Multiple Pumps Alternative using either three or five pumps.[24] If, in fact, the F1 value is actually 2 instead of 3, the FPCI becomes 0.4 and the cost per AAHU jumps to $1,110.[25] That the choice of F1 is highly subjective and that the uncertainty is not explicitly identified in assigning this value has been criticized in previous peer reviews of this methodology.[26] At the very least, the range of uncertainty suggests that from a cost effectiveness perspective, a higher cost per AAHU for the Bypass Channel over any combination of Multiple Pumps would invariably result if this were modeled statistically.

2. The actual FPCI may be lower than either 0.6 **or** 0.5

Whether the DEIS methodology should produce an FPCI of 0.5 or 0.6 for sturgeon may, however, be a moot question. The DEIS contains minimal evidence of the ability/willingness of sturgeon to use natural bypass channels, and the ability/willingness of sturgeon to use artificial bypass channels.[27] To the extent that sturgeon will be more than twice as likely to use a weir-free river as to use an artificial side channel with flows 80+ percent smaller than main river flows, then the real FPCI will be below 0.5.[28] A 2013 analysis suggested that a bypass channel originating near the toe of the dam, as proposed in the DEIS, "appears to have a limited probability of success….The probability that the preferred alternative will perform as proposed is very low based on the scientific information presented, the number of project uncertainties and risks, and concerns regarding the sustainability of the bypass channel."[29] The DEIS does not

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[24] See the attached spreadsheet, "Cost per AAHU" tab, lines 2a-4, which calculates sturgeon-specific FPCI and HU values for the Multiple Pump and Bypass Channel Alternatives, using the formulae in Appendix D, pp. 2 and 10, and the sturgeon-specific data in Appendix D, pp. 11-12 and 14-15.

[25] Id, line 2b.

[26] See, 2013 Battelle Peer Review, Final Independent External Peer Review Report for the Intake Diversion Dam Modification Lower Yellowstone Project, Montana Draft Supplement to the 26 April 2010 Environmental Assessment and Appendices by Battelle, 505 King Avenue, Columbus, OH 43201 for Department of the Army, U.S. Army Corps of Engineers, Ecosystem Restoration Planning Center of Expertise for the St. Paul District, February 8, 2013 (cited below as "Battelle").

[27] DEIS, pp. 2-105 to 2-108.

[28] The DEIS shows the FPCI for a weir-free river as 1.0. Thus the sturgeon FPCI for the Bypass Channel Alternative is simply the ratio of the number of sturgeon that would use the proposed bypass channel compared to the number of sturgeon that would use a weir-free main river. If more than twice as many sturgeon would choose a weir-free river over an artificial bypass channel, then that ratio is less than one out of two, and the Bypass Channel Alternative FPCI is less than 0.5.

[29] Battelle p. A-6.

consider the possibility that the FPCI for the Bypass Channel Alternative will be less than 0.5, which undermines the validity of its cost calculations.

IV. DEIS benefit/cost results

A. Bypass Channel Alternative

1. Cost

The DEIS estimates the annualized cost of the Bypass Channel Alternative will be $5.171 million per year.[30] That cost includes post-construction monitoring for 8 years,[31] but no costs for post-construction modifications based on the results of monitoring. The DEIS acknowledges that in the Bypass Channel alternative (unlike the no-weir alternatives), there is a "moderate" likelihood that adaptive management will be required once actual post-construction operations have been observed.[32] The Supplemental EA published last year also suggested that adaptive management could require a variety of changes to the Bypass Channel once it was operational as more was learned about actual use (or non-use) of the newly constructed channel by pallid sturgeon.[33] The EA priced four such adaptive management measures that could be required for the Bypass Channel Alternative as a result of monitoring, and quantified their costs at an annualized $170,000 per year.[34] A review of an earlier version of the EA suggested that the proposed bypass channel originating from the base of the dam was at risk of being "inundated" and suffering "scour damage and potential sediment deposition" during an overbank flood event, calling into question its "sustainability."[35] It concluded that for the "proposed bypass channel … some form of encouragement or form of guidance may be necessary to have the migrating pallid sturgeon find and enter [the bypass] channel."[36] Both of these problems (damage to the bypass channel during floods, and failure of pallid sturgeon to find or use the inlet to the bypass channel) are additional sources of future adaptive management costs.

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30 DEIS, pp. xxxii and 2-99.
31 Appendix B, pdf p. 167 of 173.
32 DEIS, p. 2-103.
33 Supplemental EA, Appendix E, pdf pp. 302-3 of 426.
34 Supplemental EA, Appendix E, pdf p. 303 of 426.
35 Battelle, p. A-3.
36 Ibid.

Failure to account for such post-construction adaptive management costs means the true costs of Bypass Channel Alternative are likely to be higher (possibly much higher) if the initial design fails to entice sturgeon to enter and pass through the newly-built bypass channel. Even if only half the adaptive management costs quantified in the Supplemental EA are added to the DEIS's forecast of the cost of the Bypass Channel Alternative, which would raise its annualized cost from $5.171 million per year[37] to $5.256 million per year.

2. Benefits for sturgeon

The sturgeon-specific increase in habitat units for the Bypass Channel Alternative, per the data in the DEIS, is 7264, based on a No Action HU of 318 and a Bypass Chanel Alternative HU of 7582.[38]

3. Cost per unit of HU increase

The cost per AAHU of the Bypass Channel Alternative would be $724, based on the increase in sturgeon-specific HUs from the No Action Alternative to the Bypass Channel Alternative, and the DEIS cost of the Bypass Channel Alternative plus half the Supplemental EA cost for specific adaptive management measures for the Bypass Channel Alternative.[39] However, as noted above, it would be $876 if the FPCI value from the 2015 EA were used,[40] and may be as high as $1,110 if uncertainty of the fish passage benefit is included in the calculation.[41]

B. Multiple Pumps alternative

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[37] DEIS, pp. xxxii and 2-99.
[38] See the attached spreadsheet which calculates sturgeon-specific FPCI and HU values for the No Action and Bypass Channel Alternatives, using the formulae in Appendix D, pp. 2 and 10, and the sturgeon-specific data in Appendix D, pp. 11-12 and 14-15.
[39] See the attached spreadsheet, "Cost per AAHU" tab, line 2, which calculates sturgeon-specific FPCI and HU values for the No Action and Bypass Channel Alternatives, the cost of the Bypass Channel Alternative including an adjustment for adaptive management, and the resultant cost per AAHU.
[40] Id., line 2a.
[41] Id., line 2b.

The DEIS projects an annualized cost for the Multiple Pumps Alternative of $10.595 million per year.[42] However, this cost projection needs to be adjusted for a variety of ways in which the DEIS has either overforecasted costs or included unnecessary equipment (and thus costs) in its description of the scope of the Multiple Pumps Alternative.

1. Operating cost is overstated due to errors in calculating pumping energy requirements, and hence pumping energy cost - $111,000 per year

a. The DEIS assumes too high of a water diversion requirement

The DEIS assumes that the average amount of water diverted will be 1100 cfs over the 5-month period from May-September[43] (April water use does not require pumping, but can rely on gravity diversions). The 1100 cfs figure is overstated because of rounding; the DEIS itself says the actual number is 1078 cfs.[44] But even the 1078 cfs figure is incorrect; the 42-year average is below 1000 cfs, and the average for the most recent 11 years of data is 1044 cfs.[45]

b. The DEIS assumes unnecessarily lumpy pumping increments

The DEIS assumes that as water diversions by gravity drop, the amount of water needed to be pumped will grow by 275 cfs increments, reflecting the pumping capacity at each site. But each site will have three separate pumps (actually four in the DEIS, but the fourth one is a spare). So even if pumps have to be used in an all-or-nothing mode (which may not be true), the amount of pumping is still controllable to 92 cfs steps, rather than 275 cfs steps. That reduces the amount of pumping required by a considerable amount.

c. The DEIS assumes pumps are operated in an inefficient manner

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[42] DEIS, p. xxxii, Table ES-1, and p. 2-99.
[43] Appendix A, pdf p. 204 of 527.
[44] Ibid.
[45] See the attached spreadsheet, “Historical diversions” tab.

The DEIS points out that when pumped water is being delivered to the main canal above the check structure called Burns Creek Overchute, tailwater effects will make it impossible to simultaneously divert water by gravity flow at Intake. But the converse is also true: when pumped water is being delivered below Burns Creek Overchute, it will be possible to simultaneously divert water at Intake.[46] Of the five proposed pump sites, two would deliver to the Main Canal above Burns Creek Overchute (although the site 2 delivery point is less than one mile above Burns Creek Overchute,[47] and thus could potentially be moved to solve this problem). The DEIS acknowledges that all three of the downstream pump sites could be operating at their full 825 cfs capacity without simultaneously impairing gravity diversions of up to 550 cfs at Intake. Thus it would certainly be possible to operate any one of the lower three sites without impairing gravity diversions at Intake. The DEIS incorrectly assumes that when only one pump site is being used, it would have to be the farthest downstream one. If Site 3 pumps were used before Site 4 or 5 pumps, pumping costs would be reduced because Site 3 requires less pumping energy per cfs pumped than sites 4 or 5.

d. The DEIS does not address monthly variations in both hydrology and irrigation requirements

The DEIS models the level of pumping energy based on average diversion requirements across the full 5-month season and gravity diversion capability across the full 5-month season. The DEIS presents, but does not use, data on monthly gravity diversion capability. The Federal agencies have also previously provided monthly diversion data for 28 historical years. Thus data exists to allow the pumping requirement calculations to be done on a month-by-month basis, which is more accurate.

e. Altogether, the DEIS overestimates pumping loads by more than 28 percent

[46] Appendix A, pdf p. 200 of 527.
[47] Ibid.

Correcting for the overstated average diversion requirements in the DEIS, the DEIS's failure to account for the presence of three pumps at each pumping site, and the DEIS's assumption that the most costly site will have to be used first (rather than third), and then modeling pumping requirements separately for each month, the overall average pumping requirement turns out to be 7.85 gwh per year, not the 10.1 gwh asserted in the DEIS.[48] The DEIS has overstated pumping energy requirements by at least 28 percent.[49] Based on the DEIS's forecasted cost of $500,000 per year for 10.1 gwh, the savings from the lower actual pumping requirements would be $0.111 million per year,[50] and pumping costs would be reduced to $389,000 per year.[51]

2. Capital cost is overstated due to piping length for pump site 3 - $0.568 million

The DEIS proposes a 5600 feet long pipe to deliver water from pump site 3 to the Main Canal, using a convoluted route.[52] Eliminating the long east-west section along County Route 103 would cut the pipe length by about 2600 feet,[53] or almost 50%, thereby reducing its cost by $429,000.[54] Because the Multiple Pump Scenario includes an additional 32.46% contingency for discharge pipeline costs,[55] the reduction in the total DEIS cost for reducing the Site 3 piping length would be $429,000 x 1.3246 = $568,000.[56] This is just the reduction in costs for the pipe itself, and does not include additional savings in installation costs, which were not quantifiable from the data in the DEIS.

3. Capital cost is overstated due to piping length for pump sites 4 and 5 - $0.437 million

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[48] See the attached spreadsheet, "Flows with no dam, 5 pump sites" tab, Excel cell BC40.
[49] 10.1/7.853 = 1.286, for an overstatement of 28.6 percent. The "at least" is because the calculations do not account for the possibility of running individual pumps at less than 100 percent of their capacity.
[50] $500,000 x (10,100 – 7853)/10,100. See the attached spreadsheet, "Multiple Pump costs" tab, line 9.
[51] $500,000 - $111,000 = $389,000.
[52] Appendix A, pdf p. 228 of 527.
[53] Ibid.
[54] $100 per linear foot, per document BOR-0005749/50. $100/linear foot is a 2013 estimate for 54" diameter pipe, per Attachment 1 to Agency data response of 12/22/15. Scaling up linearly for 84" pipe proposed at Site 3, plus 6% for 2013-2016 inflation, yields $165 per linear foot for 84-inch diameter pipe. 2600 feet x $165/foot = $429,000.
[55] Appendix B, pdf p. 84 of 173.
[56] See the attached spreadsheet, "Multiple Pump costs" tab, line 1.

The DEIS proposes to reduce the cost of pumping sites 4 and 5 by having a common outlet structure to deliver their water to the Main Canal,[57] which seems reasonable. However, the proposed location of the outlet structure requires about 1400 linear feet of parallel piping from where the two outlet pipes reach each other to where they would reach the outlet structure.[58] Locating the outlet structure directly inland of pump site 4 would shorten that parallel pipe distance to about 400 feet,[59] thus savings a total of 2000 feet of piping (1000 for each pump site). It would also save the cost of an inverted siphon on lateral HH where it would need to pass under the outlet pipes,[60] which have not been quantified here. The capital cost savings would be $330,000.[61] Because the Multiple Pump Scenario includes an additional 32.46% contingency for discharge pipeline costs,[62] the reduction in the total DEIS cost for reducing the Sites 4 and 5 piping length would be $330,000 x 1.3246 = $437,000.[63] This is just the reduction in costs for the pipe itself, and does not include additional savings in installation costs, which were not quantifiable from the data in the DEIS.

4. Capital and operating costs are overstated due to the inclusion of unnecessary backup equipment

a. Back-up pumps: $2.987 million of capital and $178,000 per year of OM&R costs

The DEIS includes capital costs for back-up pumps at all five sites, as protection against one of the three pumps at each site failing. However, if a pump fails at one site, backup pumping can be supplied from the other sites. Only if all five sites are already operating, and all three pumps at each site are already operating, would a pump failure be unreplaceable from

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[57] According to the map in Appendix A, pdf p. 230 of 527.
[58] Appendix A, pdf p. 230 of 527.
[59] Appendix A, pdf p. 229 of 527.
[60] Appendix A, pdf pp. 229 and 316-317 of 527.
[61] $100 per linear foot, per document BOR-0005749/50. $100/linear foot is a 2013 estimate for 54” diameter pipe, per Attachment 1 to Agency data response of 12/22/15. Scaling up linearly for 84” pipe proposed at Site 3, plus 6% for 2013-2016 inflation, yields $165 per linear foot for 84-inch diameter pipe. 2000 feet x $165/foot = $330,000.
[62] Appendix B, pdf p. 84 of 173.
[63] See the attached spreadsheet, “Multiple Pump costs” tab, line 2.

increased pumping at another site.[64] Even then, diversions of 1283 cfs would still be possible using the 14 remaining pumps.

The DEIS provides daily diversion levels for only two years, 2000 and 2012, which were years with average diversions about 5 percent above average.[65] During those two years, diversions exceed 1283 cfs only 17 days in 2000 and 23 days in 2012.[66] During the days when diversions exceeded 1283 cfs, they did so by an average of 32 cfs in 2000 and 56 cfs in 2012.[67] Thus, averaged across the entire irrigation season, the average diversion in excess of 1283 cfs was just 6 cfs.[68]

The average number of days when a pump outage would affect diversion capability with 2000 or 2012 diversion rates is 20 per year. The chance that there would be a pump out of service in all 20 such days is clearly much less than 100 percent. The consequences if there **were** a pump out of service on all 20 such days per year would be an average reduction in water deliveries of 6 cfs, or less than 0.6 percent of the annual average deliveries in 2000 and 2012 of about 1100 cfs.[69]

Spending millions of dollars to mitigate a small chance of a 0.6% impact is clearly not cost-effective. By not installing backup pumps at each site, but instead relying on the not-in-use pumps at other sites to provide backup, the capital cost of the Multiple Pump Scenario can be reduced by $2.163 million.[70] Because the Multiple Pump Scenario includes an additional 38.1% contingency for pump station costs,[71] the reduction in the total DEIS cost for pump stations will be $2.163 million x 138.1% = $2.987 million.[72] In addition, annual levelized operation, maintenance and replacement costs of $178,000 per year will be avoided.[73]

[64] This ignores the possibility of two different pumps failing at the same time, which is presumably very unlikely (since the DEIS did not propose having two backup pumps at each site).
[65] Diversions in those two years averaged 1094 cfs and 1097 cfs respectively. Appendix A, pdf p. 205 of 527. The average diversion for the most recent 11 years of available data was 1044 cfs (for the total 42 years of available data, the average diversion was 985 cfs). See the attached spreadsheet, "Historical diversions" tab, Excel cells F347 and F345. 1097 is 53 more than 1044, or 5%.
[66] Appendix A, pdf pp. 472-474 and 478-480 of 527.
[67] Ibid.
[68] (32*17 + 56*23)/(2*153) = 5.98.
[69] Appendix A, pdf p. 205 of 527.
[70] Appendix B, pdf p. 119 of 173. This is just the cost for the back-up pumps themselves, and does not include the cost savings for any reduction in building size and installation costs, which could be considerable.
[71] Appendix B, pdf p. 84 of 173.
[72] See the attached spreadsheet, "Multiple Pump costs" tab, line 3.
[73] Appendix B, pdf p. 171 of 173, 25% (one pump out of four proposed at each site) times OM&R categories 11-14 and 16 costs of $713,000 per year.

b. Back-up diesel generators at all five sites (as protection against power failures) - $3.446 million of capital cost

The DEIS includes capital costs of $2.495 million for diesel generators to provide a backup source of electricity in the event of a power failure.[74] This is an even more extreme case of overbuilding. Reliability data is publicly available for the Glendive district of Montana-Dakota Utilities (MDU). It shows that for the last 7 years, 2009-15 inclusive, the average customer has experienced 222 minutes per year of outages,[75] or 3.7 hours per year. That's less than one hour in 2000. The longest single outage during that entire period appears to be an outage lasting 11 hours on July 27 of 2015.[76] The **expected** consequences of not having backup generators would thus be 3.7 outage hours per 8760 (the number of hours in a year) x 153 days out of 365 (because outages outside the irrigation season would not affect pumping, and pumping would not be required in April) x .73 (because 27 percent of the time during the irrigation season no pumping would be happening)[77] x 459 cfs (the average pumping rate while pumping),[78] or less than 0.1 cfs on average.

Or consider the worst case situation, an 11 hour long outage that affected all five pump stations and occurred on a day when all 5 pump stations were in use. That's what the July 27, 2015 outage would have been if the Multiple Pumps alternative had been in effect then (and **if** the outage had affected all five pump sites). Diversions that day averaged 1310 cfs, so shutting off power for 11 hours would have reduced average diversions that day by 11/24 x 1310 = 600 cfs. Diversions on the following days were 1280-1310 cfs. By increasing them to 1374 cfs for the next 9 days, the entire shortfall on July 27 would have been replaced. Farmers would have received at most 46 percent less water than they expected, for one day only, but then 5-7 percent more on each of the next 9 days. It's hard to imagine the consequences of such a once-in-a-decade event merit spending millions on backup generators. According to the DEIS, the capital cost for the five proposed back-up generators is $2.495 million.[79] Because the Multiple Pump

[74] Appendix B, pdf p. 115 of 173.
[75] Data for the 2005-08 period shows an outage rate less than half as large as for 2009-15. For the last seven years, outage rates have been fairly flat, with no up or down trend.
[76] 2015 MDU Electric Reliability Report, available at http://www.psc.mt.gov/docs/ElectricReliabilityReports/2015ElectricReliabilityReports/default.asp.
[77] Appendix A, pdf p. 205 of 527.
[78] Ibid.
[79] Appendix B, pdf p. 115 of 173.

Scenario includes an additional 38.1% contingency for pump station costs,[80] the reduction in the total DEIS cost for pump stations will be \$2.495 million x 138.1% = \$3.446 million.[81]

5. Reduced capital cost for lower adaptive management costs

The DEIS assumes that whatever construction costs are forecasted to be incurred have to be increased by one percent to account for adaptive management during construction.[82] Thus when capital costs are reduced, as described above, the DEIS's cost methodology would reduce annualized adaptive management costs by a further one percent. That reduction comes to \$74,000.[83]

6. Reduced direct capital costs from shortened pipe lengths also reduce associated planning, engineering, design and construction management costs - \$1.038 million

The excess direct capital costs in the DEIS estimate for the Multiple Pump alternative which are identified above (before contingency adders) come to \$5.471 million.[84] The DEIS calculates additional costs for planning, engineering, design, and project management equal to 15 percent of the direct capital costs.[85] Thus, reducing direct capital costs by \$5.471 million would, according to the DEIS, reduce the associated planning, engineering, design, and construction management costs \$5.471 x 0.15 = \$0.821 million.

The DEIS includes a 26.52 percent contingency factor for planning, engineering, design, and construction management costs for the Multiple Pump Alternative.[86] Thus the total cost

[80] Appendix B, pdf p. 84 of 173.
[81] See the attached spreadsheet, "Multiple Pump costs" tab, line 4.
[82] DEIS, p. 2-98. Also Appendix B, pdf p. 22 of 173 (making clear that the 1 percent is for adaptive management "during construction").
[83] See the attached spreadsheet, "Multiple Pump costs" tab, line 5.
[84] \$0.429 million for reduced discharge pipe length for site 3, \$0.330 million for reduced discharge pipe length for sites 4-5, \$2.163 million for eliminating back-up pumps, \$2.495 million for eliminating back-up generators, and \$0.054 million for adaptive management during construction. See the attached spreadsheet, "Multiple Pump costs" tab, lines 1-5, "Direct cost adjustment" column.
[85] Appendix B, pdf pp. 12-13 of 173. Note that the actual planning, engineering, design, and construction management costs shown in the DEIS are \$12.772 million for a construction contract of \$84.277 million (Appendix B, pdf p. 84 of 173), which is 15.15 percent and not 15%. The apparent reason for the extra 0.15% is the 1 percent adder for adaptive management costs during construction (DEIS, p. 2-98). Those costs are not shown on the page cited here but their impact on planning, engineering, design, and construction management costs **is** included.
[86] Appendix B, pdf p. 84 of 173.

reduction for planning, engineering, design, and construction management costs would be $0.821 million x 1.2652 = $1.038 million.[87]

7. Reduced investment costs due to reduced interest during construction - $0.425 million

The DEIS estimates that the direct ("first") cost of the Multiple Pumps alternative, $132.028 million,[88] would be increased by another $6.557 million, or 4.966 percent, due to interest during construction.[89] The adjustments described above reduce the cost of the Multiple Pump alternative by $8.551 million.[90] Thus they would also reduce the interest during construction by $8.551 million x 4.966 percent, or $425,000.[91]

8. Adjusted capital cost is lower by $8.975 million, which corresponds to 6.476 percent, which corresponds to $0.339 million per year on an annualized basis.

The total of the adjustments described above, including reduced interest during construction, comes to $8.975 million.[92] That is 6.476 percent of the total investment cost of $138.585 million reported in the DEIS.[93] The DEIS then calculates that the levelized average **annual** investment cost associated with an investment cost of $138.585 million will be $5.515 million, for a fixed charge rate of 3.98 percent.[94] The corresponding reduction in annual investment-related costs, based on the 6.476 percent adjustment identified above, will be 6.476 percent x $5.515 million, or $357,000 per year. Alternatively, the reduction can be calculated as $8.975 million x 3.98 percent, which is also $357,000 per year.[95]

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[87] See the attached spreadsheet, "Multiple Pump costs" tab, line 6.
[88] Ibid.; also DEIS, p. xxxii, Table ES-1.
[89] DEIS, p. xxxii, Table ES-1.
[90] $0.568 million for reduced discharge pipe length for site 3, $0.437 million for reduced discharge pipe length for sites 4-5, $2.987 million for eliminating back-up pumps, $3.446 million for eliminating back-up generators, $0.074 million for adaptive management during construction, and $1.038 million for planning, engineering, design, and construction management costs. See the attached spreadsheet, "Multiple Pump costs" tab, line 12.
[91] See the attached spreadsheet, "Multiple Pump costs" tab, line 7.
[92] See the attached spreadsheet, "Multiple Pump costs" tab, line 8.
[93] DEIS, p. xxxii. 8.975/138.585 = .06476 = 6.476%.
[94] Ibid. 5.515/138.585 = .039795 = 3.98%. See also the attached spreadsheet, "Multiple Pump cost" tab, line 12.
[95] See the attached spreadsheet, "Multiple Pump costs" tab, line 13.

9. Corrected annualized cost is $9.949 million per year

The DEIS reports a total annualized cost for the Multiple Pumps Alternative of $10.595 million per year.[96] The adjustments described above reduce that number by $0.646 million, based on reductions of $289,000 per year for electricity operating costs and pump OM&R,[97] and $357,000 per year for annualized capital cost savings.[98] The adjusted annualized cost for the Multiple Pumps Alternative is thus $9.949 million per year.[99]

10. Environmental benefits to sturgeon

The DEIS presents calculated Habitat Unit (HU) values for each Alternative, and the increase over the No Action Alternative that each other alternative would produce.[100] As discussed above (Section III.C) the DEIS numbers are basically meaningless, because they average sturgeon HU values together with HU values for 13 other species, including such non-threatened species as smallmouth bass.[101] The DEIS nowhere provides sturgeon-specific HU values. However, this shortcoming is easily overcome, since the DEIS does provide the equations and the data needed to calculate the sturgeon-specific HU for each alternative.[102] Using the data in the DEIS, the pallid sturgeon-specific fish passage connectivity indices (FPCI) are .0252 for the No Action Alternative,[103] 0.600 for the Bypass Channel Alternative,[104] and 1.000 for the Multiple Pumps Alternative.[105] Note that the FPCI for the Bypass Channel Alternative, is 20 percent higher than the corresponding FPCI for that alternative in the 2015 Supplemental EA.

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[96] DEIS, p. xxxii.
[97] See the attached spreadsheet, "Multiple Pump costs" tab, line 14.
[98] See the attached spreadsheet, "Multiple Pump costs" tab, line 13.
[99] See the attached spreadsheet, "Multiple Pump costs" tab, line 17.
[100] Appendix D, p. 16.
[101] Appendix D, pp. 4, 9, 14, 15.
[102] Appendix D, pp. 2, 10 (formulae underlying FPCI), 4 (habitat acres), 11-12 and 14-15 (data used in the FPCI formula. HU is then simply FPCI x habitat acres.
[103] [(5 + 2)/2]*1*.018 / 25 = .252; see Appendix D, pp. 11-12, 14-15 for data.
[104] [(2 + 4)/2]*5*1 / 25 = 0.600; ibid.
[105] [(5 + 5)/2] *5 *1 / 25 = 1.000; ibid. Note that the value on p. 12 in Table 1-8 is shown as 2, but this is a typo and it should be 5. The DEIS does not show the actual FPCI calculations, but it appears they used 5, as they should have.

In that document, the value for the Fl parameter was given as 3,[106] but in the DEIS it has been increased to 4.[107] The DEIS neither acknowledges nor explains this increase.

Multiplying the alternative-specific sturgeon FPCIs times the 12637 acres of pallid sturgeon habitat upstream of Intake Dam[108] gives the following sturgeon-specific HUs: 318 for the No Action Alternative, 7582 for the Bypass Channel Alternative, and 12,637 for the Multiple Pump Alternative.[109] The incremental HUs are then 7264 when going from No Action to Bypass, 12,319 when going from No Action to Multiple Pumps, and 5,055 when going from Bypass Channel Alternative to the Multiple Pump Alternative.[110]

V. Implications of the DEIS cost/benefit methodology with adjusted Multiple Pumps Alternative costs

The DEIS's cost/benefit methodology is based on choosing the alternative with the lowest cost per added AAHU, as compared to the AAHU with the No Action Alternative. The numbers in the DEIS clearly indicate that the Multiple Pumps Alternative is better for pallid sturgeon than the Bypass Channel Alternative, by a margin of 5055 sturgeon HUs.[111] The problem with the Multiple Pumps Alternative, according to the DEIS methodology, is not even that it costs too much. The DEIS calculates costs of $727/AAHU for the Bypass Channel Alternative and $962/AAHU for the Multiple Pump Alternative, and concludes that both of those alternatives are cost-effective.[112] The adjusted costs discussed above, and the use of sturgeon-specific HUs, narrow the gap between the Bypass Channel and Multiple Pump Alternatives considerably, to $724/sturgeon AAHU for the Bypass Channel Alternative and $808/sturgeon

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[106] Supplemental EA, Appendix E, Attachment 1, "Fish Passage Benefits Analysis," p. 16, Table 6.
[107] Appendix D, p. 11, Table 1-7.
[108] Appendix D, p. 4, Table 1-1, last line.
[109] See the attached spreadsheet, "Costs per AAHU" tab.
[110] Ibid.
[111] Ibid, line 3. Even when 13 species other than sturgeon are considered, the DEIS concludes that the Multiple Pump Alternative is better than the Bypass Channel Alternative, by a margin of 3895 HUs. Appendix D, p. 22, Table 2-5.
[112] Appendix D, p. 20, Table 2-3. Note that the DEIS uses costs that do not have any of the adjustments discussed above, and uses HU values for 14 total species, of which pallid sturgeon is just one.

AAHU for the Multiple Pumps with the adjustments above.[113] Applying the 2015 EA FPCI scores results in a cost of $876/sturgeon AAHU for the Bypass Channel Alternative[114] – substantially higher than the DEIS estimates, and higher than the Multiple Pumps Alternative.[115] As noted above, the cost/sturgeon AAHU may be as high as $1,110 if uncertainty of the fish passage benefit is included in the calculation.[116] Again, the failure of the agencies to incorporate uncertainty into their analysis completely reverses the conclusions regarding the cost effectiveness of their preferred alternative.[117]

VI. Alternative approaches – additional overpricing of the multiple pumps alternative

The Agencies have emphasized costs as a determining factor for preference in comparing one alternative against the rest (as opposed to efficiency or effectiveness). In addition, the Multiple Pumps Alternative evaluated in the DEIS is designed to ensure that the irrigation district receives even more water than it is guaranteed to receive now, and the agencies never consider the many ways that the costs could be reduced and irrigation water delivered through alternative mechanisms. Therefore, it is appropriate to question why they did not address a range of alternatives that reduced overall costs while maintaining high probabilities of fish passage. Additional avenues of cost savings not analyzed by the Agencies in the Multiple Pumps Alternative are listed below. There are multiple configurations that the Agencies failed to analyze.

For example, using three pump sites instead of the five in the Multiple Pumps Alternative, which was not considered or analyzed in the DEIS, could provide 100 percent of the sturgeon passage benefits of the Multiple Pump alternative, and on average allow 96 percent of the historical level of water diversion rights, at only 75-80 percent of the cost.[118] Using only

[113] See the attached spreadsheet, "Costs per AAHU" tab, lines 2 and 3.
[114] See the attached spreadsheet, "Costs per AAHU" tab, line 2a.
[115] Ibid., lines 2a and 3.
[116] Ibid., line 2b.
[117] Ibid., lines 2-2b versus lines 3-4.
[118] Per section VI.B, below, and the attached spreadsheet, "Three Pump Sites cost" tab, line 23, using three pump sites instead of five would have an annualized cost of $7.985 million. Per the DEIS, the Multiple Pumps Alternative

three pump sites would have a 10.4 percent lower cost per unit of sturgeon habitat improvement than any alternative considered in the DEIS,[119] and a quantity of habitat improvement equal to the highest level of any alternative considered in the DEIS. It would also allow the irrigators to divert their actual historical average annual diversions 99 percent of the time.[120] Thus, using fewer pumps than analyzed in the DEIS, Multiple Pumps Alternative would be much better for pallid sturgeon than the DEIS-endorsed Bypass Channel Alternative, and not nearly as bad for farmers as the Bypass Channel Alternative would be for sturgeon (when compared to using multiple pumps).

Adding the most cost-effective of the measures from the Multiple Pumps with Conservation Measures Alternative, combined with using fewer pumps, would make the Multiple Pumps Alternative even better at meeting the water needs of farmers (section VII.A). Acknowledging the existing trend of conversion from flood irrigation to sprinklers would further reduce the impact on farmers (section VII.B). Additional options could also reduce the impact on farmers from an alternative where pumping with fewer sites could not produce the entire water right (sections VII.C-E).

A. Pump sites 1-2 result in high costs for small additional water diversions; savings from omitting sites 1-2

In the Multiple Pumps Alternative, the number of pumps and pump stations was chosen so as to assure potential diversions of 1374 cfs in every hour of every year, without regard to hydrological conditions. That is actually somewhat more diversion capacity than currently exists,

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would have an annualized cost of $10.595 million. Per section IV.B, below, and the attached spreadsheet, that cost could be lowered to $9.949 million. $7.985/$10.595 = .754 = 75.4%. $7.985/$9.949 = .803 = 80.3%.

[119] $648 per annual average HU, versus $724 (and possibly as much as $1,110) for the Bypass Channel Alternative. See the attached spreadsheet, “Cost per AAHU” tab, lines 2-2b and 4. 648/724 = .896, or a 10.4% reduction.

[120] Actual diversions average only about ¾ of diversion rights, so an alternative that provides less than 100 percent of diversion rights will provide a higher percentage of diversion needs than of diversion rights. Over a 42-year period for which data is available, diversions have averaged 985 cfs, which is only 72% of 1374 cfs (attached spreadsheet, “Historical diversions” tab). Even the average diversion over the 11 years since 2003 for which data is available, 1045 cfs (ibid.), is only 76% of 1374 cfs. The DEIS assumes an average diversion of 1100 cfs (Appendix A, pdf p. 204 of 527; that is above the historical average), but even that is just 80 percent of 1374 cfs. The attached spreadsheet, “Flows with no dam, 3 pump sites” tab, Excel cells A32 (99 percent exceedance line) and BG32 (1047 cfs diversion feasible at that exceedance level) shows that using three pump sites could divert more than 1045 cfs 99 percent of the time.

since the current diversion right of 1374 cfs is contingent on river flows above 3000 cfs at Intake,[121] which 42 years of irrigation-season gauge data shows fails to happen 0.68 percent of the time (2.92% of the time in August).[122] So times already currently exist where the full 1374 cfs cannot be legally withdrawn.

The DEIS also shows that gravity diversions of at least 167 cfs would be possible at all times even with the Intake Dam removed (or 207 cfs if periods when the Yellowstone River flow is below 3000 cfs are excluded, since at those times diversions would not be allowed even if the Intake Dam were present).[123] However, making those gravity diversions would not be possible if pumping were occurring at pump sites 1 or 2, the two sites closest to Intake. Thus, in order to pump more than 825 cfs (the amount that could be pumped from sites 3-5), gravity diversions would have to cease. The result is that the 550 cfs that could be pumped from sites 1-2 would come at the price of a reduction of at least 167-207 cfs in gravity diversions. Hence, the net increase in possible diversions due to the inclusion of sites 1 and 2 in the Multiple Pumps Alternative is, at most, 525 minus 167-207 cfs, or 318-358 cfs.

The DEIS also shows that pump sites 1-2 would be expected to be needed to operate only 3 percent of the time.[124] Given that very low capacity factor one may ask, what happens if Pump Sites 1 and 2 are not developed? Farmers would receive somewhat less water, which would theoretically affect crop yields and revenues (a cost to them). But on the other hand, they would lower operating costs to pay, which would be a benefit to them. The discussion below addresses both the cost savings from building fewer pumps, and the water diversion and delivery implications of doing so by using only three pump sites (3-5 in the DEIS's Multiple Pumps Alternative).

The analysis below does not answer the question of whether farmers would be better served by using three pump sites (lower cost, less water) or a Multiple Pump Alternative (higher

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[121] Appendix A, pdf pp. 352-353 of 527.
[122] Based on 1967-2008 daily Sydney gauge flows on May-September days at or below 1620 cfs, which implies that even if Intake diversions had been the maximum 1374 cfs, with no return flows between Intake and Sydney, Intake flows would have had to be no more than 2994 cfs. See the attached spreadsheet, "Sydney gauge data" tab, Excel cells F11 – I22. Note that the DEIS assumes no return flows in at least the first 18.7 river miles below Intake. Appendix A, pdf p. 194 of 527.
[123] See the attached spreadsheet, "Flows with no dam, 5 pump sites" tab, Excel column R and the note below in columns Q-U.
[124] Appendix B, pdf p. 197 of 527.

cost, more water). Nor does it answer the threshold standard set in the DEIS, that any alternative selected for development should be "sustainable."

B Effects of Using only Three Pump Sites

1. Consequences for sturgeon

Using only three pump sites would look much like the Multiple Pumps Alternative in the DEIS, but without development of pump sites 1 and 2. Because it would also remove the existing Intake Dam, its fish passage effects would be the same as those of the other no-weir alternatives. It would produce 12,319 incremental HUs for sturgeon, relative to the No Action Alternative.[125] That is some 5055 HUs (70 percent) more than the increase of 7,264 sturgeon HUs produced when going from the No Action Alternative to the Bypass Channel Alternative.[126]

2. Consequences for farmers[127]

Because it would never pump water into the Main Canal above the Burns Creek Overchute, using three pump sites would allow for simultaneous pumping and gravity diversions in all hours. However, it would not be able to divert 1374 cfs in as many hours. The Bypass Channel Alternative would allow diversions of 1374 cfs in about 98.6 percent of all hours,[128] but would produce only 7264/12319 = 59% as many incremental sturgeon HUs as a no-weir alternative.[129] Conversely, using three pump sites would produce the maximum level of incremental sturgeon HUs, but would allow diversion of 1374 cfs only 68 percent of the time.[130]

[125] Section V.B, above. See also the attached spreadsheet, "Cost per AAHU" tab.
[126] Ibid.
[127] All numerical results in this subsection are based on DEIS hydrology data from Appendix A, pdf p. 197 of 527, and on annual diversion data for 42 years and monthly diversion data for 28 years, all supplied by the Agencies in various data responses to Defenders of Wildlife and NRDC. All of the data and calculations from the data not footnoted below are shown in the attached spreadsheet, in the "Flow with no dam, 3 pump sites" tab.
[128] Based on the current 1374 cfs diversion right requiring Yellowstone River flows at Intake of 3000 cfs and above, per Appendix A, pp. 352-3. Interpolated between 98 and 99 percent per data in Appendix A, pdf p. 328 of 527.
[129] See analysis above, and in the attached spreadsheet, "Costs per AAHU" tab.
[130] Appendix A, pdf p. 322 of 527. The 68% figure is the percentage of the time that gravity diversions would be above 549 cfs, which when combined with up to 825 cfs of pumping from three sites would allow total diversions of 1374 cfs. The 68% figure can also be interpolated from Appendix A, pdf p. 197 of 527, showing gravity diversions of 527 cfs as feasible 70% of the time and diversions of 620 cfs as feasible 60% of the time.

It would, however, allow average diversions **above** the historical average monthly diversion in the months of May, June, and September, and under 97% of hydrological conditions in July and 70+ percent in August.[131] Even when feasible diversions did not reach 1374 cfs, they would exceed 1100 cfs 97% of the time.[132] 1100 cfs is more than the historical average monthly and annual diversions that have actually occurred at Intake.[133] The expected average annual diversion, taking into account monthly diversion requirements that are well below 1374 cfs, would be 1140 cfs, or 346,000 acre-feet.[134] That is 9.1 percent above the average annual diversion over the last 11 years of 317,000 acre-feet.[135] The expected **feasible** average annual diversion using three pump sites would be 1324 cfs, or over 400,000 acre-feet for the May-September season.[136] 1324 cfs is over 96 percent of the maximum diversion of 1374 cfs under the current water right.[137] Thus, though the Agencies did not analyze daily demand with actual hydrology, it is likely that irrigators would get most of the water they need most of the days they need it.

C. Costs using only three pump sites

The only reason to choose three pump sites instead of five is cost. Since the DEIS puts a premium on cost in choosing between alternatives, the cost benefits of the using just three pump sites would be significant if the ultimate decision is based on the logic of the DEIS.

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[131] Attached spreadsheet, "Flows with no dam, 3 pump sites" tab. Excel cells V7-Z7 show the historical average monthly diversions, based on 28 years of data from the "Historical diversions" tab, Excel cells F337-F341, and scaled up 9% to reflect annual diversions in the most recent 11 years ("Historical diversions tab", Excel cell F347) which were higher than those in the 28 years with monthly data (Historical diversions" tab, Excel cell F342). The percent of the time 825 cfs could meet average monthly pumping diversions is determined by looking at the cell in columns V-Z where the required pumping exceeds 825 cfs, and reading across to the corresponding exceedance level in Column A.

[132] Appendix A, pdf pp. 204-205, showing only pump sites 3-5 are needed 97 percent of the time to achieve 1100 cfs of total diversion. The 97 percent figure can also be interpolated from the 95% and 98% lines on Appendix B, pp. 197 or 329, showing that gravity diversions of 275 cfs will be achievable 97% of the time. 275 cfs of gravity diversion, when combined with 825 cfs of pumping from three sites, produces a total diversion of 1100 cfs. See also the attached spreadsheet, "Flows with no dam, 3 pump sites" tab, rightmost column (showing pumping capacity at different gravity diversion exceedance levels) and the leftmost column (showing the exceedance levels for each line of data). For exceedance levels up to 97 percent in the leftmost column, potential diversions in the rightmost column exceed 1100 cfs.

[133] See the attached spreadsheet, "Historical diversions" tab, Excel cells F337-347.

[134] See the attached spreadsheet, , "Flows with no dam, 3 pump sites" tab, Excel cells BE40 and BE41.

[135] Ibid., Excel cells BE43 and BK43.

[136] Ibid., Excel cells BG40 and BI40.

[137] 1324/1374 = .963 = 96.3%.

Using fewer pump sites would have substantially lower capital **and** operating costs for any Multiple Pumps Alternative. The cost estimates below are based on the data supplied in the DEIS.

1. Capital costs

The DEIS shows a total capital cost for the Multiple Pumps Alternative of $132.028 million.[138] This cost is broken down in the DEIS Appendices into land, construction, planning/engineering/design, and construction management components, as well as contingency adders for each of those components.[139] The discussion below quantifies the savings from each of these components using three pump sites as compared to the Multiple Pumps Alternative.

a. Land - $0.222 million

The DEIS forecasts land acquisition costs of $443,000, or $554,000 when contingency costs are included.[140] With three pump sites instead of five, those costs could be reduced by 40 percent, or a total of $222,000.[141]

b. Construction - $31.524 million

The DEIS forecasts construction contract costs of $84.277 million before contingency.[142] It then disaggregates the forecasted construction contract cost by site, with the forecasted costs for Sites 1 and 2 equal to $10.484 million and $12.561 million, respectively, or a total of $23.044 million.[143] The DEIS applies a contingency rate of 36.8 percent to its construction estimate,[144] which means the $23.044 million savings have to be increased by 36.8 percent, to $31.524 million.[145]

[138] DEIS, p. xxxii, Table ES-1. Also p. 2-99, and Appendix B, pdf p. 84 of 173.
[139] Appendix B, pdf p. 84 of 173.
[140] Ibid.
[141] See attached spreadsheet, "Three Pump Sites cost" tab, line 1.
[142] Appendix B, pdf p. 84 of 173.
[143] Appendix B, pdf p. 157 of 173.
[144] Appendix B, pdf p. 84 of 173.
[145] See attached spreadsheet, "Three Pump Sites cost" tab, line 2.

c. Reduced piping length for sites 3-5 discharge pipes - $1.005 million

As described above in the discussion of the Multiple Pumps Alternative, the DEIS chooses routes for the discharge pipes for sites 3-5 which are inordinately long. Alternate routes would save piping costs estimated to be at least $1.005 million.[146] There would be additional capital cost savings for reduced installation costs, which are not quantified here due to lack of data in the DEIS.

d. Reduced costs associated with backup pumps - $0

In the discussion above of the Multiple Pump Alternative, backup pumps are identified as an unnecessary expense, since with 15 pumps at five different sites, there will be very few hours when all 15 pumps will need to be in service. Thus, pump outages can be mitigated by using one of the other 14 pumps. If only three pump sites are used, there would be only nine pumps, and they would be much more likely to all be in service at any given time.[147] Thus if only three pump sites are used, a backup pump may be reasonable at each site.

e. Reduced cost associated with backup generators - $2.666 million

The analysis of the Multiple Pump Alternative, above, quantified a capital cost savings of $3.446 million from not installing backup generators at each site. The basis for forgoing backup generation is the infrequency of power failures, coupled with their short duration, as discussed above. The same logic applies at fewer pump sites.[148] However, $0.780 million of the savings associated with not having backup generators at sites 1 and 2 was already counted above as part

[146] See section V.B, above. The $1.005 million consists of $0.429 million of direct costs and $0.139 million of contingency at Site 3, and $0.330 million of direct costs plus $0.107 million of contingency at Sites 4-5. See also the attached spreadsheet, "Three Pump Sites cost" tab, lines 3-4.
[147] Based on historical average August diversions and DEIS hydrological data on gravity diversion exceedance rates, in August all nine pumps would need to operate 40% of the time. See attached spreadsheet, "Flows with no dam, 3 pump sites" tab, Excel cells A23 (showing the 60 percent exceedance line) and AU23 (showing this is the highest exceedance level at which only 8 pumps would need to be on).
[148] See the attached spreadsheet, "Three Pump Sites cost" tab, line 6.

of the construction cost savings.[149] The additional capital cost savings for not installing back-up generators at sites 3-5 would thus be $2.666 million.[150]

f. Adaptive management - $0.354 million

The DEIS adds 1 percent to the construction costs of each alternative for adaptive management costs during construction.[151] Thus, by the logic of the DEIS, the cost savings identified above would also reduce the associated adaptive management costs if there were fewer pump sites. The direct cost savings identified above are $25.905 million,[152] or $35.417 million including contingency.[153] The associated reduction in adaptive management costs, by the logic of the DEIS, would be one percent of that, or $0.259 million directly and $0.354 million including contingency.[154]

g. Planning, engineering, design, and construction management - $4.965 million

The DEIS calculates additional direct costs for planning, engineering, design, and project management equal to 15 percent of the direct capital costs.[155] The direct costs identified above are $26.164 million.[156] Fifteen percent of that would be $3.925 million.[157] In addition, the DEIS

[149] $0.570 million for back-up generators at sites 1 and 2 (Appendix B, pdf p. 115 of 173, plus 36.8% for the contingency associated above with construction costs (Appendix B, pdf p. 84 of 173), for a total of $0.780 million. See also the attached spreadsheet, "Three Pump Sites cost" tab, line 7.
[150] $3.446 million savings from having no back-up generators, minus $0.780 million already counted for Sites 1-2. The direct savings at sites 3-5, before contingency, would be $1.925 million (Appendix B, pdf p. 115 of 173). See also the attached spreadsheet, "Three Pump Sites cost" tab, lines 6-7.
[151] DEIS, p. 2-98. Also Appendix B, pdf p. 22 of 173.
[152] $0.177 million for land, $23.044 million for construction, $0.759 million for shorter discharge pipes at sites 3-5, and $1.925 million for eliminating back-up generators at sites 3-5. See also the attached spreadsheet, "Three Pump Sites cost" tab, lines 1-7, "Direct cost adjustment" column.
[153] $0.222 million for land, $31.524 million for construction, $1.005 million for shorter discharge pipes at sites 3-5, and $2.666 million for eliminating back-up generators at sites 3-5. See also the attached spreadsheet, "Three Pump Sites cost" tab, lines 1-7, "Total cost adjustment" column.
[154] See the attached spreadsheet, "Three Pump Sites cost" tab, line 8.
[155] Appendix B, pdf pp. 12-13 of 173.
[156] $0.177 million for land, $23.044 million for construction, $0.759 million for shorter discharge pipes at sites 3-5, $1.925 million for eliminating back-up generators at sites 3-5, and $0.259 million for associated adaptive management. See also the attached spreadsheet, "Three Pump Sites cost" tab, lines 1-8, "Direct cost adjustment" column.
[157] See the attached spreadsheet, "Three Pump Sites cost" tab, line 9.

associates 26.52% contingency with planning, engineering, design, and project management costs.[158] So the total savings in planning, engineering, design, and project management costs for only three pump sites would be \$3.925 million times 1.2652 = \$4.965 million.[159]

h. Interest during construction - \$3.318 million

Using only three pump sites would reduce interest during construction two different ways. First, since construction costs would be lower, the interest on them would be lower. The total cost savings identified above are \$40.737 million,[160] which is 30.85 percent[161] of the DEIS-estimated \$132.028 million total first cost[162] of the Multiple Pump Alternative. Thus, the \$6.557 million interest cost shown in the DEIS for the Multiple Pump Alternative[163] could be reduced by 30.85%, a reduction of \$2.023 million,[164] to \$4.534 million.

Second, because of the smaller scope of the Alternative, it could be built more quickly than the Multiple Pumps Alternative. The DEIS estimates a 42-month construction period for the Multiple Pumps Alternative, with staggered construction of at the five pump sites.[165] Based on the DEIS's own schedule, eliminating two pump sites would shorten the construction period by one year, to 30 months.[166] Thus the interest during construction would be at least 12/42, or 28.6 percent[167] less. That would lower the \$4.534 million in interest costs associated with a smaller project by a further \$1.295 million.[168]

The total reduction in interest during construction would be \$2.023 million plus \$1.295 million, or \$3.318 million.

2. Annualized capital costs reduction for reduction in pump sites - \$1.702 million

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[158] Appendix B, pdf p. 84 of 173, lines 13-14.
[159] See the attached spreadsheet, "Three Pump Sites cost" tab, line 9.
[160] \$0.222 million for land, \$31.524 million for construction, \$1.005 million for shorter discharge pipes at sites 3-5, \$2.666 million for eliminating back-up generators at sites 3-5, \$0.354 million for adaptive management during construction, and \$4.965 million for reduced planning, engineering, design, and project management costs. See also the attached spreadsheet, "Three Pump Sites cost" tab, lines 1-9, "Total cost adjustment" column.
[161] \$40.737/\$132.028 = .30855 = 30.855%.
[162] DEIS, p. 2-99, table 2-26.
[163] Ibid.
[164] See the attached spreadsheet, "Three Pump Sites cost" tab, line 10.
[165] DEIS, p. 2-99, table 2-26.
[166] Appendix B, pdf p. 50 of 173, lines 64-66.
[167] 12/42 = .286 = 28.6%.
[168] See the attached spreadsheet, "Three Pump Sites cost" tab, line 11.

The total of all the construction cost adjustments identified above for reducing pump sites comes to $42.760 million.[169] That is 30.85 percent of the total investment cost of $138.585 million reported in the DEIS.[170] The DEIS then calculates that the levelized average **annual** investment cost associated with an investment cost of $138.585 million will be $5.515 million.[171] The corresponding reduction in annual investment-related costs, based on the 30.85 percent adjustment identified above, will be 30.85 percent x $5.515 million, or $1,702,000 per year.[172]

3. OM&R cost reductions - $909,000 per year

The OM&R costs for the Multiple Pumps Alternative, which represent over half of its total costs, are summarized on a single page of the DEIS.[173] They are divided into 30 categories, some 18 of which would be less expensive with three pump sites instead of the five pump sites in the Multiple Pumps Alternative. Specific adjustments are summarized below.

a. Costs that would be reduced proportionally to the number of sites - $583,000 per year

Most of the OM&R cost savings for reducing the number of pump sites come from the 40 percent reduction in the number of pump sites, and are proportional to that reduction. Cost items 11-19, and 21 are pump-related costs that would be reduced 40 percent. Cost items 23-25 and 27 are fish screen and trash rack costs that would also be reduced 40 percent, as would item 28, bank stabilization. The DEIS calculates annualized costs for each of these cost items.[174] A forty percent reduction would reduce the OM&R cost by a total of $583,000 per year.[175]

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[169] See the attached spreadsheet, "Three Pump Sites cost" tab, line 12.
[170] DEIS, p. xxxii and 2-99. $42.76/$138.585 = .30854 = 30.85%.
[171] Ibid.
[172] See the attached spreadsheet, "Three Pump Sites cost" tab, line 19.
[173] Appendix B, pdf p. 171 of 173.
[174] Ibid.
[175] Annualized cost reductions of $188K for item 11, $40K for item 12, $24K for item 13, $15K for item 14, $2K for item 15, $19K for item 16, $2K for item 17, $96K for item 18, $26K for item 19, $4K for item 21, $8K for item 23, $75K for item 24, $60K for item 25, $19K for item 27, and $5K for item 28.

b. Power cost reductions - $139,000 per year

The DEIS estimates that annualized power costs would be $500,000 per year for 10,100 Mwh per year of pumping energy.[176] The attached spreadsheets show that pumping requirement would be reduced to 7296 Mwh, based on the monthly pattern of diversions, monthly Yellowstone River flow probabilities and associated gravity diversion capability, operating pump sites in economic order, and turning on pumps at each pump site individually as needed.[177] The resultant power costs would be only 7296/10100 of the $500,000 per year in the DEIS, or $361,000 per year, for a savings of $139,000 per year.[178]

c. Reduced feeder canal maintenance - $120,000 per year

Using three pump sites would eliminate two of the five feeder canals required by the Multiple Pumps Alternative. However, because the proposed feeder canals are of different lengths,[179] and because maintenance costs might be assumed proportional to the length of the feeder canals and not the number of canals, the savings might be less than 40 percent. However, that is not what the DEIS assumed. The DEIS assumes each feeder canal will have the same annual maintenance cost, $60,000.[180] Thus, based on the DEIS, a using three pump sites would save $120,000 per year in feeder canal maintenance costs.[181]

d. Reduced passage and entrainment monitoring - $67,000 per year

The DEIS estimates that annual costs to monitor fish passage and possible entrainment are currently $400,000 per year, which corresponds to an annualized cost over 50 years of $111,000 per year.[182] It then indicates that it expects those annualized costs to rise to $278,000 per year when entrainment monitoring costs at five pump stations are added in the Multiple

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[176] Ibid. (item 20)
[177] See the discussion above in section V.B regarding pumping energy as calculated in the DEIS. See also the attached spreadsheet, "Flows with no dam, 3 pump sites" tab, Excel cell BC40.
[178] See the attached spreadsheet, "Three Pump Sites cost" tab, line 13.
[179] Appendix A, pdf p. 209 of 527.
[180] Appendix B, pdf p. 171 of 173, cost item 26.
[181] See the attached spreadsheet, "Three Pump Sites cost" tab, line 15.
[182] Appendix B, pdf p. 163 of 173 (No Action Alternative), cost item 14.

Pumps Alternative.[183] Accepting the DEIS's numbers, using three pump sites would save 40 percent of the $167,000 per year increase for pump site monitoring, or $67,000 per year.[184]

4. Total annualized cost savings using three pump sites

The annualized cost savings identified above are $1.702 million associated with capital cost reductions, and $0.909 million associated with OM&R.[185] Thus the total annualized cost savings using three pump sites, as compared to the Multiple Pump Alternative, would be $2.610 million.[186]

5. Total annualized cost of a using three pump sites

The DEIS quantifies the annualized cost of the Multiple Pump Alternative as $10.595 million. Reducing that by $2.610 million results in an annualized cost using three pump sites of $7.985 million.[187]

D. Cost-effectiveness of a using three pump sites

As described above, the total annualized cost of using three pump sites would be $7.985 million per year. Its benefits for pallid sturgeon would be the same as for the Multiple Pumps Alternative, some 12,319 sturgeon HUs more than the No Action Alternative and some 5,055 sturgeon HUs more than the Bypass Channel Alternative.[188] Thus using three pump sites instead of five would have a total cost of $648 per AAHU.[189] Using three pump sites instead of five would have an incremental cost for improving on the Bypass Channel Alternative of $540 per HU.[190] Since both its cost relative to the No Action Alternative and its incremental cost relative

[183] Appendix B, pdf p. 171 of 173, cost item 30.
[184] See the attached spreadsheet, "Three Pump Sites cost" tab, line 16.
[185] See the attached spreadsheet, "Three Pump Sites cost" tab, lines 19-20.
[186] See the attached spreadsheet, "Three Pump Sites cost" tab, line 21.
[187] See the attached spreadsheet, "Three Pump Sites cost" tab, line 23.
[188] See the attached spreadsheet, "Cost per AAHU" tab, line 4.
[189] $7.985 million / 12,319 sturgeon HU = $648/HU. See the attached spreadsheet, "Cost per AAHU" tab, line 4.
[190] $7.985 million annual cost for the using three pump sites; $5.256 million adjusted annual cost for the Bypass Channel Alternative; 5055 more HUs with using three pump sites than with the Bypass Channel Alternative. ($7.985

to the Bypass Channel Alternative would be lower than the Bypass Channel Alternative's cost of $724-$1,110 per sturgeon HU,[191] using three pump sites instead of five would be superior to the Bypass Channel Alternative **using the DEIS's own methodology**.

VII. Further improvements with three pump sites

Unlike all of the alternatives considered feasible in the DEIS, reducing the number of pump sites would not always allow diversion of 1374 cfs.[192] Thus there would be some times when it would result in less water flowing to farms than under the other alternatives. However, there are ways to mitigate the resultant shortfalls that have already been identified in the DEIS. The DEIS analyzes several water conservation measures. It finds costs for most of them which, if accurate, mean they are more costly then simply installing and operating pumps, as described in the Multiple Pump Alternative. However, as described below, there are at least five measures that could be used to reduce the impact to farmers of reducing the number of pump sites.

Note that these are all measures to benefit farmers. None of them would do anything for sturgeon. Thus, to the extent each of these would increase the cost of the Multiple Pumps Alternative, it would increase the cost per sturgeon HU, and thus lower its cost-effectiveness as computed by the DEIS. They are included here only to illustrate ways in which the impact on water availability to farmers could be reduced if so desired.

A. Flow measurement devices

The irrigation system that currently exists lacks flow measurements at many locations. Failure to measure means overuse, whether accidental or intentional, cannot be detected, nor can inefficient use. The DEIS identifies flow measurement device installation at 120 locations as a way to provide more data about how much water is being used in the irrigation system, where,

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million - $5.256 million)/5055 HUs = $2.729 million/5055 HUs = $540/HU. See the attached spreadsheet, "Cost per AAHU" tab, lines 2 and 4.

[191] See the attached spreadsheet, "Cost per AAHU" tab, lines 2-2b.

[192] The DEIS considers a Conservation Measures alternative which results in diversions less than 1374 cfs in many hours, which the DEIS rejects as both costly and infeasible. DEIS, pp. 2-97 (infeasible – fails to meet project purposes), 2-99 (costs more than double the cost of the next-most-expensive alternative, with no additional benefits to fish).

and by whom.[193] The result will be expected changes in behavior that could reduce water use by 3 percent,[194] thereby reducing water diversions by an average of 31 cfs,[195] on average, at a capital cost of $1.301 million.[196] That's a capital cost of $42,000 per cfs.[197] Increased water diversion through adding pumps, when going from three pump sites to five, has a cost equivalent to a capital cost of $85,000 per cfs added.[198] Thus, adding flow measurement devices would appear to be cost-effective when compared to the cost of adding water deliverability through additional pump stations.

B. Sprinkler conversions

The DEIS estimates that sprinkler conversions on 5000 acres could save 62 cfs of water, while costing $19.28 million, for a capital cost of saved water of over $300,000 per cfs saved.[199] Increased water diversion through adding pumps, when going from three pump sites to five, has a cost equivalent to a capital cost of only $85,000 per cfs added.[200] Thus, according to the data in the DEIS, sprinkler conversions are not cost-effective as compared to additional pumping.

On the other hand, sprinkler conversions clearly are cost-effective under some conditions, as shown by the fact that they have been happening in the LYP. According to the DEIS, sprinkler-irrigated land has gone from about 5000 acres in 2009[201] to almost 8000 acres currently,[202] an increase of about 3000 acres in just 7 years.[203] That is 60 percent of the amount of sprinkler conversions that DEIS finds uneconomic.[204] Clearly there are other reasons (increased efficiency, increased crop yields, reduced costs for managing on-farm irrigation, etc.)

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[193] Appendix A, pdf p. 360 of 527.
[194] Appendix A, pdf p. 393 of 527.
[195] Three percent based on a 2009 report cited in DEIS, with no subsequent analysis done for the DEIS (Appendix A, pdf p. 393 of 527). The one paragraph on pp. 419-420 of Appendix A contains no actual data. Note that these savings could include savings from reduced spill and reduced unneeded diversions from the Main Canal to laterals; they would not necessarily affect on-farm deliveries or usage at all. Average diversions of 1045 cfs (attached spreadsheet, "Historical diversions" tab, Excel cell F347) x 3% = 31.35 cfs.
[196] Appendix B, pdf p. 94 of 173, $1.133 million (line 14), plus planning, engineering, design, and construction management costs of 126.52% of 15% of $0.887 million.
[197] $1.301 million / 31 cfs = .04197 million/cfs.
[198] See the attached spreadsheet, "Cost for Pumping Capability" tab, rightmost column.
[199] $19.28 million / 62 = $0.311 million/cfs.
[200] See the attached spreadsheet, "Cost for Pumping Capability" tab, rightmost column.
[201] 9 percent of the irrigated acreage in 2009, per Appendix A, pdf p. 394 of 527. 9% x 55,000 acres = 4950 acres.
[202] 7988 acres in 2016, per Appendix A, pdf p. 395 of 527.
[203] 7988 – 4950 = 3038 acres.
[204] 3000 / 5000 = 0.6 = 60%.

why farmers have converted to sprinklers. There is no reason to expect these reasons to cease in the future. To the extent using three pump sites instead of five increases the uncertainty of water supply, even slightly, it would further improve the economics of converting to sprinkler irrigation. Increased sprinkler conversions will reduce the amount of diversions called for by farmers, thus reducing the cost of operating with three pump sites, as sprinkler conversions continue into the future. Increased sprinkler conversions will also reduce the frequency of hours when farmers desire greater diversions than are feasible with just three pump sites.

C. Increased use of relift capability

The LYP currently has pump stations within its system that take water that would otherwise end up unused on farms, and "relift" it back to the canal system for irrigation use. According to the DEIS there are 4 such pump stations with a "relift" capability of 62 cfs.[205] The DEIS reports a current annual cost for pumping of $235,000 per year, which it assumes will continue into the future under all alternatives.[206] That's an annualized cost of $3,790 per cfs of pumping capability,[207] within one percent of the annualized cost of the DEIS's preferred Bypass Channel Alternative, $3,763-$3,825 per cfs.[208] So additional use of the existing 62 cfs of relift capability, and potentially adding additional relift capability, appears to be a cost-effective way to add water delivery capacity to the LYP without increasing diversions from the Yellowstone River,[209] and deal with hours when the pumping capacity would be unable to divert 1374 cfs from the Yellowstone River.

D. Use of Pick-Sloan power for pumping energy

The energy pumping costs in the DEIS are based on commercial power prices, although the LYP correctly uses lower-cost energy from the Federal Pick-Sloan project to meet existing

205 Appendix A, pdf p. 421 of 527.
206 Appendix B, pdf pp. 163, 165, 167, 169, 171, 173 of 173.
207 $235,000/year / 62 cfs = $3,790/yr/cfs.
208 $5.171 million (DEIS, p. xxxii, Table ES-1) / 1374 cfs = $3,763/cfs. $5.256 million (Section V.A, above) / 1374 cfs = $3,825/cfs.
209 Of course, the fact that relift is already used in the LYP is also evidence of its cost-effectiveness.

pumping energy needs.[210] However, as the DEIS acknowledges, Pick-Sloan energy may be available to meet the increasing pumping energy requirements of the no-weir alternatives.[211] The DEIS estimates that use of Pick-Sloan energy would reduce pumping costs by 41.15-67.34 percent.[212] That would reduce the cost of the Multiple Pump Alternative by $0.160 million to $0.262 million per year,[213] or about 1.6-2.6 percent of the entire annualized Multiple Pump Alternative cost of just under $10 million[214] per year. It would reduce the annual cost of pumping energy if only three pump sites were used, by $0.149 - $0.243 million per year,[215] or up to 3 percent of the entire annualized cost of just under $8 million per year.[216] Thus, use of Pick-Sloan power could reduce the cost per sturgeon AAHU of the Multiple Pump Alternative by up to $21/sturgeon AAHU,[217] and could reduce the cost per sturgeon AAHU of using three pump sites by up to $20/sturgeon AAHU.[218]

E. Use of wind energy for pumping energy

The DEIS includes the cost of wind generation in the Conservation Measures Alternative,[219] and indicates the agencies have the authority to build, operate, and maintain wind turbines to provide pumping energy.[220] The DEIS forecasts a capital cost for a 2 Mw wind turbine of more than $2.7 million per Mw of capacity,[221] which seems high given the recent approvals of two North Dakota wind farms consisting of 1.7 – 2.1 Mw turbines for $1.64 - $1.67

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[210] DEIS, pp. 2-24, 2-37, 3-14.
[211] DEIS, p. 2-75.
[212] Ibid. Reduction from $500,000 to $163,317 equals (500,000-163,317)/500,000 = .6734 = 67.34%. Reduction from $500,000 to $294,251 = (500,000 – 294,251)/500,000 = .4115 = 41.15%.
[213] Expected pumping costs of $389,000 (section V.B.1.e, above) x 41.15% reduction = $0.160 million reduction. $389,000 x 67.34% reduction = $0.262 million.
[214] $9.949 million per year adjusted annualized cost, per attached spreadsheet, "Multiple Pump costs" tab, line 17.
[215] Expected pumping costs of $361,000 (section VI.C.3.b, above) x 41.15% reduction = $0.149 million. $361,000 x 67.34 percent reduction = $0.243 million reduction from use of Pick Sloan energy.
[216] $0.243 million / 7.985 million = .0304 = 3.04%.
[217] $0.262 million / 12,319 sturgeon HUs (attached spreadsheet, "Cost per AAHU tab, line 3) = $21.27/sturgeon AAHU.
[218] $0.243 million / 12,319 sturgeon HUs (attached spreadsheet, "Cost per AAHU tab, line 3) = $19.73/sturgeon AAHU.
[219] Appendix B, pdf p. 94 of 173, line 9.
[220] DEIS, p. 2-92.
[221] Appendix B, pdf p. 94 of 173, lines 9, 13 and 14. $4.686 million x 1.01 (for adaptive management), plus $3.584 million x 1.01 x .15 x 1.2652 (for planning, engineering, construction, construction management, and associated contingency) = $5.420 million, or $2.71 million per Mw.

million per Mw.[222] Given the rapid development of wind resources in western North Dakota,[223] there seems to be little doubt that wind energy is a viable alternative source of supply for pumping energy.

VIII. Other issues

The analysis above focuses on the costs, the DEIS's habitat calculations, and cost effectiveness (as defined by the DEIS) of the Bypass Channel and Multiple Pumps Alternatives, and potentially modifying the Multiple Pumps Alternative to include three pump sites rather than five. It does not include a page-by-page review of the DEIS for errors or inconsistencies. However, a few such items are worth pointing out.

A. FPCI calculation for the Multiple Pumps alternative

The Fish Passage Connectivity Index (FPCI) is one of the two parameters that, when multiplied together, yield the "Habitat Units" measure that the DEIS uses to evaluate the environmental impacts on sturgeon passage. Thus the FPCI is key to evaluating and comparing the alternatives in the DEIS. The FPCI is in turn calculated from just four inputs. One of those inputs, known as Fs, is a measure of the likelihood of fish using the passage option available to them in a particular Alternative. Fs is measured on a scale of 1 to 5 with 5 being the highest likelihood. For a no-weir alternative, Fs should be 5, and the DEIS indeed reports it as 5 for the

[222] http://bismarcktribune.com/bakken/western-north-dakota-in-the-midst-of-a-wind-boom/article_e32568d7-4fc3-5f66-babf-e8395fa7babb.html, a news story dated June 16, 2016 describing the permit approval of a 150 Mw wind farm containing 87 turbines for $250 million. 150 Mw/87 turbines = 1.72 Mw/turbine. $250 million / 150 Mw = $1.667 million / Mw.
See also http://bismarcktribune.com/news/state-and-regional/north-dakota-panel-approves-proposed-million-wind-farm/article_894783bd-b3c1-5598-87a3-0b1a829c319d.html, a news story dated June 22, 2016, describing the permit approval of a different North Dakota wind farm, containing 48 turbines and producing 100 Mw, for a capital cost of $164.4 million including transmission. 100 Mw / 48 turbines = 2.08 Mw / turbine. $164.4 million / 100 Mw = $1.644 million per turbine.

[223] Ibid., describing western North Dakota as having 400 wind turbines in service that were installed in the last ten years, and another 550 proposed for the next two years. The articles names seven specific projects with a combined capacity over 1250 Mw that form the basis for the estimated 550 new wind turbines to be built by 2018.
See also http://bismarcktribune.com/wind-farm-projects/pdf_7f769038-c4a4-596a-bc02-244b27b81b35.html, a map showing the locations of 9 western North Dakota projects (including an MDU project) with in-service dates from 2010 to 2018, totaling 903 turbines and 2223 turbines (average turbine size 2.46 Mw).

no-weir alternative using conservation measures.[224] However, the Fs input is shown as 2 in the DEIS for the Multiple Pumps Alternative.[225] Since the DEIS does not show the calculation of the FPCI for sturgeon (or indeed for any other individual species), it is unclear whether the actual FPCI calculations for the Multiple Pumps Alternative used an Fs value of 2 or 5.

B. Dam removal costs

The DEIS contains two alternatives in which the existing Intake Dam is removed. However, the forecasted cost of dam removal is quite different for the two alternatives. For the Multiple Pump Alternative, dam removal costs are given as $6.600 million plus a 45.02 percent contingency, for a total of $9.571 million.[226] But for the Conservation Measures Alternative, dam removal costs are stated as $2.534 million, again with a 45.02 percent contingency, for a total of $3.675 million.[227] The use of the identical contingency percentage shows that dam removal refers to the same activity for both alternatives, as does the fact that the dam removal section for the Multiple Pump Alternative simply references the Conservation Measures Alternative.[228] Equally clearly, at least one of the estimates is wrong. As it turns out, the estimate for the Multiple Pump Alternative is the higher one, by $5.896 million,[229] and has been used without adjustment in the analysis above. But if the correct dam removal cost estimate is the lower one, then the Multiple Pump Alternative using three or five pump sites would be less expensive, by about $280,000 per year,[230] and thus have about a $23 lower annual cost per sturgeon HU,[231] and thus be more cost-effective.

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[224] Appendix D, p. 12.
[225] Ibid.
[226] Appendix B, pdf p. 84 of 173, line 1.
[227] Appendix B, pdf p. 94 of 173, line 3.
[228] Appendix A, pdf p. 219 of 527.
[229] $9.571 million minus $3.675 million equals $5.896 million.
[230] Reducing their direct cost by $6.600 - $2.534 = $4.066 million would reduce the associated, planning, engineering, design and construction management costs by $4.066 million x .15 = $0.610 million, or $0.610 x 1.2652 = $0.772 million including contingency. Reducing capital costs by $5.896 + $0.772 million = $6.668 million would reduce total first costs by another 1% ($0.067 million) due to habitat management costs during construction, for a total first cost reduction of $6.668 + $0.067 = $6.735 million. Interest during construction is equal to 6.557/132.028 = 4.966% of first costs (DEIS, p. xxxii, Table ES-1), for a total investment cost of $6.735 x 1.04966 = $7.069 million. Annualized investment costs are equal to $5.515/$138.585 = 3.980% of investment costs, so an investment cost reduction of $7.069 million equates to an annualized investment cost reduction of $7.069 million x .0398 = $0.281 million per year.
[231] An annualized cost reduction of $281,000 for a no-weir alternative equates to a reduction in the cost per sturgeon HU of $281,000/12,319 sturgeon HU = $23/sturgeon AAHU.

C. Boulder field removal costs

Decades of ice scouring have moved rocks from the top of the Intake Dam to the bed of the Yellowstone River downstream, resulting in a substantial boulder field on the river bottom downstream of the dam. The dam removal costs for the two no-weir alternatives in the DEIS include the cost to remove not just the dam itself, but also the boulder field downstream of it.[232] The boulder field removal represents 93.6 percent of the total material to be removed from the Yellowstone River as part of "dam removal,"[233] and thus presumably represents close to 93% of the cost as well.

The DEIS does not appear to have any explanation of whether full removal of the boulder field is necessary to allow sturgeon passage up the main channel of the Yellowstone River after dam removal. The DEIS indicates that the boulder field length downstream of the dam varies by a factor of more than two, from 170 feet to 370 feet,[234] with the shorter field on the Joe's Island side of the river.[235] Thus, if sturgeon passage would be enabled by removing the boulder field only on the south half of the river where the field is shortest, boulder removal volumes (and thus presumably removal costs) would be cut by substantially more than 50 percent.

Alternatively, if **any** boulders remaining on the riverbed represent a threat to sturgeon passage,[236] then the DEIS should have included a discussion of the risk and cost for the Bypass Channel Alternative of leaving the boulder field intact. The DEIS says only that the proposed new concrete dam would cause the addition of new rocks on top of Intake Dam to cease.[237] It appears to say nothing about what would happen to the existing century worth of rocks that are already in the river, and have already migrated up to 370 feet[238] downstream from the dam where they were originally placed. The DEIS does acknowledge that removing some or all of the existing boulder field is a possible future action in response to the results of monitoring.[239]

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[232] Appendix B, pdf p. 126 of 173, showing that even the less expensive (per comparison of pdf pp. 94 and 84) Conservation Measures Alternative involves removal of downstream boulders.
[233] Ibid. 42,264 cubic yards/(42,264+2,904) cubic years = 93.6%.
[234] Ibid.
[235] DEIS, p. 2-40.
[236] As suggested by the DEIS, p. 2-108. See also Battelle, p. A-6, indicating that "pallid sturgeon are known to avoid" the "boulder-sized substrates near Intake Diversion Dam."
[237] DEIS, p. 2-46.
[238] Appendix A, pdf p. 370 of 527.
[239] Appendix E, p. 16.

D. Role of contingency adders in the cost analysis

The DEIS estimates the total construction cost of the Multiple Pump Alternative as \$97.492 million, and then adds total contingency estimates of \$34.535 million, to get a total cost of \$132.027 million.[240] Thus, over 26 percent of the capital cost of the Multiple Pump Alternative is contingency costs.[241] The comparable figure for the Bypass Channel Alternative is only 8.1 percent.[242] Thus a substantial part of the reason why the DEIS concludes that the Multiple Pump Alternative is not as cost-effective as the Bypass Channel Alternative[243] is the greater uncertainty associated with its capital costs.

In effect, the DEIS penalizes the Multiple Pump Alternative for the fact that the Federal Agencies had previously decided to pursue the Bypass Channel Alternative, and thus have spent money designing it and pricing it.[244] Then they use the fact that they have not given the Multiple Pump Alternative as much scrutiny in the past as a reason to reject it in the present.

E. Water losses in the Main Canal

The DEIS claims water losses from the Main Canal are "minimal."[245] That claim is false, and is based on cherry-picking of data. While the error does not affect any of the conclusions of either the DEIS or this analysis, it casts doubt on the impartiality of the DEIS authors.

Specifically, the analysis underlying the "minimal" claim is found at the end of Appendix A, in tables showing daily diversions and daily Main Canal losses for the years 2000 and 2012.[246] It shows that on days when diversions were above 1300 cfs, the highest diversion days of the year, losses from the Main Canal averaged 20.4 percent during 17 days in 2000 and 16.3 percent during 20 days in 2012. The year 2000 loss rate of 20.4 percent during those high diversion days were almost as high as the annual average loss rate of 23.3 percent for the year

[240] Appendix B, pdf p. 84 of 173, lowest highlighted line.
[241] \$34.535 / \$132.027 = .262 = 26.2%.
[242] Appendix B, pdf p. 65 of 173. \$4.624 million of contingency / \$57.044 million total cost = 8.1 percent.
[243] DEIS, p. 2-100.
[244] Indeed, the DEIS doesn't count as part of the cost of the Bypass Channel Alternative the money, probably millions of dollars, that has already been spent on it. DEIS, p. 2-98, Table 2-25 and its footnote a.
[245] DEIS, p. 2-93.
[246] Appendix A, pdf pp. 472-474 (year 2000 daily data) and 478-480 (year 2012 daily data).

2000. The loss during the high diversion days in 2012 was 16.3 percent, **higher** than the 15.5 percent loss rate for the year as a whole. Annual loss rates of 15-23 percent are hardly minimal, loss rates of 16-20 during days when diversions at Intake exceed 1300 cfs are not either, and claims that loss rates go down substantially when diversion rates are high are contradicted by the evidence.

F. O&M costs and viability/sustainability

The DEIS lists only four reasons for preferring the Bypass Channel Alternative, one of which is its claimed lower operation and maintenance (O&M) costs.[247] The table cited by the DEIS shows "Annualized OM&R" costs that are $2.799 million for the Bypass Channel Alternative and $5.034 million for the Multiple Pumps Alternative,[248] for a difference of $2.235 million per year.

The $2.235 million figure is overstated. First, part of the $2.235 million is not O&M at all, but rather is replacement costs. Those replacement costs include costs such as pump replacements that are capital costs that are incurred only once per 35 years.[249] The difference between the Bypass Channel and Multiple Pumps Alternatives for just O&M is $1.557 – 1.941 million.[250]

Second, the $2.235 million omits the "moderately potential"[251] cost of adaptive management for the Bypass Channel Alternative, and includes unnecessary costs for the Multiple Pumps Alternative. The omitted costs for the Bypass Channel Alternative were estimated above as $0.085 million per year,[252] while the O&M costs for the Multiple Pumps Alternative are

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[247] DEIS, p. 2-105.
[248] DEIS, p. 2-99, Table 2-26.
[249] See the attached spreadsheet, "O&M Costs" tab, which summarizes data from Attachment B-8 to Appendix B of the DEIS, pdf pp. 9-10 of 19 (Bypass Channel Alternative) and pdf pp. 15-16 of 19 (Multiple Pump Alternative).
[250] Ibid., lines 44-45.
[251] DEIS, p. 2-103. By contrast, the DEIS expects the Multiple Pumps Alternative to have a "minimal need" for adaptive management.
[252] Section IV.A.1, assuming the "moderate" likelihood results in adaptive management costs only half as large as the potential cost estimated in the 2015 EA.

overstated by between $0.289 million[253] and $0.909 million.[254] Thus the $2.235 million difference should be corrected to $1.241 - $1.861 million.[255]

Third, the $2.235 million difference omits the possible O&M reduction for the Multiple Pumps Alternative from use of Pick-Sloan power, which could save a further $0.143 - $0.262 million.[256]

[253] See the attached spreadsheet, "Multiple Pump costs" tab, line 14.
[254] See the attached spreadsheet, "Three Pump Sites cost" tab, line 20.
[255] $2.235 million minus $0.085 million minus either $$0.909 million or $0.289 million.
[256] See section VII.D, above.

Tab name: Historical diversions

Cumulative average diversion: 298282 985

Year	Month	Flow at Sydney Acre-ft	Flow at Sydney cfs	Diversion at Intake Acre-ft	Diversion at Intake cfs		Max pumping	Expected gravity diversion (if total limited to 1374)	Total potential diversion	Required diversion with 3% conservation	Shortfall	Shortfall without 3% conservation
1968	May		12000	70920	1153	ACE0029791	825	535.9	1361	1119	0	0
	June		49370	68740	1155	ACE0029791	825	548.6	1374	1121	0	0
	July		24100	74990	1220	ACE0029791	825	497.3	1322	1183	0	0
	August		12570	72390	1177	ACE0029791	825	442.5	1268	1142	0	0
	September		12640	69020	1160	ACE0029791	825	498.5	1324	1125	0	0
				356060	1173	ACE0029791						
1969	May		19040	45050	733	ACE0029791	825	535.9	1361	711	0	0
	June		27050	73490	1235	ACE0029791	825	548.6	1374	1198	0	0
	July		25410	74090	1205	ACE0029791	825	497.3	1322	1169	0	0
	August		7200	79430	1292	ACE0029791	825	442.5	1268	1253	0	24
	September		5770	74230	1247	ACE0029791	825	498.5	1324	1210	0	0
				346290	1141	ACE0029791						
1970	May		23000	640	10	ACE0029791	825	535.9	1361	10	0	0
	June		48010	65600	1102	ACE0029791	825	548.6	1374	1069	0	0
	July		26900	81180	1320	ACE0029791	825	497.3	1322	1281	0	0
	August		7260	81200	1321	ACE0029791	825	442.5	1268	1281	13	53
	September		7380	69590	1169	ACE0029791	825	498.5	1324	1134	0	0
				298210	983	ACE0029791						
1971	May		21660	37800	615	ACE0029791	825	535.9	1361	596	0	0
	June		50480	70050	1177	ACE0029791	825	548.6	1374	1142	0	0
	July		29380	80470	1309	ACE0029791	825	497.3	1322	1269	0	0
	August		9870	82700	1345	ACE0029791	825	442.5	1268	1305	37	77
	September		10060	59610	1002	ACE0029791	825	498.5	1324	972	0	0
				330630	1089	ACE0029791						
1972	May		19240	26430	430	ACE0029791	825	535.9	1361	417	0	0
	June		43300	64720	1088	ACE0029791	825	548.6	1374	1055	0	0
	July		19370	78660	1279	ACE0029791	825	497.3	1322	1241	0	0
	August		11110	79380	1291	ACE0029791	825	442.5	1268	1252	0	23
	September		9880	70690	1188	ACE0029791	825	498.5	1324	1152	0	0
				319880	1054	ACE0029791						
1973	May		23670	64080	1042	ACE0029791	825	535.9	1361	1011	0	0
	June		32620	72010	1210	ACE0029791	825	548.6	1374	1174	0	0
	July		13910	79510	1293	ACE0029791	825	497.3	1322	1254	0	0
	August		6530	77350	1258	ACE0029791	825	442.5	1268	1220	0	0
	September		12230	59290	996	ACE0029791	825	498.5	1324	967	0	0
				352240	1161	ACE0029791						
1974	May		15490	66600	1083	ACE0029791	825	535.9	1361	1051	0	0
	June		49710	69310	1165	ACE0029791	825	548.6	1374	1130	0	0
	July		32060	81250	1321	ACE0029791	825	497.3	1322	1282	0	0
	August		10740	79270	1289	ACE0029791	825	442.5	1268	1251	0	22
	September		8750	49810	837	ACE0029791	825	498.5	1324	812	0	0
				346240	1141	ACE0029791						
1975	May		29100	7010	114	ACE0029792	825	535.9	1361	111	0	0
	June		45000	65940	1108	ACE0029792	825	548.6	1374	1075	0	0
	July		48640	75450	1227	ACE0029792	825	497.3	1322	1190	0	0
	August		16250	79840	1298	ACE0029792	825	442.5	1268	1260	0	31
	September		9720	62390	1048	ACE0029792	825	498.5	1324	1017	0	0
				290630	958	ACE0029792						

Tab name: Historical diversions

Year	Month	Flow at Sydney		Diversion at Intake			Max pumping	Expected gravity diversion (if total limited to 1374)	Total potential diversion	Required diversion with 3% conservation	Shortfall	Shortfall without 3% conservation
		Acre-ft	cfs	Acre-ft	cfs							
1976	May		27120	62010	1008	ACE0029792	825	535.9	1361	978	0	0
	June		40580	74960	1260	ACE0029792	825	548.6	1374	1222	0	0
	July		22770	83440	1357	ACE0029792	825	497.3	1322	1316	0	35
	August		9400	82730	1345	ACE0029792	825	442.5	1268	1305	38	78
	September		7320	71970	1209	ACE0029792	825	498.5	1324	1173	0	0
				375110	1236	ACE0029792						
1977	May		10530	13980	227	ACE0029792	825	535.9	1361	221	0	0
	June		17100	9840	165	ACE0029792	825	548.6	1374	160	0	0
	July		5360	14700	239	ACE0029792	825	497.3	1322	232	0	0
	August		3710	13000	211	ACE0029792	825	442.5	1268	205	0	0
	September		5300	663	11	ACE0029792	825	498.5	1324	11	0	0
				52183	172	ACE0029792						
1978	May		34600	57290	932	ACE0029792	825	535.9	1361	904	0	0
	June		47590	61240	1029	ACE0029792	825	548.6	1374	998	0	0
	July		37660	71950	1170	ACE0029792	825	497.3	1322	1135	0	0
	August		14240	76180	1239	ACE0029792	825	442.5	1268	1202	0	0
	September		12100	49450	831	ACE0029792	825	498.5	1324	806	0	0
				316110	1042	ACE0029792						
1979	May		16050	4680	76	ACE0029792	825	535.9	1361	74	0	0
	June		24100	18580	312	ACE0029792	825	548.6	1374	303	0	0
	July		15160	20840	339	ACE0029792	825	497.3	1322	329	0	0
	August		7470	16120	262	ACE0029792	825	442.5	1268	254	0	0
	September		5860	12610	212	ACE0029792	825	498.5	1324	206	0	0
				72830	240	ACE0029792						
1980	May		16700	77940	1268	ACE0029792	825	535.9	1361	1230	0	0
	June		24900	74310	1249	ACE0029792	825	548.6	1374	1211	0	0
	July		14020	80160	1304	ACE0029792	825	497.3	1322	1265	0	0
	August		6790	70610	1148	ACE0029792	825	442.5	1268	1114	0	0
	September		8320	49670	835	ACE0029792	825	498.5	1324	810	0	0
				352690	1162	ACE0029792						
1981	May		17370	10220	166	ACE0029792	825	535.9	1361	161	0	0
	June		38650	9260	156	ACE0029792	825	548.6	1374	151	0	0
	July		14780	14720	239	ACE0029792	825	497.3	1322	232	0	0
	August		5160	13170	214	ACE0029792	825	442.5	1268	208	0	0
	September		3750	10830	182	ACE0029792	825	498.5	1324	177	0	0
				58200	192	ACE0029792						
1982	May		13490	152	2	ACE0029792	825	535.9	1361	2	0	0
	June		33440	2300	39	ACE0029792	825	548.6	1374	37	0	0
	July		36530	12300	200	ACE0029792	825	497.3	1322	194	0	0
	August		13470	13000	211	ACE0029792	825	442.5	1268	205	0	0
	September		10450	4650	78	ACE0029792	825	498.5	1324	76	0	0
				32402	107	ACE0029792						
1983	May		12230	52200	849	ACE0029792	825	535.9	1361	823	0	0
	June		30160	61000	1025	ACE0029792	825	548.6	1374	994	0	0
	July		27110	60800	989	ACE0029792	825	497.3	1322	959	0	0
	August		9950	63600	1034	ACE0029792	825	442.5	1268	1003	0	0
	September		7950	49900	839	ACE0029792	825	498.5	1324	813	0	0
				287500	947	ACE0029792						
1984	May		20240	74040	1204	ACE0029792	825	535.9	1361	1168	0	0
	June		32550	69510	1168	ACE0029792	825	548.6	1374	1133	0	0
	July		24070	76630	1246	ACE0029792	825	497.3	1322	1209	0	0
	August		9970	78710	1280	ACE0029792	825	442.5	1268	1242	0	13
	September		7670	59960	1008	ACE0029792	825	498.5	1324	977	0	0
				358850	1182	ACE0029792						

Tab name: Historical diversions

Year	Month	Flow at Sydney Acre-ft	Flow at Sydney cfs	Diversion at Intake Acre-ft	Diversion at Intake cfs		Max pumping	Expected gravity diversion (if total limited to 1374)	Total potential diversion	Required diversion with 3% conservation	Shortfall	Shortfall without 3% conservation
1985	May		10410	57400	934	ACE0029792	825	535.9	1361	906	0	0
	June		15970	55500	933	ACE0029792	825	548.6	1374	905	0	0
	July		5730	56500	919	ACE0029792	825	497.3	1322	891	0	0
	August		6480	56600	921	ACE0029792	825	442.5	1268	893	0	0
	September		5490	45900	771	ACE0029792	825	498.5	1324	748	0	0
				271900	896							
1986	May		16890	67200	1093	ACE0029792	825	535.9	1361	1060	0	0
	June		42680	72800	1223	ACE0029792	825	548.6	1374	1187	0	0
	July		19370	75300	1225	ACE0029792	825	497.3	1322	1188	0	0
	August		8040	81200	1321	ACE0029792	825	442.5	1268	1281	13	53
	September		12930	51600	867	ACE0029792	825	498.5	1324	841	0	0
				348100	1147							
1987	May		13550	57020	927	ACE0029792	825	535.9	1361	900	0	0
	June		14450	69800	1173	ACE0029792	825	548.6	1374	1138	0	0
	July		8350	79430	1292	ACE0029792	825	497.3	1322	1253	0	0
	August		5910	70530	1147	ACE0029792	825	442.5	1268	1113	0	0
	September		6130	61530	1034	ACE0029792	825	498.5	1324	1003	0	0
				338310	1115							
1988	May											
	June											
	July											
	August											
	September											
				310147.4	1022	2/8/16, Enclosure 2, p. 11/15						
1989	May				872	2/8/16, Enclosure 2, p. 12/15	825	535.9	1361	846	0	0
	June				1098	2/8/16, Enclosure 2, p. 12/15	825	548.6	1374	1065	0	0
	July				1218	2/8/16, Enclosure 2, p. 12/15	825	497.3	1322	1181	0	0
	August				1197	2/8/16, Enclosure 2, p. 12/15	825	442.5	1268	1161	0	0
	September				873	2/8/16, Enclosure 2, p. 12/15	825	498.5	1324	847	0	0
				319379	1052							
1990	May				1107	2/8/16, Enclosure 2, p. 13/15	825	535.9	1361	1074	0	0
	June				1028	2/8/16, Enclosure 2, p. 13/15	825	548.6	1374	997	0	0
	July				1204	2/8/16, Enclosure 2, p. 13/15	825	497.3	1322	1168	0	0
	August				1202	2/8/16, Enclosure 2, p. 13/15	825	442.5	1268	1166	0	0
	September				1052	2/8/16, Enclosure 2, p. 13/15	825	498.5	1324	1021	0	0
				339842	1120							
1991	May				972	2/8/16, Enclosure 2, p. 14/15	825	535.9	1361	943	0	0
	June				1043	2/8/16, Enclosure 2, p. 14/15	825	548.6	1374	1012	0	0
	July				1152	2/8/16, Enclosure 2, p. 14/15	825	497.3	1322	1118	0	0
	August				1226	2/8/16, Enclosure 2, p. 14/15	825	442.5	1268	1189	0	0
	September				747	2/8/16, Enclosure 2, p. 14/15	825	498.5	1324	724	0	0
				312541	1030							
1992	May				1106	2/8/16, Enclosure 2, p. 15/15	825	535.9	1361	1073	0	0
	June				1170	2/8/16, Enclosure 2, p. 15/15	825	548.6	1374	1135	0	0
	July				1188	2/8/16, Enclosure 2, p. 15/15	825	497.3	1322	1152	0	0
	August				1212	2/8/16, Enclosure 2, p. 15/15	825	442.5	1268	1176	0	0
	September				1087	2/8/16, Enclosure 2, p. 15/15	825	498.5	1324	1054	0	0
				349874	1153							
1993	May				1031	2/8/16, Enclosure 3, p. 1/1	825	535.9	1361	1000	0	0
	June				1119	2/8/16, Enclosure 3, p. 1/1	825	548.6	1374	1085	0	0
	July				1094	2/8/16, Enclosure 3, p. 1/1	825	497.3	1322	1061	0	0
	August				1180	2/8/16, Enclosure 3, p. 1/1	825	442.5	1268	1145	0	0
	September				960	2/8/16, Enclosure 3, p. 1/1	825	498.5	1324	931	0	0
				326922	1077							

Tab name: Historical diversions

Year	Month	Flow at Sydney Acre-ft	Flow at Sydney cfs	Diversion at Intake Acre-ft	Diversion at Intake cfs		Max pumping	Expected gravity diversion (if total limited to 1374)	Total potential diversion	Required diversion with 3% conservation	Shortfall	Shortfall without 3% conservation
1994	May											
	June											
	July											
	August											
	September											
1995	May											
	June											
	July											
	August											
	September											
				308428	1016							
1996	May											
	June											
	July											
	August											
	September											
				302632	997	2/8/16, Enclosure 5, p. 5/5						
1997	May											
	June											
	July											
	August											
	September											
				307168	1012	2/8/16, Enclosure 6, p. 5/5						
1998	May											
	June											
	July											
	August											
	September											
				353649	1165	2/8/16, Enclosure 8, p. 5/5						
1999	May											
	June											
	July											
	August											
	September											
2000	May				1093	DEIS, App. A, pdf p. 472/527	825	535.9	1361	1060	0	0
	June				1032	DEIS, App. A, pdf pp. 472-473/527	825	548.6	1374	1001	0	0
	July				1207	DEIS, App. A, pdf p. 473/527	825	497.3	1322	1171	0	0
	August				1252	DEIS, App. A, pdf p. 473/527	825	442.5	1268	1214	0	0
	September				838	DEIS, App. A, pdf pp. 473-474/527	825	498.5	1324	813	0	0
				329712	1086							
2001	May											
	June											
	July											
	August											
	September											
2002	May											
	June											
	July											
	August											
	September											

Tab name: Historical diversions

Year	Month	Flow at Sydney Acre-ft	Flow at Sydney cfs	Diversion at Intake Acre-ft	Diversion at Intake cfs		Max pumping	Expected gravity diversion (if total limited to 1374)	Total potential diversion	Required diversion with 3% conservation	Shortfall	Shortfall without 3% conservation
2003	May											
	June											
	July											
	August											
	September											
				343073	1130	2/8/16, Enclosure 9, p. 3/9						
2004	May											
	June											
	July											
	August											
	September											
				332318.4	1095	2/8/16, Enclosure 9, pp. 1-3/9						
2005	May											
	June											
	July											
	August											
	September											
				319138.3	1052	2/8/16, Enclosure 9, pp. 1-3/9						
2006	May											
	June											
	July											
	August											
	September											
				329206	1085	2/8/16, Enclosure 9, p. 3/9						
2007	May											
	June											
	July											
	August											
	September											
				318803	1051	2/8/16, Enclosure 9, p. 6/9						
2008	May											
	June											
	July											
	August											
	September											
				345127.3	1137	2/8/16, Enclosure 9, p. 4-6/9						
2009	May											
	June											
	July											
	August											
	September											
				350892	1156	2/8/16, Enclosure 9, p. 6/9						
2010	May											
	June											
	July											
	August											
	September											
				289211	953	2/8/16, Enclosure 9, p. 6/9						
2011	May											
	June											
	July											
	August											
	September											
				197893	652	2/8/16, Enclosure 9, p. 9/9						

Tab name: Historical diversions

Year	Month	Flow at Sydney Acre-ft	Flow at Sydney cfs	Diversion at Intake Acre-ft	Diversion at Intake cfs		Max pumping	Expected gravity diversion (if total limited to 1374)	Total potential diversion	Required diversion with 3% conservation	Shortfall	Shortfall without 3% conservation
2012	May				1077	DEIS, App. A, pdf p. 478/527	825	535.9	1361	1044	0	0
	June				1108	DEIS, App. A, pdf p. 478/527	825	548.6	1374	1074	0	0
	July				1274	DEIS, App. A, pdf pp. 478-479/527	825	497.3	1322	1236	0	0
	August				1221	DEIS, App. A, pdf p. 479/527	825	442.5	1268	1185	0	0
	September				902	DEIS, App. A, pdf pp. 479-480/527	825	498.5	1324	875	0	0
				339253	1118							
2015	May				750	"Encl. A LYIP 2015 Diversion Flows.xlsx"	825	535.9	1361	728	0	0
	June				1151	"Encl. A LYIP 2015 Diversion Flows.xlsx"	825	548.6	1374	1117	0	0
	July				1325	"Encl. A LYIP 2015 Diversion Flows.xlsx"	825	497.3	1322	1285	0	3
	August				1295	"Encl. A LYIP 2015 Diversion Flows.xlsx"	825	442.5	1268	1256	0	27
	September				757	"Encl. A LYIP 2015 Diversion Flows.xlsx"	825	498.5	1324	734	0	0
				320713	1057							

42-yr ave. ('68-93, '95-98, '00, '03-12, '15):	298282	985
Max. monthly diversion (July 1976):	83440	1357

Monthly diversions	Average acre-feet	Average cfs	2nd highest	Max	Year of max	Pump	expected gravity diversion	expected total diversion	Required diversion with 3% conservation cfs	Shortfall cfs	Shortfall without 3% conservation	
28-yr May data ('68-87, '89-93, '00, '12):		781		1268	1980	825	536	1361	759	0.0	0.0	
28-yr June data ('68-87, '89-93, '00, '12):		990		1260	1976	825	549	1374	955	0.0	0.0	
28-yr July data ('68-87, '89-93, '00, '12):		1084		1357	1976	825	497	1322	1043	0.0	1.4	
28-yr August data ('68-87, '89-93, '00, '12):		1085		1345	1976	825	443	1268	1045	3.8	14.9	
28-yr September data ('68-87, '89-93, '00, '12):		848		1247	1969	825	499	1324	826	0.0	0.0	
28-yr May-September data ('68-87, '89-93, '00, '12):		958	1182	1236	1976	825	504	1329	926	0.8	3.3	
42-year May-September data	298000	985		1182 1236						38	78	Maximum August shortfall
10-year May-September average ('03-'12):	316000	1043								0	35	Maximum July shortfall
11-year May-September ave. ('03-12, '15):	317000	1044										
										4	12	Number of August shortfalls (out of 28)
										0	2	Number of July shortfalls (out of 28)
										8	23	Maximum seasonal shortfall
										4	12	Number of seasonal shortfalls (out of 28)

Seasonal Kaf per cfs:	0.303471
Cfs per seasonal Kaf:	3.295207

Tab name: Flows with no dam, 3 pump sites

Data in Columns A-I:
Flow duration of potential diversions (DEIS, Appendix A, pdf. page 197 of 527 except where indicated otherwise)

Percent time exceeded	May	June	July	August	September	5-month season
0.1	1374	1374	1374	1374	1374	1374
0.2	1374	1374	1374	1374	1331	1374
0.5	1374	1374	1374	1302	1095	1374
1	1374	1374	1374	1214	946	1374
2	1374	1374	1374	1116	847	1374
5	1374	1374	1374	904	748	1374
10	1374	1374	1374	790	692	1374
15	1269	1374	1374	731	647	1374
20	1141.0	1374.0	1374.0	692.0	612.0	1282
27	1038.6	1374.0	1278.9	638.9	580.3	1100 (pdf p. A-322)
30	1002.0	1374.0	1245.0	620.0	569.0	1035
40	908.0	1374.0	1088.0	544.0	525.0	853
42	890.6	1374.0	1050.7	532.5	513.5	825 (pdf p. A-322)
50	828.0	1374.0	916.0	491.0	472.0	724
60	765.0	1262.0	801.0	442.0	427.0	620
68	710.1	1155.1	705.4	394.6	396.9	550 (pdf p. A-322)
70	692.0	1120.0	674.0	379.0	387.0	527
80	614.0	977.0	523.0	334.0	352.0	443
85	554.0	908.0	474.0	308.0	331.0	400
90	513.0	832.0	428.0	267.0	314.0	356
95	452.0	731.0	385.0	215.0	286.0	307
97	426.7	676.3	357.1	203.1	265.9	275 (pdf p. A-322)
98	403.0	625.0	331.0	192.0	247.0	245
99	364.0	559.0	314.0	187.0	231.0	210
99.5	277	521	289	182	203	194
99.8	250	492	254	177	192	186
99.9	231	466	249	174	188	182
99.95	229	464	246	172	186	177
99.99	227	464	240	167	181	169

Note: monthly values for 27, 42, 68, and 97 rows are interpolated using seasonal proportions

Interval	Size of interval	May average across the interval (assumes 1/3 of the way between limits, not 1/2)	June average across the interval (assumes 1/3 of the way between limits, not 1/2)	July average across the interval (assumes 1/3 of the way between limits, not 1/2)	August average across the interval (assumes 1/3 of the way between limits, not 1/2)	September average across the interval (assumes 1/3 of the way between limits, not 1/2)	5-month seasonal average across the interval (assumes 1/3 of the way between limits, not 1/2)
0.0-0.2	0.002	1374	1374	1374	1374	1360	1374
0.2-0.5	0.003	1374	1374	1374	1326	1174	1374
0.5-1	0.005	1374	1374	1374	1243	996	1374
1-2	0.01	1374	1374	1374	1149	880	1374
2-5	0.03	1374	1374	1374	975	781	1374
5-10	0.05	1374	1374	1374	828	711	1374
10-15	0.05	1304	1374	1374	751	662	1374
15-20	0.05	1184	1374	1374	705	624	1313
20-27	0.07	1073	1374	1311	657	591	1161
27-30	0.03	1014	1374	1256	626	573	1057
30-40	0.1	939	1374	1140	569	540	914
40-42	0.02	896	1374	1063	536	517	834
42-50	0.08	849	1374	961	505	486	758
50-60	0.1	786	1299	839	458	442	655
60-68	0.08	728	1191	737	410	407	573
68-70	0.02	698	1132	684	384	390	535
70-80	0.1	640	1025	573	349	364	471
80-85	0.05	574	931	490	317	338	414
85-90	0.05	527	857	443	281	320	371
90-95	0.05	472	765	399	232	295	323
95-97	0.02	435	695	366	207	273	286
97-98	0.01	411	642	340	196	253	255
98-99	0.01	377	581	320	189	236	222
99-99.5	0.005	306	534	297	184	212	199
99.5-99.8	0.003	259	502	266	179	196	189
99.8-99.9	0.001	237	475	251	175	189	183
99.9-99.95	0.0005	230	465	247	173	187	179
99.95-99.99	0.0004	228	464	242	169	183	172
99.99-100	0.0001	227	464	240	167	181	169
Total	1	860	1196	914	513	486	790

Shortfall if pumping limited to 825 cfs(average cfs during the month):

0-70	0.7
70-80	0.1
80-85	0.05
85-90	0.05
90-95	0.05
95-97	0.02
97-98	0.01
98-99	0.01
99-99.5	0.005
99.5-99.8	0.003
99.8-99.9	0.001
99.9-99.95	0.0005
99.95-99.99	0.0004
99.99-100	0.0001
0-100	1

Tab name: Flows with no dam, 3 pump sites

May pumping required to exceed 851 cfs	June pumping required to exceed 1079 cfs	July pumping required to exceed 1182 cfs	August pumping required to exceed 1183 cfs	September pumping required to exceed 924 cfs	5-month seasonal pumping required to exceed 1044 cfs
-523	-295	-192	-60	-71	-330
-523	-295	-192	34	44	-330
-523	-295	-192	208	143	-330
-523	-295	-192	355	214	-330
-453	-295	-192	432	262	-330
-332	-295	-192	478	301	-268
-221	-295	-129	526	333	-116
-163	-295	-75	557	351	-12
-88	-295	41	614	385	131
-45	-295	119	647	407	210
2	-295	221	678	438	287
65	-220	342	725	482	390
123	-112	444	773	517	471
153	-53	497	799	534	510
211	54	608	834	561	573
277	148	691	866	586	630
325	222	738	902	605	674
379	314	782	951	629	721
416	385	815	976	652	759
440	437	842	987	671	789
474	498	862	994	688	823
545	545	884	999	712	845
592	577	916	1004	729	856
614	604	931	1008	735	861
622	614	935	1010	738	866
624	615	940	1014	742	873
624	615	942	1016	743	>909

(monthly pumping requirement scaled up 9% from 28-yr average to match 11-yr average)

May pumping required cfs	June pumping required cfs	July pumping required cfs	August pumping required cfs	September pumping required cfs
0	0	0	0	0
0	0	0	92	92
0	0	0	275	183
0	0	0	367	275
0	0	0	458	275
0	0	0	550	367
0	0	0	550	367
0	0	0	642	367
0	0	92	642	458
0	0	183	733	458
92	0	275	733	458
92	0	367	733	550
183	0	458	825	550
183	0	550	825	550
275	92	642	917	642
367	183	733	917	642
367	275	825	917	642
458	367	825	1008	642
458	458	825	1008	733
458	458	917	1008	733
550	550	917	1008	733
550	550	917	1008	733
642	642	917	1008	733
642	642	1008	1008	825
642	642	1008	1100	825
642	642	1008	1100	825
642	642	1008	1100	825

(assumes each of the three pumps at each of three sites is either all the way on or all the way off; no partial loads)

yellow highlighting shows shortfalls
when pumping limited to a maximum of 825 cfs

	0	0	(70% of months have no shortfalls)
	0	9	
	0	41	
	0	77	
	0	126	
	0	151	
	17	162	
	37	169	
	59	174	
	91	179	
	106	183	
	110	185	
	115	189	
	117	191	
Weighted average shortfalls:	1	21	

Tab name: Flows with no dam, 3 pump sites

May			June			July			August			September					
Pumps used (92 cfs each)	kW used (50 kw + ratings from pdf p. A-322)	MWh used	Pumps used (92 cfs each)	kW used (50 kw + ratings from pdf p. A-322)	MWh used	Pumps used (92 cfs each)	kW used (50 kw + ratings from pdf p. A-322)	MWh used	Pumps used (92 cfs each)	kW used (50 kw + ratings from pdf p. A-322)	MWh used	Pumps used (92 cfs each)	kW used (50 kw + ratings from pdf p. A-322)	MWh used	5-month season Mwh used	Expected total diversion cfs	Total potential diversion with all pumps in use
																1371	1374
																1324	1374
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1272	1374
0	0	0	0	0	0	0	0	0	1	517	4	1	517	4	1043	1267	1374
0	0	0	0	0	0	0	0	0	3	1450	32	2	983	21	2492	1267	1374
0	0	0	0	0	0	0	0	0	4	2017	75	3	1450	52	3601	1260	1374
0	0	0	0	0	0	0	0	0	5	2583	96	3	1450	52	4190	1240	1374
0	0	0	0	0	0	0	0	0	6	3150	117	4	2017	73	5366	1235	1374
0	0	0	0	0	0	0	0	0	6	3150	164	4	2017	102	5442	1184	1374
0	0	0	0	0	0	0	0	0	7	3717	83	4	2017	44	5871	1170	1374
0	0	0	0	0	0	1	517	38	7	3717	277	5	2583	186	7331	1151	1374
0	0	0	0	0	0	2	983	15	8	4283	64	5	2583	37	7981	1152	1374
1	517	31	0	0	0	3	1450	86	8	4283	255	5	2583	149	8853	1147	1374
1	517	38	0	0	0	4	2017	150	8	4283	319	6	3150	227	10202	1113	1374
2	983	59	0	0	0	5	2583	154	9	4850	289	6	3150	181	11286	1098	1374
2	983	15	0	0	0	6	3150	47	9	4850	72	6	3150	45	11350	1079	1360
3	1450	108	1	517	37	7	3717	277	9	4850	361	7	3717	268	13874	1085	1296
4	2017	75	2	983	35	8	4283	159	9	4850	180	7	3717	134	14443	1080	1239
4	2017	75	3	1450	52	9	4850	180	9	4850	180	7	3717	134	15517	1072	1196
5	2583	96	4	2017	73	9	4850	180	9	4850	180	7	3717	134	16126	1056	1148
5	2583	38	5	2583	37	9	4850	72	9	4850	72	8	4283	62	16879	1055	1111
5	2583	19	5	2583	19	9	4850	36	9	4850	36	8	4283	31	16738	1028	1080
6	3150	23	6	3150	23	9	4850	36	9	4850	36	8	4283	31	17314	1037	1047
6	3150	12	6	3150	11	9	4850	18	9	4850	18	8	4283	15	17240	1003	1024
7	3717	8	7	3717	8	9	4850	11	9	4850	11	8	4283	9	17780	1013	1014
7	3717	3	7	3717	3	9	4850	4	9	4850	4	9	4850	3	18317	1017	1008
7	3717	1	7	3717	1	9	4850	2	9	4850	2	9	4850	2	18309	1012	1004
7	3717	1	7	3717	1	9	4850	1	9	4850	1	9	4850	1	18307	1009	997
7	3717	0	7	3717	0	9	4850	0	9	4850	0	9	4850	0	18302	1007	<994
		603			301			1467			2929			1997	7296	1140	1324 cfs, or 401,745 acre-feet
																or 345,941 acre-feet	

vs. 317,000 acre-feet average in most recent 11 years, or 9.13% more;
the extra diversions are due to "lumpiness" of pumping

Tab name: Flows with no dam, 5 pump sites

Flow duration of potential diversions (DEIS, Appendix A, pdf. page 197 of 527 except where indicated otherwise)

Percent time exceeded	May	June	July	August	September	5-month season
0.1	1374	1374	1374	1374	1374	1374
0.2	1374	1374	1374	1374	1331	1374
0.5	1374	1374	1374	1302	1095	1374
1	1374	1374	1374	1214	946	1374
2	1374	1374	1374	1116	847	1374
5	1374	1374	1374	904	748	1374
10	1374	1374	1374	790	692	1374
15	1269	1374	1374	731	647	1374
20	1141.0	1374.0	1374.0	692.0	612.0	1282
27	1038.6	1374.0	1278.9	638.9	580.3	1100 (pdf p. A-322)
30	1002.0	1374.0	1245.0	620.0	569.0	1035
40	908.0	1374.0	1088.0	544.0	525.0	853
42	890.6	1374.0	1050.7	532.5	513.5	825 (pdf p. A-322)
50	828.0	1374.0	916.0	491.0	472.0	724
60	765.0	1262.0	801.0	442.0	427.0	620
68	710.1	1155.1	705.4	394.6	396.9	550 (pdf p. A-322)
70	692.0	1120.0	674.0	379.0	387.0	527
80	614.0	977.0	523.0	334.0	352.0	443
85	554.0	908.0	474.0	308.0	331.0	400
90	513.0	832.0	428.0	267.0	314.0	356
95	452.0	731.0	385.0	215.0	286.0	307
97	426.7	676.3	357.1	203.1	265.9	275 (pdf p. A-322)
98	403.0	625.0	331.0	192.0	247.0	245
99	364.0	559.0	314.0	187.0	231.0	210
99.5	277	521	289	182	203	194
99.8	250	492	254	177	192	186
99.9	231	466	249	174	188	182
99.95	229	464	246	172	186	177
99.99	227	464	240	167	181	169

Note: monthly values for 27, 42, 68, 97 are interpolated using seasonal proportions

Interval	Size of interval	May average across the interval (assumes 1 of the way between limits, not	June average across the interval (assumes 1 of the way between limits, not	July average across the interval (assumes 1 of the way between limits, not	August average across the interval (assumes 1 of the way between limits, not	September average across the interval (assumes 1 of the way between limits, not	5-month seasonal average across the interval (assumes 1/3 of the way between limits, not 1/2)	May pumping required to exceed 851 cfs	June pumping required to exceed 1079 cfs	July pumping required to exceed 1182 cfs	August pumping required to exceed 1183 cfs	September pumping required to exceed 924 cfs	5-month seasonal pumping required to exceed 1044 cfs
								(monthly pumping requirement scaled up from 28-yr ave to match 11-yr totals)					
0.0-0.2	0.002	1374	1374	1374	1374	1360	1374						
0.2-0.5	0.003	1374	1374	1374	1326	1174	1374						
0.5-1	0.005	1374	1374	1374	1243	996	1374	-523	-295	-192	-60	-71	-330
1-2	0.01	1374	1374	1374	1149	880	1374	-523	-295	-192	34	44	-330
2-5	0.03	1374	1374	1374	975	781	1374	-523	-295	-192	208	143	-330
5-10	0.05	1374	1374	1374	828	711	1374	-523	-295	-192	355	214	-330
10-15	0.05	1304	1374	1374	751	662	1374	-453	-295	-192	432	262	-330
15-20	0.05	1184	1374	1374	705	624	1313	-332	-295	-192	478	301	-268
20-27	0.07	1073	1374	1311	657	591	1161	-221	-295	-129	526	333	-116
27-30	0.03	1014	1374	1256	626	573	1057	-163	-295	-75	557	351	-12
30-40	0.1	939	1374	1140	569	540	914	-88	-295	41	614	385	131
40-42	0.02	896	1374	1063	536	517	834	-45	-295	119	647	407	210
42-50	0.08	849	1374	961	505	486	758	2	-295	221	678	438	287
50-60	0.1	786	1299	839	458	442	655	65	-220	342	725	482	390
60-68	0.08	728	1191	737	410	407	573	123	-112	444	773	517	471
68-70	0.02	698	1132	684	384	390	535	153	-53	497	799	534	510
70-80	0.1	640	1025	573	349	364	471	211	54	608	1183	561	573
80-85	0.05	574	931	490	317	338	414	277	148	691	1183	586	630
85-90	0.05	527	857	443	281	320	371	325	222	738	1183	605	674
90-95	0.05	472	765	399	232	295	323	379	314	782	1183	629	721
95-97	0.02	435	695	366	207	273	286	416	385	815	1183	652	759
97-98	0.01	411	642	340	196	253	255	440	437	1182	1183	671	789
98-99	0.01	377	581	320	189	236	222	474	498	1182	1183	688	823
99-99.5	0.005	306	534	297	184	212	199	545	545	1182	1183	712	845
99.5-99.8	0.003	259	502	266	179	196	189	592	577	1182	1183	729	856
99.8-99.9	0.001	237	475	251	175	189	183	614	604	1182	1183	735	861
99.9-99.95	0.0005	230	465	247	173	187	179	622	614	1182	1183	738	866
99.95-99.9	0.0004	228	464	242	169	183	172	624	615	1182	1183	742	873
99.99-100	0.0001	227	464	240	167	181	169	624	615	1182	1183	743	>909
Total	1	860	1196	914	513	486	790						

Note: shaded hours in August and September are the times when river flows at Intake have been below 3000 cfs, so full diversions were not permitted even under current diversion rights. 2.92% of days in August and 0.48% in September, per 1967-2008 Sydney gauge flows below 1630 cfs

yellow highlighting shows periods when no gravity diversions can occur because pumping is required at sites 1-2

Shortfall if pumping limited to 825 cfs(average cfs during the month):

0-70	0.7
70-80	0.1
80-85	0.05
85-90	0.05
90-95	0.05
95-97	0.02
97-98	0.01
98-99	0.01
99-99.5	0.005
99.5-99.8	0.003
99.8-99.9	0.001
99.9-99.95	0.0005
99.95-99.9	0.0004
99.99-100	0.0001
0-100	1

Tab name: Flows with no dam, 5 pump sites

(assumes each of the three pumps at each of three sites is either all the way on or all the way off; no partial loads)

					May			June			July			August			September					
May pumping required	June pumping required	July pumping required	August pumping required	September pumping required	Pumps used (92 cfs each)	kW used (50 kw + ratings from pdf p. A-322)	MWh used	Pumps used (92 cfs each)	kW used (50 kw + ratings from pdf p. A-322)	MWh used	Pumps used (92 cfs each)	kW used (50 kw + ratings from pdf p. A-322)	MWh used	Pumps used (92 cfs each)	kW used (50 kw + ratings from pdf p. A-322)	MWh used	Pumps used (92 cfs each)	kW used (50 kw + ratings from pdf p. A-322)	MWh used	5-month season Mwh used	Expected total diversion cfs	Total potential diversion with all pumps in use
																					1371	1374
																					1324	1374
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1272	1374
0	0	0	92	92	0	0	0	0	0	0	0	0	0	1	517	4	1	517	4	1043	1267	1374
0	0	0	275	183	0	0	0	0	0	0	0	0	0	3	1450	32	2	983	21	2492	1267	1374
0	0	0	367	275	0	0	0	0	0	0	0	0	0	4	2017	75	3	1450	52	3601	1260	1374
0	0	0	458	275	0	0	0	0	0	0	0	0	0	5	2583	96	3	1450	52	4190	1240	1374
0	0	0	550	367	0	0	0	0	0	0	0	0	0	6	3150	117	4	2017	73	5366	1235	1374
0	0	0	550	367	0	0	0	0	0	0	0	0	0	6	3150	164	4	2017	102	5442	1184	1374
0	0	0	642	367	0	0	0	0	0	0	0	0	0	7	3717	83	4	2017	44	5871	1170	1374
0	0	92	642	458	0	0	0	0	0	0	1	517	38	7	3717	277	5	2583	186	7331	1151	1374
0	0	183	733	458	0	0	0	0	0	0	2	983	15	8	4283	64	5	2583	37	7981	1152	1374
92	0	275	733	458	1	517	31	0	0	0	3	1450	86	8	4283	255	5	2583	149	8853	1147	1374
92	0	367	733	550	1	517	38	0	0	0	4	2017	150	8	4283	319	6	3150	227	10202	1113	1374
183	0	458	825	550	2	983	59	0	0	0	5	2583	154	9	4850	289	6	3150	181	11286	1098	1374
183	0	550	825	550	2	983	15	0	0	0	6	3150	47	9	4850	72	6	3150	45	11350	1079	1374
275	92	642	1192	642	3	1450	108	1	517	37	7	3717	277	13	7117	529	7	3717	268	16313	1158	1374
367	183	733	1192	642	4	2017	75	2	983	35	8	4283	159	13	7117	265	7	3717	134	16798	1153	1374
367	275	825	1192	642	4	2017	75	3	1450	52	9	4850	180	13	7117	265	7	3717	134	17872	1146	1374
458	367	825	1192	642	5	2583	96	4	2017	73	9	4850	180	13	7117	265	7	3717	134	18481	1129	1374
458	458	825	1192	733	5	2583	38	5	2583	37	9	4850	72	13	7117	106	8	4283	62	19184	1128	1374
458	458	1192	1192	733	5	2583	19	5	2583	19	13	7117	53	13	7117	53	8	4283	31	21314	1175	1374
550	550	1192	1192	733	6	3150	23	6	3150	23	13	7117	53	13	7117	53	8	4283	31	21890	1184	1374
550	550	1192	1192	733	6	3150	12	6	3150	11	13	7117	26	13	7117	26	8	4283	15	21798	1150	1374
642	642	1192	1192	733	7	3717	8	7	3717	8	13	7117	16	13	7117	16	8	4283	9	22332	1160	1374
642	642	1192	1192	825	7	3717	3	7	3717	3	13	7117	5	13	7117	5	9	4850	3	22862	1164	1374
642	642	1192	1192	825	7	3717	1	7	3717	1	13	7117	3	13	7117	3	9	4850	2	22852	1158	1374
642	642	1192	1192	825	7	3717	1	7	3717	1	13	7117	2	13	7117	2	9	4850	1	22850	1155	1374
642	642	1192	1192	825	7	3717	0	7	3717	0	13	7117	1	13	7117	1	9	4850	0	22844	1154	1374
							603			301			1518			3435			1997	7853	1164	1374

vs. 1044 average in most recent 11 years of data, or 111.5%
the extra diversions are due to "lumpiness" of pumping

Tab name: Cost for pumping capability

Costs for different alternatives for incremental pumping capability

Case name	Annualized cost	Incremental annual cost (total)	Pumping capability	Incremental pumping capability	Annualized incremental cost to increase pumping capability	Fixed Charge Rate	Capital cost worth paying for decreased pumping requirements
	$ 1000s / yr	$ 1000s / yr	cfs	cfs	$1000s/year / cfs	%/year	$ 1000s / cfs
No Action	2643		0				
3 Pump Sites	7831	5188	825	825	$6.29		
Multiple Pump	9686	1855	1374	549	$3.38	0.039795	$84.91
Data sources:	DEIS p. 2-99; Marcus analysis					DEIS p. 2-99	

Tab name: Multiple Pump costs

Quantification of cost adjustments - Multiple Pump Alternative

Capital cost items

Line #	Item	Direct cost adjustment	Contingency	Total cost adjustment
1	Site 3 pipe	$0.429	32.46%	$0.568
2	Sites 4-5 pipe	$0.330	32.46%	$0.437
3	Back-up pumps	$2.163	38.10%	$2.987
4	Back-up generators	$2.495	38.10%	$3.446
5	Adaptive mgmt. during construction	$0.054		$0.074
6	Planning, engineering, design, const. management	$0.821	26.52%	$1.038
7	Interest during construction			$0.425
8	Total investment cost adjustment			$8.975

OM&R items

Line #	Item	Cost adjustment
9	Pumping energy	$0.111
10	Back-up pumps	$0.178
11	Total OM&R items	$0.289

12	Annualization factor for capital costs:	3.980%	(DEIS, p. 2-99)
13	Annualized investment costs	$0.357	
14	Annualized OM&R costs	$0.289	
15	Total annualized cost reduction	$0.646	
16	Alternative Cost per DEIS	$10.595	(DEIS, p. 2-99)
17	Adjusted alternative cost	$9.949	

Tab name: Three Pump Sites cost

Quantification of cost adjustments - Three Pump Sites Alternative

Capital cost items

Line #	Item	Direct cost adjustment	Contingency	Total cost adjustment
1	Land	$0.177	25.00%	$0.222
2	Pump sites 1-2	23.044	36.80%	$31.524
3	Site 3 pipe	$0.429	32.46%	$0.568
4	Sites 4-5 pipe	$0.330	32.46%	$0.437
5	Back-up pumps	$0.000	38.10%	$0.000
6	Back-up generators	$2.495	38.10%	$3.446
7	Back-up generators already counted at sites 1-2	-$0.570	36.80%	-$0.780
8	Adaptive mgmt. during construction	$0.259		$0.354
9	Planning, engineering, design, const. management	$3.925	26.52%	$4.965
10	Interest during construction - lower capital cost			$2.023
11	Interest during construction - shorter construction period			$1.295
12	Total investment cost adjustment			$42.760

Tab name: Three Pump Sites cost

OM&R items

	Item	Cost adjustment
13	Pumping energy	$0.139
14	Sites 1-2	$0.583
15	Feeder canals	$0.120
16	ESA monitoring	$0.067
17	Total OM&R items	$0.909

18	Annualization factor for capital costs:	3.980%	(DEIS, p. 2-99)
19	Annualized investment costs	$1.702	
20	Annualized OM&R costs	$0.909	
21	Total annualized cost reduction	$2.610	
22	Alternative cost per DEIS	$10.595	(DEIS, p. 2-99)
23	Adjusted cost for the Three Pump Sites Alternative	$7.985	

261.9526

Tab name: Cost per AAHU

Cost per annual additional habitat unit (AAHU) calculations

Line #	Alternative	Annualized Cost per DEIS ($millions/yr)	Cost adjustments ($millions/yr)	Corrected cost ($millions/yr)	FPCI	Sturgeon habitat acres	HU	Incremental HU vs. No Action	Cost per AAHU
1	No Action	$2.643	$0.000	$2.643	0.0252	12637	318	0	N/A
2	Bypass Channel	$5.171	$0.085	$5.256	0.6	12637	7,582	7,264	$724
2a	Bypass Channel w/ FPCI from EA	$5.171	$0.085	$5.256	0.5	12637	6,319	6,000	$876
2b	Bypass Channel w/ lower FPCI	$5.171	$0.085	$5.256	0.4	12637	5,055	4,736	$1,110
3	Multiple Pumps with 5 pump sites	$10.595	-$0.646	$9.949	1	12637	12,637	12,319	$808
4	Multiple Pumps with 3 pump sites	N/A	$7.985	$7.985	1	12637	12,637	12,319	$648
	Sources:	DEIS, p. 2-99	Comments, sections V.A (Bypass Channel), V.B (Multiple Pump), VII.C (Three Pump Sites)	Calculated	Appendix D, pp. 11-12, 14-15 (as shown below)	Appendix D, p. 4	Calculated	Calculated	Calculated

Line #	FPCI calculations Alternative	Fs	Fl	E	U	D	FPCI
5	No Action	5	2	3.5	1	0.18	0.0252
6	Bypass Channel	2	4	3	5	1	0.6
6a	Bypass Channel per 2015 EA	2	3	2.5	5	1	0.5
6b	Bypass Channel with Fl = 2	2	2	2	5	1	0.4
7	No-weir	5	5	5	5	1	1
	Sources:	App. D, p. 12	App. D, p. 11	Formula in App. D, p. 10	App. D, p. 14	App. D, p. 15	Formula in App. D, p. 2

Tab name: Cost per AAHU

Incremental AAHU beyond Bypass Channel Alternative (with DEIS FPCI)	Incremental AAHU beyond Bypass Channel Alternative (with EA FPCI)	Incremental AAHU beyond Bypass Channel Alternative (with lower FPCI)	Incremental cost for extra AAHU beyond Bypass Channel Alternative (with DEIS FPCI)	Incremental cost for extra AAHU beyond Bypass Channel Alternative (with EA FPCI)	Incremental cost for extra AAHU beyond Bypass Channel Alternative (with lower FPCI)
0					
0					
0					
5,055	6,319	7,582	$928	$743	$619
5,055	6,319	7,582	$540	$432	$360

Tab name: O&M costs

Disaggregation of OM&R costs (DEIS, p. 2-99, Table 2-26) into their O&M and R (replacement) components
All data from Attachment B-8 to Appendix B of the DEIS, pdf pp. 9-10 of 19 (Bypass Channel Alternative) and pdf pp. 15-16 of 19 (Multiple Pump Alternative)

	Alternative			Bypass Channel Alternative		Multiple Pump Alternative	
				item #	annualized	item #	annualized
	OM&R line item	Years between	Cost		cost		cost
		cost	type		(thousands of dollars)		
Line #		recurrence	(O&M, R, U)*				
1	Main Canal, Lateral, Drains	1	O&M	1	1875	1	1875
2	Sediment Removal	1	O&M	2	10	3	10
3	Daily Operations	1	O&M	3	77	4	77
4	Fish Screen Manifolds	25	R	4	55.04	5	55.04
5	Fish Screen Cylinder Units	25	R	5	32.38	6	32.38
6	Fish Screen External Brushes	5	R	6	45.09	7	45.09
7	Fish Screen Internal Brushes	5	R	7	45.09	8	45.09
8	Fish Screen Seal System	10	R	8	10.41	9	10.41
9	Diversion Dam Maintenance	1	O&M	9	10	N/A	0
10	Rock Replacement	5	U	10	18.79	N/A	0
11	Barge Cost	5	U	11	18.79	N/A	0
12	Bypass Channel	1	O&M	12	57	N/A	0
13	Coffer Dam (Major Repairs)	10	U	13	43.36	N/A	0
14	Riprap Repairs (Major Repairs)	10	U	14	34.69	N/A	0
15	Channel Repairs	5	U	15	28.18	N/A	0
16	Bypass Channel Inspection	1	O&M	16	3	N/A	0
17	Existing Pumps	1	O&M	17	235	22	235
18	Administrative/Indirect Costs	1	O&M	18	61	29	61
19	Monitoring	1	O&M	19	138.93	30	277.87
20	Lateral pumps	1	O&M	N/A	0	10	50
21	Large pumps Rehab	4	U	N/A	0	11	468.88
22	Large Pump Motors Rehab	1	O&M	N/A	0	12	100
23	Large Pumps Replacement	35	R	N/A	0	13	59.64
24	Large Pump Motor Replacement	50	R	N/A	0	14	37.59
25	Pump House Maintenance	1	O&M	N/A	0	15	10
26	Pump and Motor Remove and Install	4	U	N/A	0	16	46.89
27	Control Panel and Electronics	1	O&M	N/A	0	17	5
28	Man Power to Maintain and Operate	1	O&M	N/A	0	18	240
29	Vehicle	1	O&M	N/A	0	19	64.15
30	Power Costs	1	O&M	N/A	0	20	500
31	Service discharge pipes and valves	25	R	N/A	0	21	10.79
32	Fish Screens	1	O&M	N/A	0	23	20
33	Fish Screen and Cleaner Replacement	25	R	N/A	0	24	186.28
34	Dewatering and Sediment Removal	1	O&M	N/A	0	25	150
35	Sediment Removal from Feeder Canal	1	O&M	N/A	0	26	300
36	Trash Rack Cleaning - Manual	1	O&M	N/A	0	27	48.6
37	Bank Stabilization	5	U	N/A	0	28	12.4
38	Total OM&R cost				$2,799		$5,034
39	Total O&M only				$2,467		$4,024
40	Total O&M + U				$2,611		$4,552
41	Total R only				$188		$482
42	Total R + U				$332		$1,010

Differences between alternatives:
(thousands of dollars)

43	Total OM&R cost	$2,235
44	Total O&M only	$1,557
45	Total O&M + U	$1,941
46	Total R only	$294
47	Total R + U	$679

* O&M for costs that recur annually; R for replacement of equipment; U for unclear, where recurrence interval is multiple years but activity doesn't involve equipment

Tab name: Sidney gauge data

Yellowstone River at Sidney, Montana Site # 6329500

Data-value qualification codes included in this output.

Ice	Ice affected
A	Approved for publication - Processing and review completed.
P	Provisional data subject to revision.
e	Value has been estimated.

Days at 1620 cfs and below:

8/7-13, 16-17, 21-25/1988	14
8/11-31/2001	21
9/1-6/2001	6
8/21-23/2004	3
Total	44
August frequency	2.92%
September frequency	0.48%
Seasonal frequency	0.68%

Date	Discharge cfs	Qualifier
5/23/1978	104000	A
5/22/1978	88900	A
6/17/1997	84900	A
6/18/1997	84200	A
6/16/1997	83400	A
5/24/1978	82800	A
6/15/1997	81600	A
6/14/1997	81300	A
6/13/1997	80100	A
6/20/1967	79700	A
6/19/1997	79500	A
6/19/1967	76900	A
6/12/1997	76900	A
7/9/1975	76300	A
7/10/1975	76300	A
6/23/1974	75700	A
6/23/1997	75700	A
6/20/1997	75200	A
5/21/1978	74900	A
6/24/1997	74600	A
6/27/1967	74400	A
6/24/1974	74200	A
7/8/1975	74100	A
6/21/1997	73700	A
7/11/1975	73100	A
6/22/1974	73000	A
6/21/1967	72900	A
6/22/1997	72900	A
6/25/1974	72700	A
6/11/1997	72400	A
6/26/1967	70800	A
7/7/1975	70600	A
7/5/1967	70400	A
6/25/1967	70000	A
6/13/1968	70000	A
6/23/1967	69700	A
6/24/1967	69700	A
6/22/1967	69400	A
7/4/1967	69200	A
7/3/1967	67800	A
6/21/1974	67700	A
7/12/1975	67700	A
6/10/1997	67500	A
7/6/1967	66900	A
6/18/1967	66800	A
7/2/1967	66800	A
6/14/1968	66800	A
7/6/1975	66400	A
6/12/1968	66200	A
7/1/1967	65800	A
6/26/1974	65500	A
7/7/1967	65100	A
6/17/1996	65000	A
6/16/1996	64700	A
7/13/1975	64200	A
6/25/1997	63900	A
7/11/1967	63800	A
6/18/1996	63800	A
7/10/1967	63600	A
6/9/1997	63600	A
6/16/1968	63500	A
6/19/1996	63200	A
7/8/1967	63100	A

Tab name: Sidney gauge data

7/9/1967	62900	A
6/17/1968	62900	A
6/28/1967	62800	A
6/15/1968	62800	A
6/30/1967	62500	A
6/7/1997	62400	A
6/24/1968	62300	A
6/15/1996	62300	A
7/4/1982	62200	A
6/12/1991	62200	A
6/27/1971	62100	A
6/28/1971	61900	A
6/20/1996	61900	A
7/3/1982	61800	A
6/11/1991	61800	A
6/20/1974	61700	A
6/28/1974	61700	A
7/12/1967	61600	A
6/8/1997	61600	A
6/29/1974	61500	A
6/29/1975	61500	A
7/5/1975	61500	A
6/16/1991	61300	A
6/17/1991	61300	A
6/27/1974	60500	A
6/6/1997	60500	A
6/30/1974	60400	A
6/21/1996	60300	A
6/25/1968	60200	A
6/10/1991	60200	A
6/26/1971	60100	A
7/13/1967	60000	A
6/23/1968	60000	A
6/29/1970	59800	A
6/11/1968	59700	A
6/17/1967	59600	A
6/26/1997	59500	A
6/22/1996	59400	A
6/12/1972	59300	A
6/29/1967	59200	A
6/13/1970	59200	A
6/28/1970	59200	A
6/29/1971	59200	A
7/2/1982	59000	A
6/13/1991	58900	A
6/26/1991	58900	A
6/14/1978	58800	A
6/10/1986	58800	A
6/11/1972	58700	A
7/5/1982	58700	A
6/14/1996	58700	A
6/28/1975	58400	A
6/25/1971	58000	A
6/15/1991	58000	A
7/2/1970	57900	A
6/26/1968	57800	A
6/20/1975	57800	A
6/13/1978	57800	A
6/13/1972	57700	A
6/12/1970	57600	A
7/14/1975	57600	A
6/30/1970	57400	A
6/19/1974	57300	A
7/1/1982	57300	A
6/16/1967	57200	A
6/27/1970	57200	A
6/11/1970	57000	A
7/1/1970	57000	A
7/1/1974	57000	A
7/4/1975	57000	A
6/27/1997	57000	A
6/10/1967	56800	A
6/19/1978	56800	A
7/2/1997	56700	A

Tab name: Sidney gauge data

6/9/1967	56600	A
7/14/1967	56600	A
6/14/1991	56600	A
6/27/1991	56600	A
6/19/1995	56600	A
6/30/1971	56500	A
6/29/2008	56500	A
6/30/1975	56400	A
6/10/1968	56300	A
6/24/1971	56200	A
6/18/1978	56200	A
6/22/1975	56100	A
6/20/1995	56000	A
6/30/2008	56000	A
6/10/1970	55900	A
6/14/1971	55900	A
6/30/1982	55900	A
6/9/1986	55900	A
6/25/1991	55900	A
6/28/2008	55900	A
6/15/1971	55800	A
6/22/1971	55800	A
7/1/1971	55800	A
6/19/1975	55800	A
6/22/1968	55700	A
6/19/1971	55700	A
6/23/1971	55700	A
6/5/1997	55500	A
6/20/1971	55400	A
6/21/1971	55400	A
6/13/1996	55200	A
6/23/1975	55100	A
6/13/1981	55000	A
6/18/1971	54800	A
6/27/2008	54700	A
6/27/1968	54600	A
6/26/1970	54600	A
6/10/1972	54600	A
6/9/1991	54600	A
6/23/1996	54500	A
6/14/1972	54300	A
7/2/1974	54300	A
6/28/1982	54300	A
6/29/1982	54300	A
6/11/1986	54100	A
6/11/1995	54100	A
6/9/1970	54000	A
6/18/1995	53900	A
7/15/1967	53800	A
6/13/1986	53700	A
6/21/1995	53700	A
6/15/1972	53600	A
6/26/1999	53500	A
7/3/1974	53400	A
6/10/1995	53400	A
7/1/2008	53300	A
6/17/1971	53200	A
6/27/1982	53200	A
7/6/1982	53200	A
6/25/1999	53200	A
6/18/1991	53100	A
5/31/1970	53000	A
6/18/1968	52900	A
6/16/1971	52900	A
7/5/1978	52900	A
6/24/1999	52900	A
6/18/1974	52700	A
6/12/1986	52700	A
6/12/1996	52600	A
6/27/1975	52500	A
7/3/1975	52500	A
6/12/1981	52500	A
6/24/1991	52500	A
6/23/1999	52500	A

Tab name: Sidney gauge data

6/26/2008	52400	A
6/10/1996	52300	A
6/14/1970	52100	A
6/11/1975	52100	A
6/21/1975	52100	A
6/28/1978	52100	A
7/16/1967	51900	A
6/12/1978	51900	A
6/27/1978	51800	A
6/22/1991	51800	A
6/13/1971	51600	A
7/15/1975	51600	A
6/9/1972	51400	A
6/8/1986	51400	A
6/11/1996	51400	A
5/25/1978	51300	A
6/1/1970	51200	A
7/2/1975	51200	A
7/1/1975	51100	A
6/25/1970	51000	A
6/15/1978	50900	A
7/6/1978	50800	A
6/18/1975	50700	A
6/1/1978	50700	A
6/28/1997	50700	A
7/4/1974	50600	A
5/20/1978	50600	A
6/26/1978	50600	A
6/8/1970	50500	A
6/12/1975	50500	A
7/2/2008	50500	A
6/8/1967	50400	A
6/8/1972	50400	A
7/17/1967	50300	A
6/20/1978	50300	A
6/22/1999	50300	A
6/24/1975	50200	A
6/9/1996	50200	A
6/25/2008	50100	A
5/29/1991	50000	A
7/3/1997	50000	A
5/30/1970	49800	A
6/15/1967	49700	A
7/3/1970	49700	A
7/6/1974	49700	A
6/22/1995	49700	A
6/26/1982	49600	A
7/29/1993	49600	A
6/28/1991	49500	A
6/24/2008	49500	A
6/10/1975	49400	A
6/17/1995	49400	A
6/23/2008	49400	A
6/8/1968	49300	A
6/17/1978	49300	A
6/14/1986	49300	A
7/5/2008	49300	A
6/9/1968	49200	A
7/5/1974	49200	A
6/7/1972	49100	A
7/4/2008	49100	A
6/2/1978	49000	A
6/19/1986	49000	A
6/8/1991	49000	A
5/28/1997	49000	A
5/29/1997	49000	A
5/30/1997	49000	A
6/4/1997	49000	A
6/21/1968	48900	A
6/16/1972	48900	A
6/14/1981	48800	A
7/7/1982	48800	A
5/31/1978	48700	A
6/11/1978	48700	A

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6/4/1981	48700	A
6/28/1968	48600	A
6/14/1976	48600	A
6/21/1991	48600	A
7/3/2008	48600	A
6/26/1975	48500	A
6/29/1978	48500	A
6/14/1967	48400	A
6/5/2003	48400	A
6/16/1986	48300	A
6/21/1999	48300	A
7/6/1993	48200	A
6/11/1967	48100	A
7/4/1978	48000	A
5/28/1991	48000	A
7/2/1971	47900	A
6/27/1999	47900	A
7/16/1975	47800	A
7/18/1975	47800	A
6/7/1986	47800	A
6/15/1986	47800	A
5/30/1991	47800	A
6/26/1996	47800	A
6/12/1967	47700	A
6/15/1970	47700	A
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6/15/1976	47500	A
7/7/1978	47500	A
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7/17/1975	47400	A
7/3/1978	47400	A
6/4/2003	47400	A
6/24/1970	47300	A
6/17/1974	47300	A
6/25/1978	47300	A
6/18/1986	47300	A
5/28/1978	47200	A
5/27/1991	47200	A
6/9/1995	47200	A
6/30/1969	47100	A
6/17/1986	47000	A
7/4/1997	47000	A
7/1/1968	46800	A
6/22/2008	46800	A
6/29/1969	46700	A
7/18/1967	46600	A
5/27/1978	46600	A
6/25/1982	46600	A
7/6/2008	46600	A
6/13/1967	46500	A
6/19/1968	46500	A
6/10/1978	46500	A
7/30/1993	46500	A
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6/20/1986	46400	A
7/8/2008	46400	A
7/7/1974	46300	A
5/26/1978	46300	A
6/2/1970	46200	A
6/13/1973	46200	A
6/22/1978	46200	A
6/20/1991	46100	A
6/24/1996	46100	A
7/9/2008	46100	A
6/17/1975	46000	A
6/10/1976	46000	A
6/21/1978	46000	A
6/6/1986	46000	A
6/23/1991	46000	A
6/8/2008	46000	A
7/19/1975	45900	A
6/11/1981	45900	A
6/8/1996	45900	A

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6/2/1999	45900	A
6/3/2003	45900	A
7/7/2008	45900	A
6/29/1997	45800	A
6/7/2008	45800	A
6/12/1976	45700	A
6/3/1978	45700	A
6/23/1978	45700	A
5/31/1981	45700	A
6/3/1981	45700	A
6/19/1991	45700	A
7/1/1991	45700	A
6/12/1995	45700	A
6/7/1970	45600	A
5/26/1991	45600	A
6/23/1995	45600	A
6/25/1996	45600	A
6/20/1968	45500	A
6/16/1976	45500	A
6/14/1973	45400	A
6/17/1976	45400	A
6/27/1996	45400	A
6/3/1999	45400	A
5/27/1997	45300	A
7/8/1978	45200	A
5/29/1970	45100	A
5/29/1978	45100	A
7/8/1982	45100	A
6/24/1982	45000	A
5/31/1997	45000	A
6/9/1976	44900	A
6/28/1999	44900	A
6/9/2008	44900	A
6/7/1968	44800	A
6/3/1971	44800	A
6/11/1976	44800	A
6/16/1978	44800	A
7/5/1993	44800	A
6/29/1968	44700	A
6/1/1981	44700	A
6/29/1999	44700	A
6/19/1973	44600	A
6/13/1975	44600	A
7/2/1968	44500	A
7/2/1978	44500	A
6/21/1986	44500	A
7/1/1997	44500	A
6/5/1972	44400	A
6/2/1981	44400	A
6/7/1991	44400	A
6/8/1976	44300	A
6/24/1978	44300	A
6/21/1982	44300	A
6/29/1991	44300	A
6/5/1981	44200	A
6/20/1999	44200	A
6/16/1970	44100	A
7/19/1967	44000	A
6/30/1968	43900	A
6/10/2008	43900	A
6/30/1991	43800	A
6/30/1997	43800	A
7/4/1970	43700	A
6/2/1971	43700	A
6/9/1975	43700	A
6/26/1976	43700	A
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6/10/1981	43700	A
6/23/1970	43600	A
6/17/1972	43600	A
7/7/1998	43600	A
6/4/1971	43500	A
6/18/1973	43500	A
7/8/1974	43500	A

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6/8/1995	43500	A
6/29/1996	43500	A
6/30/1996	43500	A
6/25/1976	43300	A
5/30/1981	43200	A
6/5/1986	43200	A
6/15/1981	43100	A
6/22/1982	43100	A
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7/7/1993	43000	A
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6/30/1978	42800	A
7/1/1996	42800	A
6/10/1999	42800	A
6/11/1999	42800	A
6/22/1972	42700	A
6/25/1984	42700	A
6/3/1970	42600	A
6/9/1974	42600	A
6/11/1974	42600	A
7/2/1991	42600	A
6/28/1996	42600	A
6/6/2002	42600	A
6/24/1984	42400	A
5/25/1991	42400	A
7/5/1997	42400	A
6/17/1970	42300	A
6/4/1978	42300	A
7/1/1995	42300	A
6/6/1967	42200	A
6/9/1978	42200	A
7/12/1978	42200	A
6/20/1982	42200	A
6/11/1971	42100	A
7/10/2008	42100	A
5/28/1970	42000	A
5/27/1970	41900	A
5/8/1975	41900	A
7/20/1975	41900	A
7/3/1984	41900	A
6/21/2008	41900	A
6/5/1967	41800	A
6/5/1971	41800	A
6/19/1972	41800	A
6/21/1972	41800	A
6/10/1974	41800	A
6/7/1976	41800	A
6/1/1999	41800	A
6/2/2003	41800	A
7/9/1974	41700	A
6/22/1984	41700	A
6/13/1995	41700	A
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6/22/1986	41600	A
5/26/1997	41600	A
6/18/1972	41500	A
7/1/1978	41500	A
7/4/1984	41500	A
6/23/1984	41400	A
6/24/1995	41400	A
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7/6/1998	41400	A
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6/16/1981	41300	A
6/15/1983	41300	A
6/5/2002	41300	A
7/3/1971	41200	A
7/8/1998	41200	A
6/9/1999	41200	A
5/26/1970	41100	A

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6/2/1974	41100	A
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5/22/1997	41100	A
6/7/1967	41000	A
6/15/1973	41000	A
6/7/1996	41000	A
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6/11/2008	40800	A
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6/8/1974	40600	A
6/16/1975	40600	A
6/20/1984	40600	A
6/20/1973	40500	A
7/10/1974	40500	A
7/15/1995	40500	A
6/3/1996	40500	A
7/15/1978	40400	A
5/21/1997	40400	A
6/28/1969	40300	A
7/7/1971	40300	A
6/27/1976	40300	A
7/14/1978	40300	A
6/8/1999	40300	A
6/6/2003	40300	A
6/20/1972	40200	A
6/17/1973	40200	A
7/10/1978	40200	A
7/9/1982	40200	A
7/2/1984	40200	A
5/25/1993	40200	A
7/21/1967	40100	A
6/16/1974	40100	A
6/7/1975	40100	A
6/7/1995	40100	A
6/10/2007	40100	A
7/1/1969	40000	A
6/12/1973	40000	A
6/18/1976	40000	A
6/24/1976	40000	A
6/26/1984	40000	A
5/26/1993	40000	A
6/2/1996	40000	A
6/1/1997	40000	A
6/7/1999	40000	A
6/10/1971	39900	A
6/1/1974	39800	A
6/8/1975	39800	A
6/2/1976	39800	A
7/1/1984	39800	A
7/3/1968	39700	A
6/18/1970	39700	A
6/30/1984	39700	A
5/25/1997	39700	A
7/5/1970	39600	A
6/7/1971	39600	A
7/16/1995	39600	A
6/28/2005	39600	A
6/16/1973	39500	A
7/11/1974	39500	A
6/17/1981	39500	A
6/25/1995	39500	A
7/2/1996	39500	A
6/8/1971	39400	A
5/31/1991	39400	A
6/12/1993	39400	A
7/14/1995	39400	A
5/25/1970	39300	A
6/6/1970	39300	A
6/6/1971	39300	A
6/4/1972	39300	A
6/3/1976	39300	A
6/4/1986	39300	A
5/24/1991	39300	A

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6/9/1993	39300	A
6/14/1995	39300	A
6/4/1999	39300	A
6/30/1999	39300	A
6/27/2005	39300	A
6/4/1967	39200	A
5/26/1976	39200	A
6/29/1984	39200	A
6/6/1981	39100	A
6/23/1972	39000	A
6/27/1972	39000	A
6/4/1984	39000	A
6/4/1996	39000	A
6/5/2008	39000	A
7/14/1983	38900	A
7/8/1993	38900	A
7/6/1997	38900	A
6/9/1971	38800	A
6/1/1976	38800	A
6/15/1995	38800	A
7/22/1967	38700	A
6/22/1970	38700	A
7/8/1970	38700	A
5/29/1981	38700	A
6/9/1981	38700	A
6/21/1992	38700	A
6/14/1975	38600	A
5/25/1976	38600	A
6/30/1998	38600	A
6/19/1982	38500	A
6/30/1995	38500	A
6/4/1970	38400	A
6/24/1972	38400	A
6/26/1972	38400	A
7/21/1975	38400	A
7/16/1978	38400	A
6/23/1986	38400	A
7/11/2008	38400	A
6/5/1978	38300	A
6/8/1978	38300	A
7/8/1969	38200	A
6/3/1967	38100	A
6/19/1970	38100	A
7/6/1970	38100	A
5/23/1997	38100	A
6/30/2005	38100	A
5/26/2008	38100	A
6/20/1976	38000	A
6/7/1981	38000	A
6/2/1997	38000	A
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7/7/1995	37900	A
6/1/1971	37800	A
7/6/1971	37800	A
6/16/1983	37800	A
9/27/1986	37800	A
5/27/2008	37800	A
6/28/1972	37700	A
5/27/1976	37700	A
7/13/1982	37700	A
7/13/1995	37700	A
5/24/1997	37700	A
7/23/1967	37600	A
7/7/1970	37600	A
6/11/1993	37600	A
6/15/1993	37600	A
6/6/1996	37600	A
7/9/1998	37600	A
5/31/1999	37600	A
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6/7/1974	37400	A
7/12/1974	37400	A

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5/23/1975	37400	A
6/6/1976	37400	A
6/7/1978	37400	A
6/28/1984	37400	A
5/23/1991	37400	A
6/6/1991	37400	A
7/12/1995	37400	A
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6/3/1974	37300	A
7/8/1995	37300	A
7/11/1995	37300	A
7/17/1995	37300	A
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5/10/1975	37200	A
5/24/1976	37200	A
7/20/1978	37200	A
7/13/1983	37200	A
6/26/1995	37200	A
7/7/1997	37200	A
6/18/1999	37200	A
5/28/1976	37100	A
6/21/1976	37100	A
7/12/1982	37100	A
6/5/1984	37100	A
5/23/1976	37000	A
7/5/1998	37000	A
6/21/1970	36900	A
6/19/1984	36900	A
7/3/1991	36900	A
7/3/1995	36900	A
5/20/1997	36900	A
6/13/1999	36900	A
6/4/2008	36900	A
6/20/2008	36900	A
6/20/1970	36800	A
5/22/1975	36800	A
6/4/1976	36800	A
6/19/1976	36800	A
7/1/1983	36800	A
6/4/2002	36800	A
5/30/2008	36800	A
6/12/2008	36800	A
5/29/1973	36700	A
6/20/1989	36700	A
6/5/1996	36700	A
7/3/1996	36700	A
6/2/1967	36600	A
6/18/1981	36600	A
6/27/1984	36600	A
6/28/1990	36600	A
6/1/2003	36600	A
5/29/2008	36600	A
6/18/1982	36500	A
6/3/1986	36500	A
6/16/1993	36500	A
6/5/1970	36400	A
7/9/1970	36400	A
5/24/1973	36400	A
6/6/1978	36400	A
7/17/1978	36400	A
6/8/1981	36400	A
7/6/1995	36400	A
6/29/1998	36400	A
7/24/1967	36300	A
7/14/1982	36300	A
5/28/2008	36300	A
5/24/1970	36200	A
7/5/1971	36200	A
6/21/1973	36200	A
6/25/1993	36200	A
7/7/1996	36200	A
7/8/1996	36200	A
7/7/1969	36100	A

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7/8/1971	36100	A
5/25/1973	36100	A
5/29/1976	36100	A
6/28/1976	36100	A
7/6/1996	36100	A
7/10/1982	36000	A
6/22/1983	36000	A
6/22/1992	36000	A
5/24/1993	36000	A
6/26/1993	36000	A
5/31/2008	36000	A
5/24/1975	35900	A
7/5/1976	35900	A
7/10/1995	35900	A
5/30/1996	35900	A
5/31/1996	35900	A
7/13/1974	35800	A
6/14/1983	35800	A
7/5/1984	35800	A
6/15/1975	35700	A
6/29/1995	35700	A
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6/29/1990	35500	A
7/9/1995	35500	A
7/18/1995	35500	A
7/9/1996	35500	A
6/6/1968	35400	A
5/28/1973	35400	A
5/22/1976	35400	A
7/19/1978	35400	A
7/5/1996	35400	A
7/12/2008	35400	A
7/18/1978	35300	A
6/24/1986	35300	A
6/20/1993	35300	A
7/4/1996	35300	A
7/10/1998	35300	A
6/26/2005	35300	A
7/11/1971	35200	A
6/5/1976	35200	A
6/23/1976	35200	A
7/28/1993	35200	A
6/6/1999	35200	A
6/7/2002	35200	A
5/25/2008	35200	A
6/3/2008	35200	A
5/30/1999	35100	A
6/2/2008	35100	A
7/25/1967	35000	A
6/25/1980	35000	A
6/23/1992	35000	A
7/4/1995	35000	A
5/29/1967	34900	A
7/11/1982	34900	A
6/24/1993	34900	A
6/9/2007	34900	A
5/27/1973	34800	A
6/22/1976	34800	A
7/6/1983	34800	A
6/14/1993	34800	A
6/6/1975	34700	A
5/28/1981	34700	A
6/2/1986	34700	A
6/1/1993	34700	A
6/6/1995	34700	A
6/27/1995	34700	A
7/5/1995	34700	A
5/22/1996	34700	A
6/14/2008	34700	A

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7/4/1968	34600	A
5/26/1973	34600	A
7/21/1978	34600	A
7/9/1993	34600	A
7/1/1998	34600	A
7/9/1969	34500	A
6/15/1974	34500	A
6/24/1980	34500	A
6/2/1993	34500	A
5/16/1995	34500	A
6/5/1999	34500	A
5/27/2005	34500	A
6/1/2008	34500	A
5/30/1973	34400	A
5/30/1976	34400	A
6/28/1995	34400	A
6/14/1999	34400	A
6/17/1999	34400	A
5/25/2005	34400	A
7/15/1982	34300	A
6/1/1991	34300	A
6/30/1983	34200	A
7/4/1991	34200	A
7/14/1993	34200	A
7/1/1999	34200	A
6/13/2008	34200	A
7/9/1971	34100	A
6/19/1993	34100	A
7/31/1993	34100	A
5/15/1995	34100	A
6/2/2000	34100	A
6/15/2008	34100	A
7/14/1974	34000	A
5/21/1975	34000	A
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6/8/2007	34000	A
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6/15/1990	33900	A
5/27/1993	33900	A
7/19/1995	33900	A
7/8/1997	33900	A
6/15/1999	33900	A
5/27/1981	33800	A
6/27/1981	33800	A
6/30/1990	33800	A
6/24/1992	33800	A
6/21/1993	33800	A
6/24/1998	33800	A
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7/4/1976	33700	A
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5/28/1996	33700	A
6/6/1974	33600	A
5/12/1975	33600	A
5/25/1975	33600	A
6/23/1980	33600	A
6/29/1983	33600	A
5/31/1993	33600	A
6/4/1993	33600	A
7/10/1971	33500	A
5/27/1980	33500	A
7/3/1983	33500	A
6/8/1993	33500	A
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6/13/1974	33400	A
5/9/1975	33400	A
5/16/1975	33400	A
7/16/1982	33400	A
5/20/1993	33400	A
5/17/1994	33400	A
5/29/1996	33400	A
5/26/2005	33400	A

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6/19/1981	33300	A
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6/23/1993	33300	A
6/29/1976	33200	A
7/5/1983	33200	A
6/5/1993	33200	A
7/3/1998	33200	A
6/10/2002	33200	A
6/4/1974	33100	A
5/20/1975	33100	A
7/23/1975	33100	A
6/17/1980	33100	A
7/17/1982	33100	A
7/18/1982	33100	A
7/11/1997	33100	A
7/13/2008	33100	A
7/22/1978	33000	A
6/21/1989	33000	A
5/23/1993	33000	A
6/22/1993	33000	A
5/27/1996	33000	A
6/7/2003	33000	A
6/11/1973	32900	A
7/6/1976	32900	A
7/1/2005	32900	A
5/25/2006	32900	A
6/19/2008	32900	A
7/10/1969	32800	A
6/21/1983	32800	A
7/4/1983	32800	A
5/24/1984	32800	A
6/6/1984	32800	A
6/6/1973	32700	A
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6/17/1983	32700	A
7/7/1983	32700	A
5/22/1991	32700	A
6/19/1992	32700	A
7/10/1996	32700	A
6/23/1998	32700	A
6/11/2002	32700	A
6/16/2008	32700	A
5/31/1969	32600	A
6/26/1980	32600	A
7/10/1993	32600	A
5/19/1997	32600	A
6/12/2007	32600	A
5/28/1967	32500	A
5/28/1980	32500	A
6/28/1981	32500	A
6/2/1991	32500	A
7/15/1993	32500	A
7/9/1997	32500	A
7/14/1997	32500	A
5/31/1974	32400	A
5/26/1981	32400	A
7/1/1981	32400	A
7/6/1984	32400	A
9/28/1986	32400	A
7/5/1991	32400	A
5/20/1996	32400	A
5/31/2003	32400	A
6/14/1974	32300	A
5/13/1975	32300	A
7/6/1969	32200	A
6/3/1972	32200	A
5/31/1979	32200	A
6/25/1986	32200	A
6/9/1988	32200	A
5/21/1993	32200	A
7/15/1997	32200	A
6/22/1973	32100	A
5/19/1975	32100	A

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7/23/1978	32100	A
6/23/1979	32100	A
6/3/1983	32100	A
6/20/1983	32100	A
7/12/1983	32100	A
6/1/1986	32100	A
6/30/1986	32100	A
7/2/1998	32100	A
7/4/1969	32000	A
5/7/1975	32000	A
6/16/1980	32000	A
6/17/1993	32000	A
6/11/2000	32000	A
7/24/1978	31900	A
7/1/1990	31900	A
6/5/1995	31900	A
5/29/1999	31900	A
5/25/1972	31800	A
6/26/1981	31800	A
7/20/1995	31800	A
6/28/1998	31800	A
7/14/2008	31800	A
6/5/1974	31700	A
6/24/1981	31700	A
7/19/1982	31700	A
6/23/1983	31700	A
6/14/1989	31700	A
7/10/1997	31700	A
7/11/1969	31600	A
5/18/1976	31600	A
7/3/1976	31600	A
6/30/1981	31600	A
5/20/1984	31600	A
6/27/1990	31600	A
6/5/1991	31600	A
6/6/1993	31600	A
6/27/1993	31600	A
7/12/1998	31600	A
6/12/2000	31600	A
6/13/2006	31600	A
6/1/1967	31500	A
5/23/1973	31500	A
6/5/1973	31500	A
7/11/1983	31500	A
5/19/1993	31500	A
5/24/2005	31500	A
5/26/2006	31500	A
6/13/1969	31400	A
7/15/1974	31400	A
5/19/1976	31400	A
6/18/1980	31400	A
6/19/1980	31400	A
5/22/1993	31400	A
6/27/1998	31400	A
6/3/2000	31400	A
6/14/1969	31300	A
7/10/1970	31300	A
5/17/1995	31300	A
6/25/1998	31300	A
7/4/1998	31300	A
6/25/2005	31300	A
7/2/1969	31200	A
7/5/1969	31200	A
5/31/1971	31200	A
7/12/1971	31200	A
7/24/1975	31200	A
7/15/1983	31200	A
6/18/1993	31200	A
7/13/1997	31200	A
5/28/2005	31200	A
6/20/1981	31100	A
5/30/1967	31000	A
5/24/1972	31000	A
5/26/1975	31000	A

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5/21/1976	31000	A
6/22/1979	31000	A
6/22/1980	31000	A
6/27/1983	31000	A
6/29/1986	31000	A
6/14/2006	31000	A
6/1/1969	30900	A
5/31/1973	30900	A
6/3/1991	30900	A
6/21/2005	30900	A
6/30/1972	30800	A
6/30/1976	30800	A
7/7/1976	30800	A
6/17/1982	30800	A
6/10/1988	30800	A
5/15/1989	30800	A
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5/17/1975	30700	A
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6/26/1998	30700	A
6/22/2005	30700	A
6/17/2008	30700	A
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7/3/1973	30600	A
6/29/1981	30600	A
7/7/1984	30600	A
7/21/1995	30600	A
7/2/2005	30600	A
5/19/1978	30500	A
6/13/1983	30500	A
7/11/1984	30500	A
6/13/1989	30500	A
7/6/1991	30500	A
5/16/1994	30500	A
5/26/1996	30500	A
7/16/1997	30500	A
7/23/1997	30500	A
6/13/2007	30500	A
6/18/2008	30500	A
5/26/1980	30400	A
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6/14/1990	30300	A
7/11/1993	30300	A
7/2/1999	30300	A
6/12/2002	30300	A
5/30/1969	30200	A
5/14/1975	30200	A
6/10/1982	30200	A
6/19/1983	30200	A
6/3/2002	30200	A
7/25/1975	30100	A
6/20/1980	30100	A
5/19/1984	30100	A
6/3/1984	30100	A
6/12/1989	30100	A
6/19/1989	30100	A
7/4/1993	30100	A
7/22/1995	30100	A
7/23/1995	30100	A
7/5/1968	30000	A
5/26/1972	30000	A
7/10/1983	30000	A
5/30/1993	30000	A
5/23/1972	29900	A
5/18/1975	29900	A
7/2/1981	29900	A
7/8/1984	29900	A
6/12/2006	29900	A
7/13/1971	29800	A

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7/14/1971	29800	A
10/4/1971	29800	A
6/21/1981	29800	A
7/4/1992	29800	A
7/11/1996	29800	A
7/4/1999	29800	A
7/15/2008	29800	A
7/12/1969	29700	A
5/24/1995	29700	A
7/13/1998	29700	A
6/5/1975	29600	A
7/10/1976	29600	A
5/29/1980	29600	A
6/18/1983	29600	A
5/28/1984	29600	A
6/18/1984	29600	A
6/15/1989	29600	A
7/2/1990	29600	A
5/23/1995	29600	A
5/25/1995	29600	A
6/24/2005	29600	A
7/4/1973	29500	A
5/20/1976	29500	A
6/1/1983	29500	A
7/9/1984	29500	A
7/12/1984	29500	A
6/4/1991	29500	A
7/3/1992	29500	A
5/30/2003	29500	A
5/24/2006	29500	A
7/11/1976	29400	A
6/1/1979	29400	A
6/21/1980	29400	A
7/20/1982	29400	A
6/26/1986	29400	A
6/26/1990	29400	A
7/7/1992	29400	A
6/4/2000	29400	A
7/16/1974	29300	A
6/27/1980	29300	A
5/31/1982	29300	A
7/8/1983	29300	A
7/10/1984	29300	A
5/22/1995	29300	A
7/5/1999	29300	A
5/31/1967	29200	A
7/27/1967	29200	A
6/24/1983	29200	A
5/31/1988	29200	A
6/7/1993	29200	A
7/24/1995	29200	A
6/23/2005	29200	A
10/3/1971	29100	A
6/2/1979	29100	A
6/23/1981	29100	A
6/7/1984	29100	A
6/16/1990	29100	A
5/18/1995	29100	A
5/21/1995	29100	A
7/3/1999	29100	A
6/9/2000	29100	A
6/13/2000	29100	A
5/27/2006	29100	A
6/10/1969	29000	A
5/16/1989	29000	A
5/18/1994	29000	A
7/25/1995	29000	A
6/8/2002	29000	A
6/8/2003	29000	A
5/27/1975	28900	A
6/23/1989	28900	A
7/16/1993	28900	A
5/26/1995	28900	A
7/15/1971	28800	A

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7/2/1973	28800	A
7/26/1975	28800	A
7/1/1976	28800	A
7/8/1976	28800	A
6/25/1979	28800	A
6/9/1982	28800	A
6/4/1983	28800	A
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7/24/1997	28800	A
6/28/1973	28700	A
5/26/1984	28700	A
6/12/1985	28700	A
6/26/1992	28700	A
5/20/1995	28700	A
5/18/1997	28700	A
7/18/1997	28700	A
6/22/2002	28700	A
7/9/1976	28600	A
7/17/1997	28600	A
6/14/2003	28600	A
7/11/1970	28500	A
7/18/1983	28500	A
5/21/1984	28500	A
7/2/1993	28500	A
7/13/1993	28500	A
6/4/1995	28500	A
7/8/1999	28500	A
6/15/2003	28500	A
6/11/1969	28400	A
6/19/1979	28400	A
5/28/1993	28400	A
7/26/1995	28400	A
7/19/1997	28400	A
7/14/1998	28400	A
7/6/1999	28400	A
6/8/2000	28400	A
7/11/1968	28300	A
7/2/1976	28300	A
7/26/1978	28300	A
5/30/1988	28300	A
6/24/1989	28300	A
7/12/1993	28300	A
5/25/1996	28300	A
6/9/2002	28300	A
6/15/2006	28300	A
7/1/1972	28200	A
7/4/1972	28200	A
6/4/1975	28200	A
6/30/1979	28200	A
6/15/1980	28200	A
6/1/1982	28200	A
7/1/1986	28200	A
6/3/1988	28200	A
7/7/1991	28200	A
5/24/1996	28200	A
6/1/1973	28100	A
6/27/1986	28100	A
6/2/1988	28100	A
6/22/1989	28100	A
6/20/1998	28100	A
5/27/1984	28000	A
5/19/1996	28000	A
7/12/1996	28000	A
7/7/1999	28000	A
5/30/2006	28000	A
5/24/2008	28000	A
6/12/1969	27900	A
5/23/1970	27900	A
5/22/1973	27900	A
6/23/1973	27900	A
6/27/1973	27900	A
5/30/1979	27900	A
7/19/1983	27900	A
7/5/1992	27900	A

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6/10/2005	27900	A
6/14/2007	27900	A
7/10/1968	27800	A
7/17/1974	27800	A
7/27/1975	27800	A
7/29/1982	27800	A
6/11/1988	27800	A
7/1/1993	27800	A
7/9/1968	27700	A
7/12/1968	27700	A
6/2/1969	27700	A
6/15/1969	27700	A
7/12/1970	27700	A
7/16/1971	27700	A
6/29/1979	27700	A
7/1/1979	27700	A
7/9/1983	27700	A
6/11/1989	27700	A
6/25/1990	27700	A
5/28/1999	27700	A
5/27/1972	27600	A
7/3/1972	27600	A
6/10/1973	27600	A
6/12/1983	27600	A
6/25/1983	27600	A
6/26/1983	27600	A
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5/30/2000	27600	A
6/5/1968	27500	A
7/14/1970	27500	A
6/8/1988	27500	A
6/27/1992	27500	A
5/18/1993	27500	A
6/28/1993	27500	A
6/7/2000	27500	A
7/3/2005	27500	A
7/6/1968	27400	A
5/17/1971	27400	A
6/8/1973	27400	A
7/1/1973	27400	A
7/27/1978	27400	A
7/8/1992	27400	A
7/15/1998	27400	A
5/31/2006	27400	A
6/11/2006	27400	A
7/13/1968	27300	A
6/3/1969	27300	A
7/13/1969	27300	A
6/11/1982	27300	A
5/29/1984	27300	A
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5/11/1986	27300	A
5/31/1986	27300	A
7/3/1990	27300	A
7/22/1997	27300	A
7/15/1970	27200	A
5/20/1971	27200	A
6/15/1977	27200	A
6/21/1979	27200	A
6/26/1979	27200	A
7/8/1991	27200	A
5/19/1995	27200	A
6/19/1998	27200	A
5/31/2000	27200	A
6/9/2005	27200	A
5/22/1972	27100	A
6/4/1973	27100	A
5/17/1976	27100	A
6/22/1981	27100	A
7/17/1986	27100	A
7/17/1993	27100	A
5/14/1995	27100	A
7/27/1995	27100	A

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7/20/1997	27100	A
7/25/1997	27100	A
6/18/1998	27100	A
6/23/2002	27100	A
7/16/2008	27100	A
7/8/1968	27000	A
7/13/1970	27000	A
7/17/1971	27000	A
6/2/1972	27000	A
6/29/1973	27000	A
5/15/1976	27000	A
7/17/1983	27000	A
5/23/1984	27000	A
6/11/1985	27000	A
7/3/1993	27000	A
6/16/2003	27000	A
5/29/1969	26900	A
7/12/1976	26900	A
7/2/1979	26900	A
7/21/1982	26900	A
5/10/1986	26900	A
5/29/1993	26900	A
7/13/1996	26900	A
7/21/1997	26900	A
6/22/2003	26900	A
6/25/1969	26800	A
5/18/1971	26800	A
8/3/1975	26800	A
7/28/1978	26800	A
7/3/1981	26800	A
7/2/1986	26800	A
7/19/1993	26800	A
5/15/2005	26800	A
6/4/1968	26700	A
6/9/1969	26700	A
7/28/1975	26700	A
6/20/1979	26700	A
5/22/1984	26700	A
7/9/1999	26700	A
7/2/1972	26600	A
6/30/1973	26600	A
7/3/1979	26600	A
6/28/1986	26600	A
5/17/1997	26600	A
6/23/2003	26600	A
5/29/2006	26600	A
7/5/1973	26500	A
6/18/1989	26500	A
6/21/1998	26500	A
6/13/2002	26500	A
6/18/2003	26500	A
5/23/2006	26500	A
5/28/2006	26500	A
7/18/1971	26400	A
7/5/1972	26400	A
5/28/1975	26400	A
6/27/1979	26400	A
5/25/1981	26400	A
7/28/1982	26400	A
6/9/1984	26400	A
6/16/1989	26400	A
6/5/2000	26400	A
6/21/2003	26400	A
6/26/1969	26300	A
7/18/1974	26300	A
8/4/1975	26300	A
6/28/1979	26300	A
6/17/1989	26300	A
7/9/1991	26300	A
6/30/1993	26300	A
7/18/1993	26300	A
5/15/1994	26300	A
5/29/2000	26300	A
6/9/2003	26300	A

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7/13/1976	26200	A
7/16/1983	26200	A
7/2/1992	26200	A
7/6/1992	26200	A
8/1/1993	26200	A
6/13/2003	26200	A
6/17/2003	26200	A
6/20/2003	26200	A
6/15/2007	26200	A
6/2/1973	26100	A
7/4/1979	26100	A
6/28/1992	26100	A
7/14/1996	26100	A
5/29/2005	26100	A
5/27/1967	26000	A
7/7/1968	26000	A
7/14/1968	26000	A
7/19/1971	26000	A
5/28/1972	26000	A
6/3/1973	26000	A
8/2/1975	26000	A
7/29/1978	26000	A
7/30/1978	26000	A
6/28/1980	26000	A
5/29/1988	26000	A
6/27/1969	25900	A
5/19/1971	25900	A
5/21/1971	25900	A
6/14/1977	25900	A
7/20/1983	25900	A
7/9/1992	25900	A
7/20/1993	25900	A
7/11/1999	25900	A
6/10/2006	25900	A
6/16/2006	25900	A
5/17/2007	25900	A
7/28/1967	25800	A
5/16/1976	25800	A
6/13/1977	25800	A
6/12/1984	25800	A
7/3/1986	25800	A
6/29/1993	25800	A
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7/26/1997	25800	A
6/19/2003	25800	A
6/16/1969	25700	A
6/26/1973	25700	A
7/4/1990	25700	A
6/24/2003	25700	A
7/29/1967	25600	A
6/3/1975	25600	A
7/29/1975	25600	A
6/14/1980	25600	A
6/10/1984	25600	A
5/30/1985	25600	A
6/17/1998	25600	A
6/22/1998	25600	A
6/20/2005	25600	A
5/18/2007	25600	A
7/6/1972	25500	A
6/9/1973	25500	A
6/24/1973	25500	A
7/14/1976	25500	A
5/25/1980	25500	A
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6/6/2000	25500	A
5/25/2002	25500	A
7/4/2005	25500	A
6/17/2006	25500	A
6/4/1969	25400	A
7/14/1969	25400	A
5/30/1971	25400	A
7/6/1990	25400	A

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7/10/1991	25400	A
7/10/1999	25400	A
7/22/1969	25300	A
7/16/1970	25300	A
6/12/1977	25300	A
7/5/1990	25300	A
7/15/1996	25300	A
6/14/2000	25300	A
8/25/1968	25200	A
7/4/1981	25200	A
5/21/1991	25200	A
6/3/1968	25100	A
7/15/1968	25100	A
5/21/1972	25100	A
5/29/1972	25100	A
5/14/1976	25100	A
5/29/1979	25100	A
6/12/1988	25100	A
7/23/1993	25100	A
7/12/1999	25100	A
5/29/2003	25100	A
6/24/1969	25000	A
6/30/1980	25000	A
7/22/1982	25000	A
5/30/1984	25000	A
7/1/1992	25000	A
5/19/1994	25000	A
7/28/1995	25000	A
7/27/1997	25000	A
7/16/1998	25000	A
6/9/2006	25000	A
7/30/1967	24900	A
7/20/1971	24900	A
6/25/1973	24900	A
5/29/1975	24900	A
6/13/1984	24900	A
6/4/1988	24900	A
7/7/1990	24900	A
6/14/2004	24900	A
5/25/2007	24900	A
7/17/2008	24900	A
7/16/1968	24800	A
6/16/1977	24800	A
6/29/1980	24800	A
7/5/1981	24800	A
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5/21/1988	24800	A
6/24/1990	24800	A
6/5/1994	24800	A
6/16/2007	24800	A
5/16/1971	24700	A
5/22/1971	24700	A
7/21/1971	24700	A
6/3/1979	24700	A
7/30/1982	24700	A
7/14/1984	24700	A
6/13/1985	24700	A
5/31/1983	24600	A
6/11/1983	24600	A
5/14/1994	24600	A
5/28/1995	24600	A
5/23/2005	24600	A
6/11/2005	24600	A
7/5/2005	24600	A
6/18/2006	24600	A
7/15/1969	24500	A
7/19/1969	24500	A
6/1/1975	24500	A
6/12/1982	24500	A
6/15/1984	24500	A
6/29/1992	24500	A
7/27/1993	24500	A

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7/16/1996	24500	A
5/16/1997	24500	A
7/28/1997	24500	A
5/24/1969	24400	A
5/22/1970	24400	A
7/30/1975	24400	A
6/16/1984	24400	A
6/4/1990	24400	A
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5/27/1999	24400	A
5/30/1982	24300	A
6/3/1995	24300	A
7/21/1969	24200	A
5/21/1973	24200	A
5/30/1975	24200	A
7/31/1975	24200	A
7/15/1976	24200	A
7/5/1979	24200	A
7/4/1986	24200	A
5/29/1995	24200	A
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7/22/1971	24100	A
5/30/1974	24100	A
5/22/1988	24100	A
5/17/1989	24100	A
6/13/1990	24100	A
6/28/2002	24100	A
7/16/1969	24000	A
5/31/1975	24000	A
7/31/1978	24000	A
6/8/1983	24000	A
5/31/1985	24000	A
6/3/1990	24000	A
6/23/1990	24000	A
6/1/2006	24000	A
5/16/2007	24000	A
7/20/1969	23900	A
6/17/1979	23900	A
7/31/1982	23900	A
6/6/1994	23900	A
6/8/1994	23900	A
7/29/1995	23900	A
7/29/1997	23900	A
6/17/2001	23900	A
6/26/2002	23900	A
6/10/2003	23900	A
7/19/1974	23800	A
5/30/1980	23800	A
7/6/1981	23800	A
6/17/1990	23800	A
6/25/2002	23800	A
6/27/2002	23800	A
6/1/1972	23700	A
6/2/1975	23700	A
6/10/1977	23700	A
7/23/1982	23700	A
7/27/1982	23700	A
6/9/1983	23700	A
9/26/1986	23700	A
6/10/1989	23700	A
5/18/1996	23700	A
5/24/2007	23700	A
6/17/2007	23700	A
7/18/1969	23600	A
5/13/1976	23600	A
7/1/1980	23600	A
6/2/1982	23600	A
7/8/1986	23600	A
5/21/1994	23600	A
7/17/1996	23600	A
5/28/2000	23600	A
6/24/2002	23600	A
6/29/2002	23600	A

Tab name: Sidney gauge data

7/6/2005	23600	A
7/17/1968	23500	A
6/17/1969	23500	A
8/1/1975	23500	A
6/8/1982	23500	A
7/21/1983	23500	A
7/13/1999	23500	A
6/25/2003	23500	A
7/16/1976	23400	A
6/11/1977	23400	A
6/16/1979	23400	A
7/11/1991	23400	A
5/17/1993	23400	A
7/21/1993	23400	A
5/21/2005	23400	A
6/19/2007	23400	A
5/28/1969	23300	A
6/10/1983	23300	A
5/18/1984	23300	A
5/13/1989	23300	A
7/30/1997	23300	A
6/18/2007	23300	A
5/28/1979	23200	A
6/18/1979	23200	A
6/7/1983	23200	A
6/25/1989	23200	A
8/2/1993	23200	A
5/30/1995	23200	A
6/17/2000	23200	A
5/22/2006	23200	A
7/18/2008	23200	A
7/20/1974	23100	A
8/5/1975	23100	A
6/17/1977	23100	A
6/16/1982	23100	A
6/6/1983	23100	A
5/31/1984	23100	A
5/13/1986	23100	A
7/10/1992	23100	A
7/22/1993	23100	A
5/19/2007	23100	A
5/23/1969	23000	A
7/17/1969	23000	A
7/5/1986	23000	A
7/7/1986	23000	A
8/3/1997	23000	A
6/20/2007	23000	A
6/23/1969	22900	A
8/1/1978	22900	A
6/12/1990	22900	A
5/13/1994	22900	A
6/12/2003	22900	A
7/17/1970	22800	A
7/15/1984	22800	A
6/5/1990	22800	A
5/15/1997	22800	A
5/26/2002	22800	A
6/30/2002	22800	A
5/26/2007	22800	A
7/18/1968	22700	A
5/25/1969	22700	A
5/23/1971	22700	A
7/26/1982	22700	A
5/15/2007	22700	A
6/7/2007	22700	A
7/31/1967	22600	A
7/23/1971	22600	A
7/6/1973	22600	A
7/21/1974	22600	A
6/9/1977	22600	A
8/2/1978	22600	A
6/10/1979	22600	A
7/18/1996	22600	A
7/31/1997	22600	A

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7/15/1999	22600	A
7/7/1972	22500	A
6/22/1990	22500	A
7/24/1993	22500	A
8/2/1997	22500	A
8/4/1997	22500	A
6/14/2002	22500	A
6/13/2004	22500	A
5/30/2005	22500	A
5/7/2007	22500	A
7/23/1969	22400	A
7/24/1982	22400	A
7/6/1986	22400	A
7/30/1995	22400	A
6/15/2000	22400	A
6/21/2007	22400	A
7/20/1968	22300	A
8/26/1968	22300	A
6/5/1969	22300	A
5/26/1971	22300	A
7/7/1981	22300	A
7/9/1986	22300	A
8/1/1997	22300	A
6/19/2000	22300	A
6/12/2005	22300	A
8/24/1968	22200	A
10/5/1971	22200	A
5/30/1972	22200	A
7/6/1979	22200	A
8/1/1982	22200	A
5/24/1994	22200	A
6/1/1994	22200	A
6/16/2000	22200	A
6/8/2006	22200	A
7/19/1968	22100	A
5/12/1971	22100	A
5/13/1971	22100	A
5/25/1971	22100	A
5/9/1976	22100	A
5/12/1976	22100	A
7/17/1976	22100	A
5/31/1987	22100	A
6/13/1988	22100	A
5/28/1989	22100	A
6/11/1990	22100	A
6/18/1990	22100	A
7/12/1991	22100	A
7/19/2008	22100	A
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5/31/1995	22000	A
7/14/1999	22000	A
5/22/2005	22000	A
6/2/2005	22000	A
6/14/2005	22000	A
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5/29/1971	21900	A
9/4/1973	21900	A
5/10/1976	21900	A
5/24/1981	21900	A
5/29/1985	21900	A
5/28/1988	21900	A
7/25/1993	21900	A
5/23/1994	21900	A
5/16/2005	21900	A
6/19/2005	21900	A
7/7/2005	21900	A
5/8/2007	21900	A
5/23/2008	21900	A
6/8/1969	21800	A
5/24/1971	21800	A

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7/16/1984	21800	A
5/31/1994	21800	A
5/24/2002	21800	A
6/22/1969	21700	A
6/13/1982	21700	A
9/16/1991	21700	A
8/3/1993	21700	A
6/11/2003	21700	A
6/15/2004	21700	A
6/1/2005	21700	A
6/19/2006	21700	A
5/20/2007	21700	A
5/23/2007	21700	A
5/27/1979	21600	A
5/23/1989	21600	A
5/27/2000	21600	A
5/14/2005	21600	A
5/21/2007	21600	A
5/12/1970	21500	A
5/14/1971	21500	A
5/27/1971	21500	A
9/21/1978	21500	A
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6/2/1984	21500	A
6/1/1985	21500	A
6/10/1985	21500	A
7/20/1996	21500	A
8/5/1997	21500	A
5/26/1999	21500	A
7/1/2002	21500	A
6/13/2005	21500	A
5/19/1969	21400	A
6/18/1969	21400	A
7/22/1974	21400	A
5/18/1989	21400	A
6/19/1990	21400	A
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7/11/1992	21400	A
6/4/1994	21400	A
6/20/2000	21400	A
7/20/2008	21400	A
5/28/1971	21300	A
5/31/1972	21300	A
8/3/1978	21300	A
6/4/1979	21300	A
5/27/1989	21300	A
6/18/1992	21300	A
5/22/1994	21300	A
6/2/1995	21300	A
7/19/1996	21300	A
5/22/2007	21300	A
7/21/1968	21200	A
5/26/1969	21200	A
8/6/1975	21200	A
5/11/1976	21200	A
5/11/1978	21200	A
5/23/1988	21200	A
5/22/1989	21200	A
5/12/1992	21200	A
5/13/1992	21200	A
7/16/1999	21200	A
5/31/2005	21200	A
5/27/1969	21100	A
7/24/1971	21100	A
5/8/1976	21100	A
5/21/1981	21100	A
5/12/1989	21100	A
6/18/1994	21100	A
5/11/1971	21000	A
5/31/1980	21000	A
6/15/1982	21000	A
5/30/1986	21000	A
9/29/1986	21000	A

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5/19/1989	21000	A
5/20/1989	21000	A
5/10/1971	20900	A
7/23/1974	20900	A
7/7/1979	20900	A
6/14/1985	20900	A
5/14/1986	20900	A
6/2/1990	20900	A
6/7/1994	20900	A
6/1/1995	20900	A
7/18/1998	20900	A
6/3/2005	20900	A
5/20/1972	20800	A
5/12/1978	20800	A
7/2/1980	20800	A
5/29/1982	20800	A
8/2/1982	20800	A
5/30/1983	20800	A
6/1/1984	20800	A
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5/20/1973	20700	A
5/21/1989	20700	A
7/21/1996	20700	A
8/6/1997	20700	A
6/20/2002	20700	A
5/27/2007	20700	A
6/4/2007	20700	A
7/21/2008	20700	A
5/1/1969	20600	A
6/7/1969	20600	A
7/10/1972	20600	A
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7/25/1971	20500	A
7/10/1986	20500	A
6/2/1987	20500	A
5/1/1989	20500	A
5/14/1997	20500	A
6/26/2003	20500	A
5/14/2007	20500	A
7/26/1971	20400	A
7/8/1972	20400	A
7/9/1972	20400	A
6/7/1989	20400	A
5/20/1991	20400	A
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5/9/2007	20400	A
5/26/1967	20300	A
7/11/1972	20300	A
8/7/1975	20300	A
7/8/1981	20300	A
7/23/1983	20300	A
6/9/1990	20300	A
6/20/1990	20300	A

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7/18/1999	20300	A
7/19/1999	20300	A
6/2/2007	20300	A
6/22/2007	20300	A
5/15/1978	20200	A
8/4/1978	20200	A
6/10/1990	20200	A
8/4/1993	20200	A
7/31/1995	20200	A
6/16/2005	20200	A
8/27/1968	20100	A
6/19/1969	20100	A
7/24/1969	20100	A
7/8/1979	20100	A
5/20/1988	20100	A
7/13/1991	20100	A
6/3/1994	20100	A
5/10/1998	20100	A
5/19/2001	20100	A
6/4/2005	20100	A
6/2/2006	20100	A
6/3/2007	20100	A
6/5/2007	20100	A
6/6/2007	20100	A
7/22/2008	20100	A
5/10/1970	20000	A
5/2/1973	20000	A
6/8/1977	20000	A
5/25/1992	20000	A
5/12/1998	20000	A
5/13/1999	20000	A
5/14/1999	20000	A
7/20/1999	20000	A
6/23/2000	20000	A
5/17/2005	20000	A
5/20/2005	20000	A
5/21/2006	20000	A
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6/2/1985	19900	A
6/26/1989	19900	A
6/1/1992	19900	A
7/13/1992	19900	A
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6/21/1969	19800	A
5/13/1970	19800	A
6/19/1977	19800	A
5/20/1981	19800	A
5/28/1982	19800	A
5/29/1989	19800	A
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6/5/2005	19800	A
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7/7/1973	19700	A
7/18/1984	19700	A
5/9/1986	19700	A
5/19/1991	19700	A
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6/29/2000	19700	A
7/12/1972	19600	A
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7/15/1986	19600	A
6/3/1987	19600	A
6/7/1988	19600	A
6/9/1994	19600	A
8/7/1997	19600	A
6/28/2000	19600	A
7/27/1971	19500	A
5/7/1976	19500	A

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5/10/1978	19500	A
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6/4/1987	19500	A
6/15/1988	19500	A
5/3/1973	19400	A
5/5/1973	19400	A
5/8/1973	19400	A
8/5/1978	19400	A
5/26/1979	19400	A
6/11/1979	19400	A
7/7/1980	19400	A
5/30/1987	19400	A
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5/11/1992	19400	A
5/12/1994	19400	A
5/9/1998	19400	A
7/19/1998	19400	A
6/7/2005	19400	A
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5/9/1973	19300	A
7/24/1974	19300	A
7/11/1986	19300	A
5/30/1989	19300	A
7/9/1990	19300	A
5/13/1998	19300	A
6/8/2005	19300	A
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6/20/1969	19200	A
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6/13/1980	19200	A
8/3/1982	19200	A
7/18/1986	19200	A
5/26/1989	19200	A
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5/15/1999	19200	A
6/18/2001	19200	A
6/15/2002	19200	A
6/6/2005	19200	A
6/18/2005	19200	A
7/23/2008	19200	A
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5/11/1997	19100	A
5/8/1998	19100	A
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6/21/2000	19100	A
6/20/2006	19100	A
7/19/1970	19000	A
5/1/1973	19000	A
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6/2/1980	19000	A
7/3/1980	19000	A
7/4/1980	19000	A
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7/14/1986	19000	A
7/16/1986	19000	A
5/29/1987	19000	A
5/2/1989	19000	A
8/1/1995	19000	A
5/25/1999	19000	A
5/22/1969	18900	A
5/14/1970	18900	A

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5/9/1971	18900	A
5/4/1973	18900	A
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5/19/1988	18900	A
6/8/1990	18900	A
7/10/1990	18900	A
5/29/1992	18900	A
7/14/1992	18900	A
7/3/2002	18900	A
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6/7/2006	18900	A
6/1/2007	18900	A
5/21/1970	18800	A
5/1/1974	18800	A
8/8/1975	18800	A
6/7/1977	18800	A
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6/7/1982	18800	A
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7/12/1986	18800	A
8/8/1997	18800	A
6/7/1998	18800	A
5/20/2001	18800	A
6/16/2001	18800	A
5/10/2007	18800	A
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5/1/1975	18700	A
5/20/1977	18700	A
6/5/1979	18700	A
6/12/1979	18700	A
7/6/1980	18700	A
7/9/1981	18700	A
7/13/1986	18700	A
6/5/1987	18700	A
7/14/1991	18700	A
5/12/1997	18700	A
6/27/2000	18700	A
5/27/2002	18700	A
7/24/2008	18700	A
7/25/1972	18600	A
7/25/1974	18600	A
7/19/1976	18600	A
7/9/1979	18600	A
6/3/1980	18600	A
7/19/1984	18600	A
6/13/1987	18600	A
6/16/1988	18600	A
6/6/1989	18600	A
6/7/1990	18600	A
8/5/1993	18600	A
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6/8/1989	18500	A
5/28/1994	18500	A
8/2/1995	18500	A
5/7/1973	18400	A
5/10/1973	18400	A
5/11/1973	18400	A
8/6/1978	18400	A
5/14/1980	18400	A
6/4/1980	18400	A
6/5/1980	18400	A
8/4/1982	18400	A
7/15/1992	18400	A
6/27/2003	18400	A
5/18/2005	18400	A
7/26/2008	18400	A
5/8/1971	18300	A

Tab name: Sidney gauge data

7/28/1971	18300	A
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5/27/1982	18300	A
5/27/1986	18300	A
5/24/1988	18300	A
6/6/1988	18300	A
5/28/1992	18300	A
5/16/1993	18300	A
7/22/1996	18300	A
5/13/1997	18300	A
8/9/1997	18300	A
7/22/1999	18300	A
7/25/2008	18300	A
8/2/1967	18200	A
7/14/1972	18200	A
5/14/1973	18200	A
7/26/1974	18200	A
5/9/1978	18200	A
5/18/1978	18200	A
6/27/1989	18200	A
6/10/1994	18200	A
5/14/1998	18200	A
7/20/1998	18200	A
6/25/2000	18200	A
7/4/2002	18200	A
5/29/1968	18100	A
7/29/1971	18100	A
7/24/1972	18100	A
7/26/1983	18100	A
6/3/1985	18100	A
5/25/1989	18100	A
6/3/1989	18100	A
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6/6/1980	18000	A
6/15/1985	18000	A
5/26/1992	18000	A
7/16/1992	18000	A
8/10/1997	18000	A
8/22/1997	18000	A
5/19/2005	18000	A
5/21/1969	17900	A
5/19/1973	17900	A
7/8/1973	17900	A
5/2/1974	17900	A
9/23/1978	17900	A
7/10/1981	17900	A
5/5/1997	17900	A
5/8/1999	17900	A
6/22/2000	17900	A
6/30/2000	17900	A
7/28/2008	17900	A
6/2/1968	17800	A
7/25/1969	17800	A
5/2/1978	17800	A
6/14/1979	17800	A
6/5/1982	17800	A
7/20/1986	17800	A
5/12/1988	17800	A
5/27/1994	17800	A
5/13/1995	17800	A
8/3/1995	17800	A
5/17/1996	17800	A
5/26/2000	17800	A
5/5/2007	17800	A
5/13/2007	17800	A
5/6/1976	17700	A

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7/23/1976	17700	A
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6/6/1982	17700	A
7/21/1986	17700	A
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5/27/1992	17700	A
8/23/1997	17700	A
6/3/1998	17700	A
5/11/1999	17700	A
6/11/2004	17700	A
5/29/2007	17700	A
5/3/1969	17600	A
7/20/1970	17600	A
7/30/1971	17600	A
7/23/1972	17600	A
7/22/1976	17600	A
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8/5/1982	17600	A
6/14/1987	17600	A
6/17/1988	17600	A
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8/11/1997	17600	A
8/19/1997	17600	A
5/7/1998	17600	A
6/22/2001	17600	A
6/19/2002	17600	A
6/12/2004	17600	A
6/21/2006	17600	A
7/15/1972	17500	A
5/13/1980	17500	A
5/29/1983	17500	A
7/11/1990	17500	A
5/18/1991	17500	A
5/3/1997	17500	A
5/6/1997	17500	A
8/12/1997	17500	A
8/13/1997	17500	A
5/9/1999	17500	A
5/17/1999	17500	A
5/2/1975	17400	A
6/7/1980	17400	A
7/27/1983	17400	A
5/16/1986	17400	A
7/19/1986	17400	A
7/17/1992	17400	A
5/31/1998	17400	A
5/6/1999	17400	A
5/20/2006	17400	A
5/11/2007	17400	A
8/4/1967	17300	A
5/17/1969	17300	A
7/17/1972	17300	A
5/14/1974	17300	A
7/20/1976	17300	A
5/8/1978	17300	A
6/8/1980	17300	A
6/10/1980	17300	A
7/11/1981	17300	A
7/28/1983	17300	A
5/17/1984	17300	A
6/12/1987	17300	A
5/10/1992	17300	A
8/6/1993	17300	A
5/15/1998	17300	A
5/10/1999	17300	A
5/18/1999	17300	A
7/23/1999	17300	A
6/3/2006	17300	A
7/23/1968	17200	A
8/29/1968	17200	A
5/16/1969	17200	A
7/26/1972	17200	A
8/9/1975	17200	A

Tab name: Sidney gauge data

5/17/1978	17200	A
5/25/1979	17200	A
7/10/1979	17200	A
6/11/1980	17200	A
6/11/1994	17200	A
5/4/1997	17200	A
5/10/1997	17200	A
8/24/1997	17200	A
6/8/1998	17200	A
5/12/2007	17200	A
8/3/1967	17100	A
5/30/1968	17100	A
5/15/1970	17100	A
5/7/1971	17100	A
7/16/1972	17100	A
7/18/1972	17100	A
5/15/1973	17100	A
6/21/1977	17100	A
6/6/1979	17100	A
5/23/1982	17100	A
7/30/1983	17100	A
7/22/1986	17100	A
6/6/1987	17100	A
8/7/1993	17100	A
8/14/1997	17100	A
5/19/1999	17100	A
5/20/1999	17100	A
6/16/2002	17100	A
7/31/1971	17000	A
10/6/1971	17000	A
7/27/1974	17000	A
5/28/1985	17000	A
5/31/1989	17000	A
6/4/1989	17000	A
6/5/1989	17000	A
7/23/1996	17000	A
6/24/2007	17000	A
5/14/1972	16900	A
7/20/1972	16900	A
5/18/1973	16900	A
7/9/1973	16900	A
6/12/1980	16900	A
7/29/1983	16900	A
7/31/1983	16900	A
7/20/1984	16900	A
5/21/1987	16900	A
5/16/1991	16900	A
5/23/1992	16900	A
6/3/1992	16900	A
5/11/1993	16900	A
5/2/1997	16900	A
8/29/1997	16900	A
7/21/1998	16900	A
6/21/2001	16900	A
6/28/2003	16900	A
7/10/2005	16900	A
5/15/1969	16800	A
5/24/1980	16800	A
7/9/1980	16800	A
8/6/1982	16800	A
6/28/1989	16800	A
8/15/1997	16800	A
6/22/2006	16800	A
7/21/1970	16700	A
5/1/1971	16700	A
5/3/1974	16700	A
7/21/1976	16700	A
5/21/1977	16700	A
8/8/1978	16700	A
6/7/1979	16700	A
7/11/1979	16700	A
6/9/1980	16700	A
6/17/1992	16700	A
7/27/1992	16700	A

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7/6/2000	16700	A
6/30/2001	16700	A
7/5/2002	16700	A
5/30/2007	16700	A
5/31/2007	16700	A
7/29/2008	16700	A
5/4/1969	16600	A
7/19/1972	16600	A
5/15/1974	16600	A
5/5/1976	16600	A
8/6/1976	16600	A
5/24/1979	16600	A
8/18/1997	16600	A
8/25/1997	16600	A
6/15/1998	16600	A
6/17/2004	16600	A
7/22/1972	16500	A
7/24/1976	16500	A
5/29/1986	16500	A
6/1/1989	16500	A
5/7/1997	16500	A
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7/22/1970	16400	A
5/12/1972	16400	A
5/13/1972	16400	A
5/16/1973	16400	A
7/27/1984	16400	A
6/16/1985	16400	A
5/28/1986	16400	A
6/15/1987	16400	A
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5/29/1990	16400	A
9/17/1991	16400	A
7/18/1992	16400	A
5/9/1997	16400	A
8/17/1997	16400	A
8/28/1997	16400	A
5/6/1998	16400	A
6/2/1998	16400	A
6/19/2001	16400	A
6/23/2001	16400	A
6/25/2007	16400	A
8/5/1967	16300	A
5/16/1970	16300	A
5/11/1972	16300	A
5/3/1975	16300	A
5/23/1979	16300	A
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5/12/1993	16300	A
6/4/1998	16300	A
6/5/1998	16300	A
7/22/1998	16300	A
6/29/2001	16300	A
5/31/1968	16200	A
8/1/1971	16200	A
5/19/1972	16200	A
7/10/1973	16200	A
7/28/1974	16200	A
8/10/1975	16200	A
9/24/1978	16200	A
5/24/1982	16200	A
8/7/1982	16200	A
5/8/1986	16200	A
5/22/1987	16200	A
5/28/1987	16200	A
7/4/1989	16200	A
5/17/1991	16200	A

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7/24/1996	16200	A
5/1/1997	16200	A
8/26/1997	16200	A
6/14/1998	16200	A
7/1/2000	16200	A
6/6/2001	16200	A
6/7/2001	16200	A
6/20/2001	16200	A
6/23/2006	16200	A
5/2/1971	16100	A
7/27/1972	16100	A
8/9/1978	16100	A
5/15/1980	16100	A
8/1/1983	16100	A
6/4/1985	16100	A
7/12/1990	16100	A
6/17/1994	16100	A
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7/11/2005	16100	A
5/28/1968	16000	A
8/30/1968	16000	A
5/17/1970	16000	A
5/15/1972	16000	A
5/17/1973	16000	A
5/13/1974	16000	A
7/10/1980	16000	A
5/24/1987	16000	A
7/3/1989	16000	A
7/5/1989	16000	A
6/9/1998	16000	A
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5/11/1980	15900	A
6/29/1989	15900	A
7/26/1992	15900	A
5/28/2002	15900	A
7/14/2005	15900	A
5/19/1968	15800	A
5/5/1969	15800	A
5/3/1971	15800	A
5/6/1971	15800	A
5/26/1982	15800	A
7/26/1984	15800	A
5/4/1992	15800	A
5/5/1992	15800	A
6/4/1992	15800	A
8/27/1997	15800	A
6/10/1998	15800	A
5/21/2001	15800	A
6/2/2001	15800	A
6/17/2002	15800	A
5/22/2008	15800	A
5/18/1970	15700	A
7/23/1970	15700	A
7/21/1972	15700	A
8/11/1975	15700	A
7/25/1976	15700	A
5/3/1978	15700	A
7/12/1979	15700	A
7/12/1981	15700	A
5/14/1984	15700	A
7/21/1984	15700	A
7/28/1984	15700	A
5/17/1986	15700	A
5/25/1986	15700	A
6/7/1987	15700	A
5/3/1989	15700	A
7/2/1989	15700	A
7/17/1991	15700	A

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5/9/1992	15700	A
6/12/1998	15700	A
6/13/1998	15700	A
5/23/1999	15700	A
7/25/1999	15700	A
6/6/2006	15700	A
6/26/2007	15700	A
7/30/2008	15700	A
5/14/1967	15600	A
7/24/1968	15600	A
5/14/1969	15600	A
7/11/1973	15600	A
7/29/1974	15600	A
5/11/1979	15600	A
6/6/1985	15600	A
6/17/1985	15600	A
9/30/1986	15600	A
6/18/1988	15600	A
6/12/1994	15600	A
7/23/1998	15600	A
6/18/2002	15600	A
8/6/1967	15500	A
8/2/1971	15500	A
7/28/1972	15500	A
5/12/1980	15500	A
5/16/1984	15500	A
6/5/1985	15500	A
7/19/1992	15500	A
8/8/1993	15500	A
5/16/1998	15500	A
7/12/2005	15500	A
6/4/2006	15500	A
6/24/2006	15500	A
5/4/2007	15500	A
6/1/1968	15400	A
5/9/1970	15400	A
5/19/1970	15400	A
5/4/1971	15400	A
5/16/1974	15400	A
8/12/1975	15400	A
8/10/1978	15400	A
5/12/1979	15400	A
5/22/1979	15400	A
7/11/1980	15400	A
7/24/1986	15400	A
5/11/1989	15400	A
5/28/1990	15400	A
5/11/1994	15400	A
7/25/1996	15400	A
8/30/1997	15400	A
5/31/2001	15400	A
5/29/1974	15300	A
5/4/1975	15300	A
5/10/1979	15300	A
7/13/1980	15300	A
5/22/1982	15300	A
8/8/1982	15300	A
5/16/1983	15300	A
5/15/1984	15300	A
5/30/1990	15300	A
5/15/1991	15300	A
6/16/1992	15300	A
7/2/2000	15300	A
6/28/2001	15300	A
7/13/2005	15300	A
7/26/1969	15200	A
5/20/1970	15200	A
7/24/1970	15200	A
8/6/1972	15200	A
10/10/1982	15200	A
5/5/1999	15200	A
7/7/2000	15200	A
6/24/2001	15200	A
6/29/2003	15200	A

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6/10/2004	15200	A
5/25/1967	15100	A
8/31/1968	15100	A
5/12/1969	15100	A
5/5/1971	15100	A
8/3/1971	15100	A
5/10/1972	15100	A
5/22/1977	15100	A
7/12/1980	15100	A
6/20/1985	15100	A
9/25/1986	15100	A
6/30/1989	15100	A
5/13/1993	15100	A
8/9/1993	15100	A
8/31/1997	15100	A
5/25/2000	15100	A
6/1/2001	15100	A
7/15/2005	15100	A
5/18/1968	15000	A
7/26/1970	15000	A
7/30/1974	15000	A
7/26/1976	15000	A
5/7/1978	15000	A
7/14/1980	15000	A
5/25/1982	15000	A
5/15/1983	15000	A
5/17/1983	15000	A
5/13/1984	15000	A
6/9/1985	15000	A
6/18/1985	15000	A
5/25/1987	15000	A
6/16/1987	15000	A
7/6/1989	15000	A
6/1/1990	15000	A
6/7/1992	15000	A
7/28/1992	15000	A
9/1/1997	15000	A
9/2/1997	15000	A
7/26/1999	15000	A
6/27/2001	15000	A
5/15/1967	14900	A
7/27/1970	14900	A
5/25/1974	14900	A
5/6/1975	14900	A
5/1/1976	14900	A
5/4/1976	14900	A
6/23/1977	14900	A
9/16/1978	14900	A
9/20/1978	14900	A
5/10/1984	14900	A
9/3/1986	14900	A
5/5/1987	14900	A
7/1/1989	14900	A
6/9/1992	14900	A
8/10/1993	14900	A
7/4/2000	14900	A
6/18/2004	14900	A
6/27/2007	14900	A
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5/13/1969	14800	A
8/4/1971	14800	A
5/11/1974	14800	A
7/13/1979	14800	A
5/18/1983	14800	A
8/2/1983	14800	A
6/19/1985	14800	A
5/15/1992	14800	A
6/15/2001	14800	A
7/6/2002	14800	A
5/20/1968	14700	A
9/1/1968	14700	A
7/25/1970	14700	A
5/16/1972	14700	A
9/6/1973	14700	A

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5/17/1974	14700	A
8/13/1975	14700	A
6/24/1977	14700	A
5/10/1980	14700	A
7/13/1990	14700	A
5/6/1992	14700	A
6/5/1992	14700	A
6/8/1992	14700	A
9/3/1997	14700	A
5/30/2001	14700	A
5/23/2002	14700	A
5/19/2006	14700	A
6/5/2006	14700	A
7/31/2008	14700	A
8/7/1967	14600	A
7/25/1968	14600	A
5/6/1969	14600	A
5/4/1974	14600	A
5/12/1974	14600	A
9/15/1978	14600	A
9/28/1982	14600	A
5/11/1984	14600	A
5/12/1984	14600	A
7/22/1984	14600	A
5/18/1986	14600	A
7/25/1986	14600	A
6/8/1987	14600	A
6/6/1992	14600	A
6/21/1994	14600	A
8/5/1995	14600	A
7/3/2000	14600	A
6/30/2004	14600	A
7/9/2004	14600	A
6/25/2006	14600	A
8/8/1967	14500	A
5/4/1972	14500	A
5/26/1974	14500	A
7/31/1974	14500	A
8/5/1976	14500	A
8/7/1976	14500	A
9/25/1978	14500	A
5/6/1979	14500	A
5/7/1979	14500	A
5/9/1979	14500	A
5/13/1979	14500	A
5/21/1979	14500	A
7/15/1980	14500	A
5/15/1981	14500	A
5/8/1984	14500	A
7/29/1984	14500	A
6/7/1985	14500	A
5/4/1987	14500	A
5/6/1987	14500	A
6/11/1987	14500	A
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7/18/1991	14500	A
5/8/1992	14500	A
7/25/1992	14500	A
7/26/1996	14500	A
9/4/1997	14500	A
5/17/1998	14500	A
7/24/1998	14500	A
7/27/1999	14500	A
7/11/2000	14500	A
6/25/2001	14500	A
6/29/2004	14500	A
7/8/2004	14500	A
5/13/1967	14400	A
5/24/1967	14400	A
9/2/1968	14400	A
9/5/1971	14400	A
8/9/1982	14400	A
7/28/1986	14400	A

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6/20/1987	14400	A
6/15/1992	14400	A
7/20/1992	14400	A
5/5/1998	14400	A
8/5/1998	14400	A
5/23/2000	14400	A
6/3/2001	14400	A
5/23/1967	14300	A
10/7/1971	14300	A
5/5/1972	14300	A
5/5/1975	14300	A
8/22/1975	14300	A
5/2/1976	14300	A
8/11/1978	14300	A
10/9/1982	14300	A
5/9/1984	14300	A
7/25/1984	14300	A
5/3/1987	14300	A
8/11/1993	14300	A
5/2/1996	14300	A
8/7/1998	14300	A
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7/8/2000	14300	A
6/26/2001	14300	A
6/19/2004	14300	A
7/27/1969	14200	A
10/8/1971	14200	A
5/17/1972	14200	A
7/12/1973	14200	A
5/8/1979	14200	A
5/28/1983	14200	A
5/7/1984	14200	A
6/21/1985	14200	A
7/26/1986	14200	A
6/19/1988	14200	A
7/7/1989	14200	A
5/31/1990	14200	A
6/10/1992	14200	A
5/1/1996	14200	A
9/5/1997	14200	A
5/26/1998	14200	A
6/8/2001	14200	A
6/1/2002	14200	A
7/1/2004	14200	A
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5/10/1974	14100	A
5/3/1976	14100	A
5/21/1982	14100	A
10/6/1982	14100	A
5/19/1986	14100	A
5/20/1987	14100	A
6/17/1987	14100	A
5/13/1988	14100	A
5/27/1998	14100	A
8/4/1998	14100	A
7/28/1999	14100	A
5/8/2000	14100	A
5/24/2000	14100	A
7/1/2001	14100	A
8/9/1967	14000	A
5/9/1972	14000	A
5/5/1974	14000	A
5/18/1974	14000	A
8/1/1974	14000	A
8/14/1975	14000	A
6/25/1977	14000	A
5/16/1981	14000	A
5/19/1983	14000	A
8/3/1983	14000	A
7/23/1984	14000	A
7/30/1984	14000	A
7/27/1986	14000	A
5/1/1990	14000	A
5/7/1992	14000	A

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5/1/1994	14000	A
6/13/1994	14000	A
8/6/1998	14000	A
6/28/2007	14000	A
8/1/2008	14000	A
5/16/1967	13900	A
5/21/1968	13900	A
9/25/1968	13900	A
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7/13/1981	13900	A
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5/3/1996	13900	A
5/16/1996	13900	A
7/27/1996	13900	A
8/8/1998	13900	A
7/5/2003	13900	A
5/27/1968	13800	A
7/26/1968	13800	A
9/3/1968	13800	A
9/26/1968	13800	A
5/3/1972	13800	A
7/29/1972	13800	A
5/27/1974	13800	A
8/23/1975	13800	A
9/17/1978	13800	A
5/5/1979	13800	A
7/14/1979	13800	A
8/5/1984	13800	A
7/29/1986	13800	A
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5/12/1995	13800	A
5/7/1996	13800	A
5/18/1998	13800	A
7/9/2000	13800	A
6/5/2001	13800	A
5/29/2002	13800	A
7/3/2003	13800	A
7/4/2003	13800	A
6/20/2004	13800	A
8/20/1968	13700	A
5/10/1969	13700	A
7/28/1970	13700	A
5/18/1972	13700	A
8/15/1975	13700	A
7/27/1976	13700	A
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8/10/1967	13600	A
5/22/1968	13600	A
10/9/1971	13600	A
8/7/1972	13600	A
5/24/1974	13600	A
5/28/1974	13600	A
6/6/1977	13600	A
5/6/1978	13600	A

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9/26/1978	13600	A
5/9/1980	13600	A
8/4/1983	13600	A
5/1/1986	13600	A
7/31/1986	13600	A
6/20/1988	13600	A
7/15/1989	13600	A
7/19/1991	13600	A
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5/7/1974	13400	A
8/2/1974	13400	A
5/14/1979	13400	A
5/8/1980	13400	A
5/20/1983	13400	A
5/24/1983	13400	A
8/3/1984	13400	A
6/10/1987	13400	A
5/12/1990	13400	A
7/14/1990	13400	A
7/29/1992	13400	A
5/4/1996	13400	A
5/30/1998	13400	A
5/4/1999	13400	A
5/10/2000	13400	A
5/22/2003	13400	A
7/5/2004	13400	A
7/10/2004	13400	A
5/25/1968	13300	A
10/10/1971	13300	A
8/19/1975	13300	A
5/5/1978	13300	A
8/13/1978	13300	A
8/10/1982	13300	A
8/14/1982	13300	A
10/2/1982	13300	A
8/6/1984	13300	A
8/7/1984	13300	A
5/7/1986	13300	A
5/20/1986	13300	A
6/21/1987	13300	A
6/22/1988	13300	A
6/23/1988	13300	A
6/22/1994	13300	A
8/6/1995	13300	A
5/5/1996	13300	A
7/25/1998	13300	A

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8/3/1998	13300	A
8/9/1998	13300	A
5/22/2001	13300	A
7/7/2002	13300	A
8/2/2008	13300	A
8/11/1967	13200	A
7/27/1968	13200	A
8/23/1968	13200	A
9/4/1968	13200	A
9/9/1968	13200	A
7/29/1969	13200	A
5/7/1972	13200	A
5/8/1972	13200	A
5/6/1974	13200	A
5/8/1974	13200	A
5/20/1974	13200	A
8/17/1975	13200	A
8/18/1975	13200	A
8/21/1975	13200	A
8/24/1975	13200	A
5/4/1979	13200	A
5/6/1980	13200	A
5/19/1981	13200	A
5/27/1983	13200	A
8/7/1983	13200	A
8/2/1984	13200	A
6/18/1987	13200	A
6/21/1988	13200	A
7/18/1989	13200	A
5/2/1994	13200	A
7/29/1996	13200	A
6/14/2001	13200	A
7/6/2003	13200	A
9/5/1968	13100	A
9/6/1968	13100	A
9/7/1968	13100	A
9/8/1968	13100	A
5/7/1969	13100	A
7/29/1970	13100	A
8/5/1972	13100	A
5/9/1974	13100	A
8/20/1975	13100	A
8/25/1975	13100	A
8/29/1975	13100	A
7/28/1976	13100	A
5/1/1979	13100	A
7/17/1980	13100	A
7/14/1981	13100	A
8/13/1982	13100	A
9/22/1982	13100	A
5/26/1983	13100	A
5/4/1989	13100	A
5/2/1990	13100	A
7/30/1999	13100	A
7/12/2000	13100	A
7/2/2001	13100	A
6/21/2004	13100	A
7/3/2004	13100	A
7/6/2004	13100	A
7/16/2005	13100	A
9/28/1968	13000	A
7/30/1969	13000	A
9/19/1978	13000	A
5/2/1979	13000	A
7/15/1979	13000	A
5/17/1981	13000	A
8/8/1984	13000	A
6/22/1985	13000	A
8/1/1986	13000	A
7/9/1989	13000	A
5/15/1996	13000	A
9/7/1997	13000	A
9/18/1967	12900	A
9/10/1968	12900	A

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5/9/1969	12900	A					
10/2/1971	12900	A					
7/30/1972	12900	A					
9/17/1973	12900	A					
9/26/1973	12900	A					
9/30/1973	12900	A					
8/26/1975	12900	A					
5/18/1977	12900	A					
8/14/1978	12900	A					
9/27/1978	12900	A					
5/3/1979	12900	A					
5/7/1980	12900	A					
5/23/1980	12900	A					
5/21/1983	12900	A					
5/2/1986	12900	A					
6/22/1987	12900	A					
7/15/1987	12900	A					
7/20/1991	12900	A					
5/22/1992	12900	A					
6/11/1992	12900	A					
7/24/1992	12900	A					
6/23/1994	12900	A					
7/30/1996	12900	A					
8/17/1999	12900	A					
5/22/2000	12900	A					
5/27/2003	12900	A					
7/7/2004	12900	A					
7/12/2004	12900	A					
6/29/2007	12900	A					
5/24/1968	12800	A					
7/28/1968	12800	A					
9/6/1971	12800	A					
9/8/1971	12800	A					
8/27/1975	12800	A					
8/28/1975	12800	A					
8/30/1975	12800	A					
8/8/1976	12800	A					
8/18/1982	12800	A					
9/23/1982	12800	A					
9/29/1982	12800	A					
5/25/1983	12800	A					
7/16/1987	12800	A					
5/3/1992	12800	A					
5/16/1992	12800	A					
5/9/1996	12800	A					
10/6/1998	12800	A					
8/18/1999	12800	A					
7/3/2001	12800	A					
6/27/2006	12800	A					
5/17/1967	12700	A					
5/23/1968	12700	A					
7/29/1968	12700	A					
7/30/1968	12700	A					
7/30/1970	12700	A					
8/3/1970	12700	A					
9/25/1973	12700	A					
9/29/1973	12700	A					
10/1/1973	12700	A					
5/22/1974	12700	A					
5/1/1978	12700	A					
8/12/1982	12700	A					
8/15/1982	12700	A					
10/1/1982	12700	A					
5/21/1986	12700	A					
8/2/1986	12700	A					
9/21/1986	12700	A					
5/7/1987	12700	A					
5/14/1988	12700	A					
7/22/1992	12700	A					
7/1/2003	12700	A					
8/3/2008	12700	A		3094	days at or above 12,700 cfs, of wh	22	days in 1971, 1982, 1986, and 1998 were in October
5/12/1967	12600	A					
5/26/1968	12600	A	So in May-September,	3072	days out of	6426	days were at or above 12,700 cfs at Sydney, or
7/31/1968	12600	A					

Tab name: Sidney gauge data

9/11/1968	12600	A
9/29/1968	12600	A
9/30/1968	12600	A
10/1/1968	12600	A
10/2/1968	12600	A
10/3/1968	12600	A
10/2/1973	12600	A
5/23/1974	12600	A
7/29/1976	12600	A
6/26/1977	12600	A
8/15/1978	12600	A
7/16/1979	12600	A
7/18/1980	12600	A
7/15/1981	12600	A
8/11/1982	12600	A
9/27/1982	12600	A
5/14/1983	12600	A
5/6/1984	12600	A
5/15/1985	12600	A
10/2/1986	12600	A
6/24/1988	12600	A
6/25/1988	12600	A
8/13/1993	12600	A
5/10/1994	12600	A
6/14/1994	12600	A
7/31/1996	12600	A
10/10/1997	12600	A
8/10/1998	12600	A
5/21/2003	12600	A
7/2/2003	12600	A
7/7/2003	12600	A
6/22/2004	12600	A
8/21/1968	12500	A
5/8/1969	12500	A
8/2/1970	12500	A
8/6/1971	12500	A
9/7/1971	12500	A
5/1/1972	12500	A
8/8/1972	12500	A
9/20/1973	12500	A
9/28/1973	12500	A
9/18/1978	12500	A
5/15/1979	12500	A
9/21/1982	12500	A
6/26/1988	12500	A
5/11/1990	12500	A
7/15/1990	12500	A
6/14/1992	12500	A
7/23/1992	12500	A
8/1/1996	12500	A
10/9/1997	12500	A
5/19/1998	12500	A
7/31/1999	12500	A
6/4/2001	12500	A
8/22/1968	12400	A
7/31/1969	12400	A
7/31/1970	12400	A
8/1/1970	12400	A
9/18/1973	12400	A
9/21/1973	12400	A
8/31/1975	12400	A
8/9/1976	12400	A
8/16/1978	12400	A
8/17/1978	12400	A
9/28/1978	12400	A
5/20/1979	12400	A
7/16/1981	12400	A
9/24/1982	12400	A
9/30/1982	12400	A
5/22/1983	12400	A
8/9/1984	12400	A
5/3/1986	12400	A
8/3/1986	12400	A
9/20/1986	12400	A

Tab name: Sidney gauge data

5/2/1987	12400	A		3176	days at or above 12,400 cfs, of wh	28 days in 1968, 1971, 1973, 1986, 1997, and 1998 were in October
6/16/1994	12400	A				
5/28/1998	12400	A	So in May-September,	3148	days out of	6426 days were at or above 12,400 cfs at Sydney, or
8/11/1998	12400	A				
7/8/2002	12400	A				
8/12/1967	12300	A				
8/19/1968	12300	A				
9/12/1968	12300	A				
7/31/1972	12300	A				
7/13/1973	12300	A				
9/19/1973	12300	A				
9/27/1973	12300	A				
8/3/1974	12300	A				
5/22/1980	12300	A				
5/18/1981	12300	A				
8/16/1982	12300	A				
8/19/1982	12300	A				
9/20/1982	12300	A				
9/25/1982	12300	A				
5/15/1988	12300	A				
7/10/1989	12300	A				
5/3/1990	12300	A				
5/13/1990	12300	A				
5/20/1992	12300	A				
7/30/1992	12300	A				
6/24/1994	12300	A				
6/25/1994	12300	A				
8/7/1995	12300	A				
5/10/1996	12300	A				
5/14/1996	12300	A				
9/8/1997	12300	A				
10/3/1997	12300	A				
5/4/1998	12300	A				
8/1/1999	12300	A				
5/29/2001	12300	A				
8/1/2001	12300	A				
5/30/2002	12300	A				
5/31/2002	12300	A				
5/23/2003	12300	A				
6/23/2004	12300	A				
7/11/2004	12300	A				
6/28/2006	12300	A				
9/17/1967	12200	A				
8/7/1970	12200	A				
9/22/1973	12200	A				
10/3/1973	12200	A				
8/4/1974	12200	A				
7/30/1976	12200	A				
5/24/1977	12200	A				
8/18/1978	12200	A				
9/29/1978	12200	A				
9/30/1978	12200	A				
7/17/1979	12200	A				
7/19/1980	12200	A				
10/6/1983	12200	A				
10/7/1983	12200	A				
9/22/1986	12200	A				
5/19/1987	12200	A				
6/23/1987	12200	A				
7/23/1987	12200	A				
5/3/1994	12200	A				
6/26/1994	12200	A				
9/28/1997	12200	A				
10/2/1997	12200	A				
5/3/1999	12200	A				
5/11/2000	12200	A				
8/14/1967	12100	A				
5/10/1968	12100	A				
9/13/1968	12100	A				
10/4/1968	12100	A				
10/6/1973	12100	A				
8/19/1978	12100	A				
5/4/1980	12100	A				
9/26/1982	12100	A				

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10/5/1983	12100	A
8/10/1984	12100	A
5/4/1986	12100	A
7/16/1989	12100	A
5/13/1991	12100	A
5/21/1992	12100	A
5/10/1993	12100	A
8/14/1993	12100	A
5/11/1996	12100	A
8/3/1996	12100	A
9/27/1997	12100	A
10/4/1997	12100	A
10/5/1997	12100	A
10/8/1997	12100	A
8/2/1999	12100	A
6/9/2001	12100	P
7/4/2001	12100	P
8/13/1967	12000	P
5/11/1968	12000	P
5/17/1968	12000	P
8/4/1970	12000	P
8/7/1971	12000	P
8/28/1972	12000	P
9/13/1973	12000	P
9/24/1973	12000	P
10/5/1973	12000	P
10/7/1973	12000	P
9/1/1975	12000	P
5/30/1977	12000	P
10/1/1978	12000	A
5/17/1980	12000	A
7/20/1980	12000	A
8/17/1982	12000	A
8/8/1983	12000	A
5/8/1985	12000	A
6/23/1985	12000	A
5/22/1986	12000	A
5/24/1986	12000	A
6/27/1988	12000	A
7/19/1989	12000	A
6/12/1992	12000	A
5/4/1994	12000	P
5/12/1996	12000	P
10/6/1997	12000	P
7/26/1998	12000	P
8/2/1998	12000	P
8/3/1999	12000	P
8/13/1999	12000	P
8/19/1999	12000	P
5/7/2000	12000	P
6/24/2004	12000	P
6/27/2004	12000	P
5/12/2006	12000	P
8/4/2008	12000	P
8/1/1968	11900	P
9/23/1968	11900	P
8/8/1971	11900	P
8/25/1974	11900	P
7/31/1976	11900	P
8/20/1978	11900	P
8/22/1978	11900	P
8/23/1978	11900	P
5/14/1981	11900	P
7/17/1981	11900	P
8/5/1985	11900	P
5/6/1986	11900	P
9/24/1986	11900	P
10/3/1986	11900	P
7/22/1987	11900	P
7/16/1990	11900	P
7/21/1991	11900	P
8/15/1993	11900	P
8/16/1993	11900	P
5/13/1996	11900	P

Tab name: Sidney gauge data

8/2/1996	11900	P
8/4/1996	11900	P
9/17/1997	11900	P
9/29/1997	11900	P
9/30/1997	11900	P
10/1/1997	11900	P
10/7/1997	11900	P
5/1/1998	11900	P
10/7/1998	11900	P
7/8/2003	11900	A
5/6/2006	11900	A
5/18/2006	11900	A
6/29/2006	11900	A
5/22/1967	11800	A
10/5/1968	11800	A
10/6/1968	11800	A
10/7/1968	11800	A
9/9/1971	11800	A
10/9/1972	11800	A
9/7/1973	11800	A
9/23/1973	11800	A
8/24/1974	11800	A
8/10/1976	11800	A
7/21/1980	11800	A
10/4/1983	11800	A
10/8/1983	11800	A
8/4/1986	11800	A
9/23/1986	11800	A
7/21/1987	11800	A
5/27/1990	11800	A
9/18/1991	11800	A
5/5/1994	11800	A
6/15/1994	11800	A
8/8/1995	11800	A
9/9/1997	11800	A
8/12/1998	11800	A
6/30/2007	11800	P
5/18/1967	11700	P
5/15/1968	11700	P
9/14/1968	11700	P
9/22/1968	11700	P
10/8/1968	11700	P
8/1/1969	11700	P
8/9/1971	11700	P
9/4/1971	11700	P
8/9/1972	11700	P
10/8/1972	11700	P
10/10/1972	11700	P
9/2/1975	11700	P
5/31/1977	11700	P
8/21/1978	11700	P
8/24/1978	11700	P
10/2/1978	11700	P
7/18/1979	11700	P
5/10/1982	11700	P
8/20/1982	11700	A
9/19/1982	11700	P
5/9/1985	11700	P
5/5/1986	11700	P
9/19/1986	11700	P
10/6/1986	11700	P
5/18/1987	11700	P
7/17/1990	11700	P
9/11/1997	11700	P
9/26/1997	11700	P
8/15/1999	11700	P
8/16/1999	11700	P
7/10/2000	11700	P
5/7/2006	11700	P
5/13/2006	11700	P
9/21/1968	11600	P
8/1/1972	11600	P
9/16/1973	11600	P
8/1/1976	11600	A

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6/27/1977	11600	P
5/3/1980	11600	P
10/9/1983	11600	P
5/5/1984	11600	A
8/11/1984	11600	A
5/23/1986	11600	A
10/4/1986	11600	P
10/7/1986	11600	P
5/18/1990	11600	P
6/13/1992	11600	P
9/10/1997	11600	P
9/18/1997	11600	P
5/29/1998	11600	P
8/4/1999	11600	P
5/23/2001	11600	P
5/24/2001	11600	P
7/9/2002	11600	P
7/9/2003	11600	P
5/13/2005	11600	P
8/10/1971	11500	P
8/11/1971	11500	A
8/4/1972	11500	A
10/3/1978	11500	A
5/19/1979	11500	A
5/1/1980	11500	A
5/2/1980	11500	P
8/17/1980	11500	A
9/18/1982	11500	A
5/16/1985	11500	A
10/5/1986	11500	A
6/24/1987	11500	A
7/14/1989	11500	A
5/4/1990	11500	A
8/17/1993	11500	A
5/6/1994	11500	A
5/9/1994	11500	A
6/25/2004	11500	A
6/26/2004	11500	A
5/11/2006	11500	A
9/19/1967	11400	A
8/2/1968	11400	A
9/15/1968	11400	A
9/16/1968	11400	A
9/20/1968	11400	A
8/5/1970	11400	A
9/11/1971	11400	A
8/20/1972	11400	A
8/21/1972	11400	A
10/3/1972	11400	A
9/12/1973	11400	A
9/14/1973	11400	A
9/15/1973	11400	A
10/8/1973	11400	A
8/5/1974	11400	A
8/26/1974	11400	A
8/4/1976	11400	A
5/16/1979	11400	A
5/17/1979	11400	A
5/21/1980	11400	A
6/28/1988	11400	A
5/5/1989	11400	A
7/11/1989	11400	A
5/14/1990	11400	A
5/17/1990	11400	A
7/18/1990	11400	A
5/1/1991	11400	A
5/17/1992	11400	A
8/18/1993	11400	A
6/27/1994	11400	A
8/5/1996	11400	A
9/25/1997	11400	A
5/2/1998	11400	A
5/3/1998	11400	A
7/13/2000	11400	A

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6/9/2004	11400	A
6/30/2006	11400	A
8/5/2008	11400	A
5/11/1967	11300	A
8/18/1968	11300	A
9/17/1968	11300	A
9/18/1968	11300	A
9/19/1968	11300	A
9/10/1971	11300	A
8/27/1972	11300	A
8/29/1972	11300	A
8/30/1972	11300	A
9/16/1972	11300	A
5/29/1977	11300	A
8/25/1978	11300	A
10/10/1983	11300	A
5/14/1985	11300	A
6/24/1985	11300	A
9/4/1986	11300	A
7/20/1989	11300	A
9/12/1997	11300	A
9/19/1997	11300	A
8/13/1998	11300	A
7/17/2005	11300	A
10/9/1968	11200	A
9/12/1971	11200	A
9/15/1972	11200	A
10/2/1972	11200	A
7/14/1973	11200	A
8/2/1976	11200	A
8/11/1976	11200	A
6/1/1977	11200	A
6/28/1977	11200	A
10/4/1978	11200	A
5/7/1982	11200	A
8/27/1982	11200	A
10/3/1983	11200	A
10/8/1986	11200	A
10/9/1986	11200	A
10/10/1986	11200	A
5/16/1990	11200	A
5/19/1990	11200	A
7/31/1992	11200	A
5/7/1994	11200	A
5/8/1994	11200	A
9/23/1997	11200	A
9/24/1997	11200	A
5/20/1998	11200	A
7/27/1998	11200	A
7/28/1998	11200	A
7/29/1998	11200	A
10/8/1998	11200	A
5/5/2006	11200	A
5/3/2007	11200	A
8/15/1967	11100	A
8/12/1971	11100	A
8/2/1972	11100	A
8/3/1972	11100	A
8/10/1972	11100	A
10/4/1972	11100	A
10/7/1972	11100	A
9/11/1973	11100	A
10/4/1973	11100	A
10/9/1973	11100	A
9/3/1975	11100	A
8/26/1978	11100	A
5/18/1979	11100	A
7/19/1979	11100	A
8/1/1979	11100	A
7/22/1980	11100	A
9/24/1980	11100	A
7/18/1981	11100	A
5/12/1982	11100	A
5/13/1982	11100	A

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5/12/1983	11100	A
5/13/1983	11100	A
8/12/1984	11100	A
5/14/1987	11100	A
7/22/1991	11100	A
9/15/1991	11100	A
7/11/1994	11100	A
8/9/1995	11100	A
9/16/1997	11100	A
5/25/1998	11100	A
10/5/1998	11100	A
7/13/2004	11100	A
7/1/2006	11100	A
8/3/1968	11000	A
8/2/1969	11000	A
10/10/1973	11000	A
8/3/1976	11000	A
5/7/1977	11000	A
5/25/1977	11000	A
10/5/1978	11000	A
9/25/1980	11000	A
8/26/1982	11000	A
8/28/1982	11000	A
8/9/1983	11000	A
6/25/1985	11000	A
5/1/1987	11000	A
5/13/1987	11000	A
7/24/1987	11000	A
6/30/1988	11000	A
5/8/1989	11000	A
7/12/1989	11000	A
7/13/1989	11000	A
5/15/1990	11000	A
10/5/1995	11000	A
8/6/1996	11000	A
9/20/1997	11000	A
9/22/1997	11000	A
5/12/2000	11000	A
5/19/1967	10900	A
9/16/1967	10900	A
10/10/1967	10900	A
5/12/1968	10900	A
10/10/1968	10900	A
8/6/1970	10900	A
8/18/1972	10900	A
9/17/1972	10900	A
10/1/1972	10900	A
10/6/1972	10900	A
8/27/1974	10900	A
10/6/1978	10900	A
10/7/1978	10900	A
9/26/1980	10900	A
9/27/1980	10900	A
9/28/1980	10900	A
5/7/1981	10900	A
5/20/1982	10900	A
8/21/1982	10900	A
5/1/1984	10900	A
8/4/1985	10900	A
8/5/1986	10900	A
5/17/1987	10900	A
5/10/1989	10900	A
9/25/1995	10900	A
9/26/1995	10900	A
9/13/1997	10900	A
9/21/1997	10900	A
9/8/1999	10900	A
5/24/2003	10900	A
7/10/2003	10900	A
10/10/2005	10900	A
5/8/2006	10900	A
7/2/2006	10900	A
5/10/1967	10800	A
9/13/1971	10800	A

Tab name: Sidney gauge data

8/19/1972	10800	A
8/22/1972	10800	A
10/5/1972	10800	A
8/6/1974	10800	A
8/23/1974	10800	A
8/27/1978	10800	A
8/28/1978	10800	A
7/27/1979	10800	A
5/14/1982	10800	A
10/2/1983	10800	A
5/4/1984	10800	A
6/25/1987	10800	A
6/29/1988	10800	A
5/6/1989	10800	A
5/7/1989	10800	A
5/5/1990	10800	A
8/19/1993	10800	A
9/27/1995	10800	A
9/28/1995	10800	A
9/29/1995	10800	A
10/6/1995	10800	A
10/9/1995	10800	A
10/10/1995	10800	A
10/9/1998	10800	A
8/5/1999	10800	A
8/20/1999	10800	A
9/7/1999	10800	A
7/5/2001	10800	A
5/14/2006	10800	A
7/1/2007	10800	A
8/6/2008	10800	A
8/13/1971	10700	A
9/3/1971	10700	A
8/29/1978	10700	A
9/14/1978	10700	A
10/8/1978	10700	A
8/2/1979	10700	A
5/18/1980	10700	A
7/23/1980	10700	A
9/29/1980	10700	A
10/1/1980	10700	A
5/11/1982	10700	A
8/29/1982	10700	A
5/8/1987	10700	A
5/20/1990	10700	A
7/23/1991	10700	A
5/19/1992	10700	A
8/27/1993	10700	A
8/14/1995	10700	A
9/30/1995	10700	A
8/7/1996	10700	A
7/30/1998	10700	A
7/10/2002	10700	A
5/12/2005	10700	A
5/16/1968	10600	A
8/11/1972	10600	A
8/23/1972	10600	A
8/24/1972	10600	A
9/18/1972	10600	A
9/8/1973	10600	A
9/10/1973	10600	A
8/13/1974	10600	A
5/16/1977	10600	A
8/30/1978	10600	A
8/31/1978	10600	A
10/9/1978	10600	A
10/2/1980	10600	A
8/24/1982	10600	A
8/25/1982	10600	A
8/10/1983	10600	A
8/13/1984	10600	A
5/15/1987	10600	A
7/17/1987	10600	A
7/19/1990	10600	A

Tab name: Sidney gauge data

5/9/1993	10600	A
6/28/1994	10600	A
9/24/1995	10600	A
10/1/1995	10600	A
10/7/1995	10600	A
10/8/1995	10600	A
8/1/1998	10600	A
8/14/1998	10600	A
10/10/1998	10600	A
9/9/1999	10600	A
5/4/2000	10600	A
5/10/2006	10600	A
9/21/1967	10500	A
5/1/1970	10500	A
5/3/1970	10500	A
9/12/1972	10500	A
7/15/1973	10500	A
8/9/1974	10500	A
10/10/1978	10500	A
7/20/1979	10500	A
9/23/1980	10500	A
9/30/1980	10500	A
8/22/1982	10500	A
8/23/1982	10500	A
8/30/1982	10500	A
10/1/1984	10500	A
10/6/1984	10500	A
6/29/1985	10500	A
8/6/1985	10500	A
5/12/1987	10500	A
5/9/1989	10500	A
7/24/1991	10500	A
9/19/1991	10500	A
5/18/1992	10500	A
8/10/1995	10500	A
9/14/1997	10500	A
9/15/1997	10500	A
7/31/1998	10500	A
6/10/2001	10500	A
7/5/2006	10500	A
8/3/1969	10400	A
5/2/1970	10400	A
8/25/1972	10400	A
8/31/1972	10400	A
9/14/1972	10400	A
9/29/1972	10400	A
8/12/1974	10400	A
8/14/1974	10400	A
8/28/1974	10400	A
8/12/1976	10400	A
5/8/1977	10400	A
6/29/1977	10400	A
8/31/1982	10400	A
10/2/1984	10400	A
10/5/1984	10400	A
10/7/1984	10400	A
5/25/1990	10400	A
5/26/1990	10400	A
8/1/1992	10400	A
8/26/1993	10400	A
8/13/1995	10400	A
10/2/1995	10400	A
10/4/1995	10400	A
9/6/1999	10400	A
6/13/2001	10400	A
7/14/2004	10400	A
7/3/2006	10400	A
5/21/1967	10300	A
8/16/1967	10300	A
9/20/1967	10300	A
10/9/1967	10300	A
5/9/1968	10300	A
8/4/1968	10300	A
5/4/1970	10300	A

Tab name: Sidney gauge data

8/26/1972	10300	A
9/30/1972	10300	A
9/9/1973	10300	A
8/7/1974	10300	A
8/8/1974	10300	A
8/15/1974	10300	A
6/2/1977	10300	A
7/31/1979	10300	A
10/3/1980	10300	A
7/19/1981	10300	A
5/2/1984	10300	A
5/3/1984	10300	A
7/26/1987	10300	A
5/21/1990	10300	A
5/24/1990	10300	A
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8/12/1995	10300	A
10/3/1995	10300	A
8/8/1996	10300	A
9/30/1998	10300	A
10/1/1998	10300	A
5/9/2006	10300	A
7/6/2006	10300	A
8/7/2008	10300	A
5/20/1967	10200	A
5/8/1970	10200	A
8/8/1970	10200	A
9/14/1971	10200	A
9/19/1972	10200	A
7/16/1973	10200	A
9/4/1975	10200	A
9/7/1975	10200	A
9/8/1975	10200	A
5/17/1977	10200	A
5/20/1980	10200	A
7/24/1980	10200	A
10/4/1980	10200	A
5/1/1982	10200	A
5/15/1982	10200	A
9/1/1982	10200	A
8/14/1984	10200	A
10/3/1984	10200	A
10/8/1984	10200	A
10/9/1984	10200	A
5/26/1985	10200	A
6/30/1985	10200	A
7/25/1987	10200	A
7/27/1987	10200	A
5/10/1988	10200	A
5/6/1990	10200	A
5/23/1990	10200	A
5/11/1995	10200	A
8/15/1998	10200	A
5/22/2002	10200	A
5/25/2003	10200	A
7/11/2003	10200	A
7/18/2005	10200	A
7/4/2006	10200	A
7/7/2006	10200	A
9/22/1967	10100	A
8/14/1971	10100	A
8/15/1971	10100	A
8/12/1972	10100	A
9/13/1972	10100	A
9/27/1972	10100	A
9/28/1972	10100	A
8/16/1974	10100	A
9/6/1975	10100	A
9/9/1975	10100	A
5/26/1977	10100	A
5/28/1977	10100	A
7/28/1979	10100	A
7/30/1979	10100	A

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8/3/1979	10100	A
5/19/1980	10100	A
5/8/1981	10100	A
5/11/1981	10100	A
9/17/1982	10100	A
8/11/1983	10100	A
9/25/1983	10100	A
9/30/1984	10100	A
10/4/1984	10100	A
6/26/1985	10100	A
8/6/1986	10100	A
9/18/1986	10100	A
6/26/1987	10100	A
7/21/1989	10100	A
5/22/1990	10100	A
5/2/1992	10100	A
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9/29/1998	10100	A
10/4/1998	10100	A
9/10/1999	10100	A
5/13/2000	10100	A
5/25/2001	10100	A
5/20/2002	10100	A
5/20/2003	10100	A
5/26/2003	10100	A
7/11/2006	10100	A
5/5/1970	10000	A
9/11/1972	10000	A
8/29/1974	10000	A
9/1/1978	10000	A
9/18/1980	10000	A
9/19/1980	10000	A
5/4/1982	10000	A
5/11/1983	10000	A
9/26/1983	10000	A
10/1/1983	10000	A
10/10/1984	10000	A
5/13/1985	10000	A
7/25/1991	10000	A
10/2/1998	10000	A
8/6/1999	10000	A
5/21/2000	10000	A
5/7/2003	10000	A
8/11/1974	9980	A
8/19/1974	9980	A
9/10/1975	9980	A
10/5/1980	9980	A
8/4/1981	9980	A
9/23/1991	9980	A
9/25/1991	9980	A
9/2/1982	9970	A
9/5/1986	9970	A
10/3/1998	9970	A
8/21/1999	9970	A
5/21/2002	9960	A
6/3/2004	9950	A
5/7/1968	9940	A
8/4/1969	9940	A
9/26/1972	9940	A
9/3/1982	9940	A
5/7/1990	9940	A
9/26/1991	9940	A
8/18/1974	9930	A
8/13/1976	9930	A
8/2/1992	9930	A
5/3/1982	9920	A
5/14/1968	9910	A
10/10/1976	9910	A
9/24/1983	9910	A
7/26/1990	9910	A
8/28/1993	9910	A
8/17/1967	9900	A

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8/18/1967	9900	A
9/24/1967	9900	A
8/17/1974	9900	A
8/21/1974	9900	A
8/22/1974	9900	A
7/10/2006	9890	A
7/21/1979	9880	A
7/14/2000	9880	A
8/20/1974	9870	A
10/6/1980	9870	A
8/2/1981	9870	A
5/16/1987	9870	A
9/20/1991	9860	A
8/21/1993	9850	A
5/6/1970	9840	A
8/30/1974	9840	A
7/29/1979	9840	A
9/17/1986	9840	A
7/20/1990	9840	A
5/22/1998	9840	A
9/28/1998	9840	A
7/2/2007	9840	A
5/16/1982	9830	A
8/12/1999	9830	A
7/11/2002	9830	A
10/9/2005	9830	A
5/15/2006	9830	A
7/8/2006	9830	A
9/23/1967	9820	A
10/2/1967	9820	A
9/11/1975	9810	A
9/23/1975	9810	A
9/26/1975	9810	A
9/27/1975	9810	A
6/28/1985	9810	A
5/7/1970	9800	A
6/30/1977	9800	A
5/13/1981	9800	A
8/6/1981	9800	A
9/27/1983	9800	A
5/11/1987	9800	A
7/1/1988	9800	A
7/12/1994	9800	A
8/13/1972	9790	A
5/6/1977	9790	A
5/15/1977	9780	A
5/27/1977	9780	A
8/9/1999	9770	A
8/8/2008	9770	A
7/17/1973	9760	A
9/29/1984	9760	A
9/22/1991	9760	A
9/5/1999	9760	A
8/10/1974	9750	A
9/1/1972	9730	A
9/20/1972	9730	A
9/21/1980	9730	A
9/22/1980	9730	A
8/9/1996	9730	A
9/5/1975	9720	A
9/24/1975	9720	A
9/28/1975	9720	A
10/7/1980	9720	A
5/10/1981	9720	A
5/12/1981	9720	A
7/20/1981	9720	A
5/2/1982	9710	A
8/16/1998	9710	A
8/16/1971	9700	A
9/15/1971	9700	A
8/17/1972	9700	A
5/17/1982	9700	A
5/2/1991	9700	A
8/10/1999	9700	A

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9/11/1999	9700	A
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7/12/2003	9690	A
8/15/1984	9680	A
8/5/1968	9670	A
7/28/1973	9670	A
9/25/1975	9660	A
5/6/1982	9660	A
9/28/1983	9660	A
5/2/1999	9660	A
9/17/1980	9650	A
9/29/1991	9650	A
8/22/1993	9650	A
7/10/1994	9650	A
8/15/1995	9650	A
8/5/1969	9640	A
9/21/1971	9640	A
6/27/1985	9640	A
9/28/1991	9640	A
5/17/2001	9640	A
5/6/2000	9630	A
9/24/1991	9620	A
9/2/1972	9610	A
9/29/1983	9610	A
9/27/1991	9610	A
5/8/2003	9610	A
5/13/1968	9600	A
9/4/1982	9600	A
9/22/1995	9600	A
5/21/2008	9600	A
9/25/1967	9590	A
10/1/1967	9590	A
5/14/2000	9590	A
9/22/1975	9580	A
10/9/1976	9580	A
10/8/1980	9580	A
5/10/1985	9580	A
5/14/2003	9580	A
5/8/1968	9570	A
5/5/1982	9570	A
6/27/1987	9560	A
6/11/2001	9560	A
9/5/1974	9550	A
9/30/1991	9550	A
8/23/1993	9550	A
9/27/1998	9550	A
8/11/1999	9550	A
8/16/1968	9540	A
9/18/1970	9540	A
9/21/1991	9540	A
8/7/1999	9540	A
9/12/1999	9540	A
5/4/2006	9530	A
9/21/1972	9520	A
9/25/1972	9520	A
9/23/1983	9520	A
5/9/1967	9510	A
10/3/1967	9510	A
5/9/1987	9510	A
9/28/1984	9500	A
10/8/2005	9500	A
8/14/1972	9490	A
9/3/1972	9490	A
9/1/1974	9490	A
9/6/1974	9490	A
5/18/1982	9490	A
8/8/1999	9490	A
7/15/2004	9490	A
5/17/2006	9490	A
5/19/1982	9480	A
9/6/1986	9470	A
8/24/1993	9470	A
9/4/1972	9460	A

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9/5/1972	9460	A
9/4/1974	9460	A
7/25/1980	9460	A
7/27/1990	9460	A
8/7/1985	9450	A
10/1/1991	9450	A
5/28/2001	9450	A
8/17/1968	9440	A
9/17/1970	9440	A
9/19/1970	9440	A
6/29/1994	9440	A
9/6/1972	9430	A
8/14/1976	9430	A
8/7/1986	9430	A
8/3/1992	9430	A
8/29/1993	9430	A
9/21/1995	9430	A
7/12/2006	9430	A
7/3/2007	9420	A
7/9/2006	9410	A
9/22/1972	9400	A
5/10/1990	9400	A
10/10/1993	9400	A
7/22/1979	9390	A
7/23/1979	9390	A
7/26/1979	9390	A
8/4/1979	9390	A
8/16/1980	9390	A
8/30/1993	9390	A
8/22/1999	9390	A
7/1/1977	9380	A
8/15/1968	9370	A
8/16/1972	9370	A
7/28/2001	9370	A
10/9/1980	9360	A
8/5/1981	9360	A
9/27/1984	9360	A
9/26/1998	9360	A
9/12/1978	9350	A
10/2/1991	9350	A
9/16/1971	9340	A
9/22/1971	9340	A
9/2/1974	9340	A
10/2/1976	9340	A
9/18/1995	9340	A
5/4/1967	9330	A
9/5/1982	9330	A
7/1/1985	9330	A
9/16/1986	9330	A
7/28/1987	9330	A
5/8/1990	9330	A
5/28/2004	9330	A
5/2/2007	9330	A
10/1/1976	9320	A
8/6/1968	9310	A
9/3/1974	9310	A
9/7/1974	9310	A
10/10/1975	9310	A
9/30/1976	9310	A
9/20/1995	9310	A
9/13/1999	9310	A
5/5/1977	9300	A
7/21/1990	9300	A
10/3/1991	9300	A
9/24/1972	9280	A
7/24/1979	9280	A
8/17/1998	9280	A
9/15/2008	9280	A
10/4/1991	9260	A
8/16/1995	9260	A
8/9/2008	9260	A
8/15/1972	9250	A
9/21/1975	9250	A
10/4/1975	9250	A

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10/8/1991	9250	A
5/29/2004	9250	A
9/20/1970	9240	A
9/24/1971	9240	A
9/25/1971	9240	A
9/19/1995	9240	A
9/2/1978	9230	A
8/10/1996	9230	A
5/24/1998	9230	A
9/10/1972	9220	A
7/18/1973	9220	A
9/29/1976	9220	A
5/17/1985	9220	A
10/5/1991	9220	A
10/7/1991	9220	A
10/9/1991	9220	A
9/14/1999	9220	A
8/19/1967	9210	A
10/4/1967	9210	A
9/17/1971	9210	A
6/3/1977	9210	A
8/16/1984	9210	A
5/10/1987	9210	A
7/6/2001	9210	A
5/13/2003	9210	A
5/1/2007	9210	A
7/2/1988	9200	A
9/12/1975	9190	A
10/2/1975	9190	A
10/3/1975	9190	A
10/5/1975	9190	A
8/12/1983	9190	A
9/17/1995	9190	A
5/16/2006	9190	A
10/10/1980	9180	A
5/5/2000	9180	A
7/12/2002	9180	A
10/6/1967	9170	A
10/8/1967	9170	A
7/26/1991	9170	A
7/19/2005	9170	A
9/7/1972	9160	A
9/23/1972	9160	A
7/26/1980	9160	A
10/6/1991	9160	A
10/3/1976	9150	A
5/23/1998	9150	A
6/2/2004	9150	A
5/11/2005	9150	A
9/15/1986	9140	A
5/9/1990	9140	A
8/31/1993	9140	A
10/7/1967	9130	A
9/8/1972	9130	A
9/29/1975	9130	A
9/30/1975	9130	A
10/1/1975	9130	A
10/6/1975	9130	A
9/30/1983	9130	A
8/30/1987	9130	A
10/9/1993	9130	A
9/15/1999	9130	A
7/22/1990	9120	A
5/15/2000	9120	A
8/9/1970	9110	A
10/10/1991	9110	A
9/3/1973	9100	A
8/18/1998	9100	A
9/26/1967	9090	A
10/4/1976	9090	A
5/9/1977	9090	A
7/25/1990	9090	A
5/13/2004	9090	A
5/6/1968	9080	A

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9/20/1971	9080	A
9/23/1971	9080	A
10/8/1976	9080	A
9/20/1975	9070	A
9/6/1982	9070	A
5/4/2001	9070	A
9/25/1998	9060	A
9/27/1967	9050	A
8/6/1969	9050	A
9/18/1971	9040	A
10/9/1974	9040	A
10/10/1974	9040	A
5/5/1967	9030	A
10/7/1976	9030	A
10/5/1967	9020	A
7/18/1987	9020	A
9/26/1971	9010	A
9/9/1972	9010	A
10/7/1975	9010	A
10/9/1975	9010	A
9/13/1978	9010	A
9/14/1986	9010	A
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5/12/2004	9010	A
5/7/1985	9000	A
8/23/1998	9000	A
9/16/1970	8980	A
8/17/1971	8980	A
9/17/1974	8980	A
10/7/1974	8980	A
9/16/1975	8980	A
9/17/1975	8980	A
8/15/1976	8980	A
9/4/1999	8980	A
5/19/2002	8980	A
9/16/2008	8980	A
8/8/1985	8970	A
5/15/2003	8970	A
5/27/2004	8970	A
6/4/2004	8970	A
8/17/1984	8960	A
10/6/1999	8960	A
9/16/1974	8950	A
9/15/1975	8950	A
9/18/1975	8950	A
9/19/1996	8950	A
8/19/1998	8950	A
8/23/1999	8950	A
9/28/1967	8940	A
9/3/1978	8940	A
9/4/1978	8940	A
7/25/1979	8940	A
7/27/1980	8940	A
9/7/1986	8940	A
8/19/1995	8940	A
10/7/1999	8940	A
7/13/2003	8940	A
8/3/1981	8930	A
9/26/1984	8930	A
8/4/1992	8930	A
8/17/1995	8930	A
5/5/2001	8930	A
10/2/1974	8920	A
10/6/1974	8920	A
9/13/1975	8920	A
9/14/1975	8920	A
9/19/1975	8920	A
8/27/1983	8920	A
9/2/1986	8920	A
7/27/1991	8920	A
9/17/1999	8920	A
9/19/1971	8910	A
10/6/1976	8910	A
5/3/2006	8910	A

Tab name: Sidney gauge data

9/30/1967	8900	A
7/22/1989	8900	A
7/13/1994	8900	A
10/8/1999	8900	A
7/15/2000	8900	A
5/7/1967	8890	A
10/8/1975	8890	A
7/30/1981	8890	A
7/31/1981	8890	A
6/28/1987	8890	A
7/3/1988	8890	A
5/3/1991	8890	A
9/24/1998	8890	A
9/16/1995	8880	A
7/4/2007	8880	A
8/24/1998	8870	A
5/12/2008	8870	A
10/1/1974	8860	A
10/8/1974	8860	A
10/5/1999	8860	A
10/10/1999	8860	A
10/5/1976	8850	A
8/20/1998	8850	A
5/13/2008	8850	A
5/14/2008	8850	A
9/18/1974	8830	A
10/9/1999	8830	A
8/10/2008	8830	A
5/6/1967	8820	A
8/7/1968	8820	A
9/7/1982	8820	A
8/18/1984	8820	A
9/3/1999	8820	A
6/12/2001	8820	A
5/9/2005	8820	A
9/26/1970	8810	A
9/29/1970	8810	A
9/27/1971	8810	A
8/22/1998	8810	A
9/8/1974	8800	A
8/28/1983	8790	A
9/21/1970	8780	A
9/27/1970	8780	A
8/18/1971	8780	A
9/13/1986	8780	A
9/22/1974	8770	A
8/14/1968	8760	A
7/20/1987	8760	A
9/23/1998	8760	A
9/15/1970	8750	A
9/28/1970	8750	A
10/6/1970	8750	A
10/7/1970	8750	A
9/5/1978	8750	A
7/21/1981	8750	A
9/1/1993	8750	A
8/11/1996	8750	A
9/22/1998	8750	A
9/18/1999	8750	A
9/17/2008	8750	A
7/27/1973	8740	A
10/3/1974	8740	A
8/21/1998	8740	A
8/19/1984	8730	A
9/20/1998	8730	A
5/8/1967	8720	A
5/9/1981	8720	A
8/1/1981	8720	A
9/29/1967	8710	A
9/19/1974	8710	A
9/8/1986	8710	A
10/8/1969	8700	A
8/26/1983	8700	A
5/9/2003	8700	A

Tab name: Sidney gauge data

8/5/1979	8690	A
7/19/1987	8690	A
9/2/1993	8690	A
8/25/1998	8690	A
5/2/2006	8690	A
9/24/1970	8680	A
9/25/1970	8680	A
7/19/1973	8680	A
10/4/1974	8680	A
10/5/1974	8680	A
9/8/1982	8680	A
5/1/1983	8680	A
9/15/1995	8680	A
7/23/1990	8660	A
7/13/2002	8660	A
5/1/2006	8660	A
9/30/1970	8650	A
7/29/1973	8650	A
9/15/1974	8650	A
8/16/1976	8650	A
5/2/1983	8650	A
9/19/1998	8650	A
9/12/1986	8640	A
9/14/1995	8640	A
9/19/1999	8640	A
8/8/1986	8630	A
10/2/1970	8620	A
10/1/1971	8620	A
9/25/1974	8620	A
7/28/1980	8620	A
10/8/1993	8620	A
5/4/1977	8610	A
9/9/1986	8610	A
9/2/1999	8610	A
8/20/1984	8600	A
9/11/1986	8600	A
8/31/1987	8600	A
8/5/1992	8600	A
7/29/2001	8600	A
5/6/2003	8600	A
9/20/1974	8590	A
9/21/1974	8590	A
9/23/1974	8590	A
8/29/1983	8590	A
9/10/1986	8590	A
9/14/1970	8580	A
9/28/1971	8580	A
7/14/1994	8580	A
9/24/1999	8580	A
9/15/1967	8560	A
10/9/1969	8560	A
8/24/1973	8560	A
9/26/1974	8560	A
9/22/1983	8560	A
8/19/1971	8550	A
7/2/1977	8550	A
7/2/1985	8550	A
7/24/1990	8550	A
8/29/1987	8540	A
8/26/1998	8540	A
7/13/2006	8540	A
9/3/1993	8530	A
10/1/1970	8520	A
10/3/1970	8520	A
10/9/1970	8520	A
8/24/1999	8520	A
8/13/1983	8510	A
9/24/1974	8500	A
9/28/1976	8500	A
8/18/1995	8500	A
9/20/1999	8500	A
9/23/1999	8500	A
5/6/2001	8500	A
5/12/2003	8500	A

Tab name: Sidney gauge data

10/7/2005	8500	A					
9/9/1982	8490	A					
7/28/1991	8490	A					
8/30/1999	8490	A					
10/4/1999	8490	A					
10/8/1970	8480	A					
8/7/1969	8470	A					
9/9/1974	8470	A					
9/10/1974	8470	A					
5/12/1985	8470	A					
8/9/1985	8470	A					
9/14/2008	8470	A					
9/18/2008	8470	A					
9/16/1982	8460	A					
6/30/1994	8460	A					
9/21/1998	8460	A					
5/10/2005	8460	A					
9/1/1999	8450	A					
8/17/1976	8440	A					
9/26/1976	8440	A		4451	days at or above 8440 cfs, of whic	200	days were in October
7/22/1981	8440	A					
5/14/2004	8440	A	So in May-September,	4251	days out of	6426	days were at or above 8440 cfs at Sydney, or
5/3/1967	8430	A					
7/29/1987	8430	A					
9/22/1999	8430	A					
5/10/2003	8430	A					
8/10/1970	8420	A					
9/22/1970	8420	A					
10/10/1970	8420	A					
9/29/1971	8420	A					
8/25/1983	8420	A					
5/4/1991	8420	A					
9/21/1999	8420	A					
7/16/2004	8420	A					
8/11/2008	8420	A					
8/8/1968	8410	A					
9/25/1976	8410	A					
8/16/1983	8400	A					
9/13/1995	8400	A					
5/16/2000	8400	A					
9/23/1970	8390	A					
9/30/1971	8390	A					
7/30/1987	8390	A					
9/25/1999	8390	A	So in May-September,	4273	days out of	6426	days were at or above 8390 cfs at Sydney, or
9/27/1974	8380	A					
9/30/1974	8380	A					
7/29/1980	8370	A					
7/30/1980	8370	A					
10/7/1969	8360	A					
10/8/1977	8360	A					
8/17/1983	8360	A					
8/3/1985	8360	A					
10/4/1970	8350	A					
9/11/1974	8350	A					
5/3/1977	8350	A					
9/27/1993	8330	A					
9/28/1993	8330	A					
8/20/1995	8330	A					
8/12/1996	8330	A					
9/2/1971	8320	A					
9/12/1974	8320	A					
9/14/1974	8320	A					
9/28/1974	8320	A					
9/6/1978	8320	A					
10/1/1996	8320	A					
5/11/2004	8320	A					
7/20/2005	8320	A					
9/29/1993	8310	A					
8/27/1998	8310	A					
7/14/2003	8310	A					
8/14/1983	8300	A					
8/30/1983	8300	A					
9/19/2008	8300	A					
10/5/1970	8290	A					

Tab name: Sidney gauge data

9/13/1974	8290	A
9/24/1976	8290	A
9/11/1978	8290	A
8/15/1983	8280	A
8/6/1992	8280	A
10/2/1996	8270	A
10/5/1996	8270	A
8/11/1970	8260	A
8/26/1973	8260	A
9/4/1993	8260	A
10/9/1977	8250	A
8/21/1995	8250	A
8/14/2008	8250	A
9/10/1982	8240	A
8/21/1984	8240	A
5/1/1999	8240	A
5/3/2000	8240	A
8/13/2008	8240	A
9/13/1970	8230	A
9/27/1976	8230	A
5/3/1983	8230	A
7/23/1989	8230	A
10/3/1999	8230	A
5/10/2002	8230	A
5/11/2003	8230	A
8/6/1979	8220	A
9/21/1983	8220	A
9/25/1984	8220	A
8/31/1995	8220	A
10/6/1996	8220	A
6/29/1987	8210	A
10/4/1993	8210	A
8/15/2008	8210	A
9/29/1974	8200	A
8/12/2008	8200	A
9/30/1993	8190	A
10/1/1993	8190	A
10/5/1993	8190	A
9/30/1999	8190	A
5/1/2003	8190	A
9/7/1978	8180	A
8/18/1976	8170	A
5/25/1985	8170	A
8/23/1995	8170	A
10/4/1996	8170	A
8/18/1983	8160	A
5/11/1985	8160	A
9/20/1996	8160	A
7/19/2001	8160	A
9/8/1978	8150	A
7/4/1988	8150	A
5/8/1993	8150	A
10/2/1993	8150	A
8/22/1995	8150	A
9/22/1996	8150	A
10/3/1996	8150	A
10/7/1996	8150	A
9/17/1998	8150	A
9/23/1976	8140	A
5/1/1992	8140	A
8/30/1995	8140	A
9/29/1999	8140	A
7/23/1981	8130	A
8/7/1992	8130	A
7/28/1990	8120	A
10/3/1993	8120	A
9/23/1996	8120	A
5/12/1991	8110	A
10/6/1993	8110	A
8/9/1968	8100	A
8/8/1969	8100	A
8/12/1970	8100	A
9/15/1982	8100	A
8/9/1986	8100	A

Tab name: Sidney gauge data

9/5/1993	8100	A
10/7/1993	8090	A
6/4/1977	8080	A
9/9/1978	8080	A
8/16/1987	8080	A
9/21/1996	8080	A
8/25/1999	8080	A
7/14/2002	8080	A
5/16/2003	8080	A
8/20/1967	8070	A
5/1/1968	8070	A
5/15/2008	8070	A
8/24/1983	8060	A
9/1/1987	8060	A
5/26/2001	8060	A
7/15/2003	8060	A
8/20/1980	8050	A
8/22/1980	8050	A
9/16/1980	8050	A
10/8/1996	8050	A
8/28/1998	8050	A
9/10/1978	8040	A
10/1/1999	8040	A
5/19/2003	8040	A
9/11/1982	8030	A
8/1/1985	8030	A
9/20/2008	8030	A
7/29/1991	8020	A
8/23/1980	8010	A
8/20/1971	8000	A
5/5/1991	8000	A
7/7/2001	8000	A
7/26/1973	7990	A
8/25/1973	7990	A
7/29/1981	7990	A
8/31/1983	7990	A
9/26/1993	7980	A
5/15/2004	7980	A
7/30/1991	7970	A
9/30/1996	7970	A
10/9/1996	7970	A
9/18/1976	7960	A
9/20/1983	7960	A
10/9/1985	7960	A
8/2/1985	7950	A
5/5/1995	7950	A
9/24/1996	7950	A
7/3/1985	7940	A
5/30/2004	7940	A
7/24/1981	7930	A
5/10/1983	7930	A
8/10/1985	7930	A
10/8/1985	7930	A
7/24/1989	7930	A
8/13/1968	7910	A
8/24/1980	7910	A
9/12/1982	7910	A
8/26/1990	7910	A
5/11/2002	7910	A
5/2/1967	7900	A
10/3/1977	7900	A
9/6/1993	7900	A
5/10/1995	7900	A
8/16/2008	7900	A
9/21/2008	7900	A
5/6/1981	7890	A
5/4/1983	7890	A
8/19/1983	7890	A
9/25/1996	7890	A
5/16/2004	7890	A
5/5/1968	7880	A
7/30/1990	7880	A
10/10/1996	7880	A
7/30/1973	7870	A

Tab name: Sidney gauge data

8/19/1976	7870	A
9/22/1976	7870	A
7/31/1980	7870	A
8/21/1980	7870	A
10/10/1985	7870	A
8/24/1995	7860	A
8/29/1995	7860	A
8/10/1968	7850	A
5/2/1977	7850	A
7/16/2000	7850	A
10/6/1969	7840	A
8/13/1970	7840	A
9/17/1976	7840	A
9/19/1976	7840	A
10/10/1977	7840	A
5/6/1995	7840	A
7/5/2007	7840	A
5/10/1977	7830	A
5/17/2008	7830	A
8/23/1983	7820	A
5/2/2003	7820	A
7/20/1973	7810	A
8/27/1995	7810	A
8/19/1979	7800	A
9/19/1984	7800	A
8/29/1998	7800	A
10/7/1985	7790	A
5/6/1991	7790	A
9/17/1993	7790	A
9/25/1993	7790	A
9/18/1984	7780	A
9/7/1993	7780	A
9/18/1993	7780	A
9/26/1996	7780	A
9/12/2008	7780	A
9/22/2008	7780	A
9/15/1984	7770	A
8/26/1999	7770	A
8/9/1969	7760	A
8/7/1981	7760	A
5/5/1983	7760	A
5/18/1985	7760	A
7/5/1988	7760	A
7/26/1989	7760	A
7/31/1990	7760	A
9/8/1993	7760	A
9/21/1993	7760	A
8/13/1996	7760	A
5/5/2003	7760	A
5/26/2004	7760	A
9/23/2008	7760	A
9/14/1982	7750	A
9/17/1984	7750	A
7/31/1987	7750	A
7/29/1990	7750	A
8/8/1992	7750	A
9/13/2008	7750	A
7/14/2006	7740	A
9/13/1982	7730	A
5/7/1991	7730	A
7/31/1991	7730	A
9/20/1976	7720	A
5/6/1983	7720	A
8/22/1983	7720	A
9/24/1984	7720	A
9/29/1996	7720	A
9/20/1984	7710	A
9/1/1995	7710	A
10/6/2005	7710	A
10/4/1977	7700	A
8/7/1979	7700	A
7/27/1989	7700	A
9/22/1993	7700	A
7/15/1994	7700	A

Tab name: Sidney gauge data

9/11/2008	7700	A
9/14/1984	7690	A
9/20/1993	7690	A
10/2/1999	7690	A
7/18/2002	7690	A
7/16/2003	7690	A
8/20/1983	7680	A
10/4/1985	7680	A
9/2/1987	7680	A
8/1/1990	7680	A
9/27/1996	7680	A
8/10/1969	7670	A
8/29/1979	7670	A
8/21/1983	7670	A
8/25/1990	7670	A
9/26/1999	7670	A
5/3/2001	7670	A
5/9/2002	7670	A
6/5/2004	7670	A
7/21/2005	7670	A
5/1/1967	7660	A
9/21/1976	7660	A
9/9/1993	7660	A
9/28/1996	7660	A
8/22/1971	7650	A
9/17/1983	7650	A
8/22/1984	7640	A
7/1/1994	7640	A
5/16/2008	7640	A
9/2/1973	7630	A
10/5/1977	7630	A
9/16/1984	7630	A
7/28/1989	7630	A
5/7/1993	7630	A
9/1/1983	7620	A
9/23/1993	7620	A
9/30/2008	7620	A
5/2/1968	7610	A
5/3/1968	7610	A
8/11/1968	7610	A
8/12/1968	7610	A
10/3/1985	7610	A
8/10/1986	7610	A
7/25/1989	7610	A
5/5/1993	7610	A
8/2/2001	7610	A
5/18/2008	7610	A
8/27/1973	7600	A
6/5/1977	7600	A
8/18/1979	7600	A
8/30/1979	7600	A
8/31/1979	7600	A
8/18/1980	7600	A
9/10/1993	7600	A
9/19/1993	7600	A
5/7/1995	7600	A
9/12/1995	7600	A
8/30/1998	7600	A
5/7/2001	7600	A
7/17/2004	7600	A
8/21/1971	7590	A
9/19/1983	7590	A
5/17/2000	7590	A
9/7/2008	7590	A
9/24/2008	7590	A
10/2/1985	7580	A
5/8/1991	7580	A
8/28/1973	7570	A
8/20/1976	7570	A
9/16/1976	7570	A
9/29/2008	7570	A
9/18/1983	7560	A
10/1/1985	7560	A
5/6/2008	7560	A

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8/23/1971	7550	A
9/16/1993	7550	A
5/4/1995	7550	A
8/31/1999	7550	A
9/16/1983	7540	A
7/4/1985	7540	A
9/24/1993	7540	A
9/18/1998	7540	A
5/27/2001	7540	A
9/21/1984	7520	A
10/5/1985	7520	A
8/26/1995	7520	A
8/29/1973	7510	A
8/13/1986	7510	A
6/8/2004	7510	A
8/11/1986	7500	A
6/30/1987	7500	A
5/6/1993	7500	A
7/12/2001	7500	A
5/18/2003	7500	A
9/6/2008	7500	A
9/13/1984	7490	A
10/6/1985	7490	A
5/1/1993	7490	A
8/25/1995	7490	A
5/17/2003	7490	A
8/30/1973	7480	A
9/28/1999	7480	A
5/4/2003	7480	A
9/10/2008	7470	A
8/1/1980	7460	A
8/25/1980	7460	A
7/25/1981	7460	A
9/15/1983	7460	A
9/12/1984	7460	A
8/2/1990	7460	A
5/2/1993	7460	A
8/27/1999	7460	A
5/12/2002	7460	A
7/25/1973	7450	A
7/31/1973	7450	A
9/8/2008	7450	A
7/3/1977	7440	A
8/23/1984	7440	A
8/14/1996	7440	A
9/27/1999	7440	A
8/17/2008	7440	A
9/27/2008	7440	A
10/2/1977	7430	A
8/20/1979	7430	A
9/1/1979	7430	A
5/7/1983	7430	A
8/16/1986	7430	A
8/17/1986	7430	A
9/9/2008	7430	A
9/25/2008	7430	A
8/11/1985	7420	A
7/31/1985	7410	A
9/30/1985	7410	A
5/9/1991	7410	A
8/12/1986	7400	A
9/11/1993	7400	A
5/3/2003	7400	A
9/28/2008	7400	A
9/1/1973	7390	A
5/4/1968	7380	A
8/14/1986	7380	A
8/31/1998	7380	A
5/19/2008	7380	A
5/20/2008	7380	A
5/3/2008	7370	A
8/31/1973	7360	A
9/15/1976	7360	A
5/6/1985	7360	A

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5/3/1993	7360	A
7/15/2002	7360	A
9/26/2008	7360	A
9/14/1983	7350	A
8/9/1992	7350	A
8/1/1991	7340	A
5/1/2000	7340	A
8/3/1987	7320	A
9/2/1983	7310	A
8/11/1969	7300	A
8/14/1970	7300	A
8/21/1976	7300	A
7/26/1981	7300	A
5/8/1995	7300	A
9/2/1995	7300	A
8/28/1979	7290	A
7/17/2003	7290	A
5/11/2008	7290	A
7/9/1977	7280	A
9/3/1987	7270	A
8/19/1980	7260	A
7/28/1981	7260	A
9/22/1984	7260	A
9/28/1985	7260	A
8/15/1986	7260	A
8/2/1987	7260	A
8/28/1995	7260	A
8/24/1984	7250	A
9/23/1984	7250	A
9/1/1998	7250	A
7/8/2001	7250	A
7/10/1977	7240	A
7/29/1989	7240	A
8/29/1999	7240	A
7/17/2000	7240	A
8/8/1979	7230	A
9/4/1980	7230	A
8/25/1984	7230	A
7/5/1985	7230	A
9/29/1985	7230	A
7/6/2007	7230	A
10/5/1969	7220	A
5/15/2001	7220	A
10/10/1969	7210	A
9/14/1976	7210	A
7/15/2006	7210	Ae
10/6/1977	7200	Ae
9/13/1983	7200	Ae
9/14/1991	7200	Ae
8/18/2008	7200	Ae
8/18/1969	7190	Ae
8/3/1990	7190	A
7/22/2005	7190	A
5/5/2008	7180	A
5/1/1985	7170	A
5/9/1995	7170	A
8/28/1999	7170	A
8/27/1979	7160	A
8/26/1980	7160	A
7/14/1987	7160	A
5/31/2004	7160	A
9/14/1967	7150	A
9/13/1976	7150	A
5/4/1993	7150	A
9/11/1983	7140	A
9/27/1985	7140	A
5/10/1991	7140	A
8/2/1991	7140	A
9/2/1998	7140	A
9/16/1998	7140	A
5/13/2002	7140	A
9/2/1979	7130	A
9/12/1983	7130	A
8/26/1984	7130	A

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8/1/1973	7120	A
9/11/1984	7120	A
8/18/1986	7120	A
5/2/2000	7120	A
8/12/1969	7110	A
9/27/1969	7110	A
10/1/2008	7110	A
7/27/1981	7100	A
5/8/1983	7100	A
9/12/1993	7100	A
6/1/2004	7100	A
7/21/1973	7090	A
9/9/1977	7090	A
8/27/1984	7090	A
7/6/1988	7090	A
10/7/1977	7070	A
9/3/1983	7070	A
5/21/1985	7070	A
8/26/1979	7060	A
9/3/1979	7060	A
5/11/1991	7060	A
7/9/2007	7060	A
8/24/1971	7050	A
8/4/1987	7050	A
8/7/1991	7050	A
7/16/1994	7050	A
8/1/1987	7040	A
9/11/1995	7040	A
10/7/2000	7040	A
7/24/1973	7030	A
8/21/1979	7030	A
8/25/1979	7030	A
8/27/1980	7030	A
9/3/1995	7030	A
9/5/2008	7030	A
9/15/1993	7020	A
8/15/1996	7020	A
10/8/2000	7020	A
8/22/1976	7000	A
8/28/1984	7000	A
5/14/2001	7000	A
8/19/2008	7000	A
10/2/2008	7000	A
8/21/1967	6990	A
8/24/1979	6990	A
9/12/1970	6980	A
8/12/1985	6980	A
8/19/1986	6980	A
9/28/1969	6970	A
9/12/1976	6970	A
10/3/2008	6970	A
8/29/1984	6960	A
9/3/1998	6960	A
8/16/1969	6950	A
9/1/1971	6950	A
10/10/1992	6950	A
9/13/1993	6950	A
8/2/1973	6940	A
8/30/1984	6940	A
5/2/1985	6940	A
9/26/1985	6940	A
7/2/1994	6940	A
7/23/2000	6940	A
5/25/2004	6940	A
5/7/2008	6940	A
7/30/1989	6930	A
8/17/1969	6920	A
10/1/1969	6920	A
10/3/1969	6920	A
10/4/1969	6920	A
9/4/1984	6920	A
9/10/1984	6920	A
5/2/2005	6920	A
9/10/1983	6910	A

Tab name: Sidney gauge data

8/31/1984	6910	A
7/24/2000	6910	A
10/8/2008	6910	A
9/14/1993	6900	A
5/16/2001	6900	A
8/9/1979	6890	A
8/27/1986	6890	A
8/22/1990	6890	A
8/10/1992	6890	A
5/8/2002	6890	A
9/4/1983	6880	A
9/9/1984	6880	A
7/1/1987	6880	A
8/19/1969	6870	A
9/30/1969	6870	A
8/28/1987	6870	A
8/22/1979	6860	A
8/23/1979	6860	A
9/5/1980	6860	A
9/3/1984	6860	A
9/20/1985	6860	A
9/4/1987	6860	A
7/18/2003	6860	A
7/18/2004	6860	A
10/7/2008	6860	A
8/25/1976	6850	A
5/19/1985	6850	A
5/6/1988	6850	A
5/1/2005	6850	A
8/13/1969	6840	A
8/20/1986	6840	A
7/16/2006	6840	A
10/9/2008	6840	A
9/4/1979	6830	A
8/28/1980	6830	A
8/28/1986	6830	A
7/18/2000	6830	A
10/4/2008	6830	A
7/6/1985	6820	A
9/4/1995	6820	A
9/26/1969	6810	A
9/29/1969	6810	A
5/1/1977	6810	A
9/1/1984	6810	A
9/25/1985	6810	A
9/10/1995	6810	A
7/20/2001	6810	A
10/5/2005	6810	A
9/6/1984	6800	A
8/4/1990	6800	A
7/23/1973	6790	A
9/9/1983	6790	A
9/8/1984	6790	A
10/10/2000	6790	A
10/2/1969	6780	A
9/5/1984	6780	A
7/31/1989	6780	A
7/22/2000	6780	A
5/17/2004	6780	A
10/5/2008	6780	A
10/10/2008	6780	A
9/18/1996	6770	A
7/24/2002	6770	A
6/6/2004	6770	A
7/22/1973	6760	A
9/6/1980	6760	A
9/7/1984	6760	A
8/1/1989	6760	A
10/9/2000	6760	A
7/21/2001	6760	A
7/19/2002	6760	A
7/25/2002	6760	A
5/9/1983	6750	A
5/22/1985	6750	A

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8/5/1987	6750	A
8/2/1989	6750	A
9/5/1995	6750	A
9/8/1983	6740	A
7/23/2001	6740	A
10/6/2008	6740	A
9/5/1979	6730	A
9/5/1983	6730	A
9/2/1984	6730	A
5/18/2000	6730	A
7/16/2002	6710	A
7/23/2002	6710	A
5/2/2008	6710	A
8/23/1976	6700	A
8/24/1976	6700	A
9/11/1976	6700	A
8/2/1980	6700	A
9/3/1980	6700	A
9/7/1983	6700	A
10/8/1992	6700	A
9/15/1998	6700	A
7/22/2001	6700	A
8/20/2008	6700	A
9/1/1986	6690	A
8/3/1991	6690	A
7/17/2006	6690	A
10/1/1977	6680	A
9/21/1985	6680	A
8/5/1990	6680	A
8/27/1990	6680	A
10/9/1992	6680	A
9/6/1995	6680	A
8/16/1996	6680	A
9/4/1998	6680	A
9/7/1980	6670	A
9/7/1995	6670	A
7/30/2001	6670	A
7/22/2002	6670	A
5/3/1985	6660	A
7/7/1988	6660	A
9/6/1983	6650	A
9/9/1995	6650	A
7/21/2002	6650	A
8/3/1973	6640	A
7/11/1977	6640	A
8/29/1986	6640	A
8/30/1980	6630	A
8/31/1980	6630	A
9/2/1980	6630	A
5/3/1995	6630	A
9/13/1967	6620	A
5/11/1977	6620	A
8/13/1985	6620	A
8/25/1971	6610	A
7/25/2000	6610	A
7/19/2003	6610	A
9/1/1980	6600	A
9/15/1980	6600	A
9/5/1987	6600	A
8/5/1991	6600	A
8/6/1991	6600	A
10/3/1992	6600	A
5/20/1985	6590	A
7/20/2002	6580	A
8/20/1969	6570	A
8/10/1979	6570	A
9/6/1979	6570	A
9/8/1987	6570	A
7/19/2000	6570	A
7/17/2002	6570	A
9/8/1977	6560	A
8/8/1981	6560	A
5/5/1988	6560	A
5/14/2002	6560	A

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7/7/2007	6560	A
8/14/1969	6550	A
8/15/1969	6550	A
9/11/1970	6550	A
8/26/1976	6550	A
7/8/1977	6550	A
9/9/1987	6550	A
5/4/2008	6550	A
9/8/1980	6540	A
9/24/1985	6540	A
8/21/1986	6540	A
8/4/1991	6540	A
10/2/1992	6540	A
7/9/2001	6540	A
7/4/1977	6530	A
5/5/1985	6530	A
8/6/1990	6530	A
8/8/1991	6520	A
7/23/2005	6520	A
8/17/1979	6510	A
8/31/1986	6510	A
9/10/1987	6510	A
8/30/1986	6500	A
5/7/1988	6500	A
5/8/2001	6500	A
5/6/2002	6500	A
10/7/1989	6490	A
7/18/2006	6490	A
10/8/1989	6480	A
7/17/1994	6480	A
8/22/1967	6470	A
8/29/1980	6470	A
5/24/1985	6470	A
6/7/2004	6470	A
8/30/1976	6460	A
9/1/1976	6460	A
9/8/1995	6460	A
8/17/1996	6460	A
9/5/1998	6460	A
10/6/2000	6460	A
7/7/1985	6440	A
8/28/1990	6440	A
7/26/2002	6440	A
5/10/2004	6440	A
8/31/1976	6430	A
9/2/1977	6430	A
9/6/1987	6430	A
8/3/1989	6430	A
7/11/2007	6430	A
10/4/2000	6420	A
7/26/2001	6420	A
5/3/2005	6420	A
10/10/1989	6410	A
8/29/1990	6410	A
8/11/1992	6410	A
7/21/2000	6410	A
8/21/1969	6400	A
8/15/1970	6400	A
8/26/1971	6400	A
8/29/1976	6400	A
9/11/1987	6400	A
10/9/1989	6400	A
8/30/1990	6400	A
9/30/2000	6400	A
10/3/2000	6400	A
7/17/2001	6400	A
7/2/1987	6390	A
7/19/2004	6390	A
9/9/1980	6380	A
9/23/1985	6380	A
8/24/1986	6380	A
8/11/1973	6370	A
8/12/1973	6370	A
8/27/1976	6370	A

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8/23/1986	6370	A
7/8/1988	6370	A
10/10/1990	6370	A
5/18/2002	6370	A
9/6/1967	6360	A
8/27/1987	6360	A
9/7/1979	6350	A
10/4/1992	6350	A
7/20/2000	6350	A
10/5/2000	6350	A
7/18/2001	6350	A
8/4/1973	6340	A
9/10/1976	6340	A
8/22/1986	6340	A
10/6/1990	6340	A
5/7/2002	6340	A
9/12/1967	6330	A
8/17/1985	6330	A
10/1/1992	6330	A
8/18/1996	6330	A
9/25/1969	6320	A
8/3/1980	6320	A
9/14/1980	6320	A
9/7/1987	6320	A
8/28/1976	6310	A
9/2/1976	6310	A
8/20/1996	6310	A
9/14/1998	6310	A
8/21/2008	6310	A
9/5/1967	6300	A
8/24/1992	6300	A
9/13/1992	6300	A
9/29/2000	6300	A
9/26/2004	6300	A
7/5/1977	6290	A
8/25/1986	6290	A
8/19/1996	6290	A
8/11/1979	6280	A
5/23/1985	6280	A
8/26/1986	6280	A
9/12/1987	6280	A
7/8/1987	6270	A
10/7/1992	6260	A
7/10/2007	6260	A
8/23/1967	6250	A
9/7/1967	6250	A
8/17/1973	6250	A
10/10/1981	6250	A
5/4/1985	6250	A
9/22/1985	6250	A
7/20/2003	6250	A
8/29/1992	6240	A
8/21/1996	6240	A
9/18/1992	6230	A
9/6/1998	6230	A
8/16/1973	6220	A
10/9/1981	6220	A
8/7/1990	6220	A
10/2/2000	6220	A
7/8/2007	6220	A
8/27/1971	6210	A
8/31/1971	6210	A
5/11/2001	6210	A
7/27/2002	6210	A
5/14/1977	6200	A
7/3/1994	6200	A
10/1/2000	6200	A
9/8/1967	6190	A
8/13/1973	6190	A
8/18/1985	6190	A
9/19/1992	6190	A
9/10/1970	6180	A
7/12/1977	6180	A
9/13/1998	6180	A

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10/4/2005	6180	A
9/4/1967	6170	A
9/11/1967	6170	A
5/8/1988	6170	A
9/23/1992	6170	A
7/28/2002	6170	A
9/27/2004	6170	A
9/3/1976	6160	A
8/12/1979	6160	A
8/13/1979	6160	A
10/5/1992	6160	A
8/22/1996	6160	A
10/1/2005	6160	A
7/7/1987	6150	A
10/7/1990	6150	A
9/7/1977	6140	A
8/9/1991	6140	A
9/14/1992	6140	A
9/24/1992	6140	A
9/23/2006	6140	A
5/8/2008	6140	A
5/2/1995	6130	A
7/26/2000	6130	A
7/31/2001	6130	A
5/9/2008	6130	A
8/22/1969	6120	A
9/24/1969	6120	A
7/3/1987	6120	A
9/30/1992	6120	A
5/12/2001	6120	A
5/15/2002	6120	A
9/4/2008	6120	A
7/6/1977	6110	A
7/9/1987	6110	A
5/9/1988	6110	A
9/12/1998	6110	A
9/22/1969	6100	A
8/5/1973	6100	A
9/8/1979	6100	A
7/8/1985	6100	A
5/1/1995	6100	A
9/10/1998	6100	A
8/28/1971	6090	A
7/7/1977	6090	A
8/6/1987	6080	A
9/21/1992	6080	A
9/11/1998	6080	A
9/24/2006	6080	A
5/10/2008	6080	A
8/9/1981	6070	A
10/9/1990	6070	A
9/20/1992	6070	A
10/6/1992	6070	A
7/24/2001	6070	A
7/20/2004	6070	A
9/25/2004	6070	A
9/2/1967	6060	A
9/9/1967	6060	A
9/13/1987	6060	A
8/4/1989	6060	A
8/31/1990	6060	A
9/7/1998	6060	A
9/9/1998	6060	A
9/23/1969	6050	A
9/12/1992	6050	A
8/22/2008	6050	A
9/10/1967	6040	A
8/14/1973	6040	A
8/23/1973	6040	A
9/4/1976	6040	A
9/5/1976	6040	A
10/8/1981	6040	A
8/12/1992	6040	A
9/22/1992	6040	A

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7/12/2007	6040	A
9/10/1977	6030	A
8/16/1979	6030	A
9/30/2005	6030	A
8/19/1985	6020	A
9/25/1992	6020	A
10/2/2005	6020	A
8/26/1967	6010	A
9/3/1967	6010	A
8/10/1973	6010	A
8/15/1973	6010	A
9/6/1976	6010	A
8/14/1985	6010	A
8/23/1996	6010	A
10/10/2007	6010	A
9/13/1980	6000	A
5/1/1988	6000	A
9/28/2000	6000	A
10/6/2004	6000	A
7/19/2006	6000	A
8/29/1971	5990	A
9/14/1987	5990	A
8/24/1990	5990	A
8/28/1992	5990	A
8/31/1989	5980	A
5/18/2004	5980	A
8/14/1979	5970	A
8/4/1980	5970	A
9/15/1987	5970	A
7/9/1988	5970	A
8/8/1990	5970	A
9/28/2004	5970	A
10/1/2004	5970	A
9/21/1969	5960	A
8/16/1985	5960	A
7/6/1987	5960	A
8/5/1989	5960	A
10/8/1990	5960	A
8/30/1992	5960	A
9/8/1998	5960	A
5/19/2000	5960	A
10/3/2005	5960	A
9/26/2006	5960	A
9/9/1976	5950	A
10/3/1987	5950	A
9/15/1992	5950	A
7/18/1994	5950	A
7/21/2003	5950	A
8/15/1979	5940	A
8/5/1980	5940	A
8/6/1980	5940	A
10/6/1989	5940	A
5/2/2001	5940	A
7/29/2002	5940	A
9/9/1970	5930	A
9/30/2004	5930	A
8/18/1973	5920	A
8/21/1973	5920	A
8/22/1973	5920	A
9/7/1976	5920	A
10/7/1981	5920	A
9/17/1992	5920	A
9/29/2005	5920	A
10/4/1987	5910	A
9/26/1992	5910	A
8/16/1970	5900	A
9/16/1992	5900	A
7/11/2001	5900	A
5/24/2004	5900	A
10/7/2004	5900	A
9/8/1976	5890	A
8/7/1980	5880	A
5/9/2001	5880	A
7/25/2001	5880	A

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9/13/1991	5870	A
8/25/1992	5870	A
5/16/2002	5870	A
10/5/2004	5870	A
9/25/2006	5870	A
9/28/2006	5870	A
10/6/1981	5860	A
9/19/1985	5860	A
9/16/1987	5860	A
9/9/1979	5850	A
10/2/1987	5850	A
9/29/1992	5850	A
7/10/2001	5850	A
9/29/2004	5850	A
9/27/2006	5850	A
8/30/1971	5840	A
7/4/1987	5840	A
8/24/1996	5840	A
10/4/2004	5840	A
5/4/2005	5840	A
7/24/2005	5840	A
7/9/1985	5830	A
9/1/1989	5830	A
9/24/2004	5830	A
9/17/1979	5820	A
9/18/1979	5820	A
8/17/1987	5820	A
5/4/1988	5820	A
9/28/1992	5820	A
7/25/2004	5810	A
10/2/2004	5810	A
8/13/1992	5800	A
9/27/1992	5800	A
8/26/1996	5800	A
8/23/2008	5800	A
9/10/1979	5790	A
9/16/1979	5790	A
9/19/1979	5790	A
8/8/1980	5790	A
9/10/1980	5790	A
10/10/1994	5790	A
10/8/2004	5790	A
10/1/1987	5780	A
7/30/2002	5780	A
8/10/1981	5770	A
8/15/1985	5770	A
8/20/1985	5770	A
9/17/1987	5770	A
8/23/1969	5750	A
9/3/1969	5750	A
9/18/1987	5750	A
10/5/1987	5750	A
10/3/2004	5750	A
8/6/1973	5740	A
7/31/2002	5740	A
7/21/2004	5740	A
8/29/1967	5730	A
9/3/1977	5730	A
9/12/1980	5730	A
8/15/1987	5730	A
5/2/1988	5730	A
5/10/2001	5730	A
7/27/2001	5730	A
8/25/2008	5730	A
7/13/1977	5720	A
9/19/1987	5720	A
5/20/2000	5720	A
7/27/2000	5720	A
9/27/2000	5720	A
9/20/1969	5710	A
10/5/1981	5710	A
8/9/1990	5710	A
8/24/2008	5710	A
9/20/1979	5700	A

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9/11/1992	5700	A
10/9/2004	5700	A
8/24/1969	5690	A
9/5/1977	5690	A
9/22/1987	5690	A
7/26/2005	5690	A
8/24/1967	5680	A
8/27/1967	5680	A
9/1/1967	5680	A
8/20/1973	5680	A
9/6/1977	5680	A
8/9/1980	5670	A
7/5/1987	5670	A
8/31/1992	5670	A
8/25/1996	5670	A
7/20/2006	5670	A
8/19/1987	5660	A
9/20/1987	5660	A
9/28/1987	5660	A
9/29/1987	5660	A
9/9/1991	5660	A
7/9/1994	5660	A
8/28/1967	5650	A
9/4/1969	5650	A
8/9/1973	5650	A
7/10/1987	5650	A
9/21/1987	5650	A
5/17/2002	5650	A
9/15/1979	5640	A
9/23/1987	5640	A
7/24/2004	5640	A
9/3/2008	5640	A
8/17/1970	5630	A
8/23/1990	5630	A
8/27/1992	5630	A
7/4/1994	5630	A
7/16/2001	5630	A
8/1/2002	5630	A
7/22/2003	5630	A
8/25/1967	5620	A
9/11/1969	5620	A
5/12/1977	5620	A
10/6/1987	5620	A
5/3/1988	5620	A
8/14/1992	5620	A
5/5/2002	5620	A
10/10/2004	5620	A
9/29/2006	5620	A
9/11/1979	5610	A
7/19/1994	5610	A
9/7/1969	5600	A
9/4/1977	5600	A
8/27/1996	5600	A
7/13/1987	5590	A
8/6/1989	5590	A
9/1/1990	5590	A
9/21/1979	5580	A
8/21/1985	5580	A
8/11/1981	5570	A
9/30/1987	5570	A
10/5/1990	5570	A
8/10/1991	5570	A
5/13/2001	5570	A
7/26/2004	5570	A
9/23/2004	5570	A
8/26/2008	5570	A
8/7/1973	5560	A
8/8/1973	5560	A
8/19/1973	5560	A
9/14/1979	5550	A
9/28/2005	5550	A
8/27/2008	5550	A
9/5/1969	5540	A
5/3/1981	5540	A

Tab name: Sidney gauge data

7/27/2004	5540	A
9/30/1977	5530	A
10/7/1987	5530	A
8/7/1989	5530	A
10/4/1990	5530	A
7/13/2001	5530	A
10/10/2006	5530	A
9/6/1969	5520	A
9/19/1969	5520	A
8/2/2002	5520	A
9/22/2006	5520	A
5/13/1977	5510	A
5/2/1981	5510	A
8/30/1967	5500	A
8/25/1969	5500	A
9/10/1996	5500	A
7/13/2007	5500	A
7/14/1977	5490	A
9/12/1979	5490	A
9/13/1979	5490	A
7/10/1985	5490	A
9/10/1969	5480	A
8/7/1987	5480	A
9/24/1987	5480	A
7/10/1988	5480	A
7/28/2004	5480	A
8/8/1989	5470	A
8/26/1992	5470	A
8/28/1996	5470	A
9/17/1996	5470	A
7/25/2005	5470	A
10/9/2006	5470	A
9/30/1979	5460	A
9/11/1980	5460	A
8/20/1987	5460	A
9/11/1996	5460	A
5/5/2005	5460	A
10/4/1981	5450	A
10/8/2006	5450	A
9/1/1977	5440	A
9/18/1985	5440	A
8/18/1987	5440	A
10/10/1987	5440	A
9/1/1992	5440	A
10/8/2002	5440	A
5/19/2004	5440	A
9/30/2006	5440	A
9/22/1979	5430	A
8/10/1980	5430	A
7/28/2000	5430	A
7/22/1985	5420	A
9/27/1987	5420	A
10/8/1987	5420	A
9/25/1987	5410	A
8/11/2005	5410	A
10/2/2006	5410	A
9/2/1969	5400	A
10/3/1981	5400	A
9/26/1987	5400	A
10/9/1987	5400	A
9/2/2008	5400	A
10/5/1989	5390	A
9/9/1996	5390	A
9/12/1996	5390	A
10/7/2006	5390	A
9/17/1985	5380	A
10/9/2002	5380	A
10/3/2006	5380	A
8/28/2008	5380	A
9/23/1979	5370	A
10/9/1979	5370	A
10/1/2006	5370	A
10/4/2006	5370	A
9/18/1969	5360	A

Tab name: Sidney gauge data

7/23/1985	5360	A
9/16/1985	5360	A
7/11/1987	5360	A
9/26/2000	5360	A
10/7/2002	5360	A
7/31/2003	5360	A
7/30/2005	5360	A
10/9/1994	5350	A
9/16/1996	5350	A
10/9/2007	5350	A
9/9/1969	5340	A
9/13/1969	5340	A
9/24/1979	5340	A
10/8/1979	5340	A
10/10/1979	5340	A
7/11/1985	5340	A
9/13/1996	5340	A
7/15/2001	5340	A
7/22/2004	5340	A
8/18/1970	5330	A
9/29/1977	5330	A
10/5/2006	5330	A
9/8/1969	5320	A
7/23/2003	5320	A
7/21/2006	5320	A
9/29/1979	5310	A
7/12/1987	5310	A
9/2/1989	5310	A
10/10/2002	5310	A
9/22/2004	5310	A
9/21/2006	5310	A
9/12/1969	5300	A
9/27/1977	5300	A
9/2/1990	5300	A
9/24/1977	5290	A
8/11/1991	5290	A
9/10/1992	5290	A
7/20/1994	5290	A
7/27/2005	5290	A
8/26/1969	5280	A
9/1/1969	5280	A
9/25/1977	5280	A
10/4/1979	5280	A
10/5/1979	5280	A
10/7/1979	5280	A
10/2/1981	5280	A
7/24/1985	5280	A
8/29/1989	5280	A
7/5/1994	5280	A
9/14/1996	5280	A
5/3/2002	5280	A
7/31/2005	5280	A
9/28/1977	5270	A
9/15/1985	5270	A
9/15/1996	5270	A
9/23/1977	5260	A
8/10/1990	5260	A
10/6/2006	5260	A
9/25/1979	5250	A
9/28/1979	5250	A
10/3/1979	5250	A
8/26/1987	5250	A
9/2/1992	5250	A
8/27/1969	5240	A
8/28/1969	5240	A
9/26/1977	5240	A
10/3/1990	5240	A
8/15/1992	5240	A
8/9/1989	5230	A
10/1/1979	5220	A
10/6/1979	5220	A
8/21/1987	5220	A
9/12/1991	5220	A
7/8/1994	5220	A

Tab name: Sidney gauge data

8/29/1996	5220	A					
5/4/2002	5220	A					
9/21/2004	5220	A					
9/1/2008	5220	A					
7/11/1988	5210	A					
9/3/1990	5210	A					
9/4/1990	5210	A					
7/29/2000	5210	A					
7/29/2004	5210	A					
8/31/1967	5200	A					
9/17/1969	5200	A					
9/5/1990	5200	A					
9/26/1979	5190	A					
10/2/1979	5190	A					
8/31/1969	5180	A					
9/8/1970	5180	A					
7/30/1985	5180	A					
5/8/2005	5180	A					
8/29/2008	5180	A					
9/11/1977	5170	A					
10/1/1981	5170	A					
8/30/1989	5170	A					
7/29/2005	5170	A					
7/15/1977	5160	A					
9/27/1979	5160	A					
8/22/1985	5160	A					
9/6/1996	5150	A					
5/23/2004	5150	A					
8/23/1992	5140	A					
5/1/2002	5140	A					
8/12/1980	5130	A					
8/15/1980	5130	A					
9/16/1989	5130	A					
9/16/1969	5120	A					
8/19/1970	5120	A					
7/12/1985	5120	A					
9/5/1996	5120	A					
10/6/2002	5120	A					
7/23/2004	5120	A					
9/27/2005	5120	A					
7/7/1994	5110	A					
5/1/2001	5110	A					
7/28/2005	5110	A					
8/30/1969	5100	A					
9/15/1989	5100	A					
8/12/1991	5100	A					
9/4/1996	5100	A					
10/6/2007	5100	A					
10/1/1990	5090	A					
9/3/1992	5090	A					
7/14/2001	5090	A					
8/3/2002	5090	A					
7/24/2003	5090	A	So in May-September,	5457	days out of	6426	days were at or above 5010 cfs at Sydney, or
8/11/1980	5080	A					
8/13/1980	5080	A					
8/14/1980	5080	A					
7/18/1985	5080	A					
9/14/1985	5080	A					
9/17/1989	5080	A					
9/3/1996	5080	A					
7/22/2006	5080	A					
8/22/1987	5070	A					
8/28/1989	5070	A					
9/6/1990	5070	A					
5/20/2004	5070	A					
8/29/1969	5060	A					
10/2/1990	5060	A					
7/6/1994	5060	A					
7/21/1994	5060	A					
9/19/1988	5050	A					
9/3/1989	5050	A					
9/29/1989	5050	A					
9/27/1990	5050	A					
9/29/1990	5050	A					

Tab name: Sidney gauge data

7/30/2000	5050	A					
8/1/2003	5050	A					
7/25/1985	5040	A					
9/28/1989	5040	A					
9/7/1996	5040	A					
5/22/2004	5040	A					
10/7/2007	5030	A					
8/30/2008	5030	A					
8/10/2002	5020	A					
10/4/2002	5020	A					
7/17/1985	5010	A	5848	days at or above 5010 cfs, of whic		360	days were in October
9/13/1985	5010	A					
9/30/1990	5010	A	So in May-September,	5488	days out of	6426	days were at or above 5010 cfs at Sydney, or
8/12/1981	5000	A					
10/4/1989	5000	A					
8/12/2002	5000	A					
8/13/2002	5000	A					
10/5/2002	5000	A					
9/2/1996	4990	A					
9/8/1996	4990	A					
10/1/2007	4990	A					
9/12/1985	4980	A					
5/6/2005	4980	A					
9/15/1969	4970	A					
8/20/1970	4970	A					
9/22/1977	4970	A					
5/4/1981	4970	A					
9/18/1989	4970	A					
9/30/1989	4970	A					
10/3/2002	4970	A					
8/10/1989	4960	A					
9/28/1990	4960	A					
9/14/2002	4960	A					
8/1/2005	4960	A					
9/14/1969	4950	A					
5/5/1981	4950	A					
9/30/1981	4950	A					
8/23/1987	4950	A					
7/12/1988	4950	A					
9/14/1989	4950	A					
9/26/1990	4950	A					
9/9/1992	4950	A					
7/14/2007	4950	A					
7/13/1985	4940	A					
8/8/1987	4940	A					
9/23/1988	4940	A					
9/27/1989	4940	A					
9/7/1990	4940	A					
9/8/1991	4940	A					
7/23/2006	4940	A					
9/12/1977	4930	A					
7/19/1985	4930	A					
10/8/1994	4930	A					
8/30/1996	4930	A					
7/30/2004	4930	A					
8/31/2008	4930	A					
8/31/1985	4920	A					
9/4/1992	4920	A					
7/25/2003	4920	A					
9/7/1970	4910	A					
10/3/1989	4910	A					
9/4/1989	4900	A					
9/1/1996	4900	A					
9/30/2007	4900	A					
10/2/2007	4900	A					
7/14/1985	4890	A					
8/13/1991	4890	A					
5/2/2002	4890	A					
8/14/2002	4890	A					
7/30/2003	4890	A					
8/16/1992	4880	A					
7/31/2000	4880	A					
10/1/1989	4870	A					
10/2/1989	4870	A					

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9/19/1989	4860	A
8/11/1990	4860	A
9/25/1990	4860	A
7/16/1977	4850	A
8/31/1996	4850	A
8/3/2001	4850	A
10/8/2007	4850	A
9/25/1989	4830	A
9/8/1990	4830	A
8/15/1991	4830	A
10/2/2002	4830	A
8/20/1991	4820	A
9/29/2007	4820	A
10/5/2007	4820	A
9/20/2004	4810	A
7/21/1985	4800	A
8/11/2002	4800	A
5/7/2005	4800	A
9/26/1989	4790	A
5/21/2004	4790	A
8/25/2005	4790	A
9/28/2007	4790	A
8/14/1991	4780	A
7/22/1994	4780	A
8/1/2000	4780	A
10/3/2007	4780	A
7/15/1985	4770	A
9/5/1992	4770	A
7/16/1985	4760	A
7/26/2003	4760	A
7/31/2004	4760	A
9/5/1989	4750	A
9/20/1989	4750	A
8/21/1991	4750	A
9/25/2000	4750	A
9/15/2002	4750	A
8/21/1970	4740	A
7/20/1985	4740	A
8/6/2000	4740	A
8/9/2002	4740	A
8/13/1981	4730	A
9/29/1981	4730	A
8/24/1987	4730	A
7/13/1988	4730	A
9/24/1989	4730	A
9/26/2005	4730	A
10/4/2007	4730	A
9/21/1989	4720	A
8/19/1991	4720	A
9/3/2002	4720	A
9/13/1977	4710	A
9/20/1988	4710	A
9/24/1988	4710	A
9/22/1989	4710	A
8/2/2000	4710	A
9/15/2001	4710	A
9/13/2002	4710	A
7/26/1985	4700	A
9/10/1990	4700	A
10/7/1994	4700	A
9/22/1988	4690	A
9/12/1990	4690	A
9/11/1991	4690	A
8/3/2000	4690	A
9/23/1989	4680	A
8/16/1991	4680	A
8/4/2002	4680	A
7/24/2006	4680	A
9/14/1977	4670	A
5/1/1981	4670	A
9/6/1989	4670	A
9/9/1990	4670	A
8/7/2002	4670	A
8/8/2002	4670	A

Tab name: Sidney gauge data

8/1/2004	4670	A
9/6/1970	4660	A
9/15/1977	4660	A
9/25/1988	4660	A
9/13/1989	4660	A
9/11/1990	4660	A
8/22/1991	4660	A
8/5/2000	4660	A
9/12/2002	4660	A
8/2/2003	4660	A
9/11/1985	4650	A
8/25/1987	4650	A
8/11/1989	4650	A
9/24/1990	4650	A
8/23/1991	4650	A
9/10/1991	4650	A
7/27/2003	4650	A
8/4/2000	4640	A
8/22/1970	4630	A
9/28/1988	4630	A
9/29/1988	4630	A
8/17/1992	4630	A
9/28/1981	4620	A
9/11/2002	4620	A
7/18/1977	4610	A
7/29/1985	4610	A
8/9/1987	4600	A
9/30/1988	4600	A
9/8/1992	4600	A
9/29/2002	4600	A
9/27/1981	4590	A
9/21/1988	4590	A
9/6/1992	4590	A
8/6/2004	4590	A
8/7/2004	4590	A
9/7/1989	4580	A
9/21/1990	4580	A
8/6/2002	4580	A
7/28/2003	4580	A
5/1/2008	4580	A
9/16/1977	4570	A
9/9/1985	4570	A
9/27/1988	4570	A
8/12/1990	4570	A
9/20/1990	4570	A
8/7/2000	4570	A
10/1/2002	4570	A
8/18/2005	4570	A
7/17/1977	4560	A
9/21/1977	4560	A
8/17/1990	4560	A
9/13/1990	4560	A
9/22/1990	4560	A
8/23/1985	4550	A
10/1/1988	4550	A
9/23/1990	4550	A
9/28/2002	4550	A
7/29/2003	4550	A
8/15/1990	4540	A
8/2/2005	4540	A
7/15/2007	4540	A
8/18/1991	4530	A
10/6/1994	4530	A
9/24/2000	4530	A
8/5/2002	4530	A
9/27/2002	4530	A
9/30/2002	4530	A
9/5/1970	4520	A
9/19/1977	4520	A
10/2/1988	4520	A
8/16/1990	4520	A
9/14/1990	4520	A
8/17/1991	4520	A
10/5/1994	4520	A

Tab name: Sidney gauge data

9/16/2002	4520	A
9/26/2002	4520	A
8/17/2005	4520	A
8/24/2005	4520	A
8/14/1981	4510	A
9/10/1985	4510	A
7/14/1988	4510	A
8/15/2002	4510	A
9/12/1989	4500	A
8/14/1990	4500	A
9/18/1990	4500	A
9/8/1985	4490	A
8/25/1989	4490	A
7/23/1994	4490	A
8/2/2004	4490	A
10/3/1988	4480	A
8/13/1990	4480	A
8/18/1990	4480	A
9/19/1990	4480	A
9/7/1992	4480	A
10/4/1994	4480	A
9/25/2002	4480	A
9/20/2006	4480	A
8/31/1977	4470	A
7/27/1985	4470	A
9/8/1989	4470	A
9/15/1990	4470	A
8/23/1970	4460	A
8/24/1970	4460	A
8/25/1970	4460	A
8/26/1970	4460	A
10/10/1988	4460	A
8/8/2000	4460	A
8/4/2004	4460	A
9/27/2007	4460	A
7/19/1977	4450	A
8/21/1990	4450	A
8/22/1992	4450	A
9/4/2002	4450	A
9/17/2002	4440	A
8/27/1970	4430	A
9/3/1970	4430	A
9/16/1990	4430	A
9/17/1977	4420	A
9/18/1977	4420	A
9/26/1988	4420	A
9/18/2004	4420	A
9/2/1970	4410	A
7/28/1985	4410	A
7/24/1994	4410	A
8/5/2004	4410	A
9/20/1977	4400	A
9/1/1985	4400	A
8/12/1989	4400	A
8/17/1989	4400	A
9/17/1990	4400	A
8/19/1992	4400	A
9/10/2002	4400	A
8/18/1992	4390	A
8/9/2000	4390	A
8/10/2000	4390	A
9/19/2004	4390	A
7/25/2006	4390	A
9/4/1970	4380	A
8/11/2000	4380	A
9/24/2002	4380	A
8/3/2005	4380	A
8/10/1987	4370	A
10/4/1988	4370	A
10/8/1988	4370	A
8/19/1990	4370	A
8/18/1989	4360	A
8/3/2004	4350	A
8/4/2005	4350	A

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10/7/1988	4340	A
9/9/1989	4340	A
8/3/2003	4340	A
8/9/2004	4340	A
8/28/1970	4330	A
8/13/1989	4330	A
8/21/1992	4330	A
9/14/2001	4330	A
9/18/2002	4330	A
9/22/2002	4330	A
9/23/2002	4330	A
9/17/2004	4330	A
10/5/1988	4320	A
10/6/1988	4320	A
8/15/1977	4310	A
7/15/1988	4310	A
10/9/1988	4310	A
8/16/1989	4310	A
8/24/1991	4310	A
8/20/1992	4310	A
9/25/2007	4310	A
8/8/2004	4300	A
7/20/1977	4290	A
9/18/1988	4290	A
8/20/1990	4290	A
9/20/2002	4290	A
8/26/2005	4290	A
9/23/2000	4280	A
9/19/2002	4280	A
9/26/2007	4280	A
9/10/1989	4270	A
9/16/2004	4270	A
9/24/2007	4270	A
8/26/1989	4260	A
8/29/1970	4250	A
8/14/1989	4250	A
8/12/2000	4240	A
7/16/2007	4240	A
8/8/2005	4230	A
8/11/1987	4220	A
8/19/1989	4220	A
8/24/1989	4220	A
9/18/1994	4220	A
10/3/1994	4220	A
9/21/2002	4220	A
9/11/1989	4210	A
9/14/2000	4210	A
9/9/2002	4210	A
8/19/2005	4210	A
8/23/2005	4210	A
8/16/1977	4200	A
9/26/1981	4200	A
8/14/1987	4200	A
8/15/1989	4200	A
9/13/2000	4200	A
9/1/1970	4180	A
9/5/1985	4180	A
8/12/1987	4180	A
9/15/2000	4180	A
9/5/2002	4180	A
9/23/2007	4180	A
8/14/1977	4170	A
9/7/1985	4170	A
8/10/2004	4170	A
8/5/2005	4170	A
8/24/1985	4160	A
9/16/2000	4160	A
9/25/2005	4160	A
7/30/1977	4150	A
7/31/1977	4150	A
8/15/1981	4150	A
8/13/1987	4150	A
7/24/1977	4140	A
8/16/2002	4140	A

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9/22/2007	4140	A
8/30/1970	4130	A
8/9/2005	4130	A
7/21/1977	4110	A
9/2/1985	4110	A
7/25/1994	4110	A
10/5/2003	4110	A
10/6/2003	4110	A
9/6/1985	4100	A
8/27/1989	4100	A
8/25/1991	4100	A
9/30/1994	4100	A
9/12/2000	4100	A
9/29/2003	4100	A
9/15/2007	4100	A
9/16/2007	4100	A
8/1/1977	4090	A
9/19/1994	4090	A
10/1/1994	4090	A
10/7/2003	4090	A
8/10/2005	4090	A
8/12/2005	4090	A
7/26/2006	4090	A
9/17/2007	4090	A
9/19/2007	4090	A
9/21/2007	4090	A
8/17/1977	4080	A
9/17/2000	4080	A
8/20/1989	4070	A
9/22/2000	4070	A
9/20/2007	4070	A
8/31/1970	4060	A
9/11/2000	4060	A
8/4/2001	4060	A
9/15/2004	4060	A
9/14/2007	4060	A
9/18/2007	4060	A
7/16/1988	4050	A
10/8/2003	4050	A
8/17/1981	4040	A
9/10/2000	4040	A
9/9/2000	4030	A
10/9/2003	4030	A
10/2/1994	4020	A
8/4/2007	4020	A
9/8/2000	4010	A
9/24/2003	4010	A
9/30/2003	4010	A
9/18/2000	4000	A
9/6/2002	4000	A
9/28/2003	4000	A
10/4/2003	4000	A
8/16/1981	3990	A
8/26/1991	3990	A
9/23/2003	3990	A
7/29/1977	3980	A
9/7/2000	3980	A
8/7/2005	3980	A
7/22/1977	3970	A
8/29/1977	3970	A
9/5/1991	3970	A
7/17/2007	3970	A
9/6/1991	3960	A
9/26/2003	3960	A
8/6/2005	3960	A
9/13/2007	3960	A
8/21/1989	3950	A
8/28/1991	3950	A
9/26/1994	3950	A
9/21/2000	3950	A
9/27/2003	3950	A
10/10/2003	3950	A
8/27/1991	3940	A
10/1/2003	3940	A

Tab name: Sidney gauge data

10/2/2003	3940	A
9/24/2005	3940	A
9/19/2000	3930	A
9/20/2000	3930	A
8/4/2003	3930	A
10/3/2003	3930	A
9/14/2004	3930	A
9/29/1994	3920	A
9/25/2003	3920	A
8/22/2005	3920	A
8/27/2005	3920	A
8/18/1977	3910	A
8/23/2002	3910	A
8/29/1991	3900	A
9/4/1991	3900	A
7/29/1994	3900	A
7/23/1977	3890	A
8/30/1977	3890	A
9/7/1991	3890	A
9/27/1994	3890	A
9/6/2000	3890	A
9/23/2005	3890	A
8/2/1977	3880	A
7/26/1994	3880	A
8/13/2000	3880	A
8/11/2004	3880	A
7/27/2006	3880	A
9/25/1981	3870	A
9/4/1985	3870	A
8/28/2005	3870	A
8/25/1985	3860	A
9/25/1994	3860	A
8/23/1989	3850	A
9/20/1994	3850	A
9/3/1985	3840	A
8/22/1989	3840	A
7/17/1988	3830	A
9/17/1994	3830	A
9/21/2005	3830	A
9/22/2005	3830	A
9/28/1994	3820	A
8/19/1977	3810	A
9/17/1988	3810	A
9/8/2002	3800	A
8/16/2005	3800	A
8/3/1977	3790	A
9/24/1981	3790	A
7/31/1994	3790	A
9/20/2001	3790	A
8/17/2002	3790	A
9/7/2002	3790	A
8/12/1977	3780	A
7/27/1994	3780	A
7/28/1994	3780	A
8/20/2005	3780	A
7/18/1988	3770	A
8/29/2005	3770	A
7/20/1988	3760	A
9/5/2000	3760	A
9/19/2006	3760	A
9/19/2001	3750	A
9/22/2003	3750	A
8/18/1981	3740	A
8/19/1981	3740	A
9/12/1981	3740	A
8/30/1991	3740	A
9/23/1994	3740	A
8/21/2005	3740	A
9/20/2005	3740	A
8/4/1977	3730	A
8/13/1977	3730	A
8/7/2003	3730	A
8/13/2005	3730	A
8/14/2005	3730	A

Tab name: Sidney gauge data

9/22/1981	3720	A
9/22/1994	3720	A
9/21/2001	3720	A
9/1/2004	3720	A
8/15/2005	3720	A
9/12/2007	3720	A
7/28/1977	3710	A
10/10/2001	3710	A
8/5/2003	3710	A
9/13/1981	3700	A
9/23/1981	3700	A
9/2/1991	3700	A
9/3/1991	3700	A
7/30/1994	3700	A
9/21/1994	3700	A
7/25/1977	3690	A
7/19/1988	3690	A
7/21/1988	3690	A
8/1/1994	3690	A
9/24/1994	3690	A
8/6/2003	3690	A
8/23/1977	3680	A
7/28/2006	3680	A
9/4/2000	3670	A
9/22/2001	3670	A
8/28/1977	3660	A
8/2/1994	3660	A
9/2/2002	3660	A
9/9/2004	3660	A
9/13/2004	3660	A
7/18/2007	3660	A
9/11/1981	3650	A
9/15/1981	3650	A
9/21/1981	3650	A
8/14/2000	3650	A
8/12/2004	3640	A
9/19/2005	3640	A
8/20/1977	3630	A
8/26/1985	3630	A
9/1/1991	3630	A
9/18/2001	3630	A
8/20/1981	3620	A
9/9/1981	3620	A
9/18/2005	3620	A
9/10/2004	3610	A
9/10/1981	3600	A
9/14/1981	3600	A
9/16/1981	3600	A
9/20/1981	3600	A
8/15/2000	3600	A
9/29/2001	3600	A
9/21/2003	3600	A
8/30/2005	3600	A
8/5/1977	3590	A
8/31/1991	3590	A
9/16/2001	3590	A
9/30/2001	3590	A
10/9/2001	3590	A
8/26/2002	3590	A
9/20/2003	3590	A
5/4/2004	3590	A
9/2/2004	3590	A
8/24/1977	3580	A
9/23/2001	3580	A
10/3/2001	3580	A
9/19/1981	3570	A
9/19/2003	3570	A
9/28/2001	3560	A
9/5/1981	3550	A
9/8/1981	3550	A
9/16/1988	3550	A
7/27/1977	3540	A
9/12/2004	3540	A
8/11/1977	3530	A

Tab name: Sidney gauge data

8/21/1981	3530	A
8/3/1994	3520	A
9/24/2001	3520	A
9/27/2001	3520	A
8/21/1977	3510	A
9/11/2004	3510	A
9/6/1981	3500	A
8/27/1985	3500	A
9/17/2001	3500	A
10/2/2001	3500	A
9/18/2003	3500	A
8/2/2007	3500	A
8/6/1977	3490	A
7/22/1988	3490	A
10/8/2001	3490	A
9/8/2004	3490	A
9/17/2005	3490	A
7/29/2006	3490	A
9/11/2007	3490	A
9/7/1981	3480	A
9/17/1981	3480	A
10/4/2001	3480	A
9/3/2000	3470	A
10/7/2001	3470	A
9/4/1981	3460	A
10/1/2001	3460	A
8/29/2002	3460	A
8/3/2007	3460	A
8/28/1985	3450	A
8/16/2000	3450	A
9/25/2001	3450	A
10/5/2001	3450	A
10/6/2001	3450	A
7/19/2007	3440	A
9/18/1981	3430	A
8/5/2001	3430	A
8/4/1994	3420	A
8/31/2005	3420	A
8/22/1977	3410	A
9/26/2001	3410	A
9/16/2003	3410	A
8/18/2002	3400	A
8/24/2002	3400	A
8/28/2002	3400	A
9/17/2003	3400	A
8/27/1977	3390	A
9/1/2002	3390	A
8/5/2007	3390	A
8/25/1977	3380	A
8/22/1981	3380	A
9/15/2003	3380	A
7/30/2006	3380	A
7/23/1988	3360	A
8/30/2002	3360	A
9/1/2005	3360	A
7/26/1977	3350	A
8/7/1977	3350	A
8/29/1985	3350	A
8/17/2000	3350	A
8/8/2003	3350	A
8/13/2004	3350	A
8/31/2002	3340	A
9/16/2005	3340	A
8/30/1985	3330	A
5/9/2004	3330	A
8/1/2007	3330	A
8/26/1977	3320	A
9/2/1981	3310	A
9/3/1981	3310	A
9/2/2000	3300	A
9/11/2005	3300	A
8/10/1977	3290	A
8/25/2002	3290	A
7/31/2006	3280	A

Tab name: Sidney gauge data

9/10/2007	3280	A
7/24/1988	3270	A
9/3/2004	3270	A
8/18/2000	3260	A
8/27/2002	3260	A
8/19/2002	3220	A
9/14/2003	3220	A
9/5/2005	3220	A
8/12/1994	3210	A
9/18/2006	3210	A
8/9/1977	3200	A
9/1/1981	3200	A
9/12/2005	3200	A
9/9/2007	3200	A
8/5/1994	3190	A
8/9/2003	3190	A
8/10/2003	3190	A
9/9/2005	3190	A
9/15/2005	3190	A
9/2/2005	3180	A
9/8/1994	3170	A
9/13/2001	3170	A
9/6/2005	3170	A
9/7/2005	3170	A
9/8/2005	3170	A
7/20/2007	3170	A
8/8/1977	3160	A
9/16/1994	3160	A
9/1/2000	3160	A
9/10/2005	3160	A
8/23/1981	3150	A
8/27/1981	3150	A
9/12/2001	3150	A
9/4/2005	3150	A
9/7/1994	3140	A
9/7/2004	3120	A
9/15/1988	3110	A
9/3/2005	3110	A
8/1/2006	3110	A
5/5/2004	3100	A
7/25/1988	3090	A
9/9/1994	3090	A
8/28/1981	3080	A
8/19/2000	3080	A
9/14/2005	3080	A
8/6/2007	3080	A
8/25/1981	3060	A
8/26/1981	3060	A
9/4/2004	3060	A
9/10/1994	3050	A
8/31/2000	3050	A
8/14/2004	3050	A
7/31/2007	3040	A
8/29/2007	3040	A
8/20/2000	3030	A
8/22/2006	3030	A
8/6/1994	3010	A
9/13/2005	3010	A
8/2/2006	3010	A
8/20/2002	3000	A
8/7/2007	3000	A
9/6/1994	2980	A
8/21/2000	2980	A
8/24/1981	2970	A
9/11/1994	2970	A
9/8/2007	2970	A
9/13/2003	2960	A
8/24/2000	2940	A
8/23/2006	2940	A
8/29/1981	2930	A
8/23/2000	2930	A
8/25/2000	2930	A
8/6/2001	2930	A
8/31/2007	2930	A

Tab name: Sidney gauge data

8/22/2000	2920	A
8/30/2000	2920	A
8/8/2007	2920	A
8/31/1981	2910	A
9/6/2004	2910	A
8/3/2006	2910	A
8/24/2006	2910	A
8/30/2007	2910	A
8/26/2000	2900	A
8/29/2000	2900	A
9/11/2001	2900	A
8/11/2003	2900	A
8/28/2000	2890	A
5/1/2004	2890	A
9/5/2004	2890	A
8/27/2000	2880	A
8/21/2002	2880	A
7/21/2007	2880	A
9/4/2007	2880	A
8/9/2007	2870	A
8/28/2007	2870	A
9/7/2007	2870	A
8/30/1981	2860	A
7/26/1988	2860	A
9/12/1994	2860	A
9/5/2007	2860	A
9/12/2003	2840	A
9/1/2007	2840	A
9/6/2007	2840	A
9/15/1994	2830	A
9/3/2007	2820	A
8/22/2002	2810	A
9/5/1994	2800	A
9/2/2007	2800	A
5/3/2004	2790	A
8/21/2006	2790	A
7/22/2007	2790	A
9/13/1994	2770	A
8/4/2006	2770	A
9/14/1994	2760	A
8/25/2006	2750	A
8/25/2007	2750	A
8/27/2007	2750	A
8/15/2004	2740	A
8/26/2007	2730	A
8/12/2003	2720	A
9/11/2003	2720	A
7/23/2007	2720	A
5/2/2004	2700	A
7/27/1988	2670	A
9/9/2003	2660	A
8/31/2004	2660	A
9/10/2003	2650	A
9/17/2006	2650	A
8/13/1994	2640	A
8/7/1994	2630	A
8/10/2007	2630	A
9/4/1994	2620	A
8/13/2003	2600	A
9/14/1988	2590	A
8/7/2001	2580	A
8/5/2006	2580	A
8/14/2003	2560	A
9/5/2003	2560	A
9/6/2003	2560	A
9/10/2001	2540	A
8/12/2007	2540	A
8/26/2006	2530	A
8/16/2004	2520	A
8/11/1994	2510	A
9/7/2003	2510	A
8/11/2007	2510	A
8/24/2007	2510	A
9/8/2003	2490	A

Tab name: Sidney gauge data

8/20/2006	2490	A			
8/13/2007	2490	A			
8/10/1994	2470	A			
7/24/2007	2470	A			
8/27/2006	2460	A			
8/8/1994	2450	A			
8/15/2003	2450	A			
9/4/2003	2450	A			
8/14/2007	2440	A			
8/15/2007	2440	A			
5/6/2004	2430	A			
8/6/2006	2430	A			
8/9/2006	2430	A			
7/28/1988	2420	A			
8/19/2006	2420	A			
9/9/2001	2410	A			
8/23/2007	2410	A			
9/3/1994	2400	A			
9/8/2001	2380	A			
8/28/2006	2380	A			
8/9/1994	2350	A			
9/16/2006	2350	A			
7/30/2007	2350	A			
8/20/2007	2340	A			
8/21/2007	2340	A			
8/22/2007	2340	A			
8/14/1994	2330	A			
8/7/2006	2330	A			
9/13/1988	2320	A			
8/16/2003	2320	A			
8/15/1994	2310	A			
8/18/2006	2300	A			
9/13/2006	2280	A	6684 days at or above 5010 cfs, of whic		408 days were in October
9/14/2006	2280	A			
8/16/2007	2280	A	So in May-September,	6276 days out of	6426 days were at or above 5010 cfs at Sydney, or
9/12/1988	2260	A			
9/2/1994	2260	A			
9/3/2003	2260	A			
9/15/2006	2260	A			
8/17/1994	2250	A			
8/18/1994	2250	A			
8/8/2006	2240	A			
9/12/2006	2240	A			
7/25/2007	2240	A			
8/19/1994	2230	A			
8/8/2001	2230	A			
7/29/2007	2230	A			
8/19/2007	2220	A			
7/29/1988	2210	A			
8/18/2007	2210	A			
8/30/2004	2200	A			
8/16/1994	2190	A			
8/20/1994	2180	A			
8/21/1994	2180	A			
8/10/2006	2180	A			
8/17/2007	2180	A			
9/10/1988	2170	A			
8/22/1994	2170	A			
8/26/1994	2170	A			
9/1/1994	2170	A			
8/17/2004	2170	A			
8/29/2006	2160	A			
9/11/1988	2150	A			
8/25/1994	2150	A			
9/9/1988	2140	A			
8/30/2006	2140	A			
8/31/1994	2130	A			
7/27/2007	2130	A			
9/8/1988	2110	A			
8/27/1994	2110	A			
8/30/1994	2110	A			
9/11/2006	2110	A			
8/11/2006	2100	A			
7/26/2007	2100	A			

Tab name: Sidney gauge data

8/24/1994	2090	A
8/23/1994	2080	A
8/17/2003	2080	A
8/17/2006	2080	A
9/2/2003	2070	A
8/31/2006	2070	A
9/7/1988	2050	A
7/28/2007	2050	A
8/28/1994	2040	A
8/29/1994	2040	A
9/6/1988	2030	A
5/7/2004	2030	A
7/30/1988	2020	A
9/5/1988	2020	A
9/1/2006	2020	A

Tab name: Sidney gauge data

9/3/1988	2010	A		
9/8/2006	2010	A		
9/4/1988	2000	A		
9/2/1988	1990	A		
9/4/2006	1990	A		
8/18/2003	1980	A		
9/9/2006	1980	A		
9/2/2006	1970	A		
9/10/2006	1970	A		
8/9/2001	1960	A		
9/7/2001	1960	A		
8/18/2004	1960	A		
8/27/2004	1960	A		
9/5/2006	1960	A		
8/25/2003	1950	A		
8/26/2003	1950	A		
9/7/2006	1950	A		
9/3/2006	1930	A		
9/6/2006	1920	A		
8/21/2003	1910	A		
8/12/2006	1910	A		
8/29/2004	1900	A		
8/16/2006	1900	A		
9/1/1988	1890	A		
5/8/2004	1890	A		
8/25/2004	1890	A		
8/26/2004	1870	A		
8/28/2004	1870	A		
8/19/2003	1860	A		
8/24/2003	1860	A		
9/1/2003	1850	A		
8/22/2003	1840	A		
8/23/2003	1840	A		
8/20/2003	1810	A		
8/27/2003	1810	A		
8/13/2006	1810	A		
8/19/1988	1800	A		
8/14/2006	1800	A		
8/15/2006	1800	A		
8/31/1988	1790	A		
8/28/2003	1780	A		
8/19/2004	1780	A		
7/31/1988	1770	A		
8/5/1988	1760	A		
8/29/2003	1760	A		
8/31/2003	1750	A		
8/1/1988	1740	A		
8/10/2001	1730	A		
8/30/2003	1720	A		
8/18/1988	1710	A		
8/2/1988	1700	A		
8/4/1988	1700	A		
8/15/1988	1700	A		
8/6/1988	1680	A		
8/20/1988	1680	A		
8/24/2004	1680	A		
8/3/1988	1670	A		
8/20/2004	1660	A		
8/14/1988	1650	A		
8/27/1988	1650	A		
8/30/1988	1650	A		
8/28/1988	1640	A		
8/29/1988	1640	A		
8/26/1988	1630	A		
8/10/1988	1620	A	Days at 1620 cfs and below:	
9/6/2001	1610	A		
8/11/1988	1580	A	8/7-13, 16-17, 21-25/1988	14
8/9/1988	1560	A	8/11-31/2001	21
8/25/1988	1550	A	9/1-6/2001	6
8/16/1988	1540	A	8/21-23/2004	3
8/21/2004	1540	A		
8/7/1988	1530	A		44
8/8/1988	1530	A		

Tab name: Sidney gauge data

9/5/2001	1510	A	August frequency	2.92%
8/23/2004	1510	A	September frequency	0.48%
8/11/2001	1490	A	Seasonal frequency	0.68%
8/13/1988	1480	A		
8/22/2004	1480	A		
8/17/1988	1460	A		
8/12/1988	1450	A		
8/24/1988	1430	A		
8/21/1988	1420	A		
8/23/1988	1410	A		
9/4/2001	1410	A		
8/22/1988	1390	A		
8/12/2001	1370	A		
8/13/2001	1320	A		
8/17/2001	1300	A		
8/15/2001	1290	A		
8/18/2001	1290	A		
8/14/2001	1280	A		
8/16/2001	1280	A		
9/3/2001	1280	A		
9/1/2001	1230	A		
9/2/2001	1220	A		
8/31/2001	1200	A		
8/19/2001	1180	A		
8/22/2001	1180	A		
8/21/2001	1160	P		
8/20/2001	1140	P		
8/23/2001	1100	P		
8/30/2001	1100	P		
8/24/2001	1080	P		
8/29/2001	1080	P		
8/28/2001	1070	P		
8/25/2001	1050	P		
8/26/2001	1010	P		
8/27/2001	1010	P		

YELLOWSTONE VALLEY AUDUBON SOCIETY
- FROM THE PRAIRIES TO THE PEAKS.

Mission "*Building on the tradition of special interest in birds, Yellowstone Valley Audubon Society is organized to promote enjoyment and protection of the natural environment through education, activism, and conservation of bird habitat.*"

PO Box 1075, Billings MT 59103 www.yvaudubon.org

28 July 2016

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AA
1616 Capital Ave.
Omaha, NE 68102
cenwo-planning@usace.army.mil

(sent via electronic mail)

Re: Comments on the draft Environmental Impact Statement for the Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana

As members of Yellowstone Valley Audubon Society (YVAS) we would like to provide comments additional to those formally submitted earlier today concerning the draft Environmental Impact Statement (EIS) for the Lower Yellowstone Intake Diversion Dam (Intake) Fish Passage Project. We appreciate the opportunity to provide input as the U.S. Army Corps of Engineers (COE) and U.S. Bureau of Reclamation (Bureau) jointly prepare this EIS.

The Yellowstone River is a high value public resource that provides substantial fish and wildlife habitat, recreational, historic, and aesthetic values. The Yellowstone River also is unique and irreplaceable on a national level. It is the longest free-flowing river in the contiguous United States, flowing 670 miles, originating as a cold water system that transition into a warm water prairie river. The Yellowstone River was designated as one of the 10 American Heritage rivers by President Clinton. National Geographic Magazine, in April 1997, identified the Yellowstone River as "The Last Best River". Montana Executive Order No. 19-97, signed by the Governor of Montana, concludes that the Yellowstone River is a National treasure. The Yellowstone River is a Resource of National Importance (ARNI) based on several criteria and not in the least, essential fish habitat for federally managed fisheries. The Yellowstone River has in the past, been designated by American Rivers as one of the top ten most endangered rivers in the United States. Recognizing that the Yellowstone River requires room to flow and function within the floodplain is essential. YVAS recognizes the importance to maintain integrity of the riparian habitat because it provides year round habitat for many bird species and migration habitat and cover for Neotropical migrant birds, as well as the native fish in the Yellowstone drainage.
1 Constructing a permanent concrete dam and filling in a natural side channel, does not maintain the integrity of this unique ecosystem. The preferred alternative presented in the your *proposed Supplemental Environmental Assessment for the Intake Diversion Dam Modification, Lower Yellowstone Project, Montana, March 2014* (EA) and now in your *Lower Yellowstone Intake Diversion Dam Fish passage project, Montana Draft Environmental Impact Statement, June 2016*, will do nothing but ensure the eventual extinction of the pallid sturgeon and the

degradation of the native fish in the Missouri-Yellowstone River system. The preferred alternative is not ecosystem restoration.

We oppose the preferred alternative. We disagree with the statement that the *"The overall*
outcome of the proposed Bypass Channel Alternative is beneficial to the endangered pallid
sturgeon, as well as other fish species". There is no evidence that the constructed bypass
2 channel will work for pallid sturgeon. Destroying a natural side channel that passes some native
fish including a few pallid sturgeon and constructing a bypass channel that may pass some native
fish is not beneficial as a freely flowing Yellowstone River. We repeat our earlier comment on
the EA.

The Service's formal revision of the Reasonable and Prudent Alternative (RPA) in the 2003 amended Biological Opinion (BiOp) described in the letter from Noreen Walsh to David Ponganis on March 19, 2014 does not provide adequate certainty to avoid jeopardy under §7(a)(2). This letter states on page 3:

> *"[I]nevitable uncertainties remain that are inherent in both the hydraulic modeling upon which the project design is based and the monitoring and measurement needed to verify that the constructed bypass channel meets the hydraulic and physical conditions stated above…the conditions on the river have inherent variability that is difficult to predict. This plan should account for this variability and be completed prior to completion of the construction phase of the project."*

We note that in the EIS, it states *that "Section 7 consultation by Reclamation and the Corps on*
the action proposed in this EIS has not been concluded at this time. A final biological opinion is
3 *anticipated to be complete by fall 2016. Construction will not proceed until the biological*
opinion is complete and consultation concluded. While the effects of alternatives on recovery of
species is analyzed in this EIS, Section 7(a) (2) does not require the actions on which the federal
agencies are consulting to contribute to or result in the recovery of the species."

The ESA directs all Federal agencies to participate in conserving these species including recovery. Specifically, section 7(a)(1) of the ESA charges Federal agencies to aid in the conservation of listed species.

Section 7(a)(2) is "designed to ensure that the actions taken by federal agencies, including those funded or authorized by such agencies, do not "jeopardize the existence of any listed species."

The COE in the 2003 Missouri Mainstem Biological Opinion determined that the pallid sturgeon
is in jeopardy. We believe that consultation on the preferred alternative should also be a jeopardy
4 biological opinion. The Service states, *"When an action appreciably impairs or precludes the*
capability of a recovery unit from providing both the survival AND recovery function assigned it,
that action may represent jeopardy to the species."

As stated in the EIS, the preferred alternative, requires a permit under authority of the Secretary of the Army under Section 10 of the Rivers and Harbors Act of 1899 (30 Stat. 1151; 33 U.S.C. 403) and Section 404 of the Clean Water Act (33 USC 1344) (CWA). We understand that the COE will also consult formally on its action (issuing a permit).

YVAS does not agree with your Section 404(b)(1) Guidelines Analysis as it does not comply
with the Section 404(b)(1) Guidelines. Please detail why the *"overall outcome of the proposed
Bypass Channel Alternative is beneficial to the endangered pallid sturgeon, as well as other fish
species"*. Why would an open channel providing full upstream passage above Intake Dam not be
5 the most beneficial? The applicant will have to clearly demonstrate that the proposed project
(Preferred Alternative) is the Least Environmentally Damaging Practicable Alternative (40 CFR
230.10.10(a)). Issuance of this permit will result in Jeopardy to the pallid sturgeon and will
result in unacceptable adverse effects to Aquatic Resources of National Importance (ARNI). The
Environmental Protection Agency should Request a higher level of review by the Department of
the Army under the 1992 404(q) MOA.

YVAS supports removal of Intake dam to permit unobstructed full river passage of pallid
sturgeon and the native fish of the Yellowstone River. This alternative is embedded in your two
alternatives of Multiple Pump Systems and Multiple Pumps with Conservation Measures. We
request that the Bureau and the COE reanalyze both alternatives using the most practicable and
less expensive elements to make them more workable. We have the perception that the elements
that were more expensive (wells and a wind turbine(s) were paired with the Multiple Pumps and
6 Conservation Measures to make it less cost effective. If you paired some of the conservation
measures with more conventional intakes (Not Ranney wells) or a less expensive way to pay for
running the pumps (interest from a trust fund and Pick Sloan power rates), the pumping
alternative would be more viable. This would truly suit the Purpose and Need of this EIS in that
it would totally provide for fish passage and provide irrigation water to the Lower Yellowstone
Water District. More efficient irrigation systems such as pivot irrigation, may serve well the
farmers who depend on that water when water becomes less available in the future.

A pumping and conservation alternative could also be built in stages while the current dam and
8 intake provides irrigation water. Once each pumping stage is operational and providing adequate
irrigation water, the old dam and all the rock can be removed.

We conclude that the preferred plan as presented in the EIS is not a *"plan that reasonably maximizes ecosystem restoration benefits compared to costs, consistent with the Federal objective…"* It is not the most cost effective plan if it does not provide one of the elements in the Purpose and Need which is, to provide sufficient passage for the pallid sturgeon. We suggest a plan without a dam.

Sincerely,

Lou Hanebury
Deb Regele
Steve Regele
Yellowstone Valley Audubon Society

YELLOWSTONE VALLEY AUDUBON SOCIETY
- FROM THE PRAIRIES TO THE PEAKS.

<u>Mission</u> *"Building on the tradition of special interest in birds, Yellowstone Valley Audubon Society is organized to promote enjoyment and protection of the natural environment through education, activism, and conservation of bird habitat."*

PO Box 1075, Billings MT 59103 www.yvaudubon.org

28 July 2016 OR-9

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AA
1616 Capital Ave.
Omaha, NE 68102
cenwo-planning@usace.army cenwo-planning@usace.army.mil

Subject: Comments on the draft Environmental Impact Statement for the Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana

Yellowstone Valley Audubon Society (YVAS) agrees with the points raised and supports the
1 recommendations in the July 28, 2016 comment letter from Mr. Zachary R. Shattuck, Chair of
the Upper Basin Pallid Sturgeon Workgroup, (copy attached). His letter and this letter are
submitted with respect to the draft Environmental Impact Statement (EIS) for the Lower
Yellowstone Intake Diversion Dam (Intake) Fish Passage Project being prepared by the U.S.
Army Corps of Engineers (Corps) and U.S. Bureau of Reclamation (Bureau) .

We at YVAS appreciate the opportunity to provide input in this regard.

We wish to emphasize Mr. Shattuck's point that "*Improved efficiencies and updated*
2 *technologies in irrigation practices would serve an agreeable compromise between*
socioeconomic viability and ecological integrity; a cornerstone of the vision and mission of the
Missouri River Recovery Program (MRRP)."

The millions of dollars that would be spent to establish a Bypass Channel Alternative may very
possibly be only an initial expenditure, and result in an unsuccessful project. Even if this
measure was at least partially successful, monitoring and channel maintenance would
3 seemingly have to continue in perpetuity – very expensive. That money applied to large intake
pumps and/or other "*Improved efficiencies"* would not only help Pallid Sturgeon but would also
support the riverine and related ecosystem and the unavoidable and necessary changes
agriculture and the rest of society is faced with to conserve and more efficiently manage limited
water resources.

4 Additionally, YVAS and many other organizations and concerned parties strongly support
measures to minimize further impacts to and to improve *"the health of the Yellowstone and*

Missouri rivers that will ultimately yield recovery of Pallid Sturgeon and long-term resiliency of the entire aquatic community." We would like to add that the Yellowstone and Missouri rivers and the aquatic ecosystem they support are inextricably supportive of riparian and other terrestrial ecosystems.

The Yellowstone is the longest free flowing river in the US. That 'free flowing' nature is already compromised by volume decreases and other manipulations by industry, municipal and residential as well as by agriculture usages and practices. This greatly affects riparian plant community regeneration abilities, the biological and fluvial characteristics of the river and the overall ecosystem of which it is a part, and of course thereby the birds and other wildlife dependent on the whole thing. The Yellowstone is extremely important to resident and migratory birds – many of which have an increasing difficulty finding the dynamic sand and gravel and other habitats they need to survive. Without natural fluvial dynamics, these habitats can and do disappear. It is not just the future of Pallid Sturgeon that may be dependent on your decision and precedent set here but myriad other species as well.

Please implement a plan that minimizes environmental impacts to the ecological integrity of
the Yellowstone River. Initiate holistic measures that minimize environmental impacts while
5 also improving efficiencies and technologies in irrigation practices. Careful and holistic
evaluation of the environmental and economic effects of the Bypass Channel Alternative would
almost certainly support a different paradigm than creation, monitoring and maintenance of a
Bypass Channel.

We appreciate your consideration of our comments. We will also greatly appreciate your best efforts and stewardship to protect Pallid Sturgeon and other species as well as all the human users and uses affected by your decisions.

Sincerely

Stephen M. Regele
President, Yellowstone Valley Audubon Society
9872 US Highway 212
Joliet, MT 59041
sregele@juno.com
1-406-962-3115

DEFENDERS OF WILDLIFE

NRDC
NATURAL RESOURCES DEFENSE COUNCIL

OR-10

July 28, 2016

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Ave.
Omaha, NE 68102
Email: cenwo-planning@usace.army.mil

Submitted via email and UPS 2nd Day Air

Dear Ms. Vanosdall:

Thank you for the opportunity to comment on the U.S. Army Corps of Engineers (Corps) and U.S. Bureau of Reclamation's (Reclamation) Draft Environmental Impact Statement ("Draft EIS") for the Lower Yellowstone Intake Diversion Dam Fish Passage Project ("Intake Project"). We submit these comments on behalf of Defenders of Wildlife (Defenders) and Natural Resources Defense Council (NRDC). Together, Defenders and NRDC have over 3 million members, supporters, and activists nationwide, including thousands in Montana.

1 We urge the Corps and Reclamation (collectively, the "Agencies") to adopt the "Multiple Pump Alternative" as is, or with some of the conservation measures described in the "Multiple Pumps with Conservation Measures Alternative." Restoring the endangered pallid sturgeon's habitat on the Yellowstone River is essential to averting the imminent extinction of the wild population of this species in Montana. The only way to allow pallid sturgeon to once again successfully spawn and "recruit" (produce young which survive to adulthood) and begin rebuilding a self-sustaining population in the river is to remove the existing dam and provide unobstructed passage through the main channel.

2 We also urge the Agencies to abandon their preferred alternative, the "Bypass Channel Alternative" (hereinafter, "Dam/Bypass Channel Alternative"). There is no evidence in the Draft EIS suggesting that the Dam/Bypass Channel Alternative will succeed in averting extirpation of the pallid sturgeon or in setting the pallid sturgeon on a path that would restore a self-sustaining, viable population. Instead, this alternative likely ensures the extirpation of the wild pallid sturgeon population in the upper Missouri River basin.

3 Perhaps recognizing that the best available science does not support adoption of the Dam/Bypass Channel Alternative, the Draft EIS fails altogether to analyze how it will

3 affect pallid sturgeon survival or recovery in the Yellowstone River, and therefore, whether this alternative is likely to succeed. By failing to complete this analysis, the Draft EIS violates the National Environmental Policy Act (NEPA) and fails to cure a legal violation identified by the U.S. District Court for the District of Montana in its preliminary injunction order regarding the Agencies' prior NEPA process for this project. In that order, the court specifically concluded that a "new analysis should include the anticipated effects of the Project on the recovery of pallid sturgeon." Defenders of Wildlife v. U.S. Army Corps of Engineers, 15-cv-14-GF-BMM (D. Mont. Sept. 4, 2015), Dkt. #73 at 12 (citation omitted).

4 The Dam/Bypass Channel Alternative will not even meet the very low (and unlawful) bar set by the Draft EIS to "improve" pallid sturgeon passage. This Alternative would replace a porous rock dam with a concrete dam and replace a natural side channel with a man-made side channel. These changes are not an "improvement" for pallid sturgeon, and will likely permanently close the door on any potential for natural reproduction in the Yellowstone River. At best, a few pallid sturgeon may swim up the bypass channel each year, just as a handful of pallid sturgeon use the existing natural side channel now, and reach essential spawning habitat upstream. Further, even if a few pallid sturgeon swim upstream, there is no evidence to suggest that pallid sturgeon will successfully spawn and that their larvae will survive.

As a result, if the Agencies adopt the Dam/Bypass Channel alternative, they will
5 not remedy their long-standing and well-documented Endangered Species Act (ESA) violations with respect to Reclamation's operations of Intake Dam or the Corps' operations of Fort Peck Dam. A central premise of the Intake Project is that the Corps will fund the Project – even though Intake is a Reclamation facility – in exchange for being allowed to abandon at least some of the operational modifications at Fort Peck Dam required by the 2003 Biological Opinion on the Corps' Missouri River dam operations ("2003 Biological Opinion"). While we support restoring a free-flowing Yellowstone River as the best and only means of protecting the pallid sturgeon and other native fish species in this River, addressing the Yellowstone alone may not be sufficient to allow for the recovery of the pallid sturgeon in the upper Missouri River basin, nor resolve the Corps' ESA obligations at Fort Peck Dam. Regardless of the alternative chosen, restoration of the Missouri River, in addition to any changes made at Intake, may well be necessary for the Corps to avoid jeopardizing the pallid sturgeon. If the Agencies choose the Dam/Bypass Channel in the Final EIS and Record of Decision (ROD), they will foreclose the opportunity for pallid sturgeon survival and recovery in the Yellowstone River and restoration of the Missouri River will be mandatory.

6 I. NEPA Requirements for the Intake Project

NEPA's goals are twofold. First, NEPA requires federal agencies to evaluate and consider the environmental impacts of their actions. Marsh v. ONRC, 490 U.S. 360, 371 (1989). Through this review, NEPA ensures agencies make informed decisions before taking action. Id. at 371 ("By so focusing agency attention, NEPA ensures that the agency will not act on incomplete information, only to regret its decision after it is too late to correct.") (citation omitted); Bob Marshall Alliance v. Hodel, 852 F.2d 1223, 1228 (9th Cir. 1988) ("The goal of the statute is to ensure 'that federal agencies infuse in project planning a thorough consideration of environmental values") (citation omitted). Second, NEPA provides a mechanism for the public to learn about and comment on the impacts of a proposed action. Marsh, 490 U.S. at 371. NEPA is intended to ensure that relevant information is conveyed to the public in a timely way so that the public may play a meaningful role in the decision-making process. WildEarth Guardians v. Mont. Snowmobile Ass'n, 790 F.3d 920, 924 (9th Cir. 2015) (quoting Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349 (1989)).

An EIS is required, among other things, to "provide full and fair discussion of significant environmental impacts" and "inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.1. NEPA requires that a draft EIS carefully and thoroughly describe the environmental consequences of each alternative, including its direct, indirect, and cumulative effects. See 40 C.F.R. §§ 1502.16(a), (b), 1508.25(c); 1508.7. "Direct effects" are those "caused by the action and occur at the same time and place." Id. § 1508.8(a). "Indirect effects" are those "caused by the action and [] later in time or farther removed in distance, but still [] reasonably foreseeable." Id. § 1508.8(b). Direct and indirect effects "may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial." Id. "Cumulative impacts" are those that "result[] from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions." Id. § 1508.7. NEPA also requires evaluation of "connected actions." Id. § 1508.25(c). "Connected actions" are "closely related" actions, including actions that "[a]re interdependent parts of a larger action and depend on the larger action for their justification." Id. § 1508.25(c).

II. THE SCOPE OF THE ANALYSIS IN THE DRAFT EIS IS UNLAWFULLY NARROW

7 The scope of a NEPA analysis is determined in part by the relevant substantive statute driving the action. See Montana Wilderness Ass'n v. Connell, 725 F.3d 988, 1002 (9th Cir. 2013) (noting that a "NEPA analysis should be informed by the laws driving the federal action being reviewed") (citations omitted); ONDA v. BLM, 625 F.3d 1092, 1109-12 (9th Cir. 2008) (finding that agency must evaluate affected wilderness values where underlying statute requires agency to balance multiple uses, including wilderness resources). In addition, NEPA regulations require that an EIS "shall state how alternatives considered in it and decisions based on it will or will not achieve the requirements of … other environmental laws and policies." 40 C.F.R. § 1502.2(d); Mont. Wilderness Ass'n v. McAllister, 658 F. Supp. 2d 1249, 1255-56 (D. Mont. 2009) (finding NEPA violation where Forest Service "fail[ed] to consider an important aspect of the problem" in EIS by failing to address whether proposed travel plan impacting wilderness character achieved requirements of Wilderness Study Act) (quoting Lands Council v. McNair, 537 F.3d 981, 987 (9th Cir. 2008), aff'd 666 F.3d 549 (9th Cir. 2011).

7 The relevant substantive statute driving the Intake Project is the ESA. As Defenders and NRDC described in our scoping letter, the Intake Project is intended to address and resolve Reclamation's ongoing ESA violations at Intake Dam and the Corps' ongoing ESA violations at Fort Peck Dam. See Defenders and NRDC scoping letter at 4-12. Thus, the Draft EIS must evaluate whether each of the alternatives will resolve these violations, including the ongoing "jeopardy" and unlawful "take" caused by Intake Dam and Fort Peck Dam. See 16 U.S.C. §§ 1536, 1538. Jeopardy results when it is reasonable to expect that a federal action would "reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." 50 C.F.R. § 402.02. The jeopardy standard mandates that agencies consider whether and how their actions will affect imperiled species' ability to both survive and recover. NWF v. NMFS, 524 F.3d 917, 931-33 (9th Cir. 2008). "Recovery" is the point at which a species is healthy enough to be taken off the endangered species list. Alaska v. Lubchenko, 723 F.3d 1043, 1054 (9th Cir. 2013).

As described in more detail below, the Draft EIS does not analyze the impacts on
8 pallid sturgeon survival and recovery. Nor does the Draft EIS attempt to explain how or why the various alternatives will or will not comply with the ESA. See 40 C.F.R. § 1502.2(d). Instead, the Draft EIS offers a chart with brief conclusions about the purported "ESA success" of each alternative (2-103), but does not support that conclusion with an analysis. The Draft EIS also states that the Agencies included a draft
9 biological assessment as Appendix D. This appears to be an error. Appendix D is the Fish Passage Connectivity Index and Cost Effectiveness and Incremental Cost Analysis. The Agencies have not provided a biological assessment in connection with the 2016 Draft EIS and nowhere analyze whether the alternatives will comply with the ESA.

10 A. The Draft EIS Fails to Disclose or Analyze the Impacts of the Intake Project on the Survival or Recovery of the Pallid Sturgeon

To comply with NEPA, the Agencies must disclose and evaluate the impacts relevant to the ESA's jeopardy standard, including the effects of each alternative on survival and recovery of the pallid sturgeon. See Defenders of Wildlife, 15-cv-14-GF-BMM, Dkt. #73 at 12) ("The new analysis should include the anticipated effects of the Project on the recovery of the pallid sturgeon.").[1] Despite the Court's specific direction in the preliminary injunction order, the Draft EIS fails to evaluate survival or recovery. As a result, the Draft EIS violates NEPA.[2]

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[1] The Draft EIS inexplicably states that recovery was analyzed (see 1-4, 1-13), but elsewhere claims that recovery is outside its scope (1-8), as described below. Regardless, there is no recovery analysis in the Draft EIS or the appendices.

[2] The Draft EIS also failed to explain how the alternative will comply with other ESA requirements, including the Agencies' obligation to avoid "taking" pallid sturgeon at Intake in violation of ESA section 9, 16 U.S.C. § 1538, and their duties under ESA section 7(a)(1), 16 U.S.C. § 1536(a)(1). See 40 C.F.R. § 1502.2(d).

11 For pallid sturgeon, a recovery analysis would include, among other things, whether and how each alternative will move the pallid sturgeon closer to achieving the 2014 Recovery Plan's goal of a self-sustaining population of 5,000 adult fish in the upper Missouri River basin, including what percentage of the adult pallid sturgeon are expected to migrate upstream for each alternative; their likelihood of successfully spawning and in what numbers; the likelihood of their larvae surviving the downstream drift and in what numbers, whether these numbers would be sufficient to re-establish a viable, self-sustaining population; whether and why the Yellowstone River alone would be enough to re-establish a viable, self-sustaining population, and any other relevant factors to survival and recovery of the species in the wild.

12 The Draft EIS does not analyze any of these factors. In fact, the Draft EIS provides no more in the way of analysis of survival and recovery than the 2015 Final Supplemental Environmental Assessment to the 2010 Final Environmental Assessment ("2015 EA"), even though the Court held that the 2015 EA was likely to violate NEPA because it did not contain this analysis. Defenders of Wildlife, 15-cv-14, Dkt. #73 at 8 ("The EA also fails to analyze whether the bypass channel likely would allow a sufficient number of pallid sturgeons to spawn so that the species could recover, or whether the new weir will prevent pallid sturgeon from recovering.").

13 The few references to "recovery" in the Draft EIS highlight the lack of analysis. For example, the Draft EIS concludes that the "proposed Intake Project would contribute to recovery of pallid sturgeon by providing up to an additional 165 miles of the Yellowstone River for migration, spawning, and development." Draft EIS at 2-22. This is a conclusion that presumes full success of all of the alternatives, not an analysis of whether and how each of the alternatives will facilitate recovery.

14 Similarly, the Draft EIS notes that recruitment is a part of recovery, but never analyzes how each alternative will affect recruitment. Instead, the Draft EIS generally recites uncertainties related to the potential for recruitment: "(1) it is unclear what length of drift distance is actually required for successful recruitment… and (2) the location, quantity, and quality of spawning habitat, and (3) the number of pallid sturgeon that would be motivated to migrate upstream to suitable spawning habitat." Draft EIS at 4-152. Without any further analysis, the Draft EIS concludes that the Yellowstone River "appears to offer the best chance of potentially successful spawning and recruitment" for the management area and that the chances for recovering the wild population are "rapidly diminishing." Id. This is not an analysis of what is required for survival or recovery, whether and how each of the alternatives will move the pallid sturgeon toward those goals, or even whether any particular alternative will slow down or halt the imminent extirpation of the wild population.

15 The Draft EIS also provides a speculative series of steps with respect to the anticipated success of the Dam/Bypass Channel Alternative to offer "an example of the potential recruitment from one year of much improved spawning, which could begin to contribute to recovery." Draft EIS at 4-169. This "example" again is a conclusion

without an analysis. It simply summarizes the obvious: if the bypass channel works to pass fish, recruitment may be possible.

The Agencies' failure to evaluate the effects of the alternatives on pallid sturgeon survival and recovery violates NEPA and is inconsistent with the Court's preliminary injunction order.

16 **B. The Draft EIS Fails to Disclose and Analyze the Impacts of the Agencies' Intended "Swap" With Fort Peck Dam on Pallid Sturgeon Survival and Recovery**

As part of the analysis of pallid sturgeon survival and recovery, the Agencies must evaluate the entire context of the Intake Project – including its role in the Corps' intended "swap" for Fort Peck Dam operational modifications to resolve the Corps' ESA obligations. The Corps' intention, according to all prior documentation, is to fund the Intake Project in exchange for being permitted to abandon the operational changes it is currently required to implement at Fort Peck Dam. Accordingly, one of the effects of the Intake Project may be to eliminate the requirement to make habitat modifications on the Missouri River for the benefit of the pallid sturgeon.

17 The Draft EIS does not include any analysis of this "swap," nor even appear to mention it. Moreover, the Draft EIS notes that the Corps is funding the Project pursuant to the authorization in the Water Resources Development Act of 2007 (WRDA), P.L. 110-114, 121 Stat. 1041 § 3109, but does not explain that the rationale behind providing that authorization is to relieve the Corps of its Fort Peck Dam obligations. See Draft EIS at 1-8.

18 One slight improvement from the 2015 EA to the Draft EIS is that the Agencies now recognize that there is not a single successful pallid sturgeon or shovelnose sturgeon bypass or fishway in the world. See Draft EIS at 2-105 – 2-107.[3] However, the Agencies do not incorporate this lack of precedent into any relevant analysis to explain why this proposed bypass channel will succeed.

The Agencies' failure to acknowledge and evaluate all of the impacts associated
19 with the Corps' involvement with the Intake Project violates NEPA's "hard look"

[3] Defenders and NRDC cited and attached several studies to our scoping comments relevant to addressing the low levels of success for fish passage projects across the country, but the Draft EIS does not mention or cite them. See, e.g., Noonan *et al.*, A quantitative assessment of fish passage efficiency, (2012) (study referenced in Braaten *et al.*, finding that at existing fish passage facilities in the northeast United States, upstream passage for non-salmonids was only 21.1%); Brown *et al.* ("It may be time to admit failure of fish passage and hatchery-based restoration programs and acknowledge that significant diadromous species restoration is not possible without dam removals."); http://e360.yale.edu/feature/blocked_migration_fish_ladders_on_us_dams_are_not_effective/2636/ (article summarizing findings).

19 requirement. There is no doubt that the Corps is funding this Project solely to be relieved of its ESA duties at Fort Peck Dam. Thus, the impacts of making that "swap," particularly with respect to the impacts on pallid sturgeon survival and recovery, must be included in a NEPA analysis because the swap is part of the contemplated action. At a minimum, the Corps' intention to abandon Fort Peck Dam modifications is a "connected" agency action. See 40 C.F.R. § 1508.25(a)(1). In addition, NEPA's implementing regulations require an analysis of how each alternative will comply with the Agencies' obligations under other laws. 40 C.F.R. § 1502.2(d). Here, that analysis must include whether and how the Corps will comply with the ESA through this Project.

20 Notably, the Draft EIS includes other potential Missouri River habitat modifications in the "cumulative effects" section. Yet even here the Agencies ignore the intended "swap," and the existing obligations for habitat modifications. The Draft EIS describes the "Missouri River Management Plan" within the "Reasonably Foreseeable Future Projects/Actions" section and suggests that the Plan will "evaluate[] the effectiveness of current habitat development and will recommend modifications 'to more effectively create habitat and avoid jeopardy to the species.'" Draft EIS at 4-4. The Draft EIS also notes that "[i]mplementation of the [Plan] will likely help to slightly further reduce cumulative effects on surface water in the upper Missouri River basin." Draft EIS at 4-57. Incredibly, the Draft EIS does not acknowledge that FWS has already determined what is required to avoid jeopardy – in the 2003 BiOp – and that the Corps intends to abandon any obligation to implement those very actions in exchange for funding the Intake Project.

21 The Agencies' failure to complete this analysis is scientifically indefensible. The best available science indicates that both the Missouri and the Yellowstone rivers contain habitat essential to this population's survival. A successful Intake Project would provide access to 165 miles of potential spawning habitat and more river miles for larval drift. However, as explained by the Montana Chapter of the American Fisheries Society, the chances for pallid sturgeon recovery in the upper Missouri River basin will be harmed if the Agencies focus on restoring the Yellowstone River alone. Defenders of Wildlife, 15-cv-00014-GF-BMM, Dkt. #63 at 13-16 (Amicus brief).

22 Further, the best available science confirms the premise of the 2003 Biological Opinion on the Missouri River – that the Missouri River below the Fort Peck Dam could be restored to allow successful pallid sturgeon spawning and recruitment if the Corps implemented flow and temperature modifications. See Defenders and NRDC's scoping comments at 7-8, 10-11.[4] The Draft EIS acknowledges that several studies "highlight the ability of the Yellowstone and Missouri Rivers to provide conditions that support survival, feeding, and growth of pallid sturgeon early life stages." Draft EIS at 2-24. The Draft EIS also acknowledges that "[e]xtremely low recruitment is possibly occurring in the Missouri River." Draft EIS at 3-83. Yet the Draft EIS does not examine the trade-offs of

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[4] Defenders and NRDC attached several studies cited in our scoping comments related to pallid sturgeon habitat in the Missouri River. The Draft EIS does not acknowledge or address these studies.

abandoning any effort to restore the Missouri River habitat in exchange for funding the Intake Project.

The Agencies' failure to analyze the impacts of the "swap" on pallid sturgeon survival and recovery violates NEPA.

C. The Draft EIS's Apparent Rationales for Narrowing the Scope of the Analysis are Arbitrary and Do Not Comply with NEPA

1. The Draft EIS Misstates the Agencies' Obligations Under the ESA and the Required Scope of Analysis under NEPA

23 The Draft EIS appears to try to avoid analyzing the effects of the Project on pallid sturgeon survival and recovery by narrowing the Agencies' ESA obligations. According to the Draft EIS, the ESA "does not require the actions on which the federal agencies are consulting to contribute to or result in the recovery of the species." Draft EIS at 1-7; see also xxvi ("Pallid sturgeon recovery is not within the scope of this project"); 4-152 (stating that "pallid sturgeon recovery is not an objective of the project").[5] This statement is inconsistent with the ESA. However, even if this approach somehow complied with the ESA, the Agencies would not be absolved of their NEPA obligations to disclose and evaluate all impacts to pallid sturgeon survival and recovery.

First, the Draft EIS's disavowal of any obligation for this Project to contribute to
24 recovery is inconsistent with the ESA's "jeopardy" standard. As described above, the Agencies have an obligation to avoid jeopardy in connection with the Intake Project, and avoiding jeopardy is, in fact, the underlying purpose of the Project. The Ninth Circuit has explained that an action can "jeopardize" a species even "if there is no appreciable reduction of survival" because "a species can often cling to survival even when recovery is far out of reach." NWF v. NMFS, 524 F.3d at 931. This standard is particularly essential for species like the pallid sturgeon, which are on the brink of extirpation. Thus, the recovery standard requires agencies to use a metric that "take[s] into account whether populations remaining at significantly low abundance numbers, even though the populations may be growing incrementally, appreciably diminish the likelihood of recovery." NWF v. NMFS, 2016 WL 235367, at *17, -- F.Supp.3d -- (D. Or. May 4, 2016).

25 Instead of applying these standards, however, the scope of the Draft EIS's analysis of impacts to pallid sturgeon is limited to whether the project may "improve" fish passage. See, e.g., DEIS xxv (Executive Summary). The "improvement" standard is inconsistent with the jeopardy standard because it lowers the bar to the point that "success" could occur if, for example, only one more fish passed upstream than has used

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[5] This approach is also reflected in the Biological Review Team's (BRT) criteria for success, which do not appear to mention any particular goals for recruitment – a key aspect of determining whether the pallid sturgeon can become a self-sustaining, viable population again in the upper Missouri River basin. See Draft EIS at 4-152 – 4-153.

25 the natural channel in the past. Compared to 2015, just two telemetered pallid sturgeon swimming upstream would be an "improvement." The District of Oregon recently rejected a similar standard because the agency's metric was based on "population growth regardless of actual population numbers," and was "not tethered to any minimum population goal." NWF v. NMFS, 2016 WL 235367, at *17. Here, too, nothing in the Draft EIS analyzes or suggests that "improvement" in upstream migration would be sufficient for this population to avoid extinction, let alone recover, nor could it. The Draft EIS makes no effort to "take into account" whether the very low abundance numbers for Montana's wild population appreciably diminishes the likelihood of survival or recovery of the species.

26 Further, the Draft EIS fails to analyze whether an "improvement" in the number of adults migrating upstream will result in recruitment sufficient to provide for survival or recovery. The data from the telemetry stations in 2014 and 2015 demonstrates that some number of pallid sturgeon have successfully passed Intake at least in some years, yet there has been no documented recruitment. See Draft EIS at 4-164 (noting that pallids could have used the side channel before 2014 under certain conditions, but there has been no documented recruitment to date). The Draft EIS does not evaluate why recruitment has failed, despite a few fish spawning upstream of Intake, nor how the new Project would differ from the existing dam in a way that recruitment would somehow succeed where it has failed in the past. See, e.g., Defenders of Wildlife, 15-cv-14-GF-BMM, Dkt. #73 at 14 ("The proposed bypass channel likely will be 'less bad' than the existing channel available only during high water years. This fact alone, however, fails to demonstrate that the Project, as a whole, would improve conditions for the pallid sturgeon."). Absent successful recruitment, the wild population cannot survive or recover.

The "improvement" standard also fails to evaluate whether the alternatives will
27 provide for survival or recovery of the wild population in the event no modifications are made to Fort Peck Dam operations, as contemplated by the Corps.

28 Second, even if the Agencies could lawfully ignore an evaluation of the prospects for recovery under the ESA (which they cannot), the Draft EIS does not even analyze whether the preferred alternative will provide for the survival of the pallid sturgeon in the wild – which would require enough successful reproduction in the wild to replace the existing population. The jeopardy standard indisputably prohibits the Agencies from taking an action that will preclude an endangered species from successfully reproducing in the wild at a replacement rate. The Draft EIS provides no analysis to support the idea that any alternatives will provide for that amount of successful reproduction.

29 Third, regardless of the ESA standards for "jeopardy," the impacts to pallid sturgeon survival and recovery caused by the Intake Project (including through the anticipated "swap" with Fort Peck Dam) are direct and indirect impacts under NEPA and must be analyzed for that reason as well.

At bottom, the Agencies must analyze whether the Intake Project will succeed in saving the wild pallid sturgeon population in the upper Missouri River basin from extinction and whether it will facilitate recovery. The Agencies' failure to complete that analysis violates NEPA.

30 2. The Draft EIS Arbitrarily Narrows the Purpose and Need for the Intake Project

The Draft EIS appears to try to avoid the required analysis of whether this Project will succeed in allowing pallid sturgeon to survive or recover in the wild in another way: by excluding the Agencies' ESA obligations from the Purpose and Need Statement. In the statement of "Purpose and Need," the Agencies offered three purposes for the Intake Project: (1) "improve fish passage for pallid sturgeon and other native fish at the Intake Diversion Dam;" (2) "continue the viable and effective operation of the Lower Yellowstone Project;" and (3) "contribute to ecosystem restoration." Draft EIS at xxvi (Executive Summary). This Purpose and Need Statement ignores the fundamental statutory obligations driving the project.

The Purpose and Need Statement of an EIS must be informed by the statutory context of the federal action. League of Wilderness Defenders-Blue Mountain Biodiversity Project v. U.S. Forest Service, 689 F.3d 1060, 1070 (9th Cir. 2012) ("In assessing the reasonableness of a purpose and need specified in an EIS, we must consider the statutory context of the federal action"). "Where an action is taken pursuant to a specific statute, the statutory objectives of the project serve as a guide by which to determine the reasonableness of objectives outlined in an EIS." Westlands Water District v. U.S. Dept. of Interior, 376 F.3d 854, 866 (9th Cir. 2004).

The Draft EIS's Purpose and Need Statement ignores the fundamental statutory obligations driving the need for this Project – compliance with the ESA. The long-time underlying purpose for initiating the Intake Project EIS is to remedy ongoing ESA violations at Intake Dam (Reclamation) and Fort Peck Dam (Corps) and facilitate the recovery of the pallid sturgeon in the upper Missouri River basin. See, e.g., BOR-4439 (FWS noting in 2012 that, "[a]s stated in the 2010 FONSI, the underlying need for the proposed action (i.e. the overall Intake Project) is for Reclamation and the Corps to comply with the ESA."). In order to comply with the ESA, the Intake Project must not simply "improve" fish passage; it must avoid causing jeopardy to the pallid sturgeon and avoid unlawfully "taking" pallid sturgeon and resolve the Corps' ongoing jeopardy and take obligations at Fort Peck Dam as well. Here, Reclamation must comply with all of its statutory obligations, including the ESA. Because the purpose of the Intake Project is to comply with that statute, the scope of the NEPA analysis must be commensurate with that purpose, regardless of the stated purpose and need.

While it is appropriate for the Agencies to acknowledge the private goals of the
31 Lower Yellowstone Project (LYP) in maintaining the irrigation district's viability, those private interests cannot override Congress' intent in authorizing Reclamation to act. See Nat'l Parks & Conservation Ass'n v. Bureau of Land Mgmt., 606 F.3d 1058, 1070-71 (9th Cir. 2010) (distinguishing Department of Interior NEPA regulations from Corps regulations and noting that "[r]equiring agencies to consider private objectives, however,

31 is a far cry from mandating that those private interests define the scope of the proposed project.”). Here, meeting the water delivery needs of the irrigation district is compatible with providing for pallid sturgeon survival and recovery through the Multiple Pump Alternative. In contrast, the Dam/Bypass Channel unlawfully prioritizes the private needs over the Agencies’ ESA mandates.

32 Nonetheless, regardless of the Purpose and Need statement, the Intake Project will have direct and indirect effects on pallid sturgeon survival and recovery. These effects will be compounded by the Corps’ attempt to abandon the required habitat modifications on the Missouri River as well. Thus, even if the purpose of the Project had nothing to do with the Agencies’ ESA obligations (which is not the case), the Agencies must complete the analysis described above in order to comply with NEPA.

IV. The Agencies’ No-Action Alternative Violates NEPA

NEPA requires the Agencies to evaluate a “no-action” alternative. See 40 C.F.R. §§ 1502.14(d), 1508.25(b)(1). This alternative is intended to provide an analysis of the status quo and establish a baseline against which the other alternatives may be measured. Id. § 1502.14(b); Ctr. for Biological Diversity v. U.S. Dep’t of Interior, 623 F.3d 633, 645 (9th Cir. 2010) (“It is black letter law that NEPA requires a comparative analysis of the environmental consequences of the alternatives before the agency,” including the no-action alternative); N. Carolina Wildlife Fed'n v. N. Carolina Dep't of Transp., 677 F.3d 596, 603 (4th Cir. 2012) (“Without [accurate baseline] data, an agency cannot carefully consider information about significant environment impacts ... resulting in an arbitrary and capricious decision.”) (citing N. Plains Res. Council, Inc. v. Surface Transp. Bd., 668 F.3d 1067, 1085 (9th Cir.2011)). The analysis must be informed by what others are likely to do if the agency chooses not to act. “Where a choice of ‘no action’ by the agency would result in predictable actions by others, this consequence of the ‘no action’ alternative should be included in the analysis.” Hammond v. Norton, 370 F. Supp. 2d 226, 241 (D.D.C. 2005) (quoting Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations, at 4-5, 46 Fed. Reg. 18026, 18027 (March 23, 1981)).

The Draft EIS defines the “no-action” alternative as “continued operation, maintenance, and rehabilitation of the Lower Yellowstone Project as authorized.” Draft EIS at 2-38. The Draft EIS uses these continuing operations as the “baseline from which to measure benefits and impacts of implementing fish passage improvement alternatives considered in this document.” Id.

33 The Agencies’ definition of the no-action alternative violates NEPA because this alternative assumes the continued operation of an unlawful project. See Friends of Yosemite Valley v. Kempthorne, 520 F.3d 1024, 1038 (9th Cir. 2008) (holding that agency “did not set forth a true ‘no-action’ alternative because” the alternative assumed the existence of a plan that the court has already found to be invalid). As the Ninth Circuit has explained, an agency “cannot properly include elements from [an illegal] plan in the no action alternative as the status quo….” Id.

34 Reclamation is precluded by the ESA from continuing the current operation of Intake Dam. It is uncontested that Intake Dam, as it is currently operated, poses a near total barrier to pallid sturgeon migration to spawning areas that would be sufficiently far upstream to allow juvenile survival through the larval drift stage. Draft EIS at 2-22. Present operations allow the re-construction of the dam each year, which violates sections 7 and 9 of the ESA, as Defenders and NRDC described in our scoping letter.[6] The 2015 BiOp conceded that the current "injury" to breeding for pallid sturgeon would continue as long as the existing dam was re-built each year. 2015 BiOp at 30-32. The 2015 BiOp also conceded that the existing dam operations "take" 32 adult sturgeon per year. Id. at 33. Further, the Draft EIS acknowledges that under the no-action alternative, the wild pallid sturgeon population will continue to decline. See Draft EIS at 4-164 (estimating that there will be fewer than 50 wild adults by 2023). The Draft EIS also acknowledges that a population based entirely on hatchery-born fish may not be able to create a "sustaining, naturally spawning population." Id. In other words, if no action is taken, the wild population will certainly go extinct, and the hatchery-born population may never be able to sustain itself without perpetual stocking of hatchery-born fish. This outcome – extinction of a wild population in an isolated river basin with no chance of becoming a self-sustaining population again – indisputably violates section 7 and 9 of the ESA.

35 Because the current operations are illegal, a proper "no-action" alternative must include the likely consequences of taking no action. The Draft EIS fails to do so. Instead, while acknowledging that Reclamation would have to reinitiate ESA consultation for the operation and management of the Dam and Lower Yellowstone Project (LYP), the Agencies feign ignorance in several places within the Draft EIS about the likely result of that consultation. Draft EIS at 4-164 (the biological opinion resulting from a consultation "would likely require other future activities to reduce the effect on listed species, but these effects are unknown at this time"); Draft EIS at 2-38 ("[a]ny specific outcomes of future consultation for the No Action Alternative are not reasonably foreseeable at this time"). However, in the executive summary, the Agencies conceded what Reclamation has known since at least 1992 – that "fish passage" would be "an ultimate requirement at Intake Diversion Dam." Draft EIS at xxviii; see BOR-5068-5069. Moreover, the Agencies explicitly determined that there was no need to propose adaptive management actions for the "no-action" alternative because "it is presumed that no action is not a viable alternative as it would not improve fish passage." Appendix E at 1 (emphasis added).

36 Indeed, more than 20 years after FWS first suggested Reclamation needed to provide fish passage, the only reasonable, predictable outcome of a new consultation

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[6] The "no-action" alternative also likely violates the Clean Water Act, 33 U.S.C. § 1344 because Reclamation has never obtained a Section 404 permit for the "rocking." The Corps has apparently relied on the exemption in section 404(f)(1)(C) to section 404's requirements, but this exemption "for the purpose of construction or maintenance of farm or stock ponds or irrigation ditches, or the maintenance of drainage ditches" does not apply here. 13 U.S.C. §1344(f)(1)(C).

36 would be that the continued rocking of the Dam would be prohibited because it is illegal and the dam would eventually naturally erode away, or that Reclamation would finally comply with the law and actively remove the barrier to provide fish passage. To the extent that allowing the rock to naturally erode away would not provide passage, as the Draft EIS suggests (Draft EIS at 2-38), Reclamation would have to actively provide passage. The Agencies must analyze the consequences of those realistic, predictable scenarios. See Ctr. for Biological Diversity v U.S. Dep't of the Interior, 623 F.3d 633, 645-46 (9th Cir. 2010) (holding that EIS "must make a meaningful comparison of the environmental consequences of [the applicant's] likely mining operations" both with and without the additional regulations that would apply under the no action alternative).

37 As a result, continuation of present Intake Dam operations as the "no-action" alternative is unrealistic and cannot serve as the baseline comparison for the EIS. Indeed, Reclamation has recognized in another context that a No Action Alternative cannot analyze a set of dam operations that have been found to violate the ESA. See "Coordinated Long-Term Operation of the Central Valley Project and State Water Project," Final EIS, November 2015 at ES-9 (available at http://www.usbr.gov/mp/nepa/documentShow.cfm?Doc_ID=23658) (last visited July 27, 2016). Reclamation explained:

> Simply analyzing a No Action Alternative that is similar to the project description described in either the 2004 Biological Assessment or 2008 Biological Assessment is insufficient, as each was found to jeopardize listed species, the 2004 Biological Assessment by the District Court in 2007, the 2008 Biological Assessment by USFWS and [National Marine Fisheries Service]. Either of these operations would be inconsistent with Reclamation's existing policy and management direction.

38 Id. Here, the comparison between the action alternatives and the no-action alternative must compare the consequences of different means of providing passage – not whether the action alternatives are an "improvement," no matter how minute, over the current, illegal situation where there is almost no passage at all. Such an analysis would acknowledge that the pallid sturgeon has been nearly extirpated as a result of past actions, but would assume that those past actions cannot continue under any scenario. Absent a realistic, lawful "no-action" alternative, the Draft EIS fails to provide a meaningful baseline comparison between alternatives in violation of NEPA.

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V. The Draft EIS Fails to Take a "Hard Look" at the Impacts of the Dam/Bypass Channel Alternative

The preferred alternative in the Draft EIS, the Dam/Bypass Channel Alternative, is nearly identical to the alternative adopted in the 2015 EA and temporarily enjoined by the District Court of Montana last September. As noted above, the Agencies have not complied with the Court's direction to evaluate pallid sturgeon recovery in order to comply with NEPA. Moreover, the analysis that the Agencies completed to support this

39 alternative in the Draft EIS is based on flawed assumptions, is internally inconsistent, and is not supported by the best available science.

At bottom, regardless of the legal standard for success with this Project, the fundamental scientific problem with the Dam/Bypass Channel Alternative is that there is no evidence that the Project will pass any more fish than already use the existing side channel, let alone avert extinction of the wild population or set the species on a path to recovery. We urge the Agencies to abandon this alternative in the Final EIS and Record of Decision (ROD).

A. The Draft EIS Concedes that the Dam/Bypass Channel Alternative Will Not Meet the Biological Review Team's Own Standards for Biological Success

40 The Draft EIS lists four reasons to support choosing the Dam/Bypass Channel Alternative. Draft EIS at xlii. Of these four reasons, only one prioritizes the fate of the pallid sturgeon – that the Agencies believe this alternative "could be constructed, operated, and maintained to meet the physical and biological criteria identified by the Service's Biological Review Team (BRT), and therefore would provide passage for pallid sturgeon." This rationale fails both scientifically and legally.

As an initial matter, "provid[ing] passage" of some unknown amount, as
41 described above, does not necessarily meet the ESA standards for survival or recovery of this population and arbitrarily lowers the bar for success of the Intake Project.

42 Further, even if providing passage was sufficient, the Draft EIS makes clear that the Dam/Bypass Channel will likely <u>fail</u> the standards set out by the BRT, directly contradicting this rationale. The Draft EIS recites the following biological criteria for success, set by the BRT, for adult passage: "[a] passage alternative would be considered successful if greater than or equal to 85 percent of motivate[d] adult pallid sturgeon (i.e. fish that move upstream to the entrance of the passage alternative) annual[ly] pass upstream of Intake Diversion Dam during the spawning migration period (April 1 – June 15)." Draft EIS at 4-152; Appendix E at 2. However, the Agencies' sole method of modeling potential success – the Fish Passage Connectivity Index (FPCI) – predicts that the Dam/Bypass Channel will be 67% as successful for all fish species as the Multiple Pump Alternative (which is predicted to have a 100% success rate). Appendix D at 16.[7] As described in more detail below, the FPCI is not a rational basis on which to base any scientific conclusions about pallid sturgeon passage. Even if it was a rational basis, the actual passage rate (67% overall, 60% for pallid sturgeon) is far less than the BRT's standard (85%). The Draft EIS never acknowledges or explains why the facts within the Draft EIS directly contradict the Agencies' primary rationale for choosing the Dam/Bypass Channel Alternative.

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7 As discussed below, the FPCI for pallid sturgeon specifically is 60%, using the Draft EIS's numbers, and is likely much lower if the appropriate metrics are applied to its calculations.

B. The Draft EIS Fails to Take a "Hard Look" at Whether Any Pallid Sturgeon Will Use the Bypass Channel

To the extent the Draft EIS analyzes whether the Dam/Bypass Channel will serve the purpose of passing any pallid sturgeon upstream past the new dam, this analysis is conclusory, incomplete, and unsupported.

43 #### 1. The Draft EIS Fails to Take a "Hard Look" at the Uncertainties Surrounding Pallid Sturgeon Use of the Proposed Bypass Channel

The Draft EIS vaguely and repeatedly concedes that the Agencies do not know if the Dam/Bypass Channel will succeed in passing pallid sturgeon at all, in part because such an effort has never succeeded. See, e.g., Draft EIS at 4-162 ("There are still many uncertainties over whether a majority of pallid sturgeon would actually pass through the bypass channel as there are no other examples of similar natural-type channels designed for non-jumping benthic fish."); Appendix E at 11 ("Existing modeling indicates that the bypass channel would meet BRT criteria under all flow conditions, but it remains to be seen if the channel maintains these characteristics over the long term and if these physical criteria result in biological performance"). Such uncertainty cannot form the basis for choosing the Dam/Bypass Channel Alternative over the Multiple Pumps Alternative, which will provide near-natural conditions for pallid sturgeon and other native fish.

44 Although the Draft EIS does not acknowledge it, the Independent External Peer Review that was performed on the bypass channel proposal in 2013 also highlights the high level of uncertainty associated with this Project. At that time, the peer review concluded that "the probability that the [bypass channel] will perform as proposed is very low." BOR-11188. The peer review also characterized the uncertainties associated with the bypass channel as having "high" significance, meaning that they implicated a "showstopper" issue. BOR-11154, 11169. In addition, as we described in our scoping comments, Braaten *et al*. noted that there was little information about pallid sturgeon use of natural side channels prior to their own study and that pallid sturgeon use of these channels is inconsistent and not well understood. See Defenders and NRDC scoping letter at 25. The Braaten study "identified that pallid sturgeon will use side channels as a component of the migration pathways. However, side channel use was not consistent among migrating pallid sturgeon to suggest that a by-pass channel might be used by some but not all individuals." Id. at 193.

45 Despite these uncertainties, the Draft EIS also concludes, without supporting analysis, that it is "reasonable to assume that a majority of fish would find and use the channel." Draft EIS at 4-169. However, as with the 2015 EA, the Draft EIS only analyzes the technical suitability of the channel for upstream migration, not whether or how well the bypass channel will work biologically.

46 The Court has already recognized this distinction. In the preliminary injunction order, the Court acknowledged that the "Federal Defendants note that they conducted physical and computer modeling to ensure that the entrance of the bypass channel would mimic natural river flows and encourage pallid sturgeon to use it." Defenders of Wildlife, 15-cv-14, GF-BMM, Dkt. #73 at 8. Nonetheless, the Court found this analysis insufficient because "[t]he EA fails to analyze, however, whether the pallid sturgeon actually would be likely to use the bypass channel." Id.

The Draft EIS does not adequately evaluate the available science regarding the uncertainties associated with the Dam/Bypass Alternative nor reconcile that science with its assumption that the bypass channel will succeed in passing a majority of pallid sturgeon.

47 **2. The Agencies' Reliance on the Fish Passage Connectivity Index as the Basis for Determining the Likelihood of Fish Passage is Arbitrary**

A second rationale for the Agencies' preference for the Dam/Bypass Channel is that it is purportedly "a cost effective means of providing fish passage." Draft EIS at xlii. However, despite the fact that the Draft EIS elsewhere concedes that the concept of successful "fish passage" is highly uncertain, the cost/benefit analysis rests on a very specific determination that fish passage will be 67% successful. The Draft EIS arrives at that number by using a "Fish Passage Connectivity Index" (FPCI). The FPCI's methodology is flawed in numerous and fundamental ways and does not constitute the required "hard look" at the likelihood that the Dam/Bypass Channel will succeed in passing pallid sturgeon.[8]

48 The FPCI purportedly measures the likelihood of pallid sturgeon passing upstream. However, the FPCI's methodology is flawed in numerous and fundamental ways. The Agencies have, at best, failed to disclose the sensitivity and uncertainty of the model used to justify the value of incremental fish passage benefits assigned to the various alternatives, and at worst, have manipulated the model to arrive at the conclusion that the Dam/Bypass Channel alternative is superior on a cost/habitat unit improvement basis.

The FPCI varies by alternative, from 1.0 (100%) for the no-dam alternatives to a minimal 0.08 for the No Action Alternative. See Draft EIS at 2-99, Table 2-27; Appendix D, Table 1-11 at 16. The Dam/Bypass Channel Alternative is given a FPCI of .674 (67%) passage rate. Id. However, the numbers used in the model are arbitrary and unexplained.

49 As an initial matter, the FPCI modeling is based on the needs of 14 different fish species with varying migration behaviors and various swimming abilities, and an average

[8] The flawed methodology compromises the validity of the cost/benefit analysis as well, as described below.

of the results. Appendix D at 3-4. Thus, the 67% average success rate says nothing
49 about the predicted success rate for the pallid sturgeon, the only endangered fish at issue with respect to the Project. In fact, the pallid sturgeon passage rate could be zero or anything in between. Using an average of different fish species to predict success for one species has no rational basis.

50 Although the Draft EIS does not offer a pallid sturgeon-specific FPCI for any of the alternatives, our expert consultant, Mr. David Marcus, calculated what the number would be, from the Agencies' perspective, based on information found within the Draft EIS. <u>See</u> Attachment 1 at 3-6 (formulas for calculating FPCI at Appendix D at 2, 10; pallid sturgeon-specific values for the inputs into the FPCI formula calculated from figures in Appendix D at 11-12 and 13-14). Using the Draft EIS's numbers, Mr. Marcus concluded that the FPCI for pallid sturgeon passage would be 60% – lower than the 14-species rating of 67%.[9]

51 However, the problems with the Agencies' reliance on the FPCI calculations run much deeper. In 2015, the EA concluded that the FPCI for pallid sturgeon for the preferred Dam/Bypass Channel alternative was only 0.5, or only half of the FPCI in the Draft EIS for the Multiple Pump Alternative. <u>Compare</u> 2015 EA, Appendix E Attachment 1, "Fish Passage benefits Analysis," at 23, Table 10 <u>with</u> Attachment 2 to these comments ("Cost per AAHU" tab, line 3). This is the same value assigned in a 2012 analysis by Reclamation. <u>See</u> BOR 12003. The Draft EIS offers no explanation for this discrepancy, which results in a 20% higher FPCI for pallid sturgeon in the 2016 Draft EIS as opposed to the 2015 EA. In fact, the Draft EIS does not even acknowledge it.

52 As Mr. Marcus explains in more detail in his report (Attachment 1), the discrepancy appears to be based on an apparently arbitrary change in one of the inputs to the FPCI model: F1. Fl represents the probability of pallid sturgeon finding the proposed bypass on a scale of 1-5, with 1 being the lowest. <u>See</u> Appendix D at 10. In the 2015 EA and the 2012 analysis in the administrative record (BOR 11996, Table 6), Fl was given a value of 3, while in the Draft EIS, that value has been changed to a 4 – an increase of 33%. Appendix D at 11, Table 1-7. Changing the value of F1, in turn, raises the FPCI from .5 to .6. The Draft EIS does not acknowledge or explain the change in F1. The Draft EIS simply states that "the Corps (2014) used the best professional judgment of federal and state biologists working on the Yellowstone River (Table 16)." Appendix D at 10. If this citation refers to a document, it does not appear to be in the administrative record for the existing litigation. Further, the 2014 date pre-dates the 2015 EA, which used a different F1 value. Because the Draft EIS provides no analysis or support for its assignment of an F1 value, and because this document is not readily identifiable and may

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9 Similarly, the adjusted FPCI for the No Action Alternative would be calculated from parameters for pallid sturgeon in Appendix D at 11-12 and 14-15 [2+5)/2*180.18/25 = .0252. <u>See</u> Attachment 2, "cost per AAHU" tab.

52 not be publicly available, the public has no ability to determine the basis for this change.[10]

53 Moreover, the actual results are most likely even lower. As noted above, the Draft EIS concedes that pallid sturgeon passage through the artificial bypass channel is highly uncertain. This uncertainty is illustrated by the fact that there are no examples of successful bypass channels for either pallid sturgeon or shovelnose sturgeon. Draft EIS at 2-105 (“to date, no successful upstream fish passage facility of any type has been built for shovelnose or pallid sturgeon”); Draft EIS at 2-107 (noting that bypass channel built for shovelnose at T&Y dam on Tongue River has failed to pass any shovelnose sturgeon). Thus, the potential range of results for the FPCI are highly variable.

However, despite this uncertainty, the FPCI assigns a specific prediction to fish
54 passage benefits for each alternative. As a result, the inputs to the model are each highly subjective, translating uncertain predictions into (arbitrarily) precise numerical values. Not surprisingly, the results are unsupported by scientific evidence in the Draft EIS, and the Draft EIS offers no basis for its choice of any of those numbers. Thus, the methodology underlying the FPCI is so susceptible to manipulation and sensitive to arbitrary selection of variables that the results are meaningless – and potentially highly misleading. As one FWS biologist noted in 2012, “Remember, this [the FPCI] is not a complex ecological model development exercise, but rather a mechanism to interject some level of biology into a mostly fiscally driven planning process.” BOR-11979; see also BOR 11980 (“I also tried to outline in the document how there are many uncertainties in fish passage, especially as they regard sturgeon, trying to convey that the results of the FPCI “are what they are”... a science based planning tool, not science furthering science.”).

In short, there is no basis to assume that the FPCI offers a scientific or supportable assumption for any passage benefits to pallid sturgeon, let alone at the specific level relied on for the Draft EIS. The Draft EIS’s reliance on the FPCI does not constitute the required “hard look” at the likelihood of fish passage.

55 C. The Draft EIS Fails to Adequately Analyze and Disclose the Impacts of the Dam/Bypass Channel Alternative on Larval Mortality

For pallid sturgeon to successfully naturally reproduce, they must not only pass Intake Dam on their upstream migration, they must spawn in a location that provides for an adequate larval drift distance, and their larvae must survive in sufficient numbers to maintain their current population and avert extinction as well as increase their population to facilitate recovery. However, the Draft EIS simply speculates about larval mortality rates, without providing a meaningful supporting analysis. See 4-169 – 4-170.

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[10] As described in Mr. Marcus’s report and below, the impact of this one change is significant in terms of the results of the Draft EIS’s cost/benefit analysis and the Agencies’ method for comparing one alternative to another.

56 Perhaps most importantly, the Draft EIS never evaluates why, given that the handful of pallid sturgeon that are currently using the existing side channel have never successfully reproduced, the pallid sturgeon that may use an artificial bypass channel would change this pattern and succeed where the prior spawning attempts have failed. As one former member of the Missouri River Recovery Implementation Committee (MRRIC) summarized the problem in 2014, "[i]f the Pallid have been using the old side channel and therefore spawning above Intake as No. 36 did, why haven't we had the recruitment promised by the scientists who support building the new side-channel?" ACE-3600. The Draft EIS does not attempt to answer that question. To conduct that analysis, the Agencies would have to analyze the factors that have precluded the pallid sturgeon from successfully reproducing so far, and how and whether the new Dam/Bypass Channel would change those conditions. The reasons for the recruitment failure could be related to many factors, including, but not limited to, the fact that the numbers of individuals successfully migrating upstream are too few, that larvae cannot survive the journey downstream with a dam at Intake and/or due to other hazards, or that the drift distance is too short from the point at which the pallid sturgeon have spawned so far.

57 Further, the Draft EIS completely discounts the possibility of any larval mortality caused by traveling over the new concrete dam or striking the boulder field below the new concrete dam without any analysis or scientific citation. Draft EIS at 4-170. The Draft EIS concludes in one sentence that larvae "would be able to drift downstream of the weir with no difficulty as they would typically be drifting in the deepest part of the channel and would pass through the low-flow notch without injury." Id. This single sentence, with no scientific basis, does not constitute a "hard look" at larval mortality caused by the new dam and existing boulder field. The new concrete dam and existing boulder field will cause changes in water velocities, gradients, and other river conditions that must be analyzed to determine how they will affect the downstream drift. Given the precarious nature of the pallid sturgeon population in Montana, the Intake Project should be designed to minimize larval mortalities, not create new sources of mortality without even the benefit of an analysis of their impacts.

58 The Draft EIS also discounts larval mortalities caused by entrainment. Draft EIS at 4-169 – 4-170. As Defenders and NRDC previously explained, larvae are expected to be entrained in the main irrigation canal at Intake because the fish screens cannot block pallid sturgeon larvae. See 2015 Biological Opinion on "Interim and Future Maintenance of the Lower Yellowstone Irrigation Project and Construction of Fish Passage" at 26. They may also be killed on the screens themselves. Id. at 26, 30. In addition, the upstream, neighboring Buffalo Rapids Irrigation District has an unscreened canal that could entrain pallid sturgeon larvae. Some number of larvae will also be killed on the dam in the river. See id. The Draft EIS ignores the impacts of the Buffalo Rapids Irrigation District, and assumes a maximum 5% entrainment rate at the headworks, but describes these deaths as having "negligible effects" on recruitment because age-0 pallid sturgeon typically suffer mortality rates of 99.9% anyway. Draft EIS at 4-169. The Draft EIS also assumes that there will be no mortality at the new dam because larvae will drift through the low-flow notch. The opposite conclusion is just as likely – that with such

high rates of mortality, there is no margin for error. Moreover, the Draft EIS does not analyze the various sources of larval mortality together, to determine how they may affect the species cumulatively.

In short, the Agencies failed to take a "hard look" at larval mortality.

59 **D. The Draft EIS's Economic Rationales for the Dam/Bypass Channel Alternative Are Not Supportable**

As noted above, one of the primary rationales for identifying the Dam/Bypass Channel as the preferred alternative is the Agencies' conclusion that this alternative is the most "cost-effective means of providing fish passage." Draft EIS at xlii. However, the Agencies' reliance on the "cost-effectiveness" of the various alternatives is unsupportable in this context. The fact that a project may be "cost-effective" is irrelevant – and not an appropriate basis to choose an alternative – if it does not comply with the law. Here, as described above, the Draft EIS fails to even analyze the impacts that would indicate whether the Dam/Bypass Channel Alternative will fulfill the Intake Project's purpose or comply with the ESA, let alone describe how this alternative will comply with that law. Further, all available evidence indicates that the Dam/Bypass Channel will, in fact, violate the ESA.[11] Thus, the Agencies' reliance on the cost/benefit analysis in support of an unlawful alternative is arbitrary.

60 Even if the Agencies' reliance on cost/benefit analysis to identify the preferred alternative was appropriate, Mr. Marcus's attached report demonstrates that the calculations underlying the Agencies' cost/benefit analysis are unsupported and fatally flawed. See Attachment 1.

61 For example, one key calculation underlying the cost/benefit analysis is the FPCI, which, as described above, is a planning tool subject to arbitrary and unexplained inputs. As Mr. Marcus describes, had the Agencies continued to use a "3" as the "F1" value – as they did in the 2015 EA – the Multiple Pumps Alternative would be most cost-effective per habitat unit gained, according to the Agencies' own methodologies. See Attachment 1 at 5-7. The cost per habitat unit grows even greater if the "F1" value is assigned a lower value, consistent with a more realistic biological perspective. Id. at 7-8. At the very least, the high level of uncertainty suggests that, if the "F1" value was modeled statistically, it would result in a higher cost per habitat unit for the Bypass Channel in nearly every scenario.

In short, the Draft EIS's reliance on the cost/benefit analysis is unfounded legally and scientifically and does not support the Agencies' preferred Dam/Bypass Channel Alternative.

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11 The Dam/Bypass Channel Alternative will also violate the Clean Water Act, as described below.

62

E. The Adaptive Management Provisions are Unfunded and Uncertain

The Draft EIS also fails to adequately disclose and analyze the future ramifications of choosing the Dam/Bypass Channel Alternative with respect to necessary adaptive management funding and actions.

63 As an initial matter, the Draft EIS notes that the Corps will not be accountable or responsible for addressing any needed changes to the Intake Project if the Project fails. See Appendix E at 12 ("Once the one year warranty period [for the Corps] is complete, Reclamation through the LYP will be responsible for maintaining the new weir and bypass channel for the life of the project."). This means that if the Project fails to provide for survival and recovery of pallid sturgeon, as required by the ESA, the Corps will not necessarily be on the hook to fund any changes to the Project, large or small.[12] In the event any changes are needed, the Draft EIS does not identify funding sources. Indeed, there does not appear to be any dedicated funding for monitoring or alterations to the plan even if Reclamation concludes that the Project has failed. Instead, the Draft EIS notes that implementation of adaptive management measures "would [] depend on funding availability." Appendix E at 16. Given that the Dam/Bypass Channel is essentially an experiment, with the fate of a highly imperiled endangered species at stake, funding should be in place prior to proceeding with such an uncertain project.

Nonetheless, the Draft EIS's adaptive management plan does not even
64 contemplate the idea that the Project will fail – even though the Agencies admit that "it remains to be seen" if the bypass channel will succeed biologically. Appendix E at 11. The potential adaptive management actions for the Dam/Bypass Channel Alternative involve making modifications to the bypass channel, removing fill from the existing natural channel, removing the existing boulder field, modifying the notch in the new dam, or modifying the headworks. Id. at 15-16. None of these measures involve removing the new dam and installing a pump system – the one action that would indisputably provide pallid sturgeon with the opportunity to naturally reproduce in the Yellowstone River. This is also the action that will be required of Reclamation if the Dam/Bypass Channel fails to provide for pallid sturgeon survival and recovery.

Given the admitted uncertainty associated with this Project and the precarious status of the species, the Draft EIS must disclose and analyze all available funding and a realistic menu of for fixing any problems that arise when the Dam/Bypass Channel fails, including removal of the new dam.

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[12] The Corps may be accountable for operational changes at Fort Peck Dam under the ESA whether or not the Intake Project fails, but the Draft EIS specifically contemplates absolving the Corps of any obligations to address future issues with the Intake Project, regardless of its success.

65

F. The EIS Does Not Adequately Disclose and Analyze Impacts to the Entire Ecosystem

According to the Draft EIS, there are 54 fish species in the Yellowstone River, 7 of which are listed as Montana Species of Concern. Draft EIS at 3-50 and 3-85. The Draft EIS recognizes the differences in preferred habitat conditions between these species by classifying them as “Main Channel Species” or “Backwater Species.” Draft EIS at 3-52 to 3-54 and 3-85. Yet the Draft EIS does not differentiate between these sets of species in addressing the impacts of each alternative. With respect to at least the seven species of concern, the Draft EIS concludes, in one sentence, that under the Dam/Bypass Channel Alternative, all “sensitive fish species” will be allowed to move upstream, “including both stronger and weaker swimming fish, providing a major benefit to these species.” Draft EIS at 4-168. A single sentence is not sufficient to analyze the impacts of the Draft/Bypass Channel Alternative on the species of concern in the Yellowstone River.

66

The Draft EIS’s discussion of the impacts of climate change are also cursory and insufficient. The Draft EIS notes that the artificial bypass channel planned for the Dam/Bypass Channel Alternative may not be enough for fish passage for some species during drought years, and that floods may cause structural problems to the channel. Draft EIS at 4-11. Yet the Draft EIS concludes that the risk is “minor” without providing any detail to support that conclusion. Absent more analysis, there is no way for the public to understand or respond to the Draft EIS’s discussion of climate change.

VI. THE AGENCIES SHOULD ADOPT THE MULTIPLE PUMP ALTERNATIVE WITH OR WITHOUT ADDITIONAL CONSERVATION MEASURES

67

A. The Draft EIS and the Best Available Science Demonstrate That Dam Removal Provides the Best Opportunity for Pallid Sturgeon Spawning and Recruitment in the Yellowstone River

As Defenders and NRDC explained in our scoping letter, the consistent and uncontroverted findings in scientific studies over the past two decades confirm that removing Intake Dam and restoring a free-flowing river is the only reliable way to facilitate successful natural reproduction for pallid sturgeon in the Yellowstone River. Restoring this habitat is essential to the survival and recovery of the pallid sturgeon. Compared to other alternatives, this alternative also presents less of a risk for fish during droughts, which are expected to increase as a result of climate change. Id. at 4-12. In addition, given that the Agencies intend to abandon the efforts at Fort Peck Dam, there is no room for error with respect to the Intake Project – the fate of the species may rest entirely on this decision and therefore must be the best possible project for the pallid sturgeon. As a result, we urge the Agencies to adopt the Multiple Pump Alternative in the Final EIS and ROD.

68

B. The Draft EIS's Cost Analysis Does Not Support Rejection of the Multiple Pump Alternative

As described above, the Agencies identified the Dam/Bypass Channel at the expense of the Multiple Pump Alternative in large part based on cost comparisons. The Draft EIS references two different kinds of costs to justify this choice: (1) construction costs; and (2) OM&R costs. Draft EIS at xlii. However, costs are only relevant if the chosen alternative complies with all applicable laws, including the ESA – which the Dam/Bypass Channel Alternative will not. Even if the Dam/Bypass Channel Alternative complied with all applicable laws, the cost analysis in the Draft EIS does not comply with NEPA and does not support rejection of the Multiple Pump Alternative.

69

The "cost-effectiveness" analysis in the Draft EIS evaluates construction costs. The Draft EIS's analysis of these costs is unsupportable, as described above and in Mr. Marcus's report.[13]

70

The arbitrary nature of the cost/benefit analysis is illustrated by the fact that the Draft EIS assigns an annual cost for monitoring and adaptive management requirements for the Multiple Pump Alternative that is more than two times as high as the Dam/Bypass Channel Alternative. <u>See</u> Appendix D at 19, Table 2-2. The Draft EIS did so by applying a 1% fee for adaptive management to each alternative. DEIS at 2-98, Appendix B at 22. This 1% addition has no logical basis. While monitoring costs should be equal, adaptive management costs should be significantly <u>lower</u> for the Multiple Pump Alternative. Once the dam is removed, the only potential adaptive management action mentioned by the Draft EIS is the potential for modifications to the headworks and pump stations to reduce entrainment. Appendix E at 28. In contrast, under the best case scenario, the Dam/Bypass Channel Alternative will likely require constant maintenance to maintain the bypass channel at its current specifications in the face of floods, ice flows, and other natural river processes. Those minimum measures will be required if the bypass channel succeeds – far greater costs should be assumed if it fails. Thus, there is no reasonable basis to assign a higher cost to such measures in the Multiple Pump Alternative.

71

The second kind of costs, for operations and maintenance (O&M), are generally paid for by the irrigation districts. The administrative record for the 2015 EA makes clear that the focus of this Project has long been on minimizing or eliminating any additional costs for the irrigators, regardless of the biological outcome for pallid sturgeon. <u>See</u> FWS-4960-4961 (FWS official noting that "the irrigators have enlisted congressional inquiry to ensure full implementation of the project **<u>does not result in any</u>** added costs to the irrigators") (emphasis in original). As Mr. Marcus's report describes, the Draft EIS overestimates the O&M costs associated with the Multiple Pump Alternative and

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[13] Notably, these costs have no effect on the sustainability of the LYP and are not a part of the Agencies' stated purpose and need. They also fail to reflect the cost "savings" the Corps would attain if it is permitted to abandon its required operational modifications at Fort Peck Dam in exchange for funding the Intake Project.

underestimates those for the Bypass Channel Alternative. See Attachment 1 at 42-43.
71 For example, although the Draft EIS acknowledges that reduced power rates may be available, the Agencies did not apply those lower rates to the Multiple Pump Alternative. See, e.g., Draft EIS at 2-75. The Draft EIS also fails to adequately describe the framework and limitations the Agencies relied on to determine whether a particular alternative would allow for the LYP to remain viable.

72

Finally, to the extent that construction or O&M costs are a prohibitive factor, the Agencies must explore alternative funding, as Defenders and NRDC highlighted in our scoping comments. While the Draft EIS concludes that requiring Reclamation to fund the Project will require the irrigation district to reimburse the agency, it does not otherwise offer any potential funding sources or resolutions. This analysis is insufficient to meet NEPA's requirements, especially given that available funding is a primary rationale for choosing particular alternatives.

73 VII. THE CORPS' SECTION 404 ANALYSIS DOES NOT COMPLY WITH THE CLEAN WATER ACT

The Clean Water Act (CWA) differs significantly from NEPA in that it has substantive standards and section 404 *prohibits* activities that violate those standards. See Bering Strait Citizens v. Army Corps of Engineers, 524 F.3d 938, 947-48 (9th Cir. 2008). The CWA is designed to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). The CWA generally prohibits the discharge of pollutants, including dredged or fill material, into the waters of the United States unless authorized by a permit. 33 U.S.C. § 1311(a); see also 33 C.F.R. § 323.2 (defining discharge of dredged and fill material); 40 C.F.R. § 232.2 (same). Section 404 of the CWA authorizes the Corps to issue such permits. 33 U.S.C. § 1344. The section 404 requirements apply to the Corps where, as here, it is authorizing its own activities. See 33 C.F.R. Parts 335-337. However, instead of issuing itself a permit, the Corps issues a Statement of Findings (SOF) to authorize its activities. 33 C.F.R. §§ 336.1(a), 337.6.

The Corps has adopted regulations, known as the "public interest" factors, to implement this permitting authority. 33 C.F.R. §§ 320 et seq. The Corps must "weigh the benefits that reasonably may be expected to accrue from the proposal against its reasonably foreseeable detriments, considering all relevant factors." Alliance to Save the Mattaponi v. U.S. Army Corps of Engineers, 606 F. Supp. 2d 121, 124 (D.D.C. 2009) (citing 33 C.F.R. § 320.4). The Corps must consider a broad range of potential impacts as part of its public interest review, including "conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people." 33 C.F.R. § 320.4(a)(1). Moreover, in the evaluation of every permit, the Corps must consider:

> (i) The relevant extent of the public and private need for the proposed structure or work; (ii) Where there are unresolved conflicts as to resource use, the practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed structure or work; and (iii) The extent and permanence of the beneficial and/or detrimental effects which the proposed structure or work is likely to have on the public and private uses to which the area is suited.

Id. § 320.4(a)(2).

74 Appendix C to the Draft EIS does not appear to make an explicit finding regarding whether the Dam/Bypass Channel is in the public interest, as required by the Corps' regulations.

The Section 404 process is also governed by the Environmental Protection Agency's (EPA) "404(b)(1) Guidelines." 33 U.S.C. § 1344(b)(1); 40 C.F.R. §§ 230 et seq. The Corps reviews all proposed Section 404 permits under both the Corps' public interest factors and EPA's 404(b)(1) guidelines. 33 U.S.C. § 1344(b)(1); 33 C.F.R. § 320.2(f). A permit must be denied if it is contrary to the public interest or does not comport with the Section 404(b)(1) Guidelines. 33 C.F.R. §§ 320.4, 323.6; 40 C.F.R. §§ 230.10, 230.12.

To ensure these mandatory CWA requirements are satisfied, the Corps must fully evaluate the direct, secondary, and cumulative impacts of the activity, including impacts to endangered species, the aquatic environment, fish and wildlife, and human impacts. See, e.g., 33 C.F.R. §§ 320.4(a)(1), 336.1(c)(5), 336.1(c)(8); 40 C.F.R. §§ 230.11(a)-(h), 230.20-23, 230.30, 230.31, 230.51, 230.53. The 404(b)(1) guidelines also set forth particular restrictions on discharges, described more fully below. 40 C.F.R. § 230.12. The Corps must set forth its findings in writing on the short-term and long-term effects of the discharge of dredge or fill activities, as well as compliance or non-compliance with the restrictions on discharge. Id. §§ 230.11, 230.12(b).

EPA's 404(b)(1) guidelines prohibit the Corps from authorizing an application for dredge and fill activities under several circumstances relevant to this case:

(1) the activity "jeopardizes the continued existence" of an endangered species under the Endangered Species Act ("ESA") (40 C.F.R. §§ 230.10(b)(3), 230.12(a)(3)(ii));
(2) there is a practicable alternative which would have less adverse impact and does not have other significant adverse environmental consequences (40 C.F.R. §§ 230.10(a), 230.12(a)(3)(i));
(3) the discharge will result in significant degradation to waters of the U.S. (40 C.F.R. § 230.10(c) 230.12(a)(3)(ii)); or
(4) there does not exist sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with the COE's Guidelines for permit issuance. (40 C.F.R. § 230.12(3)(iv)).

See Utahns for Better Transp. v. U.S. Dep't of Transp., 305 F.3d 1152, 1163 (10th Cir. 2002) (citing 40 C.F.R. § 230.12(a)(3)(i-iv)). The Corps must document its findings of compliance or noncompliance with the restrictions on discharge set forth in these guidelines. 40 C.F.R. § 230.12(b). Where there is not sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with the Guidelines, the Corps must deny the permit. 40 C.F.R. § 230.12(a)(3)(iv).

75

A. Because the Corps' Section 404(b)(1) Analysis Relies on the Inadequate Analysis in the Draft EIS, the Corps Cannot Demonstrate Compliance with the Clean Water Act

The Corps' Clean Water Act Section 404(b)(1) Analysis (Appendix C) relies on the Draft EIS for the underlying analysis of each alternative, and supplements that analysis with specific findings with respect to the No Action and Dam/Bypass Channel Alternatives only. See Appendix C at 62 (noting analysis of alternatives provided in the Draft EIS). A NEPA analysis may be used to inform the 404 permitting decision. However, where a NEPA analysis fails to consider the alternatives "in sufficient detail to respond to the requirements of these Guidelines," the Corps should supplement the NEPA documents with additional information. 40 C.F.R. § 230.10(a)(4).

Here, as described above, the Draft EIS does not provide sufficient information or analyses to support the selection of the Dam/Bypass Channel Alternative as the preferred alternative. The Corps' 404(b)(1) Analysis perpetuates this failure by: (1) assuming the Dam/Bypass Channel's success, despite the limited scope of analysis and all evidence to the contrary; and (2) ignoring the Multiple Pump Alternative and other alternatives altogether, such that the Corps fails to weigh the benefits and costs of the Dam/Bypass Channel Alternative to the Multiple Pump Alternative as required by the CWA.

76

B. The Corps Failed to Evaluate Whether the Dam/Bypass Channel Alternative Will Jeopardize the Endangered Pallid Sturgeon

Under EPA's guidelines, the Corps may not permit a dredge and fill activity that "jeopardizes the continued existence" of an endangered species – the standard for prohibiting federal activities under section 7 of the ESA, 16 U.S.C. § 1536(a)(2); 40 C.F.R. § 230.10(b)(3). As described in detail in our scoping comments and noted above, Reclamation and the Corps are currently violating section 7 of the ESA and jeopardizing the continued existence of the pallid sturgeon at Intake Dam and Fort Peck Dam, respectively.

77

The Section 404(b)(1) analysis relies on Appendix D to conclude that the Dam/Bypass Channel Alternative will not result in jeopardy to any listed species. Appendix C at 67. However, the reference to Appendix D appears to be an error. Neither Appendix D nor the Draft EIS contain any analysis of the Dam/Bypass Channel Alternative's effects on survival and recovery of the species (essential elements of a "jeopardy" analysis) or reach a conclusion regarding whether it will cause jeopardy. The Draft EIS also contains no analysis of the effects of the intended "swap" of Fort Peck Dam operational modifications on survival and recovery of the species. As a result, the

Section 404(b)(1) analysis's conclusion that the preferred alternative will not cause jeopardy to pallid sturgeon on the Yellowstone River is unfounded and arbitrary.

78 Even with respect to upstream passage, just one component of the pallid sturgeon's life cycle relevant to the jeopardy analysis, the 404(b)(1) Analysis is insufficient. Instead, the Corps perpetuates the assumption of success that permeates the Draft EIS. "It is anticipated that a majority of pallid sturgeon that swim up to the weir would encounter the bypass channel as its entrance will be located close to the weir, thus a likely majority of pallid sturgeon [will] use the channel." Appendix C at 38. As with the conclusions in the main body of the Draft EIS, there is no analysis to support the conclusion that simply "encountering" the bypass channel will mean that pallid sturgeon will use it, and the Draft EIS concedes that the likelihood that pallid sturgeon will use the bypass channel is highly uncertain. Neither the Draft EIS nor the 404(b)(1) Analysis provide sufficient data or analysis to determine whether pallid sturgeon will use the channel at all. They certainly fail to demonstrate that adult pallid sturgeon will use the channel in sufficient numbers to provide for natural reproduction at a survival or recovery level.

79 Further, the Section 404(b)(1) Analysis repeats the Agencies' conclusion that the Dam/Bypass Channel will be a success if 85% or more of the telemetered pallid sturgeon use the bypass channel. Appendix C at 60. Yet, as described above, the Draft EIS estimates that only 67% of pallid sturgeon will utilize the bypass channel, and that estimate is deeply flawed and likely vastly overstated. Appendix D at 16. Thus, even under the Draft EIS's own analysis and their own (unlawful) metric for success, the Dam/Bypass Channel is predicted to fail. The Section 404(b)(1) Analysis offers no rationale for concluding that a Project that will fail the Agencies' own metric for success will somehow also avoid causing "jeopardy" to pallid sturgeon.

Even if the Agencies' conclusion regarding the anticipated passage of pallid
80 sturgeon upstream was supportable, the Agencies failed to analyze how or whether the pallid sturgeon will be able to complete their life cycle and successfully naturally reproduce. Absent this analysis, there is no way to determine whether the species will be able to replace itself in the wild, let alone move toward recovery, the key elements in any analysis of whether an action will jeopardize a species.

In short, the available evidence demonstrates that the Dam/Bypass Channel will cause jeopardy to the species, based on ESA legal standards as well as the Agencies' own (legally inadequate) conclusions. Absent evidence demonstrating that the Intake Project will not cause jeopardy to the species, approval of the Dam/Bypass Channel will violate Section 404(b)(1). <u>See</u> 40 C.F.R. § 230.10(b)(3). The Corps' conclusion that this element of the 404(b)(1) guidelines has been met is unfounded.

81 **C. The Least Environmentally Damaging Practicable Alternative is to Remove the Dam and Adopt the Multiple Pump Alternative**

As noted above, in order to comply with CWA Section 404, the Corps must choose the alternative that is the least damaging alternative unless it is proven to be impracticable. See Utahns, 305 F.3d at 1186-87; Alliance to Save the Mattaponi, 606 F. Supp. 2d at 128; 40 C.F.R. § 230.10(a). The Corps is required to deny the application "if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." 40 C.F.R. § 230.10(a). The Clean Water Act "compels that the [least-damaging] alternative be considered and selected unless proven impracticable." Utahns, 305 F.3d at 1189; Alliance to Save the Mattaponi, 606 F. Supp. 2d at 130 ("The Corps must adequately explain why there is no less-damaging practicable alternative. If the Corps cannot so explain based on the record before it, it must reconsider its determination based on an adequate analysis of the alternatives."). An alternative is practicable if it is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." 40 C.F.R. § 230.10(a)(2).

82 Notably, although one factor of the practicability test involves the cost of a particular alternative, the fact that one alternative may cost more than another is not, by itself, sufficient to reject it. Instead, the Corps must weigh the relative benefits and impacts of all of the potential alternatives. See Alameda Water & Sanitation District v. Reilly, 930 F. Supp. 486, 489, 492 (D. Colo. 1996) (upholding EPA's determination that practicable alternatives existed even though the record showed "very substantial regulatory and legal obstacles to these alternatives" – such as moving an entire town and obtaining a Presidential exemption); Friends of the Earth v. Hall, 693 F. Supp. 904, 946-47 (W.D. Wash. 1988) (noting that whether costs make an alternative impracticable depends on whether "competing alternatives can reasonably be viewed as equivalent with respect to other factors" including the "potential for environmental harm"); Hough v. Marsh, 557 F. Supp. 74, 83-84 (D. Mass. 1982) (remanding because "'exorbitant cost' . . . by itself carries little weight; although cost is relevant to an assessment of an alternative's 'practicability,' the Corps conducted no examination of whether the price was unreasonably high [or] whether the defendants could afford it . . ."). Accordingly, the Agencies must fully evaluate the relative benefits of all of these costs and benefits for public information and comment.

It is indisputable that the least environmentally damaging alternative is removing
83 the dam and installing a pumping system for irrigation, as contemplated by the Multiple Pump Alternative. The Section 404(b)(1) Analysis in Appendix C ignores this alternative in its effects analysis, and therefore fails to weigh the relative benefits of this alternative to the Dam/Bypass Channel Alternative as required by the statute.

84 Balancing the relative benefits – and not just the costs – is essential here because the Dam/Bypass Channel does not comply with all legal standards or provide for pallid sturgeon survival and recovery, the fundamental purpose of the Project. Costs may only be used as the determining factor for a Section 404 analysis if the benefits "can

reasonably be viewed as equivalent with respect to other factors." Friends of the Earth, 693 F. Supp. at 946-47. Here, there is no scientific evidence to support the idea that the Dam/Bypass Channel is "equivalent" to the Multiple Pump Alternative in terms of benefits to the pallid sturgeon, and, in fact, the available scientific evidence indicates that the Dam/Bypass Channel will permanently close the door on pallid sturgeon recovery.

85 Further, as described above, the Draft EIS does not support the conclusion that the Multiple Pump Alternative is impracticable. The cost/benefit analysis concluding that the Multiple Pump Alternative is less cost-effective than the Bypass Channel Alternative is built on numerous unsupportable and arbitrary assumptions that make its conclusions essentially meaningless. However, even using the Agencies' assumptions, the Multiple Pump Alternative was deemed "cost-effective" in the Draft EIS and the Agencies offer no evidence to demonstrate that it is "impracticable." See Appendix C at 12. Moreover, if realistic numbers are applied, the Multiple Pump Alternative would cost even less per habitat unit gained than the Bypass Channel Alternative, making it even more "cost-effective" (under the Agencies' metric) than the Bypass Channel Alternative.

86 Moreover, the Section 404(b)(1) Analysis failed to include the costs that are likely to occur if the Dam/Bypass Channel fails to provide for survival and recovery of pallid sturgeon. For example, if an alternative is chosen that will not recover the species, there will be additional costs associated with: (1) the costs of evaluating and implementing a new alternative to comply with the ESA if the initial plan fails to provide for recovery of the species; (2) the adaptive management activities required to tear down any construction and implement a new solution; and (3) the maintenance, in perpetuity, of a hatchery program for pallid sturgeon if the species continues to be unable to be self-sustaining.

The Draft Section 404(b)(1) Analysis fails to comply with the CWA because the Corps failed to adopt the least environmentally damaging alternative – the Multiple Pump Alternative. See 40 C.F.R. § 230.10(a).

87

D. The Dam/Bypass Channel Alternative Will Cause or Contribute to Significant Degradation of the Yellowstone River

The Corps may not permit a dredge and fill activity that "cause[s] or contribute[s] to significant degradation of the waters of the United States," which includes the Yellowstone River. 40 C.F.R. § 230.10(c). Effects that contribute to significant degradation include: "[s]ignificant adverse effects of the discharge of pollutants on aquatic ecosystem diversity, productivity, and stability. Such effects may include ... loss of fish and wildlife habitat." 40 C.F.R. § 230.10(c)(3).

First and foremost, the Dam/Bypass Channel Alternative violates this standard because it will contribute to the extirpation of an endangered species, which indisputably "causes or contributes" to significant degradation to the Yellowstone River.

88 Moreover, as described in our scoping comments and above, the Dam/Bypass Channel Alternative will significantly degrade the entire aquatic ecosystem of the

Yellowstone, a river regarded by the Environmental Protection Agency as an aquatic resource of national importance. See Greater Yellowstone Coalition v. Flowers, 321 F.3d 1250, 1257-1258 (10th Cir. 2003) ("adverse impact on the aquatic ecosystem" under the Guidelines does not require showing jeopardy; harm to individuals can suffice). The Dam/Bypass Channel Alternative will require extensive bank stabilization or river modifications, and will significantly alter and degrade the Yellowstone River's fishery and riparian habitat. This Alternative is also inconsistent with the Yellowstone River Conservation District Council's plan to protect and encourage channel migration easements within channel migration zones on the Yellowstone River as well as the Agencies' acknowledgment that dam building, bank stabilization, and other river modification efforts throughout the Missouri and Mississippi River basins are the primary reason that the pallid sturgeon is nearing extinction.

In contrast, the Multiple Pump Alternative will start the process of reversing the degradation caused by the more than a century of dam building and river modifications that have destroyed the habitat for pallid sturgeon and other sensitive species.

VI. CONCLUSION

Thank you for providing the opportunity to comment on the Draft EIS for the Intake Project. Defenders and NRDC urge the Agencies to take this opportunity to protect the pallid sturgeon and restore its habitat in the state of Montana by adopting the Multiple Pump Alternative, or some close variation that removes the existing dam, restores the free-flowing Yellowstone River, and provides an alternate means of providing water for the LYP.

Sincerely,

McCrystie Adams
Jay Tutchton
Defenders of Wildlife

On behalf of:
Defenders of Wildlife
Natural Resources Defense Council

ATTACHMENT 1

Comments on the Intake Dam DEIS
David Marcus
7/21/16

I. Introduction

The Draft Environmental Impact Statement (DEIS) examines six alternatives: 1) No Action, 2) Rock Ramp, 3) Bypass Channel, 4) Modified Side Channel, 5) Multiple Pumps, and 6) Multiple Pumps with Conservation Measures. Of those, the No Action Alternative does nothing to improve fish passage. According to the DEIS, the Rock Ramp Alternative and Modified Side Channel Alternative are each either more expensive than or environmentally inferior to the Bypass Channel Alternative, and the Conservation Measures Alternative produces the same level of fish passage benefits as the Multiple Pumps alternative but at more than twice the cost.[1] Thus, the DEIS rejects each of those four alternatives as inferior to at least one of the other alternatives.

The remaining two alternatives, the Bypass Channel Alternative and the Multiple Pumps Alternative, involve tradeoffs. According to the DEIS, the Multiple Pumps Alternative produces 55% more fish passage benefits than the Bypass Channel Alternative,[2] but costs 105 percent more.[3] The rest of this analysis will focus on those two Alternatives, identify adjustments that should be made to the DEIS cost numbers that should change these conclusions, and highlight other potential ways of reducing the costs of the Multiple Pumps Alternative.   This analysis does not address the wisdom or the legal implications of choosing an alternative based on the chosen cost/benefit analysis. Rather, this analysis only addresses the validity of the inputs used and the DEIS's conclusions regarding the relative costs of these two alternatives.

II. Summary of conclusions

The DEIS identifies the Bypass Channel Alternative as the preferred alternative primarily based on the conclusion that it is the most cost-effective alternative. However, the DEIS's cost/benefit analysis relies on unsubstantiated assumptions that undermine its

[1] Appendix D, p. 20, Table 2-3.
[2] Ibid. 11,011/7,116 = 1.547, or a 54.7% difference.
[3] Ibid. $10,594/$5,170 = 2.047, or a 104.7% difference.

conclusions. Once the costs for the Bypass Channel Alternative and Multiple Pumps Alternative are adjusted to reflect these erroneous assumptions, the cost per habitat unit – the DEIS's measurement of benefits to pallid sturgeon – is **lower** for the Multiple Pump Alternative than the Bypass Channel Alternative. Thus, the agencies' basis for choosing the Bypass Channel Alternative is not supported by the information provided in the DEIS.

As described in more detail below and in the accompanying spreadsheet, the DEIS's economic conclusions are undermined in the following ways:

(1) The DEIS's conclusion overstates the economic benefits of the Bypass Channel Alternative (section III) in several significant ways, including:

- The DEIS lumps the benefits of the Bypass Channel Alternative for pallid sturgeon with 13 other species of fish to obtain a Fish Passage Connectivity Index (FPCI, the key measure in the DEIS for benefits to fish) average value (0.67) that is higher than the FPCI for pallid sturgeon alone (0.6) (sections III.B and C);
- There is a crucial inconsistency between the April 2015 Final Supplement to the 2010 Final Environmental Assessment ("Supplemental EA") and the DEIS, the former of which gave the Bypass Channel Alternative an FPCI value of only 0.5 (section III.D.1). The increase in the FPCI for pallid sturgeon between the 2015 EA and the DEIS results from manipulation of the Fl variable, which was changed between the documents from a "3" to "4" value, with no acknowledgement or justification for the change (section III.D.1);
- This in turn affects the value/increased habitat unit profoundly. Using the F1 variable from the Supplemental EA renders the Bypass Channel Alternative more expensive on a cost/habitat unit basis (a key cost criterion in the Draft EIS) than the Multiple Pumps Alternative (section III.D.1).

(2) The DEIS understates the capital and operating and maintenance (O&M) costs of the Bypass Channel Alternative (section IV.A).

(3) The DEIS overstates the capital and O&M costs of the Multiple Pumps Alternative (section IV.B).

(4) Quantifying most of the overstated cost of the Multiple Pumps Alternative (and some of the understatement of the cost of the Bypass Channel Alternative), the

incremental cost of the fish passage benefits from going from No Action to the Bypass Channel Alternative is still less than the incremental cost of the benefits gained by going from the No Action Alternative to the Multiple Pump Alternative (section V.B). However, the DEIS fails to note that the sensitivity results of its model are based entirely on the assignment of an upwardly-revised numeric value to fish attractiveness for the Bypass Channel Alternative, and that using that most optimistic assignment of attractiveness in turn results in a lower cost/habitat unit improvement than the Multiple Pumps Alternatives. Using the 2015 EA assignment value for F1, and more accurate adjustments for cost, results in the conclusion that the Multiple Pumps alternative is superior on a cost/habitat unit basis.

(5) The DEIS further overstates costs of the Multiple Pumps Alternative by failing to analyze ways that using fewer pump sites might reduce the cost substantially (sections VI and VII).

(6) The DEIS contains a number of other analytical errors that ignore costs associated with the Bypass Channel Alternative, including rock removal, and tend to inflate the cost of the Multiple Pumps Alternative (sections IV.A.1., VIII.C-D).

III. DEIS benefit/cost methodology

A. Compares levelized cost to increase in annual average habitat units (AAHUs)

The DEIS measures the benefits to fish of improved passage at Intake in "habitat units" or "HUs," which are also referred to as "annual average habitat units" or "AAHUs." A habitat unit is simply the number of acres of habitat upstream of Intake times the likelihood that the alternative in question will provide access to them. For every alternative, the number of acres of upstream pallid sturgeon (also referred to below as simply "sturgeon") habitat is the same, 12,637 acres,[4] and thus the maximum possible number of sturgeon HUs for any alternative is 12,637. The probability that an alternative

[4] Appendix D, p. 4, Table 1-1.

will allow fish to pass upstream of Intake is measured by what the DEIS calls the "Fish Passage Connectivity Index," or FPCI. The FPCI varies by alternative, from 1.0 (100%) for the no-weir alternatives[5] to a minimal 0.0252 for the No Action Alternative.[6] Thus the number of sturgeon HUs varies from a low of 318 for the No Action Alternative to a high of 12,637 for the no-weir alternatives. Variations in HU between alternatives are driven entirely by the variation between alternatives of the FPCI component of the HU calculation.

The DEIS then calculates how much each alternative will increase the number of HUs as compared to the No Action Alternative. Thus, the no-weir alternatives would increase the number of pallid-sturgeon specific HUs by 12,319.[7]

The DEIS then divides the annualized cost of each alternative by the increase in HUs for that alternative to produce a cost per AAHU for each alternative. Thus, the Multiple Pump Alternative, using DEIS numbers, would have a cost for improved sturgeon habitat of $10.595 million for an HU increase of 12,319, or a cost per AAHU of $860.

B. The HU numbers reported in the DEIS inappropriately all but ignore pallid sturgeon

The DEIS methodology as described above used examples based on the DEIS data for sturgeon. But the DEIS itself inappropriately measures HUs and cost per AAHU differently. Even though the reason for the proposed action is to "improve fish passage for pallid sturgeon,"[8] the DEIS lumps sturgeon in with 13 other species in calculating HUs and cost per AAHU.[9] Sturgeon benefits thus get a weight of only 1/14 in calculating HU benefits.[10]

[5] DEIS, p. 2-99, Table 2-27.
[6] The DEIS calculates the FPCI based on a composite of 14 different fish species, as described in Section III.B. The figures used here are calculated from parameters for pallid sturgeon only in Appendix D, pp. 11-12 and 14-15. [(2+5)/2]*1*0.18/25 = .0252. See the attached spreadsheet, "Cost per AAHU" tab.
[7] 12,637 (sturgeon HUs for the no-weir alternatives) minus 318 (sturgeon HUs for the No Action Alternative) equals 12,319.
[8] DEIS, p. 1-6.
[9] Appendix D, p. 4, Table 1-1.
[10] Appendix D, p. 2, formula showing that the HUs for each species are weighted equally.

The fallacy of the DEIS approach, as a statistical matter, can be seen by imagining what would happen if the proposed action, the Bypass Channel Alternative,[11] would not allow any pallid sturgeon passage whatsoever, but passage for other species was unaffected. In that case, the HUs for the Bypass Channel Alternative would be reduced by about 1/14, since the sturgeon-specific HU would drop to zero but the HUs for the other 13 species would stay the same. That would increase the cost per AAHU for the Bypass Channel Alternative by about 1/14, or about 7 percent. The DEIS methodology would still conclude that the Bypass Channel Alternative is the most cost-effective![12]

A methodology in which an Alternative that provided no sturgeon passage could be rated the most cost-effective is an absurd methodology. The DEIS should have used sturgeon-specific data to calculate HUs and costs per AAHU, with any impacts on other species identified as required by NEPA, but not used to drive the policy choice. The analysis below uses sturgeon-specific data whenever it calculates HUs or costs per AAHU.

C. Focusing HU measurement on sturgeon reduces the HU benefit of the Bypass Channel Alternative relative to the Multiple Pumps Alternative

As described above (section IV.A), variations in HU between alternatives are driven entirely by variations in the FPCI between alternatives. For the Multiple Pump Alternative, the FPCI is 1 for all fourteen species, and thus the sturgeon FPCI of 1 is the same as the composite FPCI reported in the DEIS. For the Bypass Channel alternative, however, the sturgeon FPCI is lower than the all-species FPCI. The DEIS calculates an FPCI for all fourteen species together of 0.674.[13] But the sturgeon-specific FPCI for the Bypass Channel Alternative, using the data in the DEIS, is 0.600.[14] Thus, using a

[11] DEIS, p. 2-105.
[12] DEIS, p. 2-100, showing a Bypass Channel cost per AAHU of $727. Increasing that number by 7 percent would increase it to $778/AAHU, which would still be less than the cost of the next cheapest alternative. Thus the Bypass Channel Alternative would remain the most cost-effective, according to the DEIS's flawed methodology.
[13] DEIS, p. 2-99, Table 2-27, showing average HUs of 8,054 for the Bypass Channel Alternative and 11,949 for the two no-weir alternatives. 8,054/11,949 = .6740, which the DEIS rounds off to .67 for display purposes (while using the .674 figure for calculation purposes).
[14] Appendix D, pp. 2 and 10 (formulas for calculating FPCI), and pp. 11-12 and 13-14 (sturgeon-specific values for the inputs into the FPCI formula). The resultant sturgeon-specific FPCI is [(2+4)/2]*5*1/25 = .6.

sturgeon-specific FPCI reduces the HU for the Bypass Channel Alternative by some 11 percent.[15]

With an FPCI of 0.6, the Bypass Channel Alternative produces only 60 percent as many HUs as the no-weir alternatives with their FPCI of 1.0. The net improvement in fish passage is even less than that, because (according to the DEIS), there is already some fish passage occurring under the No Action Alternative. When the small sturgeon passage the DEIS attributes to the No Action Alternative is considered, the net benefits of the Bypass Channel Alternative are even smaller, only 59 percent of the net benefits of the Multiple Pump Alternative, using DEIS data.[16]

D. The DEIS may be overstating the benefits to sturgeon of the Bypass Channel Alternative when it says they will have a FPCI of 0.600

1. DEIS vs. Supplemental EA

Just last year, the 2015 Supplemental EA said the FPCI for pallid sturgeon of the Bypass Channel alternative was only 0.5,[17] or only half of the FPCI in the DEIS for Multiple Pumps.[18] The DEIS neither acknowledges nor explains why it now shows an FPCI for sturgeon 20% larger than the Supplemental EA of 2015. Comparing the two documents, the basis for the higher FPCI in the DEIS is an increase in the forecast value for Fl. Fl is a variable which represents the probability of sturgeon finding the proposed bypass, with 1 lowest, 5 highest, and 3 corresponding to a 50 percent probability.[19] Fl was 3 (out of a maximum of 5) in the Supplemental EA,[20] but has been increased by 33 percent, to 4, in the DEIS.[21] That single change raises the overall FPCI for sturgeon from

[15] 0.600/0.674 = .890 = 89%, for a reduction of 11 percent.
[16] See the attached spreadsheet, "Cost per AAHU" tab, calculating sturgeon-specific HUs and the increase in HUs (compared to the No Action Alternative). The Bypass Channel Alternative produces 7,264 sturgeon HUs more than the No Action Case, while the no-weir alternatives produce 12,319 more HUs than the No Action Alternative. 7,264/12,319 = .5897 = 58.97 percent.
[17] Supplemental EA, Appendix E, Attachment 1, "Fish Passage Benefits Analysis," p. 23, Table 10.
[18] See the attached spreadsheet, "Cost per AAHU" tab, line 3, for the FPCI for the Multiple Pump Alternative as calculated using DEIS data and DEIS methodology.
[19] Appendix D, p. 10.
[20] Supplemental EA, Appendix E, Attachment 1, "Fish Passage benefits Analysis," p. 16, Table 6.
[21] Appendix D, p. 11, Table 1-7.

0.5 in the Supplemental EA to 0.6 in the DEIS. The DEIS neither acknowledges nor explains why it now shows an Fl value for sturgeon that is 33% larger than the value in the Supplemental EA of 2015. Instead, the DEIS claims that it is using a value from "Corps (2014),"[22] a date earlier than the Supplemental EA, which used a value of 3. If the FPCI for the Bypass Channel Alternative should have remained at 0.5, then the DEIS has overstated the sturgeon-specific HUs for the Bypass Channel Alternative by 20 percent.[23]

The impact of this arbitrary conversion is profound in terms of the results of the analysis. If the FPCI resulting from the choice of F1 of 3 instead of 4 is 0.5, as was used in the 2015 EA, then the cost per AAHU jumps to $876, less cost effective than the Multiple Pumps Alternative using either three or five pumps.[24] If, in fact, the F1 value is actually 2 instead of 3, the FPCI becomes 0.4 and the cost per AAHU jumps to $1,110.[25] That the choice of F1 is highly subjective and that the uncertainty is not explicitly identified in assigning this value has been criticized in previous peer reviews of this methodology.[26] At the very least, the range of uncertainty suggests that from a cost effectiveness perspective, a higher cost per AAHU for the Bypass Channel over any combination of Multiple Pumps would invariably result if this were modeled statistically.

2. The actual FPCI may be lower than either 0.6 **or** 0.5

Whether the DEIS methodology should produce an FPCI of 0.5 or 0.6 for sturgeon may, however, be a moot question. The DEIS contains minimal evidence of the ability/willingness of sturgeon to use natural bypass channels, and the ability/willingness of sturgeon to use artificial bypass channels.[27] To the extent that sturgeon will be more than twice as likely to use a weir-free river as to use an artificial side channel with flows

[22] Appendix D, p. 10.
[23] 0.6 / 0.5 = 1.20, or an increase of 20 percent.
[24] See the attached spreadsheet, "Cost per AAHU" tab, lines 2a-4, which calculates sturgeon-specific FPCI and HU values for the Multiple Pump and Bypass Channel Alternatives, using the formulae in Appendix D, pp. 2 and 10, and the sturgeon-specific data in Appendix D, pp. 11-12 and 14-15.
[25] Id, line 2b.
[26] See, 2013 Battelle Peer Review, Final Independent External Peer Review Report for the Intake Diversion Dam Modification Lower Yellowstone Project, Montana Draft Supplement to the 26 April 2010 Environmental Assessment and Appendices by Battelle, 505 King Avenue, Columbus, OH 43201 for Department of the Army, U.S. Army Corps of Engineers, Ecosystem Restoration Planning Center of Expertise for the St. Paul District, February 8, 2013 (cited below as "Battelle").
[27] DEIS, pp. 2-105 to 2-108.

80+ percent smaller than main river flows, then the real FPCI will be below 0.5.[28] A 2013 analysis suggested that a bypass channel originating near the toe of the dam, as proposed in the DEIS, "appears to have a limited probability of success….The probability that the preferred alternative will perform as proposed is very low based on the scientific information presented, the number of project uncertainties and risks, and concerns regarding the sustainability of the bypass channel."[29] The DEIS does not consider the possibility that the FPCI for the Bypass Channel Alternative will be less than 0.5, which undermines the validity of its cost calculations.

IV. DEIS benefit/cost results

A. Bypass Channel Alternative

1. Cost

The DEIS estimates the annualized cost of the Bypass Channel Alternative will be $5.171 million per year.[30] That cost includes post-construction monitoring for 8 years,[31] but no costs for post-construction modifications based on the results of monitoring. The DEIS acknowledges that in the Bypass Channel alternative (unlike the no-weir alternatives), there is a "moderate" likelihood that adaptive management will be required once actual post-construction operations have been observed.[32] The Supplemental EA published last year also suggested that adaptive management could require a variety of changes to the Bypass Channel once it was operational as more was learned about actual use (or non-use) of the newly constructed channel by pallid

[28] The DEIS shows the FPCI for a weir-free river as 1.0. Thus the sturgeon FPCI for the Bypass Channel Alternative is simply the ratio of the number of sturgeon that would use the proposed bypass channel compared to the number of sturgeon that would use a weir-free main river. If more than twice as many sturgeon would choose a weir-free river over an artificial bypass channel, then that ratio is less than one out of two, and the Bypass Channel Alternative FPCI is less than 0.5.
[29] Battelle p. A-6.
[30] DEIS, pp. xxxii and 2-99.
[31] Appendix B, pdf p. 167 of 173.
[32] DEIS, p. 2-103.

sturgeon.[33] The EA priced four such adaptive management measures that could be required for the Bypass Channel Alternative as a result of monitoring, and quantified their costs at an annualized $170,000 per year.[34] A review of an earlier version of the EA suggested that the proposed bypass channel originating from the base of the dam was at risk of being "inundated" and suffering "scour damage and potential sediment deposition" during an overbank flood event, calling into question its "sustainability."[35] It concluded that for the "proposed bypass channel … some form of encouragement or form of guidance may be necessary to have the migrating pallid sturgeon find and enter [the bypass] channel."[36] Both of these problems (damage to the bypass channel during floods, and failure of pallid sturgeon to find or use the inlet to the bypass channel) are additional sources of future adaptive management costs.

Failure to account for such post-construction adaptive management costs means the true costs of Bypass Channel Alternative are likely to be higher (possibly much higher) if the initial design fails to entice sturgeon to enter and pass through the newly-built bypass channel. Even if only half the adaptive management costs quantified in the Supplemental EA are added to the DEIS's forecast of the cost of the Bypass Channel Alternative, which would raise its annualized cost from $5.171 million per year[37] to $5.256 million per year.

2. Benefits for sturgeon

The sturgeon-specific increase in habitat units for the Bypass Channel Alternative, per the data in the DEIS, is 7264, based on a No Action HU of 318 and a Bypass Chanel Alternative HU of 7582.[38]

3. Cost per unit of HU increase

[33] Supplemental EA, Appendix E, pdf pp. 302-3 of 426.
[34] Supplemental EA, Appendix E, pdf p. 303 of 426.
[35] Battelle, p. A-3.
[36] Ibid.
[37] DEIS, pp. xxxii and 2-99.
[38] See the attached spreadsheet which calculates sturgeon-specific FPCI and HU values for the No Action and Bypass Channel Alternatives, using the formulae in Appendix D, pp. 2 and 10, and the sturgeon-specific data in Appendix D, pp. 11-12 and 14-15.

The cost per AAHU of the Bypass Channel Alternative would be $724, based on the increase in sturgeon-specific HUs from the No Action Alternative to the Bypass Channel Alternative, and the DEIS cost of the Bypass Channel Alternative plus half the Supplemental EA cost for specific adaptive management measures for the Bypass Channel Alternative.[39] However, as noted above, it would be $876 if the FPCI value from the 2015 EA were used,[40] and may be as high as $1,110 if uncertainty of the fish passage benefit is included in the calculation.[41]

B. Multiple Pumps alternative

The DEIS projects an annualized cost for the Multiple Pumps Alternative of $10.595 million per year.[42] However, this cost projection needs to be adjusted for a variety of ways in which the DEIS has either overforecasted costs or included unnecessary equipment (and thus costs) in its description of the scope of the Multiple Pumps Alternative.

1. Operating cost is overstated due to errors in calculating pumping energy requirements, and hence pumping energy cost - $111,000 per year

a. The DEIS assumes too high of a water diversion requirement

The DEIS assumes that the average amount of water diverted will be 1100 cfs over the 5-month period from May-September[43] (April water use does not require pumping, but can rely on gravity diversions). The 1100 cfs figure is overstated because of rounding; the DEIS itself says the actual number is 1078 cfs.[44] But even the 1078 cfs

[39] See the attached spreadsheet, "Cost per AAHU" tab, line 2, which calculates sturgeon-specific FPCI and HU values for the No Action and Bypass Channel Alternatives, the cost of the Bypass Channel Alternative including an adjustment for adaptive management, and the resultant cost per AAHU.
[40] Id., line 2a.
[41] Id., line 2b.
[42] DEIS, p. xxxii, Table ES-1, and p. 2-99.
[43] Appendix A, pdf p. 204 of 527.
[44] Ibid.

figure is incorrect; the 42-year average is below 1000 cfs, and the average for the most recent 11 years of data is 1044 cfs.[45]

b. The DEIS assumes unnecessarily lumpy pumping increments

The DEIS assumes that as water diversions by gravity drop, the amount of water needed to be pumped will grow by 275 cfs increments, reflecting the pumping capacity at each site. But each site will have three separate pumps (actually four in the DEIS, but the fourth one is a spare). So even if pumps have to be used in an all-or-nothing mode (which may not be true), the amount of pumping is still controllable to 92 cfs steps, rather than 275 cfs steps. That reduces the amount of pumping required by a considerable amount.

c. The DEIS assumes pumps are operated in an inefficient manner

The DEIS points out that when pumped water is being delivered to the main canal above the check structure called Burns Creek Overchute, tailwater effects will make it impossible to simultaneously divert water by gravity flow at Intake. But the converse is also true: when pumped water is being delivered below Burns Creek Overchute, it will be possible to simultaneously divert water at Intake.[46] Of the five proposed pump sites, two would deliver to the Main Canal above Burns Creek Overchute (although the site 2 delivery point is less than one mile above Burns Creek Overchute,[47] and thus could potentially be moved to solve this problem). The DEIS acknowledges that all three of the downstream pump sites could be operating at their full 825 cfs capacity without simultaneously impairing gravity diversions of up to 550 cfs at Intake. Thus it would certainly be possible to operate any one of the lower three sites without impairing gravity diversions at Intake. The DEIS incorrectly assumes that when only one pump site is being used, it would have to be the farthest downstream one. If Site 3 pumps were used before Site 4 or 5 pumps, pumping costs would be reduced because Site 3 requires less pumping energy per cfs pumped than sites 4 or 5.

[45] See the attached spreadsheet, “Historical diversions” tab.
[46] Appendix A, pdf p. 200 of 527.
[47] Ibid.

d. The DEIS does not address monthly variations in both hydrology and irrigation requirements

The DEIS models the level of pumping energy based on average diversion requirements across the full 5-month season and gravity diversion capability across the full 5-month season. The DEIS presents, but does not use, data on monthly gravity diversion capability. The Federal agencies have also previously provided monthly diversion data for 28 historical years. Thus data exists to allow the pumping requirement calculations to be done on a month-by-month basis, which is more accurate.

e. Altogether, the DEIS overestimates pumping loads by more than 28 percent

Correcting for the overstated average diversion requirements in the DEIS, the DEIS's failure to account for the presence of three pumps at each pumping site, and the DEIS's assumption that the most costly site will have to be used first (rather than third), and then modeling pumping requirements separately for each month, the overall average pumping requirement turns out to be 7.85 gwh per year, not the 10.1 gwh asserted in the DEIS.[48] The DEIS has overstated pumping energy requirements by at least 28 percent.[49] Based on the DEIS's forecasted cost of $500,000 per year for 10.1 gwh, the savings from the lower actual pumping requirements would be $0.111 million per year,[50] and pumping costs would be reduced to $389,000 per year.[51]

2. Capital cost is overstated due to piping length for pump site 3 - $0.568 million

[48] See the attached spreadsheet, "Flows with no dam, 5 pump sites" tab, Excel cell BC40.
[49] 10.1/7.853 = 1.286, for an overstatement of 28.6 percent. The "at least" is because the calculations do not account for the possibility of running individual pumps at less than 100 percent of their capacity.
[50] $500,000 x (10,100 – 7853)/10,100. See the attached spreadsheet, "Multiple Pump costs" tab, line 9.
[51] $500,000 - $111,000 = $389,000.

The DEIS proposes a 5600 feet long pipe to deliver water from pump site 3 to the Main Canal, using a convoluted route.[52] Eliminating the long east-west section along County Route 103 would cut the pipe length by about 2600 feet,[53] or almost 50%, thereby reducing its cost by $429,000.[54] Because the Multiple Pump Scenario includes an additional 32.46% contingency for discharge pipeline costs,[55] the reduction in the total DEIS cost for reducing the Site 3 piping length would be $429,000 x 1.3246 = $568,000.[56] This is just the reduction in costs for the pipe itself, and does not include additional savings in installation costs, which were not quantifiable from the data in the DEIS.

3. Capital cost is overstated due to piping length for pump sites 4 and 5 - $0.437 million

The DEIS proposes to reduce the cost of pumping sites 4 and 5 by having a common outlet structure to deliver their water to the Main Canal,[57] which seems reasonable. However, the proposed location of the outlet structure requires about 1400 linear feet of parallel piping from where the two outlet pipes reach each other to where they would reach the outlet structure.[58] Locating the outlet structure directly inland of pump site 4 would shorten that parallel pipe distance to about 400 feet,[59] thus savings a total of 2000 feet of piping (1000 for each pump site). It would also save the cost of an inverted siphon on lateral HH where it would need to pass under the outlet pipes,[60] which have not been quantified here. The capital cost savings would be $330,000.[61] Because the

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[52] Appendix A, pdf p. 228 of 527.
[53] Ibid.
[54] $100 per linear foot, per document BOR-0005749/50. $100/linear foot is a 2013 estimate for 54” diameter pipe, per Attachment 1 to Agency data response of 12/22/15. Scaling up linearly for 84” pipe proposed at Site 3, plus 6% for 2013-2016 inflation, yields $165 per linear foot for 84 inch diameter pipe. 2600 feet x $165/foot = $429,000.
[55] Appendix B, pdf p. 84 of 173.
[56] See the attached spreadsheet, “Multiple Pump costs” tab, line 1.
[57] According to the map in Appendix A, pdf p. 230 of 527.
[58] Appendix A, pdf p. 230 of 527.
[59] Appendix A, pdf p. 229 of 527.
[60] Appendix A, pdf pp. 229 and 316-317 of 527.
[61] $100 per linear foot, per document BOR-0005749/50. $100/linear foot is a 2013 estimate for 54” diameter pipe, per Attachment 1 to Agency data response of 12/22/15. Scaling up linearly for 84” pipe

Multiple Pump Scenario includes an additional 32.46% contingency for discharge pipeline costs,[62] the reduction in the total DEIS cost for reducing the Sites 4 and 5 piping length would be $330,000 x 1.3246 = $437,000.[63] This is just the reduction in costs for the pipe itself, and does not include additional savings in installation costs, which were not quantifiable from the data in the DEIS.

4. Capital and operating costs are overstated due to the inclusion of unnecessary backup equipment

a. Back-up pumps: $2.987 million of capital and $178,000 per year of OM&R costs

The DEIS includes capital costs for back-up pumps at all five sites, as protection against one of the three pumps at each site failing. However, if a pump fails at one site, backup pumping can be supplied from the other sites. Only if all five sites are already operating, and all three pumps at each site are already operating, would a pump failure be unreplaceable from increased pumping at another site.[64] Even then, diversions of 1283 cfs would still be possible using the 14 remaining pumps.

The DEIS provides daily diversion levels for only two years, 2000 and 2012, which were years with average diversions about 5 percent above average.[65] During those two years, diversions exceed 1283 cfs only 17 days in 2000 and 23 days in 2012.[66] During the days when diversions exceeded 1283 cfs, they did so by an average of 32 cfs

proposed at Site 3, plus 6% for 2013-2016 inflation, yields $165 per linear foot for 84 inch diameter pipe. 2000 feet x $165/foot = $330,000.

[62] Appendix B, pdf p. 84 of 173.

[63] See the attached spreadsheet, "Multiple Pump costs" tab, line 2.

[64] This ignores the possibility of two different pumps failing at the same time, which is presumably very unlikely (since the DEIS did not propose having two backup pumps at each site).

[65] Diversions in those two years averaged 1094 cfs and 1097 cfs respectively. Appendix A, pdf p. 205 of 527. The average diversion for the most recent 11 years of available data was 1044 cfs (for the total 42 years of available data, the average diversion was 985 cfs). See the attached spreadsheet, "Historical diversions" tab, Excel cells F347 and F345. 1097 is 53 more than 1044, or 5%.

[66] Appendix A, pdf pp. 472-474 and 478-480 of 527.

in 2000 and 56 cfs in 2012.[67] Thus, averaged across the entire irrigation season, the average diversion in excess of 1283 cfs was just 6 cfs.[68]

The average number of days when a pump outage would affect diversion capability with 2000 or 2012 diversion rates is 20 per year.[69] The chance that there would be a pump out of service in all 20 such days is clearly much less than 100 percent. The consequences if there **were** a pump out of service on all 20 such days per year would be an average reduction in water deliveries of 6 cfs, or less than 0.6 percent of the annual average deliveries in 2000 and 2012 of about 1100 cfs.[70]

Spending millions of dollars to mitigate a small chance of a 0.6% impact is clearly not cost-effective. By not installing backup pumps at each site, but instead relying on the not-in-use pumps at other sites to provide backup, the capital cost of the Multiple Pump Scenario can be reduced by $2.163 million.[71] Because the Multiple Pump Scenario includes an additional 38.1% contingency for pump station costs,[72] the reduction in the total DEIS cost for pump stations will be $2.163 million x 138.1% = $2.987 million.[73] In addition, annual levelized operation, maintenance and replacement costs of $178,000 per year will be avoided.[74]

b. Back-up diesel generators at all five sites (as protection against power failures) - $3.446 million of capital cost

The DEIS includes capital costs of $2.495 million for diesel generators to provide a backup source of electricity in the event of a power failure.[75] This is an even more extreme case of overbuilding. Reliability data is publicly available for the Glendive district of Montana-Dakota Utilities (MDU). It shows that for the last 7 years, 2009-15

67 Ibid.
68 (32*17 + 56*23)/(2*153) = 5.98.
69 Ibid.
70 Appendix A, pdf p. 205 of 527.
71 Appendix B, pdf p. 119 of 173. This is just the cost for the back-up pumps themselves, and does not include the cost savings for any reduction in building size and installation costs, which could be considerable.
72 Appendix B, pdf p. 84 of 173.
73 See the attached spreadsheet, “Multiple Pump costs” tab, line 3.
74 Appendix B, pdf p. 171 of 173, 25% (one pump out of four proposed at each site) times OM&R categories 11-14 and 16 costs of $713,000 per year.
75 Appendix B, pdf p. 115 of 173.

inclusive, the average customer has experienced 222 minutes per year of outages,[76] or 3.7 hours per year. That's less than one hour in 2000. The longest single outage during that entire period appears to be an outage lasting 11 hours on July 27 of 2015.[77] The **expected** consequences of not having backup generators would thus be 3.7 outage hours per 8760 (the number of hours in a year) x 153 days out of 365 (because outages outside the irrigation season would not affect pumping, and pumping would not be required in April) x .73 (because 27 percent of the time during the irrigation season no pumping would be happening)[78] x 459 cfs (the average pumping rate while pumping),[79] or less than 0.1 cfs on average.

Or consider the worst case situation, an 11 hour long outage that affected all five pump stations and occurred on a day when all 5 pump stations were in use. That's what the July 27, 2015 outage would have been if the Multiple Pumps alternative had been in effect then (and **if** the outage had affected all five pump sites). Diversions that day averaged 1310 cfs, so shutting off power for 11 hours would have reduced average diversions that day by 11/24 x 1310 = 600 cfs. Diversions on the following days were 1280-1310 cfs. By increasing them to 1374 cfs for the next 9 days, the entire shortfall on July 27 would have been replaced. Farmers would have received at most 46 percent less water than they expected, for one day only, but then 5-7 percent more on each of the next 9 days. It's hard to imagine the consequences of such a once-in-a-decade event merit spending millions on backup generators. According to the DEIS, the capital cost for the five proposed back-up generators is $2.495 million.[80] Because the Multiple Pump Scenario includes an additional 38.1% contingency for pump station costs,[81] the reduction in the total DEIS cost for pump stations will be $2.495 million x 138.1% = $3.446 million.[82]

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76 Data for the 2005-08 period shows an outage rate less than half as large as for 2009-15. For the last seven years, outage rates have been fairly flat, with no up or down trend.
77 2015 MDU Electric Reliability Report, available at http://www.psc.mt.gov/docs/ElectricReliabilityReports/2015ElectricReliabilityReports/default.asp.
78 Appendix A, pdf p. 205 of 527.
79 Ibid.
80 Appendix B, pdf p. 115 of 173.
81 Appendix B, pdf p. 84 of 173.
82 See the attached spreadsheet, "Multiple Pump costs" tab, line 4.

5. Reduced capital cost for lower adaptive management costs

The DEIS assumes that whatever construction costs are forecasted to be incurred have to be increased by one percent to account for adaptive management during construction.[83] Thus when capital costs are reduced, as described above, the DEIS's cost methodology would reduce annualized adaptive management costs by a further one percent. That reduction comes to $74,000.[84]

6. Reduced direct capital costs from shortened pipe lengths also reduce associated planning, engineering, design and construction management costs - $1.038 million

The excess direct capital costs in the DEIS estimate for the Multiple Pump alternative which are identified above (before contingency adders) come to $5.471 million.[85] The DEIS calculates additional costs for planning, engineering, design, and project management equal to 15 percent of the direct capital costs.[86] Thus, reducing direct capital costs by $5.471 million would, according to the DEIS, reduce the associated planning, engineering, design, and construction management costs $5.471 x 0.15 = $0.821 million.

The DEIS includes a 26.52 percent contingency factor for planning, engineering, design, and construction management costs for the Multiple Pump Alternative.[87] Thus the

[83] DEIS, p. 2-98. Also Appendix B, pdf p. 22 of 173 (making clear that the 1 percent is for adaptive management "during construction").
[84] See the attached spreadsheet, "Multiple Pump costs" tab, line 5.
[85] $0.429 million for reduced discharge pipe length for site 3, $0.330 million for reduced discharge pipe length for sites 4-5, $2.163 million for eliminating back-up pumps, $2.495 million for eliminating back-up generators, and $0.054 million for adaptive management during construction. See the attached spreadsheet, "Multiple Pump costs" tab, lines 1-5, "Direct cost adjustment" column.
[86] Appendix B, pdf pp. 12-13 of 173. Note that the actual planning, engineering, design, and construction management costs shown in the DEIS are $12.772 million for a construction contract of $84.277 million (Appendix B, pdf p. 84 of 173), which is 15.15 percent and not 15%. The apparent reason for the extra 0.15% is the 1 percent adder for adaptive management costs during construction (DEIS, p. 2-98). Those costs are not shown on the page cited here but their impact on planning, engineering, design, and construction management costs **is** included.
[87] Appendix B, pdf p. 84 of 173.

total cost reduction for planning, engineering, design, and construction management costs would be \$0.821 million x 1.2652 = \$1.038 million.[88]

7. Reduced investment costs due to reduced interest during construction - \$0.425 million

The DEIS estimates that the direct ("first") cost of the Multiple Pumps alternative, \$132.028 million,[89] would be increased by another \$6.557 million, or 4.966 percent, due to interest during construction.[90] The adjustments described above reduce the cost of the Multiple Pump alternative by \$8.551 million.[91] Thus they would also reduce the interest during construction by \$8.551 million x 4.966 percent, or \$425,000.[92]

8. Adjusted capital cost is lower by \$8.975 million, which corresponds to 6.476 percent, which corresponds to \$0.339 million per year on an annualized basis.

The total of the adjustments described above, including reduced interest during construction, comes to \$8.975 million.[93] That is 6.476 percent of the total investment cost of \$138.585 million reported in the DEIS.[94] The DEIS then calculates that the levelized average **annual** investment cost associated with an investment cost of \$138.585 million will be \$5.515 million, for a fixed charge rate of 3.98 percent.[95] The corresponding reduction in annual investment-related costs, based on the 6.476 percent adjustment identified above, will be 6.476 percent x \$5.515 million, or \$357,000 per year.

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[88] See the attached spreadsheet, "Multiple Pump costs" tab, line 6.
[89] Ibid.; also DEIS, p. xxxii, Table ES-1.
[90] DEIS, p. xxxii, Table ES-1.
[91] \$0.568 million for reduced discharge pipe length for site 3, \$0.437 million for reduced discharge pipe length for sites 4-5, \$2.987 million for eliminating back-up pumps, \$3.446 million for eliminating back-up generators, \$0.074 million for adaptive management during construction, and \$1.038 million for planning, engineering, design, and construction management costs. See the attached spreadsheet, "Multiple Pump costs" tab, line 12.
[92] See the attached spreadsheet, "Multiple Pump costs" tab, line 7.
[93] See the attached spreadsheet, "Multiple Pump costs" tab, line 8.
[94] DEIS, p. xxxii. 8.975/138.585 = .06476 = 6.476%.
[95] Ibid. 5.515/138.585 = .039795 = 3.98%. See also the attached spreadsheet, "Multiple Pump cost" tab, line 12.

Alternatively, the reduction can be calculated as $8.975 million x 3.98 percent, which is also $357,000 per year.[96]

9. Corrected annualized cost is $9.949 million per year

The DEIS reports a total annualized cost for the Multiple Pumps Alternative of $10.595 million per year.[97] The adjustments described above reduce that number by $0.646 million, based on reductions of $289,000 per year for electricity operating costs and pump OM&R,[98] and $357,000 per year for annualized capital cost savings.[99] The adjusted annualized cost for the Multiple Pumps Alternative is thus $9.949 million per year.[100]

10. Environmental benefits to sturgeon

The DEIS presents calculated Habitat Unit (HU) values for each Alternative, and the increase over the No Action Alternative that each other alternative would produce.[101] As discussed above (Section III.C) the DEIS numbers are basically meaningless, because they average sturgeon HU values together with HU values for 13 other species, including such non-threatened species as smallmouth bass.[102] The DEIS nowhere provides sturgeon-specific HU values. However, this shortcoming is easily overcome, since the DEIS does provide the equations and the data needed to calculate the sturgeon-specific HU for each alternative.[103] Using the data in the DEIS, the pallid sturgeon-specific fish passage connectivity indices (FPCI) are .0252 for the No Action Alternative,[104] 0.600 for the Bypass Channel Alternative,[105] and 1.000 for the Multiple Pumps Alternative.[106]

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[96] See the attached spreadsheet, "Multiple Pump costs" tab, line 13.
[97] DEIS, p. xxxii.
[98] See the attached spreadsheet, "Multiple Pump costs" tab, line 14.
[99] See the attached spreadsheet, "Multiple Pump costs" tab, line 13.
[100] See the attached spreadsheet, "Multiple Pump costs" tab, line 17.
[101] Appendix D, p. 16.
[102] Appendix D, pp. 4, 9, 14, 15.
[103] Appendix D, pp. 2, 10 (formulae underlying FPCI), 4 (habitat acres), 11-12 and 14-15 (data used in the FPCI formula. HU is then simply FPCI x habitat acres.
[104] [(5 + 2)/2]*1*.018 / 25 = .252; see Appendix D, pp. 11-12, 14-15 for data.
[105] [(2 + 4)/2]*5*1 / 25 = 0.600; ibid.

Note that the FPCI for the Bypass Channel Alternative, is 20 percent higher than the corresponding FPCI for that alternative in the 2015 Supplemental EA. In that document, the value for the Fl parameter was given as 3,[107] but in the DEIS it has been increased to 4.[108] The DEIS neither acknowledges nor explains this increase.

Multiplying the alternative-specific sturgeon FPCIs times the 12637 acres of pallid sturgeon habitat upstream of Intake Dam[109] gives the following sturgeon-specific HUs: 318 for the No Action Alternative, 7582 for the Bypass Channel Alternative, and 12,637 for the Multiple Pump Alternative.[110] The incremental HUs are then 7264 when going from No Action to Bypass, 12,319 when going from No Action to Multiple Pumps, and 5,055 when going from Bypass Channel Alternative to the Multiple Pump Alternative.[111]

V. Implications of the DEIS cost/benefit methodology with adjusted Multiple Pumps Alternative costs

The DEIS's cost/benefit methodology is based on choosing the alternative with the lowest cost per added AAHU, as compared to the AAHU with the No Action Alternative. The numbers in the DEIS clearly indicate that the Multiple Pumps Alternative is better for pallid sturgeon than the Bypass Channel Alternative, by a margin of 5055 sturgeon HUs.[112] The problem with the Multiple Pumps Alternative, according to the DEIS methodology, is not even that it costs too much. The DEIS calculates costs of $727/AAHU for the Bypass Channel Alternative and $962/AAHU for the Multiple Pump

[106] [(5 + 5)/2] *5 *1 / 25 = 1.000; ibid. Note that the value on p. 12 in Table 1-8 is shown as 2, but this is a typo and it should be 5. The DEIS does not show the actual FPCI calculations, but it appears they used 5, as they should have.
[107] Supplemental EA, Appendix E, Attachment 1, "Fish Passage Benefits Analysis," p. 16, Table 6.
[108] Appendix D, p. 11, Table 1-7.
[109] Appendix D, p. 4, Table 1-1, last line.
[110] See the attached spreadsheet, "Costs per AAHU" tab.
[111] Ibid.
[112] Ibid, line 3. Even when 13 species other than sturgeon are considered, the DEIS concludes that the Multiple Pump Alternative is better than the Bypass Channel Alternative, by a margin of 3895 HUs. Appendix D, p. 22, Table 2-5.

Alternative, and concludes that both of those alternatives are cost-effective.[113] The adjusted costs discussed above, and the use of sturgeon-specific HUs, narrow the gap between the Bypass Channel and Multiple Pump Alternatives considerably, to $724/sturgeon AAHU for the Bypass Channel Alternative and $808/sturgeon AAHU for the Multiple Pumps with the adjustments above.[114] Applying the 2015 EA FPCI scores results in a cost of $876/sturgeon AAHU for the Bypass Channel Alternative[115] – substantially higher than the DEIS estimates, and higher than the Multiple Pumps Alternative.[116] As noted above, the cost/sturgeon AAHU may be as high as $1,110 if uncertainty of the fish passage benefit is included in the calculation.[117] Again, the failure of the agencies to incorporate uncertainty into their analysis completely reverses the conclusions regarding the cost effectiveness of their preferred alternative.[118]

VI. Alternative approaches – additional overpricing of the multiple pumps alternative

The Agencies have emphasized costs as a determining factor for preference in comparing one alternative against the rest (as opposed to efficiency or effectiveness). In addition, the Multiple Pumps Alternative evaluated in the DEIS is designed to ensure that the irrigation district receives even more water than it is guaranteed to receive now, and the agencies never consider the many ways that the costs could be reduced and irrigation water delivered through alternative mechanisms. Therefore, it is appropriate to question why they did not address a other mechanisms that reduced overall costs while maintaining high probabilities of fish passage. Additional avenues of cost savings not analyzed by the Agencies in the Multiple Pumps Alternative are listed below. There are multiple configurations that the Agencies failed to analyze.

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[113] Appendix D, p. 20, Table 2-3. Note that the DEIS uses costs that do not have any of the adjustments discussed above, and uses HU values for 14 total species, of which pallid sturgeon is just one.
[114] See the attached spreadsheet, “Costs per AAHU” tab, lines 2 and 3.
[115] See the attached spreadsheet, “Costs per AAHU” tab, line 2a.
[116] Ibid., lines 2a and 3.
[117] Ibid., line 2b.
[118] Ibid., lines 2-2b versus lines 3-4.

For example, using three pump sites instead of the five in the Multiple Pumps Alternative, which was not considered or analyzed in the DEIS, could provide 100 percent of the sturgeon passage benefits of the Multiple Pump alternative, and on average allow 96 percent of the historical level of water diversion rights, at only 75-80 percent of the cost.[119] Using only three pump sites would have a 10.4 percent lower cost per unit of sturgeon habitat improvement than any alternative considered in the DEIS,[120] and a quantity of habitat improvement equal to the highest level of any alternative considered in the DEIS. It would also allow the irrigators to divert their actual historical average annual diversions 99 percent of the time.[121] Thus, using fewer pumps than analyzed in the DEIS, Multiple Pumps Alternative would be much better for pallid sturgeon than the DEIS-endorsed Bypass Channel Alternative, and not nearly as bad for farmers as the Bypass Channel Alternative would be for sturgeon (when compared to using multiple pumps).

Adding the most cost-effective of the measures from the Multiple Pumps with Conservation Measures Alternative, combined with using fewer pumps, would make the Multiple Pumps Alternative even better at meeting the water needs of farmers (section VII.A). Acknowledging the existing trend of conversion from flood irrigation to sprinklers would further reduce the impact on farmers (section VII.B). Additional options could also reduce the impact on farmers from an alternative where pumping with fewer sites could not produce the entire water right (sections VII.C-E).

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[119] Per section VI.B, below, and the attached spreadsheet, “Three Pump Sites cost” tab, line 23, using three pump sites instead of five would have an annualized cost of $7.985 million. Per the DEIS, the Multiple Pumps Alternative would have an annualized cost of $10.595 million. Per section IV.B, below, and the attached spreadsheet, that cost could be lowered to $9.949 million. $7.985/$10.595 = .754 = 75.4%. $7.985/$9.949 = .803 = 80.3%.

[120] $648 per annual average HU, versus $724 (and possibly as much as $1,110) for the Bypass Channel Alternative. See the attached spreadsheet, “Cost per AAHU” tab, lines 2-2b and 4. 648/724 = .896, or a 10.4% reduction.

[121] Actual diversions average only about ¾ of diversion rights, so an alternative that provides less than 100 percent of diversion rights will provide a higher percentage of diversion needs than of diversion rights. Over a 42 year period for which data is available, diversions have averaged 985 cfs, which is only 72% of 1374 cfs (attached spreadsheet, “Historical diversions” tab). Even the average diversion over the 11 years since 2003 for which data is available, 1045 cfs (ibid.), is only 76% of 1374 cfs. The DEIS assumes an average diversion of 1100 cfs (Appendix A, pdf p. 204 of 527; that is above the historical average), but even that is just 80 percent of 1374 cfs. The attached spreadsheet, “Flows with no dam, 3 pump sites” tab, Excel cells A32 (99 percent exceedance line) and BG32 (1047 cfs diversion feasible at that exceedance level) shows that using three pump sites could divert more than 1045 cfs 99 percent of the time.

A. Pump sites 1-2 result in high costs for small additional water diversions; savings from omitting sites 1-2

In the Multiple Pumps Alternative, the number of pumps and pump stations was chosen so as to assure potential diversions of 1374 cfs in every hour of every year, without regard to hydrological conditions. That is actually somewhat more diversion capacity than currently exists, since the current diversion right of 1374 cfs is contingent on river flows above 3000 cfs at Intake,[122] which 42 years of irrigation-season gauge data shows fails to happen 0.68 percent of the time (2.92% of the time in August).[123] So times already currently exist where the full 1374 cfs cannot be legally withdrawn.

The DEIS also shows that gravity diversions of at least 167 cfs would be possible at all times even with the Intake Dam removed (or 207 cfs if periods when the Yellowstone River flow is below 3000 cfs are excluded, since at those times diversions would not be allowed even if the Intake Dam were present).[124] However, making those gravity diversions would not be possible if pumping were occurring at pump sites 1 or 2, the two sites closest to Intake. Thus, in order to pump more than 825 cfs (the amount that could be pumped from sites 3-5), gravity diversions would have to cease. The result is that the 550 cfs that could be pumped from sites 1-2 would come at the price of a reduction of at least 167-207 cfs in gravity diversions. Hence, the net increase in possible diversions due to the inclusion of sites 1 and 2 in the Multiple Pumps Alternative is, at most, 525 minus 167-207 cfs, or 318-358 cfs.

The DEIS also shows that pump sites 1-2 would be expected to be needed to operate only 3 percent of the time.[125] Given that very low capacity factor one may ask, what happens if Pump Sites 1 and 2 are not developed? Farmers would receive somewhat

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[122] Appendix A, pdf pp. 352-353 of 527.
[123] Based on 1967-2008 daily Sydney gauge flows on May-September days at or below 1620 cfs, which implies that even if Intake diversions had been the maximum 1374 cfs, with no return flows between Intake and Sydney, Intake flows would have had to be no more than 2994 cfs. See the attached spreadsheet, "Sydney gauge data" tab, Excel cells F11 – I22. Note that the DEIS assumes no return flows in at least the first 18.7 river miles below Intake. Appendix A, pdf p. 194 of 527.
[124] See the attached spreadsheet, "Flows with no dam, 5 pump sites" tab, Excel column R and the note below in columns Q-U.
[125] Appendix B, pdf p. 197 of 527.

less water, which would theoretically affect crop yields and revenues (a cost to them). But on the other hand, they would lower operating costs to pay, which would be a benefit to them. The discussion below addresses both the cost savings from building fewer pumps, and the water diversion and delivery implications of doing so by using only three pump sites (3-5 in the DEIS's Multiple Pumps Alternative).

The analysis below does not answer the question of whether farmers would be better served by using three pump sites (lower cost, less water) or a Multiple Pump Alternative (higher cost, more water). Nor does it answer the threshold standard set in the DEIS, that any alternative selected for development should be "sustainable."

B Effects of Using only Three Pump Sites

1. Consequences for sturgeon

Using only three pump sites would look much like the Multiple Pumps Alternative in the DEIS, but without development of pump sites 1 and 2. Because it would also remove the existing Intake Dam, its fish passage effects would be the same as those of the other no-weir alternatives. It would produce 12,319 incremental HUs for sturgeon, relative to the No Action Alternative.[126] That is some 5055 HUs (70 percent) more than the increase of 7,264 sturgeon HUs produced when going from the No Action Alternative to the Bypass Channel Alternative.[127]

2. Consequences for farmers[128]

Because it would never pump water into the Main Canal above the Burns Creek Overchute, using three pump sites would allow for simultaneous pumping and gravity diversions in all hours. However, it would not be able to divert 1374 cfs in as many hours.

[126] Section V.B, above. See also the attached spreadsheet, "Cost per AAHU" tab.
[127] Ibid.
[128] All numerical results in this subsection are based on DEIS hydrology data from Appendix A, pdf p. 197 of 527, and on annual diversion data for 42 years and monthly diversion data for 28 years, all supplied by the Agencies in various data responses to Defenders of Wildlife and NRDC. All of the data and calculations from the data not footnoted below are shown in the attached spreadsheet, in the "Flow with no dam, 3 pump sites" tab.

The Bypass Channel Alternative would allow diversions of 1374 cfs in about 98.6 percent of all hours,[129] but would produce only 7264/12319 = 59% as many incremental sturgeon HUs as a no-weir alternative.[130] Conversely, using three pump sites would produce the maximum level of incremental sturgeon HUs, but would allow diversion of 1374 cfs only 68 percent of the time.[131] It would, however, allow average diversions **above** the historical average monthly diversion in the months of May, June, and September, and under 97% of hydrological conditions in July and 70+ percent in August.[132] Even when feasible diversions did not reach 1374 cfs, they would exceed 1100 cfs 97% of the time.[133] 1100 cfs is more than the historical average monthly and annual diversions that have actually occurred at Intake.[134] The expected average annual diversion, taking into account monthly diversion requirements that are well below 1374 cfs, would be 1140 cfs, or 346,000 acre-feet.[135] That is 9.1 percent above the average annual diversion over the last 11 years of 317,000 acre-feet.[136] The expected **feasible** average annual diversion using three pump sites would be 1324 cfs, or over 400,000 acre-feet for the May-September season.[137] 1324 cfs is over 96 percent of the maximum

[129] Based on the current 1374 cfs diversion right requiring Yellowstone River flows at Intake of 3000 cfs and above, per Appendix A, pp. 352-3. Interpolated between 98 and 99 percent per data in Appendix A, pdf p. 328 of 527.

[130] See analysis above, and in the attached spreadsheet, “Costs per AAHU” tab.

[131] Appendix A, pdf p. 322 of 527. The 68% figure is the percentage of the time that gravity diversions would be above 549 cfs, which when combined with up to 825 cfs of pumping from three sites would allow total diversions of 1374 cfs. The 68% figure can also be interpolated from Appendix A, pdf p. 197 of 527, showing gravity diversions of 527 cfs as feasible 70% of the time and diversions of 620 cfs as feasible 60% of the time.

[132] Attached spreadsheet, “Flows with no dam, 3 pump sites” tab. Excel cells V7-Z7 show the historical average monthly diversions, based on 28 years of data from the “Historical diversions” tab, Excel cells F337-F341, and scaled up 9% to reflect annual diversions in the most recent 11 years (“Historical diversions tab”, Excel cell F347) which were higher than those in the 28 years with monthly data (Historical diversions” tab, Excel cell F342). The percent of the time 825 cfs could meet average monthly pumping diversions is determined by looking at the cell in columns V-Z where the required pumping exceeds 825 cfs, and reading across to the corresponding exceedance level in Column A.

[133] Appendix A, pdf pp. 204-205, showing only pump sites 3-5 are needed 97 percent of the time to achieve 1100 cfs of total diversion. The 97 percent figure can also be interpolated from the 95% and 98% lines on Appendix B, pp. 197 or 329, showing that gravity diversions of 275 cfs will be achievable 97% of the time. 275 cfs of gravity diversion, when combined with 825 cfs of pumping from three sites, produces a total diversion of 1100 cfs. See also the attached spreadsheet, “Flows with no dam, 3 pump sites” tab, rightmost column (showing pumping capacity at different gravity diversion exceedance levels) and the leftmost column (showing the exceedance levels for each line of data). For exceedance levels up to 97 percent in the leftmost column, potential diversions in the rightmost column exceed 1100 cfs.

[134] See the attached spreadsheet, “Historical diversions” tab, Excel cells F337-347.

[135] See the attached spreadsheet, , “Flows with no dam, 3 pump sites” tab, Excel cells BE40 and BE41.

[136] Ibid., Excel cells BE43 and BK43.

[137] Ibid., Excel cells BG40 and BI40.

diversion of 1374 cfs under the current water right.[138] Thus, though the Agencies did not analyze daily demand with actual hydrology, it is likely that irrigators would get most of the water they need most of the days they need it.

C. Costs using only three pump sites

The only reason to choose three pump sites instead of five is cost. Since the DEIS puts a premium on cost in choosing between alternatives, the cost benefits of the using just three pump sites would be significant if the ultimate decision is based on the logic of the DEIS.

Using fewer pump sites would have substantially lower capital **and** operating costs for any Multiple Pumps Alternative. The cost estimates below are based on the data supplied in the DEIS.

1. Capital costs

The DEIS shows a total capital cost for the Multiple Pumps Alternative of $132.028 million.[139] This cost is broken down in the DEIS Appendices into land, construction, planning/engineering/design, and construction management components, as well as contingency adders for each of those components.[140] The discussion below quantifies the savings from each of these components using three pump sites as compared to the Multiple Pumps Alternative.

a. Land - $0.222 million

The DEIS forecasts land acquisition costs of $443,000, or $554,000 when contingency costs are included.[141] With three pump sites instead of five, those costs could be reduced by 40 percent, or a total of $222,000.[142]

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[138] 1324/1374 = .963 = 96.3%.
[139] DEIS, p. xxxii, Table ES-1. Also p. 2-99, and Appendix B, pdf p. 84 of 173.
[140] Appendix B, pdf p. 84 of 173.
[141] Ibid.

b. Construction - $31.524 million

The DEIS forecasts construction contract costs of $84.277 million before contingency.[143] It then disaggregates the forecasted construction contract cost by site, with the forecasted costs for Sites 1 and 2 equal to $10.484 million and $12.561 million, respectively, or a total of $23.044 million.[144] The DEIS applies a contingency rate of 36.8 percent to its construction estimate,[145] which means the $23.044 million savings have to be increased by 36.8 percent, to $31.524 million.[146]

c. Reduced piping length for sites 3-5 discharge pipes - $1.005 million

As described above in the discussion of the Multiple Pumps Alternative, the DEIS chooses routes for the discharge pipes for sites 3-5 which are inordinately long. Alternate routes would save piping costs estimated to be at least $1.005 million.[147] There would be additional capital cost savings for reduced installation costs, which are not quantified here due to lack of data in the DEIS.

d. Reduced costs associated with backup pumps - $0

In the discussion above of the Multiple Pump Alternative, backup pumps are identified as an unnecessary expense, since with 15 pumps at five different sites, there will be very few hours when all 15 pumps will need to be in service. Thus, pump outages can be mitigated by using one of the other 14 pumps. If only three pump sites are used, there would be only nine pumps, and they would be much more likely to all be in service

[142] See attached spreadsheet, “Three Pump Sites cost” tab, line 1.
[143] Appendix B, pdf p. 84 of 173.
[144] Appendix B, pdf p. 157 of 173.
[145] Appendix B, pdf p. 84 of 173.
[146] See attached spreadsheet, “Three Pump Sites cost” tab, line 2.
[147] See section V.B, above. The $1.005 million consists of $0.429 million of direct costs and $0.139 million of contingency at Site 3, and $0.330 million of direct costs plus $0.107 million of contingency at Sites 4-5. See also the attached spreadsheet, “Three Pump Sites cost” tab, lines 3-4.

at any given time.[148] Thus if only three pump sites are used, a backup pump may be reasonable at each site.

e. Reduced cost associated with backup generators - $2.666 million

The analysis of the Multiple Pump Alternative, above, quantified a capital cost savings of $3.446 million from not installing backup generators at each site. The basis for forgoing backup generation is the infrequency of power failures, coupled with their short duration, as discussed above. The same logic applies at fewer pump sites.[149] However, $0.780 million of the savings associated with not having backup generators at sites 1 and 2 was already counted above as part of the construction cost savings.[150] The additional capital cost savings for not installing back-up generators at sites 3-5 would thus be $2.666 million.[151]

f. Adaptive management - $0.354 million

The DEIS adds 1 percent to the construction costs of each alternative for adaptive management costs during construction.[152] Thus, by the logic of the DEIS, the cost savings identified above would also reduce the associated adaptive management costs if there were fewer pump sites. The direct cost savings identified above are $25.905 million,[153] or

[148] Based on historical average August diversions and DEIS hydrological data on gravity diversion exceedance rates, in August all nine pumps would need to operate 40% of the time. See attached spreadsheet, "Flows with no dam, 3 pump sites" tab, Excel cells A23 (showing the 60 percent exceedance line) and AU23 (showing this is the highest exceedance level at which only 8 pumps would need to be on).
[149] See the attached spreadsheet, "Three Pump Sites cost" tab, line 6.
[150] $0.570 million for back-up generators at sites 1 and 2 (Appendix B, pdf p. 115 of 173, plus 36.8% for the contingency associated above with construction costs (Appendix B, pdf p. 84 of 173), for a total of $0.780 million. See also the attached spreadsheet, "Three Pump Sites cost" tab, line 7.
[151] $3.446 million savings from having no back-up generators, minus $0.780 million already counted for Sites 1-2. The direct savings at sites 3-5, before contingency, would be $1.925 million (Appendix B, pdf p. 115 of 173). See also the attached spreadsheet, "Three Pump Sites cost" tab, lines 6-7.
[152] DEIS, p. 2-98. Also Appendix B, pdf p. 22 of 173.
[153] $0.177 million for land, $23.044 million for construction, $0.759 million for shorter discharge pipes at sites 3-5, and $1.925 million for eliminating back-up generators at sites 3-5. See also the attached spreadsheet, "Three Pump Sites cost" tab, lines 1-7, "Direct cost adjustment" column.

$35.417 million including contingency.[154] The associated reduction in adaptive management costs, by the logic of the DEIS, would be one percent of that, or $0.259 million directly and $0.354 million including contingency.[155]

g. Planning, engineering, design, and construction management - $4.965 million

The DEIS calculates additional direct costs for planning, engineering, design, and project management equal to 15 percent of the direct capital costs.[156] The direct costs identified above are $26.164 million.[157] Fifteen percent of that would be $3.925 million.[158] In addition, the DEIS associates 26.52% contingency with planning, engineering, design, and project management costs.[159] So the total savings in planning, engineering, design, and project management costs for only three pump sites would be $3.925 million times 1.2652 = $4.965 million.[160]

h. Interest during construction - $3.318 million

Using only three pump sites would reduce interest during construction two different ways. First, since construction costs would be lower, the interest on them would be lower. The total cost savings identified above are $40.737 million,[161] which is 30.85

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[154] $0.222 million for land, $31.524 million for construction, $1.005 million for shorter discharge pipes at sites 3-5, and $2.666 million for eliminating back-up generators at sites 3-5. See also the attached spreadsheet, “Three Pump Sites cost” tab, lines 1-7, “Total cost adjustment” column.
[155] See the attached spreadsheet, “Three Pump Sites cost” tab, line 8.
[156] Appendix B, pdf pp. 12-13 of 173.
[157] $0.177 million for land, $23.044 million for construction, $0.759 million for shorter discharge pipes at sites 3-5, $1.925 million for eliminating back-up generators at sites 3-5, and $0.259 million for associated adaptive management. See also the attached spreadsheet, “Three Pump Sites cost” tab, lines 1-8, “Direct cost adjustment” column.
[158] See the attached spreadsheet, “Three Pump Sites cost” tab, line 9.
[159] Appendix B, pdf p. 84 of 173, lines 13-14.
[160] See the attached spreadsheet, “Three Pump Sites cost” tab, line 9.
[161] $0.222 million for land, $31.524 million for construction, $1.005 million for shorter discharge pipes at sites 3-5, $2.666 million for eliminating back-up generators at sites 3-5, $0.354 million for adaptive management during construction, and $4.965 million for reduced planning, engineering, design, and project management costs. See also the attached spreadsheet, “Three Pump Sites cost” tab, lines 1-9, “Total cost adjustment” column.

percent[162] of the DEIS-estimated $132.028 million total first cost[163] of the Multiple Pump Alternative. Thus, the $6.557 million interest cost shown in the DEIS for the Multiple Pump Alternative[164] could be reduced by 30.85%, a reduction of $2.023 million,[165] to $4.534 million.

Second, because of the smaller scope of the Alternative, it could be built more quickly than the Multiple Pumps Alternative. The DEIS estimates a 42-month construction period for the Multiple Pumps Alternative, with staggered construction of at the five pump sites.[166] Based on the DEIS's own schedule, eliminating two pump sites would shorten the construction period by one year, to 30 months.[167] Thus the interest during construction would be at least 12/42, or 28.6 percent[168] less. That would lower the $4.534 million in interest costs associated with a smaller project by a further $1.295 million.[169]

The total reduction in interest during construction would be $2.023 million plus $1.295 million, or $3.318 million.

2. Annualized capital costs reduction for reduction in pump sites - $1.702 million

The total of all the construction cost adjustments identified above for reducing pump sites comes to $42.760 million.[170] That is 30.85 percent of the total investment cost of $138.585 million reported in the DEIS.[171] The DEIS then calculates that the levelized average **annual** investment cost associated with an investment cost of $138.585 million will be $5.515 million.[172] The corresponding reduction in annual investment-related costs,

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[162] $40.737/$132.028 = .30855 = 30.855%.
[163] DEIS, p. 2-99, table 2-26.
[164] Ibid.
[165] See the attached spreadsheet, "Three Pump Sites cost" tab, line 10.
[166] DEIS, p. 2-99, table 2-26.
[167] Appendix B, pdf p. 50 of 173, lines 64-66.
[168] 12/42 = .286 = 28.6%.
[169] See the attached spreadsheet, "Three Pump Sites cost" tab, line 11.
[170] See the attached spreadsheet, "Three Pump Sites cost" tab, line 12.
[171] DEIS, p. xxxii and 2-99. $42.76/$138.585 = .30854 = 30.85%.
[172] Ibid.

based on the 30.85 percent adjustment identified above, will be 30.85 percent x $5.515 million, or $1,702,000 per year.[173]

3. OM&R cost reductions - $909,000 per year

The OM&R costs for the Multiple Pumps Alternative, which represent over half of its total costs, are summarized on a single page of the DEIS.[174] They are divided into 30 categories, some 18 of which would be less expensive with three pump sites instead of the five pump sites in the Multiple Pumps Alternative. Specific adjustments are summarized below.

a. Costs that would be reduced proportionally to the number of sites - $583,000 per year

Most of the OM&R cost savings for reducing the number of pump sites come from the 40 percent reduction in the number of pump sites, and are proportional to that reduction. Cost items 11-19, and 21 are pump-related costs that would be reduced 40 percent. Cost items 23-25 and 27 are fish screen and trash rack costs that would also be reduced 40 percent, as would item 28, bank stabilization. The DEIS calculates annualized costs for each of these cost items.[175] A forty percent reduction would reduce the OM&R cost by a total of $583,000 per year.[176]

b. Power cost reductions - $139,000 per year

The DEIS estimates that annualized power costs would be $500,000 per year for 10,100 Mwh per year of pumping energy.[177] The attached spreadsheets show that pumping requirement would be reduced to 7296 Mwh, based on the monthly pattern of

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[173] See the attached spreadsheet, "Three Pump Sites cost" tab, line 19.
[174] Appendix B, pdf p. 171 of 173.
[175] Ibid.
[176] Annualized cost reductions of $188K for item 11, $40K for item 12, $24K for item 13, $15K for item 14, $2K for item 15, $19K for item 16, $2K for item 17, $96K for item 18, $26K for item 19, $4K for item 21, $8K for item 23, $75K for item 24, $60K for item 25, $19K for item 27, and $5K for item 28.
[177] Ibid. (item 20)

diversions, monthly Yellowstone River flow probabilities and associated gravity diversion capability, operating pump sites in economic order, and turning on pumps at each pump site individually as needed.[178] The resultant power costs would be only 7296/10100 of the $500,000 per year in the DEIS, or $361,000 per year, for a savings of $139,000 per year.[179]

c. Reduced feeder canal maintenance - $120,000 per year

Using three pump sites would eliminate two of the five feeder canals required by the Multiple Pumps Alternative. However, because the proposed feeder canals are of different lengths,[180] and because maintenance costs might be assumed proportional to the length of the feeder canals and not the number of canals, the savings might be less than 40 percent. However, that is not what the DEIS assumed. The DEIS assumes each feeder canal will have the same annual maintenance cost, $60,000.[181] Thus, based on the DEIS, a using three pump sites would save $120,000 per year in feeder canal maintenance costs.[182]

d. Reduced passage and entrainment monitoring - $67,000 per year

The DEIS estimates that annual costs to monitor fish passage and possible entrainment are currently $400,000 per year, which corresponds to an annualized cost over 50 years of $111,000 per year.[183] It then indicates that it expects those annualized costs to rise to $278,000 per year when entrainment monitoring costs at five pump stations are added in the Multiple Pumps Alternative.[184] Accepting the DEIS's numbers,

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[178] See the discussion above in section V.B regarding pumping energy as calculated in the DEIS. See also the attached spreadsheet, "Flows with no dam, 3 pump sites" tab, Excel cell BC40.
[179] See the attached spreadsheet, "Three Pump Sites cost" tab, line 13.
[180] Appendix A, pdf p. 209 of 527.
[181] Appendix B, pdf p. 171 of 173, cost item 26.
[182] See the attached spreadsheet, "Three Pump Sites cost" tab, line 15.
[183] Appendix B, pdf p. 163 of 173 (No Action Alternative), cost item 14.
[184] Appendix B, pdf p. 171 of 173, cost item 30.

using three pump sites would save 40 percent of the $167,000 per year increase for pump site monitoring, or $67,000 per year.[185]

4. Total annualized cost savings using three pump sites

The annualized cost savings identified above are $1.702 million associated with capital cost reductions, and $0.909 million associated with OM&R.[186] Thus the total annualized cost savings using three pump sites, as compared to the Multiple Pump Alternative, would be $2.610 million.[187]

5. Total annualized cost of using three pump sites

The DEIS quantifies the annualized cost of the Multiple Pump Alternative as $10.595 million. Reducing that by $2.610 million results in an annualized cost using three pump sites of $7.985 million.[188]

D. Cost-effectiveness of a using three pump sites

As described above, the total annualized cost of using three pump sites would be $7.985 million per year. Its benefits for pallid sturgeon would be the same as for the Multiple Pumps Alternative, some 12,319 sturgeon HUs more than the No Action Alternative and some 5,055 sturgeon HUs more than the Bypass Channel Alternative.[189] Thus using three pump sites instead of five would have a total cost of $648 per AAHU.[190] Using three pump sites instead of five would have an incremental cost for improving on the Bypass Channel Alternative of $540 per HU.[191] Since both its cost relative to the No

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[185] See the attached spreadsheet, “Three Pump Sites cost” tab, line 16.
[186] See the attached spreadsheet, “Three Pump Sites cost” tab, lines 19-20.
[187] See the attached spreadsheet, “Three Pump Sites cost” tab, line 21.
[188] See the attached spreadsheet, “Three Pump Sites cost” tab, line 23.
[189] See the attached spreadsheet, “Cost per AAHU” tab, line 4.
[190] $7.985 million / 12,319 sturgeon HU = $648/HU. See the attached spreadsheet, “Cost per AAHU” tab, line 4.
[191] $7.985 million annual cost for the using three pump sites; $5.256 million adjusted annual cost for the Bypass Channel Alternative; 5055 more HUs with using three pump sites than with the Bypass Channel

Action Alternative and its incremental cost relative to the Bypass Channel Alternative would be lower than the Bypass Channel Alternative's cost of $724-$1,110 per sturgeon HU,[192] using three pump sites instead of five would be superior to the Bypass Channel Alternative **using the DEIS's own methodology**.

VII. Further improvements with three pump sites

Unlike all of the alternatives considered feasible in the DEIS, reducing the number of pump sites would not always allow diversion of 1374 cfs.[193] Thus there would be some times when it would result in less water flowing to farms than under the other alternatives. However, there are ways to mitigate the resultant shortfalls that have already been identified in the DEIS. The DEIS analyzes several water conservation measures. It finds costs for most of them which, if accurate, mean they are more costly then simply installing and operating pumps, as described in the Multiple Pump Alternative. However, as described below, there are at least five measures that could be used to reduce the impact to farmers of reducing the number of pump sites.

Note that these are all measures to benefit farmers. None of them would do anything for sturgeon. Thus, to the extent each of these would increase the cost of the Multiple Pumps Alternative, it would increase the cost per sturgeon HU, and thus lower its cost-effectiveness as computed by the DEIS. They are included here only to illustrate ways in which the impact on water availability to farmers could be reduced if so desired.

A. Flow measurement devices

The irrigation system that currently exists lacks flow measurements at many locations. Failure to measure means overuse, whether accidental or intentional, cannot be

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Alternative. ($7.985 million - $5.256 million)/5055 HUs = $2.729 million/5055 HUs = $540/HU. See the attached spreadsheet, "Cost per AAHU" tab, lines 2 and 4.

192 See the attached spreadsheet, "Cost per AAHU" tab, lines 2-2b.

193 The DEIS considers a Conservation Measures alternative which results in diversions less than 1374 cfs in many hours, which the DEIS rejects as both costly and infeasible. DEIS, pp. 2-97 (infeasible – fails to meet project purposes), 2-99 (costs more than double the cost of the next-most-expensive alternative, with no additional benefits to fish).

detected, nor can inefficient use. The DEIS identifies flow measurement device installation at 120 locations as a way to provide more data about how much water is being used in the irrigation system, where, and by whom.[194] The result will be expected changes in behavior that could reduce water use by 3 percent,[195] thereby reducing water diversions by an average of 31 cfs,[196] on average, at a capital cost of $1.301 million.[197] That's a capital cost of $42,000 per cfs.[198] Increased water diversion through adding pumps, when going from three pump sites to five, has a cost equivalent to a capital cost of $85,000 per cfs added.[199] Thus, adding flow measurement devices would appear to be cost-effective when compared to the cost of adding water deliverability through additional pump stations.

B. Sprinkler conversions

The DEIS estimates that sprinkler conversions on 5000 acres could save 62 cfs of water, while costing $19.28 million, for a capital cost of saved water of over $300,000 per cfs saved.[200] Increased water diversion through adding pumps, when going from three pump sites to five, has a cost equivalent to a capital cost of only $85,000 per cfs added.[201] Thus, according to the data in the DEIS, sprinkler conversions are not cost-effective as compared to additional pumping.

On the other hand, sprinkler conversions clearly are cost-effective under some conditions, as shown by the fact that they have been happening in the LYP. According to the DEIS, sprinkler-irrigated land has gone from about 5000 acres in 2009[202] to almost

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[194] Appendix A, pdf p. 360 of 527.
[195] Appendix A, pdf p. 393 of 527.
[196] Three percent based on a 2009 report cited in DEIS, with no subsequent analysis done for the DEIS (Appendix A, pdf p. 393 of 527). The one paragraph on pp. 419-420 of Appendix A contains no actual data. Note that these savings could include savings from reduced spill and reduced unneeded diversions from the Main Canal to laterals; they would not necessarily affect on-farm deliveries or usage at all. Average diversions of 1045 cfs (attached spreadsheet, "Historical diversions" tab, Excel cell F347) x 3% = 31.35 cfs.
[197] Appendix B, pdf p. 94 of 173, $1.133 million (line 14), plus planning, engineering, design, and construction management costs of 126.52% of 15% of $0.887 million.
[198] $1.301 million / 31 cfs = .04197 million/cfs.
[199] See the attached spreadsheet, "Cost for Pumping Capability" tab, rightmost column.
[200] $19.28 million / 62 = $0.311 million/cfs.
[201] See the attached spreadsheet, "Cost for Pumping Capability" tab, rightmost column.
[202] 9 percent of the irrigated acreage in 2009, per Appendix A, pdf p. 394 of 527. 9% x 55,000 acres = 4950 acres.

8000 acres currently,[203] an increase of about 3000 acres in just 7 years.[204] That is 60 percent of the amount of sprinkler conversions that DEIS finds uneconomic.[205] Clearly there are other reasons (increased efficiency, increased crop yields, reduced costs for managing on-farm irrigation, etc.) why farmers have converted to sprinklers. There is no reason to expect these reasons to cease in the future. To the extent using three pump sites instead of five increases the uncertainty of water supply, even slightly, it would further improve the economics of converting to sprinkler irrigation. Increased sprinkler conversions will reduce the amount of diversions called for by farmers, thus reducing the cost of operating with three pump sites, as sprinkler conversions continue into the future. Increased sprinkler conversions will also reduce the frequency of hours when farmers desire greater diversions than are feasible with just three pump sites.

C. Increased use of relift capability

The LYP currently has pump stations within its system that take water that would otherwise end up unused on farms, and “relift” it back to the canal system for irrigation use. According to the DEIS there are 4 such pump stations with a “relift” capability of 62 cfs.[206] The DEIS reports a current annual cost for pumping of $235,000 per year, which it assumes will continue into the future under all alternatives.[207] That’s an annualized cost of $3,790 per cfs of pumping capability,[208] within one percent of the annualized cost of the DEIS’s preferred Bypass Channel Alternative, $3,763-$3,825 per cfs.[209] So additional use of the existing 62 cfs of relift capability, and potentially adding additional relift capability, appears to be a cost-effective way to add water delivery capacity to the LYP without increasing diversions from the Yellowstone River,[210] and deal with hours when the pumping capacity would be unable to divert 1374 cfs from the Yellowstone River.

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[203] 7988 acres in 2016, per Appendix A, pdf p. 395 of 527.
[204] 7988 – 4950 = 3038 acres.
[205] 3000 / 5000 = 0.6 = 60%.
[206] Appendix A, pdf p. 421 of 527.
[207] Appendix B, pdf pp. 163, 165, 167, 169, 171, 173 of 173.
[208] $235,000/year / 62 cfs = $3,790/yr/cfs.
[209] $5.171 million (DEIS, p. xxxii, Table ES-1) / 1374 cfs = $3,763/cfs. $5.256 million (Section V.A, above) / 1374 cfs = $3,825/cfs.
[210] Of course, the fact that relift is already used in the LYP is also evidence of its cost-effectiveness.

D. Use of Pick-Sloan power for pumping energy

The energy pumping costs in the DEIS are based on commercial power prices, although the LYP correctly uses lower-cost energy from the Federal Pick-Sloan project to meet existing pumping energy needs.[211] However, as the DEIS acknowledges, Pick-Sloan energy may be available to meet the increasing pumping energy requirements of the no-weir alternatives.[212] The DEIS estimates that use of Pick-Sloan energy would reduce pumping costs by 41.15-67.34 percent.[213] That would reduce the cost of the Multiple Pump Alternative by $0.160 million to $0.262 million per year,[214] or about 1.6-2.6 percent of the entire annualized Multiple Pump Alternative cost of just under $10 million[215] per year. It would reduce the annual cost of pumping energy if only three pump sites were used, by $0.149 - $0.243 million per year,[216] or up to 3 percent of the entire annualized cost of just under $8 million per year.[217] Thus, use of Pick-Sloan power could reduce the cost per sturgeon AAHU of the Multiple Pump Alternative by up to $21/sturgeon AAHU,[218] and could reduce the cost per sturgeon AAHU of using three pump sites by up to $20/sturgeon AAHU.[219]

E. Use of wind energy for pumping energy

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[211] DEIS, pp. 2-24, 2-37, 3-14.
[212] DEIS, p. 2-75.
[213] Ibid. Reduction from $500,000 to $163,317 equals (500,000-163,317)/500,000 = .6734 = 67.34%. Reduction from $500,000 to $294,251 = (500,000 – 294,251)/500,000 = .4115 = 41.15%.
[214] Expected pumping costs of $389,000 (section V.B.1.e, above) x 41.15% reduction = $0.160 million reduction. $389,000 x 67.34% reduction = $0.262 million.
[215] $9.949 million per year adjusted annualized cost, per attached spreadsheet, "Multiple Pump costs" tab, line 17.
[216] Expected pumping costs of $361,000 (section VI.C.3.b, above) x 41.15% reduction = $0.149 million. $361,000 x 67.34 percent reduction = $0.243 million reduction from use of Pick Sloan energy.
[217] $0.243 million / 7.985 million = .0304 = 3.04%.
[218] $0.262 million / 12,319 sturgeon HUs (attached spreadsheet, "Cost per AAHU tab, line 3) = $21.27/sturgeon AAHU.
[219] $0.243 million / 12,319 sturgeon HUs (attached spreadsheet, "Cost per AAHU tab, line 3) = $19.73/sturgeon AAHU.

The DEIS includes the cost of wind generation in the Conservation Measures Alternative,[220] and indicates the agencies have the authority to build, operate, and maintain wind turbines to provide pumping energy.[221] The DEIS forecasts a capital cost for a 2 Mw wind turbine of more than $2.7 million per Mw of capacity,[222] which seems high given the recent approvals of two North Dakota wind farms consisting of 1.7 – 2.1 Mw turbines for $1.64 - $1.67 million per Mw.[223] Given the rapid development of wind resources in western North Dakota,[224] there seems to be little doubt that wind energy is a viable alternative source of supply for pumping energy.

VIII. Other issues

The analysis above focuses on the costs, the DEIS's habitat calculations, and cost effectiveness (as defined by the DEIS) of the Bypass Channel and Multiple Pumps Alternatives, and potentially modifying the Multiple Pumps Alternative to include three pump sites rather than five. It does not include a page-by-page review of the DEIS for errors or inconsistencies. However, a few such items are worth pointing out.

A. FPCI calculation for the Multiple Pumps alternative

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220 Appendix B, pdf p. 94 of 173, line 9.
221 DEIS, p. 2-92.
222 Appendix B, pdf p. 94 of 173, lines 9, 13 and 14. $4.686 million x 1.01 (for adaptive management), plus $3.584 million x 1.01 x .15 x 1.2652 (for planning, engineering, construction, construction management, and associated contingency) = $5.420 million, or $2.71 million per Mw.
223 http://bismarcktribune.com/bakken/western-north-dakota-in-the-midst-of-a-wind-boom/article_e32568d7-4fc3-5f66-babf-e8395fa7babb.html, a news story dated June 16, 2016 describing the permit approval of a 150 Mw windfarm containing 87 turbines for $250 million. 150 Mw/87 turbines = 1.72 Mw/turbine. $250 million / 150 Mw = $1.667 million / Mw.
See also http://bismarcktribune.com/news/state-and-regional/north-dakota-panel-approves-proposed-million-wind-farm/article_894783bd-b3c1-5598-87a3-0b1a829c319d.html, a news story dated June 22, 2016, describing the permit approval of a different North Dakota wind farm, containing 48 turbines and producing 100 Mw, for a capital cost of $164.4 million including transmission. 100 Mw / 48 turbines = 2.08 Mw / turbine. $164.4 million / 100 Mw = $1.644 million per turbine.
224 Ibid., describing western North Dakota as having 400 wind turbines in service that were installed in the last ten years ,and another 550 proposed for the next two years. The articles names seven specific projects with a combined capacity over 1250 Mw that form the basis for the estimated 550 new wind turbines to be built by 2018.
See also http://bismarcktribune.com/wind-farm-projects/pdf_7f769038-c4a4-596a-bc02-244b27b81b35.html, a map showing the locations of 9 western North Dakota projects (including an MDU project) with in-service dates from 2010 to 2018, totaling 903 turbines and 2223 turbines (average turbine size 2.46 Mw).

The Fish Passage Connectivity Index (FPCI) is one of the two parameters that, when multiplied together, yield the "Habitat Units" measure that the DEIS uses to evaluate the environmental impacts on sturgeon passage. Thus the FPCI is key to evaluating and comparing the alternatives in the DEIS. The FPCI is in turn calculated from just four inputs. One of those inputs, known as Fs, is a measure of the likelihood of fish using the passage option available to them in a particular Alternative. Fs is measured on a scale of 1 to 5 with 5 being the highest likelihood. For a no-weir alternative, Fs should be 5, and the DEIS indeed reports it as 5 for the no-weir alternative using conservation measures.[225] However, the Fs input is shown as 2 in the DEIS for the Multiple Pumps Alternative.[226] Since the DEIS does not show the calculation of the FPCI for sturgeon (or indeed for any other individual species), it is unclear whether the actual FPCI calculations for the Multiple Pumps Alternative used an Fs value of 2 or 5.

B. Dam removal costs

The DEIS contains two alternatives in which the existing Intake Dam is removed. However, the forecasted cost of dam removal is quite different for the two alternatives. For the Multiple Pump Alternative, dam removal costs are given as $6.600 million plus a 45.02 percent contingency, for a total of $9.571 million.[227] But for the Conservation Measures Alternative, dam removal costs are stated as $2.534 million, again with a 45.02 percent contingency, for a total of $3.675 million.[228] The use of the identical contingency percentage shows that dam removal refers to the same activity for both alternatives, as does the fact that the dam removal section for the Multiple Pump Alternative simply references the Conservation Measures Alternative.[229] Equally clearly, at least one of the estimates is wrong. As it turns out, the estimate for the Multiple Pump Alternative is the higher one, by $5.896 million,[230] and has been used without adjustment in the analysis

[225] Appendix D, p. 12.
[226] Ibid.
[227] Appendix B, pdf p. 84 of 173, line 1.
[228] Appendix B, pdf p. 94 of 173, line 3.
[229] Appendix A, pdf p. 219 of 527.
[230] $9.571 million minus $3.675 million equals $5.896 million.

above. But if the correct dam removal cost estimate is the lower one, then the Multiple Pump Alternative using three or five pump sites would be less expensive, by about $280,000 per year,[231] and thus have about a $23 lower annual cost per sturgeon HU,[232] and thus be more cost-effective.

C. Boulder field removal costs

Decades of ice scouring have moved rocks from the top of the Intake Dam to the bed of the Yellowstone River downstream, resulting in a substantial boulder field on the river bottom downstream of the dam. The dam removal costs for the two no-weir alternatives in the DEIS include the cost to remove not just the dam itself, but also the boulder field downstream of it.[233] The boulder field removal represents 93.6 percent of the total material to be removed from the Yellowstone River as part of “dam removal,”[234] and thus presumably represents close to 93% of the cost as well.

The DEIS does not appear to have any explanation of whether full removal of the boulder field is necessary to allow sturgeon passage up the main channel of the Yellowstone River after dam removal. However, assuming that **any** boulders remaining on the riverbed represent a threat to sturgeon passage,[235] then the DEIS should have included a discussion of the risk and cost for the Bypass Channel Alternative of leaving the boulder field intact. The DEIS says only that the proposed new concrete dam would cause the addition of new rocks on top of Intake Dam to cease.[236] It appears to say

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[231] Reducing their direct cost by $6.600 - $2.534 = $4.066 million would reduce the associated, planning, engineering, design and construction management costs by $4.066 million x .15 = $0.610 million, or $0.610 x 1.2652 = $0.772 million including contingency. Reducing capital costs by $5.896 + $0.772 million = $6.668 million would reduce total first costs by another 1% ($0.067 million) due to habitat management costs during construction, for a total first cost reduction of $6.668 + $0.067 = $6.735 million. Interest during construction is equal to 6.557/132.028 = 4.966% of first costs (DEIS, p. xxxii, Table ES-1), for a total investment cost of $6.735 x 1.04966 = $7.069 million. Annualized investment costs are equal to $5.515/$138.585 = 3.980% of investment costs, so an investment cost reduction of $7.069 million equates to an annualized investment cost reduction of $7.069 million x .0398 = $0.281 million per year.

[232] An annualized cost reduction of $281,000 for a no-weir alternative equates to a reduction in the cost per sturgeon HU of $281,000/12,319 sturgeon HU = $23/sturgeon AAHU.

[233] Appendix B, pdf p. 126 of 173, showing that even the less expensive (per comparison of pdf pp. 94 and 84) Conservation Measures Alternative involves removal of downstream boulders.

[234] Ibid. 42,264 cubic yards/(42,264+2,904) cubic years = 93.6%.

[235] As suggested by the DEIS, p. 2-108. See also Battelle, p. A-6, indicating that “pallid sturgeon are known to avoid” the “boulder-sized substrates near Intake Diversion Dam.”

[236] DEIS, p. 2-46.

nothing about what would happen to the existing century worth of rocks that are already in the river, and have already migrated up to 370 feet[237] downstream from the dam where they were originally placed. The DEIS does acknowledge that removing some or all of the existing boulder field is a possible future action in response to the results of monitoring.[238]

D. Role of contingency adders in the cost analysis

The DEIS estimates the total construction cost of the Multiple Pump Alternative as $97.492 million, and then adds total contingency estimates of $34.535 million, to get a total cost of $132.027 million.[239] Thus, over 26 percent of the capital cost of the Multiple Pump Alternative is contingency costs.[240] The comparable figure for the Bypass Channel Alternative is only 8.1 percent.[241] Thus a substantial part of the reason why the DEIS concludes that the Multiple Pump Alternative is not as cost-effective as the Bypass Channel Alternative[242] is the greater uncertainty associated with its capital costs.

In effect, the DEIS penalizes the Multiple Pump Alternative for the fact that the Federal Agencies had previously decided to pursue the Bypass Channel Alternative, and thus have spent money designing it and pricing it.[243] Then they use the fact that they have not given the Multiple Pump Alternative as much scrutiny in the past as a reason to reject it in the present.

E. Water losses in the Main Canal

The DEIS claims water losses from the Main Canal are “minimal.”[244] That claim is false, and is based on cherry-picking of data. While the error does not affect any of the

[237] Appendix A, pdf p. 370 of 527.
[238] Appendix E, p. 16.
[239] Appendix B, pdf p. 84 of 173, lowest highlighted line.
[240] $34.535 / $132.027 = .262 = 26.2%.
[241] Appendix B, pdf p. 65 of 173. $4.624 million of contingency / $57.044 million total cost = 8.1 percent.
[242] DEIS, p. 2-100.
[243] Indeed, the DEIS doesn’t count as part of the cost of the Bypass Channel Alternative the money, probably millions of dollars, that has already been spent on it. DEIS, p. 2-98, Table 2-25 and its footnote a.
[244] DEIS, p. 2-93.

conclusions of either the DEIS or this analysis, it casts doubt on the impartiality of the DEIS authors.

Specifically, the analysis underlying the "minimal" claim is found at the end of Appendix A, in tables showing daily diversions and daily Main Canal losses for the years 2000 and 2012.[245] It shows that on days when diversions were above 1300 cfs, the highest diversion days of the year, losses from the Main Canal averaged 20.4 percent during 17 days in 2000 and 16.3 percent during 20 days in 2012. The year 2000 loss rate of 20.4 percent during those high diversion days were almost as high as the annual average loss rate of 23.3 percent for the year 2000. The loss during the high diversion days in 2012 was 16.3 percent, **higher** than the 15.5 percent loss rate for the year as a whole. Annual loss rates of 15-23 percent are hardly minimal, loss rates of 16-20 during days when diversions at Intake exceed 1300 cfs are not either, and claims that loss rates go down substantially when diversion rates are high are contradicted by the evidence.

F. O&M costs and viability/sustainability

The DEIS lists only four reasons for preferring the Bypass Channel Alternative, one of which is its claimed lower operation and maintenance (O&M) costs.[246] The table cited by the DEIS shows "Annualized OM&R" costs that are $2.799 million for the Bypass Channel Alternative and $5.034 million for the Multiple Pumps Alternative,[247] for a difference of $2.235 million per year.

The $2.235 million figure is overstated. First, part of the $2.235 million is likely not O&M at all, but rather is replacement costs. Those replacement costs include costs such as pump replacements that are capital costs that are incurred only once per 35 years.[248] The difference between the Bypass Channel and Multiple Pumps Alternatives for just O&M is $1.557 – 1.941 million.[249]

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[245] Appendix A, pdf pp. 472-474 (year 2000 daily data) and 478-480 (year 2012 daily data).
[246] DEIS, p. 2-105.
[247] DEIS, p. 2-99, Table 2-26.
[248] See the attached spreadsheet, "O&M Costs" tab, which summarizes data from Attachment B-8 to Appendix B of the DEIS, pdf pp. 9-10 of 19 (Bypass Channel Alternative) and pdf pp. 15-16 of 19 (Multiple Pump Alternative).
[249] Ibid., lines 44-45.

Second, the $2.235 million omits the “moderately potential”[250] cost of adaptive management for the Bypass Channel Alternative, and includes unnecessary costs for the Multiple Pumps Alternative. The omitted costs for the Bypass Channel Alternative were estimated above as $0.085 million per year,[251] while the O&M costs for the Multiple Pumps Alternative are overstated by between $0.289 million[252] and $0.909 million.[253] Thus the $2.235 million difference should be corrected to $1.241 - $1.861 million.[254]

Third, the $2.235 million difference omits the possible O&M reduction for the Multiple Pumps Alternative from use of Pick-Sloan power, which could save a further $0.143 - $0.262 million.[255]

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[250] DEIS, p. 2-103. By contrast, the DEIS expects the Multiple Pumps Alternative to have a “minimal need” for adaptive management.
[251] Section IV.A.1, assuming the “moderate” likelihood results in adaptive management costs only half as large as the potential cost estimated in the 2015 EA.
[252] See the attached spreadsheet, “Multiple Pump costs” tab, line 14.
[253] See the attached spreadsheet, “Three Pump Sites cost” tab, line 20.
[254] $2.235 million minus $0.085 million minus either $$0.909 million or $0.289 million.
[255] See section VII.D, above.

From:	McCrystie Adams
To:	CENWO-Planning
Subject:	[EXTERNAL] Intake Diversion Dam Draft EIS comments
Date:	Thursday, July 28, 2016 1:56:06 PM
Attachments:	Defenders and NRDC comments Intake DEIS.pdf Attachment 1 to Defenders and NRDC comments - David Marcus Comments.pdf Attachment 2 to Defenders and NRDC comments - Calculations for David Marcus comments.xlsx

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Please see the attached comment letter on behalf of Defenders of Wildlife and Natural Resources Defense Council for the Intake Diversion Dam Fish Passage Project Draft EIS. Included in this email is Attachment 1, comments written by our retained expert David Marcus, and Attachment 2, containing the supporting data for Mr. Marcus's comments in an Excel spreadsheet. We will also provide a hard copy of these comments for your convenience.

Thank you, and please confirm receipt of these documents at your earliest convenience.

Best regards,

McCrystie Adams

<Blockedhttp://sigs.defenders.org/dowlogo.gif>

McCrystie Adams

Senior Staff Attorney

<Blockedhttp://sigs.defenders.org/ghln300.gif>

Defenders of Wildlife

535 16th Street, Suite 310 Denver, CO 80202

Tel: 720-943-0459

madams@defenders.org <mailto:madams@defenders.org> | Blockedwww.defenders.org <Blockedhttp://www.defenders.org/>

26 July 2016

Tiffany Vanosdall
U.S Army Corps of Engineers
Omaha District
Attn: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102

Dear Ms. Vanosdall:

Thank you for the opportunity to comment on the Corps' and U.S. Bureau of Reclamation's (BoR) Draft Environmental Impact Statement (DEIS) for the Lower Yellowstone Intake Diversion Dam Fish Passage Project. Montana Trout Unlimited represents 4,200 conservation-minded anglers, most are native or long-time Montanans who have an abiding interest in the free-flowing character and aquatic community of the Yellowstone River.

1

We strongly urge the Corps and BoR to refine the technical, biological and economic effects analysis for the "Multiple Pump Alternative," and to adopt this option as the best solution for accommodating fish passage, recovery of pallid sturgeon and the interests of water users in the Lower Yellowstone Irrigation Project ("the project"). This analysis could include a re-evaluation, or not, of incrementally implementing some of the conservation measures for irrigation infrastructure that the DEIS says is already occurring or planned (DEIS 2-36), and which could potentially reduce pumping costs.

2

The analysis in the DEIS, the best available science, and certain legal requirements under the National Environmental Policy Act and Endangered Species Act, as well as the congressional authorization under the Water Resource Development Act of 2007 (WRDA 2007), do not support selection of the Dam/Bypass Channel option as the preferred alternative for the Intake Project. The best option for maximizing success for fish passage and recruitment, as the agencies admit in the DEIS, are alternatives that involve an open river and multiple pumps for supplying irrigation water. The use of pumps is common in irrigation, and in fact, it is increasingly replacing gravity-dependent flood irrigation systems throughout Montana and the West, including within the Lower
3 Yellowstone Irrigation Project. The DEIS provides no evidence that the preferred

P.O. Box 7186
Missoula, MT 59807
406.543.0054
www.montanatu.org

3 alternative will meet the objective of helping recover endangered pallid sturgeon, nor does it demonstrate that it will improve fish passage for all fish or contribute to ecosystem restoration.

It is quite possible that if implemented the Dam/Bypass Channel option will actually reduce the potential for sturgeon to move upstream, continue to impair potential recruitment of sturgeon (if passage succeeds) by impinging, entraining or damaging eggs and larvae at the headworks and below the new dam, reduce the ability for other species to move above Intake and reduce ecosystem health by largely replacing much of the ecosystem and hydrological function of a four-mile-long natural high-water channel with two-miles of a engineered bypass channel. Essentially, there is some probability that the $60 million invested in the Dam/Bypass Channel alternative could result in making things worse for fish and ecosystem health.

<u>General Comments</u>

The DEIS deliberately ignores the stated purpose and need of the project: recovery of
4 pallid sturgeon in the upper Missouri River Basin. The agencies mistakenly limit the purpose and need to: 1.) *improve fish passage for pallid sturgeon and other fish*; 2.) *continue viable and effective operation of the LYP;* and, 3.) *contribute to ecosystem restoration (DEIS xxxvi).* The agencies claim that their obligation is to "not jeopardize" a species, and that "*pallid sturgeon recovery is not within the scope of this project* (*DEIS xxvi).*" That is incorrect.

5 Because the Corps is investing in a BoR project with the expectation the U.S Fish and Wildlife Service will then relieve it of its recovery obligations in the upper Missouri River Basin, the agency must see this investment as a "recovery" action. In a 2003 Biological Opinion, the U.S. Fish and Wildlife Service (USFWS) concluded that both the Corps' and the BoR's activities, including at Fort Peck and at Intake, are already contributing to jeopardy and deemed to be taking pallid sturgeon. That has not changed. The agencies' obligations go beyond not jeopardizing the species – that is already occurring -- but instead to instigate activities that lead to recovery.

The USFWS amplifies the importance of recovery when it states in the DEIS that *"the*
6 *value of restoring the Yellowstone River as a natural migratory route for sturgeon and making the middle Yellowstone function as the spawning and nursery grounds for pallids cannot be overstated (pg xxvii)."* Further, the congressional authorization for the Corps relative to this project, the Water Resources Development Act of 2007 (WRDA 2007) authorized spending from the Missouri River Recovery and Mitigation Program, which the Corps' website for the program says involves *"actions being taken pursuant to the 2000 biological opinion, amended in 2003…"* In order to avoid jeopardy, which the USFS has deemed has been occurring for years, and which was the purpose of the original EIS for this project, expenditures of this program need to lead to recovery, not
7 simply "*improve fish passage for pallid sturgeon and other native fish.*" It is also worth

noting that the court in Defenders of Wildlife, 15-cv-GF-BMM, docket #73 at 12 directed
7 the agencies to include an analysis of the potential effects of the Intake Project on **recovery** of pallid sturgeon. Simply avoiding jeopardy, when it is already occurring, is not sufficient.

The DEIS is heavily biased in favor of the preferred alternative. Descriptions of the
8 Dam/Bypass Channel option are subjectively positive and/or assume that that alternative will be selected. Descriptions of the other alternatives, especially the open river alternatives, are presented as subjectively negative. This bias was also evident during public meetings when the agencies displayed PowerPoint presentations on the alternatives that implied landowners within the Lower Yellowstone Irrigation Project would be liable for all O&M costs associated with the proposed alternatives on a per acre basis. These displays showed huge expenses for landowners. The DEIS, however, does not state that increased O and M or construction costs would have to be borne by water users. In fact, the DEIS portrays those costs as part of the overall project alternative costs to be borne by the agencies.

<u>Dam/Bypass Channel Alternative</u>

The proposed post-project monitoring and assessment are inadequate. MTU criticized
9 the monitoring proposed in the previous EIS for being conducted for only eight years, which in terms of producing a subsequent population of reproducing individuals is insufficient for determining successful spawning and recruitment. The current DEIS still commits to only an eight-year monitoring effort. Furthermore, the DEIS acknowledges that monitoring of the preferred alternative might show that the bypass channel fails to pass fish sufficiently. *"The design of the bypass channel is based on the best available science, but as there is not a similar precedent, there are still uncertainties about the ultimate effectiveness in providing pallid sturgeon passage. Therefore, the recommended reasonable and prudent measure (RPA) to minimize effects was to implement a monitoring and adaptive management plan that would document the performance of the replacement weir and bypass channel and take measures to improve its success if the performance did not meet desired criteria (5-4)."*

The agencies admit in many places in the DEIS that the Dam/Bypass Channel alternative
10 could very well not work for fish passage. But the DEIS also indicates that if this occurs the agencies can adaptively manage the bypass system to improve it. However, the DEIS doesn't identify exactly what criteria they will use to determine success, what the adaptive management steps would be, who would implement them, and at what cost. If there are improvements that could help later, why not simply employ them at inception? Because of the admitted uncertainty involved in the Dam/Bypass Channel option, the agencies have an obligation to disclose in the DEIS what steps would be taken, what they will cost and who will be responsible for improving performance.

The Dam/Bypass Channel will require regular maintenance, including costs associated
11 with channel stabilization, repairing the inlet and outlet, debris removal, the possible rebuilding of the trolley system or vehicular access atop the new concrete dam, etc. But the DEIS is silent on who will be responsible for these obligations, who will pay for them, and what they could cost over the projected life of the dam and bypass. These future costs are not included in the O&M budget for this alternative. They should be identified. Further, determination of costs for the open river and pumping alternatives should, as with all alternatives, be subjected to an independent peer review. The results of
12 that review should be made available to the public before an alternative is selected. It is unclear to us, for example, how some of the costs of the pumping options were determined and whether they are reasonable. For example, it is not clear that all the pumps will be needed. Curiously, the cost of the Dam/Bypass Channel option does not include a cost for design. Though this has apparently already been paid for, it is still a cost that should be attributed to this alternative, much as it is for the open-river alternatives. This is an example of the cost bias used to make the Bypass Channel appear cheaper than it is (pg. 2-98).

13 The determination that the Dam/Bypass Channel alternative will pass pallid sturgeon is based solely on scant lab studies of pallid sturgeon (mostly juveniles) and their ability to maintain upstream swimming velocities in 9-11' long flumes. The DEIS admits there is no real-world evidence of pallid sturgeon or related shovelnose sturgeon using engineered bypass structures: *"There are still many uncertainties over whether a majority of pallid sturgeon would actually pass through the bypass channel as there are no other examples of similar natural-type channels designed for non-jumping benthic fish (4-169)."* Yet the agencies with limited evidence are willing to invest an estimated $60 million in an alternative with an admitted high degree of uncertainty for success. The agencies are basically opting for faith-based fishery science.

There are real world indications, however, that point to how risky the assumptions for
14 success are. If the agencies believe this 2-mile long engineered channel, which will carry only 15 percent or less of the discharge of the Yellowstone River, will be sufficient for passing enough sturgeon (and other species) upstream with enough frequency to enable recovery (or avoid jeopardy), then it would seem that more sturgeon would have used the existing natural high-water channel more frequently over the years. However, upstream passage at Intake in the natural high-water channel has been documented only in a single recent year, when flows exceeded 45,000 cfs, an uncommon event. This is a pretty good indication that sturgeon species, though they might occasionally use a natural side channel under conditions with above average flows, they don't, however, have a strong
15 proclivity for navigating side channels. Further, discharge velocity and depth are only two of the many nuanced values that contribute to successful upstream movement. Also important are overhead cover, turbidity, temperature, chemistry, time of day, channel geometry, substrate (especially for benthic species), presence of predators, human disturbance, ability to locate entrances (and be comfortable with them), and other values. None of these have been evaluated in determining the probability of success.

16 Given the admitted high degree of uncertainty for upstream movement of pallids under the Dam/Bypass Channel Option, this alternative should only be implemented if it doesn't include the new, concrete-capped diversion dam. This would save money for investment in an open-river alternative if the bypass proves inadequate. Building the new dam before it has been established that the bypass passes sturgeon and other species in adequate numbers and in the appropriate frequency could be unnecessarily costly. If the agencies ultimately select the Dam/ Bypass Channel Option, they should first produce a binding agreement that ensures they will adhere to biologically sound monitoring and assessment that is developed by an independent biological review team -- as well as commit to being responsible for implementing an alternative that is based on the best science available and with the highest degree of scientific certainty. The agencies must remain accountable if the preferred alternative is selected and fails to contribute to pallid sturgeon recovery in the upper Missouri River basin.

17 The Dam/Bypass Channel Option would eliminate surface flows into the natural side channel, filling much of it with excavated material from the bypass construction. The natural side channel currently includes 4.5 miles of riparian habitat and has provided some upstream fish passage. Further, it also likely provides rearing and security habitat for some species. According to the DEIS the Dam/Bypass Channel Option would transform the lower reach of the natural side channel into a "backwater channel," with potential for providing false attraction to upstream migrating fish. Left undisclosed in the DEIS are other biological implications of this significant modification, as well as how it affects recreational usage of John's Island (4-43). The DEIS admits to significant modifications: "*The filling of the upper section of the existing side channel would result in the loss of the existing riverine habitat in that area, including woody riparian and wetland, as well as adjacent terrestrial habitats reliant on existing hydrology. The lower section of the existing side channel would become a backwater with a largely reduced frequency of inundation relative to current conditions. This would cause changes to vegetation, and the conversion and degradation of existing habitat in and adjacent to the channel (4-145)."* However, the document does not thoroughly disclose what the impacts of this would be on fish, wildlife and recreation.

18

The DEIS states that, *"Fish passage would be 100% during all flows for the bypass channel, modified side channel, and dam removal alternatives because suitable depths and velocities are available across a wide range of flows (pg. 6, Appendix D)."* The DEIS, however, does not disclose a complete analysis of the expected discharges in the modified side channel or bypass channel at different river stage when coupled with irrigation demands. It is not apparent therefore that the bypass channel or modified side channel would indeed have adequate depth for fish passage. Left unstated is what occurs during extreme drought years when limited water is available to accommodate both fish passage and irrigation. It is reasonable to presume that the senior water right of irrigators will trump any water right for instream flows, such as FWP's instream flow reservation. It cannot be concluded then that flows will be available at all times for fish passage.

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19 Finally, the DEIS includes limited consideration of how the project affects recruitment of pallid sturgeon and other species. Simply providing for passage is only part of the puzzle. Without reliable information on survival of larvae, it will be difficult to determine recruitment. Without recruitment, there is no recovery. Without recruitment, The Intake Diversion Project could still be deemed as taking pallid sturgeon. Therefore, the project must not lead to additional harm to free-drifting eggs and larvae. The DEIS assumes the notched dam will allow for safe downstream passage of eggs and larvae. However, no empirical evidence is provided demonstrating this. It is a guess. Eggs and larvae could get stuck behind the dam, or damaged in the hydraulics on the downstream side. Further, some impingement and entrainment will continue to occur at the Intake headworks, and, as the DEIS recognizes, if pallid sturgeon (and other species) succeed in getting above Intake their eggs/larvae, as well as adults, juveniles and young-of-the-year fish of other species could be trapped in the next major diversion upstream at the unscreened Buffalo Rapids diversion. Any determination of potential successful downstream movement
20 needs to be informed by empirical evidence. The current project on the Missouri wherein 76,000 hatchery-produced embryos were released and are being tracked to determine speed and dispersal downstream, and employing mapping of 3-D hydraulics bathymetry and substrate condition, is one such study that could inform the potential recruitment on the Yellowstone, should upstream passage be achieved. The DEIS states in several places that approximately 99.9 percent of all larval sturgeon currently perish, and so a few percent more of the remaining won't be harmful. This is counter-intuitive when mortality is already significant.

<u>Open River option comments</u>

This DEIS states that, "*Water conservation measures would be implemented under all*
21 *alternatives (pg. 2-36).*" Although the DEIS acknowledges that such measures would happen under all alternatives, indeed they are occurring now, it charges conservation measure costs only against the Multiple Pumps with Conservation Measures Alternative because such measures would be implemented at an accelerated pace under that alternative. Conversely, because the other alternatives, including No Action, would implement conservation measures such as ditch lining/piping, control structures, flow monitoring, etc., more slowly, they are not accounted for in the price tags for the bypass option. And, if additional conservation measures are expected to be implemented eventually for the LYIP, then they should be accounted for in all options. It is reasonable to assume that over time conservation measures would be more expensive. This speaks for implementation sooner than later, which could occur with the Multiple Pumps and Conservation Measures Alternative. Because increased conservation, which because of climate change the DEIS admits will be increasingly more important, is expected to occur eventually irrespective of alternative, its cost should be presented for all alternatives. Yet the DEIS assigns the costs only for the open-river alternatives, demonstrating an economic bias against these options.

The open river alternatives could include cost savings, including removing only a portion
22 (or portions) of the existing diversion dam and allowing the river to degrade the rest of the structure during high water and ice floe events. This already happens most years, necessitating annual maintenance of the Intake diversion.

Currently, the power demands of the LYIP, including multiple pumps within the system,
23 are met, in part, with subsidized Pick-Sloan Missouri Basin Program funds (pg. 2-24). The DEIS acknowledges that pumps and energy costs for the open river alternatives would likely qualify for similar Pick-Sloan funding, yet the cost estimates for the open river alternatives with pumps does not show those reduced costs, except in the text where it's estimated that for the Multiple Pumps alternative the estimated power cost at current rates (by Montana-Dakota Utilities) is $500,000/year. With Pick Sloan power those costs would drop to $167,000 to $294,000 per annum (pg. 2-75). For the Multiple Pumps with Conservation Measures alternatives, estimated power is $240,000/yr., which drops to $67,000-$178,000/yr. with Pick-Sloan (pg. 2-95). The analysis of potential power costs, how they can be reduced, needed further evaluation and disclosure than was treated in the DEIS.

24 In general, it appears that the costs associated with both open river alternatives are highly biased to make these alternatives seem economically unviable. One outstanding example is the estimate that it would cost $583,000/year for "*Additional Ditch Riders*" in the Multiple Pumps with Conservation Measures Alternative (pg. 2-95). That seems highly inflated. Though the systems are different, Montana TU at one time paid a ditch rider to cover more than 100,000 acres in the upper Big Hole watershed that includes hundreds of points of diversion $5,000 for about 2 ½ months of work.

<u>Fish Passage Connectivity Index and Incremental Cost Estimates</u>

25 There is no evidence in the scientific literature that the Corps' Fish Passage Connectivity Index (FPCI), the probability that fish of different species would encounter and use a constructed passage entrance, has ever been subject to scientific peer review. DEIS states that it is based on *"best professional judgment of federal and state biologists working on the Yellowstone River (pg. 10-13, Appendix D)."* FPCI is simply an internal planning methodology. Confidence in any findings based on the FPCI should be taken with a large grain of salt. Findings based on the application of FPCI in the DEIS are especially suspect because the agencies jiggered inputs in several unexplained ways.

26

The FPCI formula is Ei=(Fs+Fl)/2, where Ei is the probability that fish encounter the fish passage; Fs is the fishway size; and Fl is the ability of fish to encounter the fishway entrance. For the Bypass Channel, Fs = 2 and Fl = 4. Therefore Ei = 3, which produces an estimate that fish are 50% likely to encounter the bypass channel. Yet, the agencies assign a score of 0.67 for Fish Passage Connectivity for the Bypass Channel (pg. 16, Appendix D). This inflated FPCI value of 0.67 results from the agencies determining a

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Missoula, MT 59807
406.543.0054
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26 value based on **the probability of 13 different species using the channel.** It is not the value assigned for pallid sturgeon, which is significantly lower. The presentation of the FPCI value of .67 is misleading and the agencies should have more clearly acknowledged that the estimate for pallid sturgeon to use the Bypass is only .50.

27 In addition, the agencies increased the the F1 score of 4 for the Bypass Channel from the previous score of F1=3 in the 2015 EA. It appears then, that the agencies in the period between the 2015 EA and the 2016 DEIS decided to assign a faster swim speed to pallid sturgeon (3.2 as opposed to 2.7). The DEIS provides no explanation for why this occurred, though it produces a result that appears to increase the probability of pallid sturgeon successfully using the bypass channel, thereby increasing bias towards selecting the Dam/Bypass Channel option.

28 Because of the low abundance of spawning age, heritage pallid sturgeon, it seems imperative that the agencies should be favoring alternatives that maximize the probability of upstream passage and subsequent recruitment. The open river alternatives, as the DEIS admits, best meet these objectives. The inflated FPCI number for the bypass channel derived from using an estimate of passage for 13 species inordinately biases the agencies' calculations of Incremental Cost Analysis/Habitat Unit costs**. If the number of Habitat Units provided by the bypass channel is recalculated using only the FPCI for pallid sturgeon (.50 instead of .67), the cost of each Habitat Unit for that alternative becomes greater than the Habitat Unit cost of an open river Multiple Pumps alternative, which guarantees 100% fish passage.**

29 When its limits are respected, FPCI can be a helpful planning tool, but because of the subjectivity inherent in its numeric inputs, it should not be a primary determining factor for estimating costs, success of upstream passage or selection of a final alternative.

Monitoring and Adaptive Management (Appendix E)

30 The monitoring objective in the DEIS for downstream passage of free-embryo, larval, and young-of-year sturgeon is simply to *"assess impingement and entrainment."* The DEIS does not specify the response that would occur should survival of young sturgeon be deemed inadequate. And yet, as stated earlier, the alternatives that do not include an open river pose significant risk for entraining or otherwise harming sturgeon embryos, larvae or young, as well as other young fish moving downriver (pg. 2-3, Appendix E).

31 Appendix E states: *"There are uncertainties relative to the physical and biological performance of the bypass channel that could affect the ability to meet the project goals of improving fish passage, particularly for pallid sturgeon. Existing modeling indicates that the bypass channel would meet BRT criteria under all flow conditions, but it remains to be seen if the channel maintains these characteristics over the long term and if these physical criteria result in biological performance (pg. 11-12, Appendix E)."* Yet despite the admission that maintaining the integrity of the bypass channel will be problematic,

the Corps will assume monitoring of physical criteria of the selected alternative for just one year, after which the BOR and LYIP will apparently be responsible for maintaining the alternative for life. It is unclear who will monitor biological criteria for the first year and beyond. Identification of these responsibilities is a significant shortcoming in the DEIS.

32 Adaptive management measures could entail huge costs if the selected alternative fails. Yet the DEIS does not specify the measures, nor what are likely to be significant costs associated with them. If the bypass fails, and an open river alternative implemented – which would be the logical step -- the costs of removing the constructed channel and new dam, and possibly restoring the 4-mile-long, natural high-water channel could be exorbitant and incurred by the Bureau and irrigation districts. The monitoring and adaptive management plans for this project should include a commitment from both agencies assuring that in the end biological criteria – upstream passage of most sturgeon in most years, as well as successful recruitment, will be used to determine the project's performance. If the agencies are so confident that their preferred alternative will succeed, then they should not be reluctant to provide the public with an ironclad guarantee that if it indeed fails, they will be ready with funding in hand to implement a new alternative with a higher probability of success.

Thank you for the opportunity to comment.

Sincerely,

Bruce Farling
Executive Director

P.O. Box 7186
Missoula, MT 59807
406.543.0054
www.montanatu.org

From: Ryan Anderson
To: CENWO-Planning
Subject: [EXTERNAL] Intake Diversion Dam Fish Passage Project
Date: Thursday, July 28, 2016 4:18:04 PM

To whom it may concern,

1 We are in support of the Bypass Channel Alternative, which includes constructing a new bypass channel and concrete weir. The new bypass channel alternative allows the Lower Yellowstone Project (LYP) to continue operating as a gravity feed system. Utilizing gravity flow for the LYP rather than using pumps is a more efficient and economically feasible way of transporting water for the project. Irrigation already has higher annual cost inputs than dry land farming. Adding pumps to the system would add unnecessary annual costs to an already expensive farming practice.

2 Utilizing pumps over using gravity for the project almost doubles the annual O&M costs for project. The annual savings for O&M costs for the Bypass Channel Alternative as compared to the Multiple Pump Alternative is $2,400,000. Over the course of a 30 year span that savings equals $67,000,000. Also, the Bypass Channel Alternative is typically cheaper in estimated construction costs as compared to the other alternatives. This alternative saves $35,000,000 in construction costs when compared to the Multiple Pump Alternative. Over a 30-year life span going with the Bypass Channel Alternative would save over an estimated $100,000,000.

Regards

Ryan Anderson

Garrison Diversion Conservancy District

Office: 701.652.3194

Cell: 701.650.6001

ryana@daktel.com

From: Mike Penfold
To: CENWO-Planning
Subject: [EXTERNAL] Comments on Intake Project
Date: Friday, July 29, 2016 10:15:18 AM
Attachments: Audubons Comments to COE.pdf

OR-13

July 28, 2016

U. S. Army Corps of Engineers

Omaha District

ATTN: CENWO-PM-AA

1616 Capital Ave.

Omaha, NE 68102

Cenwo-planning@usace.army.mil <mailto:Cenwo-planning@usace.army.mil>

RE: Environmental Impact Statement of the Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana.

Our Montana, Inc. has had a long term focus on conservation and wise use of the Yellowstone River for 2 decades. In 1997 we established the Yellowstone River Conservation Forum made up of 14 diverse conservation organizations. The Conservation Forum worked with the 11 conservation districts along the Yellowstone for over a decade to improve information and conservation practices of the river and its corridor.

Our vision for the Yellowstone River was recently covered in a detailed article in High Country News. Blockedhttps://www.hcn.org/issues/48.11/the-grand-plan-to-save-the-yellowstone-river

1 We have commented on the need for safe recreation boat passage in past letters to you.

Needless to say the Yellowstone is a national treasure because of it place in the history of our country and the future opportunities it presents. The River is part of the Lewis and Clark National Trail system.

2 We have reviewed the attached comments to you on the above subject by the Yellowstone Valley Audubon Society dated 28 July, 2016. We are entirely in agreement with those comments and recommendations so will not repeat them here. We ask that you consider those comments as those of Our Montana. In addition to those we offer the following.

3 We recommend that the irrigation facilities of the Lower Yellowstone Project are in critical need to be modernized but the costs of modernization should not be included in the impact analysis of the Lower Yellowstone Intake Diversion Dam Fish Passage Project. Our rational is as follows.

Studies indicate that the Yellowstone River and it economic and ecological values are at risk.

The Cumulative Effects Study sponsored by your agency identifies the future problems. This study was completed by the Yellowstone River Conservation Council made up of the 11 conservation districts along the river.

4 Blockedhttp://www.yellowstonerivercouncil.org/pdfs/Yellowstone-River-Cumulative-Effects-Study.pdf

Here is an excerpt from your report, “4.3.2.5 Consideration of Climate On a state-wide basis, virtually all model simulations developed in support of the state water plan project predict earlier runoff and reduced summer flows (Montana DNRC, 2014). Median daily hydrographs compiled for pre- and post- 1990 data on the Yellowstone River

4 at Livingston corroborate this general pattern; over the past 15 years, runoff has typically started about a week earlier and peaked 10 days earlier than it typically did between 1896 and 1990. Previously published literature (Leppi et al. 2012) shows that reduced late August streamflow can be associated with climatic trends. Low flow analysis from a largely pristine gage at the Yellowstone Lake outlet indicates low August flows have been associated with increased air temperature. Tree-ring analyses of the basin show that the twentieth century was a wet period relative to the several centuries prior, and that droughts have historically been substantially longer and more intense than those recently experienced in the basin. Table 4-3 shows a summary of specific human influences described in this section, along with the associated impact, spatial extent of that impact, and relative magnitude of the impact. Although there are additional factors that will affect the system hydrology such as storm water management, these other influences are either considered to be relatively small or lacking in data. 4.3.3 Primary Human Influences on Yellowstone River Hydrology The results of the hydrologic analyses indicate that the historical hydrology of the Yellowstone River was markedly different than it is today. The influences causing those changes include both consumptive and non-consumptive water uses, which collectively alter both the amount and timing of water delivery in the system. Although there are multiple types of both consumptive and non-consumptive water use, the main alterations to the hydrology of the Yellowstone River are due to irrigation and flood control. Climate trends have been identified as influencing low flow hydrology, and those influences are predicted to become stronger in the future."

5 Analysis of the water right claims against the flows of the Yellowstone River are identified by the Thesis of Mr. Trevor M. Watson. His study illuminates further the impending future problems with water quantity availability in the Yellowstone.

Blockedhttp://www.pallidsturgeon.org/wp-content/uploads/2012/11/Watson-Final-Thesis-with-signature-7-7-2014.pdf

6 Also, water rights of Crow and Northern Cheyenne Indians, now established, provide for additional water withdrawals from the Yellowstone basin. This will further stress River environments and sustainability of existing economic uses of the River. The Tribe's water compact and legislation provide for modernizing their irrigation systems.

Blockedhttps://www.doi.gov/news/pressreleases/Crow-Tribe-United-States-and-State-of-Montana-Sign-Historic-Water-Compact

7 The Yellowstone River Conservation District Council has recognized the need to modernize irrigation systems along the Yellowstone River in their Watercraft paper on management practices.

Blockedhttp://www.yellowstonerivercouncil.org/pdfs/watercraftPOSITION_STATEMENT_02-18-2010.pdf

8 The State of Montana policies, as well, identifies the need to update and modernize irrigation facilities and practices in the Montana State Water Plan.

Blockedhttp://dnrc.mt.gov/divisions/water/management/docs/state-water-plan/2015_water_plan_executive_summary.pdf

9 The Federal Government through programs of the Natural Resource Conservation Service has funded major programs (Agricultural Water Enhancement Program) to farmers with the intent of improving and modernizing irrigation and water delivery systems for agriculture. It is the policy of the Federal Government to encourage, as well as provide some funding, to improve and modernize irrigation systems.

The point here is that there is great need for irrigators with water rights on the Yellowstone to modernize their irrigation systems. This thrust is supported in policies of the 11 counties along the Yellowstone River, the State of Montana, and the Federal Government.

10 We recommend that the Board of Control of the Lower Yellowstone Project give high priority to modernizing their irrigation system. We recommend that the Board of Control, the Bureau of Reclamation and the Corps of Engineers include modernization of the irrigation system as part of the Intake project but as a separate funding category. Irrigation improvement is a separate critical need for funding and is irrespective of the Intake Project focused on

Sturgeon. The calculation of cost of irrigation improvements should not be charged in the COE's cost analysis against the project needed for Sturgeon habitat.

Mike Penfold

Field Program Director

Our Montana, Inc.

PO Box 699

Billings, MT 59103

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Mike Penfold

Attachment 4
Responses to Comments

Responses to comments that are found in Attachment 3 are organized in the following table.

The table includes an identifier for each letter as follows.

Organization/Individual	**Identifier**
Public Meeting Transcript- Billings	TB
Public Meeting Transcript- Sidney	TS
Public Meeting Transcript- Glendive	TG
Business and Public	BP
Federal Agencies	FA
Tribal Governments	T
Elected Officials	EO
State Agencies	SA
Local Agencies	LA
Organizations	OR

Comments within each letter are listed in order, with the comment and response shown in the table on the pages below.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-1	D. Mitchell, Richland County Commissioner	1	If the Intake Diversion Dam has been working for a hundred years, why are the pallid sturgeon not extinct? They must be doing something correct to have been able to live this long.	All sturgeon species, including pallid sturgeon are long-lived, thus persisting as adults, even when recruitment of young fish is low. Pallid sturgeon are estimated to live 30-50 years or longer, and the remaining wild fish in the Upper Missouri basin (including the Yellowstone River) are large, old adults. A key hypothesis of the lack of recruitment of young fish is that the distance available for the free embryos and larvae to drift downstream from spawning areas is not sufficient before they enter Lake Sakakawea where conditions are not suitable for the larvae to rear and survive. Lake Sakakawea was filled in the 1950s and the remaining adults are of the age to have been born sometime in the late 1950s to 1960s. See Section 3.9.1.3 for additional discussion.
TB-1		2	With this perceived threat of climate change, global warming, and carbon print, how much of a carbon print has the Lower Yellowstone Irrigation Project created over the last 107 years it has been providing water to the valley?	Air quality is described in section 3.2. Study of the carbon dioxide adsorption potential of crops is beyond the scope of this study.
TB-1		3	I have been following the money that is being invested by the government through the Corps, Lower Yellowstone, the many businesses in Sidney that are continually fighting this, and all we're trying to do is preserve our economy and the future of our valley and for the our future generations.	Comment noted.
TB-2	T. Brown, Montana State Senator District 28	1	As a Montana State Senator in a District to improve a portion of the Yellowstone River Valley, I stand today in strong support of the environmental impact study that shows the bypass channel to be the best alternative for both agriculture and for aquatic species.	Comment noted.
TB-2		2	I only would like to register my complaint that, first, if you had scheduled such an important meeting over 200 miles away from the location in question; and second, that you schedule it at one of the very worst times of the year for irrigators to try to attend.	Comment noted
TB-2		3	The sacrifices that were made by many in this crowd to travel to be here tonight were immense. Please give significant weight to their comments. Because I fear that there are many here tonight that couldn't even point to the Intake weir on a map a week ago.	Comment noted
TB-2		4	My comment is this: That the proposed EIS had used real science and sound reasoning to arrive at the right solution. Our State's two biggest industries, agriculture and travel/tourism desperately needs you to get this decision right. I believe you have done that with this proposed alternative through the bypass channel.	Comment noted
TB-3	S. Staffanson, Montana House District 35	1	I am the Representative from House District 35, which encompasses most of the land that is irrigated by this project. I am in full support of this bypass channel option to keep our irrigation project viable.	Comment noted.
TB-3		2	I guess I think there are many positive environmental impacts that are provided by this irrigation project. And I think to change it to add the pumps definitely will be a negative to the environmental impact.	Comment noted
TB-4	J. Morgret, Stockman Bank	1	I'm here in support of the bypass channel as well. It's a solution that meets all of the needs of the environment and the fish, but it also still retains the economic viability of the region.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-5	R. Etzel	1	And putting pumps in would put an undue burden. And, I don't know, if they keep squeezing the farmer out, what are we going to eat?	Comment noted
TB-6	S. Appelberg	1	This bypass project needs to go through. The other alternatives I've seen just are entirely too expensive. These ranchers and farmers depend on the irrigation and the pumping process just isn't going to work, so please go forward with this bypass project.	Comment noted
TB-7	S. Reynolds	1	I do know the concept of how the pumps are supposed to work. I know it takes a lot of time and money to maintain them. When you compare the cost of the bypass channel at 57 million to the multiple pumps at 478 million, it is a no-brainer which one is the best solution.	Comment noted
TB-8	D. Lang	1	Growing up in Sidney I didn't know much about the canal, except that the fish, the farmers, and the entire community were supported by it. The job I have at Sidney Sugars is due to the farmers' ability to grow sugar beets and has given me and many others stable employment.	Comment noted
TB-8		2	I just don't think it takes a rocket scientist to figure out that the bypass channel is the best option and I support it a hundred percent.	Comment noted
TB-9	B. Bratsky	1	Farming and the agriculture in general is a high-end cost input event, and we really can't afford a lot more expenses. And therefore, we feel and urge you to go with your preferred method, which is the bypass channel.	Comment noted
TB-9		2	You know, at our bank [Stockman's] we currently have 750 to 800 million dollars in ag loans, and we're proud to say we finance agriculture. And when they hurt out in the country, everyone hurts.	Comment noted
TB-10	W. Denowh	1	One of the things that I did and helped with my customers was irrigation water rights. And you got a big problem moving a water right downstream. The water right is designed site-specific, meaning, you ain't going to move it. So when you move those pumps in downstream, you go to the back of the line for your water. Unless the government can do what the common, ordinary man can't do, that's a no-brainer to me.	Under Montana State Water Law (Mont. Code Ann. Section 36.12.1901), a change in Point of Diversion requires authorization from Montana Department of Natural Resources and does not change the priority date of the water right.
TB-10		2	I see in the Bismarck Tribune in 2009 an article that says that there is less than 200 pallid sturgeon left. And in some of the information here, the current numbers, they're saying about 125. So we're losing nine to ten -- about nine or ten a year. So if this thing goes into court, we got a couple of years and we're going to lose 20, and then ten every year since. It's not a good idea.	Comment noted
TB-10		3	One of the things that's in the Miles City area was the T&Y put in a fish bypass. … It's a project Montana Fish, Wildlife & Parks project, also. And it's a roaring success.	The T&Y bypass to date has not shown to successfully pass shovelnose sturgeon. The lack of successful passage by this species at T&Y has been accounted for in the design of the proposed bypass channel. However, there are uncertainties associated with the bypass channel which are discussed throughout the FEIS **(**See section 4.9.7). These uncertainties will be monitored and addressed through implementation of a Monitoring and Adaptive Management Plan which can be found in Appendix E. Discussion of the bypass on the Tongue River is described in Section 4.9.8.5.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-10		4	So you have something that is proven locally by the local people that's doing it and it's successful. And now your preferred option is basically what they have already proven that it's going to work.	Comment noted.
TB-11	G. Kallevig	1	First of all, as a banker, I would like to say is I get to see balance sheets and projections for these ag businesses in the valley. I get to see them firsthand. And there just is not room on their balance sheets for additional debt for additional pump costs.	Comment noted.
TB-11		2	And in this instance I think we have an opportunity to hit the fair button. Fair to the fish and the other species that would benefit from this EIS study that this fish bypass that the Corps has come up with and the Bureau has endorsed. We have a chance to hit the fair button for the ag businesses, for the communities, for everybody.	Comment noted.
TB-12	B. Rakes, Buffalo Rapids Irrigation District #2	1	We have pumps. Pumps are expensive to maintain. Our average yearly pump fee for our little district, which is 11,531 acres, runs $74,000 a year just for pump maintenance. And that's not the labor cost of taking the pumps in and out.	Comment noted. Pump O&M information available from other irrigation districts (Buffalo Rapids and Sidney Irrigation District) was used to inform cost estimates for pumping alternatives.
TB-12		2	This fish bypass makes common sense.	Comment noted.
TB-12		3	Pumps is not an alternative. It takes -- you get a power glitch, your pumps go off. There's a ditch across the river, it takes two days to get the water back to the other end.	Pump design includes redundancy and backup generators to account for potential disruptions in power supply.
TB-12		4	There's a deer underpass between Miles City and Terry. And they said, How are the deer going to get to the other side? Well, they found out. They went to the underpass and the deer are getting back and forth to the other side. So the fish will find its way around the bypass, too.	Comment noted.
TB-13	S. Pust, Savage Irrigation	1	I found the processes to be fair in the sense that we have lots of expert opinions from fish biologists to other experts, as well as the environmentalists have input.	Comment noted.
TB-13		2	I believe this is a good project because it costs the taxpayers the minimum. The cost to us as landowners in the project is also where it needs to be. And then the other reason is I believe No. 36, the female sturgeon, knew what she was doing, and the bypass channel is the preferred alternative.	Comment noted.
TB-14	T. Koffkey	1	I speak in support of the fish bypass channel.	Comment noted.
TB-14		2	I would like to state my objection to the fact that we are here in Billings on this day and this time. To accommodate the environmentalists, I would challenge you that perhaps you should have made a trip out two days earlier and got yourselves into Sidney.	Comment noted.
TB-14		3	If the pallid sturgeon has not managed to evolve to adapt to the changes, perhaps it is not meant to live according to the natural selection process.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-14		4	It has been stated that the fish do not like and will not use the man-made bypass to get upstream. I would recommend that each of you to take a trip to Ballard, Washington to the Hiram M. Chittenden Locks located there and to see the man-made salmon fish ladder. ... man-made process, and yet somehow these salmon figured it out. You know why they figured it out? Because the fish, as God created them, are actually very intelligent and able to adapt.	Comment noted.
TB-15	R. Geck	1	The cost involved for the other options are absolutely ridiculous. You want to double these guys' costs? That doesn't make any sense.	Comment noted.
TB-15		2	If you delay, the fish are dying. But I know other people that fish this river. They catch these fish. And it seems like recently the fish they're catching, they're not very big when they catch them, so they seem to be reproducing.	A key component currently contributing to the pallid sturgeon population is the Pallid Sturgeon Conservation Augmentation Program (PSCAP) that supplements the wild adult population with hatchery produced free embryos, larvae, and juvenile pallid sturgeon (from capturing and spawning wild fish). Over 1 million fish have been stocked in the Upper Missouri basin since 1998 and a recent estimate is that approximately 50,000 hatchery produced juvenile pallid sturgeon are currently alive in the basin (Rotella 2015).
TB-15		3	Fish have gone over the diversion. It is not a dam. It is a diversion. You also have documented proof these fish have gone around it through the slough.	Comment noted.
TB-15		4	The gentleman from the Defenders of Wildlife also said they won't find it, they won't find that bypass channel. I believe they will.	Comment noted.
TB-15		5	The gentleman from Buffalo Rapids, he said you don't want pumps. They have them, you know. Okay. They break down and fill with junk. The cost involves a half a billion dollars of taxpayer money? Let's be responsible. If you can do this for million dollars -- thank you.	Comment noted.
TB-16	M. Murphy, Montana Water Resources Association	1	MWRA stands in strong support of the 100 percent design complete, shovel ready, and twice determined preferred alternative concrete weir and fish friendly bypass. … The proposed preferred alternative … is based upon an extensive and thorough scientific evaluation of impacts that culminate with an opportunity to enhance the long term viability and stability of the farm and ranch community, agricultural dependent businesses and rural communities while addressing the needs of the Pallid Sturgeon and other fisheries and wildlife in the Lower Yellowstone.	Comment noted.
TB-16		2	Other alternatives, such as removing the existing dam and forcing the irrigators to pump their water from the river and assume an extremely expensive and far less reliable power dependent pumping process, would also result in adverse environmental impacts.	Comment noted. Potential effects of the alternatives are described in Chapter 4 of the FEIS
TB-17	K. Walter	1	We are obviously for the bypass. And for that reason and for many other reasons. One of the other reasons, you being from Omaha, Nebraska know all about the Ogallala Aquifer. You know about the fact that in Kansas, Nebraska, Oklahoma, where they're pumping water out of the ground, it goes away. It's no longer there and they're having a heck of a time irrigating there. We need that irrigation to support the economy in Sidney, Sidney Sugars especially, and this young man's family.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-18	B. Gifford	1	Last night I couldn't put my head around what the Defenders of Wildlife were talking about, why they wanted to pump. The pumps are -- you have to use fossil fuels; you have to use power, which is usually provided by some sort of fossil fuels or windmills, which would damage the endangered species, which we do have whooping cranes and we do have bald eagles.	Comment noted.
TB-18		2	They are trying to have a free-flowing river. And they're going to be attacking this and all the other inputs and similar structures from Billings down to Intake.	Comment noted.
TB-18		3	All the alternatives will cost money or will be environmentally unfriendly. So therefore, we're supporting the bypass channel. The preferred reason, they're smart scientists, smart people, engineers, that have put this together. his is the most viable solution and it's a working solution.	Comment noted.
TB-19	D. Garland, Sidney Sugars	1	The construction of the factory was built as a result of the irrigation canal. And with the wooden structure, we have had reliable water since its construction. The concrete weir will do the same. It's one of the only guarantees. Experts have talked about the unreliableness of the pumps. We know the concrete weir will work.	Comment noted.
TB-19		2	When the river changes courses over time, the fish seem to find their way up anyway. And it's my feeling that the fish will use that bypass.	Comment noted.
TB-20	P. Roberts	1	My husband and I own Mon-Kota Fertilizers & Irrigation, irrigation being our main source of income. Without the water, we have no income. After the Sidney meeting, one of our customers came to me and said, Without water, you're done. Yes, we are done. And by being "done," that means there are five families going to lose their total income.	Comment noted.
TB-20		2	So my store survived the irrigation solely from the bypass alternative.	Comment noted.
TB-21	J. Jennaway	1	With our growing population and the fact that natural resources, such as land and water, are not going to increase anytime soon, we need to be smart about the way we use our resources. And with irrigation, with regard to water needs to be the first priority. Not just because of all of the people in here that depend on it, but because of the impact that it has on our local economy.	Comment noted.
TB-21		2	Of course, we should be good stewards of the rivers and the fish. And in the current environment, where people tend to be so divided and we tend to look -- when we're looking for answers, we are often willing to substitute hurting our opponent for helping ourselves. Any win/win is a good thing and that's exactly what this bypass channel is. It's a win/win.	Comment noted.
TB-22	T. Ersksine	1	I don't know how on the one side of the mouth we can talk about energy conservation, and then on the other side of our mouth say we want to put a bunch of pumps in the river that we don't even have the power to take care of.	Comment noted.
TB-22		2	I believe the preferred alternative, the bypass channel, is the best alternative, not only for farming, but for the communities, for the people and jobs, and for the pallid sturgeon.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-23	T. Christensen	1	… our irrigation project has been there for a hundred years and there haven't been any issues with it. The diversion dam is reliable. It doesn't create any pollution. It's been environmentally friendly.	Comment noted.
TB-23		2	It's been brought to my attention that there are more pallid sturgeon in the Missouri River and there's a bigger problem there than there is on the Yellowstone River, so I'm not quite sure why we're continuing to have this discussion.	As stated in Chapter 3 (Section 3.9.1.3) approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). This shows the importance of restoration activities on the Yellowstone River. Outside of the spawning period the majority of the pallid sturgeon do prefer the Missouri River near the headwaters of Lake Sakakawea. The Corps of Engineers is still engaged and committed to identifying other potential management actions in the Missouri River and within its authority that could reasonably be implemented to accommodate avoidance of jeopardy for the pallid sturgeon in the upper basin beyond just this discrete project, if necessary, based on the best available science. However, current hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014) and in the short term could detract from or confound the analysis of benefits derived by providing passage at Intake.
TB-23		3	We need to move forward with this weir and bypass, just as the before when the Bureau had decided it over two years ago.	Comment noted.
TB-23		4	The pumps would cause pollution in our area in the air, as well as noise pollution. They would disturb the fish by putting metal into the water and creating noise and vibration. And the overall economy of Sidney would be gone if we don't have irrigation. It would affect the whole town.	For each alternative, effects on air quality are described in Section 4.2, effects of noise pollution are described in Section 4.14, and effects to social and economic conditions are described in 4.15.
TB-23		5	I also represent the city council and our water supply needs irrigation to put water in our wells. It would be cost prohibitive if irrigation is gone and we have to add more wells to supply the City of Sidney with water.	The potential effects of alternatives on groundwater hydrology is documented in Section 4.4.
TB-24	B. Farling, Montana Trout Unlimited	1	Why in Billings? It's because the Yellowstone River is a national treasure. People love it all over the country. It's beloved in Montana and it's beloved by my members.	Comment noted.
TB-24		2	I'm a scientist with fisheries and hydrology background. I work with fisheries and biologists all over the state. There's a strong consensus among the biologists in this state that the bypass alternative does not give the fish the highest opportunity for the success.	Comment noted.
TB-25	S. Bosse, Northern Rockies Director, American Rivers	1	Billings is the midway point of the Yellowstone River, and I think it's important to give Montanans from across the state an opportunity to comment on this issue.	Comment noted.
TB-25		2	The first question was what is going to work for the fish, because that's the primary purpose of this project. If it doesn't work for the fish, it doesn't work. And we're not just talking about pallid sturgeon. There are 52 fish species in the Lower Yellowstone River; 32 of them are native. There's seven fish species of special concern. So this isn't just about restoring the pallid sturgeon.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-25		3	We've reviewed the scientific literature, looked for examples of similar projects across the country, and found that there's never been a fish passage facility built that's been shown to pass pallid sturgeon, or shovelnose sturgeon, which is a close relative to the pallid.	Most channels and fish passageways have been designed for other species, or incorporated features such as step weirs that are difficult for sturgeon to navigate. Case study of Dunton Locks in Aadland (2010) indicated lake sturgeon had passed upstream through a short constructed rapids. The Glen-Colusa gradient facility constructed like a riffle on the Sacramento River has been shown to pass green sturgeon (Vogel 2008). Extensive analysis and design effort has gone into the design of the proposed Bypass Channel to provide suitable velocities and depths and gradients similar to natural side channels on the Yellowstone River that pallid sturgeon use. The U.S. Fish and Wildlife Service convened a Biological Review Team comprised of sturgeon experts to supply further recommendations and design criteria for the Bypass Channel to optimize the channel design based on lessons learned from other facilities and based on the state of the science regarding pallid sturgeon swimming behavior and swimming capabilities. Projects are undertaken frequently without benefit of "proof" but are based on scientific and engineering analyses of professional designers. See Section 4.9.8 for further discussion on the design of the Bypass Channel.
TB-25		4	A lot of people here tonight talked about the Tongue River Bypass, which is a fantastic project. But the truth is it's never passed a pallid sturgeon. It's been successful at providing passage for lots of other species of fish, but not for pallid sturgeon, and that's the focal species we're trying to help get past the Intake Diversion Dam.	Comment noted.
TB-25		5	If you want to look at a successful project after which this one can be modeled, you can look at the removal of the Savage Rapids Dam on the Rogue River in Oregon. It's a very similar case to what we face at Intake Diversion Dam. It involved federally listed fish species, and the Bureau of Reclamation was involved in removing the dam and replacing its function with a pump system. Thus far, it seems to have worked well for fish and farmers.	Savage Rapids Dam is one of many dam removal projects that have been implemented successfully. The FEIS describes and evaluates two pumping alternatives that include weir removal. Each fish passage and dam removal option is specific to the conditions and needs of the individual proposed project. In the case of the Lower Yellowstone Project, specific concerns exist regarding the ability to pump water at low flows from a generally unregulated river; practicability; sedimentation; changing river geomorphology; fish needs and capabilities; pumping volume; costs and funding for implementation and long-term OM&R; and weather patterns (i.e., ice). Where possible, the identified concerns were addressed through the alternative development and design process, generally resulting in increased costs for the implementation and long-term OM&R of the alternatives. Remaining concerns which were not resolved through alternative development and design will be weighed by the decision maker throughout the NEPA and decision making processes.
TB-25		6	There's one final issue I would like to address, and that is the vulnerability of the proposed bypass canal to extreme floods and ice jam events on the Lower Yellowstone River, both of which are very common. Flows on the Lower Yellowstone River can reach 70,000 cfs, sometimes even 100,000 cfs. When that happens, we have genuine concerns about the structural integrity of the bypass.	Appendix A-2 of 2015 EA describes the analysis of the bypass channel in detail including Attachment 5 which addresses ice. The design accounts for ice and a wide range of flow conditions. Ice jam risks are also described in Section 3.3.7 of the FEIS. The bypass channel was designed for the range of flow conditions that occur at this site. Some damage in large events is likely to occur but that has been accounted for in O&M costs.
TB-25		7	American Rivers supports an open river alternative that involves removing Intake Diversion Dam and replacing its function with a pump system, and the absolute worst thing we can do is throw 57 million dollars at a solution that won't work for fish or farmers and could, in fact, make the situation worse than it is today.	Comment noted.
TB-26	W. McNutt	1	We are the best stewards of the cropland involved in this project. And we have studied and studied about the bypass and the weir that the Corps of Engineers and the Bureau of Reclamation and the U.S. Fish & Wildlife says will work.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-27	D. Kelsey	1	Our operation at Bridger, without the diversion dam and the irrigation project that it supplies, would be pretty much over. So it is critical that we support this bypass channel effort.	Comment noted.
TB-27		2	These environmental folks are not happy meeting a happy medium. They want to move from that bypass channel and that diversion dam in Glendive on up the Yellowstone and take everything out along the way.	Comment noted.
TB-28	S. Forrest, Defenders of Wildlife	1	It's not a win/win situation if one side doesn't win. And the problem we have with the preferred alternative is that we don't think it's going to work. It's not going to provide passage for sturgeon. Your own EIS makes it pretty clear, it acknowledges that the open river alternative is going to give the sturgeon the best chance possible.	Section 2.5 discusses why the agencies believe the bypass channel will work and cites the cost effectiveness of each alternative and comparison of plans relative to each other in selecting the preferred alternative.
TB-28		2	All the rest of it is guesswork for putting down a 60 million dollar bet on an unknown chance. We could put down a hundred million dollar bet on a sure thing. I don't bet, necessarily, all the time, but that seems like better odds to me that's worth the extra investment. My organization and the other organizations who are here tonight are willing to look for that money elsewhere to make up that difference.	For any alternative which is selected, the Agencies would welcome opportunities for non-Federal funding opportunities. Regardless of funding source, the capital costs, cost effectiveness, and incremental cost analysis provided in Chapter 2 would remain the same.
TB-28		3	And just one other thing, given all this uncertainty around the bypass configuration, whether the sturgeon are going to find it and use it, whether they will use it in numbers; and if they do use it, are the numbers sufficient to accommodate their rather unusual spawning regime. ... The Bureau is going to stay. They're stuck. And the irrigators are stuck, if this if doesn't work. But I would like to see the Corps, who's getting off on a pretty good deal on this river to stay involved until, in fact, we have shown that sturgeon are moving up river in sufficient numbers to spawn ...	Within the upper basin, providing fish passage at the Intake Dam has been identified by the USFWS (Service 2013) and in the 2014 Pallid Sturgeon Recovery Plan, and confirmed by the best available science through an Effects Analysis (Jacobson et al. 2016), as one of the best possibilities for restoring self-sustaining populations of pallid sturgeon. This project will reestablish a linkage to potential pallid sturgeon spawning habitat and much increased drift distance, which is currently hypothesized as being one of the primary limiting factors for pallid sturgeon recruitment. The Corps of Engineers is still engaged and committed to identifying other potential management actions within its authority that could reasonably be implemented to accommodate avoidance of jeopardy for the pallid sturgeon in the upper basin beyond just this discrete project, if necessary, based on the best available science. However, current hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014) and in the short term could detract from or confound the analysis of benefits derived by providing passage at Intake.
TB-29	R. Cayko, McKenzie County Board of Commissioners; Chairman of the Board of Control of Lower Yellowstone Irrigation Project	1	If you wanted to spend a half a billion dollars putting some pumps in this river system that aren't going to work, that ain't going to fly. We can take the money -- and 57 million is a lot of money -- to do what we're going to do, but at least it's going to work. And the reason it's going to work is because it's the most environmentally and economical way to go.	Comment noted.
TB-29		2	The dam was built and in operation for over a hundred years, right? When we were growing up, our irrigation ditches were full of shovelnose and pallid sturgeon. The question is: How did they get in there if they didn't get above the dam?	There is currently a robust resident population of shovelnose sturgeon located upstream of Intake. This population has occurred upstream for many years and has been documented in the Main Canal (Hiebert et al. 2000) prior to the new headworks and screens. Shovelnose are known to pass the existing weir but pallid sturgeon have not been shown to pass in large numbers (Rugg 2014, 2015).

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-29		3	... when we get the new weir in here, concrete weir strong enough to survive the ice flows, we won't have to -- picture the low water and all those rocks sticking up, we won't have to worry about that because they won't have the rock. There'll be a level -- there'll be an elevation to get the water right and the irrigation that holds constantly water in it.	Comment noted.
TB-30	Shelby and Becky Reidle	1	We are in favor of the bypass tonight. This option has been studied repeatedly three times in 15 years, and it is the preferred option of the U. S. Army Corps of Engineers, the Department of Interior, and the Fish & Wildlife. Furthermore, the results of earlier Corps studies have now been verified by an independent contractor.	Comment noted.
TB-30		2	Installing pump sites across the river would require dredging, both initially and for routine maintenance.	Potential effects of construction and the maintenance, including any necessary dredging work, of the Pumping alternatives are described in Chapter 4 of the FEIS. Maintenance, including dredging of the channels, is included in O&M cost estimates.
TB-30		3	... the electrical infrastructure needed to operate these many pumps would be continually detrimental to wildlife, including, but not limbed to, whooping cranes and long-eared bats, which are also endangered species.	Comment noted.
TB-31	J. Kucera	1	I support the purpose of this pallid sturgeon passage, but we need to keep the farmers farming.	Comment noted.
		2	I don't understand why we have to put the bypass channel into an existing side channel, it already works for pallid sturgeon. I don't understand why we can't move the water entrance/fish exit of the preferred alternative downstream and leave the existing side channel to function as a wild connection.	The upstream end of the proposed bypass channel would be at the same location as the upstream end of the existing side channel. The proposed location of the upstream end of the bypass channel was chosen because this location has been relatively stable over time. Keeping the existing side channel open after construction of the proposed bypass channel would make the channel system at this location less stable, would decrease the flow split into the bypass channel below the BRT recommended flow split, and would reduce the reliability of the flow split into the bypass channel. Additionally, sediment transport simulations suggested that diversions of flow greater than approximately 15% from the main channel could result in excessive sediment deposition in front of the LYIP intake headworks gates, which would adversely impact their ability to operate.
		3	We should look at other alternatives including off-stream storage, such as that at Nelson and Deadman's Basin reservoirs. Look at water re-use and water conservation. Take less water out of the river, catch and store the nutrient-loaded return flows from the irrigated fields.	Off-stream storage was considered in 2005 during the Lower Yellowstone Fish Passage Alternatives Value Planning Study (2.2.1.3). This alternative was deemed infeasible due to cost and lack of suitable locations for a reservoir. Conservation measures are considered in the Pumping with Conservation Measures alternative. Also reference Section 2.3.8.7 which discusses irrigation demand.
TB-32	S. Schlothauer	1	And I believe we can support the bypass project, because it is the one that is most acceptable	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
		2	And that is, that there has been DNA testing, and I quote, "to determine the rates of hybridization between pallid and shovelnose sturgeon, and based on the genetic markers assessed, the DNA markers for the pallid sturgeon were genetically indistinguishable from the more common shovelnose sturgeon. Their ability to hybridize, and thus evolve comes about when the shovelnose fertilizes the eggs of the pallid sturgeon. Because of this ability of two species to hybridize, some biologists have expressed concern that it is a violation of the Endangered Species Act to protect one species that may not be genetically isolated from another." I think that is a very important fact to bring out.	Hybridization is likely to continue regardless of which alternative is selected. Determination of whether to list shovelnose sturgeon under the ESA is beyond the scope or authority of this project.
TB-33	J. Brower	1	First concern I have, you remove the dam and you are going to dry up several legitimate water right holding pump stations above the dam, because you will lower the water level of the river seven feet. By lowering the water level of the river seven feet, you will dry up two existing side channels that have been there over a hundred years and supports a lot of aquatic wildlife.	The water level upstream of the dam will be lowered by approximately 6 feet in the immediate proximity to the dam and decreasing to zero at a distance approximately 6 miles upstream of the dam. Additional discussion has been added to the FEIS discussing these impacts, see Sections 4.3 and 4.5.
		2	So removing the dam has a lot of unintended consequences, including the installation of pumps, which create a lot of noise and vibration and will be placed all along about a thousand feet of the Yellowstone River where some of the prime habitat, thousands of acres, has been generated in 107 years of flood irrigation that support the northern long-eared bat and the whooping crane.	The potential effects of the pumping alternative are described in Chapter 4, including the potential effects of noise and vibration on ESA listed species, other wildlife, and their habitats.
TB-34	D. Linde	1	Do the bypass. Do the right thing.	Comment noted.
TB-35	L. Schmierer	1	I support the fish bypass because it's best for the river, the land, the wildlife, and the people that are vested in it and carefully care for it.	Comment noted.
TB-36	L. Peterson	1	What I would like is 450 million dollars to support my 126 students. We need to put that into education, so we can have better stewards of the land, so we can have people who come from our area, who know the area, invest in it, and return to make it a better place. ... And I understand how you want to save the pallid sturgeon. And I say to those environmentalists what we are told in education when we're faced with a cost that we don't know how to cover. Hold a bake sale. Don't put it on the farmers.	Comment noted.
TB-37	D. Mitchell, Richland County Commissioner	1	...I would like it to be known that the County Commissioners in Richland County, all of them, all support the bypass channel.	Comment noted.
TB-38	D. Wyrwas	1	I understand that saving the pallid sturgeon is vital. I am an avid fisher, hunter and outdoorsman, with an understanding of ecosystems and nature. Conservation is how I am able to fill my freezer and eat. I also understand that my family and friends' lives may be impacted by an impulsive decision.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-39		2	Yes, dams were a big factor in the decline of salmon; and, yes, the removal of many dams, especially along the Columbia have helped boost their numbers, but those dams were turbine power generating dams, which killed the fingerings by the thousands. This dam does not have the destructive nature as those ones. This is a 100 percent natural irrigation system. ... The simplicity came when they created a passage for the salmon. This project also has a passage system in place.	Comment noted.
TB-38		3	Fish & Game have documented sturgeon above the dam. We have a proven ladder system that can be installed. We have a zero emission, zero maintenance irrigation system in place.	Comment noted.
TB-38		4	Why would we create waste by putting in a fuel-eating pump system that could cause problems that could resemble those of the City of Laurel when flows are less than normal? Why would we put ourselves at risk of a disaster that could happen to the Yellowstone River like that which happened as one of our refineries had a pipe leak thousands of gallons of fuel into the river? Why would we create expense when we Montanans are known for being conservative?	Comment noted.
TB-39	T. Paschke	1	First of all, this young man right in the back briefly said, If you want to save the fish, one of the options is transplant them, seed them above the Intake facility. That's been done all over the United States with success. Why not do that? If you really want to save the fish, that will do it.	Yearly relocation of pallid sturgeon upstream of Intake Diversion Dam was a proposed alternative during the 2005 Lower Yellowstone Fish Passage Alternatives Value Planning Study (2.2.1.3). This was determined to be an unacceptable alternative since it would not contribute to the achievement of a long-term, self-sustaining population and would not meet the purposes of ESA.
TB-39		2	You have government studies that say this will work. What are we here for? Do it.	Comment noted.
TB-40	J. Steinbeisser	1	I do stand in support of the bypass channel. I think it's by far the most viable option.	Comment noted.
TB-40		2	I would suspect that a sustainability analysis was done comparing the fish bypass channel, or alternative, to one of the pumping plants. The pumping plant would no way even compare, so its sustainability needs to be a part of this and should be considered.	Table 2-39 in the Final EIS present an alternative comparison matrix displaying categories considered when identifying the preferred alternative. The considerations presented in Table 2-39 include an analysis of sustainability.
TB-40		3	Well, in France, we have them all over the place. Fish bypasses, they work excellent. If the pallid sturgeon has been around for 70-plus million years, I think it's going to figure out the fish bypass.	Comment noted.
TB-41	S. Rekdal	1	And I can remember like in my 8th grade history class our teacher told us that to build a civilization, you're building a community, the first thing you need is people and the second thing you need is agriculture. So a decision like this should be based on something like agriculture, something that's the basis of the community and the people	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-42	D. Lemburg	1	I believe in the future of agriculture. You are agriculture. I believe in your future. And I believe that you should stand by and keep doing what you're doing, Sidney, and your surrounding area.	Comment noted.
TB-43	G. Staffanson (reading letter from R. Steinbeisser)	1	I am writing in support of the bypass channel for the Intake dam to help out not only the pallid sturgeon, but every other aquatic species in the river.	Comment noted.
TB-43		2	To my understanding there's now a recommendation to install pumps. This appears to be cost prohibitive from an economic standpoint, as well as disruptive to the environment. The pump solution runs the risk of disrupting other wildlife, possibly creating a Sidney water problem, and affecting the livelihood of the people living and working in Mon-Dak Region	Comment noted. Social and economic conditions, including O&M costs and the impacts of each alternative have been considered in section 4.15 and Appendix B. Impacts of each alternative on wildlife conditions, including disruptions to wildlife species, have been described in sections 4.8.
TB-44	J. Brower	1	I have been in design irrigation and working with irrigation systems in three different states, on three different major rivers, national treasures. … I know these people here don't want to hurt the farms, but they don't have experience on the farms with pumps. They don't realize that with pumps you have to rebuild them every three to five years for hundreds of thousands of dollars. With the motors, you have to rebuild them every seven to ten years' worth more than the pumps, hundreds of thousands of dollars.	Comment noted.
TB-44		2	Let's not delay any longer the construction of a viable solution that will help all fish in the river. And if it doesn't help them, the Corps and the Bureau, and the federal government and the project are legally obligated to create a fish passage, so fish passage solutions will continue to be implemented until it works. But after 15 years of study, we are confident the fish passage will work.	Comment noted.
TB-45	P. Seder	1	I appreciate all the folks that came from Sidney. And I want to say I'm glad they're having a meeting here tonight because it gives me an opportunity to speak in their support	Comment noted.
TB-45		2	I've been an electrician for 35 years, and there's some other issues involving motors and pumps and water. They have already proven that water and badly powered equipment in boats kill people in the water. What do you think is going to happen if there's faults and leakage? There's more than a sturgeon that's going to get \killed.	Electric pump designs will be built to national design standards.
TB-46	D. Brooks, Montana Trout Unlimited	1	it scares me that there's a huge risk that the bypass channel will not work and that's even stated in the EIS that there's zero examples of bypass channels working on this plan.	Comment noted.
TB-46		2	But the thing that scares me equally is the cost here. 57 million dollars is a lot of money. Yeah, the EIS states that after one year of implementation of any of these alternatives, the Corps of Engineers will be gone and the Bureau of Reclamation, that's not bringing any money to the table for this project, will likely not have money to support an alternative or improvements and will scrap the whole thing. ... If we take a minute and consider that this alternative, the bypass channel, might not work, who is going to be on the hook if it doesn't.	Because of uncertainties associated with the Project, the Agencies are committed to implementing a Monitoring and Adaptive Management Plan (Appendix E) that will take into consideration not only pallid sturgeon but also other native species found in the Yellowstone River.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-46		3	And even I can see in this EIS that the numbers, the financials, on many of these alternatives are grossly inflated. Let me give you one example that I think someone here in the crowd can probably speak to. For the open river alternatives, one of the expenses being charged is for a ditch rider. ... They have budgeted per year for a ditch rider on an open river alternative half a million dollars. So maybe that's every year as a ditch rider, but I would offer that that's probably an inflated cost, and there are many others like this that I see in the EIS for the other alternatives.	The assumptions section states that the estimate is for 12 added ditch riders, not one. Please see Attachment B.8 of Appendix B Cost for additional detail supporting the OM&R cost estimates for the alternatives.
TB-47	Messer	1	I have looked at the EIS and there is a portion of it that talks about a monitoring where we could actually take a look at alternatives if the bypass doesn't work.	Comment noted.
TB-47		2	I fully support the bypass channel.	Comment noted.
TB-48	T. Koffkey	1	You say, It won't work. Why can't you be an optimist and say, It just might for a fraction of the cost. Not only that, the pumping stations are a minimum of five, possibly seven. As stated in the EIS, one of the things that affects the pallid sturgeon is the bank stabilization of the river. You will have to stabilize five to seven banks wherever you put these pumps at because the river doesn't know.	Comment noted.
TB-48		2	What about some other EIS studies besides the environment impact study? What about the economic impact, not just for Richland County or Dawson County.	Economic impacts have been included within the FEIS, see section 4.15.
TB-48		3	What about the agricultural impact? The solution that you suggest, these pumping stations, the farmers could never afford the O&M.	Comment noted. Social and economic conditions, including impacts to various economic sectors, and impacts of each alternative have been considered in sections 3.15 and 4.15.
TB-49	D. Steinbeisser	1	The bypass channel is the best option	Comment noted.
TB-50	L. McFarland	1	And I just want to say that I believe the people in Yellowstone County are in support of these good people from Sidney and the bypass, because eventually it's going to work its way up the river and affect us here.	Comment noted.
TB-50		2	I ask you to support the bypass, and I appreciate all of my neighbors and friends from Sidney.	Comment noted.
TB-51	H. Asbeck	1	I can tell you one thing, water flows downhill a hell of a lot better than it does uphill with a pump.	Comment noted.
TB-52	T. Bloesser	1	I know for a fact that their taking away 58,000 acres of irrigated farmland is not going to help the world feed itself	Comment noted.
TB-53	T. Koffkey	1	As I said, the third environmental impact statement, when you take away the livelihood of somebody that that's all they have known all their lives for three or four generations -- that's what's going to happen.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-54	B. Trushel	1	What bothers me is that we have scientific data that show the pallid sturgeon do not really use the Yellowstone River. … They're in the Missouri River. They're a large river fish.	As stated in Chapter 3 (Section 3.9.1.3) approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). This shows the importance of restoration activities on the Yellowstone River. Outside of the spawning period the majority of the pallid sturgeon do prefer the Missouri River near the headwaters of Lake Sakakawea.
TB-55	W. Quinnell	1	On one side of the line is the environmentalists. They're the endangered species, they're backing the pallid sturgeon. On the other side of the line is us, the locals. We also want to save the pallid sturgeon; but, however, we are here to save the endangered species of the small American farmer.	Comment noted.
TB-55		2	Without the LYIP, many of these 350 farm families will have to sell out and move on because they won't be able to afford to keep the farms, farms that have been in their families for generations.	Comment noted.
TB-55		3	So if all 58,000 acres were planted in wheat, that wheat could produce enough flour to make 418 and a half million loaves of bread. If all of that was planted in corn, it would produce enough corn to make 3.72 billion corn tortillas. If all of that land was planted in barley, you could take that barley, malt it, and make 350 million gallons of beer. If you took all this land and planted it in sugar beets, it could produce 350,000 tons of sugar. That is 700 million pounds of sugar.	Comment noted.
TB-55		4	So this is just a few of the reasons why I believe we should all support the fish bypass.	Comment noted.
TB-56	B. Griffin	1	I stand here in support of the diversion of the channel	Comment noted.
TB-56		2	And I urge you to not give the opponents a precedence. That's an important word to remember because if they get -- if they win this precedence, they'll take it up and down every river wherever they want to go to take out dams and diversions.	Comment noted.
TB-57	T. Paschke	1	You have the study that defined and the recommended solution is the bypass channel. Do it. Just do it.	Comment noted.
TB-58	T. Koffkey	1	What about the geese and the ducks that raise their young in the canal? Every day I drive that canal twice a day, over 20 miles up and down and I see these geese and these ducks raise their young on the canal. That's their habitat, their land and we need to protect that, not only the numerous wildlife that live and thrive because of the canal and its drainage.	Comment noted. Current lands/vegetation and wildlife conditions (including habitat) within the project area, which includes the Lower Yellowstone Irrigation District service area, have been described in sections 3.8 and 3.10. Impacts of each alternative on lands/vegetation and wildlife conditions (including habitat) have been described in sections 4.8 and 4.10.
TB-58		2	And I support the bypass channel and I support this limited species, the hardworking farmer, before they, too, become extinct.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TB-58a	S. Buxbaum	1	I just have some numbers to show that I wanted in the comments, that if we do the pumping situation like you're proposing, these numbers are go up and this is going to be an additional expense on my farm. I raise 550 acres of sugar beets on my farm. My taxes would go up by at least 42,000 per year. My loss in production, my sugar beets will grow -- in the heat of July and August, my sugar beets will grow anywhere from two and a half to three ton per week. I figure two and a half ton, and my loss in production is $68,000. Just on my farm alone it's going to cost me $111,000 if we do pumps.	Comment noted.
TB-60	J. Deherrera	1	And so they released 700,000 baby fish June 27th, the collaborating scientists of the Missouri River Pallid Sturgeon Drift Study released over 700,000 one-day post hatch pallid sturgeon to the Upper Missouri River. And I just wanted everyone to understand that when she come up and she said that they weren't a native fish, that aren't in the Yellowstone River, that that is now documented, their release into the Upper Missouri River	As stated in Chapter 3 (Section 3.9.1.3) approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). This shows the importance of restoration activities on the Yellowstone River. Outside of the spawning period the majority of the pallid sturgeon do prefer the Missouri River near the headwaters of Lake Sakakawea.
TB-60		2	And I am for the bypass channel.	Comment noted.
TB-61	B.Trushel	1	Pallid sturgeon are absolutely native to the Yellowstone River and to Montana. They are a large river fish that is in the Missouri River. 5 percent of radio-tagged pallid sturgeon have moved up the Yellowstone River. 5 percent. We are putting all of our eggs into 5 percent. In fact, one of their spawning habitats is seven miles up the Yellowstone River right below the Fairview Bridge. ... So they might use -- the 5 percent, they come up and they use the Yellowstone River, but they are large river turbid fish that reside in the Missouri and Michigan Rivers.	As stated in Chapter 3 (Section 3.9.1.3) approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). Outside of the spawning period the majority of the pallid sturgeon do prefer the Missouri River near the headwaters of Lake Sakakawea.
TB-62	W.Quinnell	1	There is nothing more reliable and economical than gravity. Pumps are kind of like a new sports car full of computer technology. I'm sure they work great at first. Then you have programming glitches and they break down, and it takes three engineering degrees to find out what the problem is.	Comment noted.
TB-62		2	When the pumps that are at the SID [Savage Irrigation District] station are no little run-of-the-mill water pumps. Each of the three electric motors puts out more horsepower than the average American car. The amount of power they consume is mind boggling. They operate on a 2400-volt system, that's 20 times more power than in your home. And when things go wrong, in a 2400-volt system, you don't just go to the electrical panel and reset the tripped breaker. You can't just go to the local supply store and get a $26 part and fix the problem. A couple of years ago two fuses at SID blew, and they had to be special ordered and built at the cost of $3,000 per fuse, and it took over a 12 month to get them back up and running.	Comment noted. Pump O&M information available from other irrigation districts (Buffalo Rapids and Sidney Irrigation District) was used to inform cost estimates for pumping alternatives.
TS-01	D. Mitchell, Richland County Commissioner	1	If the Intake Diversion Dam has been working for a hundred years, why are the pallid sturgeon not extinct? They must be doing something correct to have been able to live this long.	Note: Same comment as TB-1, #1

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TS-01		2	With this perceived threat of climate change, global warming, and carbon print, how much of a carbon print has the Lower Yellowstone Irrigation Project created over the last 107 years it has been providing water to the valley?	Note: Same comment as TB-1, #2
TS-01		3	I am really worried about the tax base so I called Helena, Montana Department of Revenue. And one irrigated ground appraised value is $664.62. A wild hay acre is $175.98, and a grazing acre is $39.30. So when we go to start figuring out our tax values, that irrigated property is worth $14.34, the hay ground is worth $3.80, and the grazing land is worth 84 cents. If you do anything to that dam, you are going to kill this county. There is 55, 58,000 acres, and that tax base would disappear.	Comment noted. Social and economic conditions have been considered in section 4.15.
TS-02	R. Cayco, Chairman of District 2, LYIP, Chairman of Board of Control; Kinsey County Commissioner	1	I am just going to make a statement that says that we believe that the weir and the fish bypass would be the best alternative.	Comment noted.
TS-02		2	The other alternatives were looked at and most of them, you know, was the cost factor. The farmers here, they etch out a little living here and they do a good job. But there are four and five generations that have been here for a long, long time. We want to keep it that way.	Comment noted.
TS-03	S. Reynolds	1	But I am still not understanding why we are even going through this when you have shown that the bypass is the answer to our problems. We are saving the fish and saving the farmers. I guess my question is why are we saving one species from being extinct while making another species extinct, the farmers? We need them.	Comment noted.
TS-04	M. Hamburg	1	I am also the County Planner for Richland County. Over the years, the last probably seven years with the oil industry, some people might say that we have enough money to maintain our community with the oil money. That is not true. Our community is an agricultural-based community. It has been for a hundred years and will continue to do so when the oil is no longer a viable source for Richland County like it was 30-some years ago when we had not enough revenue, even to maintain our county with the roads and everything that's going on in our communities with the impact from the oil industry. Thank you.	Comment noted.
TS-04		2	So I would like to show my support in saying please, get this project done.	Comment noted.
TS-05	R. Etzel	1	I am an equipment operator for the Lower Yellowstone Irrigation Project. And I know first-hand that these pumps are expensive to maintain and they break down a lot. And I am sure the board members would say, too, that the bills are expense for them; and when they are broke down, you don't have any water. I am sure if you have been hearing about Buffalo Rapids, they were without water for about a month on one of their pumping stations.	Pump design includes redundancy and backup generators to account for this. Information from Buffalo Rapids and Sidney Irrigation District were used to inform O&M cost estimates in this analysis.
TS-05		2	And I think that we need to have the Bypass; it's probably the best option for the farmers, the Irrigation Project and for the fish.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TS-06	B. Gilbert, Walleyes Unlimited of Montana	1	We strongly support more and more fishing and having more and more fish in the State of Montana. However, we also support the preferred alternative on the Intake Diversion. It will work. It will be cost effective.	Comment noted.
TS-06		2	You may not like it; you may not be happy about it, but people come first. We will try to do what we can to save these endangered species. But every day in this world, numerous specious go extinct. That's the way it is.	Comment noted.
TS-07	G. Kellesig	1	The Army Corps of Engineers, Bureau of Reclamation, Fish, Wildlife, and they all three agree that the Fish Bypass is the best option and I think that probably the majority of the people here agree with that as well. It's the best solution for our community as a whole, especially for our ag producers and all of our businesses that would be affected, our local environment, and last but not least, the pallid sturgeon. I strongly support the Fish Bypass Project.	Comment noted.
TS-08	G. Entzel	1	So I support the farmers. I don't know where the proof is. I think the pallid must be kind of lazy because there is lots of shovelnose sturgeon in--and I don't know how many people know the difference between a pallid sturgeon and a shovelnose unless you have one on your fishing rod. They look a lot alike. But there are lots of other bottom feeders like the carp and the buffalo fish.	Comment noted.
TS-09	D. Garland, Sidney Sugars	1	Looking back at the history of sugar beet processing from the 1830s on, there has been 181 sugar beet factories in the United States. Today Sidney Sugars that Holly built in 1925 because of the Irrigation Canal Project, of those 181 factories, only 12 are still remaining in the United States. ... So what's the reason that we are still in operation and it comes back to reliable water. Reliable water grows a reliable crop and we are able to process year after year.	Comment noted.
TS-09		2	For that reason, Sidney Sugars supports the preferred alternative, and I would encourage everybody to comment.	Comment noted.
TS-10	J. Brower	1	The Bypass Channel has its opening in the best spots that the scientists and the engineers can predict for the fish to find the bypass channel. And it provides significant water depth all year long and it provides the right velocities for the fish to be able to make it up the river.	Comment noted.
TS-10		2	What is really unique about this option is with the cooperation of several governmental agencies and their employees, we have found an alternative that's going to save the fish at the same time as it saves the farmer.	Comment noted.
TS-10		3	So right now, we have got one viable alternative that's good for the farmer, good for the fish and good for the rest of the habitat. And let's not risk that by removing the dam and getting five new pump stations with 20 pumps that could have failures like Buffalo Rapids has been suffering through for over a month and a half and adversely affecting their crops.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TS-11	K. Moen	1	To spend that many of hundreds of millions of dollars on some pumps and decrease the flow of the water by 260 million cfs will choke us. … As a result of that, our ground water will dissipate, the drinking water for the people, the cattle, the plants.	Comment noted.
TS-11		2	I think of the alternatives. I'd love to leave it as is but as I look at the alternatives--the bypass is most viable for us--the pumps are too problematic.	Comment noted.
TS-12	R. Shipman	1	And these farmers are stewards of the land. They are true environmentalists. They are the backbone to our community here. They are what has economically sustained us for long before we had the oil and continue to support us when the oil is not here.	Comment noted.
TS-12		2	And to put in windmills and pumps, I myself question how the pumps and the windmills are going to work. I am very concerned for a carbon footprint when we have lots of wildlife, birds, you name it, that are sustained off of the Yellowstone Irrigation District.	Comment noted.
TS-12		3	I feel like this bypass is the best option, and I want our economy to stay strong here in Richland County.	Comment noted.
TS-13	S. Buxbaum	1	So I am really in favor of this Bypass Preferred Alternative. And just so let's keep this in mind: we are not here just for ourselves. We are here for the future generations that are going to run this valley and keep this community viable and running.	Comment noted.
TS-14	Letter from meeting transcript Johnson		I am writing this letter in support of the proposed bypass channel for the Lower Yellowstone Irrigation project at Intake, MT. The pallid sturgeon has survived in the river for the entire 100 plus years the irrigation system has been in place. Hundreds of Lower Yellowstone Valley farmers, as well as the communities of Glendive, Savage, Sidney and Fairview are dependent on the delivery of water from the Yellowstone River for their livelihood. The elimination of the irrigation system would result in the bankruptcy of approximately 300 family farms and the closure of countless businesses dependent on agriculture, as well as the loss of hundreds of other jobs related to the agriculture sector. Sidney Sugars, which provides approximately 150 full-time jobs and another 150 part-time jobs, would close forever. My family business, Johnson Hardware and Furniture in Sidney, MT., was founded by my great uncles in 1915. My family's business has survived two World Wars, the Great Depression, numerous recessions, fires, droughts and floods, and not one or two but three oil booms and busts. The 39 reason my business, and all the valley residents, have survived here is because of the stable presence of irrigated farms in the Lower Yellowstone Valley. I am in support of the continuation of the Lower Yellowstone Irrigation Project and strongly urge the court to rule in favor of the proposed bypass channel and the long-term viability of irrigated farming in this valley.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TS-15	Letter from meeting transcript J. Dunn	1	The sugar industry has provided my family with the ability to own a home and raise a family. If the irrigation canal is shut down, or changed to an economically unsustainable pump system, Sidney Sugars will close and my family will lose our home. I am not alone in this. Hundreds of farmers and town people in our area face bankruptcy if irrigated farming were to leave the valley. Untold businesses and their employees would be affected. I understand that the pallid sturgeon is an endangered species but at what point do people come into the equation.	Comment noted.
TS-15		2	We won't lose our lives but we will lose everything we have worked for in our lives. When do people matter? Please, please make the right decision and rule in favor of the proposed bypass channel for the Lower Yellowstone Irrigation Project and long-term survival of all the communities tied to it.	Comment noted.
TS-16	Letter from meeting transcript B.Barbula	1	My name is Bernadette Barbula and I am writing to offer my support for the Lower Yellowstone Irrigation Project's proposed bypass channel.	Comment noted.
		2	All the other options for the LYIP are economically unsustainable and would result in the closure of Sidney Sugars and the loss of countless jobs. Farms, businesses and families in all the valley communities would be facing bankruptcy and foreclosure. An economic disaster would occur! We will lose our home! We will be forced to uproot our family and move to somewhere else and leave the place we have chosen to live our lives.	Comment noted.
TG-01	M. Rosendale, Montana State Senate District 18	1	First of all, that we need to keep in mind as we go through this process that first of all, the farmers did not request a single alternative or upgrade to this entire facility. … This is all as a direct result of the Endanger Species Act as you guys are aware. ... Then the people of this nation have got to absorb the expense associated with it, not 350 farmers and their families and the communities that they support in eastern Montana. The people of this nation have to support those costs associated with preserving this fish and that also includes the extensive operation and maintenance of the facilities as we go forward.	Comment noted.
TG-01		2	The next thing I would like to say is that when the new head gates were installed three years ago, this community was sold a bill of goods and that bill of goods included the rock ramp. … And then we were told that that had fallen out of the equation because of the cost associated with it.	Comment noted, the evolution of alternatives is discussed in Chapter 2, Section 2.2.
TG-01		3	The next thing I would like to say is that the Multiple Pump Stations are unrealistic. Right now our small Irrigation Project provides water to about 900 acres and there is two small pumps, as you can image, to provide that water and there is not enough reliable electricity to even run those pumps. We just had those voltages on those turned down so that we can actually make them function throughout the season.	Power infrastructure has been included in the alternatives requiring pumps as described in Section 2.3, and coordinated with the local utility.
TG-01		4	The only realistic and reliable method for delivering this water is by gravity flow assisted by the diversion and the Bypass Channel so they can provide the fish passage. So I would like to go on record and say that I support the Bypass Channel alternative.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TG-02	D. Mitchell, Richland County Commissioner	1	If the Intake Diversion Dam has been working for a hundred years, why are the pallid sturgeon not extinct? They must be doing something correct to have been able to live this long.	Note: Same comment as TB-1, #1; TS-01 #1
TG-02		2	With this perceived threat of climate change, global warming, and carbon print, how much of a carbon print has the Lower Yellowstone Irrigation Project created over the last 107 years it has been providing water to the valley?	Note: Same comment as TB-1, #2; TS-1, #2
TG-02		3	I am really worried about the tax base so I called Helena, Montana Department of Revenue. And one irrigated ground appraised value is $664.62. A wild hay acre is $175.98, and a grazing acre is $39.30. So when we go to start figuring out our tax values, that irrigated property is worth $14.34, the hay ground is worth $3.80, and the grazing land is worth 84 cents. If you do anything to that dam, you are going to kill this county. There is 55, 58,000 acres, and that tax base would disappear.	Note: Same comment as TS-1 #3
TG-02		4	Let it be known that the Richland County Commissioners Shane Gorder, Loren Young and Duane Mitchell agree that the Bypass Channel is the best solution to keep our farmers and the fish living on and in the Yellowstone River.	Comment noted.
TG-03	S. Staffanson, Montana House District 35	1	I have got 140 acres that I irrigate out of the well. That well would probably not be near as productive if it weren't for the canal raising the ground water so that I have water through my pivot.	Comment noted.
TG-03		2	… you talk about wasting water but it goes back into the ground water, it goes back into the river and it provides so many things for this community between hunting and agriculture and a place to raise a family	Comment noted.
TG-03		3	And I'd just like to say I am in favor of the Bypass. I think it's the best alternative to keep our Irrigation Project in place.	Comment noted.
TG-04	C. Kirkpatrick, Dawson County Economic Development	1	The Pallid Sturgeon Recovery Plan was identified providing passage at Intake Diversion Dam to protect and restore pallid sturgeon populations. By providing passage at Intake Diversion Dam, approximately 165 river miles of potential spawning and larval drift habitat would become available in the Yellowstone River.	Comment noted.
TG-04		2	Dawson County Economic Development stands today to support the Bypass Channel Alternative, the preferred alternative, which includes abandonment of the existing concrete weir; construction, operation and maintenance of a two-mile long bypass channel for fish passage along the weir; placement of fill in the upstream portion of the existing side channels for stabilization; continued diversion of 1,374 cfs through the screened headwaters; and continued operation and maintenance of the irrigation distribution facilities and pumps.	Comment noted.
TG-04		3	It is the opinion of Dawson County Economic Development Board of Directors that the removal of the Intake Dam will create an economic impact, adverse economic impact on communities in eastern Montana and ultimately, the entire State of Montana.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TG-05	A. Gehnert	1	Anyone that thinks they can build something in the Yellowstone River and have no maintenance or have no responsibility needs to take a second look at nature. Nature is what we live in and the history of this river is emphatically very dangerous and hard to cope with.	Comment noted.
TG-06	M. Schwartz	1	And there is nowhere else in this region that I have seen such wildlife and it's all created by the canal system. And, I mean, to obstruct that or change it in any way and divert water, you are creating another wildlife issue. I mean there is an entire ecosystem that runs off this canal system.	Comment noted.
TG-06		2	So I am in favor of the Bypass Channel	Comment noted.
TG-07	R. Etzel (reading letter from R.Rosaaen)	1	My business relies on the survival of the farms and the survival of Sidney so I bet most of you environmentalists are thinking we have the oil to keep us going. Wrong. The farmers were here before the oil and they will be here after the oil. ... Farmers come first in my welding shop. When they break down, I am there to get them fixed so they can harvest the food everyone needs.	Comment noted.
TG-07		2	If the dam is taken out, the water table in Sidney will drop and the town will have to go on restrictions of use. The animals that flourish in our area like deer, sage grouse, pheasants and the birds all can survive because of our irrigation.	Comment noted.
TG-07		3	Let the Fish Bypass get built so the fish survive. So do the people.	Comment noted.
TG-08	W. Hier (with L. Stevenson)	1	I do machine work for Sidney Water Users Project on the east side of the Yellowstone River on machine parts for the pumps on that project that are taking water directly out of the river to irrigate about 5,000 acres. Maintaining these pumps in the river has developed many problems from the silt, trash and gravel that is inducted into the pumps from the river coming in through the intakes and causes many problems in the pump housing and drive system. The cost of the machine work to fix these pumps and the fact that not all local machine shops are willing to deal with this type of machinery causes a problem. At one point in the summer, we had three different machine shops working on the pumps for the Sidney water users and there still wasn't enough people to go around.	Pumping design and O&M estimates were informed by experiences of nearby irrigation districts with pumps (Buffalo Rapids and Sidney Irrigation District) and have incorporated that information. There are backup pumps at each pump station in the design, and annual operation and maintenance costs have accounted for this maintenance.
TG-08		2	I am in favor of the current Bypass Channel preferred alternative to save both the farmers and the pallid sturgeon.	Comment noted.
TG-09	L. Stevenson	1	I think you really underestimated the cost of pumping out of that river just from my experience of trying to keep their pumps running. They are fighting it right now even while this is going on trying to get water to just 5,000 acres	Comment noted.
TG-10	S. Reynolds	1	I really highly strongly support this Bypass Channel and I just hope that you guys put this through and just not delay it because I think that with this delay--this is all about saving the pallid sturgeon and I am thinking with this delay, we are endangering them further by doing this so I think we have got a perfect solution so let's please support the Bypass Channel and get this through and get it going.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TG-11	L. Messer, Richland County Economic Development	1	the Intake Project is one example where the government came in to help and it actually worked. The thoughtful investment from the Teddy Roosevelt era provided the money to construct this structure to make this vast dry area bloom.	Comment noted.
TG-11		2	Over the past century, generations of LYIP Board of Control members have reliably delivered affordable and equitable irrigation water to address the Endangered Species Act. They have also taken measures to try to save the pallid sturgeon. They have made modifications to the system to improve the fish passage and to deter the fish entrainment. They have demonstrated that they have been good stewards with our precious resources, the fish and the water and they will continue to do so.	Comment noted.
TG-11		3	The EIS does an amazing job of giving us projections of the six alternatives' cost of construction, the annual operation and maintenance and the annual O&M per acre to get that water to the fields. But I ask that you also take into consideration the other costs that every grower must bear given the current expenses of seed, fuel, equipment, fertilizer, labor, transportation to the markets. The local farms are struggling to break even. If the cost to get this water increases anywhere from 10 to 60 percent, farming in this Mondak Region will cease to exist. And in addition, the annual property taxes that will no longer be generated in the Mondak will no longer be injected into our communities and will negatively impact our cities, counties, schools, states, budgets and services provided.	As shown in Section 4.15.5.7, for a given % increase in O&M cost per acre, the corresponding % decrease in farm income is lower, since O&M is not a majority component of overall production costs. For example, the Modified Side Channel alternative includes a 10% increase in O&M cost per acre, which was estimated to correspond to a 2.6% decrease in net annual income for a typical farm. As noted in the last paragraph of 4.15.3.3, whether or not each specific farm would remain viable under each alternative is beyond the scope of the analysis, which considered a typical, or average, case. As shown in the document, none of the net income reductions from increased O&M is sufficient to reduce net income to zero for the typical operation case.
TG-11		4	We support and agree with the agency's recommendation of the Bypass Channel and the weir as the best solution to preserve the sturgeon and other fish species, the wildlife and the habitats, the economies in the Mondak Region and the generations of families who live, work, play, conserve and protect our precious resources for the future.	Comment noted.
TG-12	R. Cayko, McKenzie County Board of Commissioners	1	The Irrigation Project must be allowed to function with an elevation level of water that will gravity flow through our canal and lateral systems. The Bypass Channel will allow the pallid sturgeon and other specious to travel upstream. This would be the most efficient and cost-effective alternative.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
TG-13	S. Forrest, Defenders of Wildlife	1	We are supported in that view by the Montana Fisheries Association. It's a professional organization of all the fishery biologists in the State of Montana, both agency biologists, academics and private consultants. They agree. They think the uncertainties with this Bypass Channel are so great that it's unlikely to work. And if it does work, it's probably not going to work in the way that we are all hoping it might work.	Current literature on bypass designs for sturgeon all highlight that promising approaches include those that mimic natural channels. This would include building a channel with similar geometry, facilitate passage under a range of discharge conditions, and incorporate a broad range of hydraulic criteria that emulate the range and depths and velocities that have been successfully negotiated by targeted migratory fish. (Braaten et al. 2015, Aadland 2010, Jager et al. 2016). Pallid sturgeon have been shown to use natural side-channels in the upper Missouri River (Braaten et al. 2015) and constructed side-channels in the lower Missouri River (DeLonay et al. 2014, DeLonay et al. 2016a; DeLonay et al. 2016b) during spawning migration. In the upper Missouri River, pallid sturgeon migrating upriver passed through a variety of short (0.4-km long; 0.25 mi) and long (3.9-km long; 2.42 mi) side channels (Braaten et al. 2015). The constructed side channels in the lower Missouri River, even though not constructed with adult sturgeon migration in mind, have demonstrated that sturgeon will use constructed channels and at times will choose to use them even when the main channel is unobstructed. The physical and resulting hydraulic features of the proposed bypass channel at Intake were modeled according to the features within known migratory pathways (main channel and side channel) used by pallid sturgeon in the upper Missouri River and Yellowstone River. The final geometry of the proposed bypass channel falls within the range of all parameters, including length, width, sinuosity, bend radius, and meander wavelength. In addition, this bypass channel has been engineered with expert input to increase the odds of use by sturgeon by optimal location and orientation of the downstream entrance, a flow split which is higher than side channels which have been used by pallid sturgeon, and water velocities and depths suitable for passage at a wide range of flows. Because pallid sturgeon have been observed to use side channels (both constructed and natural) on the Missouri River and Yellowstone River, even when the main channel is unobstructed, and because the designs mimic physical parameters of natural side channels actually shown to be used by pallid sturgeon on the Yellowstone, we believe that construction of the preferred bypass alternative will result in a high likelihood that the constructed bypass will effectively provide passage opportunity under a variety of flows. Lastly, the design of the bypass is constructed with the entrance near the base of the obstruction, rather than located some distance downstream. The best entrance locations are at the base of the obstructions because a fish's natural tendency is to seek upstream passage at the obstruction. Entrances located significant distances downstream of the barrier may cause fish to swim past and become trapped below the dam by their natural instinct to swim upstream (Aadland et al. 2010). Fish passage attempts which have often failed for sturgeon or are not suitable for sturgeon typically involve ladders, lifts, fishways with baffles, sharp turns, passage through large reservoirs, and dams with turbines (Jager et al. 2016). Additionally, there are many biologists that believe that this bypass structure will allow pallid sturgeon to migrate past Intake Dam. It is misleading to represent that all scientists are in agreement one way or another. The Montana AFS is not an organization of "all of the fishery biologists in the state of Montana" nor does a letter from that organization represent the views of all of the biologists in the state.
TG-13		2	But who is going to bear the cost of failure in this case? I don't think the Corps is intending to bear the cost of failure. It's going to fall on the Irrigation District. We want to make sure that if we are going to spend the millions of dollars--and I agree again with Senator Rosendale--I think this is a question for the American people.	See Section 4.9.4 regarding uncertainties and Section 4.9.9 regarding commitments by the federal agencies to monitoring and adaptive management.
TG-13		3	I think we need the time to find those additional resources to make up that gap. If it's a little more expensive, let's find the funds. Let's do the project right. Let's provide secure electric supply sources, if it's pumps. Let's upgrade systems as needed. Let's get renewable energy to drive the Project.	For any alternative which is selected, the Agencies would welcome opportunities for non-Federal funding opportunities.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
				Regardless of funding source, the capital costs, cost effectiveness, and incremental cost analysis provided in Chapter 2 would remain the same.
TG-14	T. Koffkey	1	I speak in support of the fish bypass channel.	Comment noted.
TG-14		2	I would like to state my objection to the fact that we are here in Billings on this day and this time. To accommodate the environmentalists, I would challenge you that perhaps you should have made a trip out two days earlier and got yourselves into Sidney.	Comment noted. (Same as TB-14, #2)
TG-14		3	If the pallid sturgeon has not managed to evolve to adapt to the changes, perhaps it is not meant to live according to the natural selection process.	Comment noted. (Same as TB-14, #3)
TG-14		4	It has been stated that the fish do not like and will not use the man-made bypass to get upstream. I would recommend that each of you to take a trip to Ballard, Washington to the Hiram M. Chittenden Locks located there and to see the man-made salmon fish ladder. ... man-made process, and yet somehow these salmon figured it out. You know why they figured it out? Because the fish, as God created them, are actually very intelligent and able to adapt.	(Same comment as TB-14, #4). See Response
TG-15	M. Skoglund, Natural Resources Defense Council	1	Our goal is for a win-win solution that accomplishes two things: one, providing farmers of the Lower Yellowstone Irrigation Project with the water that they need; and removing the existing dam and opening up the river for fish passage of the pallid sturgeon and other native fish. We do not see this as an either or choice between fish and irrigation. ... So long as the irrigators get their water, the river stays open, we will support it.	Comment noted.
TG-15		2	What is the best win-win solution to keep the river open, provide the water for irrigation? I generally think it's the best, most sensible long-term decision we can make that really would be the best for everyone.	Comment noted.
TG-16	D. Garland, Sidney Sugars	1	Sidney Sugars fully supports the Bypass Channel. When you look at things that migrate, things that both come to mind are the monarch butterfly. It travels thousands of miles, I believe, down to Mexico. I may not have all the facts but it is a very delicate animal. If it was up to man to make sure that every monarch butterfly made it to Mexico, I don't think one would make it there. God has put it into that particular animal to make that migration, to know how to manifest, how to get down there on its own.	Comment noted.
TG-17	J. Brower	1	And that, I want to ask, what is your scientific evidence that removing a dam has ever helped a pallid sturgeon before?	Although there are no examples of where dam removal has benefited pallid sturgeon, dam removal and bypass systems have been shown to benefit a variety of other sturgeon species (Aadland et al. 2010, Jager et al. 2016). Additional discussion has been added to Chapter 2 explaining why the agencies believe the bypass channel will work.

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TG-17		2	But here we have an opportunity by adding this fish-friendly concrete weir that has a fish notch in it at the lower elevation so that that fish notch will have water in it even when the Irrigation Project is having less water.	Comment noted.
TG-17		3	This artificial channel that's proposed now mimics natural channels that are proven the pallid sturgeon already use. The point of the matter is we have got a win-win situation.	Comment noted.
TG-17		4	The Fallon Pumping Station has been out this entire season and we are about to trip into July. There are crops that have been lost and there is a significant amount of crops that are damaged and they are going into rationing, which is a word that scares many farmers, in order to survive with their electrical pumps designed by engineers.	The design has incorporated redundancy and backup pumps to account for potential outages and damages. Information from Buffalo Rapids and Sidney Irrigation District was taken into account when developing O&M cost estimates for the pumping alternative.
TG-18	M. Newton, Fisher Sand and Gravel; Walleyes Unlimited of Montana	1	This bypass and where it's located at and the way it works and the way it is built, the guarding and everything about it, says it will work. If they will use that slough, they will use this bypass. But it won't just be pallid sturgeon; it will be many others. ... Get this thing done, get it built, help the fish, put a bunch of Montana people to work in eastern Montana for a little while, two years approximately, and develop our counties and our communities in eastern Montana. We need this.	Comment noted.
TG-19	B. Gifford	1	But one of the things that I did want to comment, since this is really a comment on the Environmental Impact Statement, is probably the most environmentally-friendly system is a gravity system. There is no carbon footprint to speak of.	Comment noted.
TG-19		2	The multiple pumps will have to be powered somehow. That will either be a carbon footprint from fossil fuels that have to supply power or if you try wind turbine and wind turbine--I was actually just driving down here. We are in a scenic corridor. If you come down the Yellowstone Valley, you would have visual pollution. That's a consideration that's always been taken into an Environmental Impact Statement also.	It is noted in Section 2.3.8.6 that there is uncertainty pertaining to wind power and that additional study and associated environmental compliance, siting and permitting would be carried out separate from this EIS if this proposal were to move forward into more detailed design.
TG-19		3	I need to write it down, but in 2013, the head of the Pallid Sturgeon Recovery Program actually specifically mentioned the bypass and said that this was a good way for the pallid sturgeon to help them recuperate so they could go up the river. And he seemed to have the opinion that this would work.	Comment noted.
TG-19		4	But again, I am in favor of the bypass system. It is a weir and water flows over it.	Comment noted.
TG-20	T. Christenen	1	We are here because we definitely support the bypass and the weir. And like some other groups that serve on the State, I do not see why having pump stations, it is not going to look nice. It's going to leave a carbon footprint. The pollution is going to be worse and we need to go forward with this bypass and get this project done.	Comment noted.
TG-20		2	How many people in this room, please stand up if you are in favor of this bypass. (COURT REPORTER NOTE: Majority stand. Applause.) And on the same--other hand, I would like all the people who are against this bypass to please stand up and I'd also like that on the record. (COURT REPORTER NOTE: Two attendees stand.)	Comment noted.

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TG-21	J. Schmierer	1	If this works {NOTE: bypass channel), it's a template for every compromise of dam and fish everywhere. If this works, it's a solution for the next hundred years. If it works, this is going to be a great thing for fish everywhere and for farmers and electric power everywhere.	Comment noted.
TG-22	B. Rakes, Buffalo Rapids Irrigation District #2	1	You don't want pumps. We have 11 of them. ... They break down for any reason. Rock in the the impellers, low water, um, and you have moss that gets into the pumps and tear the pump's impellers up. I wish I could have a natural inflow of water without pumps.	O&M cost estimates and real world experience from Buffalo Rapids and Sidney Irrigation District were used to inform the cost estimates that were prepared for the estimate in the FEIS.
TG-22		2	And we have cheaper power and we are still--we just went to $46 an acre on 11,000 acres is all we farm in our district, eleven five. And wherever they got that you could run Sidney Sugars or the Irrigation Project on 600 acre feet of water in that many acres, it's common sense you are not going to.	Comment noted, power costs have been incorporated into the estimates. Power costs in the FEIS have been updated to include Pick Sloan power rates.
TG-22		3	I am in favor of this bypass. You can't tell me fish are that stupid, they are not going to go down in there.	Comment noted.
TG-23	R. Etzel, Lower Yellowstone Irrigation Project	1	I just wanted to reiterate what Mr. Rakes said about pumps. They are expensive. They are a pain in the butt to work on and we don't have as many pumps as they do or as much capacity but we are working on them a lot for what we do.	Comment noted.
TG-24	W. McNutt	1	But the solutions often paralleled the comment that was made tonight. I want a win-win situation as long as you take the dam out. This is what we get all the time. We are going to play ball with you if you do it according to us. Not what you want, not what you need, not what you live with and not what you built in this system that has worked for over a hundred years but we want a win-win--I want you to listen to that--as long as you take the dam out.	Comment noted.
TG-25	M. Ruddy	1	I am an environmentalist and I am also an evolutionist. But I support this Project. I support this dam.	Comment noted.
TG-25		2	If it doesn't work, the Corps of Engineers, the Bureau of Rec, they will soon recognize it real quick and we will get it modified or we can change it to do something else. But we have to make a decision. We have to go forward.	Comment noted. A monitoring and adaptive management plan is included in Appendix E which will monitor success and shortcomings of the project and includes action to modify the project if necessary.
TG-26	A. Gehnert	1	And the first proposal that we had when I first attended meetings on this Intake Project, which was about 20-plus years ago, is that we would build a Bypass Channel from upstream to deliver water at the required 1500 cfs for the complete irrigation system to have and that Bypass Channel would bring water from five river miles upstream, which gives it enough head to operate the screen structure as presently constructed. It could operate. It could work to protect some people's property, including the railroad and the highway system that's in there. It could work to bring water to the irrigators and return the larval drift that will occur if the spawning does occur upstream of Intake.	This alternative was previously analyzed in the 2005 Value Planning Study, the 2010 EA (Reclamation and Corps 2010) and the 2015 Supplemental EA (Reclamation and Corps 2015). A discussion of this alternative has been added to Chapter 2 in the FEIS (Section 2.3.1)

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TG-26		2	Now, if we take 1500 cfs out when we are trying to build a dam, they are trying to build a bypass structure, when we do all this work on dry land and build this levy alongside the railroad track and the highway system and some personal property to protect those properties and deliver the water to the irrigators with one head gate at the bottom end and one head gate at the top end, one to control the flow at the screens to allow the larval drift to pass underneath that head gate and another head gate upstream to control the flow into the canal, it would work. It was one of our very first proposals on fixing Intake and I was there. I made that proposal. And it's still has not ever been scientifically studied or engineer-wise studied.	See response to TG-26
TG-27	M. Schwartz	1	Okay, so how about another what-if? We put in the pumps, we tear out the dam and how about that doesn't work? What happens then? You just wash your hands and say, "Oh well, I tried," but what about the people that negatively affects, that ruins their life and their livelihood?	Comment noted.
TG-28	S. Reynolds	1	My thing, I guess, is the time and the study. You spend more time studying this and more money studying this, by the time you get done, there may not be any pallid sturgeon to worry about. So I think we need to support something that we know is going to work, that has already been proven, that is already there. Let's go ahead and go with it. And yeah, what if it does work? Let's just go with it.	Comment noted.
TG-29	L. Nelson (Written comments submitted at meeting)	1	I support the by-pass channel plan. This plan, devised by the Army Corps of Engineers and the Bureau of Reclamation, will work for the farmers, area businesses, local water wells, & all plants & animals who depend on a reliable water source, as well as the pallid sturgeon to use the Yellowstone River if the fish chooses to.	Comment noted.
TG-30	G. Nelson (Written comments submitted at meeting)	1	The bypass channel will allow fish to navigate the river (as they have done for the 100+ years Intake diversion dam has been operational. The livelihood of citizens in this Yellowstone River valley depends on the reliable water source not only for irrigation of crops, but all ag related businesses that feed the local economy.	Comment noted.
BP-1	E. & A. Levy	1	Please help prevent the farther abuse of habitat and those creatures living in its watery environs	Comment noted
BP-2	J. Public	1	I object strenuously for the taxpaeyrs to pay for this expensive work	Comment noted
BP-3	G. Kallevig, Stockman Bank	1	I have read/studied the proposed By-Pass proposal to allow the Pallid Sturgeon safe passage up-stream and think this is the best option for all concerned.	Comment noted
BP-4	L. Peters	1	I would like to voice my support for the Lower Yellowstone Irrigation Project in the prompt installation of the fish friendly weir and bypass channel.	Comment noted
BP-5	V. Dardis	1	Letter supports existing dam and support for farmers. (Handwritten)	Comment noted

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-6	K. Martin	1	In this report I did not see an equal amount of analysis of the people of the area, the history, their way of life, the condition of the land prior to irrigation, what it will be like after irrigation, what are alternate water sources available for these people, no an alysis of the economics of the area, supported businesses, (including the constant oil production boom and bust).	Consistent with Council on Environmental Quality(CEQ) and Department of the Interior regulations (40 CFR 1508.7 and 43 CFR 46.115, respectively) and CEQ guidance, the resources analyzed in the FEIS are those that are expected to be substantively affected by the proposed action. Chapter 2 of the FEIS contains much of the historical information providing a lead-in to describing the current conditions. Existing conditions and impacts on irrigation, socioeconomics, and surface and groundwater are disclosed in Chapters 3 and 4, respectively.
BP-6		2	There is no discussion on historic water tables and the effect on them of irrigation water. No discussion on alternate river pumping problems such as ice, channel fluctua tion, and level.	A description of historic water tables can be found in Section 3.4 of the Final EIS. Information on ice jams can be found in Section 3.3.6 and throughout Chapter 4. Channel fluctuations are discussed under the Geomorphology sections of Chapter 3 (section 3.5) and Chapter 4 (section 4.5).
BP-6		3	Will pumping be allowed? Will permits be granted or will this be a lever to kill off the w hole irrigation project? What are the condition and level history of ground water? Will pumping ground water support crops?	Requirements for pumping and permits are described in section 2.3.8 and water rights in 1.5.2.1. Groundwater existing conditions can be found in section 3.4 and potential impacts in 4.4. Social and economic conditions in 3.15 and evaluation of impacts in 4.15.
BP-6		4	With such a huge and national decision, maybe a group of Sociologists should have bee n employed to visit the area and document human life there and the impact you are pr oposing to happen. Consideration should also have been given to the way this land wa s prior to the implementation of the Lower Yellowstone Irrigation District. It was very arid sagebrush-strewn ranching area.	Social and economic conditions and impacts are discussed in Sections 3.15 and 4.15.
BP-6		5	Have there been agricultural studies done on what crops will work on these acres without irrigation? Are there alternate crops. Where is the Agricultural Department and its Experiment Stations in this decision? I see no report from Sidney Montana Station.	Social and economic conditions and impacts are discussed in Sections 3.15 and 4.15.
BP-6		6	These acres have probably increased the surface area of Co2 consuming greenery by thousands of times due to irrigation. No study or discussion was presented of this.	Air quality is described in section 3.2. Study of the carbon dioxide adsorption potential of crops is beyond the scope of this study.
BP-6		7	The Lower Yellowstone Irrigation project most surely recharges shallow groundwater wells in the area. What will be the effect on city water supplies, farm wells?	Groundwater hydrology is described in sections 3.4 and 4.4. Also as noted in the report additional groundwater studies would be required to analyze groundwater impacts. The Agencies acknowledge there is limited information available about the hydrologic connection between the Lower Yellowstone Project facilities and operations (canals, laterals, drains, and irrigation), wetlands, and groundwater. Obtaining this information would take extensive planning, investigations over the entire 58,000 acre Project, and development of a two dimensional model, all of which would be costly and take years to undertake. In some areas, it may never be possible to quantify the surface water-groundwater interaction due to the complexity of the area. The NEPA Implementing Regulations (40 CFR 1502.22) acknowledge there may be instances where there is incomplete information, and Department of the Interior Regulations (43 CFR 46.125) provide additional detail concerning the absence of information, stating, “In circumstances where the provisions of 40 CFR 1502.22 apply, bureaus must consider all costs to obtain information. These costs include monetary costs as well as other non-monetized costs when appropriate, such as social costs, delays, opportunity costs, and non-fulfillment or non-timely fulfillment of statutory mandates.” While the monetary costs to obtain this information are likely considerable, the non-monetary costs are also significant in this case, especially the delays in implementing passage for the remaining wild pallid sturgeon population and the resulting non-timely fulfillment of statutory mandates (i.e., complying with ESA).

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-6		8	I see no interviews or studies concerning how in the past fish survived and exist to this day. Could it be that no one knows? Could it be that the increased advertising and the influx of city people fishing on the Yellowstone could possibly be adversely affecting p erceived fish numbers? How many actually poach and remove sturgeons for trophies? I see no studies on this.	Pallid sturgeon were identified as a species in 1905 and there is not good data on historical abundance. However, harvest was a major source of decline prior to the species listing in 1990. The recently revised Recovery Plan for pallid sturgeon, available on the U.S. Fish and Wildlife Service website at: https://www.fws.gov/mountain-prairie/species/fish/pallidsturgeon/recoveryplan2014.pdf provides a good summary of the history of this species and current science. Illegal fishing may still be a threat to this species.
BP-6		9	I again urge you to not approve the removal of the Intake Dam. A fish passage structur e will surely suffice and balance both sides of this debate as previously approved.	Comment noted
BP-7	H. Garland	1	would like to express my support for the Bypass Channel Alternative	Comment noted
BP-8	K. Garland	1	would like to express my support for the Bypass Channel Alternative	Comment noted
BP-9	C. Averett, Big Sky Siding and Windows	1	The study recently completed clearly defines the bypass as the best option for all parties concerned including the pallid sturgeon	Comment noted
BP-10	K. Averett	1	In full support of the proposed fish bypass which the recent study clearly states is the best option for all parties concerned.	Comment noted
BP-11	T. Averett	1	Support this proposed concrete weir. I support the proposed fish bypass so it can improve fish passage	Comment noted
BP-12	D. Badt	1	I fully support the fish bypass channel that is proposed at the Intake Diversion Dam.	Comment noted
		2	Other alternatives that are being considered will eventually impact EVERYONE, not onl y financially but also by upsetting the natural course that has been laid out before us a s God's people. I am asking that your involvement in this decision regarding the bypas s channel ultimately involves a great deal of thought and attention to not creating anot her endangered species, God's PEOPLE.	Comment noted
BP-13	D. Binder	1	I support the proposed fish passage which the most recent study states is the best option for both the irrigation system and the fish	Comment noted
BP-14	L. Cooley	1	I am writing this letter to defend the diversion project for the Intake Dam on the Yello wstone River. I have grown up in Sidney and know this area WOULD be affected by the removal of this dam. This area's economy would deteriorate, jobs lost, businesses failed, farmers gone.	Comment noted. Social and economic conditions, including potential impacts of each alternative on local economic conditions, have been considered in section 4.15.
BP-15	F. Cundiff	1	I am in favor of the Bypass Channel option at Intake, The Pallid sturgeon will prosper with this improvement and the crop land to the north will receive plentiful amounts of moisture to grow their crops.	Comment noted
BP-15		2	The sugar Beet Factory in Sidney, will not survive with a reduction in the amount of water in the canal.	Comment noted
BP-16	D. Danielson	1	As an Irrigation farmer for fiftyeight years and board member of the Lower Yellowston e Irrigation Project I am strongly in favor of replacing the dam and adding a fish bypass channel.	Comment noted

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-16		2	The idea of pumping the water for Irrigation would be so costly the farmers could not a fford to continue farming. Pumps that pump the silt laden water of the Yellowstone m ust be rebuilt every several years at great cost. This year Pumps at another irrigation pr oject on the Yellowstone River have been down for unexpected repairs and many acres of crops have suffered. @ith the ever changing channels and large ice jams that occur on the Yellowstone Rive r, pump sites would be costly to maintain.	Comment noted. Social and economic conditions, including O&M costs and the impacts of each alternative have been considered in section 4.15 and Appendix B. Geomorphic considerations such as the channel migration zone are disclosed in section 4.5.
BP-17	V. Dardis (letter 2)	1	How do they know how many fish are in the river in 1910? And were they pallid sturgeon? When was it decided that they were endangered when they don't know how many were there to begin with?	Pallid sturgeon were identified as a species in 1905 and there is not good data on historical abundance as pallid sturgeon and shovelnose sturgeon are difficult to distinguish. The pallid sturgeon was listed as an endangered species in 1990. The recently revised Recovery Plan for pallid sturgeon, available on the U.S. Fish and Wildlife Service website at: https://www.fws.gov/mountain-prairie/species/fish/pallidsturgeon/recoveryplan2014.pdf provides a good summary of the history of this species and estimates of the historic population size. Background on pallid sturgeon is discussed in more detail in the Final EIS Section 3.9.1.3.
BP-17		2	This project has been here over a hundred years and the sturgeon are still here, you are trying to take away a historical project for the sake of a fish that's hardly edible.	Comment noted
BP-17		3	The proposed change can be so costly it will once again bite into the cost of owning and operating these farms and we are still at the mercy of those who tell us what to pay for what we buy and how much we will get for what we have to sell.	Comment noted. Social and economic conditions, including O&M costs and the impacts of each alternative have been considered in section 4.15 and Appendix B.
BP-18	R. Hoch	1	There has to be a way to save the fish but also save the dam which in turn keeps the fa ctory, the irrigated farms and in turn the businesses and the entire community. I do NO T believe it is necessary to kill the dam to save the fish.	Comment noted
BP-19	G. Kallevig (letter 2)	1	It seems to me that the best possible solution for the fish, the Irrigation Project and th e communities, farms, and business that will be impacted, is a solution that has a high percentage of succeeding, and is cost effective— the research and information that I have read indicates to me that the Fish By-Pass solution fits this description. The really great thing about this solution is that once it is in place, it can be closely monitored to prove that it is working as designed.	Comment noted
BP-20	G. Kallevig (letter 3)	1	With the EIS completed and supported by the Corp. and Bureau of Reclamation it mak es sense to me that the proposed Fish By-Pass option is the best option.	Comment noted
BP-20		2	If the method of getting water to our farmers changes to pumps, the increased costs w ill be an unsustainable hardship and will cause the majority of our farmers to go out of business.	Comment noted. Social and economic impacts of each alternative have been considered in section 4.15 and Appendix B.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-21	G. Kallevig (letter 4)	1	I have a question with regards to the environmentalists proposing to take out the Intak e Diversion Dam and replace it with pumps. My question is if they have done a thoroug h EIS? Other research indicates that the there will be negative consequences: 1. Removal of the Intake Diversion Dam will drop the river by several feet drying up t wo (2) significant water side channels that scientific study has proven are important to Yellowstone Fish species. 2. The City of Sidney relies on the irrigation project each year to supply it's "shallow aquifer" which is a major source of water for drinking wells and would be an added exp ense and burden to the community	A description of current surface water hydrology and hydraulics is included in Section 3.3 of the FEIS; possible effects of each alternative on surface water hydrology and hydraulics is included in section 4.3. A description of current groundwater resources is included in section 3.4 of the FEIS; possible effects of each alternative on groundwater resource is included in section 4.4. These sections note that additional studies would be required to analyze groundwater impacts. The Agencies acknowledge there is limited information available about the hydrologic connection between the Lower Yellowstone Project facilities and operations (canals, laterals, drains, and irrigation), wetlands, and groundwater. Obtaining this information would take extensive planning, investigations over the entire 58,000 acre Project, and development of a two dimensional model, all of which would be costly and take years to undertake. In some areas, it may never be possible to quantify the surface water-groundwater interaction due to the complexity of the area. The NEPA Implementing Regulations (40 CFR 1502.22) acknowledge there may be instances where there is incomplete information, and Department of the Interior Regulations (43 CFR 46.125) provide additional detail concerning the absence of information, stating, "In circumstances where the provisions of 40 CFR 1502.22 apply, bureaus must consider all costs to obtain information. These costs include monetary costs as well as other non-monetized costs when appropriate, such as social costs, delays, opportunity costs, and non-fulfillment or non-timely fulfillment of statutory mandates." While the monetary costs to obtain this information are likely considerable, the non-monetary costs are also significant in this case, especially the delays in implementing passage for the remaining wild pallid sturgeon population and the resulting non-timely fulfillment of statutory mandates (i.e., complying with ESA).
BP-22	J. Steppe	1	I believe we need the fish passage at intake. I think both the fish and human lively hoo d are important. We should not exclude either.	Comment noted
BP-23	C. Wheeler	1	This organization and construction should be considered a historic point of interest rat her than a nuisance to the environment. Because of the irrigation district, habitats hav e been created throughout the valley for various types of wildlife. The Irrigation Distric t provides various habitats for various types of wildlife, such as wetlands, wooded area s for shelter, better grasses for protection, not to mention the access to water for all ty pes of wildlife.	Comment noted. Existing conditions of lands/vegetation and wildlife (including habitat) within the project area, which includes the Lower Yellowstone Irrigation District service area, have been described in sections 3.8 and 3.10.
BP-23		2	Generally speaking, there are fewer deer crossing incidents in the spring and summer months while the canal is being utilized. For a good portion of the valley, the canal runs on the west side of Highway 16. I conte nd that the reason there are fewer deer incidents is that while the irrigation is in opera tion, the wildlife is not required to cross the busy highway in order access water.	Comment noted

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BP-23		3	I also have concerns about the reliability of irrigation pumps and wind powered genera tors. Both of these methods are historically known to be unreliable. Without reliability, the risk of farming increases ex ponentially. As such, many cost intensive crops will not be as enticing. This is going to create a scenario whereby many things will happen. First, incomes will decrease, redu cing the availability to the state for income tax purposes. As incomes reduce, so will p urchases, destroying the local economies. Additionally, land values within the area will plummet. Farmers in the area have always prided themselves with the idea that they are cash poor and asset rich. The drop in property values will make them cash poor and asset poor; annihilating their retirement prospects.	Pump reliability has been accounted for by provision of backup pumps and generators in the alternative that includes pumps. Pump O&M information available from other irrigation districts (Buffalo Rapids and Sidney Irrigation District) was used to inform cost estimates for these alternatives. Evaluation of economic conditions is discussed in Section 4.15.
BP-23		4	So, at this point, we have destroyed the wildlife, damaged the economy, and destroye d the retirements form hundreds of individuals. What we haven't discussed are the de faults to banks. Many loans were issued with the current prices of land, equipment, an d crop production. By single-handedly destroying all three of those means for repayment, bank defaults will increas e drastically. This will impact every business in the area. There are two industries that keep this area operating; Oil production and agriculture. Agriculture is the only reliabl e industry throughout the valley, and it, too, is now at risk.	Comment noted
BP-23		5	I strongly encourage the Bypass Channel as a means to live in harmony with nature, while still providing for a living.	Comment noted
BP-24	L. Ziler	1	I feel that removing the damn would be very detrimental for our community. Our entire town is built on the livelihood of the farming community. Without the irrigation system, this entire area would become a ghost town. Everything would dry up, the factory would close and the community of Sidney would be in a world of hurt. This would not only hurt the farmers, and the employees of Sidney Sugars but also all the business owners that depend on those people living and raising their families in this community. The Yellowstone Valley Farmers have irrigated the farm land in our comm unity for over 100 years.	Comment noted. Social and economic conditions, including employment in various economic sectors and impacts of each alternative, have been disclosed in section 3.15 and 4.15.
BP-24		2	I vote for the bypass that would help both the farmers, the community, the employees that depend on the crops to be harvested and processed each and every year.	Comment noted
BP-25	B. Renders	1	I urge you to PLEASE go ahead with the fish passage project and leave the weir in place for the use of the area farmers and the continued infusion of our ground water supply.	Comment noted
BP-25		2	I have to believe we could question this forever and the only thing we would accomplish is to kill more fish IF that is really happening. I would think we would be trying to get this solution in place sooner than later?	Comment noted

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-26	B. Baker	1	Increased cost of Maintaining pumps will drive farmers, Sidney Sugars plant, Anheuser Busch out of business and hurt the businesses that are supported by them and their employees. This will significa ntly reduce city and county tax income that pays for necessary government services like police, fire departments, amb ulances, road repair, and city sewer repair. This is a vital business in Sidney and will fur ther damage an area that has already seen a drastic shift in business due to the bakken and oil prices. I urge you to remember all of the families that will be negatively impact ed by this.	Comment noted. Social and economic conditions have been considered in section 4.15.
BP-26		2	Increased cost of Maintaining and operating large pumps will drive farmers out of busi ness and the LYIP will no longer be able to maintain and operate the expensive pumps. This will stop the existing irrigation of 58,000 acres which will stop the irrigation recha rge of the shallow aquifers that supports the stream, riparian habitat, and wetlands th at support a lot of important species of concern and Recharge local drinking wells inclu ding the cities.	Comment noted. Social and economic conditions, including O&M costs and the impacts of each alternative have been considered in section 4.15 and Appendix B. Current lands/vegetation and wildlife conditions (including habitat) within the project area, which includes the Lower Yellowstone Irrigation District service area, have been described in sections 3.8 and 3.10.
BP-26		3	I sincerely hope you will make the decision to great a by-way around the damn for the fish to move along while the dam is fixed and replaced. This by-way has been proven to be successful in the last several projects like these.	Comment noted
BP-27	D. and N. Berube	1	The bypass channel is the best option for the endangered species and the people of Montana and North Dakota.	Comment noted
BP-27		2	The decisions affects many jobs and industries such as Sidney Sugars, Anheuser Busch, our Research Stations and the Irrigation project.	Comment noted. Social and economic conditions, including employment in various economic sectors and impacts of each alternative have been considered in section 3.15 and 4.15.
BP-28	B. Bratsky	1	Farming and Agriculture in general CAN NOT afford any increased expenses and the re commended BYPASS CHANNELS option appears to be the BEST alternative not only to help the Pallid Sturgeon and other fish species, but also keeps the costs to a manageab le level for production agriculture.	Comment noted
BP-29	B. Buxbaum	1	I am a young farmer and could not bear the financial stress from losing irrigation on my farm or the increased cost of a pumping alternative. It seems the by pass channel wou ld be the best solution for all parties involved in this matter.	Comment noted
BP-30	R. Carlson	1	have concluded that Bypass Channel option best fullfills the needs of the pallid sturgeo n and guarantees the availability of irrigation water for growers. … The concept of the Bypass Channel providing fish passage is proven with the fact that p allid sturgeon have been observed in the existing side channel at higher river flows.	Comment noted

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BP-30		2	The Multiple Pump option is not economically viable in my opinion and does not provi de enough water to sustain the habitat that has evolved with the irrigation system to i nclude many species of animals and birds, some of which are endangered as well. ... The Multiple Pump option would require a lot of energy and long term cost to the area in either purchasing power or maintaining wind turbines to produce the electricity, not to mention the expense of maintaining the pumps themselves to make sure there isn't a loss for the growers.	Comment noted. Current lands/vegetation and wildlife conditions (including habitat) within the project area, which includes the Lower Yellowstone Irrigation District service area, have been described in sections 3.8 and 3.10. Impacts of each alternative on lands/vegetation and wildlife conditions (including habitat) have been described in sections 4.8 and 4.10. Social and economic conditions, including O&M costs and the impacts of each alternative have been considered in section 4.15 and Appendix B.
BP-31	T. Cayko	1	I'm in support of the original alternative that I felt was approved previously twice. This has been studied and gone over and the best alternative was agreed upon that the ce ment weir for the pallad sturgeon and all fish species in the Yellowstone River would w ork.	Comment noted
BP-31		2	Our farmers in this irrigated valley will not survive with taking the Intake Dam out and putting in pumps would be so costly we couldn't afford it. This effects the whole comm unity don't make us extinct. We live to pass on our farms to our children and their chil dren.	Social and economic conditions are addressed in Section 4.15
BP-32	Conststeve1952	1	Please help me understand how after 100 years of the placid sturgeon being extinct ho w is it still thriving?? Does it make sense to destroy farming and make them extinct?	Social and economic conditions are addressed in Section 4.15
BP-32		2	Please consider the diversion plan for irrigation and saving the sturgeon, nothing is per fect but compromise is important.	Comment noted
BP-33	P. Ellis	1	I am in full support of the US Corps of Engineers' preferred plan to construct new weir similar to the existing weir.	Comment noted
BP-34	A. Gehnert	1	Some of the history of the river as recorded by the USACE Cold Regions study, docume nts extreme ice jam events, loss of life and extensive loss of property which do occur fr equently.. If the project as designed is constructed without protection from ice events to the one hundred year level, it will be destroyed and require extensive funding to ma intain and operate. High summer flows cause extreme bank erosion, channel migration is recorded and occurs continually, work done in the flood plain should have a mainte nance protection plan with associated costs considered.	Design considerations to account for ice and high flows are both described in Appendix A. O&M estimates (Appendix B) and Final EIS Section 2.3 also account for this.
BP-34		2	The recovery of the endangered pallid sturgeon may be possible on the Yellowstone riv er, if the project is constructed using the best available science, please reference "The Final Science Report" dated November 30, 2009. Reference page 11, it clearly states th at removal of the rock structure is desired. Page 30 Item 1b was apparently not consid ered in the planning of the new proposed concrete weir. The issue of larval drift and im pingement on the screens suggests a one meter difference is needed. One meter woul d allow larval drift and small fish to pass below the screens, sedimentation levels are to o monitored and corrected to prevent entrainment.	Page 11 of the Final Science Report discusses the uncertainties with upstream passage and how the Rock Ramp and Bypass Channel have the opportunity to improve this condition; neither alternative was referenced as preferred. Screens and gates design considered approach velocities, sedimentation under the screens, and leaving an opening beneath the screens to minimize larval entrainment.

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BP-34		3	Funding of species recovery efforts should not become the responsibility of the local re sidents upstream or downstream of the project	Comment noted
BP-34		4	Restoration to full access of the entire river for fish species and historic uses may not b e possible but infringement on the flood plain and work in the river corridor should not endanger the nature of the Yellowstone river. A water delivery canal with inlet and ou tlet gates, constructed parallel to the BNSF RR grade, could provide flood control to th e 100 year flood level for the railway and the screen structures. The canal could leave t he flood plain at the upstream creek crossing to access an abandoned highway right of way. The old roadway extends upstream to the proposed inlet gate structure. Removal of the present rock timber weir would provide a natural river for pallid sturgeon upstr eam migration, the removed rocks could be utilized as stream bank protection on the p roposed delivery canal.	This alternative was previously analyzed in the 2005 Value Planning Study, the 2010 EA (Reclamation and Corps 2010) and the 2015 Supplemental EA (Reclamation and Corps 2015). A discussion of this alternative has been added to Chapter 2 in the FEIS 2.3.1.
BP-35	I. Johnson	1	I think the Army Corps of Engineers impact study - that shows immediate construction of the fish by-pass channel in the E.I. Study is best alternative.	Comment noted
BP-36	R. Johnson	1	I went to the west coast - Portland Oregon - this spring to tour the dams on the Columbia River and looked at the fish ladders that are in place to allow the fish to go up and down the river.	Fish ladders on the Columbia River dams are designed to pass adult salmon and trout species. A small number of white sturgeon do pass upstream of some of the dams (primarily the Dalles Dam), but the ladders were not designed to pass sturgeon. The most effective ladder at passing sturgeon, on the Dalles Dam, is wider and has a wide submerged orifice for fish to enter than other ladders that pass few, if any, sturgeon (Parsley 2008). The proposed bypass channel has been designed to emulate natural side channel characteristics on the Yellowstone River. See Aadland (2010) for discussion of natural channel design for fish passage. Additional discussion on channel design has been added to Section 4.9.
BP-36		2	I feel that the bypass channel or fish ladders recommended for the Intake dam is the best alternative.	Comment noted
BP-37	J. and K. Jorgenson	1	We, Jeff and Keri Jorgensen, owners of JnK, Inc. are in favor of the channel bypass.	Comment noted
BP-37		2	We are very concerned about the option of pumping. With the cost to incorporate tha t into the irrigation project and the cost to maintain, it would be economically unfeasib le for a farmer or a farming corporation to make any profit. Therefore, making the irrig ation project a complete fail.	Comment noted. Social and economic conditions, including O&M costs and the impacts of each alternative have been considered in section 4.15 and Appendix B.
BP-38	G. Kellevig (Letter 5)	1	The Intake diversion dam has been in existence since approximately 1909 (107 years), i f the Intake Diversion Dam was the only culprit to the decline of pallid sturgeon, would they not already be extinct?	See Section 3.9.1.3 of the FEIS for discussion of pallid sturgeon status, life history and threats.
BP-39	S. Lake	1	The US Corps of Engineers' preferred plan includes a new weir similar to the original th at was constructed in 1906 but would include a fish bypass to make it easier for all fish including the pallid sturgeon to go upstream. This would be a great solution for all of those involved including the ranchers and farm ers in that area.	Comment noted

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BP-39		2	There are some groups that are trying to get the weir eliminated entirely, forcing irriga tors to pump the water out of the river instead. This will of course increase the cost of water substantially among other issues.	Comment noted
BP-39		3	The Defenders of Wildlife, one of the groups who support eliminating the weir, have publicly stated that they will also w ork to eliminate five other diversion weirs upstream. This threatens tens of thousands of acres of productive far m land with debatable outcomes.	Comment noted
BP-40	D. Lannen	1	I am in full support of the Yellowstone river intake diversion dam	Comment noted
BP-41	T. Lee	1	Removing the dam would substantially impact the aquifer in terms of its width and vol ume. This would not only impact farm and ranch operations but also house wells that rely on the ground water as it is currently.	The potential effects of alternatives on groundwater hydrology is documented in Section 4.4.
BP-42	T. Maltese	1	The Bypass Channel is the best chance to help the endangered species in the river. This is extremely important for all Eastern Montana and Western North Dakota. This affects all of our jobs and industry. The Irrigation Project, S idney Sugars, Anheuser Busch, and the Research Stations supply jobs for people who p ay taxes to the State of Montana.	Comment noted
BP-42		2	Local fisherman also tell me the pallid sturgeon are more numerous than the Defender s of Wildlife would like to admit. Many fishermen throw the fish back in the river every day.	Comment noted
BP-43	G. Myron	1	It is important to reach a decision that will benefit both sides of the discussion. We wa nt the paddlefish to succeed and we want the farmers, families and businesses to survi ve and have a continued prosperous life. A decision that makes it uneconomical for business to survive is the same as not provid ing for the paddlefish. We must have a decision that is economically equal to the cost we have now to get our irrigation water. Plus, we do not want our water level to change in our ground water.	Comment noted
BP-43		2	Using pumping or other ideas for diverting irrigation water will make farming NOT eco nomical in the Lower Yellowstone valley and will turn this valuable region of the USA in to ghost towns.	Comment noted
BP-44	J. Myron	1	I am owner of an irrigated farm (half section) at Crane, MT whose irrigation water com es directly out of the Yellowstone River at Intake Montana via the Diversion Dam and t his has been done successfully for over 100 years. I also value American wildlife species and therefore support that you build the Fish Bypass Channel as a good solution for th e Pallid Sturgeon Endangered Species problem while still providing Lower Yellowstone irrigated farmers with water for our crops at a reasonable price.	Comment noted

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-44		2	Using pumping or other ideas for diverting irrigation water will make farming NOT eco nomical in the Lower Yellowstone valley and will turn this valuable region of the USA in to ghost towns.	Comment noted
BP-45	G. Parker	1	I am writing to object to the choice of the untested bypass channel as the preferred alternative for protection and enhancement of the pallid sturgeon and other native fish. The EIS correctly identifies the need to improve fish passage. However there is too much risk for putting the untested bypass in place. The proposed alternative could block the pallid sturgeon from moving up and down river.	Comment noted
BP-45		2	The alternative of multiple pumps plus conservation measures should be selected.	Comment noted
BP-46	L. Peters (letter 2)	1	I would like to voice my support for the Lower Yellowstone Irrigation Project in the pro mpt installation of the fish friendly weir and bypass channel.	Comment noted
BP-46		2	However, one stuck in my head from a fish biologist at Montana State University. She was quoted on record stating how the pallid sturgeon do NOT prefer the Yellowstone R iver and only about 5% of the population actually use it for breeding purposes. The rest of the population prefer to use the Missouri river as it is a larger river and they are lar ge river fish.	As stated in Chapter 3 (Section 3.9.1.3) approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). This shows the importance of restoration activities on the Yellowstone River. Outside of the spawning period the majority of the pallid sturgeon do prefer the Missouri River near the headwaters of Lake Sakakawea. The Pallid Sturgeon Recovery Plan (Service 2014) describes historic uses of the Yellowstone by pallid sturgeon, also see Section 3.9.1.3
BP-47	P. Prevost	1	As a farmer and owner of a farm in Crane, Montana I support the Intake Fish BYPASS. ... I'm for protecting the fish and wildlife, as well as protecting all the people this issue aff ects	Comment noted
BP-48	S. Reidle	1	I am writing to express my support of the bypass channel proposal for the Intake Diversion Project. I see this proposal as a solution that would benefit both the Yellowstone Valley agricultural community and the pallid sturgeon population.	Comment noted
BP-48		2	Having a reliable water supply is vital to having a successful crop in Eastern Montana and agriculture is the backbone to the Sidney community. Especially now that the oil industry is experiencing a downturn, any threat to agriculture would have a devastating effect on the area. Removing the current weir would cause our area to become a high acre cost pumping district, as farmers and ranchers would lose their access to water from the river. Along with being expensive, this is also an unreliable source of water as water outages are likely to occur.	Comment noted
BP-48		3	However, I believe that they have lost sight of the actual threats to the species. Since the weir was put in place in 1909, the pallid sturgeon and other fish have been able to swim through it and have been spotted in canals in the Sidney area for decades. The weir has never been a threat to the pallid sturgeon, so removing it would be a fruitless endeavor. By creating a bypass channel, the fish will have an easier way to get around the weir and continue their journey north.	Comment noted

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BP-49	L. Reisig	1	I support the bypass channel alternative. I believe it will work and can be built to operate at a reasonable cost.	Comment noted
BP-49		2	I don't want to see any eagles killed by windmills.	Comment noted
BP-49a	W. Renders	1	I am writing this in support of the Lower Yellowstone Intake Diversion Dam Fish Passage Project	Comment noted
BP-50	R. Rosaaen	1	Because of this irrigation, we produce some of the best crops. If the dam is taken out, the water table in Sidney will drop and the town will have to go on restrictions of use. The animals that flourish in our area like the deer, sage grouse, pheasants, and the bird s all can survive because of the irrigation. This fight doesn't just affect the farmers, it a ffects the entire Yellowstone valley from Williston, ND to Billings, MT. Thousands of pe ople will be affected, land value will drop and people will have to leave. This irrigation is the life blood of the entire economy and life in our area. When did human life stop mattering?	Comment noted. Current lands/vegetation and wildlife conditions (including habitat) within the project area, which includes the Lower Yellowstone Irrigation District service area, have been described in sections 3.8 and 3.10. Impacts of each alternative on lands/vegetation and wildlife conditions (including habitat) have been described in sections 4.8 and 4.10. Comment noted. Social and economic conditions have been considered in section 4.15.
BP-50		2	We all need to work together and that is what we have been trying to do from the begi nning let the fish bypass get built so the fish survive and so do the people.	Comment noted
BP-51	S. Rosaaen	1	The row crop creates a lot of work in this area and for a lot of other Businesses.commo n sense has to prevail here on this issue. Where do the Environmentalist think our food comes from the Pallid Sturgeon and not the thin air for sure. This water system does more good then they realize.	Comment noted
BP-52	J. Rosman	1	I support the irrigators who depend on the Yellowstone River to acquire their irrigation water. I understand the corp has a plan that works for the irrigators and sturgeon fish . Please do not allow the out side groups to interrupt the Montana Farmers/ranchers i n the Yellowstone River valleys means to make a living and life style that is recognized here in Montana.	Comment noted
BP-53	K. Roth	1	Being the Controller for Sidney Sugars Inc. my reasoning stems from the cost of this alt ernative, which is presently fully funded with a project contractor ready to start constr uction, as opposed to others that are not funded and would be far most costly to imple ment. No one is talking on how the multiple pump alternative would get funded if acc epted, but my belief would be the cost would either fall on our local taxpayers and loca l growers to cover the cost as the huge initial cost estimate would most likely not be ap proved in any federal or state budget going forward. Presently we have a low cost to o perate, low cost to maintain, and efficient canal system in place.	While it's true that funding for the bypass channel has been obligated to a contract based on the previous NEPA decision, that has not be a factor in the decision of which alternative to move forward with in the FEIS. Each alternative has been considered equally and the Agencies would seek additional funding needed if another alternative were chosen.
BP-53		2	To enhance our present irrigation system we now have an alternative for a fish friendly ByPass Channel, that has sufficient funding, and is fully supported and approved by th e Corp of Engineers through the environment impact study. This appears to me to be a win/win scenario. It's a win for all the fish that swim the Yellowstone River and a win f or our local economy which depends on low cost water flowing through our present ca nal system which irrigates all the crops grown in our valley.	Comment noted
BP-54	N. Rude	1	I am in support of what the Corps of Engineers have come up with as a solution. It app ears to work for the Farmers, Ranchers and Fish.	Comment noted

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BP-55	R. Steinbreisser	1	am writing in support of the Bypass Channel for the Intake Dam that will help not only the pallid sturgeon but every other aquatic species in the river. The Bypass Channel is t he best chance to help the endangered species while still keeping the Irrigation Project , Sidney Sugars, Anheuser Busch, Feed lots, and the research stations viable!	Comment noted
BP-55		2	To my understanding, there is now a recommendation to install pumps to irrigate the valley. This appears to be costprohibitive from an economic standpoint as well as disru ptive to the environment on several levels. The pump solution runs the risk of disruptin g other wildlife, possibly creating a city water problem and affecting the livelihood of p eople living and working in the MonDak region.	Comment noted. Social and economic conditions, including O&M costs and the impacts of each alternative have been considered in section 4.15 and Appendix B. Impacts of each alternative on wildlife conditions, including disruptions to wildlife species, have been described in sections 4.8.
BP-55		3	If you are not concerned about 58,000 acres of irrigated farming land, I urge you to thi nk about all the businesses in our community that rely on agriculture to sustain their e conomy. Through the oil booms and busts, agriculture has thrived for more than 100 y ears thanks to an innovative irrigation project that was built with the land and our envi ronment in mind.	Comment noted
BP-56	R. Sterling	1	I support the compromise plan for replacement of the weir on the Yellowstone River. The plan protects the sturgeon without punishing the irrigators.	Comment noted
BP-57	V. Kitt	1	Where do these government officials that are making these decisions reside? I'm sure t hat they don't reside here. They are making decisions from a desk somewhere in a con crete jungle where there is no wildlife. Why are people surrounded by concrete, makin g decisions for people who live with wildlife every day?	Comment noted
BP-58	D. Wyrwas	1	I understand that saving the pallid sturgeon is vital. I am an avid fisher, hunter and outs doorsman, with an understanding of ecosystems and nature. Conservation is how I am able to fill my freezer and eat. I also understand that my family and friends lives may b e impacted by an impulsive decision.	Comment noted
BP-58		2	Upon looking at the combined efforts of those involved to save the salmon, both gover nmant and non- government it has been widely documented that ladder's or weirs have played a huge role in the success of the Salmon. The Pacific NW and all the ecosystems that were effe cted continue to show promise as salmon populations are moving up and to the right. Those involved are seeing that it is both complicated and quite simple. The simplicity c ame when they created a passage for the salmon. This project also has a passage syste m in place.	The proposed bypass channel has been designed using the best available science on swimming behavior and swimming ability of pallid sturgeon, which differs from the behavior and ability of salmon species, and is designed to emulate natural side channels on the Yellowstone River that are used by pallid sturgeon. Additional discussion has been provided regarding channel design in Section 4.9.
BP-58		3	So I have to ask why would we create waste- by putting in a fuel eating pump system t hat could cause problems that could resemble those of the City of Laurel when flows ar e less then normal. Why would we put our selves at risk of a disaster that could happe n to the Yellowstone river like that which happened as one of our refineries had a pipe leak 1,000's of gallons of fuel into the river? Why would we create expense when we Montanan's are known for being conservative?	Comment noted

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BP-58		4	Look into audience, these are primarily farmers from Glendive to Fairview. They are in novators and creators, in my opinion they could build the bypass better and at half the cost of the government.	Comment noted
BP-59	M. Zadow	1	I am writing in to support the fish bypass channel for the Intake Dam. This option bene fits the fish and the farmers. But it Isn't just the fish and the farmers. What will happen if you decide on another option w ill have far reaching effects on whole towns. And cities and all the people that live and work there. I cannot imagine our town witho ut Sidney Sugars running efficiently. This would affect our schools, grocery stores, har dware stores	Comment noted
BP-60	T. Erskine	1	I did not talk about the decreased land, machinery and real estate values in communiti es in the Lower Yellowstone area if either multiple pumps or multiple pumps with cons ervation measures is the chosen alternative. Farm appraisals are based on a return on investment (capitalization approach). Simply it is gross income less expenses equals re turn to the land. If either high electricity cost for irrigation or high electric costs and re duced yields occur, land values will be decreased by a significant amount- as much as 40%. This reduced farmer earning ability affects his money to live and oper ate on.	Social and economic conditions are addressed in Section 4.15
BP-60		2	On the government level, taxable value declines, so taxes go down. This affects state, county and local government services. On the federal level, income taxes will go down because of less taxable income.	Social and economic conditions are addressed in Section 4.15
BP-60		3	Any way one looks at it either of these two alternatives is NOT acceptable. The bypass channel is the best alternative.	Comment noted
BP-61	S. Reynolds	1	I would like to say that I do not support the multiple pumps alternative for the simple f act that they do not work. The cost of putting them in is astronomical, not to mention t he cost of maintaining them. We already have a cost effective, no maintenance system of irrigation.	Comment noted. Social and economic conditions, including O&M costs and the impacts of each alternative have been considered in section 4.15 and Appendix B.
BP-61		2	If all the fuss is about the pallid sturgeon and saving them from going extinct, then why fight so hard to take out the Diversion only to put pumps in, which could endanger the m further; when a perfectly fish friendly alternative has been found.	Comment noted
BP-62	M. Appelberg	1	support the bypass for the lower Yellowstone valley. I feel it's the best choice for our town and for the fish.	Comment noted
BP-63	R. Bell (two duplicate letters)	1	We are writing this letter in support of the Bypass Channel Alternative for LYIP. Just th e thought of removing the Diversion dam is devastating.	Comment noted

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BP-63		2	Even though we do not receive our irrigation water from LYIP this would still have a ma jor impact on us. If their water would become non affordable to the farmer this would jeopardize our markets making it non feasible to grow sugar beets and malt barley.	Comment noted
BP-63		3	Based on our small irrigation districts pumping expenses, pumping is not even an optio n for the massive acres LYIP covers. We have lost crops when pumps go down in midse ason during critical irrigating times. They have a great system in place that has been w orking for over 100 years.	Pump reliability has been accounted for by provision of backup pumps and generators in the alternatives that include pumps.
BP-64	B. Bouchard	1	Please do not let this irrigation project that has been in operation for over a century be shut down!	Comment noted
BP-65	R. Carico	1	The water from the Yellowstone River that is used for irrigation is crucial to the economies of Dawson & Richland counties. Losing this water will result in hundreds if not thousands of lost jobs. Valley farmking will essentially come to an end as will the majority of businesses in Glendive, Savage, Sidney and Fairview.	Comment noted
BP-66	J. Damm	1	I support the by-pass channel	Comment noted
BP-67	K. Haugen	1	I am in support of the bypass channel	Comment noted
BP-68	R. Kimbel	1	I support the by-pass channel. Save the farmers.	Comment noted
BP-69	K. Mclane	1	I am extremely proud of the region's farmers who expressed willingness to pay for the Preferred Alternative as proposed by the USACE IF that will help the pallid sturgeon an d appease the enviros.	Comment noted
BP-69		2	Three interesting facts: 1) the pallid sturgeon are still alive after over 100 years of the dam and 2) around 90% of the pallid sturgeon split at the confluence of the Yellowston e and Missouri Rivers and only 10% even go up the Yellowstone 3) pallid sturgeon with the same genetic makeup as their wild counterparts are being raised in a hatchery.	All sturgeon species, including pallid sturgeon are long-lived, thus persisting as adults, even when recruitment of young fish is low. Pallid sturgeon are estimated to live 30-50 years or longer, and the remaining wild fish in the Upper Missouri basin (including the Yellowstone River) are large, old adults. As stated in Chapter 3 (Section 3.9.1.3) approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). This shows the importance of restoration activities on the Yellowstone River. Outside of the spawning period the majority of the pallid sturgeon do prefer the Missouri River near the headwaters of Lake Sakakawea. A key component currently contributing to the pallid sturgeon population is the Pallid Sturgeon Conservation Augmentation Program (PSCAP) that supplements the wild adult population with hatchery produced free embryos, larvae, and juvenile pallid sturgeon (from capturing and spawning wild fish). Over 1 million fish have been stocked in the Upper Missouri basin since 1998 and a recent estimate is that approximately 50,000 hatchery produced juvenile pallid sturgeon are currently alive in the basin (Rotella 2015).
BP-69		3	I am totally opposed to the pump with ground source water option due to concerns wi th the inefficiencies of that system and expense to operate those pumps. Wind turbin es have not proven cost effective and are also proved to be detrimental to bird populat ions. The Fox Hills Sands underground water aquifer in that area does not refill easily.	Comment noted
BP-70	D. Nevins	1	I support the fish bypass - leave the dam as is	Comment noted

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BP-71	R. Niles	1	I strongly support the Diversion project as it has been presented and built by the Fish and Game, the Lower Yellowstone Irrigation Project, and the corps of engineers with diversion dam, the fish screen and the rock ramp.	Comment noted
BP-72	R. Nimble	1	I support the bypass channel - save the farmers	Comment noted
BP-73	P. Plumb	1	I support an open river alternative for the Lower Yellowstone Fish Passage Project. Your own analysis shows that the best outcome for the endangered pallid sturgeon fro m this project is to remove the outdated Intake Dam, open the river and allow Full river passage.	Comment noted
BP-73		2	I do not support building a new dam and artificial bypass, as the likelihood that endang ered pallid sturgeon will use it is slim. The pallid sturgeon needs all the help it can get. Please adopt an alternative that removes the dam, provides pumps or other means to get irrigators water and gives the pallid sturgeon a fighting chance.	Comment noted
BP-74	S. Reynolds (letter 2)	1	I would like to voice my support of the Bypass Channel Alternative	Comment noted
BP-74		2	I do know the concept of how the pumps are supposed to work. I know it takes a lot of time and money to maintain them. When you compare the cost of the bypass channel at 57,044,000 to the multiple pumps at 477,925,000 it is a no-brainer which one is the best solution.	Comment noted
BP-75	S. Reynolds (letter 3)	1	With that said, from what I understand, the main concern and what this fight is all abo ut, is saving the dinosaur fish, so my question is, why are they being endangered furthe r by all these delays when there is a viable, cost effective, low maintenance, environme ntally safe alternative which is the bypass channel?	Comment noted
BP-75		2	Please let the bypass channel go thru without any further delays.	Comment noted
BP-76	D. Thiel	1	The diversion dam must be maintained so irrigation can continue. The families and people's livelihood would be adversely affected by removing the dam.	Comment noted
BP-77	H. Schlothauer	1	I think it is very important that this project be allowed to proceed with the plan for a n ew weir and fish bypass. It appears it is the plan approved by all three government age ncies and I see no reason it won't work. I have lived next to the Yellowstone River for 7 0 years and have seen sturgeon in all sorts of drainage ditches and low water areas. I a m quite sure they will find the bypass.	Comment noted
BP-78	P. Neiss	1	PLEASE, seriously consider the fish bypass as the most reasonable solution to fix the pa llid sturgeon situation and improve our irrigation system that has worked for over a ce ntury.	Comment noted
BP-78		2	The proposed pumping system would be expensive to implement and maintain in the muddy waters of the Yellowstone River. The potential is great for equipment damage o r failure. Wasn't that a major problem with the system at the Buffalo Rapids, Fallon Pu mp site? Have they recovered yet from their crop damage/loss?	Capital and O&M costs have been accounted for in Appendix B and chapter 2 of the FEIS. Pump O&M information available from other irrigation districts (Buffalo Rapids and Sidney Irrigation District) was used to inform cost estimates for the pumping alternatives. Redundancy was added to the design (extra pumps) to account for situations such as equipment failure.

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BP-79	J. Johnson	1	I support the reliable delivery of water to the irrigators provided by the rock ramp alter native. The proposed rock ramp alternative and durable fish passage, will provide cost effective, reliable water to the irrigators in this large region, and greatly improve the fis h passage over the existing stacked boulder diversion dam.	Comment noted
BP-79		2	The loss of the existing reliable and economical irrigation water to the surrounding far ms would devastate our regional economics, towns and communities.	Comment noted
BP-80	V. Heinrich	1	Wind towers are expensive to construct and by the same token not very efficient.	Comment noted
BP-80		2	Pumps along the river to supply water to irrigate would almost double the cost of water.	Comment noted
BP-80		3	I believe the most feasible alternative is to build a new concrete weir and construct a new bypass channel on Joe's Island.	Comment noted
BP-81	C. Basta	1	I support to Intake fish passage. To get it built as soon as possible will save much stress on us farmers as well as the fish.	Comment noted
BP-82	B. Coon	1	I think the fish bypass channel is the best way for cost and not needing more power lines or some windmills to look at and the cost of power to run pumps.	Comment noted
BP-83	M. Dunn	1	It is very important to my family that all fish and wildlife live forever. But we also need the irrigation project going in our valley.	Comment noted
BP-83		2	I think the fish bypass is the fair solution to the problem.	Comment noted
BP-84	S. Joslin	1	Bypass channel best alternative.	Comment noted
BP-85	K. Winter	1	I support an open river alternative for the Lower Yellowstone Fish Passage project.	Comment noted
BP-85		2	Your own analysis shows the best outcome for the endangered pallid sturgeon from this project is to remove the outdated Intake Dam, open the river and allow full river passage.	Comment noted
BP-85		3	I do not support building a new dam and artificial bypass as the likelihood that endangered pallid sturgeon will use it is slim.	Comment noted
BP-86	M. Boyer	1	I am in full support of the fish passage project. Without the irrigation program, Richland County would be devastated.	Comment noted.
BP-87	H. Cutter	1	I am in full support of the fish passage project.	Comment noted.
BP-88	V. Dardis	1	…if changes are made at the diversion weir at Intake, I would hope it will be the bypass.	Comment noted.
BP-88		2	Over $400 million for a fish doesn't make sense, when we recently watched lives and homes being destroyed by fire in California, floods in Virginia, tornados everywhere.	Comment noted.
BP-88		3	Why did they hold a meeting in Billings when it was a 4 1/2 to 5 four drive for the people that are the most concerned?	Meetings were held in Glendive and Sidney as well. The meeting in Billings was scheduled to accommodate stakeholders who were unable to attend those meetings.
BP-89	D. Dillman	1	I support the fish bypass. Think about all the people we'd hurt without the dam.	Comment noted.

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BP-90	Delivery@Actionspout.com	1	I support an open river alternative for the Lower Yellowstone Fish Passage Project. Your own analysis shows that the best outcome for the endangered pallid sturgeon from this project is to remove the outdated Intake Dam, open the river and allow full river passage.	Comment noted.
BP-90		2	I do not support building a new dam and artificial bypass, as the likelihood that endangered pallid sturgeon will use it is slim.	Comment noted.
BP-91	D. Gilbert	1	I support the bypass. I feel a lot of families may face financial difficulties should this not pass.	Comment noted.
BP-91		2	My understanding is irrigated land hold more value than non-irrigated land.	Comment noted.
BP-92	G. Hechey	1	I am in full support of the intake diversion dam fish passage project. It is vital to the livelihood of our region.	Comment noted.
BP-93	H. Helland	1	There are more fish stopped by Fort Peck Dam but they can't that that down so … they pick on the Yellowstone River. This foolish agenda affects hundreds of people lives - the farmer, water wells, and total income.	Comment noted.
BP-94	M. Holst	1	I support the bypass for the farmers and for the community of rural Montana.	Comment noted.
BP-95	V. Klose	1	The environmental impact study showed the Bypass Channel to be the best alternative. The cost of pumping is too costly.	Comment noted.
BP-96	R. & R. Sundheim	1	The fish are known to have used bypass before. Common sense people, feed our people or save the fish population. You can have both with the bypass.	Comment noted.
BP-97	A. McPherson	1	I fully support the proposed construction of the fish by-pass channel. Without the dam it will completely ruin my operation as well as the communities.	Comment noted.
BP-98	Z. McPherson	1	I support the bypass. Without this we will lose everything my family has worked for.	Comment noted.
BP-99	K. Bouvier	1	My concern is for the pallid sturgeon, whose eradication would surely result from it construction; it would no longer have a healthy place for its eggs to develop if it were trapped between this dam and the Fort Peck Dam.	Comment noted.
BP-99		2	But I do not neglect the farmers who need the water in these dams for their crops. … They have proposed replacing the Intake Diversion Dam with a dam which has a bypass channel to allow fish to get past it to spawn. It is the least we can - and should - do to preserve such an ancient species.	Comment noted.
BP-100	T. Burger	1	Remove Dam and replace with Irrigation Pump. Save the fish.	Comment noted.
BP-100a	S. Irwin	1	Take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.	Comment noted.
BP-101	S. Brown	1	Take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.	Comment noted.
BP-102	K. Hogan	1	Please take out the dam! Thank you for considering this petition.	Comment noted.

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BP-103	A. Shute	1	Please remove Intake dam.	Comment noted.
BP-104	T. Bahn	1	I am baffled why the U.S. Army Corps of Engineers would want to propose a dam on a critical river. Data shows that these dams are never able to facilitate passage by fish species. When those fish are endangered it is even more egregious.	Comment noted.
BP-105	B. Booth	1	Man-made dams may be beneficial when they are built, but when they become injurious to humans and other animals, they should be removed.	Comment noted.
BP-106	K. Rosinski	1	Please help these sturgeon not get over fished.	Comment noted.
BP-107	S. Mahaux	1	Please, take out Intake Dam and replace its function with an irrigation pump system. It will protect native fish.	Comment noted.
BP-108	C. Devoss	1	I urge the Corps to select one of the “open river” alternatives in the DEIS on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River.	Comment noted.
BP-108		2	Removing the dam not only would open up 165 miles of the mainstem Lower Yellowstone River to migrating fish, but it would also give fish access to hundreds of additional miles of tributaries such as the Powder and Tongue rivers.	Comment noted.
BP-108		3	While I strongly favor restoring a free-flowing river to benefit native fish, I believe it’s also vital that the Corps address the needs of farmers who currently rely on Intake Dam to divert river water to irrigate 54,000 acres of crops in the Lower Yellowstone Project. Based on the information presented in the DEIS, these needs can reasonably be met by constructing irrigation pumps along the river that would be powered by clean, renewable, locally-produced energy such as wind power.	Comment noted.
BP-108		4	A very similar project to what is being considered on the Lower Yellowstone recently was implemented at Savage Rapids Dam on the Rogue River in Oregon. That project resulted in a win-win-win for fish, farmers, and taxpayers.	While the Savage Rapids Dam project is similar in that it involved listed species and Reclamation, there are significant differences between that project and Intake. The current diversion at that project is ~150 cfs vs 1,374 cfs at Intake, and water supply involves small tract development as opposed to 58,000 acres of agriculture. In addition the river channel bed and banks, and sediment regimes of the two rivers are significantly different. The infrastructure required to provide pumping of water, amount of pumping, and river type are major differences.
BP-109	E. Adibi	1	I urge the Corps to select one of the “open river” alternatives in the DEIS on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River.	Comment noted.
BP-109		2	Removing the dam not only would open up 165 miles of the mainstem Lower Yellowstone River to migrating fish, but it would also give fish access to hundreds of additional miles of tributaries such as the Powder and Tongue rivers.	Comment noted.
BP-109		3	While I strongly favor restoring a free-flowing river to benefit native fish, I believe it’s also vital that the Corps address the needs of farmers who currently rely on Intake Dam to divert river water to irrigate 54,000 acres of crops in the Lower Yellowstone Project. Based on the information presented in the DEIS, these needs can reasonably be met by constructing irrigation pumps along the river that would be powered by clean, renewable, locally-produced energy such as wind power.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-109		4	A very similar project to what is being considered on the Lower Yellowstone recently was implemented at Savage Rapids Dam on the Rogue River in Oregon. That project resulted in a win-win-win for fish, farmers, and taxpayers.	While the Savage Rapids Dam project is similar in that it involved listed species and Reclamation, there are significant differences between that project and Intake. The current diversion at that project is ~150 cfs vs 1,374 cfs at Intake, and water supply involves small tract development as opposed to 58,000 acres of agriculture. In addition the river channel bed and banks, and sediment regimes of the two rivers are significantly different. The infrastructure required to provide pumping of water, amount of pumping, and river type are major differences.
BP-110	K. Harris	1	I urge the Corps to select one of the “open river” alternatives in the DEIS on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River.	Comment noted.
BP-110		2	Removing the dam not only would open up 165 miles of the mainstem Lower Yellowstone River to migrating fish, but it would also give fish access to hundreds of additional miles of tributaries such as the Powder and Tongue rivers.	Comment noted.
BP-110		3	While I strongly favor restoring a free-flowing river to benefit native fish, I believe it’s also vital that the Corps address the needs of farmers who currently rely on Intake Dam to divert river water to irrigate 54,000 acres of crops in the Lower Yellowstone Project. Based on the information presented in the DEIS, these needs can reasonably be met by constructing irrigation pumps along the river that would be powered by clean, renewable, locally-produced energy such as wind power.	Comment noted.
BP-110		4	A very similar project to what is being considered on the Lower Yellowstone recently was implemented at Savage Rapids Dam on the Rogue River in Oregon. That project resulted in a win-win-win for fish, farmers, and taxpayers.	While the Savage Rapids Dam project is similar in that it involved listed species and Reclamation, there are significant differences between that project and Intake. The current diversion at that project is ~150 cfs vs 1,374 cfs at Intake, and water supply involves small tract development as opposed to 58,000 acres of agriculture. In addition the river channel bed and banks, and sediment regimes of the two rivers are significantly different. The infrastructure required to provide pumping of water, amount of pumping, and river type are major differences.
BP-111	A. Bonvouloir	1	Take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.	Comment noted.
BP-112	G. Strong	1	I urge you to remove Intake Dam and replace it with an irrigation pump system.	Comment noted.
BP-113	J. Freilich	1	U.S. Army Corps to take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish	Comment noted.
BP-114	C. Moschopoulos	1	Take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.	Comment noted.
BP-115	E. Donovan	1	The needs of the pallid sturgeon and other native fish will be met by taking out the dam. An irrigation pump system will guarantee their survival.	Comment noted.
BP-116	S. Thompson	1	The above-subject to be replaced with an irrigation pump system guarantee to meet the needs of pallid sturgeon and other native fish.	Comment noted.
BP-117	S. Porter	1	Take it out to meet needs of native fish.	Comment noted.
BP-118	D. Adler	1	please save endangered species and choose one of the “open river” alternatives in the DEIS on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-118		2	Removing the dam not only would open up 165 miles of the mainstem Lower Yellowstone River to migrating fish, but it would also give fish access to hundreds of additional miles of tributaries such as the Powder and Tongue rivers.	Comment noted.
BP-118		3	While I strongly favor restoring a free-flowing river to benefit native fish, I believe it's also vital that the Corps address the needs of farmers who currently rely on Intake Dam to divert river water to irrigate 54,000 acres of crops in the Lower Yellowstone Project. Based on the information presented in the DEIS, these needs can reasonably be met by constructing irrigation pumps along the river that would be powered by clean, renewable, locally-produced energy such as wind power.	Comment noted.
BP-118		4	A very similar project to what is being considered on the Lower Yellowstone recently was implemented at Savage Rapids Dam on the Rogue River in Oregon. That project resulted in a win-win-win for fish, farmers, and taxpayers.	While the Savage Rapids Dam project is similar in that it involved listed species and Reclamation, there are significant differences between that project and Intake. The current diversion at that project is ~150 cfs vs 1,374 cfs at Intake, and water supply involves small tract development as opposed to 58,000 acres of agriculture. In addition the river channel bed and banks, and sediment regimes of the two rivers are significantly different. The infrastructure required to provide pumping of water, amount of pumping, and river type are major differences.
BP-119	A. Craig	1	n the interests of protecting pallid sturgeon and other native fish who live in the Lower Yellowstone River, I ask you to replace the Intake Dam with an irrigation pump system.	Comment noted.
BP-120	J. Steinberg	1	Every species imperiled and lost diminishes all of those that remain, including us humans. Please help keep these native species survive. Don't build the dam; pump the water.	Comment noted.
BP-121	R. Schoedler	1	Take out the Intake Dam and allow native species to live.	Comment noted.
BP-122	D. Danielson	1	I am in favor of replacing the diversion dam and installing a fish bypass channel.	Comment noted.
BP-122		2	This entire irrigation project is made up of family farms like ours. The thought of not having irrigation is causing much stress on our family and all others in the valley. Before the fish screens were installed at Intake it was common to find fish including pallid sturgeon in our irrigation ditches, so some were making it over the diversion dam.	Comment noted.
BP-122		3	If the dam is removed, the cost of pumping from the ever changing Yellowstone River will make irrigation unaffordable	Comment noted.
BP-123	T. King	1	protect the yellowstone river by removing the lower dam on this river	Comment noted.
BP-124	B. McCune	1	Please take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.	Comment noted.
BP-125	G. Letourneau Jr	1	In a time of world wide species decline, mostly at the hands of human activity, it behooves us to do whatever actions we can to protect the species that are threatened or endangered, to the best of our abilities. Please protect the Sturgeon in the Lower Yellowstone river!	Comment noted.
BP-126	M. Novak	1	Please take out the diversion dam and add an irrigation pump system. This will be the best and, indeed, only solution to help native fish in the lower Yellowstone River.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-127	J. McCarroll	1	Take out the Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.	Comment noted.
BP-128	L. Leslie	1	Please take out Intake Dam across the lower Yellowstone and replace its function with an irrigation pump system. It is the only way to guarantee the safety and meet the needs of the pallid sturgeon and other native fish.	Comment noted.
BP-129	B. Grimm	1	Undo the damage that your greed has caused.	Comment noted.
BP-130	M. Eichenholtz	1	Please remove any new concrete dam across the Yellowstone River and consider using an irrigation pump instead. Both farmers and the pallid sturgeon will benefit.	Comment noted.
BP-131	S. Hancock	1	Please remove the intake dam on the Yellowstone and replace it with an irrigation pump system. The Sturgeon are counting on you to do the right thing and so are the American people. A bypass channel may not work.	Comment noted.
BP-132	S. & N. Bell	1	The pallid sturgeon is not able to sit in negotiations and plead for its survival. Intake Dam can be removed and an irrigation pump system installed that provides agricultural water AND critical habitat for this endangered species.	Comment noted.
BP-133	C. Facey	1	The only thing that Guantanamo has revealed, is man’s inhumanity to his fellow men. It's "time" to close this dark chapter in our story!	Comment noted.
BP-134	C. Wilkinson	1	Please let us do our part in restoring, protecting, and valuing the natural world that we need deeply to continue surviving as humans.	Comment noted.
BP-135	K. Michiels	1	Restore a more natural solution to save these important fish and the river system.	Comment noted.
BP-136	M. Pinque	1	But most fisheries scientists are deeply skeptical of this plan. There has never been a fish passage project built that has been shown to successfully pass pallid sturgeon	Comment noted.
BP-136		2	The best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been in other areas across the country, including along the Yellowstone River.	Comment noted.
BP-137	L. Sanazaro	1	I urge the Corps to select one of the “open river” alternatives in the DEIS on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River.	Comment noted.
BP-137		2	Removing the dam not only would open up 165 miles of the mainstem Lower Yellowstone River to migrating fish, but it would also give fish access to hundreds of additional miles of tributaries such as the Powder and Tongue rivers.	Comment noted.
BP-137		3	While I strongly favor restoring a free-flowing river to benefit native fish, I believe it’s also vital that the Corps address the needs of farmers who currently rely on Intake Dam to divert river water to irrigate 54,000 acres of crops in the Lower Yellowstone Project. Based on the information presented in the DEIS, these needs can reasonably be met by constructing irrigation pumps along the river that would be powered by clean, renewable, locally-produced energy such as wind power.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-137		4	A very similar project to what is being considered on the Lower Yellowstone recently was implemented at Savage Rapids Dam on the Rogue River in Oregon. That project resulted in a win-win-win for fish, farmers, and taxpayers.	While the Savage Rapids Dam project is similar in that it involved listed species and Reclamation, there are significant differences between that project and Intake. The current diversion at that project is ~150 cfs vs 1,374 cfs at Intake, and water supply involves small tract development as opposed to 58,000 acres of agriculture. In addition the river channel bed and banks, and sediment regimes of the two rivers are significantly different. The infrastructure required to provide pumping of water, amount of pumping, and river type are major differences.
BP-138	G. Sidoti	1	All Rivers Matter!	Comment noted.
BP-139	B. Amberger	1	Please protect our natural, God-given resources.	Comment noted.
BP-140	P. DeLuca	1	take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.	Comment noted.
BP-141	J. Ulness	1	Please restore the Lower Yellowstone River.	Comment noted.
BP-142	N. Smith	1	Please take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.	Comment noted.
BP-143	K. Hart	1	I agree with fisheries scientists that the intake dam on the Yellowstone River should be removed and replaced it with an irrigation pump system.	Comment noted.
BP-144	G. Dillard	1	Time to take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish. This has been a success in other areas across the country, including along the Yellowstone River.	Comment noted.
BP-145	D. Holt	1	Please remove the Lower Yellowstone River Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish	Comment noted.
BP-146	J. & R. Martin	1	we urge you to take out the Intake Dam and replace with an irrigation pump system. The fish must live too.	Comment noted.
BP-147	S. Stewart	1	Restore lower Yellowstone river	Comment noted.
BP-148	J. Candelaria	1	Please rethink this. Dams are not the answer.	Comment noted.
BP-149	M. Richards	1	Since the lowermost diversion dam on the river was built over a century ago, no wild pallid sturgeon have successfully reproduced in the river. Pallid sturgeon need long stretches of free-flowing river in which to migrate up, spawn, and let their larvae drift downstream until they mature. Right now, their larvae drift into a downstream reservoir where they perish	Comment noted.
BP-149		2	The best option to restore native fish including the pallid sturgeon would be to remove Intake Dam and provide an open river for lower Yellowstone River.	Comment noted.
BP-150	M. Adams	1	The best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been in other areas across the country, including along the Yellowstone River	Comment noted.

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BP-151	L. Hughes	1	The best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been in other areas across the country, including along the Yellowstone River.	Comment noted.
BP-152	M. McGaughey	1	Engineers, find a way to restore the lower Yellowstone river. Find a way to engineer supporting all life forms AND the integrity of the Yellowstone River.	Comment noted.
BP-153	A. Albright	1	As more & more of God's creatures are disappearing let us work wisely to keep those remaining.	Comment noted.
BP-154	A. Moskowitz	1	Remove the Intake Dam.	Comment noted.
BP-155	C. Rodgers	1	Please take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish	Comment noted.
BP-156	J. Orsatti	1	Yellowstone is amazing and needs to be preserved as much as possible. Please help reverse the damage	Comment noted.
BP-157	L. Taylor	1	I urge the Corps to select one of the “open river” alternatives in the DEIS on improving fish passage at Intake Diversion Dam on the Lower Yellowstone River	Comment noted.
BP-157		2	Removing the dam not only would open up 165 miles of the mainstem Lower Yellowstone River to migrating fish, but it would also give fish access to hundreds of additional miles of tributaries such as the Powder and Tongue rivers.	Comment noted.
BP-157		3	While I strongly favor restoring a free-flowing river to benefit native fish, I believe it’s also vital that the Corps address the needs of farmers who currently rely on Intake Dam to divert river water to irrigate 54,000 acres of crops in the Lower Yellowstone Project. Based on the information presented in the DEIS, these needs can reasonably be met by constructing irrigation pumps along the river that would be powered by clean, renewable, locally-produced energy such as wind power.	Comment noted.
BP-157		4	A very similar project to what is being considered on the Lower Yellowstone recently was implemented at Savage Rapids Dam on the Rogue River in Oregon. That project resulted in a win-win-win for fish, farmers, and taxpayers.	While the Savage Rapids Dam project is similar in that it involved listed species and Reclamation, there are significant differences between that project and Intake. The current diversion at that project is ~150 cfs vs 1,374 cfs at Intake, and water supply involves small tract development as opposed to 58,000 acres of agriculture. In addition the river channel bed and banks, and sediment regimes of the two rivers are significantly different. The infrastructure required to provide pumping of water, amount of pumping, and river type are major differences.
BP-158	D. Mishler	1	We have been through this cycle of trying to alter Nature enough times to have (hopefully) learned our lesson. When we screw with Nature, she screws back. And never to our benefit.	Comment noted.
BP-159	D. Rogers	1	Most fisheries scientists are skeptical of the plan to dam and construct an artificial bypass channel on the Yellowstone River. The best solution would be to take out the diversion dam and add an irrigation pump system.	Comment noted.
BP-160	E. Treat	1	U.S. Army Corps takes out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.	Comment noted.

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BP-161	J. Muscara	1	Please take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.	Comment noted.
BP-162	S. Chan	1	The best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been in other areas across the country, including along the Yellowstone River.	Comment noted.
BP-163	C. Joslyn	1	Please reconsider your plan to build a fish passage for the pallid sturgeon and other native fish. Basing a plan on a hope is not cost efficient or based on evidence that it will work. Please look carefully at what has been done with irrigation pump systems in other parts of the country to find a better solution for both fish species and the irrigation needs of farmers.	Comment noted.
BP-164	V. Bostock	1	Tell the U.S. Army Corps to take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon, other native fish and farmers.	Comment noted.
BP-165	S. Sellers	1	The best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been in other areas across the country, including along the Yellowstone River.	Comment noted.
BP-166	A. Capobianco	1	Tell the U.S. Army Corps to take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish	Comment noted.
BP-167	P. Kerman	1	Take out the Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.	Comment noted.
BP-168	M. Woolery	1	America is not America without wild America. And this kind of action serves only the people who do not care about wild America, and whose greed is off the charts.	Comment noted.
BP-169	E. Parket	1	Please consider the livelihood of the endangered species that already rely on the Yellowstone River before placing a dam on the river. As noted above, irrigation pumps can better serve these species and the farmers nearby than a dam could.	Comment noted.
BP-170	W. Skirbunt-Kozabo	1	I am writing to urge you to remove Intake Dam from the Yellowstone River and replace it with an irrigation pump system. This is the only solution that is guaranteed to meet the needs of endangered pallid sturgeon and other native fish. There has never been a fish passage project built that has been shown to successfully pass pallid sturgeon.	Comment noted.
BP-171	J. Bailey	1	take out the intake dam an replace it with a suitable pump system. We must save this river and the fish that call it home	Comment noted.
BP-172	P. Delapena	1	restore	Comment noted.

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BP-173	M. Lee	1	U.S. Army Corps please take out Intake Dam and replace its function with an irrigation pump system. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.	Comment noted.
BP-174	B. O'Connor	1	Take out Intake Dam and replace it's function with an irrigation pump system.	Comment noted.
BP-175	P. Mueller	1	I would like to ask you to change plans to build a new diversion dam and bypass channel at the Intake Dam on the Lower Yellowstone River and replace the planned dam with an irrigation pump system. This is the only thing that will allow species such as the pallid sturgeon to successfully pass upstream.	Comment noted.
BP-176	T. Roland	1	It should be the task of the Corp. to purify and restore every river in the nation making it healthy for their native species and for us - including the Yellowstone.	Comment noted.
BP-177	E. Duvert	1	Please do everything you can to protect the sturgeon and other native fish that live in the Yellowstone. Keep those waters flowing	Comment noted.
BP-178	T. Pearson	1	But most fisheries scientists are deeply skeptical of this plan. There has never been a fish passage project built that has been shown to successfully pass pallid sturgeon. Also, dams have been shown to mess up the environment	Many fisheries scientists believe that the bypass channel will provide passage. Because passage projects have not been tried with pallid sturgeon, we must use other sturgeon as our guide. This makes sense because other sturgeon have similar morphology, orientation to the bottom, and swimming abilities. Although passage projects have not been used for pallid sturgeon to date, there are many examples of pallid sturgeon passing through natural and man-made side channels. Current literature on bypass designs for sturgeon all highlight that promising approaches include those that mimic natural channels. This would include building a channel with similar geometry, facilitate passage under a range of discharge conditions, and incorporate a broad range of hydraulic criteria that emulate the range and depths and velocities that have been successfully negotiated by targeted migratory fish. (Braaten et al. 2015, Aadland 2010, Jager et al. 2016).The current design of the bypass channel was developed to mimic natural conditions and depth/velocity and other expert criteria, See Section 4.9.8
BP-178		2	The best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been in other areas across the country, including along the Yellowstone River.	Comment noted.
BP-179	D. Henning	1	There must be a better way to provide water for irrigation!	Comment noted.
BP-180	J. Griffith	1	Please take out the dam in the lower river and replace an irrigation pump system? you are doing irreparable harm to the fish there, especially the sturgeon	Comment noted.
BP-181	R. Bollinger	1	Take out the Intake Dam and replace it with an irrigation pump system! Save the pallid sturgeon and other native fish!	Comment noted.
BP-182	L. Hartman	1	PLEASE take out the Intake Dam and replace its function with an irrigation pump system on the Yellowstone River. It's the only solution that is guaranteed to meet the needs of pallid sturgeon and other native fish.	Comment noted.
BP-183	J. Loving	1	I believe the plant's preferred alternative--to build a new concrete dam across the width of the Yellowstone River and construct an artificial bypass channel in hopes that pallid sturgeon and other native fish will use it--is seriously flawed	Comment noted.

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BP-183		2	Most fisheries scientists are deeply skeptical of this plan. There has never been a fish passage project built that has been shown to successfully pass pallid sturgeon. In addition, a concrete dam will be expensive and a failure if the fish aren't able to overcome the obstacles the dam will present.	Many fisheries scientists believe that the bypass channel will provide pallid sturgeon passage. The Agencies are using the best available science on pallid sturgeon morphology, orientation to the bottom, and swimming abilities and behavior. Although passage projects have not been designed specifically for pallid sturgeon to date, there are many examples of pallid sturgeon passing through natural and man-made side channels. Current literature on fish passage designs for sturgeon all highlight that promising approaches include those that mimic natural channels. This would include building a channel with similar geometry, facilitate passage under a range of discharge conditions, and incorporate a broad range of hydraulic criteria that emulate the range and depths and velocities that have been successfully negotiated by targeted migratory fish. (Braaten et al. 2015, Aadland 2010, Jager et al. 2016).The current design of the bypass channel was developed to mimic natural conditions for substrate, depth, velocity, and attraction flows, along with other expert input. There is currently very rare passage of only a few individuals and no known recruitment. The bypass channel is more likely to provide passage than the existing side channel allowing more adults to pass more regularly. If this project is less successful than anticipated or needed to meet pallid sturgeon objectives, then modifications and/or other options will be pursued. The replacement weir would have a 125 foot wide and two feet deep notch roughly centered on the river thalweg to facilitate in-river upstream and downstream fish passage, especially during the lowest summer/fall flows (i.e. at 3,000 cfs). Velocities over the existing Intake Diversion Dam are more than 8 fps with depths of about 2.1 to 2.9 feet during flows of 15,000 cfs (median flows for spring pallid sturgeon migration period (April through June)). The replacement weir in the low-flow notch location would generally have velocities slightly above 5 fps at 15,000 cfs, except closer to the banks, where velocities would be slightly lower at 5 fps (above 6 fps at flows at or above 30,000 cfs). Depths through the notch would be about 3.5 feet at low flows (7,000 cfs or less). At flows above 30,000 cfs, depths would be greater than 7 feet through the notch.
BP-183		3	Urgent consultation with the departments with expertise in fish and wildlife management and in assessing environmental impacts of the proposed alternative is certainly essential before a final decision	Please see reference at Section 2.2.1.4 to the Biological Review Team with which coordination has been occurring since 2006. In addition coordination and consultation with both the U.S. Fish and Wildlife Service and Montana Fish, Wildlife and Parks are ongoing in regards to this project and both are cooperating agencies in preparation of the FEIS.
BP-183		4	I believe the best solution to meet the needs of the fish and the farmers who rely on irrigation water from the Lower Yellowstone River would be to take out the diversion dam and add an irrigation pump system. This has been done in other areas across the country, including along the Yellowstone River.	Comment noted.
BP-184	C. Lish	1	Your own analysis shows that the best outcome for the endangered pallid sturgeon from this project is to remove the outdated Intake Dam, open the river and allow full river passage. I do not support building a new dam and artificial bypass, as the likelihood that endangered pallid sturgeon will use it is slim. The pallid sturgeon needs all the help it can get	Comment noted.
BP-184		2	Please adopt an alternative that removes the dam, provides pumps or other means to get irrigators water and gives the pallid sturgeon a fighting chance. Spending taxpayer dollars on an alternative that won't work will cost more money in the future--pay to do this right the first time	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-185	C. Keiser	1	Much more needs to be researched and determined regarding the migration of pallid sturgeon upstream and the struggle for them of getting beyond this intake dam to spawn.	The Corps of Engineers is developing a Missouri River Management Plan and EIS that assesses (1) major federal actions arising from a Biological Opinion (BiOp) prepared in accordance with the Endangered Species Act (ESA) of 1973, as amended to avoid jeopardy to three federally listed threatened and endangered species that use the Missouri River and (2) the creation of habitat for those species. The relative need and effectiveness of actions on both the Yellowstone and Missouri River systems will be evaluated through a well-planned, systematic AM process which has been developed as part of the MRRP Management Plan. This AM approach has received a tremendous amount of independent scrutiny of AM and sturgeon experts and has been developed transparently with unprecedented stakeholder involvement through MRRIC and associated Independent Science Advisory Panel. The focus of the plan is in meeting pallid sturgeon objectives provided by the USFWS to avoid jeopardy.
BP-185		2	I would modify the pumping option proposed as there are other choices available that would be inexpensive, simple, and durable option to the current alternatives. The use of maintenance for farmers would seem to be an excellent alternative that has many years of proven efficiency and reliability behind its design. The technology behind these pumps has also greatly improved since they originated almost 200 years ago.	Comment noted.
BP-185a	J. Bergman	1	This is to support the Bypass Channel Alternative for the best option for both the Irrigated Farmers of the Lower Yellowstone Valley River area and for the pallid sturgeon passage. This modification will improve the co-existence of the upstream migration of the pallid sturgeon and at the same time supply a dependable water supply for the irrigation of the 55,000 acres of irrigable lands.	Comment noted.
BP-185a		2	A fish hatchery dedicated to the hatching and increase of pallid sturgeon and the release of the young pallid sturgeon in the upper reaches of the Yellowstone River would also likely assure that the pallid sturgeon will no longer be an endangered species.	The U.S. Fish and Wildlife Service has undertaken the Pallid Sturgeon Conservation Augmentation Program (PSCAP) that supplements the wild population with hatchery produced free embryos, larvae, and juvenile pallid sturgeon (produced from spawning wild fish). However, the hatchery program alone may not produce a sustainable population that can be delisted, a number of additional actions must also be taken in the watershed to provide for natural spawning and recruitment for pallid sturgeon throughout their range.
BP-185b	G. Entzel	1	The information sheet I received at the meeting in Sidney, Montana June 28, 2016, states "…the Intake diversion dam has likely impeded upstream navigation…" The term, "likely", means it's just as likely it does NOT impede the pallid sturgeon. There is "much ado" regarding an unremarkable fish. Other fish, including the shovelnose sturgeon, seem to be thriving in the Yellowstone River. For over 100 years the irrigation project has made our valley come alive. And the pallid sturgeon is still here and the river is still clean!	As stated in Chapter 3 (Section 3.9.1.3) the best available science suggests that Intake Diversion Dam is a barrier to pallid sturgeon migrating upstream in the Yellowstone River. To date only a few pallid sturgeon (6) have been documented upstream of Intake, which all were documented migrating upstream using the existing side channel around Joe's Island. However this channel does not provide passage every year. The shovelnose sturgeon likely requires less drift distance during free embryo and larval drift which has allowed them to maintain current population levels.
BP-186	G. Kallevig	1	My comment today has to with the lady that testified in Billings—she testified that she had studied the Pallid Sturgeon for several years in both the Yellowstone and Missouri Rivers---she testified that only 5% of the Pallid Sturgeon used the Yellowstone River and 95% used the Missouri River and the reason was that they are a "Big River" fish and the Missouri fits their spawning cycle much better than the Yellowstone River.	As stated in Chapter 3 (Section 3.9.1.3) approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). This shows the importance of restoration activities on the Yellowstone River. Outside of the spawning period the majority of the pallid sturgeon do prefer the Missouri River near the headwaters of Lake Sakakawea.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-186		2	If this information was accurate, my first choice would be the "No Action" option and my second choice would be the "Fish Bypass". The projected cost of the Fish Bypass @ approx. $50 million seems to be a ton of money for only 5% of the Pallid Sturgeon population	Comment noted.
BP-186a	P. Davis	1	We believe that the fish bypass is the only feasible alternative for the project. We fully support the Bypass Channel.	Comment noted.
BP-187	L. Peterson	1	I would like to state for the record that I favor the Fish-By-Pass proposal that would divert a portion of the river channel around Joe's Island. I believe it is the best option and eventual solution to enable the pallid sturgeon's to travel further upstream to spawn, as well as continuing to deliver sufficient irrigation water to the Lower Yellowstone farming communities	Comment noted.
BP-187		2	This is a gravity system that has proven itself to work well over a period of 100 years. It has a very low carbon footprint as compared to some of the proposals to remove the diversion dam and pump the water to the canal. The installation of new pumps on the river itself would raise the carbon footprint of our current irrigation system substantially with new power lines, construction equipment, and loss of riverine habitat for the many different types of wildlife.	Comment noted.
BP-188	G. Kallevig	1	A certain % of the Pallid Sturgeon make it up-stream through the natural By-Pass or over/under/through the diversion dam itself and #2, constructing an improved "Fish By-Pass" will increase the % of Pallid Sturgeon making it up-stream. The studies that have been done and submitted also recommend the "Fish By-Pass" option	Comment noted.
BP-189	T. Simard	1	I am wondering if the environmentalists have ever considered that maybe with more bald eagles, pelicans and other birds that fish in the Yellowstone River may have something to do with the lower numbers of pallid sturgeon or if they just automatically assume it's due to humans. We have been using this way of irrigating over 100 years now and the sturgeon are not extinct.	All sturgeon species, including pallid sturgeon are long-lived, thus persisting as adults, even when recruitment of young fish is low. Pallid sturgeon are estimated to live 30-50 years or longer, and the remaining wild fish in the Upper Missouri basin (including the Yellowstone River) are large, old adults. A key hypothesis of the lack of recruitment of young fish is that the distance available for the free embryos and larvae to drift downstream from spawning areas is not sufficient before they enter Lake Sakakawea where conditions are not suitable for the larvae to rear and survive. Lake Sakakawea was filled in the 1950s and the remaining adults are of the age to have been born sometime in the late 1950s to the 1960s. Pallid sturgeon status, life history, and threats are explained in Section 3.9.1.3.
BP-189		2	Their pump system would be too costly to use. It would destroy most every farmer over here.	Comment noted.
BP-190	Delivery@Actionspout.com	1	Please adopt an alternative that removes the dam, provides pumps or other means to get irrigators water and gives the pallid sturgeon a fighting chance. Spending taxpayer dollars on an alternative that won't work will cost more money in the future - pay to do this right the first time	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-191	G. Furshong	1	Please put the Yellowstone River and the ancient Pallid Sturgeon first by choosing an alternative that: * Allows for a free-flowing Yellowstone River and unimpeded upstream passage for fish. * Accommodates irrigators during low flow months with a series of pumps * Use agency funding and additional federal appropriations, above what is currently in hand, to pay for the project as well as a trust fund to pay for pumping and maintenance costs	Comment noted.
BP-192	P. Naro	1	It's my opinion, along with many fishery professionals that this dam proposal will seriously impair spawning for rare and endangered pallid sturgeon as well as other fish in the Yellowstone River.	Comment noted.
BP-192		2	I support an alternative solution that leaves the river free-flowing, so that sturgeon and other fish can migrate upstream as they have for millennia, and delivering water to irrigators using a system of pumps. This would reduce the period of need for the current head-gate which is trapping hatched sturgeon and other fish. I believe the water users should be accommodated in this way, and that costs associated with changing the water delivery system should be met using federal appropriations and a trust fund that could be established to cover pumping and future maintenance costs.	Comment noted.
BP-192		1	Please put the Yellowstone River and the ancient Pallid Sturgeon first by choosing an alternative that: * Allows for a free-flowing Yellowstone River and unimpeded upstream passage for fish. * Accommodates irrigators during low flow months with a series of pumps * Use agency funding and additional federal appropriations, above what is currently in hand, to pay for the project as well as a trust fund to pay for pumping and maintenance costs	Comment noted.
BP-193	K. Voight	1	I support the use of pumps for irrigation water in place of any of the alternatives being proposed at Intake in Glendive on the Yellowstone River.	Comment noted.
BP-194	K. Evenson	1	Please put the Yellowstone River and the ancient Pallid Sturgeon first by choosing an alternative that: * Allows for a free-flowing Yellowstone River and unimpeded upstream passage for fish. * Accommodates irrigators during low flow months with a series of pumps * Use agency funding and additional federal appropriations, above what is currently in hand, to pay for the project as well as a trust fund to pay for pumping and maintenance costs	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-195	M. Peterson	1	Please support an option for the intake diversion on the Lower Yellowstone River that allows for a free-flowing Yellowstone River and unimpeded upstream passage for fish while accommodating irrigators during periods of low flows with a series of pumps. To accomplish this use Agency funding and additional federal appropriations, above what is currently in hand, to pay for the project as well as a trust fund to pay for pumping and maintenance costs.	Comment noted.
BP-196	S. Greer	1	I would like to voice my opinion that the Yellowstone River should remain free-flowing, allowing sturgeon and other fish species to migrate as they have for thousands of years. Please do not construct a dam at Intake or engineer a bypass for fish species, as there is no evidence this will be successful for sturgeon.	Comment noted.
BP-197	D. Broadie	1	I feel strongly that the Yellowstone does not need any more permanent diversion dams. We need to keep the Yellowstone free flowing. (In fact, I would prefer that the existing dams be taken out)	Comment noted.
BP-197		2	In the long run, it will most likely be cheaper to put in pumps for the irrigation that the farmers need for their crops, …	Comment noted.
BP-198	B. Mattelin	1	The age of the naturally occurring pallid sturgeon in this region (60-70) years of age suggests that recruitment occurred after the Intake diversion was constructed in 1907. Recruitment continued to occur after the construction of Fort Peck in the 1930's, some 80 years ago. It was only after Garrison Dam was built and filled that recruitment ended. This idea is in agreement with the hypothesis that the lacking element to recruitment is river miles needed for larval drift.	Comment noted. All sturgeon species, including pallid sturgeon are long-lived, thus persisting as adults, even when recruitment of young fish is low. Pallid sturgeon are estimated to live 30-50 years or longer, and the remaining wild fish in the Upper Missouri basin (including the Yellowstone River) are large, old adults. A key hypothesis of the lack of recruitment of young fish is that the distance available for the free embryos and larvae to drift downstream from spawning areas is not sufficient before they enter Lake Sakakawea where conditions are not suitable for the larvae to rear and survive. Lake Sakakawea was filled in the 1950s and the remaining adults are of the age to have been born sometime in the late 1950s to 1960s. See Section 3.9.1.3 for additional discussion.
BP-198		2	Why should the irrigators of the Lower Yellowstone bear the brunt of the expense for a problem they did not cause. The preferred alternative has a good chance of success, keeps the irrigators in business, and is more acceptable than removal of Fort Peck or a draw down of Garrison	Comment noted.
BP-199	C. Sanders	1	Strongly support the alternative that restores the lower Yellowstone River as a free flowing river. That alternative provides for the following: Allows for a free-flowing Yellowstone River and unimpeded upstream passage for pallid sturgeon and other fish species. Accommodates irrigators during low flow months with a series of pumps. Allocates agency funding and federal appropriations, along with a dedicated trust fund, to finance pumping and maintenance costs	Comment noted.
BP-200	H. Crockett	1	Strongly support the alternative that restores the lower Yellowstone River as a free flowing river. That alternative provides for the following: Allows for a free-flowing Yellowstone River and unimpeded upstream passage for pallid sturgeon and other fish species. Accommodates irrigators during low flow months with a series of pumps. Allocates agency funding and federal appropriations, along with a dedicated trust fund, to finance pumping and maintenance costs	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-201	J. Gandulla	1	Respectively I am emailing to voice my support for "Montana TU proposal of an alternative that leaves the river free-flowing, so that sturgeon and other fish can migrate upstream as they have for millennia, and delivering water to irrigators using a system of pumps.	Comment noted.
BP-202	D. Rohn	1	The idea of building a dam and bypass channel with no evidence that it will allow wildlife to navigate this section of the river, specifically pallid sturgeon, appears ill-advised.	Comment noted.
BP-202		2	If the irrigators' needs can be met by breaching the current weir and delivering water as needed by pumping, and giving sturgeon and other fish the chance to use the river as they have for far longer than any of us has been around, why not choose it?	Comment noted.
BP-203	D. Jorgensen	1	The Weir and Fish bypass channel is the best choice for the Pallid sturgeon, farmers and surrounding communities. Removing the dam altogether and putting in pumps is not an option. The last 106 years of river levels has made an abundance of wetlands, both near the river and throughout the irrigation canals and ditches. If the dam was taken out the river level would drop 2 ft. and the wetlands would no longer be in existence.	Comment noted.
BP-203		2	The whooping Crane, which is also on the endangered species list, migrates through eastern Montana and uses the wetlands of the Yellowstone on its' flight. Why endanger another endangered animal, when the fish bypass would protect both the pallid sturgeon and Whooping crane.	Section 4.9 has been revised to provide more discussion for each listed species.
BP-203		3	Section 7(a)(2) requires each Federal agency to consult on any action authorized, funded, or carried out by the agency to ensure it does not jeopardize the continued existence of any endangered or threatened species. Transmission wires from pumps, windmills or electricity are also dangerous to the whooping Cranes.	It is noted in Section 2.3.8.6 that there is uncertainty pertaining to wind power and that additional study and associated environmental compliance, siting and permitting would be carried out separate from this EIS if this proposal were to move forward into more detailed design.
BP-204	W. & C. VanEvery	1	We support the Bypass Channel as proposed by the Bureau of Reclamation and the US Army Corps of Engineers for the Lower Yellowstone Irrigation Project at Intake, Montana. The other alternatives are too expensive.	Comment noted.
BP-205	S. Herman	1	I am writing you to state that I support the Intake Diversion Dam	Comment noted.
BP-206	Commissioner S. Gorder	1	I Shane Gorder support the bypass channel alternative for the intake diversion.	Comment noted.
BP-207	J. Broadhead, RN	1	Support the Intake Diversion Dam in order for the survival of our county and others along the river that thrive on the use of the canal system for food and economic growth!	Comment noted.

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BP-208	Commissioner D. Mitchell	1	At any rate Richland county has enjoyed the benefits of the Lower Yellowstone Irrigation Project for the last one hundred seven years. We have been blessed with water that has been provided from the Intake Diversion Dam. The "project" and all the water ways have been instrumental in providing an abundant habitat not only for wildlife but humans as well.	Comment noted.
BP-208		2	As a county Commissioner I urge you all to allow the Channel By Pass too be built.	Comment noted.
BP-209	D. Davies	1	I am in favor of the Fish-bypass and weir.	Comment noted.
BP-209		2	The pallid Sturgeon is a big water fish, Missouri River, and is not native to the Yellowstone River as stated by a marine Biologist at the Billings Montana Draft EIS Public Meeting. The pallid sturgeon is smart as they have found their way into the Yellowstone River system and through a slew by the Intake Diversion Dam to move upstream.	Pallid sturgeon are native to the Yellowstone and Missouri rivers. As stated in Chapter 3 (Section 3.9.1.3) approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). This shows the importance of restoration activities on the Yellowstone River. Outside of the spawning period the majority of the pallid sturgeon do prefer the Missouri River near the headwaters of Lake Sakakawea.
BP-210	B. Davies	1	As a veteran of the United States of America, I am appalled at the amount of money the defenders of Wild Life have put into obstructing the fish bypass and weir at Intake Dam. The Veterans are also on the endangered species list and the money would be better used to help the veterans as the Pallid Sturgeon will find its way through the fish by-pass as fish #36 has in the test results.	Comment noted.
BP-211	R. Neihart	1	Performance Engineering and Consulting (PEC) stands in strong support of th 100 percent design complete, shovel ready, and twice determined preferred alternative concrete weir and fish friendly bypass.	Comment noted.
BP-211		2	PEC works with a number of irrigation districts who pump water from the Yellowstone River. These pumping systems routinely fail throughout the irrigation season due to a number of different circumstances from electrical outages, pump failure, etc. This drive up the cost of operation and maintenance of the system ...	Comment noted.
BP-212	M. Hilton	1	I am sympathetic to agricultural concerns and believe agriculture will ultimately benefit from the preservation of our environment. As a taxpayer, I support the more costly pumping and no dam.	Comment noted.
BP-213	J. Dynneson	1	I as a resident of Richland County, support the Intake Diversion Dam	Comment noted.
BP-213a	D. Mitchell	1	Speaking of wildlife I have deer, pheasants, bald eagles and a whole host of birds that come by the house regularly. I would sincerely ask that the By Pass channel be allowed to be built, thus preserving our way of life and our continued support of all the wildlife that is in the “valley”.	Comment noted.
BP-214	S. Houston	1	I am in support of the Intake Diversion Dam. I feel this measure is very important for our farmers and the fish would still be okay.	Comment noted.
BP-215	S. Verhasselt	1	I am in support of the Intake Diversion Dam.	Comment noted.
BP-216	D. Gilbert	1	I am in support of the bypass. Many families could be impacted financially should this not pass. Many families have made farming their livelihood and if they incur added operating costs, this could devastate the farm operation.	Comment noted.

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BP-217	K. O'Clair	1	I am writing to state that I am in support of the Intake Diversion Dam. Losing the ability to irrigate farm land out of the Yellowstone River would completely devastate the economy and communities in the area. ... If farms are not able to irrigate, they will become dust. People will move elsewhere for work, businesses will close, and our communities will cease to exist.	Comment noted.
P-218	L. Anderson	1	I am in full support of the Intake Diversion Dam. It not only helps the fish spawning and passage, but also allows the farmers to continue irrigation which is needed by many farmers. This would be a win win situation which is ideal.	Comment noted.
BP-219	H. Luinstra	1	As a Richland County resident, I would like to show my support for the Intake Diversion Dam. The dam is vital to every citizen along the Lower Yellowstone River. Agriculture is the backbone of the entire valley and the commodities produced support, provide jobs for, and influence every facet of our way of life.	Comment noted.
BP-220	C. Kraemer	1	I support the Intake Diversion Dam.	Comment noted.
BP-221	J. Bradley	1	Please count me as a supporter of the Intake Diversion Dam project. Without this project the economy and overall survivability of Northeastern Montana is seriously in doubt.	Comment noted.
BP-222	A. Smith, PE, Ass't Director, Richland Co. Public Works	1	I would like to state my support for the proposed fish bypass and continued use of the diversion dam.	Comment noted.
BP-222		2	The construction costs, O&M, replacement costs, etc. of the pumps proposal does not seem feasible when compared with the low costs of the existing system.	Comment noted.
BP-222		3	If a more cost prohibitive solution is arrived at, we will all suffer. It is my fear that farmers will move their land out of irrigated crop production and into dryland or rangeland operations. This bears a huge impact on Richland County's opportunity to provide essential services to its constituents. The irrigated agriculture land is what supports this area. It takes about 16.5 acres of non-irrigated farmland to equal 1 acre of irrigated farmland in terms of taxable value.	Comment noted.
BP-222		4	I read that a biologist that attended the public meeting in Billings stated that only about 5% of the pallid sturgeon in the Missouri and Yellowstone rivers inhabit the Yellowstone river. This is somewhere around ten (with a conservative estimate). I thought I had read that wrong. We are affecting thousands of people for the benefit of a small fraction of the pallid sturgeon population. I'm wondering if someone has researched how the addition of this bypass or any other option to allow the pallid sturgeon up river is expected to help the population greatly? Are the sturgeon suddenly going to change that proportion and start migrating up the Yellowstone to spawn? I think we may actually be wiser spending the money along one of the primary rivers that the fish habitat.	As stated in Chapter 3 (Section 3.9.1.3) approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). This shows the importance of restoration activities on the Yellowstone River. Outside of the spawning period the majority of the pallid sturgeon do prefer the Missouri River near the headwaters of Lake Sakakawea.
BP-223	C. Iversen	1	I support the Intake Diversion Dam.	Comment noted.
BP-224	K. DeMangelaere	1	I am in full support for the Intake Diversion Dam.	Comment noted.

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BP-225	H. Ananthakrishnan	1	With severely dwindling numbers, the endangered pallid sturgeon is unlikely to survive as a species unless aggressive conservation measures are taken.	Comment noted.
BP-225		2	I strongly support removing the Intake Diversion Dam to allow the fish to spawn successfully and replacing it with an irrigation system using pumps, as was done on the Sacramento River. If we look at the larger picture rather than at short-term economic gains, we will see that we need not squander our ecological wealth to leave a legacy of destruction.	Comment noted.
BP-226	K. Lieber, Ocean Defenders Alliance	1	After reviewing the options for how best to help the pallid sturgeon return to a healthy population, the ONLY way to assure their existence is to remove the dams that impede their historic migration routes. With only 125 animals left in the wild, there is no time to experiment with fish passageways. Take down the existing dams and install pumps that will get water to the farmers.	Comment noted.
BP-227	R. Jones	1	Please remove the Intake Diversion Dam.	Comment noted.
BP-228	M. Rosaaen	1	Sending my email in support of the intake/diversion dam	Comment noted.
BP-229	G. Mohr	1	I support the Intake Diversion Dam and proposed fish ladder to benefit the pallid sturgeon and continued irrigation of the lower Yellowstone River valley.	Comment noted.
BP-230	S. Arnold	1	I am in favor of the channel bypass.	Comment noted.
BP-230		2	The environmentalist are so worried about the sturgeon, what if the farmers would put diesel pumps in to pump their water for irrigating. What is this going to do to global warming?	Comment noted.
BP-230	D. Steinbeisser	1	I am in favor of the concrete weir and fish bypass channel because of the wildlife habitat for pheasants, ducks, and other wildlife habitat around the spillways of the main canal will no longer be there.	Comment noted.
BP-231	A. Kellom	1	I support the bypass channel on the diversion dam along the Yellowstone River between Sidney, MT and Glendive MT. It makes the most sense environmentally and economically. It allows the fish to swim around and continue upstream and allows for irrigation with a much lower carbon footprint than proposed alternatives. To change to pumping stations would not only be unreliable but also asinine in terms of extra pollution and wasted water.	Comment noted.
BP-231a	W. Gardner	1	I support either of the dam removal alternatives because this action is the only two alternatives that would clearly achieve the goals and objectives of the project.	Comment noted.
BP-231a		2	As stated in Appendix E 2016 of DEIS 2016 (Adaptive Management) p. 2 Objective 2: “Upstream and downstream passage of pallid sturgeon: - Upstream Passage 1) Greater than or equal to 85% of motivated adult pallid sturgeon (fish that move up to the weir) annually pass upstream of the weir location during the spawning migration period (April 1 to June 15) within a reasonable amount of time without substantial delay (=0.19 miles/hour)”. These project goals and objectives should be listed in the main body of the EIS in the purpose and need section where the various alternatives can be more readily measured with consideration of the goals and objectives in mind.	This language pertaining to adaptive management has been updated and is in Section 2.3.2 Elements Common to All Alternatives.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-231a		3	I disagree with the passage duration being limited to the spawning period of April 1 to June 15. Pallid sturgeon passage over Intake Dam should be provided year-round. Pallid sturgeon adults and sub-adults are mobile and require long segments of open-river to fulfill their seasonal habitat requirements. By having year-round access throughout the lower 235-mile lower Yellowstone River (above and below Intake) pallids will be able to repopulate this section throughout the lower Yellowstone River further insuring their recovery here.	The FEIS document and project do not propose a passage duration limited to April 1 to June 15. The reference to those dates (Monitoring and Adaptive Management) is merely referencing a spawning migration period over which passage would be monitored.
BP-231a		4	I don't believe the Bypass Channel Alternative will succeed in meeting the goals and objectives for pallid sturgeon passage based on the Fish Passage Connectivity Index (FPCI) model results. Table 2-27 (page 2-99 of the DEIS) shows the fish passage connectivity index and habitat units for each alternative. The two dam removal alternatives scored the maximum, 11,949 average habitat units (AHU) compared to the Bypass Channel Alternative which scored 8,054 AHU. The Bypass Alt. AHU is only 67% of potential maximum (pallid) habitat. The objective states "greater than or equal to 85% of motivated adult pallid sturgeon" will pass over Intake Dam. So if the Bypass Alt is yielding only 67% of the habitat, then probably less than 85% of the pallids (the objective) are projected to make passage over Intake Dam. The Bypass Channel Alternative may be the "Best Buy" but it is not going to meet the objective of the proposed project. Therefore, the Bypass Channel Alternative should be rejected and the dam removal alternatives should be accepted.	To clarify, the FPCI model is a planning tool to compare the relative effectiveness of each alternative. The index score does not represent either the specific number of fish that will pass nor does it calculate a statistical probability of fish passage. Additional text has been provided in Section 2.5 describing the other factors also used in identifying the preferred alternative
BP-231a		5	The Fish Passage Connectivity Index (FPCI) model has minimal value for comparing alternatives because input data is too subjective and open for scrutiny and therefore unreliable. For example the Fs value (channel size) of 2 for the Bypass Channel Alt. (p. 10 Apdx D of the DEIS 2016) seems high since the average flow split for the Bypass Channel is more like 13% (p. 2-48 DEIS) instead of 15%; maybe Fs should have been ranked a 1 instead. Also, the U (use) value for the Bypass Alternative should have been ranked 4 or less instead of 5 (p. 12 Apdx D). Pallid sturgeon travel behavior preference for the main channel would make pallids less likely to use the artificial (side) channel compared to the open channel condition of the dam removal alternatives. Should the no dam (channel width= 700 ft) and bypass channel (channel width of 100 ft) alternatives be ranked equally in terms of pallid usage here? This is obviously incorrect scoring of the input values.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected, based on the best available science and professional judgment of the project team. Further a sensitivity analysis was completed to evaluate how the outcome would be affected if different scores were used and the results indicate the outcome is not affected. The FPCI is a planning tool intended to inform decisions, but is not the only factor considered. Additional text has been provided in Section 2.5 describing the other factors also used in selecting the preferred alternative.
BP-231a		6	On page 10 of the FPCI Appendix D of DEIS (2016) document it states that "For the Yellowstone River, Corps (2014) used the recommendation by the BRT that fish passage alternatives should be capable of conveying up to 30% of river flow". This is a confusing statement. Does it mean that a channel split of 30% is recommended or does it mean that the passage channel should convey 1-30 % of the river flow? Could you confirm that this statement is correct and not taken out of context? This sentence doesn't seem to make sense. This is a fairly important statement and therefore the BRT report should be cited if there was one written.	This statement means that a bypass channel that mimics natural side channels should be sized to convey up to 30% of the river flow at higher flows or flood events. This ensures that there is sufficient "attraction" for fish species to find it. The rest of this paragraph describes how this number was used in scoring the "Size of Fishway" element in the model. The criteria evolved to 15% but it was maintained at 30% to be conservative. The 30% was an original criteria from original discussions with the BRT, this reflects a conservative criteria to measure split flows for attraction as cited in Corps 2015 (2014 was a typo).

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BP-231a		7	I do not agree that the irrigators should have to pay for the extra O&M costs of the dam removal alternatives. This disfavors these alternatives and makes them less likely to be considered. Of the action alternatives, the Bypass Channel Alternative is expected to have the lowest annual O&M costs (see Table 2-26) (DEIS 2016 p.2-105). The O&M costs for the Multiple Pumps is 2x that of the Bypass Channel Alt. and the Multiple Pumps with Conserve. Alt. O&M costs are 5x that of the Bypass Alt., so clearly the two dam removal alternatives would cost the irrigators much more O&M. But I do not agree that the irrigators should have to pay the extra O&M costs of the dam removal alternatives. For the dam removal alternatives the irrigators should not have to pay O&M for getting the water into the main canals. The US government (i.e. Western Area Power Authority- WAPA) should assist with the costs of supplying water to the main canals. WAPA should partner-in with this project because they will have much to gain indirectly from the Intake project as far as pallid sturgeon recovery obligations are concerned. Pallid sturgeon mitigation for the US COE is being shifted from Ft Peck Dam (where WAPA generates hydropower) to Intake Dam for passage. WAPA benefits because they will not loose power generation at Ft. Peck Dam. What would be a cost estimate to have the US Government supply water to the main canals? WAPA should formally be invited to assist financially with the project.	The agencies are open to discussing alternative funding sources. For the increased OM&R costs, a trust fund was suggested and analysis has been completed. The Draft EIS was clear that additional Congressional Authorization would be necessary to establish such a trust and provide instruction for: · Who would establish and maintain the trust. · Where the funds for the trust would come from (agency appropriations or other source). · Purpose of the trust and what activities would be funded. · How long would the trust be authorized and conditions for when the trust would cease (i.e., where would the remaining funds go upon the expiration of the authority?). To address this comment, the FEIS was revised to: · Provide additional discussion related to Congressional Authorization (See Chapter 2). · Describe assumptions associated with a conceptual trust (See Chapter 4). · Estimate the initial investment that would be necessary to off-set the additional OM&R costs associated with each pumping alternative (See Chapter 4). · Present potential effects of OM&R Expenditures on Individual and LYP Net Farm Income (See Chapter 4).
BP-231b	J. Doe	1	I urge that a fully open river alternative be chosen and the current dam be removed, as this will give the pallid sturgeon the best chance to start to recover, as well as help other species. Your own analysis in the EIS documents that an option that fully restores an open flowing river provides the best chance for sturgeon.	Comment noted.
BP-231b		2	You wanted to build a rock ramp, but then decided that may not work. You then proposed the channel, but then you say that may not work. It is not fair to play with a species very existence just so we can grow crops in the desert.	Comment noted.
BP-231b		3	Removing all the dams will also benefit humans who want to navigate the river. It will benefit the entire ecosystem. There are options to remove all dams and keep the same water volume flowing to humans, and there are also even better options where human use is curtailed, as it should be.	Comment noted.
BP-231c	R. Cayko	1	This letter is in support of the bypass at Intake on the Yellowstone River	Comment noted.
BP-231c		2	The option of pumping stations would be a danger to the environment, not to mention very expensive to install and maintain. This added cost could eventually put us out of business. The bypass option will allow us to continue farming and carry on a four generation tradition.	Comment noted.
BP-231c		3	One hundred years ago when these canals were established, it changed the valley and nature adapted and many species thrived. The ditches have become safe habitat for a large variety of animals and plants such as whooping cranes, mink, otter, and the endangered monarch butterflies who feed on the ditch banks milkweed just to mention a few. Closing down these canals and the subsequent ecosystems would adversely affect many other species besides the pallid sturgeon.	The environmental consequences of alternatives are described in Chapter 4. Specifically lands and vegetation in Section 4.10, wildlife 4.8, aquatic communities 4.7.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-231d	G. Staffanson	1	I am writing in support of the Intake Diversion Dam Bypass Channel. My family has been farming our little piece of the Yellowstone Valley for over 100 years. In fact since before the dam was built.	Comment noted.
BP-231e	W. DeTienne	1	I am dismayed to hear the future of agriculture in the Yellowstone valley is in jeopardy due to "findings" of recent studies on impending extinction of the sturgeon in the local river. It doesn't make sense to me to cut off the water supply to farms in this fertile valley and to prevent families from earning a living along with contributing to the nation's food basket. Please consider further study on this issue to reach a resolution that is mutually beneficial.	Comment noted.
BP-231f	D. Flather	1	I would like to voice my support for the removal of the Yellowstone River Diversion Dam. A bypass channel has never been shown to be functional for wild sturgeon and therefore is an inadequate response to Endangered Species Act protections for the Pallid sturgeon. Instead, I support the removal of the Dam and replacement with a series of pumps for agricultural uses.	Comment noted.
BP-231g	C. & J. Washecheck	1	We are very concerned that the lively hood of the residents affected by the LYIP could be at jeopardy. I understand that the fish are an important part of the environment, however, it is disturbing that the lives of the residents of these communities would be discarded over fish. The fish have lived hundreds of years with the current situation. We are in support of whatever decision has to be made to protect the people that will be negatively affected by shutting down the irrigation canal.	Comment noted.
BP-231h	H. Langevold	1	Extinction is forever. Extra dollars for pumps is just money and is easily printed.	Comment noted.
BP-231i	T. Ley	1	I would like to express my disappointment in this project if it means condemning this Sturgeon as a species to extinction. We must take responsibility for the future. I do not want to see this project move forward without due consideration to that.	Comment noted.
BP-232	J. Kwasney	1	We favor the bypass channel to save the Pallid Sturgeon and to make passage easier for other fishes in the Yellowstone River.	Comment noted.
BP-232		2	A system using pumps and constructing new electrical delivery would be unreliable and costly.	Comment noted.
BP-233	K. Dynneson	1	I am in favor of the bypass channel. My family has been farming in the Sidney area for 5 generations and without irrigated land, I would not be allowed the opportunity to farm with my family	Comment noted.
BP-233		2	Without keeping irrigation costs feasibly, many farmers, young and old will be forced out of business.	Comment noted.

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BP-234	D. Nollmeyer	1	I am writing to support the concrete weir and the fish bypass. We have heard many proposals from electric pumps to wind turbines. Electric pumps break down and sometimes the wind doesn't blow. How many times has gravity failed to work? It is the most economical way to move water, that is why this system has worked for over 100 years.	Comment noted.
BP-235	K. Nollmeyer	1	I am writing to express my support for the concrete weir and fish bypass in the Yellowstone river. … The concrete weir and fish bypass will allow the farmers to have the water needed to grow crops that the wildlife feed on. The water in the irrigation ditches is home to many water fowl in this area. The irrigated crops in this area provided the ground cover necessary for our pheasant population to thrive.	Comment noted.
BP-235		2	Other options that have been proposed, such as wind generators, will greatly change the landscape of the valley. They also will have a negative affect on our wildlife. I'm afraid we would see a significant loss of our bird population. Wind generators are not the answer.	Comment noted.
BP-236	L. Jorgensen	1	I am in favor of the fish bypass channel for the Intake Diversion Dam Fish Passage Project. Out of all the possibilities, I feel this is the best for the fish and all other wildlife habitats that live along the Yellowstone river bottoms and the nearby communities. It is best for the environment and the best when considering costs.	Comment noted.
BP-236		2	If the dam were to be replaced by using pumps, it would be too costly to maintain and would drive out farmers and many other businesses that rely on irrigation of crops. This in turn, significantly reduces the city and county tax income that pays for necessary services within communities.	Comment noted.
BP-237	M. Backhaus	1	I am in favor of the channel by-pass for this project. The people of this valley need the irrigation waters for crops. Many jobs would be lost if the canal is closed.	Comment noted.
BP-238	E. & V. Mitchell	1	Our greatest desire is that NO ACTION be taken at all!!	Comment noted.
BP-238		2	Our SECOND choice would be for the Bypass Channel. We most certainly agree with what Mike Carlson has written and also in view of other comments that were made at the meetings from very knowledgeable sources that the number of fish involved is very minor in comparison to where the most of them are living and migrating to, therefore, it is cost prohibitive to do anything for the few that are affected.	Comment noted.
BP-239	W. Mitchell	1	We here in eastern Montana have been dealing with this issue for awhile. The people say that we need it for the sturgeon, but I heard that a fish and game person said that only 5% use the Yellowstone river. The use of pumps would be very costly and would drive food costs up considerably. It would put an extra burden on the farmer when they are already having trouble making ends meet.	Comment noted.
BP-239		2	Other then NO ACTION the only option I think is to put in the bypass channel. Please be more considerate of the people and their jobs then a few fish and the channel would still be less ongoing expense.	Comment noted.

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BP-240	A. Artim	1	Please remove lower yellowstone dams and replace with intakes to save the endangered Sturgeon. This is one of the best habitats still available to help with the restoration left to do so.	Comment noted.
BP-241	M. Stoecker, Stoecker Environmental	1	I write to urge the Army Corps and other permitting agencies to support the removal of the Intake Diversion Dam and pursue existing and effective damless diversion alternatives to achieve unimpeded fish and other wildlife migration along the Yellowstone River.	Comment noted.
BP-241		2	Below are a few examples of damless diversions already in operation on the Yellowstone and other rivers. Several of these damless diversion facilities were built following removal of a problematic dam, ineffective fishway, and specifically for the purpose of providing effective fish passage along with water diversion. I request that you review, consider, and describe these damless diversion examples, and others, within the EIS as iable technologies and alternatives to retaining an unnecessary dam on the Yellowstone. (List: Savage Rapids Dam Removal and Pump Station; Elwha River Dam Removal and Damless Diversion; Yellowstone River damless diversion; Sacramento River Red Bluff Pumping Station and Fish Screen; Stanford University damless diversion and pump station)	The comment notes that a damless diversion is already underway on the Yellowstone, but we are uncertain what project that is referencing. All other diversion structures on the Lower Yellowstone are unscreened. Although screens were added to Buffalo Rapids recently, they failed due to debris. Fish screens have also been installed at the Intake project. The project examples listed in the comment are primarily to address salmonid species passage and on different type rivers than the Yellowstone. See response to comment TB-25, 5 for discussion of the Savage Rapids Dam Removal. The Elwha River Dam Removal includes diversion of approximately ~150 cfs and does not primarily supply agriculture but small tract parcels. It also includes a water treatment facility. The Red Bluff pumping station with fish screens on the Sacramento River includes a large pump system with fish screens to allow pumping for irrigation while allowing fish passage through the dam. It is our understanding that the Stanford University removal of the Searsville Dam has not been completed but the preferred alternative is to create an opening at the base of the dam that allows water and silt into San Francisquito Creek. This is a largely different system and dam modification than is being considered at Intake.
BP-241		3	Considering the dire status and significant migration limitations of pallid sturgeon, is unreasonable to pursue any alternative that retains a dam in the river channel and which impedes fish passage to any degree when damless diversion technology is readily available, proven, and already in use on the Yellowstone and other large river systems.	Comment noted.
BP-242	E. Wznick	1	SAVE our valley	Comment noted.
BP-243	M. Whitlow	1	Please do not build a new dam but replace the irrigation system with pumps.	Comment noted.
BP-244	J. Damm	1	I am writing today in support of the Intake Diversion Dam, not only as a Richland County Employee but also as a farmers wife.	Comment noted.
BP-245	D. Strunk	1	Please remove and replace the Intake Diversion Dam (also known as Yellowstone River Diversion Dam) with a damless diversion that enables endangered sturgeon and other species to freely migrate along the river. Such damless diversions already exist elsewhere on the Yellowstone.	Comment noted.
BP-245a	L. Smith	1	I would like to submit a comment in favor of the construction of a channel to guide the fish downstream. This plan is much more economically viable than complete removal of the weir, which would farmers to spend even more money to grow their crops.	Comment noted.

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BP-245a		2	It is not economically feasible to expect them to shoulder the $500 million burden that a system built on pumps would create. Not to mention lost downtime from pumps as our neighboring water districts experience. Ultimately this would lead to many farmers being put out of business, and local economies would suffer. Environmentally, those pumps and generators required would create an even larger negative impact. More land would need to be accessed and dedicated to construction and maintenance of such an elaborate system, this is more land taken out of agricultural production.	The analysis currently acknowledges that there would be an increase in O&M which would be a burden on the farmer. Effects of that are shown in Section 4.15 Social and Economic Conditions. The analysis compares the financial burden of each alternative on farmers in terms of the effects of O&M costs on a typical farm operation. Section 4.15.5.7 compares the effects of each alternative, and shows that the Multiple Pump Station Alternative would reduce net farm income (gross revenue less production cost) by an estimated 22% for the typical farm case.
BP-245b	D. Crockett	1	The preferred solution, replacing the virtually impassable low-head rock weir with a completely impassable concrete dam, stakes everything on a 2- mile-long bypass channel around the dam. Despite costing roughly $60 million of public money, the bypass is a gamble without precedent. There are no examples of pallid sturgeon navigating such a constructed channel. The great majority of fishery professionals who have examined the proposal and understand the needs of critically endangered pallid sturgeon give the project abysmal odds of success. What has the best chance of succeeding: removing the dam and letting these fish flow up and down the river as they did for millions of years.	Comment noted, reference section 2.5.1 Reasons for Selected Alternative.
BP-245b		2	I urge you to develop and select an alternative that requires removing the existing weir to allow unimpeded upstream passage for pallid sturgeon and other important sport fish species. Choose instead an alternative that allows for the removal of the weir and doesn't require a replacement while meeting the needs of traditional agricultural water use during crucial low-flow months by building a series of irrigation pumps. Invest in conservation measures in the existing canal to improve efficiency by lining, piping, and modifying the headgate. Powering these irrigation pumps using a wind generator, or if feasible, low-head hydro in the main canals.	Comment noted.
BP-245b		3	This work should use agency funding and additional federal appropriations, above what is currently in hand, to pay for the project as well as create a trust fund to pay for pumping and maintenance costs. Economic analysis for alternatives mandating a weir/dam should include long-term annual estimated costs of maintaining all structures and the bypass channel, and clearly identify where and how these funds will be generated.	Conceptual level cost estimates for the anticipated operations, maintenance, and repairs (OM&R) over a 50 year project life and average annual costs after discounting were developed for each alternative, including the No Action, and are contained in section 4.0 of Appendix B to the Draft EIS. These estimates, based upon information from the Lower Yellowstone Irrigation Project (LYIP), Bureau of Reclamation, and the Corps, serve as the basis for the economic analysis presented in Section 4.16 of the FEIS. Consistent with Congressional authorization and repayment contracts for the Lower Yellowstone Project (LYP), funds to carry out the long term OM&R of the facilities associated with the prpoject are the responsibility of the individual beneficiaries of the LYP and are collected through acre assessments by the LYIP. The potential effects of annualized OM&R costs are described in Section 4.16 of the Draft EIS. While not proposed, it was noted that upon Congressional authorization, other sources of funding, such as trust fund for purchase of power or development of power at the project to generate revenue, could be established thus lessening the potential financial impact to the beneficiaries of the LYP. The Draft EIS was clear that additional Congressional Authorization would be necessary to establish such a trust and provide instruction for:

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				· Who would establish and maintain the trust. · Where the funds for the trust would come from (agency appropriations or other source). · Purpose of the trust and what activities would be funded. · How long would the trust be authorized and conditions for when the trust would cease (i.e., where would the remaining funds go upon the expiration of the authority?). To address this comment, the FEIS was revised to: · Provide additional discussion related to Congressional Authorization (See Chapter 2). · Describe assumptions associated with a conceptual trust (See Chapter 4). · Estimate the initial investment that would be necessary to off-set the additional OM&R costs associated with each pumping alternative (See Chapter 4). Present potential effects of OM&R Expenditures on Individual and LYP Net Farm Income (See Chapter 4).
BP-245b		4	Finally, biological criteria must be the primary determinant for which alternative has the highest probability of success, and for determining if pallid sturgeon succeed in passing upstream. The Corps should assume fully responsibility for funding all such monitoring.	Agencies are committed to implementing a Monitoring and Adaptive Management Plan that takes into consideration the biological criteria provided by the Service's Biological Review Team. The proposed Monitoring and Adaptive Management Plan can be found in Appendix E.
BP-246	S. Higley, P.E., WWC Engineering, on behalf of the Lower Yellowstone Irrigation Project	1	Upon a thorough review of the EIS, the Bypass Channel is the only Alternative that successfully meets the project purpose and need, which is to improve fish passage, contribute to ecosystem restoration, AND provide for the continued viable and effective operation of the LYIP, which supplies dependable irrigation water to nearly 58,000 acres of productive cropland.	Comment noted.
BP-246		2	The dam removal alternatives result in a significant impact on the LYIP users by increasing their Operation and Maintenance costs by over double what they are currently paying. Such an increase in costs to the LYIP will render it economically unviable; therefore, the open river alternatives will not achieve the project purpose and cannot be implemented.	The analysis acknowledges that there would be an increase in O&M which would be the responsibility of the farmer. Effects of that are shown in Section 4.15 Social and Economic Conditions. Because O&M is not a majority component of overall production costs, the % reduction in net income is less than the % increase in O&M cost. The most expensive alternative in terms of O&M is the Multiple Pump alternative, which would increase the per-acre O&M to ~$91. This amounts to a 90% increase in O&M cost per acre. However, translating this to effects on overall net income (gross revenue less production cost) results in a ~23% reduction in net income for a typical farm operation. As noted in the last paragraph of 4.15.3.3, the analysis considered a typical, or average, case as opposed to each individual farm.
BP-246		3	...It is the Agency's responsibility under federal NEPA requirements to evaluate the alternatives under the primary project purpose need. Although comments advocating a free-flowing river system may be directed toward the ecosystem restoration portion of the project purpose, such restoration cannot be made at the expense of the other elements of the project purpose, specifically the continued viable and effective operation of the LYIP.	Comment noted.

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BP-246		4	Additionally, a free-flowing river approach is a policy decision that Congress has not made. Rather, Congress has specifically authorized and continuously supported operation of the LYIP to provide dependable and economic irrigation water to more than 58,000 acres of cropland. Furthermore, the LYIP has valid, long-standing water rights that must be honored. Any alternative that provides less than the full water right to the LYIP or requires marketing of the water right or use of the water right for anything other than irrigation is prohibited because there is no authority or precedent for such action.	The 1902 Reclamation Act, the authority used to construct, operate, and maintain the Lower Yellowstone Project, does not prescribe the method used to deliver water to the Project. The LYIP and Reclamation jointly hold water rights for the Lower Yellowstone Project. The water right entitles diversion of water for beneficial use, but a water right holder is not forced to divert water by virtue of holding a water right. Reclamation has not proposed to market water or use the water right for uses other than irrigation.
BP-246		5	Implementation of the Multiple Pump Alternative will invoke unknown Geomorphology effects caused by 5 new artificial inlet channels and their required bank stabilization. The amount of bank stabilization required would result in significant new physical constraints within the Yellowstone River Channel Migration Zone in multiple areas where the pump stations are proposed.	The locations of the pump stations and inlet stations were placed in an attempt to minimize effects with the CMZ. However, at this level of design detailed analysis has yet to be completed and reasonable assumptions were made per locations of features and potential effects. All of the pump stations were setback "…approximately 1,000 feet from the channel bank where possible. This placed them at or just inside the outer edge of the CMZ" (Appendix A-2, Paragraph 4.2). It was assumed for O&M that some bank stabilization may be required over the long term to address potential movement of the channel.
BP-246		6	Implementation of the Multiple Pump Alternative will have significant impacts from access roads, pump stations, inlet channels, power lines, power sub-stations, discharge lines and other infrastructure required for implementation of this alternative. The placement of this infrastructure may not be feasible due to the required MDT Highway and BNSF Railroad crossings, as well as landowner access concerns, and easements that would be necessary to be negotiated with the landowners who are not willing to cooperate.	Comment noted, all of these items are accounted for in the cost estimate and a contingency applied to that estimate to account for uncertainties in design and construction schedules.
BP-246		7	The water rights for the LYIP require diversion specifically at the diversion dam. Changing the system as outlined in the Multiple Pump Alternative may require applications to change the water right point of diversion, adding yet another level of uncertainty and complication to the Multiple Pump Alternative.	Under Montana State Water Law (Mont. Code Ann. Section 36.12.1901), a change in Point of Diversion requires authorization from Montana Department of Natural Resources and does not change the priority date of the water right.
BP-246		8	The Multiple Pump Station Alternative erroneously indicates that the alternative retains a viable LYIP project. However, the O&M is over double what they are currently paying, which will bankrupt some of the farmers. Studies performed by Sidney Sugar (attached) clearly show that an increase in operating expense of more than 15% will result in a "break-even" point for the LYIP sugar beet farmers, requiring them to shut down operations.	The analysis currently acknowledges that there would be an increase in O&M which would be a burden on the water users. Effects of that are shown in Section 4.15 Social and Economic Conditions. Because O&M is not a majority component of overall production costs, the % reduction in net income is less than the % increase in O&M cost. For example, the most expensive alternative in terms of O&M is the Multiple Pump alternative, which would increase the per-acre O&M to ~$91. This amounts to a 90% increase in O&M cost per acre. However, translating this to effects on overall net income (gross revenue less production cost) results in a ~23% reduction in net income for a typical farm operation. In terms of production cost, this represents about a 5.8% increase in total production cost. The Sidney Sugar letter was reviewed, and similar conclusions were reached. The % increases in O&M under the alternatives, once translated to overall % increase in production cost, amounted to between 1% and 5% increase in production cost for the example beet operation. The FEIS acknowledges that the Multiple Pump Station Alternative may not meet the purpose and need to continue a viable and effective operation of the LYP (section 2.4.1).

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BP-246		9	The Lower Yellowstone Irrigation Project users currently pay a rate of $40 per acre for irrigation water from the project. The implementation of the Multiple Pump Alternative would increase user fees to approximately $90 per acre, which is more than twice as expensive as any other irrigation district's user fees in the State of Montana. Our experience on numerous irrigation projects within the State of Montana suggests that the crops currently being grown within the Lower Yellowstone Irrigation Project could not withstand this type of user fee increase, and would result in the dissolution of the Lower Yellowstone Irrigation Project.	The analysis currently acknowledges that there would be an increase in O&M which would be burden on the farmer. Effects of that are shown in Section 4.15 Social and Economic Conditions. The most expensive alternative in terms of O&M is the Multiple Pump alternative, which would increase the per-acre O&M to ~$91. This amounts to a 90% increase in O&M cost per acre. However, translating this to effects on overall net income (gross revenue less production cost) results in a ~23% reduction in net income for a typical farm operation. In terms of production cost, this represents about a 5.8% increase in total production cost. As noted in the last paragraph of 4.15.3.3, the analysis considered a typical, or average, case as opposed to each individual farm. The FEIS acknowledges that the Multiple Pump Station Alternative may not meet the purpose and need to continue a viable and effective operation of the LYP (section 2.4.1).
BP-246		10	The Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative require additional power and operational infrastructure that could present a significant hazard to listed species and species of concern. Noise and vibration from Pump operations will disturb other species of concern in adjacent wildlife habitats.	Section 4-14.
BP-246		11	LYIP water provides important water recharge to groundwater which is used for domestic and municipal drinking water supplies as well as riparian and wetland habitat. Implementing conservation measures would severely restrict the water available for groundwater recharge and negatively impact drinking water supplies as well as riparian and wetland habitat.	Impacts of each alternative on groundwater resources, including groundwater recharge have been described in section 4.4. The Agencies note that additional studies would be required to analyze groundwater impacts and acknowledge there is limited information available about the hydrologic connection between the Lower Yellowstone Project facilities and operations (canals, laterals, drains, and irrigation), wetlands, and groundwater. Obtaining this information would take extensive planning, investigations over the entire 58,000 acre Project, and development of a two dimensional model, all of which would be costly and take years to undertake. In some areas, it may never be possible to quantify the surface water-groundwater interaction due to the complexity of the area. While the monetary costs to obtain this information are likely considerable, the non-monetary costs are also significant in this case, especially the delays in implementing passage for the remaining wild pallid sturgeon population and the resulting non-timely fulfillment of statutory mandates (i.e., complying with ESA).
BP-246		12	Implementation of conservation measures violates Congress' clear intention that the LYIP provide dependable irrigation water and endangers the existing water rights. Congress has not authorized the LYIP to provide less water or to support fewer acres; therefore, any change in the scope of the LYIP, including changes resulting from limiting the amount of water available, are prohibited. Further, conservation measures that require changes to personal property and individual farming practices are beyond the scope of this project and outside the authority of the federal agencies.	The 1982 Reclamation Reform Act, which Congress enacted, encourages irrigation districts to conserve water and requires them to develop a water conservation plan.

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BP-246		13	Alternatives that require removal of the dam will remove the most popular Paddle Fish fishing area on the lower Yellowstone and Missouri Rivers. The Montana FWP generally sets an annual limit of approximately 1,000 fish harvested, with approximately 800 coming from the area below the Intake Diversion (a vast majority). This impact has far reaching effects from both a social and economic standpoint.	The analysis currently acknowledges the range of effects that dam removal could have on recreation and social and economic conditions, both beneficial and adverse. See Sections 4.11.2, 4.11.4.5, 4.11.4.6, 4.11.5.8, 4.15.2, 4.15.5.5, 4.15.5.6, 4.15.6.8.
BP-246		14	The Multiple Pump Station Alternative cannot be viably protected from Ice Jam Events that occur on the Yellowstone River. Ice Jam events on the Yellowstone River have had significant impacts to pumping facilities on other irrigation districts such as the Buffalo Rapids Irrigation District and the Sidney Water Users. In 2012, the Buffalo Rapids Irrigation District's Fallon Pump Station was nearly destroyed by ice flows.	The Agencies understand the significance of ice jams on the river, which were described in Section 3.3.7. Possible effects of ice are recognized in the alternative designs. As described in Appendix A- Design the fish screens and pumping stations are located off channel to minimize the effects of ice flows, and a berm was added to the upstream side to provide protection from ice as well. It should be recognized that there is risk and uncertainty involved in the design and that has been accounted for by a cost and schedule risk analysis that applies risk based contingencies to the cost estimates. Should this alternative be selected for more detailed design it can safely be assumed that additional analysis of ice and mitigation of these concerns would be further accounted for.
BP-246		15	The Multiple Pump Station and Multiple Pump with Conservation Alternatives result in a significant change to the overall LYIP irrigation system. The existing system runs by gravity flow, and is not subject to power interruptions, pump failures, discharge line ruptures, or the many other factors that can cause a disruption in service. The equipment required for maintenance of these alternatives would be very specialized, and would not be "off the shelf" equipment that can be acquired on short notice. This equipment would require long lead times and would result in long-term disruption in flow to the LYIP users, which could severely impact crop production and viability of the users.	As described in Section 2.3.7.2 redundancy was developed into the pump station design with an additional pump provided at each pump station. In addition the O&M cost estimates were coordinated with the irrigation district (LYIP) and also took into account real world accounts from the nearby irrigation districts also using pumps (Buffalo Rapids and Sidney Irrigation District).
BP-246		16	... Pumping in many locations does make sense and is an efficient way of providing irrigation water to crops. However, the Lower Yellowstone River contains a significant amount of sediment that becomes extremely problematic for pumping systems. Input from both the Buffalo Rapids Irrigation Project and the Sidney Water Users (who both use pump stations to supply their irrigation water and are in close proximity to the Lower Yellowstone Irrigation Project) have explained the hardships that they have endured from the sediment laden waters and the unstable nature of the Yellowstone River. Both of these irrigation projects spend a considerable amount of time, energy and money each year to protect the inflow to their pumping stations as well as to maintain their pumps.	Assumptions that went into developing O&M estimates are detailed in Appendix B Cost Estimate, Attachment B.8. As part of developing assumptions pertaining to O&M information from nearby irrigation districts operating pumps was accounted for.
BP-246		17	Although the draft EIS adequately captures the operation and maintenance activities and cost of the pumping alternatives, there is no discussion of the reliability concerns and associated impacts that will be a reality if either of these alternatives are implemented. These impacts would include unpredictable extreme water rationing, crop losses and economic losses with the region.	In response to this and other comments, text has been added to Section 4.15.5.6 to note that the alternative may have more economic uncertainty.

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BP-247	D. Garland, Sidney Sugars (attached to letter BP-246)	1	Sidney Sugers provided a table entitled "Sidney Sugars Analysis on Feasibility of Cost Increase on Sugar Beets." The letter states that "...our growers cannot withstand any significant increase to their operation and maintenance costs. Sidney Sugars cannot remain economically viable with any significant reduction to sugar beet acres planted due to increased O&M costs passed on to our growers.	The analysis currently acknowledges that there would be an increase in O&M which would be a burden on the water users. Effects of that are shown in Section 4.15 Social and Economic Conditions. Because O&M is not a majority component of overall production costs, the % reduction in net income is less than the % increase in O&M cost. For example, the most expensive alternative in terms of O&M is the Multiple Pump alternative, which would increase the per-acre O&M to ~$91. This amounts to a 90% increase in O&M cost per acre. However, translating this to effects on overall net income (gross revenue less production cost) results in a ~23% reduction in net income for a typical farm operation. In terms of production cost, this represents about a 5.8% increase in total production cost. The Sidney Sugar letter was reviewed, and similar conclusions were reached. The % increases in O&M under the alternatives, once translated to overall % increase in production cost, amounted to between 1% and 5% increase in production cost for the example beet operation. The FEIS acknowledges that the Multiple Pump Station Alternative may not meet the purpose and need to continue a viable and effective operation of the LYP (section 2.4.1).
BP-248	J. Berry, WWC Engineering (appendix to letter BP-246)	1	The attachment is a 42 page report entitled "Biological Resources Evaluation Report for the Non-Weir Alternatives - Intake Diversion Dam Fish Passage Project." Contents of the report are not reflected here.	Thank you for providing additional information, primarily on game species. Additional information and reference to this report has been added to Sections 3.8 and 4.9.
BP-249	S. Rone	1	I would like to take this time to express my opposition to the Corps draft proposal re the above intake diversion to Montana dam as being wholly inadequate for the pallid sturgeon fish's survival. Only if the Montana dam is removed can the fish have a fighting chance at survival.	Comment noted.
BP-250	G. Hensley	1	Small family farms are a dying breed. Larger corporate farms buy multiple smaller farms when family farms lose their ability to compete in a free market due to massive natural disasters that alter natural resources or when government entities change longstanding policies which govern these resources.	Comment noted.
BP-250		2	Critical habitat for fish and wildlife is of utmost concern to agencies that are given the responsibility to manage and protect habitat, often to the detriment of those humans whose livelihood is dependent upon those decisions. Solutions should always balance the needs of every species impacted by habitat change.	Comment noted.
BP-250		3	I believe all decisions related to this project should consider the negative impact such decisions have upon small farm populations. Any final decision that is made should also protect the human families whose survival is dependent upon habitat and resources that could be jeopardized or removed as a consequence.	Social and Economic conditions analysis is contained in Chapter 4.15 and is part of the considerations in the decision-making process.

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BP-250		4	I would not support a program that threaten the survival of plaid sturgeon nor do I feel that impact upon human populations is of secondary importance. Please accept the project that was developed and is now being challenged by outside populations that have no concern for every aspect and consequence and who appear to single-mindedly hold human consequences with lower regard.	Comment noted.
BP-251	J. Stanford	1	I write to urge the Army Corps and other permitting agencies to support the removal of the Intake Diversion Dam and pursue existing and effective damless diversion alternatives to achieve unimpeded fish and other wildlife migration along the Yellowstone River.	Comment noted.
BP-252	T. Burns	1	After spending time on rivers and seeing these magnificent historic animals in their native habitat I strongly urge the dam not be reconstructed and the use of irrigation pumps be implemented to save the Pallid Sturgeon from probable extinction. Although this option will cost more, it is the only reliable way to ensure the sturgeon get through the passage, therefore not a waste of expenditures. The risky expensive option of a bypass channel should not be considered, bypass channels have not worked for sturgeon.	Please see Section 4.9.8 Lessons from Other Fish Passageways.
		2	I strongly urge the option of pumps be implemented for the Pallid Sturgeon Passage and Entrainment Project as the only reliable option to save this rare species and avoid wasteful expenditures of the tax payers money on a dam and bypass channel that will not work for this animal	Comment noted.
BP-253	H. Zackmein	1	I strongly oppose the proposal to build a river-wide weir, accompanied by a bypass channel, on the Yellowstone River. Montanans do not want your dam on the Yellowstone River, no matter what you call it. Moreover, your plan is completely untested and the results are unknown. It is simply rampant and hopeful speculation that this would achieve any fishery goals. Rather, it appears more likely to be the death knell for the pallid sturgeon.	Comment noted.
BP-253		2	We need to adopt an alternative for the Lower Yellowstone that does not involve damming the Yellowstone River, does not depend on hopes for an untested bypass channel, and does in fact sustain the natural flow of the river in its existing river channel. An undammed river is the flow regime under which the pallid sturgeon evolved and formerly thrived. Any design to support irrigation must be based on a free-flowing Yellowstone River, and must be constructed in a way that allows pallid sturgeon and other fish species to move upstream in the natural river channel, without simply hoping that they'll use an expensive and untested bypass.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-253		3	Moreover, if you use your dollars wisely, you can readily accommodate the Lower Yellowstone water users with a properly designed and operated system of pumps to serve the irrigation infrastructure. Couple the pumps with sensible development of renewable energy development to power them, and further add investments in water conservation and improved irrigation efficiency, and you can achieve both fishery and irrigation goals.	Comment noted.
BP-254	J. Ramsey	1	I think that the best solution for both the farmers and the Pallid Sturgeon is to completely remove the diversion dam and replace it with multiple fish safe water pumps. Ideally the water pumps could be wind powered since wind is hardly a rarity in this area.	Comment noted.
BP-254		2	I do not think that the bypass channel alternative will work with Sturgeon. Fish ladders rarely work with any species, and have never worked with Sturgeon (New York TImes, Sept, 3, 2015 and July 25, 2016). The Multiple Pump solution, with or without conservation is the only way to insure that the Pallid Sturgeon has a chance to survive. The cost differential is not significant in the long term. Given that the Bypass Channel will likely not work for Sturgeon their population will continue to collapse. When the population is critical and their genetic diversity is drastically reduced not only will they have less chance to survive long term but we have to step in and spend the extra money in a heroic effort to save the species.	The FEIS has been updated to ensure additional information is added to make it clear why the Agencies believe a bypass is likely to work. Current literature on bypass designs for sturgeon all highlight that promising approaches include those that mimic natural channels. This would include building a channel with similar geometry, facilitate passage under a range of discharge conditions, and incorporate a broad range of hydraulic criteria that emulate the range and depths and velocities that have been successfully negotiated by targeted migratory fish. (Braaten et al. 2015, Aadland 2010, Jager et al. 2016). Pallid sturgeon have been shown to use natural side-channels in the upper Missouri River (Braaten et al. 2015) and constructed side-channels in the lower Missouri River (DeLonay et al. 2014, DeLonay et al. 2016a; DeLonay et al. 2016b) during spawning migration. In the upper Missouri River, pallid sturgeon migrating upriver passed through a variety of short (0.4-km long; 0.25 mi) and long (3.9-km long; 2.42 mi) side channels (Braaten et al. 2015). The constructed side channels in the lower Missouri River, even though not constructed with adult sturgeon migration in mind, have demonstrated that sturgeon will use constructed channels and at times will choose to use them even when the main channel is unobstructed. The physical and resulting hydraulic features of the proposed bypass channel at Intake were modeled according to the features within known migratory pathways (main channel and side channel) used by pallid sturgeon in the upper Missouri River and Yellowstone River. The final geometry of the proposed bypass channel falls within the range of all parameters, including length, width, sinuosity, bend radius, and meander wavelength. In addition, this bypass channel has been engineered with expert input to increase the odds of use by sturgeon by optimal location and orientation of the downstream entrance, a flow split which is higher than side channels which have been used by pallid sturgeon, and water velocities and depths suitable for passage at a wide range of flows. Because pallid sturgeon have been observed to use side channels (both constructed and natural) on the Missouri River and Yellowstone River, even when the main channel is unobstructed, and because the designs mimic physical parameters of natural side channels actually shown to be used by pallid sturgeon on the Yellowstone, we believe that construction of the preferred bypass alternative will result in a high likelihood that the constructed bypass will effectively provide passage opportunity under a variety of flows. Lastly, the design of the bypass is constructed with the entrance near the base of the obstruction, rather than located some distance downstream. The best entrance locations are at the base of the obstructions because a fishes natural tendency to seek upstream passage at the obstruction. Entrances located significant distances downstream of the barrier may cause fish to swim past and become trapped below the dam by their natural instinct to swim upstream (Aadland et al. 2010). Fish passage attempts which have often failed for sturgeon or are not suitable for sturgeon typically involve ladders, lifts, fishways with baffles, sharp turns, passage through large reservoirs, and dams with turbines (Jager et al. 2016).

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-254		3	The multiple pump solution would not only benefit the Pallid Sturgeon but the farmers in the area as well. As we have unfortunately learned petroleum pipeline ruptures and rail car accidents in the Yellowstone Basin can and do occur. Shutting off and cleaning a contaminated canal system is a slow process. Simply shutting down pumps in the event of an oil spill could save both time and money.	Comment noted.
BP-255	P. Mann	1	Personally, I would like to see either no action or possibly the rock ramp.	Comment noted.
BP-255		2	The bypass is a waste of effort and money as there is no way to know if the sturgeon will even use it.	Comment noted.
BP-255		3	I am stating an emphatic "NO" to the pumps. Are you really going to spend millions of dollars on an unreliable system that demands more power than there even is in the area? Do we even know if this will be successful for the 5% of the sturgeon population supposedly using it? I know who it's not going to work for. Farmers. ... Mechanical failure is 100% guaranteed at some point. Most likely, at a critical time for the farmers. They are not the only ones dependent on water getting through. There is plenty of other wildlife and vegetation not to mention the communities of eastern Montana. Pumps fail. Gravity does not.	Reference 5% is not correct. Comment noted
BP-256	C. Fryer & D. Movius	1	We strongly support following California's example where the Red Bluff Diversion Dam on the Sacramento River was removed for the passage of salmon. We believe that the Intake Diversion Dam on the Lower Yellowstone should be removed and the current irrigation system replaced with pumps.	Comment noted.
BP-257	C. Peterson	1	It is critical that we prevent the extinction of this ancient and fascinating species, the Pallid Sturgeon. Because its extinction is preventable, it would be to our species great shame should we cause it to disappear from our shared planet. There are other proven ways to irrigate farmland. Remove the dam and let this fish population swim freely and have a fighting chance to continue to exist.	Comment noted.
BP-258	M. Carlson	1	Any selected alternative must not deprive the LYIP of their irrigation water for 58,000 acres and 350 farm in this region. It is the lifeblood of our agricultural economy.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-258		2	There is a huge cost to replace what has worked fine with a minimum of maintenance by the LYIP. I am still opposed to the new bypass channel and it's huge cost and feel opening up the slough is still the cheapest and best alternative for a fish bypass. ... Both the proposed bypass and the slough work are highly over engineered and way too costly. It is hard to believe both would each cost $54-$55 million. Widening and deepening the slough channel represents the best alternative and supported fish passage in the past. Costs for contractors are down now in this region and construction bids should reflect this and save money for the govt. and taxpayers.	Comment noted.
BP-258		3	I have not seen any mention of the effects of the new concrete diversion and the proposed bypass to paddle fishing. Please provide me a link or report/study of the possible negative effects to this important fishery. Paddlefishing is important to our region's economy each spring.	Paddlefishing information was assembled from various news outlets and previous documents (links provided below). In short, there is not a study providing quantitative estimates of the effects of dam removal on the paddlefishing recreation experience or on the related socioeconomic benefits of the fishery. As noted in the subsections of Section 4.11 as well as 4.15, effects may be mixed and different depending on the time horizon considered. In the short term, reduced catch rates at Intake would prolong the season (more recreation user days and related revenue), but could also adversely affect the caviar program. Over the long term, an improved fishery might support increased harvest, angler participation, or new recreation sites. http://goo.gl/oGmSA5 http://fwp.mt.gov/mtoutdoors/HTML/articles/2007/Paddlefish.htm http://www.eater.com/2016/3/30/11250870/american-paddlefish-caviar http://www.reuters.com/article/us-north-dakota-caviar-idUSKBN0NX0TE20150512
BP-258		4	This is based on experience with pumping along the Yellowstone River above Intake. Buffalo Rapids District 1 (BRIP) provides water to 16,500 acres plus another 1,000 acres of rural and urban users in West Glendive. These acres are about ¼ the of what the Lower Yellowstone Project irrigates. Buffalo Rapids pumps all of their water (about 450 CFS) which is about 16% of what the Lower Yellowstone Irrigation Project directly pulls out of the Yellowstone River (3,000 CFS). BRIP has done many water delivery improvements because it has to pay for power and has large continuing expenses for its 5 pumps. It is extremely expensive to pump these huge volumes of water out of the Yellowstone River. Also the water must be lifted 110 feet up the hill to the main canal.	Comment noted. O&M expenses from Buffalo Rapids and Sidney Irrigation District were taken into consideration in development of O&M costs and design for the pumping alternative.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-258		5	BRIP has 2 pumping stations. Pump station #1 has three 2,500 HP GE motors and Worthington pumps. The motors were replaced 15 years ago at a cost of $1.5M. Every 10 years they must be taken out and rebuilt - $150,000. Every 5 years the pumps must be rebuilt with new bearings, seals, fittings. It cost at least $25,000/ year to keep the 100 year old pumps going. BRIP contracts with Sulzer, Inc. of Gillette Wy. who do monthly pump and motor analysis for vibration, heat, and bearing wear, etc. Cost is $25,000/year. The entire pump #1 station and the 5 story concrete building has a replacement value of $10 Million. This station is in the flood plain and has been flooded 3 times. Pump Station #2 half way between Glendive and Fallon has 2 – 800 HP motors and Gould pumps. 80 CFS is pumped for a ½ mile 120 feet up a hill to refill the main canal. This pump station cost $2.5 Million in 1978. Yearly operating costs are $25,000. Other costs include a power bill $50,000 year at .05 cents per KWH. BRIP gets electricity from Ft Peck dam from WAPA. BRIP gets low cost power because of a law when FT Peck dam was built in the 1930"s called the Pick Sloan Plan. The federal govt agreed to develop irrigated land to replace that which was flooded by the dam with new irrigation projects along the Yellowstone River. All of the irrigation projects from Billings to Glendive get this cheap power. LYIP does not have access to this power because it was built in the early 1900's before Ft Peck dam.	O&M costs were developed using Buffalo Rapids and Sidney Irrigation District actual costs to inform cost estimates. Pick-Sloan power is discussed under Section 2.3.2.3.
BP-258		6	The costs for the LYIP to convert to electric power pumps would be astronomical. Based on our costs I would estimate the cost of a huge new pumping plant at Intake to be at least $150 -200M with at least $1 to 1.5 M/ year for maintenance costs. Debris in the river is a constant problem especially after heavy rain upstream. Pine cones and moss constantly plug screens. Sand and silt in the Yellowstone River destroy pumps every 10 years or less. Pumps must be pulled and constantly rebuilt. A new power line from Glendive to Intake would need to be built at a huge cost. Also a substation would be needed. LYIP would have to install other smaller pumping stations between Intake and Fairview to refill the canal. Each of these could cost $5M plus transmission and substation costs	Pumping alternatives described in Chapter 2 both include estimates for electric pumps and infrastructure. O&M of these systems accounted for silt and debris in the system and were informed by real world experiences at Buffalo Rapids and SID. Power infrastructure costs were coordinated with the local utility as well. This is described in Chapter 2, Appendix A and B.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-259	J. Hunter	1	I cannot imagine how a proposed pump system, with five or more pumps placed strategically along the way, can be anywhere enviromentally better than the system now. Presently, the whole enviroment for all animals is virtually undisturbed---the wildlife have an abundant supply of water and living conditions, and the quiet of the flowing water does not disturb the environment whereas the noisy pumps will be a continuous noise pollution for every living creature. Now the nightime irrigators will hear the roaring pumps instead of the quietness of the night---also, any wildlife will be forever plagued with the noise day and night. The concept of pumps to save underwater fish does not equate to the noise problems of the environment above water, and the expenses to operate them.	Comment noted, the effects of pumping, including effects of noise on the natural environment, have been analyzed in Chapter 4.
BP-259		2	The noise pollution is not the only problem----testimony was given several times as to the enormous expenses involved with pumps-----the purchasing of pumps, the installation of them, the expense of bringing electricity to the pumps, the general maintenace of pumps and the replacement expense of them, and the numerous unforeseen problems. And yes, every time there is an electricity outage, the pumps go down, the water stops flowing and the farmer is unable to lirrigate as needed.	Power reliability has been accounted for by provision of backup generators in the alternative that includes pumps. Pump O&M information available from other irrigation districts (Buffalo Rapids and Sidney Irrigation District) was used to inform cost estimates for these alternatives. O&M of the pumps were accounted for in the life cycle costs of the alternatives as presented in Table 2-33.
BP-259		3	I urge you to stick with the plan already approved by the judge and approved by the LYIP, too.	Comment noted.
BP-260	S. Gil	1	I am writing in support of an open river alternative for the Lower Yellowstone Fish Passage Project. The pallid sturgeon has survived for over 70 million years. It is appalling that just in the last century, river management has caused its habitat to change to the point that this unique species could be lost forever.	Comment noted.
BP-260		2	I am strongly opposed to the construction of a new dam that includes an artificial bypass. Your own analysis confirms that the chances of the pallid sturgeon would use it and be able to survive are minimal. Therefore, the construction of a new dam is an irresponsible use of tax money because it ensures the pallid sturgeon would remain endangered and the cost of constructing and maintaining a new dam with a bypass, both costing taxpayers tens of millions of dollars when a better alternative is available.	Comment noted.
BP-261	S. Burger	1	Remove and replace the Intake Diversion Dam (also known as Yellowstone River Diversion Dam) with a damless diversion that enables endangered sturgeon and other species to freely migrate along the river. Such damless diversions already exist elsewhere on the Yellowstone.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-261a	J. Bloesser	1	A biologist in Billings spoke at the meeting, stating that the pallid sturgeon is not native to the Yellowstone River, not to the Missouri River, so I believe this is all very much a waste of time. They use the river, great, and we can assist them in the efforts to get upstream. I am all for assisting them. but to wipe out the irrigation system, which in turn will wipe out the eastern Montana economy in our area is absurd.	Pallid sturgeon are native to the Yellowstone and Missouri rivers. As stated in Chapter 3 (Section 3.9.1.3) approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). This shows the importance of restoration activities on the Yellowstone River. Outside of the spawning period the majority of the pallid sturgeon do prefer the Missouri River near the headwaters of Lake Sakakawea.
BP-261		2	Pumps will not work. If one breaks down, there will be a problem in the entire system. What about the ugly sight and noise 20 of the pumps would pose onto the environment? They are destructive to the environment, not reliable, and expensive. Ask Buffalo Rapids farmers how it is working out for them.	See response to BP-258, 5 and 6.
BP-261		3	Closing of the irrigation system will shut down Sidney Sugars, which will have a huge trickle down effect for Sidney/Savage/ Fairview. With those wages and jobs no longer in the community, our stores and our hospital would be less busy, Which will affect our schools. Personally, without our irrigated land, we will have to cut back on the size of our herd for lack of feed in the winter. Purchasing alfalfa elsewhere is too expensive as well, again have sell some of the herd.	The analysis currently acknowledges that there would be an increase in O&M which would be a burden on the water users. Effects of that are shown in Section 4.15 Social and Economic Conditions. Because O&M is not a majority component of overall production costs, the % reduction in net income is less than the % increase in O&M cost. For example, the most expensive alternative in terms of O&M is the Multiple Pump alternative, which would increase the per-acre O&M to ~$91. This amounts to a 90% increase in O&M cost per acre. However, translating this to effects on overall net income (gross revenue less production cost) results in a ~23% reduction in net income for a typical farm operation. In terms of production cost, this represents about a 5.8% increase in total production cost. The Sidney Sugar letter was reviewed, and similar conclusions were reached. The % increases in O&M under the alternatives, once translated to overall % increase in production cost, amounted to between 1% and 5% increase in production cost for the example beet operation. The FEIS acknowledges that the Multiple Pump Station Alternative may not meet the purpose and need to continue a viable and effective operation of the LYP (section 2.4.1).
BP-261		4	The fish have been surviving for 117 years....why would they die out now? I am 100% for saving the fish AND the farmer...they bypass HAS to be tried.	Comment noted.
BP-262	T.Paschke	1	My preference is that nothing be done, i.e. none of the suggested options that are spoken of for Intake, i.e. "bypass channel", "pumps", etc. Study shows the pallid sturgeon exist in both the Missouri and the Mississippi River. Why does anything need to be done? Clearly, NOTHING needs to be done. This is reinforced by the fact the Fish & Wildlife Department permits "catch and release" at Intake. IF there was really was a real, legitimate concern for the fish, "catch and release" would be banned, and no fishing of any kind would be permitted in the area where the pallid sturgeon are.	See Section 2.1.1.1 describing pallid sturgeon. There is no catch and release of pallid sturgeon permitted as it has been listed as an Endangered Species. As stated in Chapter 3 (Section 3.9.1.3) approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). This shows the importance of restoration activities on the Yellowstone River. Outside of the spawning period the majority of the pallid sturgeon do prefer the Missouri River near the headwaters of Lake Sakakawea.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-262		2	So, my question is this: In light of the above, why are you even considering altering the Intake facility? Is there some sort of hidden agenda by people who want to do a project, or to even eliminate the existing facility? That is an honest question.	As described in section 1.5, the pallid sturgeon is listed as an endangered species under the Endangered Species Act. The federally-owned Intake Diversion Dam is a barrier to pallid sturgeon spawning migration. In such situations, the Endangered Species Act requires federal agencies to consult on this impact and in consultation with the Service identify measures to address the impact.
BP-262		3	If there truly is a valid need to nurture these fish, the simplest solution to do so---if one really wishes to so---is to operate hatcheries and release the young fish UPSTREAM of the existing Intake weir, without making any changes to it. This is done with several types of fish, in a multitude of fish hatcheries all over the United States. I suggest you use that approach at Intake, if you feel you "must do something."	Currently there is a robust hatchery system in place that is responsible for the annual stocking of juvenile pallid sturgeon throughout the Missouri River System. The hatchery program is only intended to be a stop-gap measure to prevent extinction not a long-term solution. Providing passage at the Intake Diversion Dam is seen as a long term fix that could potentially contribute to a self-sustaining population in the upper Missouri River Basin.
BP-262		4	Further reading shows there are pallid sturgeon in various places, in the Missouri River and Mississippi River systems. I do not believe there really is a risk to the pallid sturgeon at Intake, in light of the fact they are found elsewhere, in various places.	As stated in Chapter 3 (Section 3.9.1.3) approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). This shows the importance of restoration activities on the Yellowstone River. Outside of the spawning period the majority of the pallid sturgeon do prefer the Missouri River near the headwaters of Lake Sakakawea.
BP-262		5	IF those granted the power to make the decisions regarding Intake feel they MUST do something------and ONLY in that situation-----I fully support ONLY the proposed fish bypass. I categorically oppose the so-called "pumping option", as well as the other options proposed. I state that due to the cost----economic considerations. But, even more so, the so-called "pumping" option is totally impractical, and unfeasible economically-speaking. And, it will impose unjust, unnecessary, tremendous suffering upon all those who live in the area served by the Intake facility.	Comment noted.
BP-263	W. O'Laughlin	1	I believe the best option is to install pumps to bring the agricultural water to the farms, and remove the dam, in order to satisfy the needs of the farmers while not compromising the ability of the endangered Pallid Sturgeon from reproducing and continuing to survive in a healthy flowing river.	Comment noted.
BP-264	D. Davis	1	Remove and replace the Intake Diversion Dam (also known as Yellowstone River Diversion Dam) with a damless diversion that enables endangered sturgeon and other species to freely migrate along the river. As you know, such damless diversions already exist elsewhere on the Yellowstone River. Dam removal will bring back fisheries and recreational opportunities which will pay us all back for your efforts.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-265	L. Ramsay	1	Remove the dam from the Lower Yellowstone Project and use pumps instead. The cost is not that much greater and the fish ladders have never worked well for almost any species, and never at all with Sturgeon. They are amazing fish and deserve to survive.	Comment noted.
BP-266	D. Draper	1	I am writing to request that you remove and replace the Intake Diversion Dam (also known as Yellowstone River Diversion Dam) with a damless diversion that enables endangered sturgeon and other species to freely migrate along the river. Such damless diversions already exist elsewhere on the Yellowstone, and this would be a good solution for this location.	Comment noted.
BP-267	J. Rice	1	Please for once use common sense - leave the dam in place so our fourth generation family can continue farming. … We support the bypass.	Comment noted.
BP-267		2	…They are catching pallid sturgeon in the Powder River by Terry so they can get over the dam, right?	We assume this comment is referring to the pallid sturgeon that were documented in the Powder River in 2014 (Rugg, 2014). Those sturgeon passed through the existing side channel.
BP-268	G. Rice	1	Similar to BP-267, comment 1	Comment noted.
BP-268		2	Similar to BP-267, comment 2	Comment noted.
BP-269	J. Free	1	I support the bypass channel allowing water to our farmers.	Comment noted.
BP-270	C. Free	1	I support the bypass channel at Intake. I support the farmer.	Comment noted.
BP-271	J. Hardy	1	I support construction of a fish bypass around the Intake Diversion Dam. This would supply water as well as take care of the 90 fish.	Comment noted.
BP-272	M. Hardy	1	I support construction of a fish bypass around the Intake Diversion Dam.	Comment noted.
BP-273	J. Hardy, Jr.	1	I support construction of a fish bypass around the Intake Diversion Dam. This alternative plan would facilitate improved fish migration, delivery of 1,374 cfs of water to irrigators, and economic stability to our communities.	Comment noted.
BP-274	B. & S. Madison	1	First is was the spotted owl - then the snail darter - next the wolf reintroduced - the prairie dog - and now the pallid sturgeon. Each year thousands of acres are being paved over, denied water to irrigate, or letting rodents destroy acre after acre of land in our country. The productivity of this land is being lost forever. I might also add that very few people alive today have never experienced going to bed hungry!	Comment noted.
BP-275	C. Ripley	1	…I would like to go on record as being in favor of the bypass channel around the proposed diversion dam near Intake. MT. It is the most cost effective and best way to insure the farmers have reliable water to provide food for this nation.	Comment noted.
BP-275		2	The other options like pumping the water are too expensive and would put many farmers that have been here for generations out of business. Plus, the huge costs of installing and maintaining these pumps on an electrical grid that is already overloaded makes the idea undesirable.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-275		3	There are many complicated issues here and some are mandated by law, such as ESA. But in this case I wonder if a few fish that most people, including some of the biologists working on the recovery project for them have never seen, more important than hundreds of farm families that have been here for generations producing food for our nation and the people that benefit from that food.	Comment noted.
BP-275		4	There are only about 125-150 pallid sturgeon in the whole Missouri River system and th U.S. government is spending hundreds of million of dollars to try to save them (i.e. increase their number). But this number is only a guess … they have only tagged about 5 pallids ear the Intake diversion dam ... I just read that a female pallid has been caught spawning at the mouth of Powder River upstream of the bypass recently. So is the bypass necessary as there are already pallids upstream?	There are an estimated 125 or fewer wild adult pallid sturgeon in the Yellowstone and upper Missouri rivers and approximately 43,000 hatchery raised pallid. A portion of these pallids have been tagged for tracking. As stated in Chapter 3 (Section 3.9.1.3) approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). This shows the importance of restoration activities on the Yellowstone River.
BP-275		5	This is just another toe in the door attempt to take out all 5 irrigation weirs on the Yellowstone River using government forces to accomplish their goals of people and land control. We need reform in our country … a good start would be repeal of the ESA and EAJA!	Comment noted.
BP-276	L. Hardy	1	Similar to BP-273	Comment noted.
BP-277	A. Sundstrand	1	The main canal and irrigation water for land has changed this valley over the years for the better. Many more ever changing varieties of crops are being raised for both domestic and livestock use. The overall results are that more people have food produced efficiently which after all is what is important.	Comment noted.
		2	Lifting water is very expensive versus letting it free flow. The water would have to be lifted to the highest points to utilize the exciting [existing?] system of distributing the water to the land. This alternative is just not economically feasible. Also the environmental impact would be horrendous.	Comment noted.
BP-277		3	The pallid sturgeon must be very adaptable to have existing since prehistoric days. I believe they will use a bypass channel as proposed if they so benefit from going up the river. Furthermore I am told that there are over one thousand planted juvenile pallid sturgeon that are swimming in the Yellowstone River. There is not any evidence that I have seen that they will not use a bypass.	Comment noted.
BP-277		4	I am in favor of the bypass channel.	Comment noted.
BP-278	B. Hardy	1	To destroy the diversion dam because environmentalists want to help the pallid sturgeon is the most unreasonable position I have ever heard … The dam is to help supply water to approximately 60,000 acres for food and feed production and has worked beautifully for over 100 years.	Comment noted.
BP-279	O. Sifuentes	1	The irrigation project I believe is the best way to go. We need irrigation for the farmers. Without the farmers Sidney Sugars would not be here. It has been proven that the sturgeon still can make with the project they have proposed. Why not save the farmers and the sturgeon both.	Comment noted.
BP-280	Kelly Feldman	1	I support the bypass channel that permits irrigation to the lower Yellowstone Valley.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-281	Kirby Feldman	1	Similar to BP-280	Comment noted.
BP-282	D. Steinbeisser	1	I am in favor of the proposed concrete weir and fish bypass channel because putting in pumps would lower the water table the whole length of the lower Yellowstone irrigation project and dry up many water wells that families depend on for household use and livestock water.	Comment noted.
BP-283	D. Sunstrand	1	My reason for the Intake Bypass Channel, as proposed are: that it is very much needed to keep the endangered pallid sturgeon alive, they have survived for over 100 years the way it is. The new weir will make it better for the fish. Also, it gives farmers enough water for the many acres irrigation so they can make a living.	Comment noted.
BP-283		2	Using pumps has been proved to be costly [and] ineffective, air and noise polluting.	Comment noted.
BP-284	L. Young	1	I believe the bypass for the fish is the best option, please do this so the lives of the people can get back to normal. Any other option would be harder on the Environment	Comment noted.
BP-285	V. Preston	1	The article starts out, "Pallid Sturgeon were once abundant along the Missouri River". Please do every you can to protect the 125 of them that are left and help them multiply. We need biodiversity, we must not kill web of life on earth. Protect the Pallid Sturgeon.	Comment noted.
BP-288	L. Odenbach (comment form, typed comment also in TS)	1	Use bypass channel	Comment noted.
BP-289	R. Hass (comment form, type text included in TS	1	I'm still not convinced changing the dam is worth saving the fish. The farmers are worth more than the fish. If the fish are truly worth improving the dam, build the bypass.	Comment noted.
BP-290	G. Buxcel (comment form, type text included in TS)	1	Bypass channel as recommended with this EIS as well as past. Should be clear to be the best option as the preferred alternative.	Comment noted.
BP-291	S. Buxcel (comment form, type text included in TS)	1	Bypass channel the preferred alternative.	Comment noted.
BP-292	K. Buckles (comment form, type text included in TS)	1	The beet factory cannot survive on less water or lower sugar beet production - conservation measures such as wind turbines will have very high maintenance cost - overall economy will take a downturn without ample crop production.	Comment noted.
BP-293	R. Rosagen (comment form, type text included in TS)	1	We need to keep the dam and build the fish bypass. Our community depends on it.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-294	W. Nankind (comment form, type text included in TS)	1	Any alternative to the present system that makes farming either impossible or unaffordable is not acceptable! The fish go before the entire Lower Yellowstone Valley.	Comment noted.
BP-295	C. Jonsson (comment form, type text included in TS)	1	Use bypass channel	Comment noted.
BP-296	L. Odenbach (comment form, type text included in TS)	1	Use the bypass channel	Comment noted.
BP-297	E. & H. Emly (comment form, type text included in TS)	1	We suggest the No Action. We use the irrigation water and need it.	Comment noted.
BP-298	C. Zimmerman	1	If you don't go with the bi-pass you will put hundreds out of work and you destroy the farmers.	Comment noted.
BP-299	W. McNutt	1	After three meetings and a good understanding of your preferred alternative of bypass channel and new concrete weir, I am in full support of the preferred alternative. ... No pumps.	Comment noted.
BP-300	R. Cumin	1	If the interstates work with wildlife passages beneath them then It seems the river would work with a fish bypass. The alternative is to remove the interstate?	Comment noted.
BP-301	T. Cayko	1	I am in support of the original alternative that I felt was approved previously twice. This has been studied and gone over and the best alternative was agreed upon that the cement weir for the pallid sturgeon and all fish species in the Yellowstone River would work. ... Our farmers in this irrigated valley will not survive with taking the Intake Dam out and putting in pumps would be so costly we couldn't afford it.	Comment noted.
BP-302	B. Bieber	1	Losing our irrigation project here would make a lot of us extinct. We need our water at an affordable price.	Comment noted
BP-302		2	The fish bypass seems like the most sensible option for the people and the fish.	Comment noted.
BP-303	J. Brodhead	1	I support the bypass channel. Proposal for the Intake Fish Dam in order to preserve the water supply to the several counties that benefit from using th canal system for their crops.	Comment noted.
BP-304	M. Brodhead	1	I believe the bypass will work for the fish and should be tried.	Comment noted.
BP-304		2	I also believe a better study should be done since the sturgeon are being caught very often when fishing here.	We assume this is referencing the catching of shovelnose strugeon. There is currently a robust resident population of shovelnose sturgeon located upstream of Intake. This population has occurred upstream for many years and has been documented in the Main Canal (Hiebert et al. 2000) prior to the new headworks and screens.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
BP-305	C. Cotton	1	I believe you have come up with a good solution for both the fish and the irrigators with the bypass channel. It is the alternative with the least cost and the msot chance of success.	Comment noted.
BP-306	P. Dahl	1	Without irrigation, our livelihood would cease to exist. The sugar beet factory was supported by the crops and has provided income for so many families. Where would be valley be without irrigation? It would be devistating and have a dramatic negative impact.	Comment noted.
BP-306		2	We have talked to people who have fished at Intake and it seems the pallid sturgeon are surviving fine as is.	We assume this is referencing the catching of shovelnose strugeon. There is currently a robust resident population of shovelnose sturgeon located upstream of Intake. This population has occurred upstream for many years and has been documented in the Main Canal (Hiebert et al. 2000) prior to the new headworks and screens.
BP-307	E. Flynn	1	Why can someone with no background in fish say no. I don't like it (meaning the fish ladder). Let's try it and go forward.	Comment noted.
BP-308	W. Harmon & J. Wagner, Horizon Resources	1	We, the Board of Directors and Management of Horizon Resources submit the following in support of the Bypass Channel Alternative as the only choice that makes sense; it fills the need of all involved including the pallid sturgeon, wetlands, wildlife and most importantly the lively hood of the agricultural producers and their families.	Comment noted.
BP-308		2	The rest of the proposals create greater expenses, potential long term environmental concerns and increased operating cost to growers with the potential risk of more expensive and potentially less volumes of water.	Comment noted.
BP-309	D. Kittleson	1	I feel that the best solution for the fish and the farmers would be the preferred alternative would be the bypass channel. If land were no longer irrigated it would devistate the tax base of the counties involved or pumping would be unaffordable.	Comment noted.
BP-310	J. LaPom	1	I support the bypass for the Yellowstone river. The area will be devastated without the bypass!	Comment noted.
BP-311	D. McDonald	1	I believe the bypass is the best alternative for the … pallid sturgeon. This will have the least impact on the people of our area and will be a viable route for the sturgeon.	Comment noted.
BP-312	D. Miller	1	It would be devistating to lose the irrigation. If we lose the irrigation we will lose a lot of the farmers and businesses. Which also puts a lot of people out of work.	Comment noted
BP-312		2	I support the intake bypass channel.	Comment noted.
BP-313	D. Mitchell	1	I would sincerely ask that the By Pass Channel be allowed to be built, thus preserving our way of life and out continued support of all the wildlife that is in the "valley."	Comment noted.
BP-314	C. Schlothauer	1	I support the fish bypass channel alternative. There has been very little science supporting the idea that the irrigation system is wholly responsible for the pallid's decline.	Comment noted.
BP-315	K. Schlothauer	1	The fish are doing well. Nothing need be done.	Comment noted
BP-316	S. Schlothauer	1	Once again: A letter of affirmation for the preferred alternative of the bypass channel.	Comment noted.
BP-317	J. Steinbeisser	1	The concrete weir with a bypass channel is an excellent idea. The sooner its installed the better.	Comment noted.
BP-317		2	Fish and Game is now paying land owners to let their river bnanks erode. Therefore making it very difficult to install permanent energy using pumps.	Pumps would not be installed in locations where easements had been granted.
BP-318	delivery@actionspout.com, no name included	1	I support an open river alternative for the Lower Yellowstone Fish Passage Project.	Comment noted.

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BP-319	Email form letters	1	Approximately 12,144 variations of an emailed form letter supporting an open river alternative.	Comment noted.
BP-320	B. Franklin	1	I am writing in support of the fish by-pass channel and modified weir for the Lower Yellowstone Intake Project near Sidney MT. The current gravity flow system is the most environmentally friendly system I can think of. Other systems of irrigation will have a much larger carbon footprint. Other irrigation systems will also be more expensive and may make irrigation not feasable. The irrigated valley has been very beneficial to a wide range of plants and animals. Any decrease would be detrimental to our local ecosystem.	Comment noted. Environmental consequences of all alternatives are described in Chapter 4
BP-321	B. Reidle	1	I would like to go on record as being in favor of the Intake diversion dam as proposed by the Corp of engineers and the Bureau of reclamation. As a long time resident of this area and a long time farmer in this same area, I know first hand how important a dependable supply of water is to all of us.	Comment noted.
		2	I can tell you from experience that pumping is not a viable solution. Machinery tends to break down and repairing it can be very time consuming at a time when time and water are of utmost importance. Our crops will not wait for parts to shipped to us and repairmen to utilize those parts. The diversion dam is the only way to be sure we have the water when it is needed.	See response to BP-258, 5 and 6.
BP-322	D. Peters	1	We support the reliable delivery of water to the irrigators provided by this proposed concrete weir. This proposed concrete weir and durable fish passage, will provide reliable water to the irrigators in this large region, and greatly improve fish passage over the existing stacked boulder diversion dam. This proposed project needs to be completed immediately for the good of the endangered species and all the local communities. The loss of the existing reliable irrigation water to the surrounding farms would devastate our regional economies and communities.	Comment noted.
BP-323	D. Rufatto	1	I believe the best outcome for the environment and local community should be the fish by-pass and modified weir. This seems the most sensible regarding the environment, allowing fish spawning to continue uninterrupted, while permitting the local farmers the use of the irrigation canal.	Comment noted.
		2	The alternative suggestion generates undue cost needed to tear out the current weir(s), install pumps and build wind machines that will still need to be powered. In response to the alternative route, the wind machines impact will be the expense to construct and run, at a much larger cost, while taking away from the natural beauty of our surrounds. The wind machines would be detrimental to the area birds, like our National symbol the Bald Eagle, which is also endangered.	Comment noted.
BP-324	M. Iverson	1	After taking many hours out of our busy irrigating season to attend all three meetings in Sidney, Glendive and Billings, it is quite apparent to me that the Bypass Channel for the Intake Dam is the only reasonable solution to help the endangered pallid sturgeon and keep the Lower Yellowstone Irrigation Project viable. The facts and figures have been presented over and over again and anyone with an ounce of common sense should be able to see that the concrete weir and bypass channel is the only way to go!	Comment noted.
		2	We sat in Billings and listened to the Fish Biologists, who fly in from Massachusetts, tell us that there is no proof that the endangered pallid sturgeon will use the bypass, while another biologist tells us that the pallid sturgeon is only native to the Missouri River. How in the world did these fish ever wind up in the Yellowstone River let alone in our	Comment noted. See response to TB-29, #2

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			main canals before the screens were in place? You can bet these educated people didn't pay their own way to get to Billings and probably don't even know where the Yellowstone River is, let alone the Intake Dam.	
		3	My grandfather homesteaded here in this valley like many others in the early 1900's. In those days the government knew people needed to work in order to feed the people. The government also knew it was important to use the land God has given us to its fullest potential. I was raised and worked in this valley my 70 plus years as a farmer and rancher. I have served on several boards in this community and am currently Chairman of District 1 on the Lower Yellowstone Irrigation Project. I now have grandsons (5th generation farmers) who are optimistic about farming and are willing to work hard.	Comment noted
		4	This continual battle between the Wildlife Federation, the Fish and Game Department, the Bureau of Reclamation and the U. S. Army Corp of Engineers has resulted in the Lower Yellowstone Irrigation project having to hire lawyers to fight for our livelihood. This added expense is cutting into the already shrinking profit margin of agriculture in this valley.	Comment noted
		5	Furthermore, the stress of this ongoing battle is detrimental to the health of all of us as farmers, merchants, employers, employees and residents of the MonDak region. I urge you to put an end to this uncertainty that has been ongoing for many years by building the concrete weir and Bypass Channel. It is the only reasonable and fiscally responsible option on the table!	Comment noted
BP-325	B. Shepard	1	The DEIS failed to address several of the issues I raised in in my scoping comments (letter from B. Shepard to U.S. Army Corps of Engineers dated February 12, 2016, sent via email [copy enclosed]). Specifically, I requested that the DEIS explicitly provide the initial recommendation from the Biological Review Team's (BRT) Comments (Jordan 2006 and 2008) - to use pumping to supply water to irrigators and either remove Intake Dam or allow it to naturally degrade (Jordan 2006). I also requested that the Corps and BoR address the rationale used for rejecting this scientific recommendation. Instead of doing this, the DEIS provided a very brief summary of the BRT recommendations on specific actions (DEIS, p. 2-31), the DEIS did not mention the original preferred alternative from the BRT and the fact that a group consisting of the BoR, the Corps, the Nature Conservancy (TNC), and Montana Department of Fish, Wildlife & Parks (MFWP; termed the MOU group in Jordan 2006) determined that dam removal and pumping was not a viable alternative because maintenance of a large pump facility was deemed at that time to be "too burdensome for irrigators" (Jordan 2006). This rationale should be clearly displayed in the DEIS so the public can see why the alternative best supported by the science and best pallid sturgeon scientists was rejected. The question in my mind, is, "Can a group of irrigators reject a scientific alternative because it is 'too burdensome', and does that meet 'reasonable and prudent' criteria used to administer the Endangered Species Act?". The fact remains that this was a preferred biological alternative that offered the highest likelihood that pallid sturgeon would pass above the Intake site, and it still remains the "best scientific" solution. This fact should be acknowledged in the final EIS. In my opinion the irrigators' demands are neither reasonable nor prudent and the expenditure of public funds to support unreasonable demands by this group of irrigators needs to be further	A brief summary of the recommendations of the BRT from 2006 and 2008 (Jordan 2006 and 2008) is provided in Section 2.2.1.4 of the FEIS. These recommendations were made when different alternatives were being considered and prior to the extensive amount of monitoring and tracking of wild adult pallid sturgeon that has occurred from 2009 to present by the USGS and MFWP that has helped inform this current evaluation. Jordan (2008) indicates that the Corps and Reclamation incorporated the BRT's recommendations in their further design analysis. Jordan (2008) provides recommendations primarily on the screen design. The 2010 and 2015 EAs incorporated the BRT recommendations made in 2006 and 2008 and further BRT input from 2009-2014.

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			evaluated. I commend the BoR for putting both BRT's Comment reports (Jordan 2006 and 2008) on their web site so they can be found via a search. This is something I also requested in my scoping comments.	
		2	I asked that the DEIS incorporate recommendations that are to be made in a report tentatively titled "Science and Adaptive Management Plan" for the Missouri River system that the Corps and their collaborators are currently preparing. I asked that this Intake Dam project and EIS be delayed until that Management Plan is completed. The DEIS does not address this request other than to state that the Management Plan is being prepared. I stand by my statement in my scoping letter that suggests "this plan should be completed prior to spending additional public funds on specific projects such as Intake Diversion Dam project". This is important because the public and our state and federal agency and political representatives need to understand how the Intake project will help to meet the objectives of this broader plan.	The Lower Yellowstone and Intake Diversion Dam Fish Passage Project and the Missouri River Recovery Management Plan are not dependent on each other and are not connected actions as defined in the Council of Environmental Quality's NEPA Regulations (40 CFR 1508.25 (a)(1)). The Fish Passage FEIS includes additional information on the relationship between the two evaluations and relative scientific information being developed for the Missouri River Recovery Management Plan, such as the Missouri River Scaphirhynchus albus (Pallid Sturgeon) Effects Analysis -- Integrative Report 2016 (Jacobson et al. 2016) has been considered and referenced in the FEIS (see Sections 4.9.2 and 4.9.4).
		3	I specifically requested that any pumping alternative that included abandonment of the current Intake Diversion structure include an analysis of an alternative that did NOT physically remove the entire diversion structure from the river, but instead removed rock from several slots in the existing structure and then allowed the river's natural processes (ice and high flows) to degrade this structure through time. The fact that constant maintenance of the existing rock irrigation is required to keep it in place indicates that without this constant maintenance natural river processes will likely remove this structure over time. The length of time it would take depends upon the magnitude and frequency of ice and high flow events. The DEIS did not consider this option. In my opinion, this is a fatal flaw in the DEIS and, consequently, economic analyses that include total removal of the current Intake Diversion are inflated way too high. We need to see a dam abandonment and pumping alternative without the costs of diversion removal	If the Intake Diversion Dam were left in place and not maintained, or if segments were removed, it would take many decades or longer for it to erode away, and achieve the desired fish passage. The substructure of the weir is a timber crib and steel sheet pile structure that will not readily erode away and would likely impede fish passage and could cause public safety concerns. See Section 2.3.3 of the FEIS where additional information has been added regarding this topic.
		4	I applaud BoR and the Corps for considering an irrigation efficiency and pumping alternative, but believe costs for this alternative are inflated. I discuss the inflated cost of diversion removal above. In addition, I did not see any annual value placed on the estimated 765.9 cfs water savings (DEIS estimate) that was included in this alternative in the economic analyses, nor did I see any consideration or assessment of how this saved water might be used as in-river flow to augment flows for natural processes and commercial barge traffic down-river. Something I specifically requested in my scoping comments. Why were these not included? If 765.9 cfs of water has no value, why are we spending so much money to deliver water to irrigators?	The potential benefits of increasing instream flows have been qualitatively described in Sections 4.3.4.6, 4.6.4.6, and 4.7.4.6 of the FEIS. The monetary value of leaving an increased volume of water in the river has not been quantified and the ability to conserve the 766 cfs is uncertain.
		5	I now shift my focus onto the DEIS and the preferred alternative. I do not believe that there is a reasonable certainty that the preferred alternative will meet the Purpose and Need for the project for pallid sturgeon or ecosystem function. I contend that 1) a concrete cap on the existing irrigation diversion to make it an actual dam will further limit passage of fish both up and downstream in the Yellowstone River past this diversion, including pallid sturgeon; 2) much uncertainty exists as to whether the proposed By-Pass Channel will provide up-river passage to pallid sturgeon and other fish species; and 3) that larval pallid sturgeon will suffer high losses into the irrigation canal, even with the existing screening structure. I expand on these three contentions below.	See responses below to specific topics briefly stated in this paragraph.

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		6	First, a concrete cap on the existing rock diversion will further reduce fish passage over this diversion from the existing condition. This concrete cap will actually make things worse for fish passage and river ecosystem function. In my opinion, the existing condition is better than a concrete capping of the existing diversion. The assumption being made by the Corps and BoR is that all fish species will use the By-Pass channel. I will expand on the problems with this assumption in the next paragraph.	For clarification the proposal does not include a concrete cap on the existing weir, but rather a new weir immediately upstream of the existing weir as described in 2.3.5.4. Hydraulic modeling of the proposed concrete replacement weir indicates there would be reduced velocities, increased depths through the low-flow notch, and likely reduced turbulence for the proposed weir as compared to the existing weir. See Sections 4.3.4.3, 4.7.4.3, and 4.9.7.3 and Table 4-30 of the FEIS.
		7	The Corps and BoR (and indirectly, the U.S. Fish and Wildlife Service) are assuming that if you design and construct a By-Pass channel with physical characteristics (water velocities and water depths) that adult pallid sturgeon have been found to use in the wild, that adult pallid sturgeon will use that By-Pass channel and successfully move upstream through it. There are likely many additional factors besides water velocities and water depths that regulate whether adult pallid sturgeon will successfully migrate up-river. There is no evidence that By-Pass channels are successful in allowing adult sturgeon to move up-river past diversion or dam structures. I have reviewed the literature and can find no evidence that any By-Pass channel constructed to pass adult sturgeon have been successful in passing high proportions of spawning adult White, Atlantic, or Pallid Sturgeon. There is just no evidence that this will work.	Additional discussion has been added to the FEIS discussing the likelihood of pallid sturgeon passage in a bypass channel. See Sections 2.5.2, 4.9.4, and 4.9.8 of the FEIS.
		8	Consequently, I suggest that if the DEIS preferred alternative is selected in the final EIS that the project be constructed in two phases. The first phase would construct the By-Pass channel, but not do anything at the diversion (i.e., no concrete cap would be placed on the diversion). The By-Pass channel could be evaluated for some reasonable period of time (i.e., three to five years) using the "Monitoring and Adaptive Management" (Appendix E) criteria. If the By-Pass channel meets the success criteria detailed in this appendix, then the concrete cap could be installed on the existing diversion. If it does not meet those criteria, then no cap would be installed and other alternatives would receive further consideration, including diversion abandonment and pumping water to irrigators. I suggested this in my "Expert Declaration" prepared for Defenders of Wildlife and used in their injunction to legally delay this project until a better environmental review was conducted. I still believe this course of action is the only "reasonable and prudent" course of action if a By-Pass Channel alternative is selected. This will reduce the probability that the preferred alternative will actually make things much worse than they currently are for fish in the Yellowstone River. After all, much of the funding for this project was to help provide up-river passage to adult pallid sturgeon and to help restore river ecosystem function. Spending this money without ensuring that these objectives have a reasonable chance of occurring seems like a misappropriation of these funds to me.	The preferred Bypass Channel Alternative could potentially be constructed in phases as suggested and was considered in the design phase. However, placement of rock on the existing weir would need to continue and construction of the bypass channel would require removal of the structures used to place rock. The continued rocking of the weir could have impacts on fish passage if rock migrates downstream in front of the bypass channel entrance (see Section 2.3.5.4). Additionally, moving the rocking structure and re-equipping it to deliver rock for those years the bypass channel is being evaluated would cost approximately $3-5 million dollars based on preliminary estimates. See the revised Appendix E for more details on monitoring and adaptive management and the actions that could be taken if passage criteria are not met.
		9	Another major assumption being made by the Corps and BoR is that the By-Pass Channel can be maintained at a relatively low cost to continue to provide the designed water velocities and water depths configured in this channel. I suggest that this assumption is faulty in a large gravel and sand bed river, such as the Yellowstone in this location. We have so many examples of rip-rap and hardening structures failing up and down the Yellowstone River, that I was amazed that the Corps and BoR actually suggested that this channel could be maintained and that the costs for this were relatively low. Will the irrigators be stuck with a major By-Pass channel renovation in a few years, or will the U.S. taxpayers again be stuck with this cost? Unfortunately, the way I read the record, the Corps will walk away from this project a year or two after its	O&M costs include periodic replacement of rock in the bypass channel and at the replacement weir. These costs are reasonable based on the erosion and scour anticipated to occur and based on rock replacement requirements in the reach. The Monitoring and Adaptive Management Plan describes roles and responsibilities (See Appendix E), including Reclamation's commitment to provide additional funding for certain measures, as appropriate.

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			construction and leave the BoR (and us as U.S. taxpayers) and the irrigators to deal with design and maintenance problems in the By-Pass Channel.	
		10	Reducing mortality of larval pallid sturgeon is an extremely difficult objective to meet for any alternative that relies on maintaining any type of diversion structure in the river channel. Adding a concrete cap and raising the height of the existing diversion structure will probably increase mortality of larval pallid sturgeon in the river by increasing the vertical water drop, water velocities, and turbulence at the diversion site. Unfortunately, the screening of the irrigation headworks will not prevent larval pallid sturgeon from moving onto and through these screens so that they are lost to the system. These facts need to be explicitly addressed in the EIS.	The proposed concrete replacement weir will be at the same average elevation as rock on the existing weir, thus not increasing the height of the structure. Further, the concrete weir will reduce velocities, increase water depths through the low-flow notch, and reduce turbulence (see Sections 4.3.4.3, 4.7.4.3, and 4.9.7.3 in the FEIS). Additional discussion on the potential for larval pallid sturgeon entrainment into the Main Canal has been included in Sections 4.9.7.2, 4.9.7.3, 4.9.7.4., 4.9.7.5, and 4.9.7.6.
		11	I contend that the only alternative that has a reasonable expectation of meeting the Purpose and Need for passing adult pallid sturgeon upstream past this diversion are the two alternatives that abandon the existing diversion structure and use pumps or a combination of pumps and conservation practices to deliver water to the irrigators. I also believe that pumps offer the best chance to limit entrainment of larval pallid sturgeon during their downstream drifting phase. While I understand that the monetary costs associated with the pumping alternatives are higher, I suggest that these additional costs are justified to provide the best chance for pallid sturgeon to persist in the Yellowstone River portion of their range. I believe that long-term costs to both the BoR and irrigators will be much higher than the DEIS estimates if the By-Pass channel does not work as designed or as predicted. Failure of the By-Pass channel to pass adult pallid sturgeon upstream and the preferred alternative's likely failure to protect enough larval pallid sturgeon, should they be produced, will result in necessary modifications or re-construction that will end up costing much more than the current Pumping or Pumping with Conservation Measures alternatives. In addition, the DEIS failed to adequately consider the potential impacts of the proposed concrete dam on passage of other fish species in the Yellowstone River.	See additional discussion added to Sections 2.5.1 and 2.5.2 regarding identification of the preferred alternative and likelihood of success. Also see additional discussion of the potential impacts of the replacement concrete weir on native fish (Section 4.7).
		12	I will now address the Fish Passage Connectivity analyses presented in Appendix D. First of all, this appendix states, "For an ecosystem restoration project such as this fish passage project, there is no monetary measure of benefits to compare alternatives in a traditional cost-benefit ratio." I agree with that statement and also point out that this has been called "an ecosystem restoration project". I suggest that the preferred alternative is NOT consistent with the "ecosystem restoration" objective. Secondly, I understand the need to develop a Fish Passage Connectivity Index and support the use of any attempt to quantify connectivity. However, two key criteria in judging the relative merits of a particular index method are: 1) has the method been reviewed and evaluated by a non-biased, independent peer group with expertise (i.e., such as that which occurs during publication in a peer-reviewed journal); and 2) can the method be consistently applied such that the rationale for assigning the index metrics are clear and different evaluators would likely assign the same metrics in repeated trials. Unfortunately, it appears to me that neither of these criteria are met by the Corps connectivity assessment. First, there has been no peer review of this Fish Passage Connectivity Index as evidenced by the lack of citations, other than Corps citations, for the method or its application. While there are good scientific literature citations for some of the habitat criteria contained within the Connectivity Index, there are no citations on the development of the Connectivity Index methodology or on its	Review of the model by the Corps of Engineers' Ecosystem Restoration Center of Expertise occurred concurrently with public review of the DEIS. Final approval of the model was received by Headquarters, Corps of Engineers, on October 18, 2016. The DEIS in its entirety, including the FPCI model, was reviewed and commented upon by the Independent External Peer Review panel (see Appendix I). Their comments and recommendations have been incorporated into the FEIS. To clarify, the model was originally developed with 30 species available for selection in the model. Pallid sturgeon was not one of the 30 species and was not added into the 2015 model utilized in the Environmental Assessment analysis. For the EIS analysis, Pallid sturgeon was included in the model.

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			application. This Connectivity Index method was originally developed for 30 fish species, but pallid sturgeon was not included in those 30 species. Consequently, the Corps added pallid sturgeon in 2014 when they conducted their initial EA supplement analysis (2015).	
		13	The portion of the Fish Passage Connectivity Index that quantified the likely additional habitat available to the various fish species above the Intake Diversion Dam site appeared reasonable to me. However, I think some assumptions the Corps made regarding the opportunity for upstream fish passage are much less tenable. The Corps assumed that "…the duration of available [appeared to be missing a word here] for fish passage would be 100% during all flows for the bypass channel, modified side channel, and dam removal alternatives because depths and velocities are suitable at most times,…." (Appendix D, p. 6 and Table 1-3 on p. 8). I suggest that it is unreasonable to assume that an open river channel has the same likelihood as a side channel or bypass channel for fish passage. I suggest that the proportion of total river flow that flows down each channel be used as the modifier here for probability that fish would pass this site. I know there are other index values that relate to probability of finding a side channel, but the overall assumption that a side channel or bypass channel are equal to an open main river channel for this index value appears seriously flawed.	Appendix D has been revised with additional discussion to clarify the selection of scores for each variable. The opportunity for fish passage is based on the swimming speed and Ucrit for each species relative to the depths and velocities present during its migratory season and results in the variable Di (Duration of migratory period passable). The proportion of total river flow is also included in the model in the variable Fs (Size of Fishway), which is shown to be less for the bypass channel and modified side channel as compared to the rock ramp or either weir removal alternatives.
		14	I found that the migratory timing portion of the analysis appeared reasonable. However, I found little justification or rationale for how values for the "Probability that Fish Encounter Fish Passage Alternative (Ei)" were computed and why it appeared that this value changed from the analysis done in 2015 (index value of 3; Intake Diversion Dam Modification, Lower Yellowstone Project, Supplemental EA 2015, Appendix E, Attachment 1, Table 6, p. 16) to the current analysis in Appendix D (index value of 4, Appendix D, Table 1-7, p. 11). No justification was provided for why this index value changed. I suggest that the consequences of this change on subsequent alternative comparisons might be significant. A preliminary assessment by Defenders of Wildlife indicates the change of this single index value from 3 to 4 had significant effects on the Incremental Cost Analysis (see comment letter by Defenders of Wildlife). I also point out that changes in index values for this criterion between these two different analyses indicate serious flaws with this methodology. Why did it change?	Additional discussion has been added to Appendix D to explain in more detail how each number in the FPCI was selected. Section 2.4.4.3 of the FEIS describes a sensitivity analysis that was completed to evaluate the sensitivity of the CE/ICA results to changes in the FPCI model outputs. These results are also included in Appendix D.
		15	For the Fish Passage Alternative Size index, the Corps used the BRT recommendation that 30% of flow in a bypass channel might allow some adult sturgeons to move past the diversion (Appendix D, p. 10). Consequently, the Corps assigned the highest index value for Fish Passage Alternative Size (5), but no reasonable biological rationale were used to set any of the remaining index values. The BRT suggested that some, not most or even a significant number of adult sturgeons, might successfully pass upstream through a diversion structure with 30% of flow. Appendix D states that more recent tracking of pallid sturgeon passing upstream of Intake Diversion in 2014 and 2015 indicated that passage in the river side channel occurred when that side channel passed only 2 to 6% of the river's flow. It must be pointed out that a very few adult sturgeons passed upstream through this side channel in 2014 and 2015, and that relatively extreme high flows occurred and triggered movements.	The Size of Fishway (Fs) was given a score of 2 for both the bypass channel and modified side channel as they each were designed to convey ~15% of the river flow. See Table 1-9 in Appendix D.
		16	The indices among the various alternatives for the "Potential (Ui) for Fish to Use Alternative Fish Passage Measures" seems totally unreasonable to me. I cannot	Additional discussion has been added to Appendix D to explain in more detail how each number in the FPCI was selected.

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			understand how all index values assigned to this criterion are "5" for every alternative except the "No Action" or "Rock Ramp" alternatives. It is illogical to suggest that every fish species evaluated, including pallid sturgeon, have the same potential to use either the proposed By-Pass or High-Flow Channel at the same probability as they would pass through an open river channel with the diversion removed. This criterion appeared to be based on the upper critical swimming speed "for the majority of alternative", but I suggest that the proportion of the alternative that does not exceed this threshold water velocity would be a much more reasonable criterion. Again, this appears to me to be a fatally flawed analysis.	
		17	Finally, I suggest that a Connectivity Index Analysis be conducted separately for pallid sturgeon since this is the primary species of concern. I think that conducting Connectivity Index Analyses for the other species are important too, but suggest that pallid sturgeon should be a focus species for this analysis. I think lumping all species together within a single analysis reduces the likely realized potential effects on pallid sturgeon. I also suggest that the Corps and BoR did not adequately display the uncertainty of their Connectivity and Incremental Cost Analysis and the unknown factors that motivate adult sturgeon to migrate up through a river system. It seems to me when we are evaluating the expenditure of this much federal funding, we should be reasonably confident that what we propose to do will actually work. I have serious doubts that the preferred alternative will work, and am worried about future costs to fix a potentially costly mistake.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected. In addition, a sensitivity analysis was conducted for the cost effectiveness and incremental cost analysis to identify whether slightly higher or lower index values or only using pallid sturgeon in the model would result in a different list of cost effective or best buy plans. There is no difference in the listing of cost-effective and best buy plans. Of note, per Corps planning guidance (ER 1105-2-100), any of the cost-effective or best buy plans could potentially be identified as a preferred alternative; however, other considerations including total cost, impacts to other elements of the environment (including social and economic conditions), constructability concerns, long-term O&M, and a variety of other factors weigh into identification of a preferred alternative. This evaluation is described in Section 2.4.
		18	As an aside, the Corps states that for the purposes of the Fish Passage Connectivity Index assignment of preferred habitat types for pallid sturgeon that "… pallid sturgeon was included and shown with a habitat preference for main channel and main channel border habitats similar to habitat preferences provided for shovelnose sturgeon." (Appendix D, p. 3). If the Corps believes pallid sturgeon prefer main channel habitats, as I suggest is a reasonable assumption and is supported by the literature, why do they assume pallid sturgeon will select and move through a By-Pass channel? The rationale that the DEIS uses to support the By-Pass Channel alternative appears flawed and points to the uncertainty that a By-Pass Channel will actually provide up-river passage to adult pallid sturgeon. If adult pallid sturgeon actually prefer main river habitats, as I believe the literature and research supports, then the only alternatives that make any biological and economic sense are ones that abandon the existing diversion structure and open up the main river channel.	Tracking of radio telemetered wild adult pallid sturgeon has shown that pallid sturgeon have migrated up the Yellowstone River to Intake Diversion Dam in several years (2011 through 2015 as reported in Delonay et al. 2014, 2015; Rugg 2014, 2015, 2016). Tracking has shown that some telemetered fish swim along the north side of the river in the two or so miles downstream of the dam (Figure 40 in Delonay et al. 2014), which generally coincides with the main channel location and includes both an outside bend and an inside bend. However, these fish do not statically reside only on the north side of the river but instead appear to "explore" around the dam and move both downstream and back upstream, indicating they may be searching for a passageway. Several of the telemetered fish have been recorded over multiple days or weeks in the vicinity of Intake Diversion Dam, which would suggesting they would have the ability to give ample opportunity to find the bypass channel at this location. See additional discussion in Sections 2.5.2 and 4.9.8 in the FEIS.
		19	I did not feel qualified to evaluate the "Cost Effectiveness and Incremental Cost Analysis", but I caution that the flawed analyses for the Connectivity Analysis above calls into question the validity of the Cost Analysis because index values assigned by criteria developed in the Connectivity Analyses were carried forward into the Cost Analysis. Please see an independent evaluation of the Cost Analysis by the Defenders of Wildlife, who retained an economist to review the Cost Analysis (comment letter from Defenders of Wildlife).	See responses to comments OR-10, 60 and 61. Technical experts at the Corps of Engineers have also reviewed the use of the model and approved it.
		20	In my opinion the DEIS was biased towards the preferred alternative in all analyses, especially the Cost and Connectivity analyses. Even with those biases, the Connectivity Analysis suggests that the pumping alternatives were superior to the DEIS's preferred alternative of the By-Pass Channel in the amount of additional habitat that would be	See Sections 2.3.5, 2.5 and 4.9.8 for additional discussion on the design of the proposed bypass channel and identification of the preferred alternative. The Cost Effectiveness and Incremental Cost Analysis was only one consideration in the identification of the preferred alternative.

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			available to pallid sturgeon. Since passage of pallid sturgeon to access more suitable habitat is one of the primary objectives of this project and explicitly identified in the funding authorization for the Corps to spend money for this project, I suggest that any alternative that meets that need should be weighted higher, not lower, than other alternatives.	See section 1.1.2.2 for the Corps' WRDA Authority, which states that the authority is for the purpose of ecosystem restoration.
		21	I now want to comment specifically on the Monitoring and Adaptive Management appendix (Appendix E). I believe this analysis is much improved over the 2015 amendment to the EA. I believe that the discussion of the success criteria and monitoring of those criteria was reasonable. I applaud the Corps and BoR for these criteria and methods. I believe that it is particularly important to monitor larval pallid sturgeon survival past the Intake Diversion structure, should adult pallid sturgeon successfully move upstream past the site and spawn. Unfortunately, the DEIS did not explicitly identify how the monitoring will be funded, who will conduct each phase of the monitoring, and include a contractual commitment by the different agencies to conduct the monitoring over a minimum time period (i.e., 10 years). The final EIS must include these monitoring assignments and commitments by all agencies that will conduct this monitoring.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to better describe Agency roles and responsibilities, including a narrative describing Agency authorities and potential funding sources.
		22	If the By-Pass Channel alternative does not work as predicted, what will be done and how will it be funded? These question has been repeatedly asked by the state of Montana (several letters from Montana Fish, Wildlife & Parks [Nov 13, 2012; Feb 5, 2013; May 20, 2013]and Montana Department of Natural Resources and Conservation [Oct 29, 2013; Jan 9, 2015]) and has never been adequately addressed by the Corps or BoR. The final EIS must detail a contingency plan and adequate funding to implement the contingency plan should the preferred alternative fail to meet the success criteria. Without the details and commitments for both the monitoring and contingencies should monitoring indicate the constructed alternative does not meet the success criteria, I believe the DEIS is fatally flawed. Costs of contingency actions should also be considered in Cost Analyses that compare the alternatives (i.e., no contingency costs to diversion abandonment or removal [Pumping alternatives], but potential costs for all other alternatives).	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to better describe Agency roles and responsibilities moving forward, including a narrative describing Agency authorities and potential funding sources. As described in Section 2.4.2, monitoring is assumed to occur for the first eight years and for comparison purposes it was assumed that adaptive management is 1% of construction cost for all of the alternatives. Adaptive management actions would include modifications both as a result of biological monitoring as well as the performance of the irrigation (or water supply from the pumping). This was clarified in the FEIS.
		23	I suggest a reasonable contingency plan is that if monitoring indicates that the success criteria are not met in 7 years out of the next 10 years, that the multiple pump and dam abandonment alternative be implemented. The risks inherent in implementing the preferred alternative is that we might delay the best option to recover pallid sturgeon in the Yellowstone River (abandoning or removing the diversion) by 10 years (or whatever minimum time period is deemed necessary for monitoring results to demonstrate success or failure of the "as-built" project) and that we will have wasted the funds used to implement the preferred alternative if it does not work. Those risks should be made clearer in the final EIS.	The Agencies are committed to avoiding jeopardy to pallid sturgeon and complying with their responsibilities under federal law. See Section 4.9.9 for further discussion. The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include timelines for monitoring efforts and implementation of adaptive management measures. The potential adaptive management measures identified in this plan are considered adjustments to the implemented alternative and not the construction of a new alternative, which would likely require additional NEPA analysis and decision. As shown in the plan, if an alternative is not meeting success criteria and adaptive management measures have been determined to be ineffective, Reclamation and the Service would work collaboratively to identify the next steps, including the need to reinitiate consultation.
		24	I believe that scientific peer-review is critical for projects such as this proposed project, especially when significant public funds are being committed and desired outcomes are so uncertain. I acknowledge and support the planned peer-review that will be done	Consistent with Corps policy, the Independent External Peer Review panel process occurred concurrently with public review of the DEIS in order for the panel to consider comments that were provided during public review. Their comments and recommendations have been incorporated into the FEIS and are available in Appendix I.

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			for this DEIS, but was surprised and appalled that this peer-review was not done prior to the release of the DEIS so that the public could use this peer-review to help evaluate the proposals within the DEIS. I contend that failure of the DEIS to provide this peer-review in the DEIS renders this DEIS as incomplete because I could not use this peer-review information to evaluate the alternatives. I know that Defenders of Wildlife asked that this peer-review be included prior to the deadline for public comment on this DEIS. I believe this was a necessary piece of information that the public should have had access to prior to the deadline for our comments.	
		25	In conclusion, I found that the DEIS was incomplete and fatally flawed. I suggest that some of the analyses were biased and that the preferred alternative selected by the DEIS was not supported by the information provided. The two alternatives that abandon or remove the existing diversion are the only alternatives that have a reasonable chance of meeting the intended Purpose and Need for this project. While the initial costs for both these alternatives are higher than other alternatives, there is so much uncertainty associated with the DEIS's preferred alternative that a prudent person would conclude that this alternative will likely not function as desired. Consequently, additional funds will have to be spent later to meet the Purpose and Need objectives. If the BoR and Corps insist on constructing the DEIS's preferred alternative, I believe the only reasonable and prudent course of action would be to implement this alternative in two phases. First, construct the By-Pass Channel (but do NOT construct the concrete cap on the diversion structure) and use proposed monitoring data and success criteria to prove that this By-Pass Channel successfully allows all fish species to move upstream and that larval pallid sturgeon are moving and surviving down past the project site BEFORE constructing the concrete cap. The second phase of re-constructing the diversion by adding the concrete cap would only be done after demonstrating the success of the By-Pass Channel using the Monitoring and Adaptive Management success criteria over a reasonable time-frame (i.e. five or ten years).	Comment noted, also see response to comment BP-325, #8.
		26	Seems to me that this EIS is biased toward preferred alternative. Language used for all other alternatives have a very negative tone, but language used for the preferred alternative is positive. I suggest that EIS evaluations should all be as objective as possible.	Comment noted.
		27	Why is no concrete shown on Figure 2-5 for the "Rendering of the Replacement Weir". This omission seems deceptive to me. It just shows cobble and rock. Are you proposing "no concrete" on this weir?	The concrete replacement weir is shown in gray as piles/shafts with a small concrete cap.
		28	Power costs for the Multiple Pump alternative (p. 2-76) are shown at $500,000, but text says could possibly get power for $163,000 to $294,000 per year from Pick Sloan Missouri Basin Program. Why inflated number used in the table for annual costs (Table 2-17). How many other costs are over-inflated in this economic analysis of the multiple pump alternative?	The document has been revised to include Pick-Sloan power rates in the cost estimates for the Multiple Pump Alternative and the Multiple Pump with Conservation Measures Alternative.
		29	I could not find actual cost estimates used for dam removal under either of the pump alternatives. Why do they need to spend money to totally remove this dam? Why can't Corps and BoR remove a couple slots and let the ice and high flows remove the rest of the dam? I made this suggestion during scoping and it was not addressed in the draft EIS. Why not?	Dam removal costs are included in the MCACES cost estimates. See explanation of dam removal costs as included in response to comment OR-7, #13 and Appendix B. See response to Comment BP-325, #3 regarding removal of a portion of the Intake Diversion Dam and allowing ice and high flows to remove the rest.

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		30	Why is fish passage and entrainment monitoring so high for the multiple pumping alternative ($277,867) compared to the channel by-pass alternatives ($138,934 for both by-pass and modified side channel alternatives)? Seems to me need to have entrainment monitoring for canal headworks in side channel alternatives that should be a comparable cost.	The bypass channel entrainment monitoring is at one site – the screened headworks. Under the multiple pumping alternative, the screened headworks and 5 new pumping sites would be monitored.
		31	Water loss rates estimated from other studies seems low (p. 2-93), but need better review.	Comment noted. The other studies were recent and included measurements from a nearby irrigation district (Sidney), which represented the best available information.
		32	Annual costs for additional ditch riders ($583,200) under Multiple Pumps with Conservation Measures alternative seems excessive (Table 2-23, p. 2-95).	See response to comment OR-11, #24.
		33	Appendix on “Fish Passage Connectivity Index” was mis-labeled as “Appendix E” when referenced in DEIS main text, it is actually Appendix D.	Labeling was corrected in the FEIS.
FA-1	P. Stribel, EPA	1	The EPA acknowledges that many of its comments during scoping have been addressed in the Draft EIS. The increased detail in the Draft EIS provides greater insight into the decision process, and the expanded range of alternatives is informative to the public and decision makers. The EPA supports the efforts to recover the pallid sturgeon population in the Yellowstone River and understands the necessity for timely action to meet that goal.	Comment noted.
FA-1		2	The Draft EIS does not thoroughly evaluate the effects of climate change on the competing purposes for this project; pallid sturgeon recovery and continued irrigation water supply for agriculture. Specifically, the EPA recommends that the Final EIS evaluate in the main body of the EIS and Adaptive Management Strategy how any diminished flows to the Yellowstone River as a result of climate Change could result in constraints in meeting the demands necessary for both purposes and what measure s or strategies would be implemented to mitigate the effects.	Climate change poses potential future changes in flows and temperatures for all alternatives (including No Action). Additional discussion has been added to Section 3.1 relative to climatic conditions and climate change. The development of alternatives considered measures most important to adapt to or mitigate climate change effects such as remaining functional under a wide range of flows and stability during extreme ice or flood events. During extreme low flows, water supply will potentially be insufficient for crop demands and water delivery will be reduced (similar to what occurs under existing conditions when flows are lower than demand).
FA-1		3	The Draft Adaptive Management Strategy is useful for understanding the approach at the USACE and Reclamation will take to evaluate the effects of the project on pallid sturgeon. The strategy identifies that monitoring of the pallid sturgeon will continue for 6+ years as part of its long-term monitoring timeline. During that time, Reclamation will present annual status reports on the effectiveness of the project. It is not specified how long the monitoring or the status reports will continue. As we commented in our scoping letter, it is likely that 15-20 years of monitoring will be necessary to evaluate long-term recruitment success. We continue to recommend that a minimum long-term monitoring effort be specified as part of the strategy.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include timelines for monitoring activities.
FA-1		4	Consistent with Section 309 of the CAA, it is the EPA's responsibility to provide and evaluation of the potential environmental impacts of this project. Based on the Procedures the EPA uses to evaluate the adequacy of the information and the potential environmental impacts of the proposed project, the EPA is rating the Draft EIS Preferred Alternative (Bypass Channel) as Lack of Objections (LO). The "LO" rating indicates that the EPA review has not identified any potential environmental impacts requiring substantive changes to the preferred alternative.	Comment noted.

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EO-1	R. Cayko, McKenzie County Board of Commissioners	1	The McKenzie County Board of Commissioners are writing this letter is support of the concrete weir and improved fish passage for the Lower Yellowstone Irrigation Project.	Comment noted
EO-1		2	The alternatives suggesting installation of pumping plants along the river to provide irrigation water would be very costly to the irrigators and would add to climate change, while making the newly installed multimillion dollar gravity fish screen worthless most of the season.	Comment noted
EO-1		3	The cost to pump water from the Yellowstone River is not feasible. The cost would have to be passed on to the land owners at a cost not feasible for sustainable/ profitable production. This reduction in economy would reduce tax dollars that are necessary to provide services to all of McKenzie County.	Comment noted. Social and economic conditions, including O&M costs and the impacts of each alternative have been considered in section 4.15 and Appendix B.
EO-1		4	The LYIP water recharges the Glacieral Aquifer that provides both the residents of the City of Sidney and the Town of Fairview with drinking water. Rural residents in the Yellowstone Valley also rely on the shallow water table for both domestic and stock water sources.	Comment noted. See section 4.4 for further discussion on groundwater hydrology.
EO-2	Senator Taylor Brown, Senate District 28	1	Stand today in strong support of the Environmental Impact Study that showed the Bypass Channel to be the best Alternative both for agriculture and for aquatic species.	Comment noted
EO-2		2	Register my objection to the location and scheduling of this particular meeting in Billings, Montana on the evening of June 30th. … I only want to register my complaint, first that you would schedule such an important meeting over 200 miles from the location in question, and second, that would schedule it at one of the very worst times of year for irrigators to try to attend. ... The sacrifices that were made by many in this crowd to travel to be here tonight were immense.	Comment noted
EO-2		3	My comment is that the proposed EIS has used real science and sound reasoning to arrive at the right solution, Out two biggest industries, Agriculture and Travel/Tourism desperately need you to get this decision right. I believe you have done that with this proposed alternative.	Comment noted
EO-3	Rep. Brad Tschida, Montana House of R epresentatives – District 97	1	It appears that there is a common sense solution to the irrigation issues on the Yellows tone River, which you, The US Corp of Engineers prefers, However, groups such as Defe nders of Wildlife, are aggressively pursuing action to eliminate the preferred weir solut ion. This is neither preferred nor practical.	Comment noted
EO-3		2	Please reach a decision that is: A) conducive to the fish population in the Yellowstone; 2) supportive of farmers/ranchers/irrigators who use the Yellowstone; 3) advantageou s to those persons (consumers) who benefit from wise and appropriate use of the natu ral resources of the State to feed and provide for her citizens.	Comment noted
EO-4	D. Young, Richland County	1	The Richland County Conservation District Board of Supervisors continues to support the By Pass Channel as the preferred alternative to meet the concerns of the Endangered Species Act for the Pallid Sturgeon.	Comment noted.

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	Conservation District			
EO-4		2	The By Pass Channel alternative is the most cost-effective means of providing the pallid sturgeon the river miles needed to spawn while allowing the irrigators to continue operating the gravity flow system that has been in operation for over 106 years.	Comment noted.
EO-4		3	The idea of removing the diversion and placing pumps in the river is neither cost effective nor "green." In a world concerned with climate change, emissions from pumps along with the noise from the motors this alternative is full of issues that the gravity flow system does not have to address.	Comment noted.
EO-4		4	The Ranney Well alternative is of concern to the Conservation District. We have several years of data collected by the MT Bureau of Mines and Geology, this ideas will require several more years of study to assure that the aquifer could sustain the irrigation season and not jeopardize the water right holders using the aquifer currently, i.e. the city of Sidney, the Town of Fairview and the residents of the Yellowstone Valley.	This has been acknowledged in the document, see Section 2.3.8.2 that states additional hydrogeological studies would be required for siting and permitting. Groundwater impacts are also described in Section 4.4. The NEPA Implementing Regulations (40 CFR 1502.22) acknowledge there may be instances where there is incomplete information, and Department of the Interior Regulations (43 CFR 46.125) provide additional detail concerning the absence of information, stating, "In circumstances where the provisions of 40 CFR 1502.22 apply, bureaus must consider all costs to obtain information. These costs include monetary costs as well as other non-monetized costs when appropriate, such as social costs, delays, opportunity costs, and non-fulfillment or non-timely fulfillment of statutory mandates." While the monetary costs to obtain this information are likely considerable, the non-monetary costs are also significant in this case, especially the delays in implementing passage for the remaining wild pallid sturgeon population and the resulting non-timely fulfillment of statutory mandates (i.e., complying with ESA).
SA-01	J. Tubbs, Montana Natural Resources & Conservation; M. Hagener, Montana Fish Wildlife & Parks	1	As articulated in previous letters, the state continues to support the Intake Project and the bypass channel alternative as long as the following conditions are achieved: l) there is a secure and affordable water supply for irrigation into the future; 2) the bypass channel provides effective upstream and downstream passage for Pallid Sturgeon and other native fish species; and 3) that federal partners (i.e., the U.S. Bureau of Reclamation [Bureau] and the U.S. Army Corps of Engineers [Corps]) remain financially committed (directed through a Biological Opinion [BOI from the U.S. Fish & Wildlife Service [Service]) to the project until the first two conditions are achieved.	Comment noted, see revised Adaptive Management Plan in Appendix E.

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SA-01		2	The state has supported the bypass channel alternative from its inception because assurances were provided through the BO that federal partners would be financially responsible for monitoring and adaptive management for a minimum of 8 years following completion of the project. If the project was not successful in 8 years, the Corps was required to return to Fort Peck Dam and provide additional measures to address jeopardy to Pallid Sturgeon on the Missouri River.	See revised AM Plan in Appendix E which includes length of time for monitoring. If passage is shown not to lead to spawning, and subsequent recruitment that can avoid jeopardy to the species in the upper basin, the Corps of Engineers will still be required to identify other potential management measures within its authority that could reasonably be implemented to accommodate avoidance of jeopardy. This is why the MRRP AM Plan does not assume success for any of these options but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed. However, it is unlikely that options at Fort Peck would be pursued based on current science. Available data indicate that hatchery released free embryos, five days post-hatch or older, are able to survive to age-1 in the Missouri River between Fort Peck Dam and Lake Sakakawea, when released 170 miles upstream of the lake. Because natural recruitment has not occurred in this reach, the conclusion is that mortality is limiting at very early stages, days 0-5 post hatch, although adequacy of dispersal distance is also dependent on spawning location (Braaten et al., 2008, 2010, 2012b). These observations support the hypothesis by Kynard et al. (2007) which implicates total drift distance as a limitation on natural recruitment. Hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014).
SA-01		3	However, this point of obviation is counter to the overall conservation of Pallid Sturgeon in Montana, and credit for technical oversight and construction in the Intake Project should not be counted as credit for avoiding jeopardy to the population of Pallid Sturgeon in the Missouri River. Furthermore, through this project's use of Pallid Sturgeon recovery dollars; there is implied commitment to Pallid Sturgeon recovery and adaptive management that considers the Missouri River and Yellowstone River as a system in concert. Moreover, assurances tying federal partners to the Intake Project are necessary to ensure responsibility for expenses (e.g., operation and maintenance, repairs, and adaptive management). In this, the Bureau should be required to further describe the implementation process as part of the adaptive management or alternative measures at Intake Diversion Dam.	See revised AM Plan in Appendix E which includes length of time for monitoring. If passage is shown not to lead to spawning, and subsequent recruitment that can avoid jeopardy to the species in the upper basin, the Corps of Engineers will still be required to identify other potential management measures within its authority that could reasonably be implemented to accommodate avoidance of jeopardy. This is why the MRRP AM Plan does not assume success for any of these options but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed. However, it is unlikely that options at Fort Peck would be pursued based on current science. Available data indicate that hatchery released free embryos, five days post-hatch or older, are able to survive to age-1 in the Missouri River between Fort Peck Dam and Lake Sakakawea, when released 170 miles upstream of the lake. Because natural recruitment has not occurred in this reach, the conclusion is that mortality is limiting at very early stages, days 0-5 post hatch, although adequacy of dispersal distance is also dependent on spawning location (Braaten et al., 2008, 2010, 2012b). These observations support the hypothesis by Kynard et al. (2007) which implicates total drift distance as a limitation on natural recruitment. Hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014).
SA-01		4	In downstream states, hybridization of Shovelnose Sturgeon and Pallid Sturgeon has been acknowledged, and efforts to determine the prevalence and extent of this introgression are ongoing. Additional research is needed to determine if this introgression began recently due to anthropogenic alterations of the Missouri River or if it has perpetuated naturally in the lower basins of the Missouri and Mississippi rivers for generations. Nonetheless, this genetic disparity demonstrates the importance of recovery efforts and decision-making regarding genetically pure Pallid Sturgeon, and underlines the fact that the species could be dependent upon the relatively small population of Pallid Sturgeon that reside in Montana and North Dakota. This is relatively new information which needs to be incorporated into every Pallid Sturgeon project such as the Intake Project, management plans, and any decisions regarding Pallid Sturgeon recovery efforts.	Comment noted.

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SA-01		5	The state suggests that adding and analyzing the previously disqualified alternative of removal of the dam and moving the diversion upstream will make the EIS more defensible. This concept continues resurface in public comment periods. While the state does not support this alternative, we believe that a detailed explanation of why it is not preferred would help address public concerns and strengthen the EIS.	This alternative was previously analyzed in the 2005 Value Planning Study, the 2010 EA (Reclamation and Corps 2010) and the 2015 Supplemental EA (Reclamation and Corps 2015). A discussion of this alternative has been added to Chapter 2 in the FEIS (Section 2.3.1)
SA-01		6	Adaptive Management and Monitoring Plan - Success criteria and specific triggers should be identified for when adaptive management options are initiated. The duration, in years, for how long fish and hydraulic monitoring will occur and specific duties should be included so stakeholders and agencies understand and can plan accordingly. For example, depending on when the project is completed will dictate if fish monitoring efforts will include adult Pallid Sturgeon or soon-to-sexually-mature juvenile Pallid Sturgeon. The most recent projection for the longevity Of remaining adult pallid sturgeon is thought to expire by 2021. See appendix for details.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include success criteria, triggers, and duration of monitoring activities.
SA-01		7	Larval drift - In 2016, a multi-agency Pallid Sturgeon larval drift study was completed on the Missouri River below Fort Peck Dam to evaluate larval drift distance and larval revisualization upstream of Lake Sakakawea. Using this understanding and study design, a similar experiment using Pallid Sturgeon larvae or surrogate beads should occur in the near future to evaluate larval drift distances and routes used by drifting larvae on the Yellowstone River.	A larval drift study on the Yellowstone River has been identified as a potential research project within the MRRP.
SA-01		8	New Weir Height - Correct the potentially inaccurate statement in the draft EIS (Executive Summary, page 2-46, section 2.3.5; also found on page xxix in second paragraph under Bypass Channel) regarding the height of the new weir to deliver water into the canal and bypass channel. The state was assured multiple times during construction and designs conference calls or meetings that the height of the new weir did not have any impact on water flows into the bypass channel. Because of the distance between the weir and upstream end of the bypass channel there will be no flow diversions into the bypass channel. Please provide an explanation regarding the realities of weir height impacts on bypass channel flows.	The proposed concrete replacement weir is designed to divert the full LYIP water right (1,374 cfs) into the main irrigation canal at Yellowstone River flows greater than or equal to 3,000 cfs. In particular, the height of the weir is designed to provide this required diversion. While diversion of flow into the proposed bypass channel was not a primary consideration in the design of the weir height, once constructed, the weir would have a minor impact on water surfaces at the upstream end of the bypass channel, and thus, a marginal effect on the amount of water diverted into the bypass. The concrete weir would eliminate the generally annual requirement for the LYIP to place rock on the crest of the weir to provide the required diversion; thus, it would reduce the amount of fill annually placed into the Yellowstone River. The proposed rock structures at the upstream end of the proposed bypass channel have been designed in accordance with applicable design standards to stabilize the upstream end of the channel, including preventing the risk of the Yellowstone River flanking the channel.
SA-01		9	Resurfacing of Access Road to Intake Fishing Access Site - Although identified within the draft EIS, it is very difficult to find. The state recommends that this aspect of the Intake Project be reinforced in an obvious location under each alternative. See appendix for more details.	The access road from State Highway 16 to the Intake fishing access site (County Road 551 and Canal Road) would be resurfaced under all FEIS alternatives except for the No Action Alternative. The road resurfacing would be to repair damage that would occur due to construction traffic during construction.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
SA-01		10	Pg. 28; "The purpose of the proposed action is to improve fish passage for pallid sturgeon and other native fish at the Intake Diversion Dam, continue the viable and effective operation of the Lower Yellowstone Project, and contribute to ecosystem restoration." This draft EIS underestimates the ecosystem impairment caused by the existing dam and the effect of adding a concrete weir. Bi-directional passage of migratory fish is needed to restore ecosystem services.	On-going impairment to fish passage for multiple species is discussed in Sections 3.6, 3.7, 3.9 and upstream/downstream passage is discussed in Sections 4.7 and 4.9.
SA-01		11	Pg. 28; "Therefore, the proposed project is needed to allow fish passage at this structure. Pallid sturgeon recovery is not within the scope of this project, but improving passage for pallid sturgeon at the Intake Diversion Dam would provide access to a large area of the sturgeon's historical range that has been mostly inaccessible since the LYP was built in 1909." While this may be true, recovery dollars spent on this project mean that they won't subsequently be spent on recovery actions elsewhere; thus, the relationship includes degrees of complexity. Nonetheless, if the quoted point is to be deemed true, recovery language throughout the document needs to remain consistent with the overall objective of avoiding jeopardy to Pallid Sturgeon.	Pallid sturgeon life history and habitat requirements are not well understood. For this reason, the Pallid Sturgeon Recovery Plan (Service 2014) identifies numerous measures to expand pallid sturgeon knowledge while moving towards recovery. The Recovery Plan uses scientific method to obtain this knowledge, wherein questions are systematically answered by implementing actions, observing the response, and then determining the need for follow-on actions. Fish passage at Intake is one of those systematic, site-specific actions identified in the Recovery Plan wherein the outcome is uncertain so subsequent actions outlined in the Recovery Plan would be implemented based on pallid sturgeon response to implementing passage at Intake. Given the absence of information about pallid sturgeon, it is currently not feasible to meaningfully differentiate how each alternative might contribute to recovery and would be entirely speculative. Ultimately, the Service will decide, through ESA consultation (not the NEPA process), if the proposed fish passage alternative would avoid jeopardy, contribute to recovery and as appropriate, meet the objectives of the Recovery Plan. See also response to LA-01, #48 pertaining to recovery. Improving pallid sturgeon passage at Intake Dam is a site-specific project the Corps and Reclamation are undertaking consistent with the Corps' WRDA Authority, Reclamation's obligation under ESA, and as mentioned above, the Service's Pallid Sturgeon Recovery Plan. This site-specific project is one measure within a larger programmatic effort to recover pallid sturgeon as described in the Recovery Plan, the Corps' WRDA Authority, and the programmatic adaptive management plan the Corps is developing for endangered species recovery on the Missouri River and Yellowstone River (expected to be available for public review December 2016). In summary, passage at Intake Diversion Dam may only be one measure in a suite of measures by the Corps, Reclamation and others that are necessary over time to recover pallid sturgeon.
SA-01		12	Pg. 28; "Habitats upstream of the Intake Diversion Dam appear to be suitable for spawning and rearing of pallid sturgeon juveniles, but few pallid sturgeon have been observed upstream of the dam." Please provide a citation for this statement, as there appears to be a lot of speculation regarding where, and if Pallid Sturgeon can spawn. What we actually know about Pallid Sturgeon spawning habitat from confirmed spawning is very limited.	Habitats upstream of Intake Diversion Dam have been studied for their potential suitability for juvenile and adult pallid sturgeon use (Jaeger et al. 2004, 2005, 2006), but agencies agree that it is currently not known where or if pallid sturgeon will spawn upstream of Intake Diversion Dam.
SA-01		13	Pg. 29; "The U.S. Fish and Wildlife Service has identified the lower Yellowstone River as an area of priority for pallid sturgeon recovery because sturgeon are still in the area, there is suitable habitat remaining in the river to assist in recovery, and the Yellowstone River exhibits a natural hydrograph." This should read "... near-natural hydrograph."	Edit made as suggested in the comment.

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SA-01		14	Pg. 29; "The U.S. Fish and Wildlife Service has identified the lower Yellowstone River as an area of priority for pallid sturgeon recovery... " The Fish and Wildlife Coordination Act (FWCA, 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) Section 2 states that fish and wildlife conservation shall receive equal consideration with other project purposes (p. I-1 5). Agencies that construct, permit, or license projects impacting a water body must consult with the Service and the state agency having jurisdiction over fish and wildlife resources, in this case MFWP. Full consideration must be given to the recommendations made through this consultation process. This draft EIS intends to meet water delivery requirements, while providing some unquantifiable improvement in fish passage for ESA-listed pallid sturgeon and other fish species. Whereas the no-dam alternatives solve for fish passage by restoring the natural channel morphology, those alterative were deemed too expensive, and would not meet the project purpose and need, because the water supply would be insufficient to keep the Lower Yellowstone Project viable (p. 2-77). The preferred bypass channel alternative meets requirements for water delivery, and places the risk on migratory fish species. Reclamation and the Corps have identified the Bypass Channel Alternative as the preferred alternative, because l) the bypass "could be constructed, operated, and maintained to meet the physical and biological criteria identified by the Service's BRT, and therefore would provide passage for pallid sturgeon", 2) the bypass "is a cost-effective means of providing fish passage", 3) "The Bypass Channel Alternative is expected to have the lowest annual O&M costs", and 4) the bypass "would not result in significant long-term adverse environmental impacts". However, the draft EIS and Reclamation's Adaptive Management Plan (Appendix E) focus primarily on successfully passing upstream migrating fish. Upstream passage alone is insufficient to complete the fish life cycles of migratory fish species. A sufficient number of downstream migrating larvae and juvenile fishes must also survive passage through the diversion structure.	See additional discussion in Section 4.9 regarding downstream passage of fish and larvae.
SA-01		15	Pg. 29; Regarding the expected extirpation of Pallid sturgeon, current adult Pallid Sturgeon estimates are 110 fish (no longer 158), with extirpation by 2021 (not 2018 as mentioned in the text). Furthermore, this only applies to mature, WILD individuals. There are currently, and will continue to be, more mature, hatchery-reared individuals in the system. To this effect, if not for progeny introduced by conservation hatcheries the species would likely be close to extinction. There are now approximately 43,000 surviving progeny that will begin reaching maturity at age 15. Roughly 18,000 individuals are expected to reach spawning age within the next 2-5 years.	See revised Exec Summary

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SA-01		16	Pg. 29; We recommend adding a paragraph with basic life history and background of the species to convey to folks why this project is important (e.g., historic distribution, unimpeded river reaches, long-lived, large migrations etc.). Language should also be added to describe the genetically distinct population of Pallid Sturgeon that exist in Montana/North Dakota; one that differs from those found further downstream in the basin. Pallid Sturgeon in RPMA I and 2 represent the most genetically intact population throughout their current range; thus, they are critical for future hatchery propagation to prevent extinction.	See revised text in Executive Summary.
SA-01		17	Pg. 29; "As these fish are only beginning to reach maturity, they are not yet contributing to population viability or sustainability." This should reflect that, currently, no Pallid Sturgeon —wild or hatchery— are currently contributing to the sustainability.	See revised text in Executive Summary.
SA-01		18	Pg. 3 1 ; Regarding the Bypass Channel Alternative, define how much higher (vertically) the new dam will be compared to the historic wood crib dam. Additionally, language regarding the impact from plugging the existing historic side channel appears to be missing. This is an important aspect that needs to be in the forefront of the alternative analysis.	See Section 2.3.5.4 for details on new weir.
SA-01		19	Pg. 3 1; There are a lot of places that assume actions will undoubtedly improve "fish passage,". However, nobody actually knows that the outcome of any of the structures will look like in terms of fish passage but we do know that we currently have over and around passage of multiple species. So, assuming that anything will be better than what we have now is probably a bad assumption. This highlights the need for providing explicit rationale behind future monitoring and adaptive management to ensure that the improved passage stated here can be empirically proven in the future.	The Agencies acknowledge there will be uncertainties associated with any alternative that is implemented at the Intake Diversion Dam. These uncertainties are discussed in Section 4.9. Because of the uncertainties with the Project, the Agencies are committed to implementing a Monitoring and Adaptive Management Plan that will take into consideration not only pallid sturgeon but also other native species found in the Yellowstone River. The proposed Monitoring and Adaptive Management Plan can be found in Appendix E.
SA-01		20	Pg. 32; Regarding the Modified Side Channel Alternative, assuming that any of these alternatives will improve Pallid Sturgeon passage, or passage of any species for that matter, may be a false assumption. We know that we currently have some passage of all species we have tracked; however, there is potential that any alternative may have no or decreased passage of certain species. Again, monitoring and adaptive management need to establish current conditions of fish passage in order to subsequently document any improvement.	The Agencies acknowledge there will be uncertainties associated with any alternative that is implemented at the Intake Diversion Dam. These uncertainties are discussed in Section 4.9. Because of the uncertainties with the Project, the Agencies are committed to implementing a Monitoring and Adaptive Management Plan that will take into consideration not only pallid sturgeon but also other native species found in the Yellowstone River. The proposed Monitoring and Adaptive Management Plan can be found in Appendix E.

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SA-01		21	Pg. 32; Though upstream movement of radio-tagged Pallid Sturgeon in the historic high flow channel occurred in 2014 and 2015 at 69,800 cfs and 60,500 cfs, respectively, actual passage occurred at much lower discharges (—45,000 cfs). As written, it implies that the river needs to reach 60k or 70k cfs for Pallid Sturgeon passage, which is inaccurate. Furthermore, the side channel would not need to convey water year round to increase fish passage; improving flows, as the Biological Review Team has recommended, is only needed when river exceeds 20,000 cfs.	See revised text in Executive Summary.
SA-01		22	Pg. 38; In Table ES-2, Operational Effects under Bypass Channel, "Side channel plug would limit passage," should be changed to "Side channel plug would permanently eliminate fish passage via the side channel."	See revised Table ES-2.
SA-01		23	Pg. 65; Under Decisions to be Made, "If Reclamation decides to proceed with the proposed action, the Corps will decide whether to assist Reclamation with the proposed action, or a reasonable alternative to it, and provide funding for design and construction activities needed to modify the Intake Diversion Dam for the purpose of improving fish passage and assisting in restoration of the lower Yellowstone River ecosystem." The interconnected Pallid Sturgeon population and the ecosystem in the Yellowstone and Missouri rivers should be treated as a whole.	The decision to be made as part of this EIS are specific to actions to be taken at Intake. Decisions on the population as a whole are considered in the Missouri River Management Plan, which the Corps is currently completing in consultation with the FWS. We do not disagree that management action on both the Missouri and Yellowstone Rivers may ultimately be needed to meet pallid sturgeon objectives. Within the upper basin, providing fish passage at the Intake Dam has been identified by the USFWS (Service 2013) and 2014 Pallid Sturgeon Recovery Plan, and confirmed by the best available science through an Effects Analysis, as one of the best possibilities for restoring self-sustaining populations of pallid sturgeon. This project will reestablish a linkage to historic pallid sturgeon spawning habitat which is currently hypothesized as being one of the primary limiting factors for pallid sturgeon recruitment. The Corps of Engineers is still engaged and committed to identifying other potential management actions within its authority that could reasonably be implemented to accommodate avoidance of jeopardy for the pallid sturgeon in the upper basin beyond just this discrete project, if necessary, based on the best available science. However, current hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014).
SA-01		24	Pg. 69; "The five pallid sturgeon that passed the Intake Diversion Dam in 2014 were documented in the Powder River and spawning appears to have occurred." This statement is only partially correct. It should read "Three of the five Pallid Sturgeon that passed the Intake Diversion Dam in 2014 were documented in the Powder River and spawning appears to have occurred."	See revised text in Section 2.1.
SA-01		25	Pg. 83; In the section discussing the Pick Sloan Missouri River Basin Program Power, there is a citation missing that is important to support a statement about how Pick Sloan Power may not be used in context of some kinds of pumping. Please include a citation to support this statement.	Citation has been added: (Reclamation 2005a) Reclamation Manual Directives and Standards FAC 04-06. Bureau of Reclamation. May 2005. Online at http://www.usbr.gov/recman/fac/fac04-06.html

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SA-01		26	Pg. 91; "Reclamation intends to work cooperatively with the state of Montana to identify funding resources for monitoring and adaptive management, as appropriate." Regarding Biological Criteria for Success (p. 4-153, downstream criterion 2). To minimize mortality in drifting Pallid Sturgeon larvae, we need to understand the pathways in which larvae drift downstream. Flow conditions that larvae experience at different river stages can be examined using 3D hydraulic mapping, bathymetry and bottom texture at various river stages. Each route could be assigned an estimate of mortality under differing flow conditions. Drift paths from the thalweg upstream through the various routes at Intake can be verified by releasing neutrally-buoyant beads and recapturing the beads at various points downstream. Results would inform remedial actions to guide larvae toward routes that minimize passage mortality.	More details would be needed to evaluate the effectiveness of such an approach but the need certainly exists to estimate larval mortality under differing conditions in a way that would highlight potential remedies if there is a problem. The consistently-funded USACE MRRP science program has invested and will continue to invest in addressing the most pressing uncertainties for pallid sturgeon in the upper basin. Although some science activities related to Intake will need to be undertaken by others, USACE-funded research and monitoring efforts will continue to be very helpful in improving understanding and management on both Yellowstone and Missouri. Many commenters have shown concern that science and monitoring will not occur or will not be funded. That concern is not founded, however, given the Adaptive Management monitoring by Reclamation at Intake, as well as other studies funded through the MRRP science program, WAPA funding, and others. MRRP funding will not be limited to efforts on the Missouri River, but will also consider collection of date on the Yellowstone River where it is needed to understand needs of the pallid sturgeon.
SA-01		27	Pg. 92; "While head requirements could theoretically be met through rock placement, a permanent structure provides more reliable flows into the bypass channel, reduces the amount of fill placed into the Yellowstone River... " This is an incorrect statement. The new dam crest height will not impact flows into the bypass channel. Furthermore, riprap at the upstream end of the bypass channel, in a southwesterly direction, could reduce the risk of flanking; however, this material must be placed on river bank rather than buried revetment to insure adequate construction of toe and slope.	The proposed concrete replacement weir is designed to divert the full LYIP water right (1,374 cfs) into the main irrigation canal at Yellowstone River flows greater than or equal to 3,000 cfs. In particular, the height of the weir is designed to ensure this diversion. While diversion of flow into the proposed bypass channel was not a primary consideration in the design of the weir height, once constructed, the weir would have a minor impact on water surfaces at the upstream end of the bypass channel, and thus, a marginal effect on the amount of water diverted into the bypass. The concrete weir would eliminate the generally annual requirement for the LYIP to place rock on the crest of the weir to provide the required diversion; thus, it would reduce the amount of fill placed into the Yellowstone River. The proposed rock structures at the upstream end of the proposed bypass channel have been designed in accordance with applicable design standards to stabilize the upstream end of the channel, including preventing the risk of the Yellowstone River flanking the channel.
SA-01		28	Pg. 97-98; "In addition, the road between Highway 16 and Intake Fishing Access Site will be resurfaced. Existing access roads to Joe's Island would be improved as needed to facilitate construction access." This point needs explanation elsewhere to ensure implementation, even for other alternatives (missing from modified side channel alternative).	See response to comment SA-01, 9
SA-01		29	Pg. 98; As part of the Bypass Channel operations and maintenance, a full span pre-stressed concrete bridge similar to what is included in the modified side channel alternative should be added to the bypass channel alternative in order to provide access for OM&R.	The modified side channel includes annual rock placement on the existing concrete weir which will include the need for regular access. Rock placement between the old weir and replacement weir is not expected to occur as frequently. O&M costs for the bypass channel include the cost of barging rock to the site, which is more conducive for the accuracy of placement needed for this alternative.

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SA-01		30	Pg. 146; "The No Action, Bypass Channel, Modified Side Channel and Multiple Pump alternatives were identified as cost effective. The Rock Ramp alternative is not cost effective because the Bypass Channel alternative provides greater output for less cost. The Multiple Pumps with Conservation Measures alternative is not cost effective because the Multiple Pump Stations alterative provides the same level of output for less cost." How are average annual habitat units (AAHU) calculated?	As described in Section 1.3.2 of Appendix D, habitat units are a metric derived by multiplying the fish passage index by the total acres of available preferred habitat for each species under each alternative, resulting in estimated average habitat benefits per year. A sentence has been added to Section 2.4.3. to include this definition in the main text as well.
SA-01		31	Pg. 149; Under the Environmental Impacts comparison of Rock Ramp vs. Bypass, etc. in Table 2-30, there appears to be wording regarding the level fish passage provided; however, many professionals agree that this qualification it is extremely uncertain. Here the rock ramp provides "partial fish passage" whereas the bypass channel has "fish passage provided". Some of these semantics appear to support a preconceived notion that the EIS would demonstrate that the bypass was the best option rather than a complete evaluation of all alternatives.	See revised Table 2-30, which is now Table 2-39
SA-01		32	Pg. 1 53; "These monitoring results suggest a bypass channel with the general geomorphic and flow characteristics of existing side channels in the river could best pass adult pallid sturgeon." The current status of Pallid Sturgeon passage at Intake is not acceptable. However, modeling the new bypass channel to mimic the existing side-channel "could best pass Pallid Sturgeon"? Clarify that this modeling is not just based on the existing high flow side channel.	This section has been moved. See revised text in Section 4.9 clarifying more specifics on the modeling and design of the proposed Bypass Channel.
SA-01		33	Pg. 1 53; "A fish passage efficiency study could provide critical research information to correct the Muggli bypass channel and to inform the design of future bypasses for shovelnose (and pallid) sturgeon." This seems to indicate that that little is known about upstream passage requirements for Pallid Sturgeon, and even if passage is achieved, and adults ultimately spawn upstream, there was insufficient discussion of downstream passage of larval Pallid Sturgeon to complete the lifecycle required for recruitment.	This section has been moved. See revised text in Section 4.9 clarifying more specifics on the design of the proposed Bypass Channel. Additional research on the deficiencies of existing constructed fish passageways is always helpful in informing future designs.

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SA-01		34	Pg. 154-155; River discharge was approximately 47,000 cfs when Pallid Sturgeon were documented ascending the existing natural side channel. The ID HEC-RAS model provides an average channel velocity, and cannot estimate the lateral distri bution of water velocities (2D column velocities) or the vertical distribution (3D, lateral, vertical and longitudinal velocities). The proposed Bypass Channel Alternative design has been modeled to have mean velocities of 3 ft/sec at lower flows (7,000 cfs river flow) and 4-5 ft/sec at higher river flows (15,000, 30,000, and 54,000 cfs river flow). We recommend 3D hydraulic mapping of the various possible migration routes for upstream and downstream movements under varying channel discharges. Monitor the irrigation canal downstream of the screens and the river immediately downstream of the boulder field below the Intake Diversion Dam to assess potential injury and mortality to free-embryo, larvae and young-of-year sturgeon. Experiments should be undertaken including the release of free-embryo Pallid Sturgeon or Shovelnose Sturgeon (or neutrally buoyant beads) upstream of the dam to assess entrainment or impingement at the screens, and injury from drift over the dam crest and through the boulder field.	These activities would be helpful and potentially essential in documenting take under section 9 of the ESA, if pallid sturgeon are able to successfully spawn upon passing intake. It is important to do no harm and not make things worse for those life stages. Pallid sturgeon are currently limited in their recruitment, however other life stages do quite well and needs of those life stages pale in importance to providing adequate drift distance for larvae. The consistently-funded USACE MRRP science program has invested and will continue to invest in addressing the most pressing uncertainties for pallid sturgeon in the upper basin. Although some science activities related to Intake will need to be undertaken by others, USACE-funded research and monitoring efforts will continue to be very helpful in improving understanding and management on both Yellowstone and Missouri. Many commenters have shown concern that science and monitoring will not occur or will not be funded. That concern is not founded, however, given the Adaptive Management monitoring by the Bureau at Intake, as well as other studies funded through the MRRP science program, WAPA funding, and others. MRRP funding will not be limited to efforts on the Missouri River, but will also consider collection of date on the Yellowstone River where it is needed to understand needs of the pallid sturgeon.
SA-01		34 continued	(continued) We also recommend developing decision criteria to trigger adaptive management options to improve passage for juveniles if the lack of juvenile passage is demonstrate to result in negative population level effects (mentioned on p. 2-6). Additionally, a concrete replacement weir is proposed just upstream from the existing rock weir at elevation 1990.5 feet (p. 2-50) with a 125 foot wide and two feet deep notch to facilitate in-river upstream and downstream fish passage. The replacement weir crest will include at least one low-flow channel (elevation I ,988 ft) for fish passage (p. 2-51, 4-44). The draft EIS provided inadequate consideration to downstream migrating larvae and juveniles that must pass over the notched weir. Furthermore, the fish passage analysis (p. 2-99) is based on a Fish Passage Connectivity Index described in Appendix D. This index contains no parameters related to downstream passage of larvae or bi-directional passage of juveniles. Little is known about upstream passage requirements for Pallid Sturgeon, and even if passage is achieved, and adults ultimately spawn upstream, there was insufficient discussion of downstream passage of larval Pallid Sturgeon to complete the lifecycle required for recruitment.	The Agencies acknowledge there will be uncertainties associated with any alternative that is implemented at the Intake Diversion Dam. These uncertainties are discussed in Section 4.9. Because of the uncertainties with the Project, the Agencies are committed to implementing a Monitoring and Adaptive Management Plan that will take into consideration not only pallid sturgeon but also other native species found in the Yellowstone River. The proposed Monitoring and Adaptive Management Plan can be found in Appendix E.
SA-01		35	Pg. 155; Please add the details for duration of monitoring; 8 years from Appendix E. Furthermore, it is strongly held that monitoring should be based on fish passage success and not a rigid timeframe.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include success criteria, triggers, and duration of monitoring activities.
SA-01		36	Pg. 206-208; Pallid Sturgeon fingerlings inhabit Zones 2 (transition) and 3 (warm water). Stocking did not begin until 1997. See White and Bramblett (1993).	Statement regarding pallid sturgeon fingerlings has been deleted.
SA-01		37	Pg. 210; Shovelnose Sturgeon are not part of the Backwater Species category; they are a main channel species. This categorization of this species may change the way alternatives are analyzed.	This was an error, they have been moved to the main channel species section, see revised text in Section 3.7.4.1.

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SA-01		38	Pg. 236; Please provide reference regarding Pallid Sturgeon genetic purity and differences with genetic hybrid swarms downstream. Additionally, include this information in Pallid Sturgeon — Status discussion. This elevates public awareness and need for focused efforts on RPMA I & 2.	See revised text in Section 3.9.1.3.
SA-01		39	Pg. 238; Under the Life History section for Pallid Sturgeon, juvenile male Pallid Sturgeon demonstrate first maturity around 15 years old, not 5, as included in the text.	Keenlyne & Jenkins (1993) estimated age at first reproduction for females at 15-20 years and males at 5 years (based on wild fish). Additional text on variation from estimates based on wild vs. hatchery fish has been added.
SA-01		40	Pg. 277-278; Eliminate all references to specific details of paddlefish contracts. ". ..Chamber is authorized to issue a 3-year concession permit. ' to "issue an annual concession permit. "The concessionaire typically pays-a-$7-50-peFmk4ee;-sells food and drinks, and offers fishing tackle for rent or purchase."	Edited as suggested.
SA-01		41	Pg. 388; "In order to maintain a diversion of 1,374 cfs when Yellowstone River flows are at a low flow of 3,000 cfs (measured at Sidney gage), the headworks structure requires 0.7 feet more head in the river (rounded to I foot of head) than was required prior to construction of the screens and gates (p. 4-36)." If so, why was the concrete replacement weir proposed to be built at an elevation of 1990.5 feet (p. 2-50)?	Due to the inclusion of fish screens on the new LYIP intake headworks gates, the new intake requires 0.7 feet more hydraulic head than the historic intake required to provide the required diversion of 1,374 cfs into the main irrigation canal at a Yellowstone River flow of 3,000 cfs. The fish screens increase head loss through the headworks gates compared to the historic unscreened gates. Additionally, inclusion of a crest notch in the design of the proposed replacement weir to facilitate downstream passage of fish during low flows requires the weir crest outside of the notch to be slightly higher than if it were to be uniform in elevation. The crest height of the weir was designed at an elevation of 1990.5 ft because this is the crest height required to provide the required irrigation diversion. The height of the new weir is roughly equivalent to the average height of the existing rock placement.
SA-01		42	Pg. 396, ".. .slightly reduced flows in the river from the split flows will result in depths over the weir about 0.5 feet lower at flows of 7,000 cfs and about I foot less at flows of 30,000 cfs."(p. 4-44). Constructed side channel would reduce depth over the weir by 0.5 to I n, compared to the existing condition.	Diversion of flows through the proposed fish bypass channel would result in reduced depths over the weir compared to the existing condition at equivalent total flows. This is a direct result of the removal of flow from the Yellowstone River main channel. The crest notch in the proposed replacement weir would provide a portion of the weir in which depths over the weir would be greater than the existing condition at equivalent total flows.
SA-01		43	Pg. 397; .0&M actions are expected periodically... to ensure fish passage." O&M actions likely require a temporary cofferdam be placed at the upstream entrance of the bypass channel completely shutting off flows to the engineered channel during the summer base flows. The timing of this maintenance procedure is critical, because downstream migration of larval fish occurs during summer and it may be necessary to direct larvae into the side channel at this time to reduce mortality. Fall would be a better time to close the channel for O&M, after larvae drift from upstream spawning locations.	O&M activities on the bypass channel and weir are expected to occur outside of pallid sturgeon migration (May 15 - July 1) and outside of free embryo and larval drift (June - July 15). The analysis in Chapter 4 has been updated to reflect this.
SA-01		44	Pg. 398; Mean column velocity (2D) does not allow examining hydraulic conditions at the depths fish travel. 3D hydraulic mapping should be conducted in the engineered side channel, notched weir, top of weir, and associated with the rubble field.	There are empirical means of estimating velocities throughout a column of water. Collecting ADCP data in the immediate vicinity of the weir and rubble field may not be feasible due to technological limitations and concerns for safety of personnel. This could be considered for the bypass as a means of monitoring, but may be excessive in terms of data needed to make a determination of meeting project goals.
SA-01		45	Pg. 400; "The hydraulic analyses of this channel configuration indicates that it would meet. except for average velocity at the upstream fish exit, the BRT depth and velocity criteria where flows were estimated to be 6.7 fps." These velocities exceed the observed velocities when Pallid Sturgeon ascended the natural side channel during 2014 and 2015.	Comment noted.

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SA-01		46	Pg. 406; "With the dam removed, the main river channel would generally have average velocities of 3.1 fps at 15,000 cfs and 4.4 fps at 30,000 cfs. Average channel depths would be about 9 feet at low flows (7,000 cfs or less). At flows above 30,000 cfs, average channel depths would be greater than 13.5 feet, which is similar to depths and velocities in the upstream/downstream river channel." Depths differ from those on p. 4-52; 7 ft at 15,000 cfs vs. 9 ft, and I I ft at > 30,000 cfs vs. 13.5 ft. Why the disparity?	Depths were checked and revised as appropriate.
SA-01		47	Pg. 407; "Removal of the Intake Diversion Dam would likely substantially improve fish passage through the main river channel, as depths and velocities would be similar to those found in upstream and downstream reaches of the river." Agreed. Removal of the dam would remove risk to upstream and downstream passage of all life cycle stages of migratory fish.	Comment noted.
SA-01		48	Pg. 409-410; "All of the alternatives that would maintain the Intake Diversion Dam whether in its existing condition or with installation of a new concrete weir (Rock Ramp, Bypass Channel, Modified Side Channel) would provide a suitable surface water route for fish passage during most flows. There would be some flows with depths or velocities not be suitable for passage for the rock ramp, but the overall cumulative effect would be an improvement for the aquatic ecosystem and fish passage." This statement ignores downstream movement of larvae and bi-directional movements of sub adult Pallid Sturgeon. This grossly underestimates the impairment caused by the existing dam and the effect of adding a concrete weir. Furthermore, only 3 actions are listed to alleviate impacts. Other remedial actions should be considered here and in Appendix E. Monitoring and Adaptive management Plan.	Bi-directional movement of pallid sturgeon and other fish species for each alternative are discussed in the direct and indirect effects section 4.9.7. Additional adaptive management measures have been included in Appendix E.
SA-01		49	Pg. 470; "When cofferdams are in place for the replacement weir, it is likely that velocities at the headworks screens could decrease when the cofferdam is on the north half of the river, but could increase when the cofferdam is on the south half of the river. Increased velocities could increase the number of fish impinged on the screens of the new headworks." Understanding the pathways of downstream drifting larvae and juveniles (see previous recommendations) would inform methods for guiding fish through the lease harmful routes.	The Aquatic Communities section in Chapter 4 has been updated with additional information and analysis on impingement and entrainment.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
SA-01		50	Pg. 487; "Reclamation will implement a monitoring and adaptive management plan to evaluate the success of any of the alternatives if they were constructed and implement measures to improve success if problems are identified" (p. 4-135). A revised Monitoring and Adaptive Management Plan is being developed to address the physical and the biological criteria that would indicate success of the project (p. 2-5 and Appendix E). If? 85% of telemetered fish passed upstream without substantial delay the passage way would be considered successful (Service 2016). The Service recommended that adult Pallid Sturgeon passing downstream of the Intake Diversion Dam be monitored for injury or evidence of adverse stress to ensure that mortality of adults passing downstream does not exceed 1% during the first 10 years of project implementation (p. 2-6). They also recommended that experiments be undertaken, including the release of free-embryo pallid or shovelnose sturgeon upstream of the dam to assess entrainment or impingement at the screens and injury from drift over the dam crest and through the boulder field. They also recommended to document if native fish are able to migrate upstream and downstream of the Intake Diversion Dam.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include success criteria and studies recommended by the Service's Biological Review Team.
SA-01		51	Pg. 504; "Although pallid sturgeon recovery is not an objective of this project, the project could have an effect on recruitment" (p. 4-152). "Velocities over the existing Intake Diversion Dam are 8 feet per second, with depths of about 2.1 to 2.9 feet during flows of 15,000 cfs (median flows for the spring pallid sturgeon migration period (April through June)" (p. 4-39). The April to June time period coincides with upstream migration and spawning. Downstream drift of larvae occurs during late June and July. "Downstream of the boulder field, average velocities are typically 3 to 4 feet per second" (p. 4-39). Given these velocities, larvae drifting over the weir and through the boulder field would experience harmful turbulence and rock strikes, causing larval mortality in addition to the 5% estimated to be lost due to entrainment through the screens (p. 4-163). The authors repeatedly suggest that entrainment mortality would have a negligible effect to Pallid Sturgeon recruitment, because the species evolved to produce very large numbers of eggs to compensate for the low survival of eggs/free embryos. However, estimating 5% entrainment of drifting larvae by percent of flow diverted, does not account for mortality on the remaining 95% that are not entrained, but are injured or killed by turbulence and rock strikes while passing over the weir and rubble field. Downstream drift will become increasingly important when hatchery progeny reach maturity and begin to spawn. ".. .an estimated 43,000 juvenile hatchery-derived Pallid Sturgeon are estimated to be present in the Upper Missouri River (Rotella 2015)" (p. 4-164).	More details on downstream movement of free embryos/larvae and potential entrainment has been added to Section 4.9.7 for each alternative.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
SA-01		52	Pg. 504; "... the Yellowstone River appears to offer the best chance of potentially successful spawning and recruitment for the Great Plains Management Unit and would rapidly help to identify if 250 miles is sufficient drift distance for successful recruitment. At a 5% rate of decline of wild adult pallid sturgeon, if 125 may have been remaining in 2008 (Jaeger et al. 2009), there may be fewer than 90 wild adults still alive in 2016, rapidly diminishing the potential for successful recruitment or recovery of these fish if passage is not provided soon." It is important to note here that flows and temperatures in the Missouri River can be controlled by modifying Fort Peck Dam, whereas flows and temperatures in the Yellowstone River can only be slightly modified by humans.	One of the main reasons the Yellowstone River has immediate promise for pallid sturgeon if passage is provided is that it has a near natural hydrograph, temperature regime, and turbidity. As a result as stated in Chapter 3 (Section 3.9.1.3), approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). The only exception was during a historic flood when some fish chose the Missouri River, although most still chose the Yellowstone. The Agencies do not believe that it would be helpful to attempt to attract fish up the Missouri River to spawn at the same time we are attempting to evaluate the effectiveness of passage at Intake and spawning potential above Intake. This does not mean that management options will not continue to be evaluated on the Missouri River and does not close the door on pursuing other options. This will depend on updates to existing drift and population models and results from fish passage, spawning, and recruitment on the Yellowstone. Increased understanding of drift dynamics, which is rapidly occurring, may result in changing views of the potential of management options at FP. This approach is described thoroughly in the MRRP AM Plan. It should be noted that a key reason for pursuing passage on the Yellowstone as a priority is that even if conditions on the Missouri River could be manipulated enough to allow recruitment (which is highly uncertain), there is no evidence that pallid sturgeon could be attracted away from the Yellowstone River with reasonable manipulations in flow from Fort Peck. In addition, it is unlikely that options at Fort Peck would be pursued based on current science. Available data indicate that hatchery released free embryos, five days post-hatch or older, are able to survive to age-1 in the Missouri River between Fort Peck Dam and Lake Sakakawea, when released 170 miles upstream of the lake. Because natural recruitment has not occurred in this reach, the conclusion is that mortality is limiting at very early stages, days 0-5 post hatch, although adequacy of dispersal distance is also dependent on spawning location (Braaten et al., 2008, 2010, 2012b). These observations support the hypothesis by Kynard et al. (2007) which implicates total drift distance as a limitation on natural recruitment. Hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014).
SA-01		53	Pg. 505; "I. For the Intake passage project to be successful, mortality of adult pallid sturgeon that encounter Intake Diversion Dam or other design alternative while migrating downstream cannot annually exceed I % during the first 10 years of project implementation. Adults passing downstream should be monitored for injury or evidence of adverse stress." Include juvenile Pallid Sturgeon and other fish species.	The additional requirements from the BRT from Appendix E have been added to this section.

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SA-01		54	Pg. 505; "2. The Service recommends that post-project monitoring be conducted both at the intake screens, in the irrigation canal, and immediately below the Intake Diversion Dam boulder field to assess potential injury and mortality to free embryos, larvae and young-of-year sturgeon." To minimize mortality in drifting Pallid Sturgeon larvae, we need to understand the pathways in which larvae drift downstream. Flow conditions that larvae experience at different river stages can be examined using 3D hydraulic mapping, bathymetry and bottom texture in each migration route, at various river stages. Each route could be assigned an estimate of mortality under differing flow conditions. Drift paths from the thalweg upstream through the various routes at Intake can be verified by releasing neutrally-buoyant beads and recapturing the beads at various points downstream. Results would inform remedial actions to guide larvae toward routes that minimize passage mortality.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include success criteria and studies recommended by the Service's Biological Review Team.
SA-01		55	Pg. 510 ; "...there will be a period of time of at least two years, when the bypass channel is not completed and the existing side channel is also blocked, which would likely prevent pallid sturgeon passage upstream of the Intake Diversion Dam." For this reason, infilling the existing side channel should be delayed, if possible, until bi-directional fish passage is confirmed through the engineered bypass channel and/or notched weir.	Delaying the filling of the existing side channel would require temporary stockpiling of the proposed bypass channel excavation spoil material, and then double handling at a later date for placement in the side channel. At a minimum, the upstream end of the existing side channel will need to be blocked to ensure the desired performance of the proposed bypass channel. Blocking the upstream end of the existing side channel will prevent any potential fish passage through this channel. Trap and haul is identified as an action to minimize effects which may be undertaken during construction to reduce impacts.
SA-01		56	Pg. 514; "During removal of the dam, passage could be inhibited over the Intake Diversion Dam as coffer dams divert flow from one side of the river to the other and have increased depths and velocities, but this should be short-term, lasting only a few months, thus resulting in only a minor adverse effect." Dam removal could be accomplished less expensively by breaching the weir in a few places, and allowing the river to gradually flush the remainder.	The existing Intake Diversion Dam consists of not only the rock placed on the dam crest as part of ongoing maintenance by the LYIP, but also a very substantial rock-filled timber structure founded in the riverbed and the extensive boulder field downstream of the dam. Complete removal of the dam by natural river processes would likely be a very long process, even if the dam were breached in an attempt to accelerate the process. Thus, if the objective of removing the dam were to allow pallid sturgeon passage in the near term, allowing natural river processes to degrade the dam over time, would not accomplish this objective in the desired timeframe.
SA-01		57	Pg. 5 17-518; The authors argue longer drift distance in the Yellowstone River (Cartersville to Lake Sakakawea = 250 mi) as compared to the Missouri River (Ft Peck to Lake Sakakawea = a little over 200 mi). This argument does not consider that river discharge controls drift speed and channel complexity controls drift paths. Hydraulic mapping (3D) has demonstrated how complex currents create areas of convergence and areas of divergence where particles/larvae in the thalweg are forced into low velocity areas. Also, Fort Peck discharge can be controlled to extend drift times, whereas Yellowstone River flows can only be slightly modified by Yellowtail Dam operations and smaller catchments upstream. Yellowtail Dam regulates 28 percent of the base flows upstream of Sidney, and reservoir operations can alter the flow regime (Corps 2006, P. 3-20).	One of the main reasons the Yellowstone River has immediate promise for pallid sturgeon if passage is provided is that it has a near natural hydrograph, temperature regime, and turbidity. As a result as stated in Chapter 3 (Section 3.9.1.3), approximately 90% (Braaten et al 2015) of the tagged adult pallid sturgeon in the upper Missouri River population utilize the Yellowstone River during the spawning period (May - July). The only exception was during a historic flood when some fish chose the Missouri River, although most still chose the Yellowstone. The Agencies do not believe that it would be helpful to attempt to attract fish up the Missouri River to spawn at the same time we are attempting to evaluate the effectiveness of passage at Intake and spawning potential above Intake. This does not mean that management options will not continue to be evaluated on the Missouri River and does not close the door on pursuing other options. This will depend on updates to existing drift and population models and results from fish passage, spawning, and recruitment on the Yellowstone. Increased understanding of drift dynamics, which is rapidly occurring, may result in changing views of the potential of management options at FP. This approach is described thoroughly in the MRRP AM Plan. It should be noted that a key reason for pursuing passage on the Yellowstone as a priority is that even if conditions on the Missouri River could be manipulated enough to allow recruitment (which is highly

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				uncertain), there is no evidence that pallid sturgeon could be attracted away from the Yellowstone River with reasonable manipulations in flow from Fort Peck. In addition, it is unlikely that options at Fort Peck would be pursued based on current science. Available data indicate that hatchery released free embryos, five days post-hatch or older, are able to survive to age-1 in the Missouri River between Fort Peck Dam and Lake Sakakawea, when released 170 miles upstream of the lake. Because natural recruitment has not occurred in this reach, the conclusion is that mortality is limiting at very early stages, days 0-5 post hatch, although adequacy of dispersal distance is also dependent on spawning location (Braaten et al., 2008, 2010, 2012b). These observations support the hypothesis by Kynard et al. (2007) which implicates total drift distance as a limitation on natural recruitment. Hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014).
SA-01		58	Pg. 518; Estimates of age I progeny produced under the alternatives (see pages 4-166, 4-169, 4-170 and 4-175) differ for various assumptions. For example, the Multiple Pump alternative assumes completion by 2022 (as opposed to completion in 2019 for the rock ramp or bypass alternatives) so there are only 66 wild fish left (as compared to 77 wild fish remaining in 2019). The Multiple Pump with conservation measures alternative assumes completion by 2025, so there are only 57 wild fish left. While the assumptions used for these comparisons might be reasonable, we need to consider the large differences that would occur when the 43,000 hatchery fish recruit to spawning age. The approximated 90% passage efficiency with the dam removed appears low (as compared to the assumed 85% passage efficiency through the bypass channel, or 50% efficiency assumed for the rock ramp and modified side channel). Regardless of these assumptions of relative passage efficiency (e.g., 90% versus 85% versus 50%), differences between the number of age 1 offspring produced by each alternative would accumulate far more rapidly after the number of spawners increase due to prior hatchery releases or improved natural recruitment. Also, this analysis does not consider different rates of survival in downstream migrating larvae (e.g., The estimated 5% loss due to entrainment, plus additional losses due to turbulence and rock strikes in the rubble field, as compared to natural mortality under the no-dam, natural channel alternatives).	The example estimates of possible age-1 progeny have been removed from the FEIS as it led to confusion of many readers.
SA-01		59	Pg. 520-521; Regarding the Bypass Channel Alternative being evaluated using the FPCI, the FPCI contains no parameters for downstream larval drift or bi-directional movements by sub adult Pallid Sturgeon. Estimates of adult passage represent only one phase of the life cycle. Additionally, if the bypass channel was functional by 2019, then assumptions similar to the assumptions for the rock ramp, except the authors assumed 50% of females would ascend the rock ramp (producing 35-161 age I offspring), compared to the assumption that 85% of the females would ascend the bypass channel (producing 50-230 age I offspring), may be valid regarding the wild fish.	Correct, the FPCI model was not created to evaluate downstream passage. See additional detail on downstream passage added to Section 4.9.7 for each alternative.

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SA-01		60	Pg. 522; "Typical mortality of age-O pallid sturgeon is likely to be 99.9% and the fish have evolved to produce very large numbers of eggs to compensate for the low survival of eggs/free embryos, so the potential entrainment of pallid sturgeon larvae is likely to be a negligible effect to pallid sturgeon recruitment." The authors repeatedly suggest that entrainment mortality would have a negligible effect to Pallid Sturgeon recruitment, because the fish evolved to produce very large numbers of eggs to compensate for the low survival of eggs/free embryos. However, increased mortality caused by the Intake Diversion Dam is additive to natural mortality. In this case, 50% of the females = 6 wild adult females might spawn (producing 30-138 age I offspring), whereas on P. 4-166 the rock ramp assumption was 50% of the females = 7 wild adult females might spawn (producing 35-161 age I offspring). Why do these assumptions differ?	The example estimates of possible age-1 progeny have been removed from the FEIS as it led to confusion of many readers.
SA-01		61	Pg. 554; Referring to the Multiple Pumps Alternative, overall construction would take about 3 years, but dam removal would take about 6 months. If dam removal would take 6 months, why are the completion dates (and estimates of remaining spawning adults in the above assumptions) set at 2019 for the dam-in-place alternatives and 2022 and 2025 for the no-dam, natural channel alternatives? Presumably, these time lines differ because the dam must be left in place until the pump installations and/or conservation measures are complete to ensure water delivery while fish migrations remain blocked during the interim. This does not appear consistent with the Fish and Wildlife Coordination Act, Section 2.	While Section 2 of the FWCA describes requirements for consultation with the Services and state fish/wildlife agencies for all projects that impound, divert, or control waters. Projects that were substantially complete prior to the enactment of the FWCA are specifically exempt (so, Intake Diversion Dam as it stands is exempt), however, when modifications are proposed (such as this project), then the agencies need to comply with FWCA. The FWCA requires that mitigation measures to avoid or compensate for adverse effects to fish and wildlife be undertaken, but it does not say those happen first (other than to say the mitigation needs to occur to avoid damaging fish/wildlife). Since the dam already exists and is exempt as it is, providing passage first, while rendering the irrigation system inoperable, is not something required by FWCA.
SA-01		62	Pg. 559; The entire section appears to minimize the benefits of two-way boat traffic under the no-dam, natural channel alternatives. For example, "Overall, the operational effects of the Multiple Pump Alternative on recreation would be significant in the short terms due to loss of the Intake boat FAS, with potential for long-term beneficial effects with the replacement of the boat ramp facility at a new location and increased opportunities for fishing along a larger portion of the river. This would result in less-than-significant effects." It is unclear why this would result in less-than-significant effects. How many boaters navigate over the existing weir?	Table 4-29 acknowledges the beneficial effects of the alternative which would improve boater access upstream of the location of the existing weir. The social and economic conditions section (Sec 4.15) also notes the potential for development of new recreation-based revenues due to increased boating access. The sentence referenced in the comment describes that overall effects on recreation by the alternative would be less than significant, as some beneficial and adverse components may offset.
SA-01			**The following comments are on Appendix D:**	
SA-01		63	Pg 8; Though the use of the Fish Passage Connectivity Index appears to be recently approved (2016) for use in Corps planning of fish passage projects, the original model plainly stated the applicability was limited to the Upper Mississippi River basin. To this point, the "minor" adjustments made to the model in order to demonstrate passage benefits specific to the Yellowstone River were not made clear. Furthermore, the reference citing the approval of applied-use is not included in the references of the appendix. Without the full methodology in this index, too much uncertainty exists regarding the success of the project. This model and the subsequent information included therein needs to be thoroughly vetted through peer-review. The model must also utilize the best available science and rely on contemporary information specific to the Action Area.	The description of the FPCI and numbers used has been revised in Appendix D to include more details for each step in the calculations. Additional references are included and cited, including several specific to pallid sturgeon and the Yellowstone River. The model is currently in peer review by the Corps Ecosystem Restoration Center of Expertise. Prior to making a final agency decision, any revisions required from that peer review will be incorporated

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SA-01		64	Pg. 8; In the index calculation, there is no mention of the relation of the index to downstream passage of Pallid Sturgeon larvae or bi-directional passage of juvenile Pallid Sturgeon.	The FPCI was developed to evaluate upstream migration by adult fish and does not incorporate downstream passage or other life stages. The FPCI is a planning tool to help evaluate the relative effectiveness of each alternative for upstream passage, but is not intended to model the population, other life history stages, recruitment, bioenergetics, or the numerous other factors that affect pallid sturgeon productivity and survival. However, the agencies agree that downstream passage of adults, juveniles, and larvae is a very important consideration and additional text has been included regarding downstream passage in Section 4.9.
SA-01		65	Pg 9; Neither Wilcox et al. (2004) nor Pitlow & Rasmussen (1995) were included in the references of the appendix. This is troubling, considering the two sources allege to provide the primary metric for evaluating swimming speed (Ucrit) and subsequently comprise a large portion of the overall evaluation of connectivity. After searching outside of the document for the references, the Ucrit models included in Wilcox et al. (2004) for Pallid Sturgeon were based on 9 individual Shovelnose Sturgeon as surrogate, with a calculated Ucrit Model of I .6 SL cm/sec and an estimated Ucrit for adult Pallid Sturgeon at 79 cm/sec and 82 cm/sec for Shovelnose Sturgeon. Furthermore, the values used in Wilcox et al. (2004) were based on trials conducted by Tunink (1975) and Schmulbach et al. (1981) and occurred over 10-minute trials; 35-41 years ago. We suggest using more contemporary information to provide the biological criteria of passage connectivity. Additionally, the reference of Pitlow & Rasmussen 1995 could not be found. We assume this was an error in the citation and it should be included as Pitlow et al. 1995.	Missing references and typos have been corrected in the FEIS and Appendix D. In addition, a few more recent references have been included specific to pallid sturgeon, shovelnose sturgeon, and other species
SA-01		66	Pg 10; Table I-I lists a Ucrit for Pallid Sturgeon of 3.2 (no units are mentioned but it is assumed to be in ft/sec). This differs from the published value in Wilcox et al. (2004) that indicates (with Shovelnose Sturgeon as a surrogate) adult Pallid Sturgeon have a Ucrit of 2.6 ft/sec. Furthermore, both of these values starkly contrast those included in 30-minute swimming trials conducted with actual individuals of both species in Adams et al. (2003). Adams et al. (2003) lists the highest average Ucrit for Pallid Sturgeon at 35.93 cm/sec and 36.98 cm/sec for Shovelnose Sturgeon. This is less than half of what was reported in Wilcox et al. (2004); perhaps underlining their advice to use the reported Ucrit estimates with "extreme caution". Adams et al. (2003) help explain that the critical swimming speeds of Pallid Sturgeon and Shovelnose Sturgeon are "low relative to most speeds reported for teleosts." Adams et al. (2003) go on to attribute this lower Ucrit to the functional limits of a heterocercal caudal fin and drag-inducing scutes.	In Appendix D, Table 1-1 has been updated for a Ucrit for pallid sturgeon of 3.3 feet/sec based on a conservative estimation from the multiple studies. The Ucrit from Adams et al. (2003) is for juvenile pallid sturgeon (<21 cm [8.3 inches]). Ucrit respirator tests for any fish species should be taken with caution compared to open channel swimming (Peake 2002). Recent tracking of wild adult pallid sturgeon moving volitionally upstream (mean FL = 141 cm; range from 112 – 164 cm FL) in 2011 and 2012 is summarized in Braaten et al. (2015). Mean column velocities were measured at each location where fish were tracked and ranged from 1.41 to 1.83 m/s (4.6 – 6 feet/sec) in 2011 and 0.89 to 1.45 m/s (2.9 -4.8 feet/sec) in 2012. The average swimming speed in migrating upstream was 1.8 m/s (5.9 feet/sec) in 2011 and 1.4 m/s (4.6 feet/sec) in 2012. If the average fish of 141 cm was swimming at the average speed of 1.4 m/s then it was traveling at about one body length/second, which it could sustain over a long period of time. A conservative estimate of 100 cm adult fish moving at 1 m/s (3.3 feet/sec) is a very conservative Ucrit (i.e. for much smaller pallid sturgeon) as traveling at one body length/second is easily accomplished by medium swimming fish species.
SA-01		67	Pg 10; If Pitlow et al. (1995) is going to be used in Table I-I to populate the column of "Species" found in the Yellowstone River, it needs to be revised to only include species actually found in the system. For example, Silver Lamprey is probably very "uncomrnon" in the Yellowstone River, as it has never been recorded in the Upper Missouri River basin.	Table 1-1 has been revised to only show the 14 species selected for use for this project. Previously, Table 1-1 showed the entire list of species available to be chosen for the model, which may have caused confusion. The 14 species selected as appropriate for our use of the model for the Yellowstone River did not ever include silver lamprey.

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SA-01		68	Pg I I ; While the use of Corps data in estimating acreages of available preferred habitat in the Yellowstone River is helpful, the subsequent habitat preference and relative abundance information borrowed from Pitlow et al. (1995) is irrelevant to the Action Area. More contemporary information would be helpful in providing an accurate assessment of potential habitat units. Furthermore, qualitative relative abundance data from the Action Area is strongly advised, as information from select bends in the Upper Mississippi River basin is inappropriate, and unnecessary, to use here.	The estimated acres of available habitat was not from the Upper Mississippi River, but rather was based on the mapping of habitats on the Yellowstone River between Cartersville and Intake on low-level color infrared aerial photography completed for the Yellowstone River Cumulative Effects Analysis (Corps & YRCDC 2015). This GIS data is available at the Yellowstone River Corridor Clearinghouse website (http://geoinfo.msl.mt.gov/Home/data/yellowstone_river_corridor_resource_clearinghouse).
SA-01		69	Pg. 16;"Guilds of fish species. ..addition of pallid sturgeon and are shown in Table 1.5." This should be in reference to Table I .6.	Table references in Appendix D have been checked and corrected.
SA-01		70	Pg. 16; "To assign an FI value to each guild, the Corps (2014) used the best professional judgment of federal and state biologists working on the Yellowstone River (Table I .6)." This should be in reference to Table 1.7	Table references in Appendix D have been checked and corrected.
SA-01		71	Pg. 16; "The size of fishway for each alternative is listed in Table 1.7." This should be in reference to Table I .8.	Table references in Appendix D have been checked and corrected.
SA-01		72	Pg. 18; "Scores for Ui can be found in Table 1.8." This should be in reference to Table 1.9.	Table references in Appendix D have been checked and corrected.
SA-01		73	Pg. 19; "Table 1.9 identifies when fish passage alternatives are available to fish.. This should be in reference to Table 1.10	Table references in Appendix D have been checked and corrected.
SA-01		74	Pg. 20-21; Pallid Sturgeon should be spelled out on both Table I .9 and 1.10. There should also be separate rows for Pallid Sturgeon and Shovelnose Sturgeon. Furthermore, why were no values included for other alternatives in the estimation of potential use and availability of fishway types other than no action and rock ramp?	Tables have been revised to spell out pallid sturgeon and have a separate row for easier reading clarity. The values for the potential for each species to use the fishway type for each of the bypass channel, multiple pumps, and multiple pumps with conservation measures alternatives is 5 because the water depths and velocities are within the swimming capabilities for all species. Similarly, the values for the duration of availability for each of the bypass channel, multiple pumps, and multiple pumps with conservation measures alternatives is 1 as there would be sufficient flow during the time period of migration for each of those alternatives.
SA-01			**The following comments are on Appendix E:**	

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SA-01		75	Pg. 5; Regarding Objective I, the hydraulic conditions are a fine starting point for this project, but at some point they become irrelevant. The decision tree alludes to actions that may be taken if physical criteria are met but passage is not, or if physical criteria are not met but passage does occur. However, we need to quantify what this means. For example, how many fish have to pass under deficient hydrological conditions in order to change or abandon the hydrological conditions? Would I year of good passage initiate a reassessment of hydrological criteria? This is probably going to be an unpopular comment; however, we have documented 2 successive years of some Pallid Sturgeon passage via the existing side-channel. Are we now going to define success as a passage rate at some level above that of which we've seen in the last 2 years (—50% of the individuals moving up to Intake passed in 2014, —20% in 2015)? If not, what would be the objective in assessing passage criteria if it's reasonable to believe that Pallid Sturgeon have had an ability to pass Intake in some capacity since the dam's construction in the early 1900's, yet we've seen little or no evidence of those upstream movements resulting in recruitment? Similarly, how many years of poor or no passage would initiate a reassessment of hydrological criteria? How many years with no passage should pass if hydrological conditions are being met before those hydrological criteria are changed or abandoned?	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include success criteria, triggers, and timelines for monitoring and adaptive management activities.
SA-01		76	Pg. 7; Project Uncertainties — All of these uncertainties are for fish passage issues. Is there no uncertainty of how the project will affect water delivery for irrigators? If there is no uncertainty, then does the adaptive management plan preclude any adaptive management actions if water delivery is not met (e.g., if the bypass is conveying more than the anticipated 13-15% of the river discharge and is passing fish, yet not providing enough irrigation water)? To this effect, what can LYIP do and what process do they need to go through in order to do it, and what entity will be responsible for paying for adaptive management to ensure that the irrigators receive a secure and affordable water supply as a result of the preferred altemative?	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include success of water delivery in monitoring and adaptive management activities.
SA-01		77	Pg. 7; Under the section that mentions "other native fish"; the "other" native species are completely omitted from the decision tree at the end of the document. We need to describe how they are incorporated into the decision making, especially since actions are likely to affect species differently (e.g., passage may improve for several species but decline for others). One species in particular, Blue Sucker, resembles the Pallid Sturgeon in that it is a large, long-lived, riverine species that we tend to see very few juveniles of while sampling. They currently navigate over the existing structure regularly. The new, flat concrete weir may cause velocity/abrasion issues with them passing. What actions are taken, if any, if they don't pass?	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include monitoring of native fish passage and potential adaptive management measures to address lack of passage.

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SA-01		78	Pg. 8; How frequently during spring, peak runoff, and summer baseline will ADCP instruments be deployed? Flow conditions can change dramatically daily during this time period. It will be difficult to plan when ADCP units should be deployed, and there will likely need to be equipment and personnel that easily mobilized. In the event that Pallid Sturgeon are using the bypass, I think it would be prudent to have ADCP units deployed as quickly as possible to capture conditions under which passage did occur.	The Monitoring and Adaptive Management Plan (Appendix E) had been updated to include success criteria, triggers, and timelines for monitoring and adaptive management activities. Additional details on specific methods and timing for monitoring will be developed in coordination with state and federal agencies once a decision is made on the project.
SA-01		79	Pg. 8; In monitoring the hydraulics of the structure, years 1 to 6 should probably include the same frequency of ADCP monitoring. Three years is definitely not long enough to capture the variability in flows. Additionally, why in what was called the intermediate time (3-6 years) is the spring runoff period not being monitored? This is the time period when fish are moving and we most want to know how the bypass channel is functioning.	The Monitoring and Adaptive Management Plan (Appendix E) has been changed based on the comment. Year 1 - 6 has been identified as "Baseline Monitoring" and years 6+ have been identified as "long-term monitoring."
SA-01		80	Pg. 9; In monitoring of adult Pallid Sturgeon, what if USGS/FWP/USFWS efforts to implant transmitters, recapture adults, track adults, and to analyze blood samples do not continue? Who is responsible for ensuring that they do? There is a good probability that current funding for these efforts will be scaled back, and some probability that they will be eliminated. Additional logging telemetry receivers (at least 3 total in the bypass) will be needed to determine that status of passage in the bypass, and these will only allow for gross movement monitoring. For a more precise determination of movement, we will need to track individuals with manual receivers by boat or by foot on shore. This would allow us to document any specific areas that are impeding passage and assess whether hydraulics or substrate or other aspects are at fault. Furthermore, there should be discussion about how far downstream Pallid Sturgeon can detect the effects of Intake Dam. Does anyone really know how far downstream Pallid Sturgeon can detect what is upstream of them (i.e., there may be effects of altered flow at Intake that are seen downstream further than I mile)?	The majority of the funding for these efforts is federal, and it is anticipated that will continue. The consistently-funded USACE MRRP science program has invested and will continue to invest in addressing the most pressing uncertainties for pallid sturgeon in the upper basin. Although some science activities related to Intake will need to be undertaken by others, USACE-funded research and monitoring efforts will continue to be very helpful in improving understanding and management on both Yellowstone and Missouri. Many commenters have shown concern that science and monitoring will not occur or will not be funded. That concern is not founded, however, given the Adaptive Management monitoring by the Bureau at Intake, as well as other studies funded through the MRRP science program, WAPA funding, and others. MRRP funding will not be limited to efforts on the Missouri River, but will also consider collection of date on the Yellowstone River where it is needed to understand needs of the pallid sturgeon. Impacts on surface water and flows are discussed in Section 4.3. The Yellowstone River has many natural side channels that split flows around bars and islands. Splitting flows in either the bypass channel or modified side channel alternative would not be out of scale with any existing side channels.
SA-01		81	Pg. 1 0; Under Downstream Adult Monitoring, it should be noted that dead fish flow downstream too; that is, just because a transmitter is detected moving downstream past the station located I mile downstream of the project, does not mean that downstream passage was successful. Further monitoring within that year or in future years will determine if it was successful or not. The Decision tree at the end of the document is extremely vague, but it seems like it is referencing upstream movements only. It should be expanded to include or clarify, how successful/unsuccessful downstream passage is incorporated into the decision making process.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include additional monitoring of downstream migrating adults to determine condition of these fish (alive vs. dead).

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SA-01		82	Pg. 10; Under Downstream Larval Monitoring, the funding sources and amount of effort going towards this project should not be expected to continue without dedicated funding. Currently, the monitoring of these movements is a collaborative effort between FWP, USGS, USFWS, SIU, etc. Funding needs to be in place for blood work, egg work, larval genetic ID, staffing, etc. If any adult Pallid Sturgeon get above Intake, Reclamation should be notified and this would give several weeks lead time, this is realistically the max lead time you will get. It is suggested that experimenting with different anchor types that could potentially hold a boat with larval nets in place in the rocky substrate. Attempts were made in spring 2015 to sample larvae in the mainstem of the Yellowstone above Intake Diversion Dam. Several anchor types were used, including up to 100 lbs of anchors, with no success at holding in the thalweg. How will you determine if larvae are successfully passing downstream? The collected larvae are killed when preserved in ethanol. You will be able to tell if they do indeed pass downstream, but not if it was successful. Downstream trawling within year or netting in subsequent years for juveniles will tell you if downstream passage was successful. Genetic analysis will need to be done to determine the origin of any captured Pallid Sturgeon. Furthermore, it should be noted that the potential to capture a Pallid Sturgeon larvae at Intake is a difficult endeavor. Experience crews on the Missouri River near the confluence rarely catch Pallid Sturgeon larvae, even when they are sampling with multiple crews immediately downstream of known spawning sites. We would not conclude that the absence of Pallid Sturgeon larvae captured downstream of the new weir meant that they were unsuccessful at passing over the dam. We think a well planned experimental release is the only realistic way to answer downstream passage over the new weir and entrainment into the canal questions.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include the Service's Biological Review Team's recommendation of experimental releases upstream of Intake Diversion Dam. Prior to this release and post construction monitoring Reclamation, the Corps, USGS, and Montana FWP staff would work together to determine best sampling practices to best achieve monitoring goals.
SA-01		83	Pg. 10; The study design for placement of logging stations should be reevaluated. As with the project currently ongoing, a control section in an unimpeded section must be included to compare movements. For example, what conclusions do you make if a fish does not pass the bypass structure, but hangs out in the area immediately downstream? Was that fish unable to pass the structure, did it choose to stay in that habitat, is it's behavior such that it's not going to make an upstream movement whether or not it is able to?	The AM plan will evolve and be updated as the level of understanding improves. Prior to implementation Reclamation, the Corps, USGS, and Montana FWP staff would work together to determine best sampling practices to best achieve monitoring goals.
SA-01		84	Pg. I l; Under Adaptive Management Measures, the wording makes it seem as though the below listed items are the only actions that may be taken. This should be reworded to clarify that other measures, currently unforeseen, may be enacted.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated with the suggested language.
SA-01		85	Pg. 16; Under Section 3(b), no text was found. If this is the case, this should be removed.	3(b) has been removed.

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SA-01		86	Pg. 16; Under Section 3(c), the layout of yeas of monitoring (Baseline, Intermediate, and long-term) is confusing. During the Baseline years sampling needs to be more specific by identifying a period of time; the "spring moderate" should be April I-May 15 when flows are between cfs, "high runoff' in June should be from May 15-June 15 when flows are between 15,000-63,000 cfs and "summer low flow" in August.; During the Intermediate years	The Monitoring and Adaptive Management Plan (Appendix E) has been updated with the suggested language.
SA-01		87	Pg. 16; Under the Upstream Adult Monitoring, these efforts are likely to decrease, and potentially decrease dramatically, depending on funding for the PSPAP, WAPA, etc. Crews on the Missouri River get most of the hatchery radios out, and Braaten (and formerly Fuller) maintained the monitoring of the radio-tagged population of adults.	The AM plan will evolve and be updated as the level of understanding improves. Prior to implementation Reclamation, the Corps, USGS, and Montana FWP staff would work together to determine best sampling practices to best achieve monitoring goals. The majority of the funding for these efforts is federal, and it is anticipated that will continue.
SA-01		88	Pg. 16; Regarding Upstream Adult Monitoring and in relation toUSBR supplying telemetry stations, telemetry stations require some amount of maintenance throughout the year. Who will ensure that the stations are running properly and continuously? In sections above, the agency responsible for the efforts is included (i.e. USGS, Service, MFWP tags pallids, USBR will locate telemetry stations); however, it doesn't say who will fund or complete the tracking.	The monitoring associated with passage at Intake is Reclamations responsibility, a funding discussion has been added to the Adaptive Management Plan. Agency roles will be defined in detail as the plan evolves, and is anticipated to be similar to the current arrangements.
SA-01		89	Pg. 16; The original "Baseline" time-frame included physical monitoring during the summer baseline flow period. Historically, the Yellowstone reaches base flows mid August; thus, July 1 5 would typically be the lower end of the descending limb of the hydrograph.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include better descriptions of sampling periods.
SA-01		90	Pg. 1 7; Please define "tagged". We assume it means fish implanted with radio transmitters. For the record, there are also adults without radios that have other "tags".	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include the suggested language.
SA-01		91	Pg. 1 7; Under Downstream Adult Monitoring, how will successful downstream passage be determined? Potential mortalities could also" move downstream". Furthermore, there are questions as to how individuals will be actively tracked and recaptured. Currently, F WP crews on the Yellowstone River do very little tracking of the downstream movements of Pallid Sturgeon once spawning has suspected to have happened. Any additional mobile tracking or netting would require additional personnel.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include success criteria, triggers, and duration of monitoring activities.
SA-01		92	Pg. 1 7; Under Downstream Embryo and Larval Sampling, this could be a substantial amount of work for the small F WP crew if the project is successful and multiple fish are upstream spawning. We saw how difficult it was to try to monitor the spawning movements of 3 Paddlefish, all within a relatively close proximity this year. If multiple Pallid Sturgeon move upstream and are any distance apart from one another, F WP won't have the man power to actively track movements, nor try to recapture to assess individuals, nor track individuals downstream, nor larval sample, etc.	Further work to define staffing needs and resources would occur once the plan evolves. The agencies will seek necessary resources to carry this out.

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SA-01		93	Pg. 1 7; The section describing Downstream Embryo and Larval Sampling needs to be thoroughly described. This is an aspect that is surrounded by a number of confounding variables and will be difficult to define.	Further work to define staffing needs, resources and best sampling practices to achieve monitoring goals would occur as the plan evolves.
SA-01		94	Pg. 37; More detail is needed in the flow chart diagram included. For example, the stated objectives of this project as a whole are to promote fish passage and to continue to provide irrigation water. The first box in this decision chart is whether or not Pallid Sturgeon pass Intake. What if the physical and biological criteria are being met but water delivery needs are not being met? There are many other scenarios not included in this flow chart. The conceptual decision tree needs to be expanded upon to include all objectives and quantified triggers that may lead to an adaptive action. The structure of the document leads one to believe that the hydraulic criteria are going to be driving adaptive management actions. The overall goal is correctly stated as "Pallid Sturgeon passage"; however, the hydraulics are the first specific objectives and monitoring approaches. Hydraulics may be an appropriate starting point for monitoring, but eventually the hydraulic criteria are meaningless. This chart needs to incorporate how and when (quantifiably) we convert from depth and flow criteria to biological criteria.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to better describe flow chart diagram.
SA-02	G. Erbele, P.E., North Dakota State Water Commission	1	The intent of the Lower Yellowstone Intake Diversion Dam Fish Passage Project is to reconnect some of the Yellowstone River's segmented reaches, providing the opportunity for fish to migrate upstream of the diversion dam, while maintaining the dam;s beneficial use, irrigation. This project could prove to be vital for the pallid sturgeon upstream of Lake Sakakawea. Allowing the pallid sturgeon to pass the diversion dam would increase the travel time of their larvae, which could lead to improved survival rates.	Comment noted.
SA-02		2	There are several alternartive that maintain the dam's beneficial use, to its existing capacity, while increasing the likelihood of fish passage upstream. I support the preferred alternative because it's the most cost effective alternative that accomplishes both.	Comment noted.
LA-01	Lower Yellowstone Irrigation Project	1	Third paragraph -- change "Dam maintenance would include placement of 1 to 2 feet of rock" to "Dam maintenance would include the annual replacement of rock". This comment was included in the prior red flag review, but was not incorporated. We suggested "replacement of rock removed by annual ice flow".	Comment noted and edit completed.
LA-01		2	The groundwater section of this table appears to be lacking. See discussion in EIS and comments below.	Table ES-2 has been revised, see groundwater section.
LA-01		3	There will be impacts to geomorphology due to the new inlet channels and stabilization of the river channel in these areas for the Multiple Pump Alternative	Table ES-2 has been revised, see geomorphology section.
LA-01		4	Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative Weir Removal will decrease existing water surface multiple feet affecting Aquatic Communities in existing Side channels upstream of diversion dam.	Table ES-2 has been revised, see aquatic communities section.

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LA-01		5	First paragraph -- refers to 5 supplemental river pumps and 79 miles of main canal when on page 2-24 the reference is to 4 supplemental river pumps and 72 miles of main canal. The correct answer is 4 supplemental river pumps and 72 miles of main canal. Please correct this inconsistency as it appears several times throughout the document.	Corrections were made throughout the document to reflect 72 miles of canal and 5 supplemental pumps.
LA-01		6	The O&M Costs for the Rock Ramp seem very low. The annualized amounts do not add up to the total that occurs every 10 years? This doesn't make sense.	The costs are annualized over a 50 year period, and discounted accordingly. Clarifying language has been added to the document so that the annualization of costs over the period of analysis are clearer. See attachment B8 of the Cost Appendix where the O&M items and their costs are displayed and annualized.
LA-01		7	Multiple Pump Station Alternative does not appear to be at a 30% level design. Where are the discharge lines going to be? Power line locations, sizes, etc? The location of these stations needs to be fixed and the actual impacts assessed for the EIS.	The alternative design is at the level sufficient to develop a reasonably comparative cost estimate and evaluate impacts. These other features without site specific details were acknowledged. Cost contingencies were also added for uncertainties. If this alternative were selected additional design details would be developed.
LA-01		8	First paragraph -- use of 480V motors is not practical based on the flowrate and the total dynamic head with exception to pump site #1. We have passed this through several electrical engineers and pump suppliers and the use of 480V motors does not appear to be feasible for Pumps 2-5.	Pump vendors indicate that irrigation pumps could be supplied with 480V motors and Montana-Dakota Utilities indicated they could supply power to the pumps at 480V. Pump vendors and MDU provided cost estimating data based on the use of 480V power. If this alternative is selected for further design and analysis, then the option of using higher voltage motors and power supplies would be investigated.
LA-01		9	First paragraph -- Refers to three submersible pumps, but in Appendix A refers to vertical turbine pumps. The reference to three pumps should also be changed to include a fourth pump for redundancy. Figure 2-12 also shows four pumps.	The text of Paragraph 2.3.7.2 will be revised to refer to vertical turbine pumps, in accordance with Appendix A-2. The text refers to three pumps with an additional pump for redundancy, which is consistent with Appendix A-2.
LA-01		10	First paragraph -- discharge pipeline lengths from 300 to 5,600 feet in length. Was the length of the discharge pipeline considered in the total dynamic head calculation (head loss).	Yes, the discharge pipeline lengths were considered in the head loss calculations, as shown in Appendix A-2, Attachment 5
LA-01		11	Discharge lines will cross BNSF and MDT Highway 16. What will be the implications of crossing these facilities? Are Existing Culverts Under Railroads Large enough and in good enough shape to handle the specified discharge pipe size And storm water runoff or irrigation flow they were originally installed for? What is the significant annual cost for BNSF Mandated Liability Insurance Riders demanded for under track crossings?	The discharge pipelines would require the construction of new crossings and approval from BNSF, as noted in Appendix A-2. If this alternative is selected for further design and analysis, then an agreement with BNSF would be negotiated and designs would be prepared for those crossings.
LA-01		12	Again, use of 480V power is not viable for pump sites 2-5.	See response to LA-01, #7
LA-01		13	Last paragraph -- 48-hour fuel supply for a generator with this capacity would be quite large. This would likely require an SPCC plan And Structure to comply with EPA requirements and would add to the annual O&M costs for this alternative. There are no details on this.	If this alternative is selected for further design, then the need for SPCC plans and a containment structure will be evaluated.
LA-01		14	States that pumping from the main canal is preferable for laterals AA, BB, CC, DD and FF because it is less costly than raising the water levels. Was this included in the capital cost of this alternative?	Section 2.3.7.5 provides a review of the HEC-RAS modeling that was done to compare if the main canal could operate with gravity flow in combination with pumping. Supplemental pumps were included in the capital cots. More detailed design would be necessary to confirm whether pumps or canal modifications would be necessary.

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LA-01		15	Sediment accruals in the upper portion of the main canal will be much higher than currently exist, as less water will be flowing into the canal via gravity and velocities will be much lower, resulting in significant sediment deposition. O&M records from the LYIP clearly recorded increased sediment deposition in the upper portion of the main canal when diversion rates were less.	This has been accounted for in the O&M estimates.
LA-01		16	It is important to realize that conservation measures can save significant amounts of water during certain periods within the irrigation season, but are not nearly as effective during other periods. This depends highly on the amount of checking, the turbidity of the water, soil saturation, and other factors. As LYIP records show, the main canal losses are much higher during the early and late irrigation season, but are minimal during the time of peak demand. Thus, the use of generic values for savings in cfs (an instantaneous measure) for water conservation measures is not a valid metric for reducing the diversion rate of an irrigation system.	The variation in potential canal losses and seepage estimates is referenced in Section 2.3.8.7, and further described in Attachment 3 of Appendix A-3.
LA-01		17	Convert Laterals from Ditches to Pipe. 1st Paragraph. 234 miles of laterals as referenced on pages 2-36 and 2-24. Reference here is for 225 miles. Please correct.	Corps and Reclamation 2010 and other references use 234, but LYIP 2009 uses 225. We used 225 based on LYIP, 2009 document and the 234 was changed to 225 in the FEIS.
LA-01		18	Line Open Canals. 1st paragraph. 234 miles of laterals as referenced on pages 2-36 and 2-24. Reference here is for 225 miles. Please correct.	Corps and Reclamation 2010 and other references use 234, but LYIP 2009 uses 225. We used 225 based on LYIP, 2009 document and the 234 was changed to 225 in the FEIS.
LA-01		19	Line Open Canals. 1st paragraph. Need to delete "and is estimated to reduce the diversion requirements by 160 cfs or more."	Deleted as suggested.
LA-01		20	There is insufficient cover over the top of the pipe and insufficient excavation quantity. The new pipes will likely not follow the existing ditch lines. Typical bury depth on irrigation pipe is 30 inches over the top of pipe.	The "typical" example figure will be corrected. The conceptual design to convert pipes to laterals made some basic assumptions with the understanding that more detailed site specific design would be necessary should the alternative be developed in more details. The assumption of pipes following ditch lines was used to reasonably estimate the length of piping required, optimum locations would need to be developed with more detailed engineering. Cost contingencies have been included in the estimates to account for uncertainties in the level of design.
LA-01		21	Pumping groundwater. 1st paragraph. Need to delete "This is proposed to reduce diversions by 49.5 cfs."	Deletion completed as suggested.
LA-01		22	2nd paragraph, end of last sentence. Refers to 51,158 acres, but the 2013 crop survey and Table 2-22 reflect 55,158 acres.	Corrected typo in sentence as suggested.
LA-01		23	Multiple Pump Station Alternative indicates that the alternative retains a viable LYIP project. However, the O&M is over double what they are currently paying, which will bankrupt some of the farmers. Suggest changing this to No with an asterisk, explaining that the severe increase in O&M rates will significantly harm the farmers. Please refer to the July 8, 2016 letter analysis from Sidney Sugar emailed from James Brower.	The analysis acknowledges that there would be an increase in O&M which would be an impact on farming operations. The agencies investigated establishing a trust fund to address potential O&M increases under the pumping alternatives. Information on the process for establishing a trust is provided in Chapter 2 and the effects of O&M increases with and without trust fund proceeds are shown in Section 4.15 Social and Economic Conditions.
LA-01		24	Change in habitat units doesn't compute? Shouldn't the change in habitat units match the Net AAHUs column in Table 2-28?	The reference values in Table 2-27 (Now Table 2-35) have been corrected. It was verified that the error was typographical; the CE/ICA analysis utilized the correct values.

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LA-01		25	Table is incomplete. Multiple Pump, Constructability. A large number of issues identified in the previous description such as right-of-way issues, isolation of work zones for feeder canals, in-river work zones for removal of the dam, etc that would impede construction progress. This alternative is also one of the highest for O&M and is rated as a "Best Buy" alternative. Please include the O&M analysis in the "Best Buy" determination. Please include all information from new feasibility sections in this table and update table for revised analysis.	In response to this and other comments the CE/ICA section (2.4.4) has been expanded to include information that was previously only provided in the appendix. The section now details the process for identifying "best buy" plans and provides their definition in the context of a CE/ICA analysis process as prescribed by USACE guidance document IWR 95-R-01. Per guidance, the cost of O&M for each alternative is included in the analysis. In this context, the term "best buy" refers specifically to an output from the CE/ICA process, and is not a judgement by the project development team. Best buy plans are the horizon of cost effective plans for which incremental cost per unit output is minimized as you move along the horizon of plans providing successively larger levels of total output.
LA-01		26	Please remove "Risk of not reliably providing irrigation water right in some years due to climatic conditions." The LYIP has 108 years of records that show they have reliability provided water.	Climate change section has been removed from Chapter 4, but potential climate change effects are discussed under cumulative effects for several disciplines in Chapter 4, including Air Quality (Section 4.2) and Surface Water (Section 4.3).
LA-01		27	The known production of carbon emissions for Electrical Generation will adversely effect air quality.	As it is not known specifically where the electricity will come from, specific effects cannot be quantified. See Section 4.2. Emissions from backup generators are described in this section. It is assumed that electricity will be purchased and from existing capacity, not capacity generation.
LA-01		28	Please include the excavation and disposal of thousands of yards or dirt and material due to Inlet canal excavation	Information added to Table 4-3.
LA-01		29	No mention of the effects on local groundwater levels from the implementation of conservation measures. This would have a significant impact by removing a large source of recharge.	Groundwater hydrology is described in sections 3.4 and 4.4 and Table 4-18. The Agencies note that additional studies would be required to analyze groundwater impacts and acknowledge there is limited information available about the hydrologic connection between the Lower Yellowstone Project facilities and operations (canals, laterals, drains, and irrigation), wetlands, and groundwater. Obtaining this information would take extensive planning, investigations over the entire 58,000 acre Project, and development of a two dimensional model, all of which would be costly and take years to undertake. In some areas, it may never be possible to quantify the surface water-groundwater interaction due to the complexity of the area. The NEPA Implementing Regulations (40 CFR 1502.22) acknowledge there may be instances where there is incomplete information, and Department of the Interior Regulations (43 CFR 46.125) provide additional detail concerning the absence of information, stating, “In circumstances where the provisions of 40 CFR 1502.22 apply, bureaus must consider all costs to obtain information. These costs include monetary costs as well as other non-monetized costs when appropriate, such as social costs, delays, opportunity costs, and non-fulfillment or non-timely fulfillment of statutory mandates.” While the monetary costs to obtain this information are likely considerable, the non-monetary costs are also significant in this case, especially the delays in implementing passage for the remaining wild pallid sturgeon population and the resulting non-timely fulfillment of statutory mandates (i.e., complying with ESA).

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
LA-01		30	No mention of the effects on local groundwater levels from the implementation of conservation measures. This would have a significant impact by removing a large source of recharge.	This seems to be a duplicate of comment LA-01, #29 (see above).
LA-01		31	It may be prudent to add a engineering study to evaluate the effects of the alternative in terms of removing recharge zones to the shallow aquifers through implementation of conservation measures.	Section 4.4 already notes that additional study would be required, however an additional statement has been added: "Further hydrogeological characterization would be necessary to define the influence of canal seepage on existing groundwater levels and to determine how the removal of seepage recharge might impact groundwater levels and nearby wells. If this alternative were to move forward an engineering design study would be performed prior to final design to evaluate the effects of the alternative in terms of the reduction of irrigation canal seepage in relation to groundwater recharge and availability to local supply wells." Additional NEPA may be required at that time.
LA-01		32	Multiple pump alternative would have minor impacts from bank stabilization measures required to stabilize the intake channels to each pump station. This would limit the river's natural changes within the CMZ.	Impacts to the CMZ are discussed in Section 2.3.7 and also channel migration in Section 4.5 Geomorphology. Language pertaining to the CMZ added to Table ES-2.
LA-01		33	Both Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative both list under operational effects "improving fish passage could remove 303(d) listing for nonsupport of aquatic life (beneficial)". Does this really go here in the water quality section?	The 303(d) listing is for non-support of aquatic life (generally referring to water and sediment quality). Reference has been added to Section 4.7, impacts to aquatic communities.
LA-01		34	Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative-- Additional power infrastructure could present a significant hazard to listed species and species of concern.	It is noted in Section 2.3.8.6 that there is uncertainty pertaining to wind power and that additional study and associated environmental compliance, siting and permitting would be carried out separate from the FEIS if this proposal were to move forward into more detailed design.
LA-01		35	Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative-- Noise and Vibration from Pump operations will disturb other species of concern in adjacent wildlife habitat.	See added discussion in Sections 4.9.7.5 and 4.9.7.6
LA-01		36	Multiple Pumps with Conservation Measures Alternative -- Will have impacts to listed species and species of concern from wind turbines.	It is noted in Section 2.3.8.6 that there is uncertainty pertaining to wind power and that additional study and associated environmental compliance, siting and permitting would be carried out separate from this EIS if this proposal were to move forward into more detailed design.
LA-01		37	Multiple Pump Alternative -- Will have significant impacts to crop land (permanent) as well as native vegetation (temporary & permanent) from installation of pump stations, intake canals, discharge lines, power lines, substations, access roads, etc.	Comment noted.

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LA-01		38	Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative-- Removal of the dam will remove the most popular Paddle Fish fishing areas on the lower Yellowstone and Missouri Rivers. The Montana FWP generally sets an annual limit of approximately 1,000 fish harvested, with approximately 800 coming from the area below the Intake Diversion (a vast majority).	Relevant language is included in Sections 4.11.4.5 and 4.11.4.6, as well as Sections 4.15.5.5 and 4.15.5.6. As noted in the report, there may be adverse short terms changes in recreation and recreation revenue, but there would also be long term opportunity to capitalize on longer paddle fishing seasons and develop additional recreation areas along the river. To reinforce the statements about these potential effects in Table 4-38, the Operational Effects row has been revised as noted below for the Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative: [existing text of 3rd bullet] * Potential for long term recreation-related revenue increase [new text], though short term effects on recreation revenue may be adverse due to dam removal reducing paddle fishing success at Intake
LA-01		39	Multiple Pump Alternative and Multiple Pumps with Conservation Measures Alternative -- Will have significant impacts to visual resources from installation of pump stations, well locations, intake canals, discharge lines, power lines, access roads, etc. Tetra Tech appeared to assume mostly underground power, but I don't think given the voltage that the power company will allow this. It will likely be overhead power to each well or pump station due to the inability of buried conductors to dissipate heat.	The recommendation to use underground powerlines was provided by MDU, along with their cost estimate for installing them.
LA-01		40	The economic impact of increased Multiple Pump O & M paid by the farmer isn't explained as a harmful condition to the farmers, but is described as a benefit to the local economy? It should be pointed out that if the farmer cannot pay, there are no benefits to the local economy, only harmful effects.	The methodology for assessing operational effects of increased O&M on LYIP farmers is summarized in Section 4.15.3.2 and 4.15.3.3. The 2nd to last paragraph of Section 4.15.3.2 states, "It's important to note that the analysis presents the magnitude of effect associated with the anticipated OM&R expenditures for each alternative. However, if OM&R funding is sourced from within the regional economy, a substantial portion of the impacts associated with the funding may represent intra-regional transfers, and not new final demand in the regional economy. The proportion of funds which represent transfers would be dependent upon funding mechanism for OM&R, and is outside the scope of this analysis. As such, the OM&R-based impacts may be considered a maximum level of effect as presented." The following text is added thereafter: If water users were unable to afford to pay the necessary assessment for OM&R, funding shortfalls would result in deferred maintenance of the system, which could increase the risk of system failures or reduce the life of the system. Both benefits of additional expenditures in the region due to construction and costs to the farmer due to additional OM&R are considered.
LA-01		41	Add Power Generation to air quality effects. Add drying up upstream side channel to surface water & aquatic communities. Add effects on recharge to local wells with conservation measures. Add operational Noise Disturbance to Adjacent species of concern by pumps	See revised Table 4-61.
LA-01		42	Update to include above	See revised Table 4-61.
LA-01		43	Due to the indicated importance of wetlands throughout the ESA & the EIS (water quality and aquatic and terrestrial species, etc.), it would seem appropriate to have a separate category for Wetlands/Aquatic Features in chapters 3 and 4. As it is in the EIS, wetlands are a subset of Land and Vegetation.	Discussion of wetlands is appropriate in the other native communities section in Lands and Vegetation 4.10.

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LA-01		44	General discussions of wetlands impacts appear to be insufficient, specifically related to alternatives that remove the diversion structure. The loss of wetlands resulting from the removal of the diversion structure (reducing inundation and the resulting reduced contributions to shallow groundwater levels) may not have been adequately addressed.	Section 4.4 already notes that additional study would be required, however an additional statement has been added: "Further hydrogeological characterization would be necessary to define the influence of canal seepage on existing groundwater levels and to determine how the removal of seepage recharge might impact groundwater levels and nearby wells. If this alternative were to move forward an engineering design study would be performed prior to final design to evaluate the effects of the alternative in terms of the reduction of irrigation canal seepage in relation to groundwater recharge and availability to local supply wells." Additional NEPA may be required at that time.
LA-01		45	Any impacts assessments from projects that excavate/convert more than 0.1 acre of wetlands would require mitigation, as required by the CWA, which would significantly increase cost. In addition, mitigation efforts typically require monitoring. Who will be responsible for this cost? A more detailed discussion on the requirements for equivalent compliance with the 404(b)(1) guidelines and other substantive requirements of the CWA would also aide in impacts assessments.	Please see sections 4.10.2 and 4.10.3 where wetland impacts of each alternative are described. Project purpose includes ecosystem restoration and therefore should offset any impacts.
LA-01		46	Table ES-2 (Summary of Environmental Effects) should include the effects of wind turbines on federal and state Species of Concern under the appropriate alternatives	It is noted in Section 2.3.8.6 that there is uncertainty pertaining to wind power and that additional study and associated environmental compliance, siting and permitting would be carried out separate from this EIS if this proposal were to move forward into more detailed design.
LA-01		47	Since *Wildlife* is included as a distinct category in chapters 3 and 4, Table ES-2 (Summary of Environmental Effects) should include the effects on wildlife	Table ES-2 has been revised to include a section on wildlife.
LA-01		48	The Judge explained on page 10 and 11 that he wanted analysis on the anticipated success of the bypass channel for recovery of the pallid sturgeon. "This Court cannot analyze the "intensity" of the Project to determine whether significant effects will <u>occur without knowing whether the proposed bypass channel would prevent the establishment of a viable population of pallid sturgeon.</u> This Court cannot, in turn, determine <u>the degree to which the Project would adversely affect pallid sturgeon or whether the Project would violate the ESA unless the Court possesses more information about the anticipated success of the proposed bypass channel."</u> "…the Project would have significant impacts on the pallid sturgeon with the analysis provided. Added <u>uncertainty regarding whether sufficient drift distance would exist above the weir to allow pallid sturgeon larvae to develop before reaching the low oxygen zones raises additional concerns.</u> These circumstances—<u>the lack of analysis regarding adversely affecting pallid sturgeon recovery and uncertainty regarding possible effects on the viability of pallid sturgeon larvae—require the Federal Defendants to prepare an EIS.</u> The new analysis should include the anticipated effects of the Project on the recovery of pallid sturgeon. Nat'l Wildlife Fed's, 524 F.3d at 931-932." This information needs to be addressed in Chapter 4 in detail, with a summary in Chapter 2 under the description of the preferred alternative.	Additional discussion has been added regarding the state of the science regarding recruitment and recovery. See Section 4.9. At this point, a rigorous analysis of recruitment and recovery cannot be completed. Critical pieces of information are lacking such as transitional survival probabilities from egg to age-1 and what proportion of the adult population will be motivated to migrate above Intake and spawn and how far upstream they will choose to spawn. These unknowns exist for all passage options including dam removal. The FEIS does make assumptions on these unknowns in order to give some idea of how we believe this project and other alternative could help towards developing a naturally viable pallid sturgeon population for avoiding jeopardy. The FEIS has been edited to provide additional information with regard to the Corps commitment and efforts to continue trying to identify key unknowns for the pallid sturgeon throughout the entire Missouri River basin, develop management actions needed to address these unknowns, and incorporate this work into the ongoing, funded, MRRP Integrated Science Program. These efforts include developing models to better predict outcomes of management scenarios and provide a more defendable and highly scientifically-reviewed process for determining future management direction. The questions laid out in this comment are very important, and it is the agencies' best judgement that the only way to answer them in a meaningful and scientific manner is to ensure a systematic approach that informs future management actions on both the Missouri and Yellowstone Rivers. One immediate step the agencies have identified to address a leading hypothesis and reduce uncertainty is to provide sturgeon passage at Intake through the proposed bypass.
LA-01		49	The existing diversion dam is commonly referred to as an alternative effect, but should be addressed as a point of reference for all other alternatives.	Text and tables have been revised to indicate that existing (or on-going) effects of No Action are not new effects and are the baseline for comparison, but some continue as on-going effects into the future with No Action.

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LA-01		50	One point of consideration is that Tetra Tech commonly uses the fact that the Bypass Channel Alternative has been 100% designed as a "crutch" to form the basis of their opinion that the Bypass Channel Alternative is the preferred alternative. I am concerned that since the Multiple Pump Alternative has not been flushed out to the same level of design scrutiny and that there are numerous design considerations that can make this alternative much more costly and reduce the feasibility considerably that have been overlooked.	Designs have been developed to the level of detail necessary to compare and evaluate alternatives for this EIS. Cost contingencies have been included to account for uncertainties in the designs.
LA-01		51	Multiple Pumping Station Alternative -- Assumption that only sand size and larger particles would deposit in the feeder canals. However, it is anticipated that velocities will be low in the feeder canals. Sediment transport in this portion of the Yellowstone River is very high, and the feeder canals will provide an avenue for sediment fallout due to low velocity flow.	The majority of the sediment in the Yellowstone River occurs during periods of high flow. During these periods gravity diversion limits, and potentially eliminates the use of the pumping stations. During lower flows, when pumping is required, the sediment transport in the main channel is low and flow velocities in the feeder channels are higher. The pumping versus gravity diversion combinations used in the design result in greater pumping and feeder canal velocity during periods with low sediment supply from the river. It is likely that the sediment deposition will vary at each site, however the assumption that only sand size and larger particles would deposit in each of the feeder canals is intended to provide a reasonably conservative estimate for the preliminary analysis and comparison of alternatives as a basis for estimating maintenance costs. If this alternative is selected for further analysis and design, then a site-specific analysis of the flow and sediment transport conditions at each site would be performed.
LA-01		52	Multiple Pumping Station Alternative -- Pumps 2-5 shows a gravity flow as well as flow from Pump No. 2, but the discussion and analysis states in multiple areas in text that the head gate needs to be closed when Pumps No. 1 and/or 2 are on. This needs to be resolved.	Table 3.3 shows flow conditions used to produce the hydraulic profiles shown on Figure 3.2. The scenario "Pumps 2-5" was not used in the analysis and will be removed from Table 3.3 for clarity.
LA-01		53	Again the analysis uses a reference to 480V power. Many of the major pump suppliers for vertical impeller pumps have indicated that 480V power will not be sufficient given the head and flow conditions. Please verify that 480V power will be adequate as the cost for both installation as well as long term O&M is significantly impacted by increases in the voltage.	The pump vendor we spoke with, stated that the irrigation pumps could be supplied with 480V motors and Montana-Dakota Utilities indicated they could supply power to the pumps at 480V. Both the pump vendor and MDU provided cost estimating data based on the use of 480V power. If this alternative is selected for further design and analysis, then the option of using higher voltage motors and power supplies would be investigated.
LA-01		54	Multiple Pumping Station Alternative -- Finished floor elevation of pump stations needs to be at least 2' above the 100 year floodplain, not 1'.	The finished floor elevation was set 1' above the 100 year floodplain elevation, in accordance with USACE Engineering Manual EM 1110-2-3102, paragraph 4-2c, "Operating Floor Elevation."
LA-01		55	Multiple Pumping Station Alternative -- Design recognizes the requirement for ice protection around the pump stations and fish screens, but shows only a very conceptual plan view with no detail. It is not certain how the fish screens will be protected by the berm and/or what type of protection would be placed in front of the fish screens. This detail could substantially effect the capital cost and the long term O&M of the alternative.	The berm intercepts ice moving downriver to prevent it from bearing on the fish screen and pump station structures, as described in paragraph 4.3.2.1. The fish screens are located inside a concrete structure. At the end of the irrigation season, stop logs would be placed and the concrete structure would be dewatered for silt removal and winter storage.
LA-01		56	Multiple Pumping Station Alternative -- Page 15-16, paragraph 2 of the Recommendation section of the Intake Alternative Selection memo provided by Tetra Tech provides a very solid viewpoint on the implementation of Ranney Wells that should be transferred and/or referenced in the Multiple Pumping Station Alternative with Conservation Measures Alternative. There is somewhat of a conflict between the text in this section and Section 4.3.1, Appendix A, Multiple Pumping Station with Conservation Measures Alternative.	The document layout of Appendix A-3 and the Intake Selection memo are different, however the content appears to be the same. In Appendix A-3: the Ranney Well concept is described in Paragraph 4.3.1, "Ranney Well", potential risks associated with the Ranney Wells are discussed in Paragraph 5.1 "Construction Risk", and land disturbance is discussed in Paragraph 5.2 "Disturbance during Construction and Operation". In the Intake Selection memo, all three subjects are addressed together. Apart from differences in document layout and level of detail, the content appears to be the same.

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LA-01		57	Multiple Pumping Stations with Conservation Measures Alternative -- Under Section 1.0, Alternative Description, at the end of this section, please add the text found in the main body of the EIS, Section 2.3.8 on page 2-77 to clarify the intent of the Appendix.	Description from page 2-77 will be added to the alternative description in the Appendix as recommended.
LA-01		58	Multiple Pumping Station Alternative and Multiple Pumping Stations with Conservation Measures Alternative -- Both of these alternatives would require a SCADA system for operation and maintenance of these facilities. Please include in the capital cost as well as the long term O&M for these alternatives.	The capital and O&M costs for the Multiple Pump Station and the Multiple Pump Station with Conservation Measures alternatives include an estimated cost for including a typical SCADA system.
LA-01		59	Multiple Pumping Stations with Conservation Measures Alternative -- 2nd paragraph on page 16 identifies that 1,100 cfs would be required to support the mix of crops current grown. However, this number should be 1,150 cfs.	Typo has been corrected as suggested.
LA-01		60	The current quoted fuel prices are very low and near a 5-year low. The fuel prices should be based on a more current rate or a 3-year running average to ensure an accurate estimate.	Per standard USACE cost guidelines, current fuel prices are to be used in the cost estimate. These prices will be updated for each submittal though, and will likely be higher in future iterations especially if the previous prices are at a low. Cost contingencies also account for fluctuations in fuel prices.
LA-01		61	Multiple Pump Station Alternative QTO Line Items -- Quantity take offs. The pump station standby generators for Sites 2-5 require 1250 kW through 2000 kW. This indicates that supply of 480V power to each of these sites will be difficult to achieve.	The pump vendor we spoke with, stated that the irrigation pumps could be supplied with 480V motors and Montana-Dakota Utilities indicated they could supply power to the pumps at 480V. Both the pump vendor and MDU provided cost estimating data based on the use of 480V power. If this alternative is selected for further design and analysis, then the option of using higher voltage motors and power supplies would be investigated.
LA-02	Z. Shattuck, Upper Basin Pallid Sturgeon Workgroup	1	We believe the most beneficial alternative for Pallid Sturgeon would involve removing the existing barrier to provide full-river passage and investing in more contemporary methods of water delivery. Improved efficiencies and updated technologies in irrigation practices would serve an agreeable compromise between socioeconomic viability and ecological integrity; a cornerstone of the vision and mission of the Missouri River Recovery Program (MRRP).	While this letter was submitted on behalf of the Upper Basin Workgroup it does not represent the views of that entire group. Views of Workgroup members from the Corps of Engineers, Bureau of Reclamation, and Fish and Wildlife Service were not reflected in the comment letter. Two alternatives that included removing the existing weir were analyzed.
LA-02		2	Although the EIS reiterates that recovery of Pallid Sturgeon is not within the scope of this project, the Workgroup feels strongly that aspects of recovery are implicit with the project's use of funding tied in-part to the MRRP. As such, more emphasis should be placed on the aspect of fish passage in the alternative analyses, rather than ensuring water delivery while merely providing conditions thought to be sufficient to avoid jeopardy to Pallid Sturgeon.	We do not disagree that management action on both the Missouri and Yellowstone Rivers may ultimately be needed to meet pallid sturgeon objectives. Within the upper basin, providing fish passage at the Intake Dam has been identified by the Service (2013) and 2014 Pallid Sturgeon Recovery Plan, and confirmed by the best available science through an Effects Analysis, as one of the best possibilities for restoring self-sustaining populations of pallid sturgeon. This project will reestablish a linkage to potential pallid sturgeon spawning habitat which is currently hypothesized as being one of the primary limiting factors for pallid sturgeon recruitment. The Corps of Engineers is still engaged and committed to identifying other potential management actions within its authority that could reasonably be implemented to accommodate avoidance of jeopardy for the pallid sturgeon in the upper basin beyond just this discrete project, if necessary, based on the best available science. However, current hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014).

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LA-02		3	To this point, the improvement of fish passage for Pallid Sturgeon and other native fishes under the preferred Bypass Channel Alternative is purely theoretical and assurances for successful passage are unfounded. Across North America, sturgeon species have exhibited little success with fish passage structures; where the only examples of consistent passage include projects that were designed specifically for sturgeon species and projects that provided passage upstream and downstream.	Many sturgeon species have benefitted from fish passage. In addition, pallid sturgeon in the Missouri River frequently pass through side channels, both natural and constructed. The proposed Intake bypass is designed specifically for pallid sturgeon passage and as such should be even more fish friendly than the side channels which they have already been documented to use. Current literature on bypass designs for sturgeon all highlight that promising approaches include those that mimic natural channels. This would include building a channel with similar geometry, facilitate passage under a range of discharge conditions, and incorporate a broad range of hydraulic criteria that emulate the range and depths and velocities that have been successfully negotiated by targeted migratory fish. (Braaten et al. 2015, Aadland 2010, Jager et al. 2016). Pallid sturgeon have been shown to use natural side-channels in the upper Missouri River (Braaten et al. 2015) and constructed side-channels in the lower Missouri River (DeLonay et al. 2014, DeLonay et al. 2016a; DeLonay et al. 2016b) during spawning migration. In the upper Missouri River, pallid sturgeon migrating upriver passed through a variety of short (0.4-km long; 0.25 mi) and long (3.9-km long; 2.42 mi) side channels (Braaten et al. 2015). The constructed side channels in the lower Missouri River, even though not constructed with adult sturgeon migration in mind, have demonstrated that sturgeon will use constructed channels and at times will choose to use them even when the main channel is unobstructed. The physical and resulting hydraulic features of the proposed bypass channel at Intake were modeled according to the features within known migratory pathways (main channel and side channel) used by pallid sturgeon in the upper Missouri River and Yellowstone River. The final geometry of the proposed bypass channel falls within the range of all parameters, including length, width, sinuosity, bend radius, and meander wavelength. In addition, this bypass channel has been engineered with expert input to increase the odds of use by sturgeon by optimal location and orientation of the downstream entrance, a flow split which is higher than side channels which have been used by pallid sturgeon, and water velocities and depths suitable for passage at a wide range of flows. Because pallid sturgeon have been observed to use side channels (both constructed and natural) on the Missouri River and Yellowstone River, even when the main channel is unobstructed, and because the designs mimic physical parameters of natural side channels actually shown to be used by pallid sturgeon on the Yellowstone, the Agencies believe that construction of the preferred bypass alternative will result in a high likelihood that the constructed bypass will effectively provide passage opportunity under a variety of flows. Lastly, the design of the bypass is constructed with the entrance near the base of the obstruction, rather than located some distance downstream. The best entrance locations are at the base of the obstructions because a fish's natural tendency is to seek upstream passage at the obstruction. Entrances located significant distances downstream of the barrier may cause fish to swim past and become trapped below the dam by their natural instinct to swim upstream (Aadland et al. 2010).
LA-02		4	Although upstream passage of adult Pallid Sturgeon has garnered much of the attention in the EIS, it is imperative that this project account for the needs of all life-stages of Pallid Sturgeon amongst other fish species. The design in the preferred Bypass Channel Alternative fails to incorporate adequate passage in the downstream drift of Pallid Sturgeon larvae, and subsequently the criteria for the entire project fails to address the potential impacts to larval Pallid Sturgeon take during downstream passage until post-project.	The effects of each alternative on downstream passage of larvae is disclosed in section 4.9.7.
LA-02		5	Currently, the No Action Alternative offers more documented passage than any other alternative that includes a weir in the design. While the preferred Bypass Channel Alternative confidently assures passage to some degree, the only proven pathway for passage for Pallid Sturgeon is planned to be used as a fill site as part of bypass construction.	Many sturgeon species have benefitted from fish passage. In addition, pallid sturgeon in the Missouri River frequently pass through side channels, both natural and constructed. The proposed Intake bypass is designed specifically for pallid sturgeon passage and as such should be even more fish friendly than the side channels which they have already been documented to use. Current literature on bypass designs for sturgeon all highlight that promising approaches include those that mimic natural channels. This would include building a channel with similar geometry, facilitate passage under a range of discharge conditions, and incorporate a

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				broad range of hydraulic criteria that emulate the range and depths and velocities that have been successfully negotiated by targeted migratory fish. (Braaten et al. 2015, Aadland 2010, Jager et al. 2016). Pallid sturgeon have been shown to use natural side-channels in the upper Missouri River (Braaten et al. 2015) and constructed side-channels in the lower Missouri River (DeLonay et al. 2014, DeLonay et al. 2016a; DeLonay et al. 2016b) during spawning migration. In the upper Missouri River, pallid sturgeon migrating upriver passed through a variety of short (0.4-km long; 0.25 mi) and long (3.9-km long; 2.42 mi) side channels (Braaten et al. 2015). The constructed side channels in the lower Missouri River, even though not constructed with adult sturgeon migration in mind, have demonstrated that sturgeon will use constructed channels and at times will choose to use them even when the main channel is unobstructed. The physical and resulting hydraulic features of the proposed bypass channel at Intake were modeled according to the features within known migratory pathways (main channel and side channel) used by pallid sturgeon in the upper Missouri River and Yellowstone River. The final geometry of the proposed bypass channel falls within the range of all parameters, including length, width, sinuosity, bend radius, and meander wavelength. In addition, this bypass channel has been engineered with expert input to increase the odds of use by sturgeon by optimal location and orientation of the downstream entrance, a flow split which is higher than side channels which have been used by pallid sturgeon, and water velocities and depths suitable for passage at a wide range of flows. Because pallid sturgeon have been observed to use side channels (both constructed and natural) on the Missouri River and Yellowstone River, even when the main channel is unobstructed, and because the designs mimic physical parameters of natural side channels actually shown to be used by pallid sturgeon on the Yellowstone, we believe that construction of the preferred bypass alternative will result in a high likelihood that the constructed bypass will effectively provide passage opportunity under a variety of flows. Lastly, the design of the bypass is constructed with the entrance near the base of the obstruction, rather than located some distance downstream. The best entrance locations are at the base of the obstructions because a fish's natural tendency is to seek upstream passage at the obstruction. Entrances located significant distances downstream of the barrier may cause fish to swim past and become trapped below the dam by their natural instinct to swim upstream (Aadland et al. 2010).
LA-02		6	While the Workgroup commends the close collaboration with the Biological Review Team in developing metrics for success, more explicit monitoring objectives whose criteria are rooted in the biology of Pallid Sturgeon and the lower Yellowstone River aquatic community are needed to meaningfully evaluate fish passage and jeopardy to Pallid Sturgeon. As currently written, the monitoring and adaptive management of fish passage success and the avoidance of jeopardy to Pallid Sturgeon does not sufficiently account for bi-directional passage, nor does it provide details of future management given documented performance of the project. In developing criteria for improving fish passage, the Workgroup feels "the development of decision criteria to trigger adaptive management options" needs to be thoroughly established prior to an alternative being preferred. To this regard, the Workgroup suggests a more expansive commitment from federal partners in evaluating the project pre- and post-development to ensure greater connectivity is truly attained in the lower Yellowstone River.	Because of uncertainties associated with the Project, the Agencies are committed to implementing a Monitoring and Adaptive Management Plan (Appendix E) that will take into consideration not only pallid sturgeon but also other native species found in the Yellowstone River. The Monitoring and Adaptive Management Plan has been revised to include more details about adaptive management measures, timing, and implementation.

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LA-02		7	The Yellowstone and Missouri rivers are two components to one system and the Workgroup remains opposed to the idea that modifications at Intake should serve as a suitable credit for operational changes at Fort Peck Dam. While successful fish passage at Intake may allow access to additional upstream habitat for Pallid Sturgeon and other native fishes, it is the health of the Yellowstone and Missouri rivers that will ultimately yield recovery of Pallid Sturgeon and long-term resiliency of the entire aquatic community. In order to restore a self-regulating upper Missouri River system that functions more naturally, engaged federal partnerships are imperative.	We do not disagree that management action on both the Missouri and Yellowstone Rivers may ultimately be needed to meet pallid sturgeon objectives. Within the upper basin, providing fish passage at the Intake Diversion Dam has been identified by the USFWS (Service 2013) and 2014 Pallid Sturgeon Recovery Plan, and confirmed by the best available science through an Effects Analysis, as one of the best possibilities for restoring self-sustaining populations of pallid sturgeon. This project will reestablish a linkage to potential pallid sturgeon spawning habitat, which is currently hypothesized as being one of the primary limiting factors for pallid sturgeon recruitment. The Corps of Engineers is still engaged and committed to identifying other potential management actions within its authority that could reasonably be implemented to accommodate avoidance of jeopardy for the pallid sturgeon in the upper basin beyond just this discrete project, if necessary, based on the best available science. However, current hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014).
LA-02a	Z. Shattuck, Upper Basin Pallid Sturgeon Workgroup		Request to withdraw letter	While the workgroup requested this letter be retracted the agencies believe that there are substantive comments that needed to be addressed, and responses have been provided.
LA-03	G. Anderson, City of Sidney Utilities	1	I am very strongly in favor of the bypass channel alternative for the LYIP as it will continue to deliver water via the existing canal which recharges our aquifer when its needed most.	Comment noted.
OR-1	Defenders of Wildlife and NRDC	1	We therefore respectfully request an additional 45-day extension of the comment period on the Draft EIS.	The NEPA Regulations require a 45-day comment period for a draft EIS. The Draft EIS was available for public review beginning May 27 and ending July 28, for a total of 63 days. Given the importance of providing fish passage at Intake, the Agencies felt 63 days was adequate to review the document and provide comments, and in addition did not believe it was in the best interest of pallid sturgeon to grant an extension potentially delaying implementation of a fish passage solution.
OR-2	M. Murphy, Montana Water Resources Association	1	MWRA stands in strong support of the 100 percent design complete, shovel ready, and twice determined preferred alternative concrete weir and fish friendly bypass. … The proposed preferred alternative … is based upon an extensive and thorough scientific evaluation of impacts that culminate with an opportunity to enhance the long term viability and stability of the farm and ranch community, agricultural dependent businesses and rural communities while addressing the needs of the Pallid Sturgeon and other fisheries and wildlife in the Lower Yellowstone.	Comment noted
OR-2		2	Other alternatives, such as removing the existing dam and forcing the irrigators to pump their water from the river and assume an extremely expensive and far less reliable power dependent pumping process, would also result in adverse environmental impacts.	Wind power reliability has been accounted for by provision of backup generators in the alternative that includes pumps. Pump O&M information available from other irrigation districts (Buffalo Rapids and Sidney Irrigation District) was used to inform cost estimates for these alternatives. Social and economic conditions, including O&M costs and the impacts of each alternative are considered in section 4.15 and Appendix B.
OR-3	J. Gutkoski, Montana River Action	1	Your plan for a new concrete dam below Glendive on the Y. River with a 2 mile bypass channel will result in just more blockage for upriver migrating Pallid Sturgeon.	Comment noted
OR-3		2	Montana River Action recommends removing the existing rock dam and provide the irrigators with a pump system.	Comment noted
OR-3		3	This will save $60,000,000 of taxpayer's money ... on a massive dam that is doomed to failure in the long term.	Comment noted

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OR-04	J. Brothen, Lower Yellowstone Rural Electric Cooperative	1	On behalf of the Board of Directors, and Lower Yellowstone Rural Electric Cooperative (LYREC) membership, I am writing this letter to support the bypass channel. As a cooperative we feel strongly about saving the farmer and the fish.	Comment noted.
OR-04		2	One major concern as an electrical distributor, is the power supply. We understand what it takes to pump water and it is a lot of power. It would take the correct mix of renewable, hydro, gas, and carbon based electrical resources to maintain the level of power needed to run the proposed pumps. Renewable resources alone cannot generate enough power at peak times to maintain the pumps and for this reason they need to have backup power to fill in for those times when the renewables are offline. With the current direction of the United States baseload power grid, it is uneasy to think of what could happen if the power supply were not adequate for the proposed pumps	Power supply for the pumps was coordinated with the local utility and costs include system upgrades and new power lines. Backup generators are also included in the cost estimates to account for outages. See Appendix A for details. As described in 2.3.8.6 if wind power to be used a banking arrangement would be needed as the wind power generation may not be consistent with the time that power was used during pumping.
OR-05	J. Bodner, Montana Stockgrowers Assn.	1	Due to the critical importance of this Intake Dam modification project to the agricultural community, MSGA has reviewed the Draft EIS and supports the Bypass Channel Alternative. This alternative is a balanced approach to improving conditions for migration of pallid sturgeon and other native fish and at the same time ensuring the water delivery system for the Intake Diversion Dam is protected.	Comment noted.
OR-05		2	In this section it is stated that "Using recent crop yields and prices from the National Agricultural Statistics Service, a production value (gross revenue) of about $51.2 million dollars may be estimated for lands irrigated by the LYP." This estimate is factored to account for about 15% of market value of agricultural products sold in the three county area. MSGA supports the assessment that "value of the LYP to the agricultural industry of the counties, and of the region, is substantial." It is vitally important in this decision making process to account for the economic impacts the selected alternative will have on the affected area.	As shown in Section 4.15.5.7, the analysis estimates the potential effects on farm income based upon a given % increase in O&M cost per acre with each alternative. Because O&M is not a majority component of overall production costs, the % reduction in net income is less than the % increase in O&M cost. As noted in the last paragraph of 4.15.3.3, whether or not each specific farm would remain viable under each alternative is beyond the scope of the analysis, which considered a typical, or average, case. As shown in the document, none of the net income reductions from increased O&M is sufficient to reduce net income to zero for the typical operation case.
OR-05		3	Through this coordination, this Draft EIS has addressed many of the concerns indicated in the 2015 Biological Assessment, such as the need for an alternate passage route during the 2-3 years of construction and the potential future entrainment/impingement of free embryos and larvae at the headworks screens. In addition, since 2010, cooperating agencies have had an integral part in developing the most sophisticated scientific approaches to resolving the sturgeon concerns. ... In our view, this input from these agencies has resulted in the Bypass Channel alternative that meets the needs of the community and a successful fish passage.	Comment noted.

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OR-05		4	In addition to the Bypass Channel alternative being one of the best conservation options, it is also one of the most cost effective. In reviewing Table ES-1 Annualized Costs, the Bypass Channel is equivalent to the Modified Side Channel alternative, but significantly lower than the others in terms of Average Annual Cost. This alternative also is shown to have the lowest annual O&M and annual O&M per acre costs, reflected in table 4-37. Just as important as the construction and O&M costs, are the change in farm income statistics reflected in Table 4-58. Once again the Bypass Channel shows the lowest reduction in Annual Change in Net Farm Income and % Change in Net Farm Income in the alternatives. These tables are significant indicators that the preferred Bypass Channel is the most efficient means to meet the purpose to construct a project to improve passage of pallid sturgeon and other native fish at the Lower Yellowstone Project Intake Diversion Dam while continuing a viable and effective operation of the Project.	Comment noted.
OR-06	D. Moser, Montana Chapter of the American Fisheries Society	1	The current EIS uses a "Connectivity Index Analysis" to base recommendations of passage of Pallid Sturgeon. It is clear this index is weakly connected to conditions at the Intake site. Moreover, no firm biological criteria were used develop bypass channel dimensions, velocities, depths, etc. Any index by which decisions are made on passage of Pallid Sturgeon cannot be validly based on data from other rivers and species of fish. As biologists we know that site specific variables as well as temporal and spatial uncertainty must be addressed to increase confidence of predictions in any predictive model. Given the large number of assumptions used to develop the "Connectivity Index Analysis" we have very little confidence that predictions on bypass use by Pallid Sturgeon or other species are scientifically valid.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected. To clarify, the FPCI model is a planning tool to compare the relative effectiveness of each alternative. The index score does not represent either the specific number of fish that will pass nor does it calculate a statistical probability of fish passage. In the FEIS, additional discussion on pallid sturgeon use of side channels and the extensive evaluation of literature that has been used to inform the design of the bypass channel has been added to Section 4.9.8
OR-06		2	Larval drift post spawning has been identified as an important factor in survival of Pallid Sturgeon. In the event Pallid Sturgeon use the engineered bypass, construction of a dam across the entire Yellowstone River will necessarily negatively impact this important life stage.	See additional discussion in Section 4.9.7 addressing downstream passage of larvae, juveniles, and adults for each alternative. The Monitoring and Adaptive Management Plan (Appendix E) will include monitoring of downstream passage.
OR-06		3	Given the vast number of unknowns related to potential use by fish of the bypass, a contingency and monitoring plan must be very specific as to who will do the work and where funding will be obtained for the work. Should objectives of the bypass channel not be met - what solutions are proposed? We strongly suggest that contingency plans be highly detailed with alternatives for remedy spelled out with costs and responsible parties. Essentially, the lack of biological criteria and unknowns on which the preferred alternative was based makes it absolutely necessary that contingencies, should passage goals not be met, are highly detailed with funding guaranteed.	The Agencies acknowledge there will be uncertainties associated with any alternative that is implemented at the Intake Diversion Dam. These uncertainties are discussed in Section 4.9. Because of the uncertainties with the Project, the Agencies are committed to implementing a Monitoring and Adaptive Management Plan that takes into consideration the biological criteria provided by the Service's Biological Review Team. The proposed Monitoring and Adaptive Management Plan can be found in Appendix E.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
OR-7	S. Bosse, American Rivers	1	After carefully reading the DEIS and reviewing the comments provided to us by David Marcus (see Appendix A), whose analysis was partially funded by American Rivers, we strongly urge the Corps and BOR to abandon the preferred alternative in the DEIS (Bypass Channel) and instead select a variation of the Multiple Pumps Alternative in the Final EIS and Record of Decision (ROD). We support a variation of the Multiple Pumps Alternative because we believe it is the only alternative that offers federally endangered pallid sturgeon a reasonable chance of recovering to self-sustaining levels, and it can reasonably be implemented in a way that meets the needs of farmers in the Lower Yellowstone Project. No other alternative in the DEIS has a high probability of achieving these two goals in a cost-effective manner.	Comment noted.
OR-7		2	American Rivers opposes the agencies' preferred alternative (Bypass Channel) for the following reasons, which we will elaborate on later in these comments: (1) the purpose and need in the DEIS are insufficient to meet the requirements of the Endangered Species Act; (2) the scientific assumptions supporting the Bypass Channel are fatally flawed; (3) the Bypass Channel alternative lacks a robust and sufficiently funded adaptive management plan in the event that it fails; and (4) the cost of the Bypass Channel is significantly understated and the cost of the Multiple Pumps Alternative is significantly overstated.	Comment noted.
OR-7		3	The DEIS states that the purpose and need of this project is to "(1) improve fish passage for pallid sturgeon and other native fish at the Intake Diversion Dam; (2) continue the viable and effective operation of the Lower Yellowstone Project; and (3) contribute to ecosystem restoration (DEIS Executive Summary, p. xxvi)." While we agree that all three of these components are valid from a conceptual standpoint, the first component is insufficient to meet the basic legal requirements of the federal Endangered Species Act, which is the primary driver in this NEPA process.	Revised text has been provided in section 1.2.3 Need - Improving Fish Passage and additional information and clarification has been provided in Section 1.2.1. As noted by commenters, the Purpose and Need Statement of an EIS must be informed by the statutory context of the federal action. The underlying purpose and need is for Reclamation to manage and operate the LYP in accordance with Project laws, authorities, and purposes. The Agencies recognize the importance of the pallid sturgeon in the Missouri River Basin and support pallid sturgeon recovery activities throughout their known range. Section 3109 of the 2007 Water Resources Development Act (WRDA) authorizes the Corps to assist Reclamation with funding from the Missouri River Recovery and Mitigation Program for the design and construction of Reclamation's Lower Yellowstone Project at Intake, Montana for the purposes of ecosystem restoration. It should be noted that the purpose and need is a NEPA requirement. The ESA does not have such a requirement. Similarly, avoiding jeopardy and the measures necessary to recover a species are determinations made by the Service as a part of ESA consultation and recovery planning, and is not a requirement of NEPA. The ESA places responsibility on all federal agencies to ensure their actions avoid jeopardy. This is inherent in any action a federal agency proposes to undertake.

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OR-7		4	Instead of striving merely to "improve fish passage...," the DEIS should have identified a range of alternatives that have a high probability of recovering pallid sturgeon to the point that they meet recovery goals and ultimately can be removed from the endangered species list. The final EIS should clearly define what the recovery goal is for pallid sturgeon in numeric terms (According to the USFWS's 2014 Recovery Plan, the goal is a self-sustaining population of 5,000 adult fish in the upper Missouri River basin); discuss in detail the probability that each alternative will achieve that recovery goal based on hard evidence (as opposed to subjective conjecture); and discuss how improving fish passage at Intake Diversion Dam can achieve recovery goals for pallid sturgeon without also addressing dam operations at Fort Peck Dam.	Pallid sturgeon life history and habitat requirements are not well understood. For this reason, the Pallid Sturgeon Recovery Plan (Service 2014) identifies numerous measures to expand pallid sturgeon knowledge while moving towards recovery. The Recovery Plan uses scientific method to obtain this knowledge, wherein questions are systematically answered by implementing actions, observing the response, and then determining the need for follow-on actions. Fish passage at Intake is one of those systematic, site-specific actions identified in the Recovery Plan wherein the outcome is uncertain so subsequent actions outlined in the Recovery Plan would be implemented based on pallid sturgeon response to implementing passage at Intake. Given the absence of information about pallid sturgeon, it is currently not feasible to meaningfully differentiate how each alternative might contribute to recovery and would be entirely speculative. Ultimately, the Service will decide, through ESA consultation (not the NEPA process), if the proposed fish passage alternative would avoid jeopardy, contribute to recovery and as appropriate, meet the objectives of the Recovery Plan. Improving pallid sturgeon passage at Intake Dam is a site-specific project Reclamation is undertaking consistent with its obligation under ESA and the Service's Pallid Sturgeon Recovery Plan. The Corps is assisting Reclamation pursuant to its authority under WRDA 2007 for the purpose of ecosystem restoration. This site-specific project is one measure within a larger programmatic effort to recover pallid sturgeon as described in the Recovery Plan and the programmatic adaptive management plan the Corps is developing in consultation with the Service for endangered species recovery on the Missouri River and Yellowstone River (expected to be available for public review December 2016). The Corps of Engineers is still engaged and committed to identifying other potential management actions within its authority that could reasonably be implemented to accommodate avoidance of jeopardy for the pallid sturgeon in the upper basin beyond just this discrete project, if necessary, based on the best available science. However, current hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck may not result in recruitment (Fischenich, 2014) and in the short term could detract from or confound the analysis of benefits derived by providing passage at Intake.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
OR-7		5	The DEIS makes no mention of the fact that the Corps is willing to fund a project at Intake Diversion Dam only in return for abandoning future recovery efforts on the Missouri River below Fort Peck Dam. Nor does it explain how recovery goals can be met when only roughly one-quarter of the wild adult pallid sturgeon in the upper Missouri River system, or 32 fish, migrate up the Yellowstone River to Intake Dam to spawn each year. Finally, recent federal court rulings have made it clear that improving passage for endangered fish species alone does not meet the requirements of the Endangered Species Act. The way the DEIS is currently written, if the number of pallid sturgeon making it past Intake Diversion Dam were to increase from one fish to two fish, that would be deemed a success based on a positive trend toward recovery.	The Corps of Engineers is developing a Missouri River Management Plan and EIS that assesses (1) major federal actions arising from a Biological Opinion (BiOp) prepared in accordance with the Endangered Species Act (ESA) of 1973, as amended to avoid jeopardy to three federally listed threatened and endangered species that use the Missouri River and (2) the creation of habitat for those species. The relative need and effectiveness of actions on both the Yellowstone and Missouri River systems will be evaluated through a well-planned, systematic AM process which has been developed as part of the MRRP Management Plan. This AM approach has received a tremendous amount of independent scrutiny by AM and sturgeon experts and has been developed transparently with unprecedented stakeholder involvement through MRRIC and associated Independent Science Advisory Panel. The focus of the plan is in meeting pallid sturgeon objectives provided by the USFWS to avoid jeopardy. Within the upper basin, the intake dam has been identified by the USFWS, and confirmed through the Effects Analysis that has been conducted as part of the Management Plan process as one of the best possibilities for restoring self-sustaining populations by being one of the only projects that can reestablish a linkage to potential pallid sturgeon spawning habitat that may provide adequate drift distance for drifting free embryos/larvae. However, it should be noted that the success of the intake fish passage project will be determined by its ability to successfully pass fish. It will not be judged on what the pallid sturgeon does after it passes, as the project has no control over that aspect of sturgeon life history. If passage is shown not to lead to spawning, and subsequent recruitment that can avoid jeopardy to the species in the upper basin, the Corps of Engineers will still be required to identify other potential management measures within its authority that could reasonably be implemented to accommodate avoidance of jeopardy. This is why the MRRP AM Plan does not assume success for any of these options but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed. However, it is unlikely that options at Fort Peck would be pursued based on current science. Available data indicate that hatchery released free embryos, five days post-hatch or older, are able to survive to age-1 in the Missouri River between Fort Peck Dam and Lake Sakakawea, when released 170 miles upstream of the lake. Because natural recruitment has not occurred in this reach, the conclusion is that mortality is limiting at very early stages, days 0-5 post hatch, although adequacy of dispersal distance is also dependent on spawning location (Braaten et al., 2008, 2010, 2012b). These observations support the hypothesis by Kynard et al. (2007) which implicates total drift distance as a limitation on natural recruitment. Hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014). See appendix E for success criteria of the project.

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OR-7		6	Under the Multiple Pumps Alternative, in which the existing diversion dam would be removed from the river, the probability of the 14 native fish species making it past Intake Diversion Dam is 1.0, which translates to 100 percent probability. Under the preferred alternative (Bypass Channel), the FPCI is estimated at .67, meaning there is only a 67 percent chance that the 14 selected fish species will make it past Intake Diversion Dam. Not only is this number arbitrary and subjective due to the fact that there has never been an artificial bypass channel or fishway constructed that has been documented to have successfully passed pallid sturgeon or shovelnose sturgeon (DEIS, p. 2-105), but it is also based on a more favorable model input than was used in the 2015 Environmental Assessment (EA). That model input, F1, represents the probability of fish finding the entrance to the proposed bypass channel. It varies on a scale of 1-5, with 1 being the lowest probability and 5 being the highest probability. In the DEIS, the agencies used an F1 of 4, whereas in the 2015 EA, the agencies used an F1 of 3. There is no acknowledgement or explanation in the DEIS as to why the F1 was upgraded from a 3 to a 4. This is concerning because the upgrade resulted in a dramatically improved FPCI for the Bypass Channel alternative. In the 2015 EA, the FPCI for pallid sturgeon was .5, meaning there was only a 50 percent chance that pallid sturgeon would make their way upstream past Intake Diversion Dam. In the DEIS, the FPCI for pallid sturgeon is .6. Yet even when this number is used, it still fails to meet the FPCI target of .85 that was set by the Biological Recovery Team (BRT). Had the agencies used an F1 value of 3 in the DEIS as they did in the 2015 EA, the Multiple Pumps Alternative would be the most cost effective alternative per habitat unit gained, according to the agencies' own methodologies.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected. In addition, a sensitivity analysis was conducted for the cost effectiveness and incremental cost analysis to identify whether different index values would result in a different list of cost effective or best buy plans. There is no difference. To clarify, the FPCI model is a planning tool to compare the relative effectiveness of each alternative. The index score does not represent either the specific number of fish that will pass nor does it calculate a statistical probability of fish passage, thus any comparison of the index value to the Biological Review Team's (BRT) criteria of passing 85% of the fish that approach within 1 mile downstream of Intake Diversion Dam is not valid.
OR-7		7	Finally and importantly, in calculating the cost effectiveness of each alternative, the DEIS used an FPCI of .67 for the preferred alternative (DEIS Appendix D, Table 1-11, p. 16), when it would have been more appropriate to use an FPCI of .60. The former represents the probability that all 14 selected native fish species make it upstream past Intake Diversion Dam, while the latter represents the probability of pallid sturgeon making it past the dam. Using this same flawed methodology, an alternative could pass 13 of the selected native fish species but not pass a single pallid sturgeon, and the number of habitat units that would be made available would be reduced by only 1/14, or 7 percent, thus barely affecting the cost effectiveness of such an alternative. The bottom line should be that if an alternative does not have at least an 85 percent likelihood of providing upstream fish passage for pallid sturgeon (the standard set by the BRT), it should be disqualified from further consideration because it does not meet that statutory requirements of the Endangered Species Act, which is the primary driver of this NEPA process.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected. Of note, in the 2015 EA, pallid sturgeon was not included and shovelnose sturgeon was used to represent both species. The agencies think including pallid sturgeon in the model is very important and thus it is included in this 2016 version. In addition, a sensitivity analysis was conducted for the cost effectiveness and incremental cost analysis to identify whether different index values would result in a different list of cost effective or best buy plans. There is no difference. To clarify, the FPCI model is a planning tool to compare the relative effectiveness of each alternative. The index score does not represent either the specific number of fish that will pass nor does it calculate a statistical probability of fish passage, thus any comparison of the index value to the Biological Review Team's (BRT) criteria of passing 85% of the fish that approach within 1 mile downstream of Intake Diversion Dam is not valid.

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OR-7		8	Given that there is a high degree of scientific uncertainty as to whether the Bypass Channel alternative will provide upstream passage to at least 85 percent of the pallid sturgeon that arrive at its base (the biological standard set by the BRT), combined with the fact that climate change and more frequent and severe flood and drought events could profoundly alter the flow and morphology of the lower Yellowstone River in the immediate vicinity of Intake Diversion Dam, it is imperative that a robust and well-funded adaptive management plan be in place prior to the signing of a Record of Decision. Yet the adaptive management plan in the DEIS only considers tweaks to the proposed dam and bypass channel, including making modifications to the bypass channel, removing fill from the existing natural channel, removing the existing boulder field immediately downstream from the diversion dam, modifying the notch in the new dam, and modifying the headworks. The DEIS fails to discuss more drastic and expensive actions that may need to be taken should the bypass channel fail to perform as hoped, including removing the new dam and replacing its function with an irrigation pump system (such as the one contemplated in the Multiple Pumps alternative) and modifying the operation of Fort Peck Dam in an effort to restore pallid sturgeon in the Missouri River below the dam. Not only does the DEIS fail to discuss these realistic adaptive management actions, but it also makes clear that after its one-year warranty period is over, the Corps will not provide any additional funding to remedy the situation. This is unacceptable and very likely a violation of the Endangered Species Act.	The Agencies acknowledge there will be uncertainties associated with any alternative that is implemented at the Intake Diversion Dam. These uncertainties are discussed in Section 4.9. Because of the uncertainties with the Project, the Agencies are committed to implementing a Monitoring and Adaptive Management Plan that takes into consideration the biological criteria provided by the Service. The proposed Monitoring and Adaptive Management Plan can be found in Appendix E. Also, the Monitoring and Adaptive Management Plan has been updated to better describe Agencies roles and responsibilities moving forward. The FEIS has also been updated with a section (4.9.9) talking about the Corps commitment to the upper Missouri River Basin and how the Lower Yellowstone Project fits into that bigger picture.
OR-7		9	Based on our read of the DEIS and the information contained in David Marcus' analysis, we believe the Corps and BOR significantly understated the costs of the preferred alternative (Bypass Channel), significantly overstated the costs of the Multiple Pumps Alternative, and failed altogether to consider less expensive variations of the Multiple Pumps Alternative that could satisfy the biological needs of pallid sturgeon and other native fish while also meeting the needs of farmers in the Lower Yellowstone Project virtually 100 percent of the time.	See responses to OR-7, #15 and 16 below.
OR-7		10	The DEIS understates the costs associated with the preferred alternative (Bypass Channel) in the following ways. First, by using an FPCI of .67 for all 14 selected native fish species instead of an FPCI of .60 for pallid sturgeon alone, or, more appropriately, an FPCI of .50 (for pallid sturgeon alone using the F1 value of 3 in the 2015 EA), the DEIS overstates the pallid sturgeon-specific HUs for the preferred alternative by 20 percent. Were the agencies to use an FPCI of .5 instead of .67, the cost per habitat unit would increase from $727 to $876, making the preferred alternative less cost-effective than the Multiple Pumps Alternative (using three or five pump sites). Considering that there has never been a bypass channel or fishway constructed that has been documented to have passed pallid sturgeon or shovelnose sturgeon, it would be entirely reasonable for the agencies to use an FPCI of less than .5. If one were to use an FPCI of .4, for example, the cost per habitat unit for the preferred alternative would jump to $1,110.	A sensitivity analysis was conducted to identify if using such modified scores would result in the identification of different best buy or cost effective plans. There is no difference. See revised Appendix D.

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OR-7		11	The second way the DEIS understates the cost of the preferred alternative is by excluding any costs that would be incurred to implement adaptive management actions should the preferred alternative fail to accomplish its goal of passing pallid sturgeon following the expiration of the Corps' one-year warranty. These costs could be relatively modest if the actions taken are limited in scope (e.g., modifying the bypass channel, removing fill from the existing natural channel, removing the existing boulder field downstream from the diversion dam, modifying the notch in the new dam, or modifying the headworks); or they could far exceed the total cost of the preferred alternative if they include removing the new dam, installing an irrigation pump system to replace its function, or modifying operations at Fork Peck Dam in an effort to restore pallid sturgeon to the Missouri River downstream of the dam.	Both monitoring and adaptive management has been assumed for every alternative including the Bypass Channel. For alternative comparison it was estimated that there would be a 1% cost of adaptive management, this assumption was applied to each alternative as it could be applicable to any of the alternatives. This is stated in Section 2.4.2 (pdf page 144). The costs of removing a new dam, installing pumps or modifying Fort Peck are beyond the scope of the Monitoring and Adaptive Management Plan for the alternatives considered in the Intake Fish Passage FEIS. "Table 2-33 provides the annualized costs of each alternative. Annualized costs have been developed and include interest during construction, monitoring and adaptive management and OM&R. OM&R are included in detail under the alternative descriptions in Section 2.5. All of these costs were estimated over a 50-year period of analysis using the current federal discount rate and are presented in April 2016 prices. Monitoring is assumed to occur for the first eight years and for comparison purposes adaptive management was estimated as 1 percent of the construction cost." This has been expanded upon in the FEIS as the reference to monitoring and adaptive management in both Section 2.3.2.6 and Appendix E were not clear. Monitoring would apply to all of the alternatives, both biological and physical. In addition it is assumed that adaptive management not merely be for ecosystem components but for function of the irrigation system also. For the Bypass Channel Alternative the annualized (over 50-years) cost of adaptive management is shown in Table 2-34. Note that the discussion of adaptive management in the comment on page 13 of Appendix A attached to your July 27 letter appears to mix up adaptive management actions with O&M. Modifications of the alternative to meet its objectives are considered adaptive management, while actions to address damages or make repairs are considered O&M. Table 2-7 includes estimated costs for repairs to the bypass channel, these are entirely separate from adaptive management.
OR-7		12	Conversely, the DEIS overstates the cost of the Multiple Pumps Alternative by making several false assumptions and miscalculations (see Appendix A, pp. 15-23). Among these, it overstates pumping loads by more than 28 percent; overstates capital costs such as the length of pipe needed, the cost of unnecessary backup equipment, and the costs of planning engineering, design and construction management; overstates the interest charges that would be incurred during construction; and overstates the price of energy to run the pumps. Together, these overstated costs add up to $8.97 million, or 6.476 percent of the total cost of this alternative (see Appendix A, p. 22). Furthermore, the DEIS fails to consider a variation of the Multiple Pumps Alternative that would include only three pump sites instead of five (see Appendix A, pp. 25-37). Such an alternative would deliver at least 1,100 cfs of water to the Lower Yellowstone Project 97 percent of the time. To put that in perspective, that's more than the historical average monthly and annual diversions that have actually occurred at Intake. The total cost savings of building three pump sites instead of five is estimated at $42.76 million, which is 30.85 percent of the total estimated cost of the Multiple Pumps Alternative in the DEIS (see Appendix A, p. 34). We strongly encourage the Corps and BOR to explore this alternative in greater detail in the FEIS in order to fully assess how and to what extent it might affect farmers in the Lower Yellowstone Project.	A. Overstated Pumping Loads- Part of the assertion that the pumping loads are overstated by 28% is based on calculations of average historic diversion rates that were attached to the commenter's letter in an Excel spreadsheet (Attachment 2). We have reviewed both the commenter's Appendix A and associated calculations and have found that the commenter's calculations are not accurate and do not agree with calculations that our engineering team has completed and verified. We stand by our assumption of an average annual diversion rate of 1,100 cfs which was used in the DEIS. This was based on the average annual diversion noted in the 2010 Final Environmental Assessment of 327,046 acre-feet per year over a 5 month irrigation season. (327,046 acre feet / 153 days between May and September = 1,078 cubic feet per second, after unit conversions). This was rounded to 1,100 cfs for use in the preliminary design. This value was confirmed using daily flow measurements from years 2000 and 2012 in which the average diversion rates were 1,094 cfs and 1,097 cfs. After reviewing the commenter's calculations we took a deeper look at diversion data in an attempt to identify the discrepancy between the commenter's data and the Agencies' data. Upon further analysis the average flow rates from years 2000-2015 is 1,135 cfs, and for the period 1968- 2015 is 1,122 cfs. This is further explained in response to comment OR-7, #16, and calculations are being added as an attachment to Appendix A (Engineering) of the FEIS for full disclosure of the data and associated calculations. B. Length of Pipe Needed- The reviewer commented on the pipe alignments chosen by the engineering team and suggested that pipe routes could have been shortened in the preliminary design and states assumed costs

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				that could have been saved. While we concur that shorter pipe routes may reduce pipe costs that assumption fails to recognize that there are tradeoffs and costs to doing so. For example at Site 3 reducing the pipe length by 2,600 feet by not choosing an alignment along County Route 103 would require a new crossing under the BNSF Railroad Right of way, installation of a construction and maintenance road, and acquisition of right of way or fee title to the properties crossed. None of these costs are accounted for in the commenter's suggested savings. Uncertainties in the level of design are acknowledged, and appropriately accounted for in the cost estimate. We stand by the design assumptions and that they are appropriate for the level of design completed for the FEIS. As described above the savings proposed is likely offset by costs that have not been accounted for in the commenter's scenario. C. Unnecessary Backup equipment- The reviewer argues that back up pumps and generators are unnecessary. Both the designs and O&M estimates have been developed by an engineering team and informed by real world examples and data from Buffalo Rapids and Sidney Irrigation District pumping costs and experience. It should be noted that there were also multiple comments on the DEIS pertaining to experiences with pumping costs and repairs. The response to comment OR-7, #16 will provide more detail but there is data to suggest that there were 13 separate power outages during the 2015 irrigation season. In addition to operational issues water fluctuation in canals during outages can cause damage to canals including flooding of adjacent properties. Using pumps at one site to replace pumps at another site presents several complications because the existing irrigation canal was designed for upstream-control so pumps at different sites are not directly interchangeable. D. Energy Prices- The cost of power used in the analysis in the DEIS assumed that power would be purchased from the local utility (MDU) and used those rates in energy calculations. Since it is not certain that Pick-Sloan power can be acquired by the LYID for the new pumps this seemed the prudent assumption to make. However, we did disclose the possible costs of Pick-Sloan power as described in Section 2.3.2.3. Note that the reviewer's savings calculations for use of Pick-Sloan power are missing a major component of the power costs and are in error. The savings presented on Page 40 of the commenter's Appendix A (Attachment 1) do not account for the capacity charge of $1,047.47 per kW. The capacity charges have been made clear in the FEIS under Pick-Sloan Power. We have updated the power cost calculations in the FEIS to display Pick-Sloan power rates, although we must reiterate that there is a process to apply for that power. If it were shown to not be available the costs would increase to those shown in the DEIS.
OR-7		13	Author included Appendix with comments from David Marcus that are not reflected here.	See responses inserted on next page.

Response Comment OR-7, #13 (Appendix A Comments on the Intake Dam EIS. David Marcus. 7/21/16)

These responses address comments included in the subject Appendix attached to two comment letters

1. "The DEIS conclusion overstates the economic benefits of the Bypass Channel Alternative (Section III) in several significant ways."

See response to OR-7, #6 and #7 (included below)

Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected. In addition, a sensitivity analysis was conducted for the cost effectiveness and incremental cost analysis to identify whether different index values would result in a different list of cost effective or best buy plans. There is no difference. To clarify, the FPCI model is a planning tool to compare the relative effectiveness of each alternative. The index score does not represent either the specific number of fish that will pass nor does it calculate a statistical probability of fish passage, thus any comparison of the index value to the Biological Review Team's (BRT) criteria of passing 85% of the fish that approach within 1 mile downstream of Intake Diversion Dam is not valid.

In addition:

Based on the cost estimates developed for the alternatives, which have been verified and revised in response to comments (Updated with Pick Sloan Power Rates), the Bypass Channel has a lower average cost per unit output than the Multiple Pump alternative. This position is reflected in the following response to comments on the cost-effectiveness/incremental cost analysis (CE/ICA) methodology.

As noted in Appendix D Section 2.4, the CE/ICA analysis does not itself conclude that the Multiple Pump alternative is impracticable. Rather, the CE/ICA provides information about the incremental cost of habitat outputs among the horizon of optimal plans. As noted in the comment letter and report, both the Bypass Channel and the Multiple Pump alternatives were found to be *Cost Effective* and *Best Buy* plans (in the parlance of the USACE guidance IWR 95-R-01). The CE/ICA does not identify a preferred plan. The CE/ICA illustrates the horizon of efficient plans from which a recommended plan might be selected. As noted in the report, "For Corps ecosystem restoration projects, the selected plan should be the alternative having the maximum excess of non-monetary benefits (habitat output) over costs."

The CE/ICA analysis in the Final Environmental Impact Statement (FEIS) shows that for the first ~7000 habitat units, the Bypass Channel provides that level of output for the least cost. It then shows that *if the decisionmakers desire additional habitat output*, the Multiple Pump alternative could be implemented. Doing so would achieve an additional ~5000 habitat units at an increased cost per unit output. The CE/ICA's purpose is to provide information about the horizon of alternative plans, and to highlight breakpoints in the incremental cost per unit output for increasing levels of environmental benefit. In this case, it was concluded that the level of output associated with the Bypass Channel was sufficient to satisfy the project purpose, need, and objectives. While the Multiple Pump alternative would have also satisfied the habitat objectives, it was less favorable in terms of maximizing excess of habitat benefits over costs, and it was subject to additional concerns as outlined in other sections of the FEIS.

2. The DEIS understates the capital and operating and maintenance (O&M) cost of the Bypass Channel Alternative (Section IV.A)

See response to OR-7, #14 (included below)

Both monitoring and adaptive management has been assumed for every alternative including the Bypass Channel. For alternative comparison it was estimated that there would be a 1% cost for adaptive management, which was applied to each alternative. This is stated in Section 2.4.2 of the FEIS. The costs of removing the weir proposed as part of the bypass channel alternative, installing pumps or modifying operations at Fort Peck Dam and Reservoir are beyond the scope of the Monitoring and Adaptive Management Plan for the alternatives considered in the Intake Fish Passage FEIS.

The DEIS states: "Table 2-26 provides the annualized costs of each alternative. Annualized costs have been developed and include interest during construction, monitoring and adaptive management and OM&R. OM&R are included in detail under the alternative descriptions in Section 2.5. All of these costs were estimated over a 50-year period of analysis using the current federal discount rate and are presented in April 2016 prices. Monitoring is assumed to occur for the first eight years and for comparison purposes adaptive management was estimated as 1 percent of the construction cost."

This has been expanded upon in the final Environmental Impact Statement (FEIS). Monitoring would apply to all of the alternatives, both biological and physical. In addition, it is assumed that adaptive management not merely be for ecosystem components but for function of the irrigation system also. For the Bypass Channel Alternative, the annualized (over 50-years) cost of adaptive management is shown in Table 2-26.

Note that the discussion of adaptive management in the comment on page 13 of Appendix A attached to your July 27 letter appears to confuse adaptive management actions with O&M. Modifications of the alternative to meet its objectives are considered adaptive management, while actions to address damages or make repairs are considered O&M. Table 2-7 includes estimated costs for repairs to the bypass channel. These are entirely separate from adaptive management.

3. The DEIS overstates the capital and O&M costs of the Multiple Pumps Alternative (section IV.B).

Comments state that the operating cost is overstated due to errors in calculating pumping energy requirements, and hence pumping energy cost. This claim is based on four items, which the reviewer estimated amount to an additional cost of $111,000 per year.

(Item IV.B.1.a) states that the DEIS assumes a water diversion requirement that is too high. The DEIS used an average annual diversion rate of 1,100 cfs over the 5-month period from May-September to calculate the estimated annual energy consumption. The reviewer states that the average diversion rate should instead be either 1,044 cfs or less than 1,000 cfs.

The average annual diversion rate of 1,100 cfs which was used in the DEIS was based on the average annual diversion noted in the 2010 Final Environmental Assessment of 327,046[1] acre-feet per year over a 5-month irrigation season. This equates to an average flow rate of 1,078[2] cfs during the five month irrigation season, which was rounded to 1,100 cfs for use in the preliminary design. This value was confirmed using daily flow measurements from 2000 and 2012 provided by the irrigation district, in which the average diversion rates were 1,094 cfs and 1,097 cfs. These two years were chosen for the preliminary analysis because the data was available electronically and these two years are believed to be representative.

However, in response to this comment a more detailed average daily flow rate was calculated, using daily flow measurements provided by the irrigation district for 11 years between 2000 and 2015[3]. The average annual flow rates from this dataset for measurements between May and September range from 1,000 cfs to 1,314 cfs, as shown in Table 1, below. The average annual flow rate during the 2000 to 2015 period is 1,135 cfs, suggesting that the 1,100 cfs rate used in the energy calculation is approximately 3% low.

Table 1 – Average Daily Flow Rates Measured at Willot Bridge, 2000 – 2015

Year	May	June	July	August	September	Yearly Average
2000	1168	1032	1211	1252	867	1106[4]
2003	868	1085	1367	1363	1031	1143
2004	1108	1052	1266	1275	953	1131
2005	929	933	1232	1346	930	1074
2006	972	1215	1389	1303	991	1174
2007	770	886	1389	1369	969	1076
2008	1150	1407	1468	1316	1232	1314
2009	920	1427	1273	1252	1033	1181
2010	815	722	1370	1310	781	1000
2012	1077	1108	1274	1221	902	1116[4]
2015	1107	1151	1325	1295	987	1173
2000 to 2015	**989**	**1092**	**1324**	**1300**	**971**	**1135**

[1] See the 2010 Final Environmental Assessment, page 1-5.
[2] 327,046 acre feet / 153 days between May and September = 1,078 cubic feet per second, after unit conversions.
[3] Data for 2001 and 2002 was not available. Data for 2011 was missing entries for approximately 63% of the days during the May – September period and was not included in this analysis.
[4] Flow rates shown for years 2000 and 2012 include only measurements from May to September and differ slightly from the average flow rates stated in the DEIS, which were calculated including measurements in April.

A review of the calculations provided with the comments shows that the flow rate for the year 2000 conflicts with the values in Table 1, likely due to data entry errors. The average flow rates calculated in Attachment 2 (Excel Spreadsheet) 2003 to 2010 appear to have been calculated using the total annual volume of water diverted, without accounting for the differing number of days when measurements were taken during those years. Also, the calculations for 1977, 1979, 1981 and 1982 used monthly diversion volume data which was more than 75% below the overall average and should be considered suspect. An analysis of the daily flow measurements recorded for 1979, 1981, and 1982 show that the average flow rates measured during the 5-month irrigation season were between 1,071 cfs and 1,154 cfs, which is between 5 and 10 times larger than the values calculated in Attachment 2, depending on which year is examined. No daily flow measurements for 1977 were available for comparison, therefore data for that year was excluded from this review.

Correcting for these errors, the average flow rate during the 5-month irrigation season, for the period from 1968 to 2015 is 1,122 cfs. A chart of the average annual flow rate during the 5-month irrigation season for each year from 1968 to 2015 is shown in Figure 1, below.

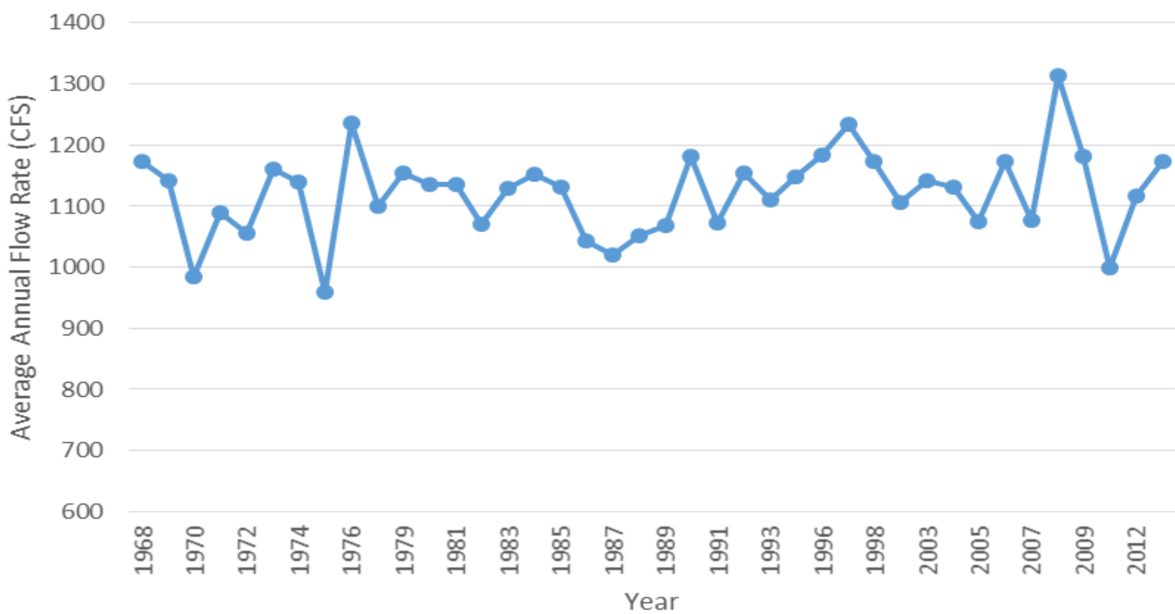

Figure 1 – Average Annual Flow Rates – 1968 to 2015

The Agencies stand by our assumption of an average annual diversion rate of 1,100 cfs, which was used in the DEIS and FEIS.

(Item IV.B.1.b) states that the DEIS assumes unnecessarily lumpy pumping increments. The calculations for the preliminary design are intended to provide a rough estimate of the average annual energy consumption, treating each pump station site as a single unit. This level of analysis was chosen for the alternatives analysis because it captures differences in operation among the sites, without addressing the operational considerations involved in having 15 distinct operating conditions. If this alternative is selected for further analysis, a more detailed analysis would be performed, addressing both individual pump operation and operational concerns such as the number of start-stop cycles on each pump and the need to adjust canal gates following a change in the flow rate. It should be noted that a more detailed analysis would include both factors which tend to increase the power demand and factors which would tend to decrease it.

(Item IV.B.1.c) states that the DEIS assumes the pumps are operated in an inefficient manner. The energy calculation in the DEIS assumes that the pumping stations are operated in a downstream-to-upstream order when transferring from gravity inflows at the upstream end to pumped inflows using the pump stations. This was assumed to minimize interference between the pumped inflows from the pumping stations and gravity inflows.

The preliminary analysis of the irrigation canal determined that the pumps at Sites 1 and 2 could not be used simultaneously with gravity inflows, as stated in the DEIS. However, Site 3 is located in a transitional location which will interfere with gravity inflows under some hydraulic conditions in the river and canal. A detailed analysis of the irrigation canal to determine the limits of this interference is beyond the scope of the preliminary design, and the conservative assumption that the pumping stations would be operated in downstream-to-upstream order was used in the preliminary energy analysis to provide a reasonable preliminary energy estimate, using an operating sequence which has been shown to work.

(Item IV.B.1.d) states that the DEIS does not address monthly variations in both hydrology and irrigation requirements. The preliminary energy analysis provided in the DEIS addresses these two factors in a simplified manner. The variation in the monthly irrigation requirements is addressed by using an average diversion rate throughout the year. The variation in the hydrology is addressed by using the flow-exceedance rates to determine the number of days of gravity diversions that are possible under each operating condition. In this way, both of these factors are considered, which is appropriate to the level of the preliminary analysis.

(Item IV.B.2) States that the pipeline lengths from Sites 3, 4, and 5 are overstated.

The first comment regarding the capital cost of the Multiple Pumping Station Alternative is in regards to the piping length for Site 3. The comment states that the capital cost is overstated due to the piping length for pump Site 3, and that eliminating the long east-west section along County Route 103 would cut the pipe length by about 2,600 feet (Item IV.B.2). The shorter alignment suggested by the reviewer has two tradeoffs. The first tradeoff is that it would cross existing farms and would likely require purchasing easements or fee title to construct and operate. The second tradeoff is that the shorter alignment would cross the BNSF Railroad at a new location, instead of at an existing road crossing as it is shown in the preliminary design. This change is expected to require more difficult construction alignment and could likely be more expensive mitigation than crossing it at the location of an existing road crossing.

Negotiations with the existing land owners and the BNSF Railroad have not been performed and the cost of these two tradeoffs has not been quantified at this time. However it is expected that these additional costs will offset some or all of the savings associated with the shorter pipeline length proposed. The pipeline alignment from Site 3 shown in the preliminary design was selected to minimize these unknowns.

The second comment regarding the capital cost of the Multiple Pumping Station Alternative is in regards to the piping length for Sites 4 and 5 (Item IV.B.3). The reviewer states that moving the outlet to the irrigation canal to a location near Site 4 would shorten the pipelines by about 2,000 feet. The alignment proposed by the reviewer would require crossing the BNSF Railroad at a new location, raising similar concerns to those discussed for Site 3, above.

(Item IV.B.4) The third comment regarding the capital cost of the Multiple Pumping Station Alternative states that providing redundant pumps and standby generators is unnecessary (Item IV.B.4). The reviewer states that if a pump fails at one site, then backup pumping can be supplied from other pumps which are not in use, and that the consequences of a pump failure or power outage would be minor.

Using pumps at one site to replace pumps at another site presents several complications because the existing irrigation canal was designed for upstream-control. Water flow in the irrigation canal travels at a low velocity, ranging from 1.3 to 1.5 feet per second between Site 3 and Site 5. The distance between Site 3 and Site 5 is approximately 5.3 miles (28,000 feet), resulting in a delay of approximately 5.6 hours between the time that an additional pump at Site 3 is turned on and the time when the water arrives at Site 5. During that time, the flow rate in the canal would be reduced by 11% (91.6 cfs / 824.4 cfs). While this may not be prohibitive, it presents operational challenges and demonstrates why pumps at different sites are not directly interchangeable, even assuming that a failure occurs when there is at least one inactive pump in the system to replace it. Should a pump fail when all 15 pumps are in use, then the available water supply would be reduced by 7% (91.6 cfs / 1374 cfs) until the system is repaired.

The reviewer states that the standby generators represent an extreme case of overbuilding, because power failures would be rare, and the consequences of a blackout would not be significant. Data logs maintained at the Thomas Point Pumping Site and the Savage Irrigation Pumping Site, both located between Site 1 and Site 3, show that there were 13 separate power outages during the 2015 irrigation season that caused critical water level fluctuations in the 2 pumped dirt canals they are connected to, or 2.6 outages per month during the 5 month irrigation season[5]. This indicates that a power failure would not be a rare event.

The consequences of a power failure to the Multiple Pumping Station system described would be similar to those experienced at the Thomas Point Pumping Site and the Savage Irrigation Pumping Site, but on a larger scale. During a power outage, the pumping stations would stop supplying water to the irrigation canal, however the water in the canal would continue flowing downhill, resulting in a rapid drawdown in the canal and laterals. When power is restored, the private pumps and pivots on farms can restart more quickly than the water being supplied from the pumping stations, which accelerates the speed of the drawdown, or they can lose suction due to the water level fluctuations and turn off, resulting in canals and laterals overfilling and flooding when water arrives more quickly than it is being removed. This process has caused public flooding at the Thomas Point and Savage Irrigation Pumping Sites, however the larger scale of the proposed pumping stations, and their application to the entire 54,000 acre project, presents the risk of creating larger scale flooding.

[5] See email from James Brower, dated March 4, 2016.

Another problem observed at the Thomas Point and Savage Irrigation Pumping Sites is that the rapid drawdown of the water level in the canals causes the saturated dirt banks of the irrigation canals to collapse inward, both blocking the canal and thinning the canal banks. At the Thomas Point and Savage Irrigation Pumping Sites, operators report that this process has required constant maintenance or rebuilding of the canals which are connected to those pumping stations. Similar maintenance problems would be expected to occur regularly along the 71.6 mile length of the main irrigation canal and the 225 mile length of the irrigation laterals, which would significantly add to the annual maintenance costs. Additionally, the loss of bank stability after a collapse could result in large scale public flooding, if it compromises a section of the canal that relies on berms to contain the canal. The potential for flooding due to a canal failure has not been evaluated for this study, but similar failures have occurred in the past. For all these reasons, we disagree with the reviewer that the standby power generators represent an "even more extreme case of overbuilding."

4. Quantifying most of the overstated cost of the Multiple Pumps Alternative (and some of the understatement of the cost of the Bypass Channel Alternative), the incremental cost of the fish passage benefits from going from No Action to the Bypass Channel Alternative is still less than the incremental cost of the benefits gained by going from the No Action Alternative to the Multiple Pump Alternative (section V.B).

See response to OR-7, #6 and #7 (included below)

Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected. In addition, a sensitivity analysis was conducted for the cost effectiveness and incremental cost analysis to identify whether different index values would result in a different list of cost effective or best buy plans. There is no difference. To clarify, the FPCI model is a planning tool to compare the relative effectiveness of each alternative. The index score does not represent either the specific number of fish that will pass nor does it calculate a statistical probability of fish passage, thus any comparison of the index value to the Biological Review Team's (BRT) criteria of passing 85% of the fish that approach within 1 mile downstream of Intake Diversion Dam is not valid.

5. The DEIS further overstates costs of the Multiple Pumps Alternative by failing to analyze ways that using fewer pump sites might reduce the cost substantially (sections VI and VII).

The comments suggest using three pumping sites instead of five and lowering the design flow rate for the system to 825 cfs, with the remainder of the required irrigation water being provided by gravity though the existing intake, when the river level is high enough to allow it.

However, the analysis provided in the comments mistakenly compares the flow which would be available using this system to the historical average water use, but it should be compared to the 1,374 cfs allowed under the water right and available using the existing system. A review of the diversion-exceedance data previously presented in the DEIS[6] shows that the proposed reduced-capacity system would fail to provide the required 1,374 cfs of irrigation water on 30% to 40% of the days during a typical irrigation season[7].

As mentioned previously, the Lower Yellowstone Irrigation District (LYID) canal system is designed for gravity diversions and upstream control. Should a modified system be implemented, such as only pumping water from sites 3-5, modifications (physical and operational) to the system would be required. This could be in the form of reductions in canal capacity, additional check structures, or additional pumping stations. There would be cost and impacts involved with such changes that are not accounted for in the assumption that reducing the pumps from 5 to 3 would reduce costs.

6. The DEIS contains a number of other analytical errors that ignore costs associated with the Bypass Channel Alternative, including rock removal, and tend to inflate the cost of the Multiple Pumps Alternative (sections IV.A.1., VIII.C-D).

Section IV.A.1 - See response to OR-7, #14 and item 2 above.

Section VIII, C-D "Further improvements with 3 pump sites"

C. Boulder field removal costs

It is assumed that the boulder field will be removed in combination with the weir in order to remove the boulder substrate and associated turbulence, allow fish passage. As referenced in other comments, the costs were included with dam removal because it is the assumption that the boulder field would require removal along with the weir. Since this was not clear the FEIS has been edited to clarify that point.

The downstream entrance to the Bypass Channel is downstream of the boulder field and therefore not blocked by boulders. One of the elements in the Monitoring and Adaptive Management Plan is to monitor the existing boulder field for movement, and any effects on the entrance to the bypass channel.

D. Role of contingency

Per USACE guidance (ER 1110-2-1302), "contingencies are included in the estimate to cover unknowns, uncertainties, and/or unanticipated conditions that are not possible to evaluate from the data on hand at the time the cost estimate is prepared…" Currently, full design plans and all necessary technical studies are complete for the Bypass Channel alternative, but the other four alternatives are only developed to a conceptual level (~10% design). Therefore, there is an inherent difference in design levels and amount of detailed technical analysis available upon

[6] Appendix A-2, Attachment 7, Table 3, pdf page 329 of 527
[7] A gravity diversion of 550 cfs would be required to provide 1374 cfs (1374 – 824 = 550). This capacity is available between 60% and 70% of the days during a typical 5-month irrigation season, meaning it is unavailable between 30% and 40% of those days.

which to base the cost estimates. This difference in uncertainty levels is reflected in the lower contingency percentage used for the Bypass Channel alternative.

Also, per general cost engineering practice (see AACE International Recommended Practice No. 18R-97), accuracy ranges for Class 1 estimates (Bypass Channel) range upwards of 15% high. In comparison, conceptual level estimates, or Class 3 or 4 estimates, may range upwards of 50% on the high side. Thus, our current contingency assumptions, based on level of detail in design information, fall in line with current estimating practices.

The design work has been completed for the Bypass Channel and a construction contract was awarded last August. Therefore, it was decided that for alternative comparison the design costs and contingency should reflect that. Since no further design analysis would be required it was not included in the cost estimate. Contingency for an alternative that has a 100% design is inherently less than for one that is at less detailed design. Therefore, the contingency for the Bypass Channel Alternative should be significantly lower than the other alternatives due to the fact that all design analysis had been completed and is reflected in the estimate.

Section VIII. Other Issues

B. Dam removal costs

The comment points out that there are different dam removal costs shown in Appendix B and states that “Equally clearly, at least one of the estimates is wrong”. We need to clarify this misinterpretation of the cost appendix.

The reason for the difference noted in this section is that the reviewer was looking at costs from the Abbreviated Risk Analysis documents. This risk analysis breaks out costs differently between each alternative based on several factors that may include type of construction activities, assumed contracting plan, scale of diversion and water control, total material costs, etc. Therefore, the costs have been broken out slightly differently in the risk documents between the two alternatives.

For proper comparison, the pre-contingency costs for the dam removal (found in the MCACES estimates) are $6.6 million for the multiple pump alternative and $7.0 million for the multiple pumps with conservation measures alternative. The exact same items and quantities were used within the two alternative MCACES estimates. The difference in cost is reflective of the contracting plan assumptions (the $7.0 million value assumes a standalone contract, with reflective contractor markups, whereas the lower cost option assumes the dam is part of a significantly larger contract with reflective lower contractor markups).

However, once these values were input into the risk analysis, the different components of the dam removal (mobilization/demobilization, dewatering, and dam removal costs) were separated into their respective features of work within the multiple pumps with conservation measures alternative. Therefore, only approximately $2.5 million is under the “Existing Dam Removal” item, but the remaining $4.5 million is spread between the “Mob, Demob & Site Prep” and “Diversion and Control of Water” items. In contrast, the multiple pump alternative shows all costs for the dam removal under one line within the risk analysis. The difference is simply in the input into the risk analysis, but all costs for the dam removal have been included appropriately.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
OR-8	L. Hanebury, D. Regele, S. Regele, Yellowstone Valley Audobon Society	1	YVAS recognizes the importance to maintain integrity of the riparian habitat because it provides year round habitat for many bird species and migration habitat and cover for Neotropical migrant birds, as well as the native fish in the Yellowstone drainage. Constructing a permanent concrete dam and filling in a natural side channel, does not maintain the integrity of this unique ecosystem.	See Sections 4.8, 4.9 and 4.10 for discussion of riparian impacts.
OR-8		2	We oppose the preferred alternative. We disagree with the statement that the "The overall outcome of the proposed Bypass Channel Alternative is beneficial to the endangered pallid sturgeon, as well as other fish species". There is no evidence that the constructed bypass channel will work for pallid sturgeon. Destroying a natural side channel that passes some native fish including a few pallid sturgeon and constructing a bypass channel that may pass some native fish is not beneficial as a freely flowing Yellowstone River.	Many sturgeon species have benefitted from fish passage (see other responses). In addition, pallid sturgeon in the Missouri River frequently pass through side channels, both natural and constructed. The proposed Intake bypass is designed specifically for pallid sturgeon passage and as such should be even more fish friendly than the side channels which they have already been documented to use. Current literature on bypass designs for sturgeon all highlight that promising approaches include those that mimic natural channels. This would include building a channel with similar geometry, facilitate passage under a range of discharge conditions, and incorporate a broad range of hydraulic criteria that emulate the range and depths and velocities that have been successfully negotiated by targeted migratory fish. (Braaten et al. 2015, Aadland 2010, Jager et al. 2016). Pallid sturgeon have been shown to use natural side-channels in the upper Missouri River (Braaten et al. 2015) and constructed side-channels in the lower Missouri River (DeLonay et al. 2014, DeLonay et al. 2016a; DeLonay et al. 2016b) during spawning migration. In the upper Missouri River, pallid sturgeon migrating upriver passed through a variety of short (0.4-km long; 0.25 mi) and long (3.9-km long; 2.42 mi) side channels (Braaten et al. 2015). The constructed side channels in the lower Missouri River, even though not constructed with adult sturgeon migration in mind, have demonstrated that sturgeon will use constructed channels and at times will choose to use them even when the main channel is unobstructed. The physical and resulting hydraulic features of the proposed bypass channel at Intake were modeled according to the features within known migratory pathways (main channel and side channel) used by pallid sturgeon in the upper Missouri River and Yellowstone River. The final geometry of the proposed bypass channel falls within the range of all parameters, including length, width, sinuosity, bend radius, and meander wavelength. In addition, this bypass channel has been engineered with expert input to increase the odds of use by sturgeon by optimal location and orientation of the downstream entrance, a flow split which is higher than side channels which have been used by pallid sturgeon, and water velocities and depths suitable for passage at a wide range of flows. Because pallid sturgeon have been observed to use side channels (both constructed and natural) on the Missouri River and Yellowstone River, even when the main channel is unobstructed, and because the designs mimic physical parameters of natural sidechannels actually shown to be used by pallid sturgeon on the Yellowstone, we believe that construction of the preferred bypass alternative will result in a high likelihood that the constructed bypass will effectively provide passage opportunity under a variety of flows. Lastly, the design of the bypass is constructed with the entrance near the base of the obstruction, rather than located some distance downstream. The best entrance locations are at the base of the obstructions because a fishes natural tendency to seek upstream passage at the obstruction. Entrances located significant distances downstream of the barrier may cause fish to swim past and become trapped below the dam by their natural instinct to swim upstream (Aadland et al. 2010). The current side channel, besides being limited to passing fish only during very high flows, has the problem of an entrance that exists significantly downstream from the barrier.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
OR-8		3	We note that in the EIS, it states that "Section 7 consultation by Reclamation and the Corps on the action proposed in this EIS has not been concluded at this time. A final biological opinion is anticipated to be complete by fall 2016. Construction will not proceed until the biological opinion is complete and consultation concluded. While the effects of alternatives on recovery of species is analyzed in this EIS, Section 7(a) (2) does not require the actions on which the federal agencies are consulting to contribute to or result in the recovery of the species." The ESA directs all Federal agencies to participate in conserving these species including recovery. Specifically, section 7(a)(1) of the ESA charges Federal agencies to aid in the conservation of listed species.	Comment noted.
OR-8		4	The COE in the 2003 Missouri Mainstem Biological Opinion determined that the pallid sturgeon is in jeopardy. We believe that consultation on the preferred alternative should also be a jeopardy biological opinion. The Service states, "When an action appreciably impairs or precludes the capability of a recovery unit from providing both the survival AND recovery function assigned it, that action may represent jeopardy to the species."	Biological Opinions are the responsibility of the Service not the Corps; the Service will make the determination as to whether there is a jeopardy opinion.
OR-8		5	YVAS does not agree with your Section 404(b)(1) Guidelines Analysis as it does not comply with the Section 404(b)(1) Guidelines. Please detail why the "overall outcome of the proposed Bypass Channel Alternative is beneficial to the endangered pallid sturgeon, as well as other fish species". Why would an open channel providing full upstream passage above Intake Dam not be the most beneficial? The applicant will have to clearly demonstrate that the proposed project (Preferred Alternative) is the Least Environmentally Damaging Practicable Alternative (40 CFR 230.10.10(a)). Issuance of this permit will result in Jeopardy to the pallid sturgeon and will result in unacceptable adverse effects to Aquatic Resources of National Importance (ARNI). The Environmental Protection Agency should Request a higher level of review by the Department of the Army under the 1992 404(q) MOA.	The Corps does not issue itself a permit under Section 404, but demonstrates compliance in accordance with 404(b)(1) requirements. According to policy, the Corps must consider Cost Effectiveness and Incremental cost analysis as part of its alternatives evaluation which is included in Appendix E. Considering the very steep increase in incremental cost, and considering there are biological uncertainties with all alternatives (proportion of adult motivated to migrate above Intake and spawn if provided the opportunity, how far upstream they will choose to spawn, etc), the Bypass Channel was considered to be the best overall federal investment relative to costs and benefits. In addition, more discussion on the practicability of each alternative has been included in Appendix C, Section 10. Practicability considerations include acquisition of land, construction difficulty, complications to the operation of the irrigation system, long-term reliability, and uncertainties regarding water availability. The Environmental Protection Agency has provided a review of the Draft EIS, and has provided a "lack of objections" determination. This rating indicates that the EPA review of the Draft EIS and supporting appendices did not identify any potential environmental impacts requiring substantive changes to the preferred alternative.
OR-8		6	YVAS supports removal of Intake dam to permit unobstructed full river passage of pallid sturgeon and the native fish of the Yellowstone River. This alternative is embedded in your two alternatives of Multiple Pump Systems and Multiple Pumps with Conservation Measures.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
OR-8		7	We request that the Bureau and the COE reanalyze both alternatives using the most practicable and less expensive elements to make them more workable. We have the perception that the elements that were more expensive (wells and a wind turbine(s) were paired with the Multiple Pumps and Conservation Measures to make it less cost effective. If you paired some of the conservation measures with more conventional intakes (Not Ranney wells) or a less expensive way to pay for running the pumps (interest from a trust fund and Pick Sloan power rates), the pumping alternative would be more viable. This would truly suit the Purpose and Need of this EIS in that it would totally provide for fish passage and provide irrigation water to the Lower Yellowstone Water District. More efficient irrigation systems such as pivot irrigation, may serve well the farmers who depend on that water when water becomes less available in the future.	The alternatives evaluated in the EIS were formulated to disclose the range of potential impacts that could occur. A final decision could include a variation of project elements within the range of impacts evaluated. The costs developed for each alternative are based on the reality of the types of pumps and existing electricity available to the site. If the Multiple Pumps Alternative were to be selected to move forward for more detailed design, some elements would be optimized for efficiency and cost savings. However, it is typically rare for a project's costs to be significantly reduced when moving from a feasibility level to the final design level as numerous factors are included as detailed line items that are currently considered in the contingency value. The Draft EIS was clear that additional Congressional Authorization would be necessary to establish such a trust and provide instruction for: ○ Who would establish and maintain the trust. ○ Where the funds for the trust would come from (agency appropriations or other source). ○ Purpose of the trust and what activities would be funded. ○ How long would the trust be authorized and conditions for when the trust would cease (i.e., where would the remaining funds go upon the expiration of the authority?). To address this comment, the EIS was revised to: ○ Provide additional discussion related to Congressional Authorization (See Chapter 2). ○ Describe assumptions associated with a conceptual trust (See Chapter 4). ○ Estimate the initial investment that would be necessary to off-set the additional OM&R costs associated with each pumping alternative (See Chapter 4). ○ Present potential effects of OM&R Expenditures on Individual and LYP Net Farm Income (See Chapter 4).
OR-8		8	A pumping and conservation alternative could also be built in stages while the current dam and intake provides irrigation water. Once each pumping stage is operational and providing adequate irrigation water, the old dam and all the rock can be removed.	Comment noted
OR-9	S. Regele, Yellowstone Valley Audubon Society	1	Yellowstone Valley Audubon Society (YVAS) agrees with the points raised and supports the recommendations in the July 28, 2016 comment letter from Mr. Zachary R. Shattuck, Chair of the Upper Basin Pallid Sturgeon Workgroup	Comment noted.
OR-9		2	We wish to emphasize Mr. Shattuck's point that "Improved efficiencies and updated technologies in irrigation practices would serve an agreeable compromise between socioeconomic viability and ecological integrity; a cornerstone of the vision and mission of the Missouri River Recovery Program (MRRP)."	Comment noted.
OR-9		3	The millions of dollars that would be spent to establish a Bypass Channel Alternative may very possibly be only an initial expenditure, and result in an unsuccessful project. Even if this measure was at least partially successful, monitoring and channel maintenance would seemingly have to continue in perpetuity – very expensive. That money applied to large intake pumps and/or other "Improved efficiencies" would not only help Pallid Sturgeon but would also support the riverine and related ecosystem and the unavoidable and necessary changes agriculture and the rest of society is faced with to conserve and more efficiently manage limited water resources.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
OR-9		4	Additionally, YVAS and many other organizations and concerned parties strongly support measures to minimize further impacts to and to improve “the health of the Yellowstone and Missouri rivers that will ultimately yield recovery of Pallid Sturgeon and long-term resiliency of the entire aquatic community.” We would like to add that the Yellowstone and Missouri rivers and the aquatic ecosystem they support are inextricably supportive of riparian and other terrestrial ecosystems.	Comment noted.
OR-9		5	Please implement a plan that minimizes environmental impacts to the ecological integrity of the Yellowstone River. Initiate holistic measures that minimize environmental impacts while also improving efficiencies and technologies in irrigation practices. Careful and holistic evaluation of the environmental and economic effects of the Bypass Channel Alternative would almost certainly support a different paradigm than creation, monitoring and maintenance of a Bypass Channel.	Please reference Chapter 4 of the FEIS which analyzed the environmental and economic consequences of the alternatives.
OR-10	M. Adams, Defenders of Wildlife, Natural Resources Defense Council	1	We urge the Corps and Reclamation (collectively, the “Agencies”) to adopt the “Multiple Pump Alternative” as is, or with some of the conservation measures described in the “Multiple Pumps with Conservation Measures Alternative.” Restoring the endangered pallid sturgeon’s habitat on the Yellowstone River is essential to averting the imminent extinction of the wild population of this species in Montana. The only way to allow pallid sturgeon to once again successfully spawn and “recruit” (produce young which survive to adulthood) and begin rebuilding a self-sustaining population in the river is to remove the existing dam and provide unobstructed passage through the main channel.	Comment noted.
OR-10		2	We also urge the Agencies to abandon their preferred alternative, the “Bypass Channel Alternative” (hereinafter, “Dam/Bypass Channel Alternative”). There is no evidence in the Draft EIS suggesting that the Dam/Bypass Channel Alternative will succeed in averting extirpation of the pallid sturgeon or in setting the pallid sturgeon on a path that would restore a self-sustaining, viable population. Instead, this alternative likely ensures the extirpation of the wild pallid sturgeon population in the upper Missouri River basin.	Success of the Intake fish passage project would be determined by its ability to successfully pass pallid sturgeon. There are no assurances that any type of bypass system or even complete weir removal will lead to a self-sustaining population of pallid sturgeon. However, it is widely acknowledged by basin scientists and the Service (USFWS 2014) that a lack of time (distance) sufficient for development of free embryos prior to settling is limiting natural recruitment of pallid sturgeon in RPMA 2. If this is true, providing access to habitats above Intake Dam will give drifting free embryos additional time for development and may ultimately provide natural recruitment. As with any bypass option and dam removal, it is unknown how many pallid sturgeon will be motivated to pass, how far upstream they may choose to spawn, and what level of recruitment may result. These unknowns are just as high for the dam removal option. As a result, the Missouri River Recovery Plan Adaptive Management Plan does not assume success for any of these options but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed.
OR-10		3	Perhaps recognizing that the best available science does not support adoption of the Dam/Bypass Channel Alternative, the Draft EIS fails altogether to analyze how it will affect pallid sturgeon survival or recovery in the Yellowstone River, and therefore, whether this alternative is likely to succeed. By failing to complete this analysis, the Draft EIS violates the National Environmental Policy Act (NEPA) and fails to cure a legal violation identified by the U.S. District Court for the District of Montana in its preliminary injunction order regarding the Agencies’ prior NEPA process for this project. In that order, the court specifically concluded that a “new analysis should include the	Pallid sturgeon life history and habitat requirements are not well understood. For this reason, the Pallid Sturgeon Recovery Plan (Service 2014) identifies numerous measures to expand pallid sturgeon knowledge while moving towards recovery. The Recovery Plan uses scientific method to obtain this knowledge, wherein questions are systematically answered by implementing actions, observing the response, and then determining the need for follow-on actions. Fish passage at Intake is one of those systematic, site-specific actions identified in the Recovery Plan wherein the outcome is uncertain so subsequent actions outlined in the Recovery Plan would be implemented based on pallid sturgeon response to implementing passage at Intake. Given the absence of information about pallid sturgeon, it is currently not feasible to meaningfully

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			anticipated effects of the Project on the recovery of pallid sturgeon." Defenders of Wildlife v. U.S. Army Corps of Engineers, 15-cv-14-GF-BMM (D. Mont. Sept. 4, 2015), Dkt. #73 at 12 (citation omitted).	differentiate how each alternative might contribute to recovery and would be entirely speculative. Ultimately, the Service will decide, through ESA consultation (not the NEPA process), if the proposed fish passage alternative would avoid jeopardy, contribute to recovery and as appropriate, meet the objectives of the Recovery Plan. Improving pallid sturgeon passage at Intake Dam is a site-specific project the Corps and Reclamation are undertaking consistent with Reclamation's obligation under ESA and as mentioned above, the Service's Pallid Sturgeon Recovery Plan. This site-specific project is one measure within a larger programmatic effort to recover pallid sturgeon as described in the Recovery Plan, the Corps WRDA Authority, and the programmatic adaptive management plan the Corps is developing for endangered species recovery on the Missouri River and Yellowstone River (expected to be available for public review December 2016). In summary, passage at Intake Diversion Dam may only be one measure in a suite of measures by the Corps, Reclamation and others that are necessary over time to recover pallid sturgeon.
OR-10		4	The Dam/Bypass Channel Alternative will not even meet the very low (and unlawful) bar set by the Draft EIS to "improve" pallid sturgeon passage. This Alternative would replace a porous rock dam with a concrete dam and replace a natural side channel with a man-made side channel. These changes are not an "improvement" for pallid sturgeon, and will likely permanently close the door on any potential for natural reproduction in the Yellowstone River. At best, a few pallid sturgeon may swim up the bypass channel each year, just as a handful of pallid sturgeon use the existing natural side channel now, and reach essential spawning habitat upstream. Further, even if a few pallid sturgeon swim upstream, there is no evidence to suggest that pallid sturgeon will successfully spawn and that their larvae will survive.	Current literature on bypass designs for sturgeon all highlight that promising approaches include those that mimic natural channels. This would include building a channel with similar geometry, facilitate passage under a range of discharge conditions, and incorporate a broad range of hydraulic criteria that emulate the range and depths and velocities that have been successfully negotiated by targeted migratory fish. (Braaten et al. 2015, Aadland 2010, Jager et al. 2016). Pallid sturgeon have been shown to use natural side-channels in the upper Missouri River (Braaten et al. 2015) and constructed side-channels in the lower Missouri River (DeLonay et al. 2014, DeLonay et al. 2016a; DeLonay et al. 2016b) during spawning migration. In the upper Missouri River, pallid sturgeon migrating upriver passed through a variety of short (0.4-km long; 0.25 mi) and long (3.9-km long; 2.42 mi) side channels (Braaten et al. 2015). The constructed side channels in the lower Missouri River, even though not constructed with adult sturgeon migration in mind, have demonstrated that sturgeon will use constructed channels and at times will choose to use them even when the main channel is unobstructed. The physical and resulting hydraulic features of the proposed bypass channel at Intake were modeled according to the features within known migratory pathways (main channel and side channel) used by pallid sturgeon in the upper Missouri River and Yellowstone River. The final geometry of the proposed bypass channel falls within the range of all parameters, including length, width, sinuosity, bend radius, and meander wavelength. In addition, this bypass channel has been engineered with expert input to increase the odds of use by sturgeon by optimal location and orientation of the downstream entrance, a flow split which is higher than side channels which have been used by pallid sturgeon, and water velocities and depths suitable for passage at a wide range of flows. Because pallid sturgeon have been observed to use side channels (both constructed and natural) on the Missouri River and Yellowstone River, even when the main channel is unobstructed, and because the designs mimic physical parameters of natural sidechannels actually shown to be used by pallid sturgeon on the Yellowstone, we believe that construction of the preferred bypass alternative will result in a high likelihood that the constructed bypass will effectively provide passage opportunity under a variety of flows. Lastly, the design of the bypass is constructed with the entrance near the base of the obstruction, rather than located some distance downstream. The best entrance locations are at the base of the obstructions because a fishes natural tendency to seek upstream passage at the obstruction. Entrances located significant distances downstream of the barrier may cause fish to swim past and become trapped below the dam by their natural instinct to swim upstream (Aadland et al. 2010). Fish passage attempts which have often failed for sturgeon or are not suitable for sturgeon typically involve ladders, lifts, fishways with baffles, sharp turns, passage through large reservoirs, and dams with turbines (Jager et al. 2016). Success of the Intake fish passage project would be determined by its ability to successfully pass pallid sturgeon. There are no assurances that any type of bypass system or even complete weir removal will lead to a

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				self-sustaining population of pallid sturgeon. However, it is widely acknowledged by basin scientists and the Service (USFWS 2014) that a lack of time (distance) sufficient for development of free embryos prior to settling is limiting natural recruitment of pallid sturgeon in RPMA 2. If this is true, providing access to habitats above Intake Dam will give drifting free embryos additional time for development and may ultimately provide natural recruitment. As with any bypass option and dam removal, it is unknown how many pallid sturgeon will be motivated to pass, how far upstream they may choose to spawn, and what level of recruitment may result. These unknowns are just as high for the dam removal option. As a result, the Missouri River Recovery Plan Adaptive Management Plan does not assume success for any of these options but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed.

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OR-10		5	As a result, if the Agencies adopt the Dam/Bypass Channel alternative, they will not remedy their long-standing and well-documented Endangered Species Act (ESA) violations with respect to Reclamation's operations of Intake Dam or the Corps' operations of Fort Peck Dam. A central premise of the Intake Project is that the Corps will fund the Project – even though Intake is a Reclamation facility – in exchange for being allowed to abandon at least some of the operational modifications at Fort Peck Dam required by the 2003 Biological Opinion on the Corps' Missouri River dam operations ("2003 Biological Opinion"). While we support restoring a free-flowing Yellowstone River as the best and only means of protecting the pallid sturgeon and other native fish species in this River, addressing the Yellowstone alone may not be sufficient to allow for the recovery of the pallid sturgeon in the upper Missouri River basin, nor resolve the Corps' ESA obligations at Fort Peck Dam. Regardless of the alternative chosen, restoration of the Missouri River, in addition to any changes made at Intake, may well be necessary for the Corps to avoid jeopardizing the pallid sturgeon. If the Agencies choose the Dam/Bypass Channel in the Final EIS and Record of Decision (ROD), they will foreclose the opportunity for pallid sturgeon survival and recovery in the Yellowstone River and restoration of the Missouri River will be mandatory.	The proposed channel is designed to increase passage efficiency beyond what is currently offered by the existing weir and the existing side channel. We believe that the bypass will pass most pallid sturgeon based on input from the experts used in design and the relative characteristics of both man-made and natural side channels elsewhere on the Missouri River which pallid sturgeon use (even when they have the main channel available). If passage is shown not to lead to spawning, and subsequent recruitment that can avoid jeopardy to the species in the upper basin, the Corps of Engineers will still be required to identify other potential management measures within its authority that could reasonably be implemented to accommodate avoidance of jeopardy. This is why the MRRP AM Plan does not assume success for any fish passage options, but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed. However, it is unlikely that options at Fort Peck would be pursued based on current science. Available data indicate that hatchery released free embryos, five days post-hatch or older, are able to survive to age-1 in the Missouri River between Fort Peck Dam and Lake Sakakawea, when released 170 miles upstream of the lake. Because natural recruitment has not occurred in this reach, the conclusion is that mortality is limiting at very early stages, days 0-5 post hatch, although adequacy of dispersal distance is also dependent on spawning location (Braaten et al., 2008, 2010, 2012b). These observations support the hypothesis by Kynard et al. (2007) which implicates total drift distance as a limitation on natural recruitment. Hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014).
OR-10		6	I. NEPA Requirements for the Intake Project (citing various NEPA regulations and court cases)	See individual comments below.
OR-10		7	II. THE SCOPE OF THE ANALYSIS IN THE DRAFT EIS IS UNLAWFULLY NARROW. The relevant substantive statute driving the Intake Project is the ESA. As Defenders and NRDC described in our scoping letter, the Intake Project is intended to address and resolve Reclamation's ongoing ESA violations at Intake Dam and the Corps' ongoing ESA violations at Fort Peck Dam. See Defenders and NRDC scoping letter at 4-12. Thus, the Draft EIS must evaluate whether each of the alternatives will resolve these violations, including the ongoing "jeopardy" and unlawful "take" caused by Intake Dam and Fort Peck Dam.	There are too many other factors associated with whether pallid sturgeon successfully recruit into the population than just passage at Intake to expect this project to resolve all issues. The scope of the passage project at Intake is to provide pallid sturgeon the opportunity to access additional habitat and drift miles. There is no alternative proposed in the FEIS that can guarantee that pallid sturgeon will ultimately spawn where there is enough drift distance to provide adequate recruitment to trend toward recovery. The Intake project is one piece of a larger puzzle that continues to be researched, monitored and evaluated.
OR-10		8	As described in more detail below, the Draft EIS does not analyze the impacts on pallid sturgeon survival and recovery. Nor does the Draft EIS attempt to explain how or why the various alternatives will or will not comply with the ESA. See 40 C.F.R. § 1502.2(d). Instead, the Draft EIS offers a chart with brief conclusions about the purported "ESA success" of each alternative (2-103), but does not support that conclusion with an analysis.	The document has been edited to add more information with regard to why the bypass channel is reasonably expected to be successful. The discussion of why the bypass channel is the preferred alternative and the discussion of why it is believed to be suitable for passage is found in Sections 2.5.1 and 2.5.2, respectively. The discussion of how the bypass (and other alternatives) is believed to be potentially beneficial toward recruitment is discussed in Section 4.9. These sections describe the fact that the Corps and the Reclamation worked with a team of pallid sturgeon experts, called the Biological Review Team (BRT), which was formed by the FWS, to ensure the design of the bypass would be effective at providing passage. The sections have also been edited to help better highlight the risks and uncertainties for each passage design, as well as why the bypass is likely to work. Within the upper basin, the Intake Dam has been identified by the USFWS (Service, 2013), and confirmed through the Effects Analysis process as one of the best possibilities for restoring self-sustaining populations by being one of the only projects that can reestablish a linkage to potential pallid sturgeon spawning habitat that may provide adequate drift distance for drifting free embryos/larvae. However, it should be noted that the

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				success of the intake fish passage project will be determined by its ability to successfully pass fish. It will not be judged on what the pallid sturgeon does after it passes, as the project has no control over that aspect of sturgeon life history. Current literature on bypass designs for sturgeon all highlight that promising approaches include those that mimic natural channels. This would include building a channel with similar geometry, facilitate passage under a range of discharge conditions, and incorporate a broad range of hydraulic criteria that emulate the range and depths and velocities that have been successfully negotiated by targeted migratory fish. (Braaten et al. 2015, Aadland 2010, Jager et al. 2016). Pallid sturgeon have been shown to use natural side-channels in the upper Missouri River (Braaten et al. 2015) and constructed side-channels in the lower Missouri River (DeLonay et al. 2014, DeLonay et al. 2016a; DeLonay et al. 2016b) during spawning migration. In the upper Missouri River, pallid sturgeon migrating upriver passed through a variety of short (0.4-km long; 0.25 mi) and long (3.9-km long; 2.42 mi) side channels (Braaten et al. 2015). The constructed side channels in the lower Missouri River, even though not constructed with adult sturgeon migration in mind, have demonstrated that sturgeon will use constructed channels and at times will choose to use them even when the main channel is unobstructed. The physical and resulting hydraulic features of the proposed bypass channel at Intake were modeled according to the features within known migratory pathways (main channel and side channel) used by pallid sturgeon in the upper Missouri River and Yellowstone River. The final geometry of the proposed bypass channel falls within the range of all parameters, including length, width, sinuosity, bend radius, and meander wavelength. In addition, this bypass channel has been engineered with expert input to increase the odds of use by sturgeon by optimal location and orientation of the downstream entrance, a flow split which is higher than side channels which have been used by pallid sturgeon, and water velocities and depths suitable for passage at a wide range of flows. Because pallid sturgeon have been observed to use side channels (both constructed and natural) on the Missouri River and Yellowstone River, even when the main channel is unobstructed, and because the designs mimic physical parameters of natural sidechannels actually shown to be used by pallid sturgeon on the Yellowstone, we believe that construction of the preferred bypass alternative will result in a high likelihood that the constructed bypass will effectively provide passage opportunity under a variety of flows. Lastly, the design of the bypass is constructed with the entrance near the base of the obstruction, rather than located some distance downstream. The best entrance locations are at the base of the obstructions because a fishes natural tendency to seek upstream passage at the obstruction. Entrances located significant distances downstream of the barrier may cause fish to swim past and become trapped below the dam by their natural instinct to swim upstream (Aadland et al. 2010). Fish passage attempts which have often failed for sturgeon or are not suitable for sturgeon typically involve ladders, lifts, fishways with baffles, sharp turns, passage through large reservoirs, and dams with turbines (Jager et al. 2016).
OR-10		9	The Draft EIS also states that the Agencies included a draft biological assessment as Appendix D. This appears to be an error. Appendix D is the Fish Passage Connectivity Index and Cost Effectiveness and Incremental Cost Analysis. The Agencies have not provided a biological assessment in connection with the 2016 Draft EIS and nowhere analyze whether the alternatives will comply with the ESA.	This reference to the draft biological assessment was a typo in the DEIS.

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OR-10		10	A. The Draft EIS Fails to Disclose or Analyze the Impacts of the Intake Project on the Survival or Recovery of the Pallid Sturgeon. To comply with NEPA, the Agencies must disclose and evaluate the impacts relevant to the ESA's jeopardy standard, including the effects of each alternative on survival and recovery of the pallid sturgeon. See Defenders of Wildlife, 15-cv-14-GFBMM, Dkt. #73 at 12) ("The new analysis should include the anticipated effects of the Project on the recovery of the pallid sturgeon."). Despite the Court's specific direction in the preliminary injunction order, the Draft EIS fails to evaluate survival or recovery. As a result, the Draft EIS violates NEPA.	The discussion of why the bypass channel is the preferred alternative and the discussion of why it is believed to be suitable for passage is found in Sections 2.5.1 and 2.5.2, respectively. The discussion of how the bypass (and other alternatives) is believed to be potentially beneficial toward recruitment is discussed in Section 4.9. These sections describe the fact that the Corps and the Reclamation worked with a team of pallid sturgeon experts, called the Biological Review Team (BRT), which was formed by the FWS, to ensure the design of the bypass would be effective at providing passage. The sections have also been edited to help better highlight the risks and uncertainties for each passage design, as well as why the bypass is likely to work. Within the upper basin, the intake dam has been identified by the USFWS (Service, 2013), and confirmed through the Effects Analysis process as one of the best possibilities for restoring self-sustaining populations by being one of the only projects that can reestablish a linkage to potential pallid sturgeon spawning habitat that may provide adequate drift distance for drifting free embryos/larvae. However, it should be noted that the success of the intake fish passage project will be determined by its ability to successfully pass fish. It will not be judged on what the pallid sturgeon does after it passes, as the project has no control over that aspect of sturgeon life history. If passage is shown not to lead to spawning, and subsequent recruitment that can avoid jeopardy to the species in the upper basin, the Corps of Engineers will still be required to identify other potential management measures within its authority that could reasonably be implemented to accommodate avoidance of jeopardy. This is why the MRRP AM Plan does not assume success for any of these options but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed.
OR-10		11	For pallid sturgeon, a recovery analysis would include, among other things, whether and how each alternative will move the pallid sturgeon closer to achieving the 2014 Recovery Plan's goal of a self-sustaining population of 5,000 adult fish in the upper Missouri River basin, including what percentage of the adult pallid sturgeon are expected to migrate upstream for each alternative; their likelihood of successfully spawning and in what numbers; the likelihood of their larvae surviving the downstream drift and in what numbers, whether these numbers would be sufficient to re-establish a viable, self-sustaining population; whether and why the Yellowstone River alone would be enough to re-establish a viable, self-sustaining population, and any other relevant factors to survival and recovery of the species in the wild.	See OR-10, #10. Section 4.9. discloses the operational impact of the alternatives with regard to recruitment, impacts to larval drift, etc. Critical pieces of information are lacking in recruitment estimation, such as transitional survival probabilities from egg to age-1 and what proportion of the adult population will be motivated to migrate above Intake and spawn and how far upstream they will choose to spawn. These unknowns exist for all passage options including dam removal. The FEIS does make assumptions on these unknowns in order to give some idea of how we believe this project and other alternative could help towards developing a naturally viable pallid sturgeon population. The FEIS has been edited to provide additional information with regard to the Corps efforts to develop a comprehensive Missouri River Recovery Program Adaptive Management Plan (MRRP AM Plan) which identifies key unknowns, lays out the science actions needed to address these unknowns, and incorporate this work into the ongoing, funded, MRRP Integrated Science Program. The AM Plan utilizes models to better predict outcomes of management scenarios and provide a more defendable and highly scientifically-reviewed process for determining future management direction. The questions laid out in this comment are very important but the only way to answer them in a meaningful way and ensure that the information informs future management is through development and implementation of a comprehensive AM Plan which incorporates knowledge and potential management options on both the Missouri and Yellowstone Rivers. One step in quickly addressing many of these uncertainties is to provide sturgeon passage at Intake through the proposed bypass.

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OR-10		12	The Draft EIS does not analyze any of these factors. In fact, the Draft EIS provides no more in the way of analysis of survival and recovery than the 2015 Final Supplemental Environmental Assessment to the 2010 Final Environmental Assessment ("2015 EA"), even though the Court held that the 2015 EA was likely to violate NEPA because it did not contain this analysis. Defenders of Wildlife, 15-cv-14, Dkt. #73 at 8 ("The EA also fails to analyze whether the bypass channel likely would allow a sufficient number of pallid sturgeons to spawn so that the species could recover, or whether the new weir will prevent pallid sturgeon from recovering.").	See OR-10,#10. Appropriate sections have also been edited to help better highlight the benefits, risks and uncertainties for each passage design, as well as why the bypass is likely to work, and current and ongoing activities by the Corps to continue to identify future management directions. It has also been edited to make it clear that data does not currently exist to develop a rigorous population and recovery type of analysis.
OR-10		13	The few references to "recovery" in the Draft EIS highlight the lack of analysis. For example, the Draft EIS concludes that the "proposed Intake Project would contribute to recovery of pallid sturgeon by providing up to an additional 165 miles of the Yellowstone River for migration, spawning, and development." Draft EIS at 2-22. This is a conclusion that presumes full success of all of the alternatives, not an analysis of whether and how each of the alternatives will facilitate recovery.	See OR-10,#10. Appropriate sections have also been edited to help better highlight the benefits, risks and uncertainties for each passage design, as well as why the bypass is likely to work, and current and ongoing activities by the Corps to continue to identify future management directions. It has also been edited to make it clear that data does not currently exist to develop a rigorous population and recovery type of analysis.
OR-10		14	Similarly, the Draft EIS notes that recruitment is a part of recovery, but never analyzes how each alternative will affect recruitment. Instead, the Draft EIS generally recites uncertainties related to the potential for recruitment: "(1) it is unclear what length of drift distance is actually required for successful recruitment… and (2) the location, quantity, and quality of spawning habitat, and (3) the number of pallid sturgeon that would be motivated to migrate upstream to suitable spawning habitat." Draft EIS at 4-152. Without any further analysis, the Draft EIS concludes that the Yellowstone River "appears to offer the best chance of potentially successful spawning and recruitment" for the management area and that the chances for recovering the wild population are "rapidly diminishing." Id. This is not an analysis of what is required for survival or recovery, whether and how each of the alternatives will move the pallid sturgeon toward those goals, or even whether any particular alternative will slow down or halt the imminent extirpation of the wild population.	See OR-10, #10. Appropriate sections have also been edited to help better highlight the benefits, risks and uncertainties for each passage design, as well as why the bypass is likely to work, and current and ongoing activities by the Corps to continue to identify future management directions. It has also been edited to make it clear that data does not currently exist to develop a rigorous population and recovery type of analysis.
OR-10		15	The Draft EIS also provides a speculative series of steps with respect to the anticipated success of the Dam/Bypass Channel Alternative to offer "an example of the potential recruitment from one year of much improved spawning, which could begin to contribute to recovery." Draft EIS at 4-169. This "example" again is a conclusion without an analysis. It simply summarizes the obvious: if the bypass channel works to pass fish, recruitment may be possible.	See OR-10, #10 Appropriate sections have also been edited to help better highlight the benefits, risks and uncertainties for each passage design, as well as why the bypass is likely to work, and current and ongoing activities by the Corps to continue to identify future management directions. It has also been edited to make it clear that data does not currently exist to develop a rigorous population and recovery type of analysis. At this point, a rigorous analysis of this type cannot be completed. Critical pieces of information are lacking such as transitional survival probabilities from egg to age-1 and what proportion of the adult population will be motivated to migrate above Intake and spawn and how far upstream they will choose to spawn. These unknowns exist for all passage options including dam removal. It would be unwise to spend time in developing an EIS to take the many years that it would take to develop this information. The FEIS does make assumptions on these unknowns in order to give some idea of how we believe this project and other alternative could help towards developing a naturally viable pallid sturgeon population for avoiding jeopardy.

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OR-10		16	B. The Draft EIS Fails to Disclose and Analyze the Impacts of the Agencies' Intended "Swap" With Fort Peck Dam on Pallid Sturgeon Survival and Recovery. As part of the analysis of pallid sturgeon survival and recovery, the Agencies must evaluate the entire context of the Intake Project – including its role in the Corps' intended "swap" for Fort Peck Dam operational modifications to resolve the Corps' ESA obligations. The Corps' intention, according to all prior documentation, is to fund the Intake Project in exchange for being permitted to abandon the operational changes it is currently required to implement at Fort Peck Dam. Accordingly, one of the effects of the Intake Project may be to eliminate the requirement to make habitat modifications on the Missouri River for the benefit of the pallid sturgeon.	The Corps is not abandoning future recovery efforts at Ft Peck and is currently in consultation with the Service on the Missouri River Recovery Program Management Plan, which considers all actions to be taken for ESA compliance in the context of the greater Missouri River system. This larger context is the appropriate place to consider which actions should be taken for the upper basin pallid sturgeon population as a whole.
OR-10		17	The Draft EIS does not include any analysis of this "swap," nor even appear to mention it. Moreover, the Draft EIS notes that the Corps is funding the Project pursuant to the authorization in the Water Resources Development Act of 2007 (WRDA), P.L. 110-114, 121 Stat. 1041 § 3109, but does not explain that the rationale behind providing that authorization is to relieve the Corps of its Fort Peck Dam obligations. See Draft EIS at 1-8.	See above response OR-10, #16
OR-10		18	One slight improvement from the 2015 EA to the Draft EIS is that the Agencies now recognize that there is not a single successful pallid sturgeon or shovelnose sturgeon bypass or fishway in the world. See Draft EIS at 2-105 – 2-107.3 However, the Agencies do not incorporate this lack of precedent into any relevant analysis to explain why this proposed bypass channel will succeed.	See Sections 2.3.5, 2.5 and 4.9.8 for additional discussion on the design of the proposed bypass channel and selection of the preferred plan.
OR-10		19	The Agencies' failure to acknowledge and evaluate all of the impacts associated with the Corps' involvement with the Intake Project violates NEPA's "hard look" requirement. There is no doubt that the Corps is funding this Project solely to be relieved of its ESA duties at Fort Peck Dam. Thus, the impacts of making that "swap," particularly with respect to the impacts on pallid sturgeon survival and recovery, must be included in a NEPA analysis because the swap is part of the contemplated action. At a minimum, the Corps' intention to abandon Fort Peck Dam modifications is a "connected" agency action. See 40 C.F.R. § 1508.25(a)(1). In addition, NEPA's implementing regulations require an analysis of how each alternative will comply with the Agencies' obligations under other laws. 40 C.F.R. § 1502.2(d). Here, that analysis must include whether and how the Corps will comply with the ESA through this Project.	The Corps is not abandoning future recovery efforts at Ft Peck and is currently in consultation with the Service on the Missouri River Recovery Program Management Plan, which considers all actions to be taken for ESA compliance in the context of the greater Missouri River system. This larger context is the appropriate place to consider which actions should be taken for the upper basin pallid sturgeon population as a whole.

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OR-10		20	Notably, the Draft EIS includes other potential Missouri River habitat modifications in the "cumulative effects" section. Yet even here the Agencies ignore the intended "swap," and the existing obligations for habitat modifications. The Draft EIS describes the "Missouri River Management Plan" within the "Reasonably Foreseeable Future Projects/Actions" section and suggests that the Plan will "evaluate[] the effectiveness of current habitat development and will recommend modifications 'to more effectively create habitat and avoid jeopardy to the species.'" Draft EIS at 4-4. The Draft EIS also notes that "[i]implementation of the [Plan] will likely help to slightly further reduce cumulative effects on surface water in the upper Missouri River basin." Draft EIS at 4-57. Incredibly, the Draft EIS does not acknowledge that FWS has already determined what is required to avoid jeopardy – in the 2003 BiOp – and that the Corps intends to abandon any obligation to implement those very actions in exchange for funding the Intake Project.	The Corps is not abandoning future recovery efforts at Ft Peck and is currently in consultation with the Service on the Missouri River Recovery Program Management Plan, which considers all actions to be taken for ESA compliance in the context of the greater Missouri River system. This larger context is the appropriate place to consider which actions should be taken for the upper basin pallid sturgeon population as a whole.
OR-10		21	The Agencies' failure to complete this analysis is scientifically indefensible. The best available science indicates that both the Missouri and the Yellowstone rivers contain habitat essential to this population's survival. A successful Intake Project would provide access to 165 miles of potential spawning habitat and more river miles for larval drift. However, as explained by the Montana Chapter of the American Fisheries Society, the chances for pallid sturgeon recovery in the upper Missouri River basin will be harmed if the Agencies focus on restoring the Yellowstone River alone. Defenders of Wildlife, 15-cv-00014-GF-BMM, Dkt. #63 at 13-16 (Amicus brief).	The Corps of Engineers is developing a Missouri River Management Plan and EIS that assesses (1) major federal actions arising from a Biological Opinion (BiOp) prepared in accordance with the Endangered Species Act (ESA) of 1973, as amended to avoid jeopardy to three federally listed threatened and endangered species that use the Missouri River and (2) the creation of habitat for those species. The relative need and effectiveness of actions on both the Yellowstone and Missouri River systems will be evaluated through a well-planned, systematic AM process which has been developed as part of the MRRP Management Plan. This AM approach has received a tremendous amount of independent scrutiny of AM and sturgeon experts and has been developed transparently with unprecedented stakeholder involvement through MRRIC and associated Independent Science Advisory Panel. The focus of the plan is in meeting pallid sturgeon objectives provided by the USFWS to avoid jeopardy. Within the upper basin, the intake dam has been identified by the Service (Service, 2013), and confirmed through the Effects Analysis that has been conducted as part of the Management Plan process as one of the best possibilities for restoring self-sustaining populations by being one of the only projects that can reestablish a linkage to potential pallid sturgeon spawning habitat that may provide adequate drift distance for drifting free embryos/larvae. However, it should be noted that the success of the intake fish passage project will be determined by its ability to successfully pass fish. It will not be judged on what the pallid sturgeon does after it passes, as the project has no control over that aspect of sturgeon life history. If passage is shown not to lead to spawning, and subsequent recruitment that can avoid jeopardy to the species in the upper basin, the Corps of Engineers will still be required to identify other potential management measures within its authority that could reasonably be implemented to accommodate avoidance of jeopardy. This is why the MRRP AM Plan does not assume success for any of these options but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed. However, it is unlikely that options at Fort Peck would be pursued based on current science. Available data indicate that hatchery released free embryos, five days post-hatch or older, are able to survive to age-1 in the Missouri River between Fort Peck Dam and Lake Sakakawea, when released 170 miles upstream of the lake. Because natural recruitment has not occurred in this reach, the conclusion is that mortality is limiting at very early stages, days 0-5 post hatch, although adequacy of dispersal distance is also dependent on spawning location (Braaten et al., 2008, 2010, 2012b). These observations support the hypothesis by Kynard et al. (2007) which implicates total drift distance as a limitation on natural recruitment. Hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014).

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OR-10		22	Further, the best available science confirms the premise of the 2003 Biological Opinion on the Missouri River – that the Missouri River below the Fort Peck Dam could be restored to allow successful pallid sturgeon spawning and recruitment if the Corps implemented flow and temperature modifications. See Defenders and NRDC's scoping comments at 7-8, 10-11.4 The Draft EIS acknowledges that several studies "highlight the ability of the Yellowstone and Missouri Rivers to provide conditions that support survival, feeding, and growth of pallid sturgeon early life stages." Draft EIS at 2-24. The Draft EIS also acknowledges that "[e]xtremely low recruitment is possibly occurring in the Missouri River." Draft EIS at 3-83. Yet the Draft EIS does not examine the trade-offs of abandoning any effort to restore the Missouri River habitat in exchange for funding the Intake Project.	See OR-10, #21. This comment is a follow on to the one above, and is answered above.
OR-10		23	The Draft EIS Misstates the Agencies' Obligations Under the ESA and the Required Scope of Analysis under NEPA. The Draft EIS appears to try to avoid analyzing the effects of the Project on pallid sturgeon survival and recovery by narrowing the Agencies' ESA obligations. According to the Draft EIS, the ESA "does not require the actions on which the federal agencies are consulting to contribute to or result in the recovery of the species." Draft EIS at 1-7; see also xxvi ("Pallid sturgeon recovery is not within the scope of this project"); 4-152 (stating that "pallid sturgeon recovery is not an objective of the project"). This statement is inconsistent with the ESA. However, even if this approach somehow complied with the ESA, the Agencies would not be absolved of their NEPA obligations to disclose and evaluate all impacts to pallid sturgeon survival and recovery.	As the document states, "The U.S. Fish and Wildlife Service has suggested that the Intake Diversion Dam is a barrier to upstream passage that may prevent pallid sturgeon from accessing upstream reaches. Therefore, the proposed project is needed to allow fish passage at this structure. Improving passage for pallid sturgeon at the Intake Diversion Dam would provide access to a large area of the sturgeon's historical range that has been mostly inaccessible since the LYP was built in 1909." The only real control or obligation that Reclamation has at Intake is to ensure that its project does not preclude the pallid sturgeon from moving upstream to its historic habitat. Specifically, the agency must meet this obligation via Section 7(a)2 of the ESA. To the extent that this project may lead to anything beyond "avoiding jeopardy" would be beneficial. Section 7(a)1 charges agencies to work within their existing authorities to further the conservation of species. This project complies with this section of the act as well. The Corps is assisting Reclamation pursuant to its authority under WRDA 2007 for the purpose of ecosystem restoration. The Corps' participation in the Intake project is not contingent upon receiving "credit" on the Missouri River or "swapping out" its requirements at Ft Peck. If passage at Intake is successful and recruitment is achieved, the Corps can take implicit credit for this in the environmental baseline in its future Missouri consultation. However, if there is no recruitment, through consultation with the Service, the Corps will need to identify and implement other potential management actions within its authority that could reasonably be implemented to accommodate avoidance of jeopardy for the pallid sturgeon in the upper basin.

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OR-10		24	First, the Draft EIS's disavowal of any obligation for this Project to contribute to recovery is inconsistent with the ESA's "jeopardy" standard. As described above, the Agencies have an obligation to avoid jeopardy in connection with the Intake Project, and avoiding jeopardy is, in fact, the underlying purpose of the Project. The Ninth Circuit has explained that an action can "jeopardize" a species even "if there is no appreciable reduction of survival" because "a species can often cling to survival even when recovery is far out of reach." NWF v. NMFS, 524 F.3d at 931.	Pallid sturgeon life history and habitat requirements are not well understood. For this reason, the Pallid Sturgeon Recovery Plan (Service 2014) identifies numerous measures to expand pallid sturgeon knowledge while moving towards recovery. The Recovery Plan uses scientific method to obtain this knowledge, wherein questions are systematically answered by implementing actions, observing the response, and then determining the need for follow-on actions. Fish passage at Intake is one of those systematic, site-specific actions identified in the Recovery Plan wherein the outcome is uncertain so subsequent actions outlined in the Recovery Plan would be implemented based on pallid sturgeon response to implementing passage at Intake. Given the absence of information about pallid sturgeon, it is currently not feasible to meaningfully differentiate how each alternative might contribute to recovery and would be entirely speculative. Ultimately, the Service will decide, through ESA consultation (not the NEPA process), if the proposed fish passage alternative would avoid jeopardy, contribute to recovery and as appropriate, meet the objectives of the Recovery Plan. Improving pallid sturgeon passage at Intake Dam is a site-specific project the Corps and Reclamation are undertaking consistent with the Corps WRDA Authority, Reclamation's obligation under ESA, and as mentioned above, the Service's Pallid Sturgeon Recovery Plan. This site-specific project is one measure within a larger programmatic effort to recover pallid sturgeon as described in the Recovery Plan, the Corps' WRDA Authority and the programmatic adaptive management plan the Corps is developing for endangered species recovery on the Missouri River and Yellowstone River (expected to be available for public review December 2016). In summary, passage at Intake Diversion Dam may only be one measure in a suite of measures by the Corps, Reclamation and others that are necessary over time to recover pallid sturgeon.
OR-10		25	Instead of applying these standards, however, the scope of the Draft EIS's analysis of impacts to pallid sturgeon is limited to whether the project may "improve" fish passage. See, e.g., DEIS xxv (Executive Summary). The "improvement" standard is inconsistent with the jeopardy standard because it lowers the bar to the point that "success" could occur if, for example, only one more fish passed upstream than has used the natural channel in the past. Compared to 2015, just two telemetered pallid sturgeon swimming upstream would be an "improvement." The District of Oregon recently rejected a similar standard because the agency's metric was based on "population growth regardless of actual population numbers," and was "not tethered to any minimum population goal." NWF v. NMFS, 2016 WL 235367, at *17. Here, too, nothing in the Draft EIS analyzes or suggests that "improvement" in upstream migration would be sufficient for this population to avoid extinction, let alone recover, nor could it. The Draft EIS makes no effort to "take into account" whether the very low abundance numbers for Montana's wild population appreciably diminishes the likelihood of survival or recovery of the species.	Pallid sturgeon life history and habitat requirements are not well understood. For this reason, the Pallid Sturgeon Recovery Plan (Service 2014) identifies numerous measures to expand pallid sturgeon knowledge while moving towards recovery. The Recovery Plan uses scientific method to obtain this knowledge, wherein questions are systematically answered by implementing actions, observing the response, and then determining the need for follow-on actions. Fish passage at Intake is one of those systematic, site-specific actions identified in the Recovery Plan wherein the outcome is uncertain so subsequent actions outlined in the Recovery Plan would be implemented based on pallid sturgeon response to implementing passage at Intake. Given the absence of information about pallid sturgeon, it is currently not feasible to meaningfully differentiate how each alternative might contribute to recovery and would be entirely speculative. Ultimately, the Service will decide, through ESA consultation (not the NEPA process), if the proposed fish passage alternative would avoid jeopardy, contribute to recovery and as appropriate, meet the objectives of the Recovery Plan. Improving pallid sturgeon passage at Intake Dam is a site-specific project the Corps and Reclamation are undertaking consistent with the Corps' WRDA Authority, Reclamation's obligation under ESA, and as mentioned above, the Service's Pallid Sturgeon Recovery Plan. This site-specific project is one measure within a larger programmatic effort to recover pallid sturgeon as described in the Recovery Plan, the Corps' WRDA Authority and the programmatic adaptive management plan the Corps is developing for endangered species recovery on the Missouri River and Yellowstone River (expected to be available for public review December 2016). In summary, passage at Intake Diversion Dam may only be one measure in a suite of measures by the Corps, Reclamation and others that are necessary over time to recover pallid sturgeon.

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OR-10		26	Further, the Draft EIS fails to analyze whether an “improvement” in the number of adults migrating upstream will result in recruitment sufficient to provide for survival or recovery. The data from the telemetry stations in 2014 and 2015 demonstrates that some number of pallid sturgeon have successfully passed Intake at least in some years, yet there has been no documented recruitment. See Draft EIS at 4-164 (noting that pallids could have used the side channel before 2014 under certain conditions, but there has been no documented recruitment to date). The Draft EIS does not evaluate why recruitment has failed, despite a few fish spawning upstream of Intake, nor how the new Project would differ from the existing dam in a way that recruitment would somehow succeed where it has failed in the past.	It is true that recruitment has not been detected from the one known spawning event that has occurred above Intake, no recruitment has been detected for many decades anywhere in the upper basin. It could take many years of monitoring to detect successful recruitment from the spawning event that took place above Intake in the Powder River if recruitment did occur. At this point, a rigorous analysis of recruitment and recovery cannot be completed. Critical pieces of information are lacking such as transitional survival probabilities from egg to age-1 and what proportion of the adult population will be motivated to migrate above Intake and spawn and how far upstream they will choose to spawn. These unknowns exist for all passage options including dam removal. It would be unwise to spend time in developing an EIS to take the many years that it would take to develop this information. The FEIS does make assumptions on these unknowns in order to give some idea of how we believe this project and other alternative could help towards developing a naturally viable pallid sturgeon population for avoiding jeopardy, although it is admittedly a “best guess” at this point. The FEIS has been edited to provide additional information with regard to the Corps efforts to develop a comprehensive AM Plan (MRRP AM Plan) which identifies key unknowns, lays out the science actions needed to address these unknowns, and incorporate this work into the ongoing, funded, MRRP Integrated Science Program. The AM Plan utilizes models to better predict outcomes of management scenarios and provide a more defendable and highly scientifically-reviewed process for determining future management direction. The questions laid out in this comment are very important but the only way to answer them in a meaningful way and ensure that the information informs future management is through development and implementation of a comprehensive AM Plan which incorporates knowledge and potential management options on both the Missouri and Yellowstone Rivers. One step in quickly addressing many of these uncertainties is to provide sturgeon passage at Intake through the proposed bypass.

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OR-10		27	The “improvement” standard also fails to evaluate whether the alternatives will provide for survival or recovery of the wild population in the event no modifications are made to Fort Peck Dam operations, as contemplated by the Corps.	Revised text has been provided in section 1.2.3 Need - Improving Fish Passage and additional information and clarification has been provided in section 1.2.1. As noted by commenters, the Purpose and Need Statement of an EIS must be informed by the statutory context of the federal action. The underlying purposes and needs for Reclamation and the Corps are to manage and operate the LYP and Fort Peck Dam in accordance with Project laws, authorities, and purposes. The Agencies recognize the importance of the pallid sturgeon in the Missouri River Basin and support pallid sturgeon recovery activities throughout their known range. Section 3109 of the 2007 Water Resources Development Act (WRDA) authorizes the US Army Corps of Engineers (Corps) to assist Reclamation with funding from the Missouri River Recovery and Mitigation Program for the design and construction of Reclamation's Lower Yellowstone Project at Intake, Montana for the purposes of ecosystem restoration.

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OR-10		28	Second, even if the Agencies could lawfully ignore an evaluation of the prospects for recovery under the ESA (which they cannot), the Draft EIS does not even analyze whether the preferred alternative will provide for the survival of the pallid sturgeon in the wild – which would require enough successful reproduction in the wild to replace the existing population. The jeopardy standard indisputably prohibits the Agencies from taking an action that will preclude an endangered species from successfully reproducing in the wild at a replacement rate. The Draft EIS provides no analysis to support the idea that any alternatives will provide for that amount of successful reproduction.	The discussion of why the bypass channel is the preferred alternative and the discussion of why it is believed to be suitable for passage is found in Sections 2.5.1 and 2.5.2, respectively. The discussion of how the bypass (and other alternatives) is believed to be potentially beneficial toward recruitment is discussed in Section 4.9. These sections describe the fact that the Corps and the Bureau of Reclamation worked with a team of pallid sturgeon experts, called the Biological Review Team (BRT), which was formed by the FWS, to ensure the design of the bypass would be effective at providing passage. The sections have also been edited to help better highlight the risks and uncertainties for each passage design, as well as why the bypass is likely to work. Within the upper basin, the Intake dam has been identified by the Service (Service, 2013), and confirmed through the Effects Analysis process as one of the best possibilities for restoring self-sustaining populations by being one of the only projects that can reestablish a linkage to potential pallid sturgeon spawning habitat that may provide adequate drift distance for drifting free embryos/larvae. However, it should be noted that the success of the intake fish passage project will be determined by its ability to successfully pass fish. It will not be judged on what the pallid sturgeon does after it passes, as the project has no control over that aspect of sturgeon life history. If passage is shown not to lead to spawning, and subsequent recruitment that can avoid jeopardy to the species in the upper basin, the Corps of Engineers will still be required to identify other potential management measures within its authority that could reasonably be implemented to accommodate avoidance of jeopardy. This is why the MRRP AM Plan does not assume success for any of these options but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed. The FEIS has been edited to ensure that more information is included regarding the lack of science and efforts in the basin by the Corps to continue investing resources to decrease uncertainties and identify measures with potential to be successful.
OR-10		29	Third, regardless of the ESA standards for "jeopardy," the impacts to pallid sturgeon survival and recovery caused by the Intake Project (including through the anticipated "swap" with Fort Peck Dam) are direct and indirect impacts under NEPA and must be analyzed for that reason as well.	See OR-10, #28, this comment is a continuation of the one above. If passage is shown not to lead to spawning, and subsequent recruitment that can avoid jeopardy to the species in the upper basin, the Corps of Engineers will still be required to identify other potential management measures within its authority that could reasonably be implemented to accommodate avoidance of jeopardy. This is why the MRRP AM Plan does not assume success for any of these options but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed. However, it is unlikely that options at Fort Peck would be pursued based on current science. Available data indicate that hatchery released free embryos, five days post-hatch or older, are able to survive to age-1 in the Missouri River between Fort Peck Dam and Lake Sakakawea, when released 170 miles upstream of the lake. Because natural recruitment has not occurred in this reach, the conclusion is that mortality is limiting at very early stages, days 0-5 post hatch, although adequacy of dispersal distance is also dependent on spawning location (Braaten et al., 2008, 2010, 2012b). These observations support the hypothesis by Kynard et al. (2007) which implicates total drift distance as a limitation on natural recruitment. Hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014). Additional information as to the current science regarding Ft. Peck has been to the FEIS.

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OR-10		30	The Draft EIS Arbitrarily Narrows the Purpose and Need for the Intake Project. The Draft EIS appears to try to avoid the required analysis of whether this Project will succeed in allowing pallid sturgeon to survive or recover in the wild in another way: by excluding the Agencies' ESA obligations from the Purpose and Need Statement. ... The Purpose and Need Statement of an EIS must be informed by the statutory context of the federal action. ... The Draft EIS's Purpose and Need Statement ignores the fundamental statutory obligations driving the need for this Project – compliance with the ESA. The long-time underlying purpose for initiating the Intake Project EIS is to remedy ongoing ESA violations at Intake Dam (Reclamation) and Fort Peck Dam (Corps) and facilitate the recovery of the pallid sturgeon in the upper Missouri River basin. See, e.g., BOR-4439 (FWS noting in 2012 that, "[a]s stated in the 2010 FONSI, the underlying need for the proposed action (i.e. the overall Intake Project) is for Reclamation and the Corps to comply with the ESA."). In order to comply with the ESA, the Intake Project must not simply "improve" fish passage; it must avoid causing jeopardy to the pallid sturgeon and avoid unlawfully "taking" pallid sturgeon and resolve the Corps' ongoing jeopardy and take obligations at Fort Peck Dam as well. Here, Reclamation must comply with all of its statutory obligations, including the ESA. Because the purpose of the Intake Project is to comply with that statute, the scope of the NEPA analysis must be commensurate with that purpose, regardless of the stated purpose and need.	Revised text has been provided in section 1.2.3 Need - Improving Fish Passage and additional information and clarification has been provided in section 1.2.1. As noted by commenters, the Purpose and Need Statement of an EIS must be informed by the statutory context of the federal action. The underlying purposes and needs for Reclamation and the Corps are to manage and operate the LYP and Fort Peck Dam in accordance with Project laws, authorities, and purposes. The Agencies recognize the importance of the pallid sturgeon in the Missouri River Basin and support pallid sturgeon recovery activities throughout their known range. Section 3109 of the 2007 Water Resources Development Act (WRDA) authorizes the US Army Corps of Engineers (Corps) to assist Reclamation with funding from the Missouri River Recovery and Mitigation Program for the design and construction of Reclamation's Lower Yellowstone Project at Intake, Montana for the purposes of ecosystem restoration.
OR-10		31	While it is appropriate for the Agencies to acknowledge the private goals of the Lower Yellowstone Project (LYP) in maintaining the irrigation district's viability, those private interests cannot override Congress' intent in authorizing Reclamation to act. See Nat'l Parks & Conservation Ass'n v. Bureau of Land Mgmt., 606 F.3d 1058, 1070-71 (9th Cir. 2010) (distinguishing Department of Interior NEPA regulations from Corps regulations and noting that "[r]equiring agencies to consider private objectives, however, is a far cry from mandating that those private interests define the scope of the proposed project."). Here, meeting the water delivery needs of the irrigation district is compatible with providing for pallid sturgeon survival and recovery through the Multiple Pump Alternative. In contrast, the Dam/Bypass Channel unlawfully prioritizes the private needs over the Agencies' ESA mandates.	The Lower Yellowstone Project is a federal project (32 Stat. 388 and 33 Stat. 1045). The diversion and delivery features are owned by the United States and are operated and maintained under agreement by the LYIP as required under the Reclamation Act of 1902 (32 Stat. 388 § 6). There are three elements to the purpose and need, these can be found in Section 1.2.

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OR-10		32	Nonetheless, regardless of the Purpose and Need statement, the Intake Project will have direct and indirect effects on pallid sturgeon survival and recovery. These effects will be compounded by the Corps' attempt to abandon the required habitat modifications on the Missouri River as well. Thus, even if the purpose of the Project had nothing to do with the Agencies' ESA obligations (which is not the case), the Agencies must complete the analysis described above in order to comply with NEPA.	Revised text has been provided in section 1.2.3 Need - Improving Fish Passage and additional information and clarification has been provided in section 1.2.1. As noted by commenters, the Purpose and Need Statement of an EIS must be informed by the statutory context of the federal action. The underlying purposes and needs for Reclamation and the Corps are to manage and operate the LYP and Fort Peck Dam in accordance with Project laws, authorities, and purposes. The Agencies recognize the importance of the pallid sturgeon in the Missouri River Basin and support pallid sturgeon recovery activities throughout their known range. Section 3109 of the 2007 Water Resources Development Act (WRDA) authorizes the US Army Corps of Engineers (Corps) to assist Reclamation with funding from the Missouri River Recovery and Mitigation Program for the design and construction of Reclamation's Lower Yellowstone Project at Intake, Montana for the purposes of ecosystem restoration.
OR-10		33	IV. The Agencies' No-Action Alternative Violates NEPA. The Agencies' definition of the no-action alternative violates NEPA because this alternative assumes the continued operation of an unlawful project. See Friends of Yosemite Valley v. Kempthorne, 520 F.3d 1024, 1038 (9th Cir. 2008) (holding that agency "did not set forth a true 'no-action' alternative because" the alternative assumed the existence of a plan that the court has already found to be invalid). As the Ninth Circuit has explained, an agency "cannot properly include elements from [an illegal] plan in the no action alternative as the status quo…." Id.	The finding in Yosemite Valley v. Kemphthorne is that the No Action alternative should not have "assume[d] the existence of the very plan being proposed." By emphasizing the "illegal" nature of the plan in Yosemite Valley v. Kemphthorne, however, this comment misses the point made by the court—that the same action cannot be both the No-action and Action alternatives. The existing weir is part of a Congressionally authorized project (Reclamation Act of 1902 (32 Stat. 388 § 6.). Additional information and clarification has been provided in section 2.3.3 No Action.
OR-10		34	Reclamation is precluded by the ESA from continuing the current operation of Intake Dam. It is uncontested that Intake Dam, as it is currently operated, poses a near total barrier to pallid sturgeon migration to spawning areas that would be sufficiently far upstream to allow juvenile survival through the larval drift stage. Draft EIS at 2-22. Present operations allow the re-construction of the dam each year, which violates sections 7 and 9 of the ESA, as Defenders and NRDC described in our scoping letter. The 2015 long as the existing dam was re-built each year. 2015 BiOp at 30-32. The 2015 BiOp also conceded that the existing dam operations "take" 32 adult sturgeon per year. Id. at 33. Further, the Draft EIS acknowledges that under the no-action alternative, the wild pallid sturgeon population will continue to decline. See Draft EIS at 4-164 (estimating that there will be fewer than 50 wild adults by 2023). The Draft EIS also acknowledges that a population based entirely on hatchery-born fish may not be able to create a "sustaining, naturally spawning population." Id. In other words, if no action is taken, the wild population will certainly go extinct, and the hatchery-born population may never be able to sustain itself without perpetual stocking of hatchery-born fish. This outcome – extinction of a wild population in an isolated river basin with no chance of becoming a self-sustaining population again – indisputably violates section 7 and 9 of the ESA.	Additional information and clarification has been provided in section 2.3.3 No Action.

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OR-10		35	Because the current operations are illegal, a proper “no-action” alternative must include the likely consequences of taking no action. The Draft EIS fails to do so. Instead, while acknowledging that Reclamation would have to reinitiate ESA consultation for the operation and management of the Dam and Lower Yellowstone Project (LYP), the Agencies feign ignorance in several places within the Draft EIS about the likely result of that consultation. Draft EIS at 4-164 (the biological opinion resulting from a consultation “would likely require other future activities to reduce the effect on listed species, but these effects are unknown at this time”); Draft EIS at 2-38 (“[a]ny specific outcomes of future consultation for the No Action Alternative are not reasonably foreseeable at this time”). However, in the executive summary, the Agencies conceded what Reclamation has known since at least 1992 – that “fish passage” would be “an ultimate requirement at Intake Diversion Dam.” Draft EIS at xxviii; see BOR-5068-5069. Moreover, the Agencies explicitly determined that there was no need to propose adaptive management actions for the “no-action” alternative because “it is presumed that no action is not a viable alternative as it would not improve fish passage.” Appendix E at 1 (emphasis added).	Additional information and clarification has been provided in section 2.3.3 No Action.
OR-10		36	Indeed, more than 20 years after FWS first suggested Reclamation needed to provide fish passage, the only reasonable, predictable outcome of a new consultation would be that the continued rocking of the Dam would be prohibited because it is illegal and the dam would eventually naturally erode away, or that Reclamation would finally comply with the law and actively remove the barrier to provide fish passage. To the extent that allowing the rock to naturally erode away would not provide passage, as the Draft EIS suggests (Draft EIS at 2-38), Reclamation would have to actively provide passage. The Agencies must analyze the consequences of those realistic, predictable scenarios.	Additional information and clarification has been provided in section 2.3.3 No Action.
OR-10		37	As a result, continuation of present Intake Dam operations as the “no-action” alternative is unrealistic and cannot serve as the baseline comparison for the EIS. Indeed, Reclamation has recognized in another context that a No Action Alternative cannot analyze a set of dam operations that have been found to violate the ESA. See “Coordinated Long-Term Operation of the Central Valley Project and State Water Project,” Final EIS, November 2015 at ES-9.	Additional information and clarification has been provided in section 2.3.3 No Action. Unlike the CVP, Lower Yellowstone Project operations have not been found to violate the ESA nor has it been determined that the operations cause jeopardy.

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OR-10		38	Here, the comparison between the action alternatives and the no-action alternative must compare the consequences of different means of providing passage – not whether the action alternatives are an “improvement,” no matter how minute, over the current, illegal situation where there is almost no passage at all. Such an analysis would acknowledge that the pallid sturgeon has been nearly extirpated as a result of past actions, but would assume that those past actions cannot continue under any scenario.	In a NEPA analysis, alternatives are compared against the baseline condition. The existing condition (No Action) is a reasonable baseline condition for comparison as there is not any current proposal to otherwise modify Intake Diversion Dam or the Lower Yellowstone Project that could be compared against.
OR-10		39	V. The Draft EIS Fails to Take a “Hard Look” at the Impacts of the Dam/Bypass Channel Alternative. The preferred alternative in the Draft EIS, the Dam/Bypass Channel Alternative, is nearly identical to the alternative adopted in the 2015 EA and temporarily enjoined by the District Court of Montana last September. As noted above, the Agencies have not complied with the Court’s direction to evaluate pallid sturgeon recovery in order to comply with NEPA. Moreover, the analysis that the Agencies completed to support this alternative in the Draft EIS is based on flawed assumptions, is internally inconsistent, and is not supported by the best available science. At bottom, regardless of the legal standard for success with this Project, the fundamental scientific problem with the Dam/Bypass Channel Alternative is that there is no evidence that the Project will pass any more fish than already use the existing side channel, let alone avert extinction of the wild population or set the species on a path to recovery. We urge the Agencies to abandon this alternative in the Final EIS and Record of Decision (ROD).	At this point, a rigorous analysis of recovery cannot be completed. Critical pieces of information are lacking such as transitional survival probabilities from egg to age-1 and what proportion of the adult population will be motivated to migrate above Intake and spawn and how far upstream they will choose to spawn. These unknowns exist for all passage options including dam removal. It would be unwise to spend time in developing an EIS to take the many years that it would take to develop this information. The FEIS does make assumptions on these unknowns in order to give some idea of how we believe this project and other alternative could help towards developing a naturally viable pallid sturgeon population for avoiding jeopardy, although it is admittedly a “best guess” at this point. The FEIS has been edited to provide additional information with regard to the Corps efforts to develop a comprehensive AM Plan (MRRP AM Plan) which identifies key unknowns, lays out the science actions needed to address these unknowns, and incorporate this work into the ongoing, funded, MRRP Integrated Science Program. The MRRP AM Plan utilizes models to better predict outcomes of management scenarios and provide a more defendable and highly scientifically-reviewed process for determining future management direction. The questions laid out in this comment are very important but the only way to answer them in a meaningful way and ensure that the information informs future management is through development and implementation of a comprehensive AM Plan which incorporates knowledge and potential management options on both the Missouri and Yellowstone Rivers. One step in quickly addressing many of these uncertainties is to provide sturgeon passage at Intake through the proposed bypass. The agencies feel the bypass has a good likelihood to work. Current literature on bypass designs for sturgeon all highlight that promising approaches include those that mimic natural channels. This would include building a channel with similar geometry, facilitate passage under a range of discharge conditions, and incorporate a broad range of hydraulic criteria that emulate the range and depths and velocities that have been successfully negotiated by targeted migratory fish. (Braaten et al. 2015, Aadland 2010, Jager et al. 2016). Pallid sturgeon have been shown to use natural side-channels in the upper Missouri River (Braaten et al. 2015) and constructed side-channels in the lower Missouri River (DeLonay et al. 2014, DeLonay et al. 2016a; DeLonay et al. 2016b) during spawning migration. In the upper Missouri River, pallid sturgeon migrating upriver passed through a variety of short (0.4-km long; 0.25 mi) and long (3.9-km long; 2.42 mi) side channels (Braaten et al. 2015). The constructed side channels in the lower Missouri River, even though not constructed with adult sturgeon migration in mind, have demonstrated that sturgeon will use constructed channels and at times will choose to use them even when the main channel is unobstructed. The physical and resulting hydraulic features of the proposed bypass channel at Intake were modeled according to the features within known migratory pathways (main channel and side channel) used by pallid sturgeon in the upper Missouri River and Yellowstone River. The final geometry of the proposed bypass channel falls within the range of all parameters, including length, width, sinuosity, bend radius, and meander wavelength. In addition, this bypass channel has been engineered with expert input to increase the odds of use by sturgeon by optimal location and orientation of the downstream entrance, a flow split which is higher than side channels which have been used by pallid sturgeon, and water velocities and depths suitable for passage at a wide range of flows. Because pallid sturgeon have been observed to use side channels (both constructed and natural) on the Missouri River and

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				Yellowstone River, even when the main channel is unobstructed, and because the designs mimic physical parameters of natural sidechannels actually shown to be used by pallid sturgeon on the Yellowstone, we believe that construction of the preferred bypass alternative will result in a high likelihood that the constructed bypass will effectively provide passage opportunity under a variety of flows. Lastly, the design of the bypass is constructed with the entrance near the base of the obstruction, rather than located some distance downstream. The best entrance locations are at the base of the obstructions because a fishes natural tendency to seek upstream passage at the obstruction. Entrances located significant distances downstream of the barrier may cause fish to swim past and become trapped below the dam by their natural instinct to swim upstream (Aadland et al. 2010). Fish passage attempts which have often failed for sturgeon or are not suitable for sturgeon typically involve ladders, lifts, fishways with baffles, sharp turns, passage through large reservoirs, and dams with turbines (Jager et al. 2016). Success of the intake fish passage project will be determined by its ability to successfully pass fish. It will not be judged on what the pallid sturgeon does after it passes, as the project has no control over that aspect of sturgeon life history. There are no assurances that any type of bypass system or even complete dam removal will lead to a self-sustaining population of pallid sturgeon. However, it is widely acknowledged by basin scientists and the Service (USFWS 2014) that a lack of time (distance) sufficient for development of free embryos prior to settling is limiting natural recruitment of pallid sturgeon in RPMA 2. If this is true, providing access to habitats above Intake Dam will give drifting free embryos additional time for development and may ultimately provide natural recruitment. As with any bypass option AND dam removal, it is unknown how many pallid sturgeon will be motivated to pass, how far upstream they may choose to spawn, and what level of recruitment may result. These unknowns are just as high for the dam removal option. As a result, the MRRP AM Plan does not assume success for any of these options but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed.
OR-10		40	The Draft EIS Concedes that the Dam/Bypass Channel Alternative Will Not Meet the Biological Review Team's Own Standards for Biological Success. The Draft EIS lists four reasons to support choosing the Dam/Bypass Channel Alternative. Draft EIS at xlii. Of these four reasons, only one prioritizes the fate of the pallid sturgeon – that the Agencies believe this alternative "could be constructed, operated, and maintained to meet the physical and biological criteria identified by the Service's Biological Review Team (BRT), and therefore would provide passage for pallid sturgeon." This rationale fails both scientifically and legally.	See Section 2.5 and 4.9 for additional discussion on the design of the proposed bypass channel and selection of the preferred plan.
OR-10		41	As an initial matter, "provid[ing] passage" of some unknown amount, as described above, does not necessarily meet the ESA standards for survival or recovery of this population and arbitrarily lowers the bar for success of the Intake Project.	This language pertaining to adaptive management has been updated and is in Section 2.3.2 Elements Common to All Alternatives.

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OR-10		42	Further, even if providing passage was sufficient, the Draft EIS makes clear that the Dam/Bypass Channel will likely fail the standards set out by the BRT, directly contradicting this rationale. The Draft EIS recites the following biological criteria for success, set by the BRT, for adult passage: "[a] passage alternative would be considered successful if greater than or equal to 85 percent of motivate[d] adult pallid sturgeon (i.e. fish that move upstream to the entrance of the passage alternative) annual[ly] pass upstream of Intake Diversion Dam during the spawning migration period (April 1 – June 15)." Draft EIS at 4-152; Appendix E at 2. However, the Agencies' sole method of modeling potential success – the Fish Passage Connectivity Index (FPCI) – predicts that the Dam/Bypass Channel will be 67% as successful for all fish species as the Multiple Pump Alternative (which is predicted to have a 100% success rate). Appendix D at 16.7 As described in more detail below, the FPCI is not a rational basis on which to base any scientific conclusions about pallid sturgeon passage. Even if it was a rational basis, the actual passage rate (67% overall, 60% for pallid sturgeon) is far less than the BRT's standard (85%). The Draft EIS never acknowledges or explains why the facts within the Draft EIS directly contradict the Agencies' primary rationale for choosing the Dam/Bypass Channel Alternative.	The FPCI model is a planning tool to compare the relative effectiveness of each alternative. The index score does not represent either the specific number of fish that will pass nor does it calculate a statistical probability of fish passage, thus any comparison of the index value to the Biological Review Team's (BRT) criteria of passing 85% of the fish that approach within 1 mile downstream of Intake Diversion Dam is not valid. See further discussion in Section 2.5 on the selection of the preferred plan that included a consideration of several factors.

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OR-10		43	The Draft EIS Fails to Take a "Hard Look" at the Uncertainties Surrounding Pallid Sturgeon Use of the Proposed Bypass Channel. The Draft EIS vaguely and repeatedly concedes that the Agencies do not know if the Dam/Bypass Channel will succeed in passing pallid sturgeon at all, in part because such an effort has never succeeded. See, e.g., Draft EIS at 4-162 ("There are still many uncertainties over whether a majority of pallid sturgeon would actually pass through the bypass channel as there are no other examples of similar natural-type channels designed for non-jumping benthic fish."); Appendix E at 11 ("Existing modeling indicates that the bypass channel would meet BRT criteria under all flow conditions, but it remains to be seen if the channel maintains these characteristics over the long term and if these physical criteria result in biological performance"). Such uncertainty cannot form the basis for choosing the Dam/Bypass Channel Alternative over the Multiple Pumps Alternative, which will provide near-natural conditions for pallid sturgeon and other native fish.	Additional information has been added to the FEIS to better convey information regarding the potential success of a bypass. Current literature on bypass designs for sturgeon all highlight that promising approaches include those that mimic natural channels. This would include building a channel with similar geometry, facilitate passage under a range of discharge conditions, and incorporate a broad range of hydraulic criteria that emulate the range and depths and velocities that have been successfully negotiated by targeted migratory fish. (Braaten et al. 2015, Aadland 2010, Jager et al. 2016). Pallid sturgeon have been shown to use natural side-channels in the upper Missouri River (Braaten et al. 2015) and constructed side-channels in the lower Missouri River (DeLonay et al. 2014, DeLonay et al. 2016a; DeLonay et al. 2016b) during spawning migration. In the upper Missouri River, pallid sturgeon migrating upriver passed through a variety of short (0.4-km long; 0.25 mi) and long (3.9-km long; 2.42 mi) side channels (Braaten et al. 2015). The constructed side channels in the lower Missouri River, even though not constructed with adult sturgeon migration in mind, have demonstrated that sturgeon will use constructed channels and at times will choose to use them even when the main channel is unobstructed. The physical and resulting hydraulic features of the proposed bypass channel at Intake were modeled according to the features within known migratory pathways (main channel and side channel) used by pallid sturgeon in the upper Missouri River and Yellowstone River. The final geometry of the proposed bypass channel falls within the range of all parameters, including length, width, sinuosity, bend radius, and meander wavelength. In addition, this bypass channel has been engineered with expert input to increase the odds of use by sturgeon by optimal location and orientation of the downstream entrance, a flow split which is higher than side channels which have been used by pallid sturgeon, and water velocities and depths suitable for passage at a wide range of flows. Because pallid sturgeon have been observed to use side channels (both constructed and natural) on the Missouri River and Yellowstone River, even when the main channel is unobstructed, and because the designs mimic physical parameters of natural sidechannels actually shown to be used by pallid sturgeon on the Yellowstone, we believe that construction of the preferred bypass alternative will result in a high likelihood that the constructed bypass will effectively provide passage opportunity under a variety of flows. Lastly, the design of the bypass is constructed with the entrance near the base of the obstruction, rather than located some distance downstream. The best entrance locations are at the base of the obstructions because a fishes natural tendency to seek upstream passage at the obstruction. Entrances located significant distances downstream of the barrier may cause fish to swim past and become trapped below the dam by their natural instinct to swim upstream (Aadland et al. 2010). Fish passage attempts which have often failed for sturgeon or are not suitable for sturgeon typically involve ladders, lifts, fishways with baffles, sharp turns, passage through large reservoirs, and dams with turbines (Jager et al. 2016). Success of the intake fish passage project will be determined by its ability to successfully pass fish. It will not be judged on what the pallid sturgeon does after it passes, as the project has no control over that aspect of sturgeon life history. There are no assurances that any type of bypass system or even complete dam removal will lead to a self-sustaining population of pallid sturgeon. However, it is widely acknowledged by basin scientists and the Service (USFWS 2014) that a lack of time (distance) sufficient for development of free embryos prior to settling is limiting natural recruitment of pallid sturgeon in RPMA 2. If this is true, providing access to habitats above Intake Dam will give drifting free embryos additional time for development and may ultimately provide natural recruitment. As with any bypass option AND dam removal, it is unknown how many pallid sturgeon will be motivated to pass, how far upstream they may choose to spawn, and what level of recruitment may result. These unknowns are just as high for the dam removal option. As a result, the MRRP AM Plan does not assume success for any of these options but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed.

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OR-10		44	Although the Draft EIS does not acknowledge it, the Independent External Peer Review that was performed on the bypass channel proposal in 2013 also highlights the high level of uncertainty associated with this Project. At that time, the peer review concluded that "the probability that the [bypass channel] will perform as proposed is very low." BOR-11188. The peer review also characterized the uncertainties associated with the bypass channel as having "high" significance, meaning that they implicated a "showstopper" issue. BOR-11154, 11169. In addition, as we described in our scoping comments, Braaten et al. noted that there was little information about pallid sturgeon use of natural side channels prior to their own study and that pallid sturgeon use of these channels is inconsistent and not well understood. See Defenders and NRDC scoping letter at 25. The Braaten study "identified that pallid sturgeon will use side channels as a component of the migration pathways. However, side channel use was not consistent among migrating pallid sturgeon to suggest that a by-pass channel might be used by some but not all individuals." Id. at 193.	Uncertainties are discussed in the FEIS in Sections 4.9.4. Also, additional discussion has been provided in Section 4.9.8 regarding how the best available science regarding pallid sturgeon use of side channels has been incorporated into the design. P. Braaten and other researchers are part of the BRT that has had extensive input into the design process.
OR-10		45	Despite these uncertainties, the Draft EIS also concludes, without supporting analysis, that it is "reasonable to assume that a majority of fish would find and use the channel." Draft EIS at 4-169. However, as with the 2015 EA, the Draft EIS only analyzes the technical suitability of the channel for upstream migration, not whether or how well the bypass channel will work biologically.	See additional discussion in Section 4.9 regarding upstream and downstream passage and uncertainties for each alternative and the revised Monitoring and Adaptive Management Plan in Appendix E.
OR-10		46	The Court has already recognized this distinction. In the preliminary injunction order, the Court acknowledged that the "Federal Defendants note that they conducted physical and computer modeling to ensure that the entrance of the bypass channel would mimic natural river flows and encourage pallid sturgeon to use it." Defenders of Wildlife, 15-cv-14, GF-BMM, Dkt. #73 at 8. Nonetheless, the Court found this analysis insufficient because "[t]he EA fails to analyze, however, whether the pallid sturgeon actually would be likely to use the bypass channel." Id.	See additional discussion in Section 4.9 regarding upstream and downstream passage and uncertainties for each alternative and the revised Monitoring and Adaptive Management Plan in Appendix E.
OR-10		47	The Agencies' Reliance on the Fish Passage Connectivity Index as the Basis for Determining the Likelihood of Fish Passage is Arbitrary. However, despite the fact that the Draft EIS elsewhere concedes that the concept of successful "fish passage" is highly uncertain, the cost/benefit analysis rests on a very specific determination that fish passage will be 67% successful. The Draft EIS arrives at that number by using a "Fish Passage Connectivity Index" (FPCI). The FPCI's methodology is flawed in numerous and fundamental ways and does not constitute the required "hard look" at the likelihood that the Dam/Bypass Channel will succeed in passing pallid sturgeon.	The FPCI model is a planning tool to compare the relative effectiveness of each alternative. The index score does not represent either the specific number of fish that will pass nor does it calculate a statistical probability of fish passage, thus any comparison of the index value to the Biological Review Team's (BRT) criteria of passing 85% of the fish that approach within 1 mile downstream of Intake Diversion Dam is not valid. Nonetheless, additional discussion has been included in Sections 2.5 and 4.9 regarding the design of the bypass channel and the selection of the preferred plan.

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OR-10		48	The FPCI purportedly measures the likelihood of pallid sturgeon passing upstream. However, the FPCI's methodology is flawed in numerous and fundamental ways. The Agencies have, at best, failed to disclose the sensitivity and uncertainty of the model used to justify the value of incremental fish passage benefits assigned to the various alternatives, and at worst, have manipulated the model to arrive at the conclusion that the Dam/Bypass Channel alternative is superior on a cost/habitat unit improvement basis. The FPCI varies by alternative, from 1.0 (100%) for the no-dam alternatives to a minimal 0.08 for the No Action Alternative. See Draft EIS at 2-99, Table 2-27; Appendix D, Table 1-11 at 16. The Dam/Bypass Channel Alternative is given a FPCI of .674 (67%) passage rate. Id. However, the numbers used in the model are arbitrary and unexplained.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected. In addition, a sensitivity analysis was conducted for the cost effectiveness and incremental cost analysis to identify whether slightly higher or lower index values would result in a different list of cost effective or best buy plans. There is no difference in the listing of cost-effective and best buy plans. Of note, per Corps planning guidance ER 1105-2-100, any of the cost-effective or best buy plans could potentially be selected as a preferred alternative; however, other considerations including total cost, impacts to other elements of the environment (including social and economic conditions), constructability concerns, long-term O&M, and a variety of other factors weigh into the decision to select a preferred alternative. This evaluation is described in Section 2.4. The preferred alternative has been selected due to several factors, of which cost-effectiveness and incremental cost analysis is only one factor.
OR-10		49	As an initial matter, the FPCI modeling is based on the needs of 14 different fish species with varying migration behaviors and various swimming abilities, and an average of the results. Appendix D at 3-4. Thus, the 67% average success rate says nothing about the predicted success rate for the pallid sturgeon, the only endangered fish at issue with respect to the Project. In fact, the pallid sturgeon passage rate could be zero or anything in between. Using an average of different fish species to predict success for one species has no rational basis.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected. Of note, in the 2015 EA, pallid sturgeon was not included in the list of 13 native species and shovelnose sturgeon was used to represent both species. The agencies think including pallid sturgeon in the model is very important and thus it is included in this 2016 version. In addition, a sensitivity analysis was conducted to identify if only using pallid sturgeon to calculate the index results in any change in the identification of best buy or cost effective plans. It does not.
OR-10		50	Although the Draft EIS does not offer a pallid sturgeon-specific FPCI for any of the alternatives, our expert consultant, Mr. David Marcus, calculated what the number would be, from the Agencies' perspective, based on information found within the Draft EIS. See Attachment 1 at 3-6 (formulas for calculating FPCI at Appendix D at 2, 10; pallid sturgeon-specific values for the inputs into the FPCI formula calculated from figures in Appendix D at 11-12 and 13-14). Using the Draft EIS's numbers, Mr. Marcus concluded that the FPCI for pallid sturgeon passage would be 60% – lower than the 14-species rating of 67%.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected. Of note, in the 2015 EA, pallid sturgeon was not included in the list of 13 native species and shovelnose sturgeon was used to represent both species. The agencies think including pallid sturgeon in the model is very important and thus it is included in this 2016 version. In addition, a sensitivity analysis was conducted to identify if only using pallid sturgeon to calculate the index results in any change in the identification of best buy or cost effective plans. It does not.
OR-10		51	However, the problems with the Agencies' reliance on the FPCI calculations run much deeper. In 2015, the EA concluded that the FPCI for pallid sturgeon for the preferred Dam/Bypass Channel alternative was only 0.5, or only half of the FPCI in the Draft EIS for the Multiple Pump Alternative. Compare 2015 EA, Appendix E Attachment 1, "Fish Passage benefits Analysis," at 23, Table 10 with Attachment 2 to these comments ("Cost per AAHU" tab, line 3). This is the same value assigned in a 2012 analysis by Reclamation. See BOR 12003. The Draft EIS offers no explanation for this discrepancy, which results in a 20% higher FPCI for pallid sturgeon in the 2016 Draft EIS as opposed to the 2015 EA. In fact, the Draft EIS does not even acknowledge it.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected.

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OR-10		52	As Mr. Marcus explains in more detail in his report (Attachment 1), the discrepancy appears to be based on an apparently arbitrary change in one of the inputs to the FPCI model: F1. Fl represents the probability of pallid sturgeon finding the proposed bypass on a scale of 1-5, with 1 being the lowest. See Appendix D at 10. In the 2015 EA and the 2012 analysis in the administrative record (BOR 11996, Table 6), Fl was given a value of 3, while in the Draft EIS, that value has been changed to a 4 – an increase of 33%. Appendix D at 11, Table 1-7. Changing the value of F1, in turn, raises the FPCI from .5 to .6. The Draft EIS does not acknowledge or explain the change in F1. The Draft EIS simply states that “the Corps (2014) used the best professional judgment of federal and state biologists working on the Yellowstone River (Table 16).” Appendix D at 10. If this citation refers to a document, it does not appear to be in the administrative record for the existing litigation. Further, the 2014 date pre-dates the 2015 EA, which used a different F1 value. Because the Draft EIS provides no analysis or support for its assignment of an F1 value, and because this document is not readily identifiable and may not be publicly available, the public has no ability to determine the basis for this change.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected, including additional literature citations.
OR-10		53	Moreover, the actual results are most likely even lower. As noted above, the Draft EIS concedes that pallid sturgeon passage through the artificial bypass channel is highly uncertain. This uncertainty is illustrated by the fact that there are no examples of successful bypass channels for either pallid sturgeon or shovelnose sturgeon. Draft EIS at 2-105 (“to date, no successful upstream fish passage facility of any type has been built for shovelnose or pallid sturgeon”); Draft EIS at 2-107 (noting that bypass channel built for shovelnose at T&Y dam on Tongue River has failed to pass any shovelnose sturgeon). Thus, the potential range of results for the FPCI are highly variable.	See Section 4.9 for discussion on how the proposed Bypass Channel has been designed specifically to provide conditions similar to side channels that pallid sturgeon have been documented to migrate through in both the Yellowstone and Missouri Rivers. Lessons learned from the T&Y channel have been used to design the proposed bypass channel differently.
OR-10		54	However, despite this uncertainty, the FPCI assigns a specific prediction to fish passage benefits for each alternative. As a result, the inputs to the model are each highly subjective, translating uncertain predictions into (arbitrarily) precise numerical values. Not surprisingly, the results are unsupported by scientific evidence in the Draft EIS, and the Draft EIS offers no basis for its choice of any of those numbers. Thus, the methodology underlying the FPCI is so susceptible to manipulation and sensitive to arbitrary selection of variables that the results are meaningless – and potentially highly misleading.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected.
OR-10		55	The Draft EIS Fails to Adequately Analyze and Disclose the Impacts of the Dam/Bypass Channel Alternative on Larval Mortality. the Draft EIS simply speculates about larval mortality rates, without providing a meaningful supporting analysis	Additional discussion has been included in Section 4.9 discussing downstream passage for free embryos, larvae, juveniles, and adult pallid sturgeon and other fish species. Of note, the proposed concrete weir would be at the same elevation as the average rock elevation on the existing weir, so would not increase the water elevation or impound water.

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OR-10		56	Perhaps most importantly, the Draft EIS never evaluates why, given that the handful of pallid sturgeon that are currently using the existing side channel have never successfully reproduced, the pallid sturgeon that may use an artificial bypass channel would change this pattern and succeed where the prior spawning attempts have failed. ... To conduct that analysis, the Agencies would have to analyze the factors that have precluded the pallid sturgeon from successfully reproducing so far, and how and whether the new Dam/Bypass Channel would change those conditions. The reasons for the recruitment failure could be related to many factors, including, but not limited to, the fact that the numbers of individuals successfully migrating upstream are too few, that larvae cannot survive the journey downstream with a dam at Intake and/or due to other hazards, or that the drift distance is too short from the point at which the pallid sturgeon have spawned so far.	At this point, a rigorous analysis of recovery cannot be completed. Critical pieces of information are lacking such as transitional survival probabilities from egg to age-1 and what proportion of the adult population will be motivated to migrate above Intake and spawn and how far upstream they will choose to spawn. These unknowns exist for all passage options including dam removal. It would be unwise to spend time in developing an EIS to take the many years that it would take to develop this information. The FEIS does make assumptions on these unknowns in order to give some idea of how we believe this project and other alternative could help towards developing a naturally viable pallid sturgeon population for avoiding jeopardy, although it is admittedly a “best guess” at this point. The FEIS has been edited to provide additional information with regard to the Corps efforts to develop a comprehensive AM Plan (MRRP AM Plan) which identifies key unknowns, lays out the science actions needed to address these unknowns, and incorporate this work into the ongoing, funded, MRRP Integrated Science Program. The AM Plan utilizes models to better predict outcomes of management scenarios and provide a more defendable and highly scientifically-reviewed process for determining future management direction. The questions laid out in this comment are very important but the only way to answer them in a meaningful way and ensure that the information informs future management is through development and implementation of a comprehensive AM Plan which incorporates knowledge and potential management options on both the Missouri and Yellowstone Rivers. One step in quickly addressing many of these uncertainties is to provide sturgeon passage at Intake through the proposed bypass. Only one spawning event has been documented above Intake and insufficient time has elapsed to conclude that recruitment did not occur. However, passage through the existing channel is extremely rare and there has been little opportunity for a successful spawning events to occur above Intake as a result. Two main facts make the agencies believe that the constructed bypass will more effectively provide passage than the existing side channel. First, the opportunity to pass will be provided for a much larger variety of flows. Secondly, the design of the bypass is constructed with the entrance near the base of the obstruction, rather than located some distance downstream. The best entrance locations, based on current literature, are at the base of the obstructions because a fishes natural tendency to seek upstream passage at the obstruction. Entrances located significant distances downstream of the barrier (such as the existing side channel) may cause fish to swim past and become trapped below the dam by their natural instinct to swim upstream (Aadland et al. 2010).
OR-10		57	Further, the Draft EIS completely discounts the possibility of any larval mortality caused by traveling over the new concrete dam or striking the boulder field below the new concrete dam without any analysis or scientific citation. Draft EIS at 4-170. The Draft EIS concludes in one sentence that larvae “would be able to drift downstream of the weir with no difficulty as they would typically be drifting in the deepest part of the channel and would pass through the low-flow notch without injury.” Id. This single sentence, with no scientific basis, does not constitute a “hard look” at larval mortality caused by the new dam and existing boulder field. The new concrete dam and existing boulder field will cause changes in water velocities, gradients, and other river conditions that must be analyzed to determine how they will affect the downstream drift.	Additional discussion has been included in Section 4.9 discussing downstream passage for free embryos, larvae, juveniles, and adult pallid sturgeon and other fish species.

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OR-10		58	The Draft EIS also discounts larval mortalities caused by entrainment. Draft EIS at 4-169 – 4-170. As Defenders and NRDC previously explained, larvae are expected to be entrained in the main irrigation canal at Intake because the fish screens cannot block pallid sturgeon larvae. See 2015 Biological Opinion on "Interim and Future Maintenance of the Lower Yellowstone Irrigation Project and Construction of Fish Passage" at 26. They may also be killed on the screens themselves. Id. at 26, 30. In addition, the upstream, neighboring Buffalo Rapids Irrigation District has an unscreened canal that could entrain pallid sturgeon larvae. Some number of larvae will also be killed on the dam in the river. See id. The Draft EIS ignores the impacts of the Buffalo Rapids Irrigation District, and assumes a maximum 5% entrainment rate at the headworks, but describes these deaths as having "negligible effects" on recruitment because age-0 pallid sturgeon typically suffer mortality rates of 99.9% anyway. Draft EIS at 4-169. The Draft EIS also assumes that there will be no mortality at the new dam because larvae will drift through the low-flow notch. The opposite conclusion is just as likely – that with such high rates of mortality, there is no margin for error. Moreover, the Draft EIS does not analyze the various sources of larval mortality together, to determine how they may affect the species cumulatively	Additional discussion has been added to Section 4.9.7 discussing downstream migration and possible entrainment of free embryos/larval pallid sturgeon.
OR-10		59	The Draft EIS's Economic Rationales for the Dam/Bypass Channel Alternative Are Not Supportable. As noted above, one of the primary rationales for identifying the Dam/Bypass Channel as the preferred alternative is the Agencies' conclusion that this alternative is the most "cost-effective means of providing fish passage." Draft EIS at xlii. However, the Agencies' reliance on the "cost-effectiveness" of the various alternatives is unsupportable in this context. The fact that a project may be "cost-effective" is irrelevant – and not an appropriate basis to choose an alternative – if it does not comply with the law. Here, as described above, the Draft EIS fails to even analyze the impacts that would indicate whether the Dam/Bypass Channel Alternative will fulfill the Intake Project's purpose or comply with the ESA, let alone describe how this alternative will comply with that law. Further, all available evidence indicates that the Dam/Bypass Channel will, in fact, violate the ESA. Thus, the Agencies' reliance on the cost/benefit analysis in support of an unlawful alternative is arbitrary.	Section 2.5 discusses why the agencies believe the bypass channel will work.
OR-10		60	Even if the Agencies' reliance on cost/benefit analysis to identify the preferred alternative was appropriate, Mr. Marcus's attached report demonstrates that the calculations underlying the Agencies' cost/benefit analysis are unsupported and fatally flawed.	As noted in Appendix D Section 2.4, the CE/ICA analysis does not conclude that the Multiple Pump alternative is impracticable, it provides information about the cost of realizing the habitat benefits associated with each alternative for consideration within the context of the rest of the FEIS evaluation. Based on the cost estimates developed for the alternatives, the Bypass Channel has a lower average cost per unit output than the Multiple Pump alternative. As noted in Appendix D, both of these alternatives were identified as Cost Effective and Best Buy plans (see Appendix D and IWR 95-R-01 for definitions). Because the Bypass Channel had a lower cost per unit, the first Best Buy was the Bypass Channel. For the extra ~4000 AAHUs that could be provided by the Multiple Pump alternatives, the incremental cost per unit is greater. From the perspective of the CE/ICA, the additional investment required to implement the Multiple Pump alternative would only be worth it if the extra habitat output were deemed worth the extra cost. Whether an investment is "worth it" is not determined only based upon the CE/ICA, it is determined based upon the overall evaluation and comparison provided in the FEIS.

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OR-10		61	For example, one key calculation underlying the cost/benefit analysis is the FPCI, which, as described above, is a planning tool subject to arbitrary and unexplained inputs. As Mr. Marcus describes, had the Agencies continued to use a "3" as the "F1" value – as they did in the 2015 EA – the Multiple Pumps Alternative would be most cost-effective per habitat unit gained, according to the Agencies' own methodologies. See Attachment 1 at 5-7. The cost per habitat unit grows even greater if the "F1" value is assigned a lower value, consistent with a more realistic biological perspective. Id. at 7-8. At the very least, the high level of uncertainty suggests that, if the "F1" value was modeled statistically, it would result in a higher cost per habitat unit for the Bypass Channel in nearly every scenario.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected. In addition, a sensitivity analysis was conducted for the cost effectiveness and incremental cost analysis to identify whether slightly higher or lower index values would result in a different list of cost effective or best buy plans. There is no difference in the listing of cost-effective and best buy plans. Of note, per Corps planning guidance (ER 1105-2-100), any of the cost-effective or best buy plans could potentially be selected as a preferred alternative; however, other considerations including total cost, impacts to other elements of the environment (including social and economic conditions), constructability concerns, long-term O&M, and a variety of other factors weigh into the decision to select a preferred alternative. This evaluation is described in Section 2.4. The preferred alternative has been selected due to several factors, of which cost-effectiveness and incremental cost analysis is only one factor.
OR-10		62	The Adaptive Management Provisions are Unfunded and Uncertain The Draft EIS also fails to adequately disclose and analyze the future ramifications of choosing the Dam/Bypass Channel Alternative with respect to necessary adaptive management funding and actions.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to better describe Agencies roles and responsibilities moving forward. A narrative describing Agency authorities and potential funding sources has also been added.
OR-10		63	As an initial matter, the Draft EIS notes that the Corps will not be accountable or responsible for addressing any needed changes to the Intake Project if the Project fails. See Appendix E at 12 ("Once the one year warranty period [for the Corps] is complete, Reclamation through the LYP will be responsible for maintaining the new weir and bypass channel for the life of the project."). This means that if the Project fails to provide for survival and recovery of pallid sturgeon, as required by the ESA, the Corps will not necessarily be on the hook to fund any changes to the Project, large or small. In the event any changes are needed, the Draft EIS does not identify funding sources. Indeed, there does not appear to be any dedicated funding for monitoring or alterations to the plan even if Reclamation concludes that the Project has failed. Instead, the Draft EIS notes that implementation of adaptive management measures "would [] depend on funding availability." Appendix E at 16. Given that the Dam/Bypass Channel is essentially an experiment, with the fate of a highly imperiled endangered species at stake, funding should be in place prior to proceeding with such an uncertain project.	Within the upper basin, the Intake Dam has been identified by the Service (Service, 2013), and confirmed through the Effects Analysis that has been conducted as part of the Management Plan process as one of the best possibilities for restoring self-sustaining populations by being one of the only projects that can reestablish a linkage to potential pallid sturgeon spawning habitat that may provide adequate drift distance for drifting free embryos/larvae. However, it should be noted that the success of the intake fish passage project will be determined by its ability to successfully pass fish. It will not be judged on what the pallid sturgeon does after it passes, as the project has no control over that aspect of sturgeon life history. If passage is shown not to lead to spawning, and subsequent recruitment that can avoid jeopardy to the species in the upper basin, the Corps of Engineers will still be required to identify other potential management measures within its authority that could reasonably be implemented to accommodate avoidance of jeopardy. This is why the MRRP AM Plan does not assume success for any of these options but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed.
OR-10		64	Nonetheless, the Draft EIS's adaptive management plan does not even contemplate the idea that the Project will fail – even though the Agencies admit that "it remains to be seen" if the bypass channel will succeed biologically. Appendix E at 11. The potential adaptive management actions for the Dam/Bypass Channel Alternative involve making modifications to the bypass channel, removing fill from the existing natural channel, removing the existing boulder field, modifying the notch in the new dam, or modifying the headworks. Id. at 15-16. None of these measures involve removing the new dam and installing a pump system – the one action that would indisputably provide pallid sturgeon with the opportunity to naturally reproduce in the Yellowstone River. This is also the action that will be required of Reclamation if the Dam/Bypass Channel fails to provide for pallid sturgeon survival and recovery.	The Monitoring and Adaptive Management Plan in Appendix E has been updated; including the addition of other adaptive management measures that have been identified.

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OR-10		65	The EIS Does Not Adequately Disclose and Analyze Impacts to the Entire Ecosystem. According to the Draft EIS, there are 54 fish species in the Yellowstone River, 7 of which are listed as Montana Species of Concern. Draft EIS at 3-50 and 3-85. The Draft EIS recognizes the differences in preferred habitat conditions between these species by classifying them as “Main Channel Species” or “Backwater Species.” Draft EIS at 3-52 to 3-54 and 3-85. Yet the Draft EIS does not differentiate between these sets of species in addressing the impacts of each alternative. With respect to at least the seven species of concern, the Draft EIS concludes, in one sentence, that under the Dam/Bypass Channel Alternative, all “sensitive fish species” will be allowed to move upstream, “including both stronger and weaker swimming fish, providing a major benefit to these species.” Draft EIS at 4-168. A single sentence is not sufficient to analyze the impacts of the Draft/Bypass Channel Alternative on the species of concern in the Yellowstone River.	Section 4.9 has been revised to break out effects to listed or sensitive species in more detail.
OR-10		66	The Draft EIS’s discussion of the impacts of climate change are also cursory and insufficient. The Draft EIS notes that the artificial bypass channel planned for the Dam/Bypass Channel Alternative may not be enough for fish passage for some species during drought years, and that floods may cause structural problems to the channel. Draft EIS at 4-11. Yet the Draft EIS concludes that the risk is “minor” without providing any detail to support that conclusion. Absent more analysis, there is no way for the public to understand or respond to the Draft EIS’s discussion of climate change.	Climate change considerations have been reorganized and are discussed in more detail in Sections 3.1 and as part of cumulative effects pertaining to several disciplines including Surface Water (Section 4.3)
OR-10		67	The Draft EIS and the Best Available Science Demonstrate That Dam Removal Provides the Best Opportunity for Pallid Sturgeon Spawning and Recruitment in the Yellowstone River. ... Restoring this habitat is essential to the survival and recovery of the pallid sturgeon. Compared to other alternatives, this alternative also presents less of a risk for fish during droughts, which are expected to increase as a result of climate change. Id. at 4-12. In addition, given that the Agencies intend to abandon the efforts at Fort Peck Dam, there is no room for error with respect to the Intake Project – the fate of the species may rest entirely on this decision and therefore must be the best possible project for the pallid sturgeon. As a result, we urge the Agencies to adopt the Multiple Pump Alternative in the Final EIS and ROD.	Comment noted.

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OR-10		68	The Draft EIS's Cost Analysis Does Not Support Rejection of the Multiple Pump Alternative. ... However, costs are only relevant if the chosen alternative complies with all applicable laws, including the ESA – which the Dam/Bypass Channel Alternative will not. Even if the Dam/Bypass Channel Alternative complied with all applicable laws, the cost analysis in the Draft EIS does not comply with NEPA and does not support rejection of the Multiple Pump Alternative.	A discussion on why the Agencies believe the project will work has been incorporated into the FEIS in Section 2.5. Compliance with ESA is determined through consultation with the Service and will be documented in the BO, which will be provided prior to a ROD being signed. As noted in Appendix D Section 2.4, the CE/ICA analysis does not itself conclude that the Multiple Pump alternative is impracticable. Rather, the CE/ICA provides information about the incremental cost of habitat outputs among the horizon of optimal plans. As noted in the comment letter and report, both the Bypass Channel and the Multiple Pump alternatives were found to be Cost Effective and Best Buy plans (in the parlance of the USACE guidance IWR 95-R-01). The CE/ICA does not identify a preferred plan. The CE/ICA illustrates the horizon of efficient plans from which a recommend plan might be selected. As noted in the report, "For Corps ecosystem restoration projects, the selected plan should be the alternative having the maximum excess of non-monetary benefits (habitat output) over costs. This plan occurs where the incremental beneficial effects just equal the incremental costs, or alternatively stated, the recommended plan is selected by identifying the largest plan for which the extra habitat output is still worth the extra costs. Definition of the level of output that is "worth it" is a concern for the study team that will consider specific project factors and information." – Appendix D Section 2.4
OR-10		69	The "cost-effectiveness" analysis in the Draft EIS evaluates construction costs. The Draft EIS's analysis of these costs is unsupportable, as described above and in Mr. Marcus's report	See explanation of the CE/ICA in response to OR-10, # 68 above. Per Mr. Marcus's report, there are several responses found in OR-7, #15 and #16. The agencies believe that the costs are supportable.
OR-10		70	The arbitrary nature of the cost/benefit analysis is illustrated by the fact that the Draft EIS assigns an annual cost for monitoring and adaptive management requirements for the Multiple Pump Alternative that is more than two times as high as the Dam/Bypass Channel Alternative. See Appendix D at 19, Table 2-2. The Draft EIS did so by applying a 1% fee for adaptive management to each alternative. DEIS at 2-98, Appendix B at 22. This 1% addition has no logical basis. While monitoring costs should be equal, adaptive management costs should be significantly lower for the Multiple Pump mentioned by the Draft EIS is the potential for modifications to the headworks and pump stations to reduce entrainment. Appendix E at 28. In contrast, under the best case scenario, the Dam/Bypass Channel Alternative will likely require constant maintenance to maintain the bypass channel at its current specifications in the face of floods, ice flows, and other natural river processes. Those minimum measures will be required if the bypass channel succeeds – far greater costs should be assumed if it fails. Thus, there is no reasonable basis to assign a higher cost to such measures in the Multiple Pump Alternative.	As described in Section 2.4.2, monitoring is assumed to occur for the first eight years and for comparison purposes it was assumed that adaptive management is 1% of construction cost for all of the alternatives. Adaptive management actions would include modifications both as a result of biological monitoring as well as the performance of the irrigation (or water supply from the pumping). This was not clear in the DEIS but has been explained in the FEIS. For planning purposes and alternative comparison it was assumed reasonable to use a 1% of first costs to estimate possible adaptive management across alternatives. As stated in Section 2.7 a more detailed plan is being developed and would be developed for any alternative selected.

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OR-10		71	The second kind of costs, for operations and maintenance (O&M), are generally paid for by the irrigation districts. The administrative record for the 2015 EA makes clear that the focus of this Project has long been on minimizing or eliminating any additional costs for the irrigators, regardless of the biological outcome for pallid sturgeon. See FWS-4960-4961 (FWS official noting that "the irrigators have enlisted congressional inquiry to ensure full implementation of the project does not result in any added costs to the irrigators") (emphasis in original). As Mr. Marcus's report describes, the Draft EIS overestimates the O&M costs associated with the Multiple Pump Alternative and underestimates those for the Bypass Channel Alternative. See Attachment 1 at 42-43. For example, although the Draft EIS acknowledges that reduced power rates may be available, the Agencies did not apply those lower rates to the Multiple Pump Alternative. See, e.g., Draft EIS at 2-75. The Draft EIS also fails to adequately describe the framework and limitations the Agencies relied on to determine whether a particular alternative would allow for the LYP to remain viable.	Section 2.3.2.2 has been corrected to clarify that the term O&M includes anticipated replacement costs. The document has been revised to include Pick-Sloan power rates in the cost estimates for the Multiple Pump Alternative and the Multiple Pump with Conservation Measures Alternative. The OM&R of the LYP is the responsibility of the Lower Yellowstone District which is funded through assessments on farms within the LYP. The ability of the farms to pay assessments is dependent upon income from crop production, which is affected by water deliveries sufficient to meet crop requirements. The purpose and need for the proposed action is a dual purpose in that it recognizes the needs of the fish and the needs of the LYP. Each alternative evaluated include estimated costs for what the assessment per acre would need to be to OM&R the alternative. In all cases, the assessment is higher (ranging from 5.9% to 90.5% greater than the calculated No Action Alternative assessment) than what each farm pays now showing that the alternatives were developed without bias. The option for a trust fund to pay increased OM&R costs is evaluated in the FEIS in response to public comment. OM&R cost is just one of several considerations being made as the agencies work through the decision-making process.
OR-10		72	Finally, to the extent that construction or O&M costs are a prohibitive factor, the Agencies must explore alternative funding, as Defenders and NRDC highlighted in our scoping comments. While the Draft EIS concludes that requiring Reclamation to fund the Project will require the irrigation district to reimburse the agency, it does not otherwise offer any potential funding sources or resolutions. This analysis is insufficient to meet NEPA's requirements, especially given that available funding is a primary rationale for choosing particular alternatives.	The agencies are open to discussing potential alternative sources of funds. The Draft EIS was clear that additional Congressional Authorization would be necessary to establish such a trust and provide instruction for: o Who would establish and maintain the trust. o Where the funds for the trust would come from (agency appropriations or other source). o Purpose of the trust and what activities would be funded. o How long would the trust be authorized and conditions for when the trust would cease (i.e., where would the remaining funds go upon the expiration of the authority?). To address this comment, the EIS was revised to: o Provide additional discussion related to Congressional Authorization (See Chapter 2). o Describe assumptions associated with a conceptual trust (See Chapter 4). o Estimate the initial investment that would be necessary to off-set the additional OM&R costs associated with each pumping alternative which exceed the OM&R costs associated with the No Action Alternative (See Chapter 4). o Present potential effects of OM&R Expenditures on Individual and LYP Net Farm Income (See Chapter 4).
OR-10		73	THE CORPS' SECTION 404 ANALYSIS DOES NOT COMPLY WITH THE CLEAN WATER ACT. (followed by regulatory citings)	See below
OR-10		74	Appendix C to the Draft EIS does not appear to make an explicit finding regarding whether the Dam/Bypass Channel is in the public interest, as required by the Corps' regulations.	The FEIS identifies the bypass alternative as the preferred alternative. When evaluating Civil Works activities, the Corps follows all procedural steps identified in Engineer Regulation (ER) 1105-2-100 and other pertinent planning regulations. And applies the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G). These guidelines lay out methodologies, such as CE/ICA to help in determining cost and benefits and environmental factors which play an equal role in determining how alternatives are formulated and which alternatives are both practicable and feasible federal investments. CE/ICA does not make the decision, it informs the decision which also includes other factors.

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OR-10		75	Because the Corps' Section 404(b)(1) Analysis Relies on the Inadequate Analysis in the Draft EIS, the Corps Cannot Demonstrate Compliance with the Clean Water Act. ... the Draft EIS does not provide sufficient information or analyses to support the selection of the Dam/Bypass Channel Alternative as the preferred alternative. The Corps' 404(b)(1) Analysis perpetuates this failure by: (1) assuming the Dam/Bypass Channel's success, despite the limited scope of analysis and all evidence to the contrary; and (2) ignoring the Multiple Pump Alternative and other alternatives altogether, such that the Corps fails to weigh the benefits and costs of the Dam/Bypass Channel Alternative to the Multiple Pump Alternative as required by the CWA.	The Corps and Bureau of Reclamation believe that the analysis in the FEIS is adequate to demonstrate a clear comparison of the alternatives, as required by NEPA, and provide a basis for the identification of the bypass as the preferred alternative. Cost was considered in selection of the preferred alternative, and in fact was very important factor in identifying the preferred alternative. Considering the steep increase in incremental costs between the Bypass Channel and Multiple Pumping Alternatives, as well as the fact that total first costs of construction pumping alternative is much higher, the agencies have clearly shown consideration for cost and benefit. Considering the very steep increase in incremental cost and the biological uncertainties related to all alternatives (proportion of adult motivated to migrate above Intake and spawn if provided the opportunity, how far upstream they will choose to spawn, etc), the Bypass Channel was considered to be the best overall federal investment and was selected as the preferred alternative. However, in addition, more discussion on the practicability of each alternative has been included in Appendix C, Section 10. Practicability considerations include acquisition of land, construction difficulty, complications to the operation of the irrigation system, long-term reliability, and uncertainties regarding water availability.
OR-10		76	The Corps Failed to Evaluate Whether the Dam/Bypass Channel Alternative Will Jeopardize the Endangered Pallid Sturgeon. ... As described in detail in our scoping comments and noted above, Reclamation and the Corps are currently violating section 7 of the ESA and jeopardizing the continued existence of the pallid sturgeon at Intake Dam and Fort Peck Dam, respectively.	The ESA charges the Service with determining whether federal actions jeopardize the continued existence of endangered species through a biological opinion. The ESA consultation will be complete prior to signing of the ROD.
OR-10		77	The Section 404(b)(1) analysis relies on Appendix D to conclude that the Dam/Bypass Channel Alternative will not result in jeopardy to any listed species. Appendix C at 67. However, the reference to Appendix D appears to be an error. Neither Appendix D nor the Draft EIS contain any analysis of the Dam/Bypass Channel Alternative's effects on survival and recovery of the species (essential elements of a "jeopardy" analysis) or reach a conclusion regarding whether it will cause jeopardy. The Draft EIS also contains no analysis of the effects of the intended "swap" of Fort Peck Dam operational modifications on survival and recovery of the species. As a result, the Section 404(b)(1) analysis's conclusion that the preferred alternative will not cause jeopardy to pallid sturgeon on the Yellowstone River is unfounded and arbitrary.	References to Appendix D have been removed and instead reference to section 4.9 where analysis of effects on listed species is contained has been provided.

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OR-10		78	Even with respect to upstream passage, just one component of the pallid sturgeon's life cycle relevant to the jeopardy analysis, the 404(b)(1) Analysis is insufficient. Instead, the Corps perpetuates the assumption of success that permeates the Draft EIS. "It is anticipated that a majority of pallid sturgeon that swim up to the weir would encounter the bypass channel as its entrance will be located close to the weir, thus a likely majority of pallid sturgeon [will] use the channel." Appendix C at 38. As with the conclusions in the main body of the Draft EIS, there is no analysis to support the conclusion that simply "encountering" the bypass channel will mean that pallid sturgeon will use it, and the Draft EIS concedes that the likelihood that pallid sturgeon will use the bypass channel is highly uncertain. Neither the Draft EIS nor the 404(b)(1) Analysis provide sufficient data or analysis to determine whether pallid sturgeon will use the channel at all. They certainly fail to demonstrate that adult pallid sturgeon will use the channel in sufficient numbers to provide for natural reproduction at a survival or recovery level.	Additional discussion has been included in Section 4.9 on uncertainties related to each alternative and the design criteria and analyses for the proposed bypass channel that maximize the potential for fish to encounter it. There is also additional discussion related to why the agencies believe that the alternative will work in Section 2.5.
OR-10		79	Further, the Section 404(b)(1) Analysis repeats the Agencies' conclusion that the Dam/Bypass Channel will be a success if 85% or more of the telemetered pallid sturgeon use the bypass channel. Appendix C at 60. Yet, as described above, the Draft EIS estimates that only 67% of pallid sturgeon will utilize the bypass channel, and that estimate is deeply flawed and likely vastly overstated. Appendix D at 16. Thus, even under the Draft EIS's own analysis and their own (unlawful) metric for success, the Dam/Bypass Channel is predicted to fail. The Section 404(b)(1) Analysis offers no rationale for concluding that a Project that will fail the Agencies' own metric for success will somehow also avoid causing "jeopardy" to pallid sturgeon.	The FPCI model is a planning tool to compare the relative effectiveness of each alternative. The index score does not represent either the specific number of fish that will pass nor does it calculate a statistical probability of fish passage, thus any comparison of the index value to the Biological Review Team's (BRT) criteria of passing 85% of the fish that approach within 1 mile downstream of Intake Diversion Dam is not valid.
OR-10		80	Even if the Agencies' conclusion regarding the anticipated passage of pallid sturgeon upstream was supportable, the Agencies failed to analyze how or whether the pallid sturgeon will be able to complete their life cycle and successfully naturally reproduce.	The current key hypothesis for lack of recruitment of pallid sturgeon in the Upper Missouri River basin (based on the best available science) is that the drift distance is insufficient on either the Yellowstone River or the Missouri River for larvae to survive (Delonay et al. 2016). Regardless of the passage alternative chosen for Intake Diversion Dam, drift distance could still be a limiting factor as it is not known how far upstream of Intake the pallid sturgeon may migrate or spawn. Additional discussion on uncertainties is included in Section 4.9.
OR-10		81	The Least Environmentally Damaging Practicable Alternative is to Remove the Dam and Adopt the Multiple Pump Alternative. As noted above, in order to comply with CWA Section 404, the Corps must choose the alternative that is the least damaging alternative unless it is proven to be impracticable. See Utahns, 305 F.3d at 1186-87; Alliance to Save the Mattaponi, 606 F. Supp. 2d at 128; 40 C.F.R. § 230.10(a). The Corps is required to deny the application "if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." 40 C.F.R. § 230.10(a). The Clean Water Act "compels that the [least-damaging] alternative be considered and selected unless proven impracticable." Utahns, 305 F.3d at 1189; Alliance to Save the Mattaponi, 606 F. Supp. 2d at 130.	The FEIS identifies the bypass alternative as the preferred alternative. When evaluating Civil Works activities, the Corps follows all procedural steps identified in Engineer Regulation (ER) 1105-2-100 and other pertinent planning regulations and applies the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G). These guidelines lay out methodologies, such as CE/ICA to help in determining cost and benefits and environmental factors which play an equal role in determining how alternatives are formulated and which alternatives are both practicable and feasible federal investments. The Corps and Bureau of Reclamation believe that the analysis in the FEIS is adequate to demonstrate a clear comparison of the alternatives, and provide a basis for the selection of the bypass as the preferred alternative. Cost was considered in selection of the preferred alternative, and in fact was very important factor in identifying the preferred alternative. Considering the steep increase in incremental costs, as well as the fact that total first costs of construction for the pumping alternative is much higher than the bypass channel, the agencies have clearly shown consideration for cost and benefit. Considering the very steep increase in incremental cost and the biological uncertainties related to all alternatives (proportion of adult motivated to

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				migrate above Intake and spawn if provided the opportunity, how far upstream they will choose to spawn, etc), the Bypass Channel was considered to be the best overall federal investment and was selected as the preferred alternative. However, in addition, more discussion on the practicability of each alternative has been included in Appendix C, Section 10. Practicability considerations include acquisition of land, construction difficulty, complications to the operation of the irrigation system, long-term reliability, and uncertainties regarding water availability.
OR-10		82	Notably, although one factor of the practicability test involves the cost of a particular alternative, the fact that one alternative may cost more than another is not, by itself, sufficient to reject it. Instead, the Corps must weigh the relative benefits and impacts of all of the potential alternatives. See Alameda Water & Sanitation District v. Reilly, 930 F. Supp. 486, 489, 492 (D. Colo. 1996) ...; Friends of the Earth v. Hall, 693 F. Supp. 904, 946-47 (W.D. Wash. 1988) ... Hough v. Marsh, 557 F. Supp. 74, 83-84 (D. Mass. 1982) ... Accordingly, the Agencies must fully evaluate the relative benefits of all of these costs and benefits for public information and comment.	See above response in OR-10, 81. This comment is a continuation of the previous.
OR-10		83	It is indisputable that the least environmentally damaging alternative is removing the dam and installing a pumping system for irrigation, as contemplated by the Multiple Pump Alternative. The Section 404(b)(1) Analysis in Appendix C ignores this alternative in its effects analysis, and therefore fails to weigh the relative benefits of this alternative to the Dam/Bypass Channel Alternative as required by the statute.	See above response in line OR-10, 81. This comment is a continuation of the previous.
OR-10		84	Balancing the relative benefits – and not just the costs – is essential here because the Dam/Bypass Channel does not comply with all legal standards or provide for pallid sturgeon survival and recovery, the fundamental purpose of the Project. Costs may only be used as the determining factor for a Section 404 analysis if the benefits "can reasonably be viewed as equivalent with respect to other factors." Friends of the Earth, 693 F. Supp. at 946-47. Here, there is no scientific evidence to support the idea that the Dam/Bypass Channel is "equivalent" to the Multiple Pump Alternative in terms of benefits to the pallid sturgeon, and, in fact, the available scientific evidence indicates that the Dam/Bypass Channel will permanently close the door on pallid sturgeon recovery.	See above response in OR-10, 81. This comment is a continuation of the previous. Any proposed discharges of fill would be in compliance with Section 404 of the Clean Water Act. The impacts, as well as efforts to offset impacts were considered as integral parts to each plan when developing overall benefits and costs. Each alternative also considers that the results will benefit endangered species, specifically pallid sturgeon, an Aquatic Resources of National Importance (ARNI). Considering the very steep increase in incremental cost and the biological uncertainties related to all alternatives (proportion of adult motivated to migrate above Intake and spawn if provided the opportunity, how far upstream they will choose to spawn, etc), the Bypass Channel was considered to be the best overall federal investment and was selected as the preferred alternative.

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OR-10		85	Further, as described above, the Draft EIS does not support the conclusion that the Multiple Pump Alternative is impracticable. The cost/benefit analysis concluding that the Multiple Pump Alternative is less cost-effective than the Bypass Channel Alternative is built on numerous unsupportable and arbitrary assumptions that make its conclusions essentially meaningless. However, even using the Agencies' assumptions, the Multiple Pump Alternative was deemed "cost-effective" in the Draft EIS and the Agencies offer no evidence to demonstrate that it is "impracticable." See Appendix C at 12. Moreover, if realistic numbers are applied, the Multiple Pump Alternative would cost even less per habitat unit gained than the Bypass Channel Alternative, making it even more "costeffective" (under the Agencies' metric) than the Bypass Channel Alternative.	See responses to OR-7, #15 and 16.
OR-10		86	Moreover, the Section 404(b)(1) Analysis failed to include the costs that are likely to occur if the Dam/Bypass Channel fails to provide for survival and recovery of pallid sturgeon. For example, if an alternative is chosen that will not recover the species, there will be additional costs associated with: (1) the costs of evaluating and implementing a new alternative to comply with the ESA if the initial plan fails to provide for recovery of the species; (2) the adaptive management activities required to tear down any construction and implement a new solution; and (3) the maintenance, in perpetuity, of a hatchery program for pallid sturgeon if the species continues to be unable to be self-sustaining.	Within the FEIS, costs are included for adaptive management. Implementing a new alternative in the future would require a new study, which would be informed by adaptive management results. Uncertainties with regard to spawning and recruitment exist equally across all passage options including dam removal. Most of the questions with successful reproduction go beyond the physical ability to pass fish, but to the uncertainties as to what pallid sturgeon will actually do after given the ability to pass.
OR-10		87	The Dam/Bypass Channel Alternative Will Cause or Contribute to Significant Degradation of the Yellowstone River. The Corps may not permit a dredge and fill activity that "cause[s] or contribute[s] to significant degradation of the waters of the United States," which includes the Yellowstone River. 40 C.F.R. § 230.10(c). ... First and foremost, the Dam/Bypass Channel Alternative violates this standard because it will contribute to the extirpation of an endangered species, which indisputably "causes or contributes" to significant degradation to the Yellowstone River.	The Corps of Engineers and the Bureau of Reclamation do not believe that there will be significant degradation to waters of the United States. Any proposed discharges of fill would be in compliance with Section 404 of the Clean Water Act. The impacts, as well as efforts to offset impacts were considered as integral parts to each plan when developing overall benefits and costs. Each alternative also considers that the results will benefit endangered species, specifically pallid sturgeon, an Aquatic Resources of National Importance (ARNI). Impacts to various resources are described in Chapter 4. Considering the very steep increase in incremental cost, and considering the biological uncertainties related to all alternatives (proportion of adult motivated to migrate above Intake and spawn if provided the opportunity, how far upstream they will choose to spawn, etc), the Bypass Channel was considered to be the best overall federal investment and was selected as the preferred alternative.

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OR-10		88	Moreover, as described in our scoping comments and above, the Dam/Bypass Channel Alternative will significantly degrade the entire aquatic ecosystem of the Yellowstone, a river regarded by the Environmental Protection Agency as an aquatic resource of national importance. See Greater Yellowstone Coalition v. Flowers, 321 F.3d 1250, 1257-1258 (10th Cir. 2003) ("adverse impact on the aquatic ecosystem" under the Guidelines does not require showing jeopardy; harm to individuals can suffice). The Dam/Bypass Channel Alternative will require extensive bank stabilization or river modifications, and will significantly alter and degrade the Yellowstone River's fishery and riparian habitat. This Alternative is also inconsistent with the Yellowstone River Conservation District Council's plan to protect and encourage channel migration easements within channel migration zones on the Yellowstone River as well as the Agencies' acknowledgment that dam building, bank stabilization, and other river modification efforts throughout the Missouri and Mississippi River basins are the primary reason that the pallid sturgeon is nearing extinction.	See above OR-10, #87. This is a continuation of the same comment. Evaluation of channel migration zone impacts is discussed in Section 4.5. The bypass channel includes some bank stabilization on outside bends within the channel but does not require more than minor bank stabilization on the main river channel.
OR-10		89	Author included Appendix with comments from David Marcus that are not reflected here. (Also included in letter OR-16)	See response to OR-7, #15 and #16
OR-10		90	Author also included extensive spreadsheets not reflected here.	See response to OR-7, #15 and #16
OR-11	B. Farling, Montana Trout Unlimited	1	We strongly urge the Corps and BoR to refine the technical, biological and economic effects analysis for the "Multiple Pump Alternative," and to adopt this option as the best solution for accommodating fish passage, recovery of pallid sturgeon and the interests of water users in the Lower Yellowstone Irrigation Project ("the project"). This analysis could include a re-evaluation, or not, of incrementally implementing some of the conservation measures for irrigation infrastructure that the DEIS says is already occurring or planned (DEIS 2-36), and which could potentially reduce pumping costs.	The conservation measures identified under the Multiple Pump With Conservation Measures Alternative have been evaluated and can be incorporated into any of the alternatives if desired by decision-makers. All conservation measures would need to be installed first, prior to dam removal, to ensure water supply to the irrigation district.
OR-11		2	The analysis in the DEIS, the best available science, and certain legal requirements under the National Environmental Policy Act and Endangered Species Act, as well as the congressional authorization under the Water Resource Development Act of 2007 (WRDA 2007), do not support selection of the Dam/Bypass Channel option as the preferred alternative for the Intake Project.	Comment noted.

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OR-11		3	The DEIS provides no evidence that the preferred alternative will meet the objective of helping recover endangered pallid sturgeon, nor does it demonstrate that it will improve fish passage for all fish or contribute to ecosystem restoration.	The FEIS is clear that pallid sturgeon passage is the objective at Intake. A fish passage design that can accommodate pallid sturgeon is likely to provide added passage benefits to other species because sturgeon species are less able to negotiate rapids and steps and other features that many native fish species can pass. Improving passage for most native species will contribute to ecosystem restoration, especially as it regards connectivity of stream habitat. Current literature on bypass designs for sturgeon all highlight that promising approaches include those that mimic natural channels. This would include building a channel with similar geometry, facilitate passage under a range of discharge conditions, and incorporate a broad range of hydraulic criteria that emulate the range and depths and velocities that have been successfully negotiated by targeted migratory fish. (Braaten et al. 2015, Aadland 2010, Jager et al. 2016). Pallid sturgeon have been shown to use natural side-channels in the upper Missouri River (Braaten et al. 2015) and constructed side-channels in the lower Missouri River (DeLonay et al. 2014, DeLonay et al. 2016a; DeLonay et al. 2016b) during spawning migration. In the upper Missouri River, pallid sturgeon migrating upriver passed through a variety of short (0.4-km long; 0.25 mi) and long (3.9-km long; 2.42 mi) side channels (Braaten et al. 2015). The constructed side channels in the lower Missouri River, even though not constructed with adult sturgeon migration in mind, have demonstrated that sturgeon will use constructed channels and at times will choose to use them even when the main channel is unobstructed. The physical and resulting hydraulic features of the proposed bypass channel at Intake were modeled according to the features within known migratory pathways (main channel and side channel) used by pallid sturgeon in the upper Missouri River and Yellowstone River. The final geometry of the proposed bypass channel falls within the range of all parameters, including length, width, sinuosity, bend radius, and meander wavelength. In addition, this bypass channel has been engineered with expert input to increase the odds of use by sturgeon by optimal location and orientation of the downstream entrance, a flow split which is higher than side channels which have been used by pallid sturgeon, and water velocities and depths suitable for passage at a wide range of flows. Because pallid sturgeon have been observed to use side channels (both constructed and natural) on the Missouri River and Yellowstone River, even when the main channel is unobstructed, and because the designs mimic physical parameters of natural side channels actually shown to be used by pallid sturgeon on the Yellowstone, we believe that construction of the preferred bypass alternative will result in a high likelihood that the constructed bypass will effectively provide passage opportunity under a variety of flows. Lastly, the design of the bypass is constructed with the entrance near the base of the obstruction, rather than located some distance downstream. The best entrance locations are at the base of the obstructions because a fishes natural tendency to seek upstream passage at the obstruction. Entrances located significant distances downstream of the barrier may cause fish to swim past and become trapped below the dam by their natural instinct to swim upstream (Aadland et al. 2010). Fish passage attempts which have often failed for sturgeon or are not suitable for sturgeon typically involve ladders, lifts, fishways with baffles, sharp turns, passage through large reservoirs, and dams with turbines (Jager et al. 2016).

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OR-11		4	The DEIS deliberately ignores the stated purpose and need of the project: recovery of pallid sturgeon in the upper Missouri River Basin. The agencies mistakenly limit the purpose and need to: 1.) improve fish passage for pallid sturgeon and other fish; 2.) continue viable and effective operation of the LYP; and, 3.) contribute to ecosystem restoration (DEIS xxxvi). The agencies claim that their obligation is to "not jeopardize" a species, and that "pallid sturgeon recovery is not within the scope of this project (DEIS xxvi)." That is incorrect.	Revised text has been provided in section 1.2.3 Need - Improving Fish Passage and additional information and clarification has been provided in section 1.2.1. As noted by commenters, the Purpose and Need Statement of an EIS must be informed by the statutory context of the federal action. The underlying purposes and needs for Reclamation and the Corps are to manage and operate the LYP and Fort Peck Dam in accordance with Project laws, authorities, and purposes. The Agencies recognize the importance of the pallid sturgeon in the Missouri River Basin and support pallid sturgeon recovery activities throughout their known range. Section 3109 of the 2007 Water Resources Development Act (WRDA) authorizes the US Army Corps of Engineers (Corps) to assist Reclamation with funding from the Missouri River Recovery and Mitigation Program for the design and construction of Reclamation's Lower Yellowstone Project at Intake, Montana for the purposes of ecosystem restoration.
OR-11		5	Because the Corps is investing in a BoR project with the expectation the U.S Fish and Wildlife Service will then relieve it of its recovery obligations in the upper Missouri River Basin, the agency must see this investment as a "recovery" action. In a 2003 Biological Opinion, the U.S. Fish and Wildlife Service (USFWS) concluded that both the Corps' and the BoR's activities, including at Fort Peck and at Intake, are already contributing to jeopardy and deemed to be taking pallid sturgeon. That has not changed. The agencies' obligations go beyond not jeopardizing the species – that is already occurring -- but instead to instigate activities that lead to recovery.	The Corps of Engineers is developing a Missouri River Management Plan and EIS that assesses (1) major federal actions arising from a Biological Opinion (BiOp) prepared in accordance with the Endangered Species Act (ESA) of 1973, as amended to avoid jeopardy to three federally listed threatened and endangered species that use the Missouri River and (2) the creation of habitat for those species. The relative need and effectiveness of actions on both the Yellowstone and Missouri River systems will be evaluated through a well-planned, systematic AM process which has been developed as part of the MRRP Management Plan. This AM approach has received a tremendous amount of independent scrutiny of AM and sturgeon experts and has been developed transparently with unprecedented stakeholder involvement through MRRIC and associated Independent Science Advisory Panel. The focus of the plan is in meeting pallid sturgeon objectives provided by the USFWS to avoid jeopardy. Within the upper basin, the intake dam has been identified by the Service (Service, 2013), and confirmed through the Effects Analysis that has been conducted as part of the Management Plan process as one of the best possibilities for restoring self-sustaining populations by being one of the only projects that can reestablish a linkage to potential pallid sturgeon spawning habitat that may provide adequate drift distance for drifting

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				free embryos/larvae. However, it should be noted that the success of the intake fish passage project will be determined by its ability to successfully pass fish. It will not be judged on what the pallid sturgeon does after it passes, as the project has no control over that aspect of sturgeon life history. If passage is shown not to lead to spawning, and subsequent recruitment that can avoid jeopardy to the species in the upper basin, the Corps of Engineers will still be required to identify other potential management measures within its authority that could reasonably be implemented to accommodate avoidance of jeopardy. This is why the MRRP AM Plan does not assume success for any of these options but instead sets up a comprehensive strategy to learn from the bypass at Intake as well as decrease relevant uncertainties on both the Missouri and Yellowstone River so that subsequent actions on either system will be informed. However, it is unlikely that options at Fort Peck would be pursued based on current science. Available data indicate that hatchery released free embryos, five days post-hatch or older, are able to survive to age-1 in the Missouri River between Fort Peck Dam and Lake Sakakawea, when released 170 miles upstream of the lake. Because natural recruitment has not occurred in this reach, the conclusion is that mortality is limiting at very early stages, days 0-5 post hatch, although adequacy of dispersal distance is also dependent on spawning location (Braaten et al., 2008, 2010, 2012b). These observations support the hypothesis by Kynard et al. (2007) which implicates total drift distance as a limitation on natural recruitment. Hydraulic drift modeling predicts that alteration of Fort Peck flows, temperature modifications at Fort Peck are all likely to not result in recruitment (Fischenich, 2014).
OR-11		6	The USFWS amplifies the importance of recovery when it states in the DEIS that "the value of restoring the Yellowstone River as a natural migratory route for sturgeon and making the middle Yellowstone function as the spawning and nursery grounds for pallids cannot be overstated (pg xxvii)." Further, the congressional authorization for the Corps relative to this project, the Water Resources Development Act of 2007 (WRDA 2007) authorized spending from the Missouri River Recovery and Mitigation Program, which the Corps' website for the program says involves "actions being taken pursuant to the 2000 biological opinion, amended in 2003..." In order to avoid jeopardy, which the USFS has deemed has been occurring for years, and which was the purpose of the original EIS for this project, expenditures of this program need to lead to recovery, not simply "improve fish passage for pallid sturgeon and other native fish."	The WRDA language authorizing the Corps to spend funds from the MRRP says "for the purpose of ecosystem restoration". Regardless of the purpose of MRRP, the Corps' authorization for the Intake project is for the purpose of ecosystem restoration.
OR-11		7	It is also worth noting that the court in Defenders of Wildlife, 15-cv-GF-BMM, docket #73 at 12 directed the agencies to include an analysis of the potential effects of the Intake Project on recovery of pallid sturgeon. Simply avoiding jeopardy, when it is already occurring, is not sufficient.	Additional discussion has been added regarding the state of the science regarding recruitment and recovery. See Section 4.9. At this point, a rigorous analysis of recruitment and recovery cannot be completed. Critical pieces of information are lacking such as transitional survival probabilities from egg to age-1 and what proportion of the adult population will be motivated to migrate above Intake and spawn and how far upstream they will choose to spawn. These unknowns exist for all passage options including dam removal. The FEIS does make assumptions on these unknowns in order to give some idea of how we believe this project and other alternative could help towards developing a naturally viable pallid sturgeon population for avoiding jeopardy. The FEIS has been edited to provide additional information with regard to the Corps commitment and efforts to continue trying to identify key unknowns for the pallid sturgeon throughout the entire Missouri River basin, develop management actions needed to address these unknowns, and incorporate this work into the ongoing, funded, MRRP Integrated Science Program. These efforts include developing models to better predict outcomes of management scenarios and provide a more defendable and highly scientifically-reviewed process for determining future management direction. The questions laid out in this comment are very important, and it is the agencies' best judgement that the only way to answer them in a meaningful and

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				scientific manner is to ensure a systematic approach that informs future management actions on both the Missouri and Yellowstone Rivers. One immediate step the agencies have identified to address a leading hypothesis and reduce uncertainty is to provide sturgeon passage at Intake through the proposed bypass.
OR-11		8	The DEIS is heavily biased in favor of the preferred alternative. Descriptions of the Dam/Bypass Channel option are subjectively positive and/or assume that that alternative will be selected. Descriptions of the other alternatives, especially the open river alternatives, are presented as subjectively negative. This bias was also evident during public meetings when the agencies displayed PowerPoint presentations on the alternatives that implied landowners within the Lower Yellowstone Irrigation Project would be liable for all O&M costs associated with the proposed alternatives on a per acre basis. These displays showed huge expenses for landowners. The DEIS, however, does not state that increased O and M or construction costs would have to be borne by water users. In fact, the DEIS portrays those costs as part of the overall project alternative costs to be borne by the agencies.	It is a fact that O&M of the Lower Yellowstone Irrigation Project is borne by the landowners within the district and O&M funded by the LYIP, not the federal agencies. The FEIS describes the O&M as it will be borne by the irrigators, please see section 2.3.2.2 Operation, Maintenance and Replacement (OM&R) of Certain Facilities, specifically the last paragraph of that section states "The LYIP is responsible for Intake Diversion Dam, headworks and canal OM&R costs consistent with the authorizing legislation (Reclamation Act of June 17, 1902, as amended; Water Conservation and Utilization Act of August 11, 1939, as amended); the current O&M transfer agreement between Reclamation and the LYIP, and Reclamation policy." O&M is consistently referenced in this manner throughout the FEIS.
OR-11		9	The proposed post-project monitoring and assessment are inadequate. MTU criticized the monitoring proposed in the previous EIS for being conducted for only eight years, which in terms of producing a subsequent population of reproducing individuals is insufficient for determining successful spawning and recruitment. The current DEIS still commits to only an eight-year monitoring effort. Furthermore, the DEIS acknowledges that monitoring of the preferred alternative might show that the bypass channel fails to pass fish sufficiently. "The design of the bypass channel is based on the best available science, but as there is not a similar precedent, there are still uncertainties about the ultimate effectiveness in providing pallid sturgeon passage. Therefore, the recommended reasonable and prudent measure (RPA) to minimize effects was to implement a monitoring and adaptive management plan that would document the performance of the replacement weir and bypass channel and take measures to improve its success if the performance did not meet desired criteria (5-4)."	The Agencies acknowledge there will be uncertainties associated with any alternative that is implemented at the Intake Diversion Dam. These uncertainties are discussed in Section 4.9. Because of the uncertainties with the Project, the Agencies are committed to implementing a Monitoring and Adaptive Management Plan (Appendix E). Also, the ultimate timeline for monitoring activities will be determined through the ESA Section 7 consultation process and the ultimate success of the alternative that gets implemented.
OR-11		10	The agencies admit in many places in the DEIS that the Dam/Bypass Channel alternative could very well not work for fish passage. But the DEIS also indicates that if this occurs the agencies can adaptively manage the bypass system to improve it. However, the DEIS doesn't identify exactly what criteria they will use to determine success, what the adaptive management steps would be, who would implement them, and at what cost. If there are improvements that could help later, why not simply employ them at inception?	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include a better discussion of timelines, success criteria and the process for making decisions.

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OR-11		11	The Dam/Bypass Channel will require regular maintenance, including costs associated with channel stabilization, repairing the inlet and outlet, debris removal, the possible rebuilding of the trolley system or vehicular access atop the new concrete dam, etc. But the DEIS is silent on who will be responsible for these obligations, who will pay for them, and what they could cost over the projected life of the dam and bypass. These future costs are not included in the O&M budget for this alternative. They should be identified.	See response to comment OR-11, 8 above. O&M costs are identified as summarized in tables for each alternative in chapter 2. More detailed assumptions pertaining to those estimates can be found in Appendix B, Attachment B.8.
OR-11		12	Further, determination of costs for the open river and pumping alternatives should, as with all alternatives, be subjected to an independent peer review. The results of that review should be made available to the public before an alternative is selected. It is unclear to us, for example, how some of the costs of the pumping options were determined and whether they are reasonable. For example, it is not clear that all the pumps will be needed. Curiously, the cost of the Dam/Bypass Channel option does not include a cost for design. Though this has apparently already been paid for, it is still a cost that should be attributed to this alternative, much as it is for the open-river alternatives.	The project has undergone an Agency Technical Review which included a review of the cost estimates by the Corps of Engineers Cost Center of Expertise in Walla Walla, Washington. Costs presented in the FEIS were deemed to have been developed following Corps policy.
OR-11		13	The determination that the Dam/Bypass Channel alternative will pass pallid sturgeon is based solely on scant lab studies of pallid sturgeon (mostly juveniles) and their ability to maintain upstream swimming velocities in 9-11' long flumes. The DEIS admits there is no real-world evidence of pallid sturgeon or related shovelnose sturgeon using engineered bypass structures: "There are still many uncertainties over whether a majority of pallid sturgeon would actually pass through the bypass channel as there are no other examples of similar natural-type channels designed for non-jumping benthic fish (4-169)."	Additional information and citations pertaining to sturgeon use of side channels, design criteria, and the potential for passage have been added to the FEIS. See Section 4.9.8.
OR-11		14	There are real world indications, however, that point to how risky the assumptions for success are. If the agencies believe this 2-mile long engineered channel, which will carry only 15 percent or less of the discharge of the Yellowstone River, will be sufficient for passing enough sturgeon (and other species) upstream with enough frequency to enable recovery (or avoid jeopardy), then it would seem that more sturgeon would have used the existing natural high-water channel more frequently over the years. However, upstream passage at Intake in the natural high-water channel has been documented only in a single recent year, when flows exceeded 45,000 cfs, an uncommon event. This is a pretty good indication that sturgeon species, though they might occasionally use a natural side channel under conditions with above average flows, they don't, however, have a strong proclivity for navigating side channels.	The existing side channel has no flow at all until Yellowstone River flows exceed 20,000 cfs, thus limiting the potential for fish passage to an average of 7 days in 5 out of 10 years. Other studies demonstrate that pallid sturgeon migrate through side channels in both the Yellowstone and Missouri rivers, including constructed side channels. The proposed bypass channel will provide sufficient depth and velocities and attraction flows for fish at all flows at or above 7,000 cfs, thus providing a passable route in every year throughout the migration season.

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OR-11		15	Further, discharge velocity and depth are only two of the many nuanced values that contribute to successful upstream movement. Also important are overhead cover, turbidity, temperature, chemistry, time of day, channel geometry, substrate (especially for benthic species), presence of predators, human disturbance, ability to locate entrances (and be comfortable with them), and other values. None of these have been evaluated in determining the probability of success	See Section 4.9 for discussion of the design of the proposed bypass channel.
OR-11		16	Given the admitted high degree of uncertainty for upstream movement of pallids under the Dam/Bypass Channel Option, this alternative should only be implemented if it doesn't include the new, concrete-capped diversion dam. This would save money for investment in an open-river alternative if the bypass proves inadequate. Building the new dam before it has been established that the bypass passes sturgeon and other species in adequate numbers and in the appropriate frequency could be unnecessarily costly. If the agencies ultimately select the Dam/ Bypass Channel Option, they should first produce a binding agreement that ensures they will adhere to biologically sound monitoring and assessment that is developed by an independent biological review team -- as well as commit to being responsible for implementing an alternative that is based on the best science available and with the highest degree of scientific certainty. The agencies must remain accountable if the preferred alternative is selected and fails to contribute to pallid sturgeon recovery in the upper Missouri River basin.	The concrete weir is proposed under the Bypass Channel Alternative for the following reasons: 1.) The new weir would not require the annual placement of rock on the weir crest like the existing structure.. If the existing weir structure was maintained there would be continued risk of rock migrating downstream in front of the bypass channel, which would likely have a negative effect on passage success. 2.) The new weir provides better reliability for continued diversions of 1,374 cfs into the Main Canal down to 3,000 cfs in the Yellowstone River. 3.) The new weir would provide a smoother transition through the area for downstream migrating adult pallid sturgeon and downstream drifting free embryos and larvae.
OR-11		17	According to the DEIS the Dam/Bypass Channel Option would transform the lower reach of the natural side channel into a "backwater channel," with potential for providing false attraction to upstream migrating fish. Left undisclosed in the DEIS are other biological implications of this significant modification, as well as how it affects recreational usage of John's Island (4-43). The DEIS admits to significant modifications: "The filling of the upper section of the existing side channel would result in the loss of the existing riverine habitat in that area, including woody riparian and wetland, as well as adjacent terrestrial habitats reliant on existing hydrology. The lower section of the existing side channel would become a backwater with a largely reduced frequency of inundation relative to current conditions. This would cause changes to vegetation, and the conversion and degradation of existing habitat in and adjacent to the channel (4-145)." However, the document does not thoroughly disclose what the impacts of this would be on fish, wildlife and recreation.	See evaluation of fish, wildlife, and recreation impacts in Sections 4.7, 4.8, and 4.11.

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OR-11		18	The DEIS states that, “Fish passage would be 100% during all flows for the bypass channel, modified side channel, and dam removal alternatives because suitable depths and velocities are available across a wide range of flows (pg. 6, Appendix D).” The DEIS, however, does not disclose a complete analysis of the expected discharges in the modified side channel or bypass channel at different river stage when coupled with irrigation demands. It is not apparent therefore that the bypass channel or modified side channel would indeed have adequate depth for fish passage. Left unstated is what occurs during extreme drought years when limited water is available to accommodate both fish passage and irrigation. It is reasonable to presume that the senior water right of irrigators will trump any water right for instream flows, such as FWP’s instream flow reservation. It cannot be concluded then that flows will be available at all times for fish passage.	The migration season for pallid sturgeon and many of the other native fish species occurs during the runoff season (generally April - July) and does not occur during the lowest river flows – depth and velocity criteria are for flows ranging from 7,000 to 63,000 cfs (as measured at Sidney). See the hydrology discussion in Section 4.3. All modeling conducted for this study accounted for flow splits into the channel(s) and irrigation diversions. Even at a flow of 3,000 cfs (as measured at Sidney), the bypass channel and modified side channel convey over 300 cfs, which could provide passage for other species motivated to migrate during low flows.
OR-11		19	Finally, the DEIS includes limited consideration of how the project affects recruitment of pallid sturgeon and other species. Simply providing for passage is only part of the puzzle. Without reliable information on survival of larvae, it will be difficult to determine recruitment. Without recruitment, there is no recovery. Without recruitment, The Intake Diversion Project could still be deemed as taking pallid sturgeon. Therefore, the project must not lead to additional harm to free-drifting eggs and larvae. The DEIS assumes the notched dam will allow for safe downstream passage of eggs and larvae. However, no empirical evidence is provided demonstrating this. It is a guess. Eggs and larvae could get stuck behind the dam, or damaged in the hydraulics on the downstream side. Further, some impingement and entrainment will continue to occur at the Intake headworks, and, as the DEIS recognizes, if pallid sturgeon (and other species) succeed in getting above Intake their eggs/larvae, as well as adults, juveniles and young-of-the-year fish of other species could be trapped in the next major diversion upstream at the unscreened Buffalo Rapids diversion. Any determination of potential successful downstream movement needs to be informed by empirical evidence.	Additional discussion of downstream passage of free embryos, larvae, juveniles, and adult pallid sturgeon is included in Section 4.9. A NEPA analysis requires the evaluation of the best available science, but does not compel new and lengthy or costly studies that cannot reasonably be accomplished (40 CFR 1502.22). The updated Monitoring and Adaptive Management Plan in Appendix E includes monitoring downstream passage.
OR-11		20	The current project on the Missouri wherein 76,000 hatchery-produced embryos were released and are being tracked to determine speed and dispersal downstream, and employing mapping of 3-D hydraulics bathymetry and substrate condition, is one such study that could inform the potential recruitment on the Yellowstone, should upstream passage be achieved. The DEIS states in several places that approximately 99.9 percent of all larval sturgeon currently perish, and so a few percent more of the remaining won’t be harmful. This is counter-intuitive when mortality is already significant.	Additional discussion has been added to Section 4.9.7 regarding downstream free embryo/larval passage and potential entrainment or mortality at Intake.

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OR-11		21	This DEIS states that, "Water conservation measures would be implemented under all alternatives (pg. 2-36)." Although the DEIS acknowledges that such measures would happen under all alternatives, indeed they are occurring now, it charges conservation measure costs only against the Multiple Pumps with Conservation Measures Alternative because such measures would be implemented at an accelerated pace under that alternative. Conversely, because the other alternatives, including No Action, would implement conservation measures such as ditch lining/piping, control structures, flow monitoring, etc., more slowly, they are not accounted for in the price tags for the bypass option. And, if additional conservation measures are expected to be implemented eventually for the LYIP, then they should be accounted for in all options.	In the past, conservation measures have been funded by grants secured by the LYIP from the State, Natural Resources Conservation Service and Reclamation. LYIP has, in large part, only implemented conservation measures when they have been successful at securing a grant. It is reasonable to assume that this funding practice will continue in the future, and as such costs for conservation measures are not reflected in future O&M estimates under each of the alternatives, with the exception of the Multiple Pumping with Conservation Measures Alternative. Under that alternative, a much more aggressive, in terms of funding and scope, implementation of conservation measures is proposed. There would need to be certainty in implementing the conservation measures, which would require identifying specific funding for implementation. This would be a departure from the opportunistic approach anticipated under the other alternatives.
OR-11		22	The open river alternatives could include cost savings, including removing only a portion (or portions) of the existing diversion dam and allowing the river to degrade the rest of the structure during high water and ice floe events. This already happens most years, necessitating annual maintenance of the Intake diversion.	See response to SA-01, 56. Removal of the existing weir structure is a small percentage of the overall alternative costs. Letting the dam degrade on its own including timber and steel portions carries risks and is not likely consistent with existing laws and regulations. In addition it may take many years for the structure to degrade.
OR-11		23	Currently, the power demands of the LYIP, including multiple pumps within the system, are met, in part, with subsidized Pick-Sloan Missouri Basin Program funds (pg. 2-24). The DEIS acknowledges that pumps and energy costs for the open river alternatives would likely qualify for similar Pick-Sloan funding, yet the cost estimates for the open river alternatives with pumps does not show those reduced costs, except in the text where it's estimated that for the Multiple Pumps alternative the estimated power cost at current rates (by Montana-Dakota Utilities) is $500,000/year. With Pick Sloan power those costs would drop to $167,000 to $294,000 per annum (pg. 2-75). For the Multiple Pumps with Conservation Measures alternatives, estimated power is $240,000/yr., which drops to $67,000-$178,000/yr. with Pick-Sloan (pg. 2-95). The analysis of potential power costs, how they can be reduced, needed further evaluation and disclosure than was treated in the DEIS.	The cost of power used in the analysis in the DEIS assumed that power would be purchased from the local utility (MDU) and used those rates in energy calculations. Since it is not certain that Pick-Sloan power can be acquired by the LYID for the new pumps this seemed the prudent assumption to make. We have updated the power cost calculations in the FEIS to display Pick-Sloan power rates, although we must reiterate that there is a process to apply for that power. If it were shown to not be available the costs would increase to those shown in the DEIS. Note that the commenter's savings calculations for use of Pick-Sloan power are missing a major component of the power costs. The savings presented on Page 40 of Appendix A do not account for the capacity charge of $1,047.47 per kW. Capacity charge has been made clear in the FEIS in the description of Pick Sloan Power.
OR-11		24	In general, it appears that the costs associated with both open river alternatives are highly biased to make these alternatives seem economically unviable. One outstanding example is the estimate that it would cost $583,000/year for "Additional Ditch Riders" in the Multiple Pumps with Conservation Measures Alternative (pg. 2-95). That seems highly inflated. Though the systems are different, Montana TU at one time paid a ditch rider to cover more than 100,000 acres in the upper Big Hole watershed that includes hundreds of points of diversion $5,000 for about 2 ½ months of work.	The backup assumptions pertaining to the O&M costs are found in Appendix B, Attachment B.8. In those details it explains the assumption that this is for **12** additional ditch riders and cites the current pay annually per ditch rider. These values were obtained from the LYIP and based on working knowledge of the system including current number and workload of ditchriders employed by the project. One of those assumptions is that the labor requirements would be increased due to extreme water rationing.

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OR-11		25	There is no evidence in the scientific literature that the Corps' Fish Passage Connectivity Index (FPCI), the probability that fish of different species would encounter and use a constructed passage entrance, has ever been subject to scientific peer review. DEIS states that it is based on "best professional judgment of federal and state biologists working on the Yellowstone River (pg. 10-13, Appendix D)." FPCI is simply an internal planning methodology. Confidence in any findings based on the FPCI should be taken with a large grain of salt. Findings based on the application of FPCI in the DEIS are especially suspect because the agencies jiggered inputs in several unexplained ways.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected. In addition, a sensitivity analysis was conducted for the cost effectiveness and incremental cost analysis to identify whether differing input values would result in a different list of cost effective or best buy plans. There is no difference in the listing of cost-effective and best buy plans. While it is true that the FPCI is a planning tool used as one factor in making a decision, it is not the only factor. See Section 2.5 for a discussion of the factors used in the selection of the preferred plan. All planning models are required to be reviewed by the Corps Ecosystem Restoration Center of Expertise, which is currently in progress, and any revisions required by that review will be incorporated before a final decision is made
OR-11		26	The FPCI formula is Ei=(Fs+Fl)/2, where Ei is the probability that fish encounter the fish passage; Fs is the fishway size; and Fl is the ability of fish to encounter the fishway entrance. For the Bypass Channel, Fs = 2 and Fl = 4. Therefore Ei = 3, which produces an estimate that fish are 50% likely to encounter the bypass channel. Yet, the agencies assign a score of 0.67 for Fish Passage Connectivity for the Bypass Channel (pg. 16, Appendix D). This inflated FPCI value of 0.67 results from the agencies determining a value based on the probability of 13 different species using the channel. It is not the value assigned for pallid sturgeon, which is significantly lower. The presentation of the FPCI value of .67 is misleading and the agencies should have more clearly acknowledged that the estimate for pallid sturgeon to use the Bypass is only .50.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected. Of note, in the 2015 EA, pallid sturgeon was not included in the list of 13 native species and shovelnose sturgeon was used to represent both species. The agencies think including pallid sturgeon in the model is very important and thus it is included in this 2016 version. In addition, a sensitivity analysis was conducted for the cost effectiveness and incremental cost analysis to identify whether differing input values would result in a different list of cost effective or best buy plans. There is no difference in the listing of cost-effective and best buy plans.
OR-11		27	In addition, the agencies increased the the F1 score of 4 for the Bypass Channel from the previous score of F1=3 in the 2015 EA. It appears then, that the agencies in the period between the 2015 EA and the 2016 DEIS decided to assign a faster swim speed to pallid sturgeon (3.2 as opposed to 2.7). The DEIS provides no explanation for why this occurred, though it produces a result that appears to increase the probability of pallid sturgeon successfully using the bypass channel, thereby increasing bias towards selecting the Dam/Bypass Channel option.	Additional text has been added to Appendix D to explain in more detail how each number in the FPCI was selected. Pallid sturgeon were not included in the 2015 version of the model (the 2.7 ft/sec swim speed was for shovelnose sturgeon). Evaluation of data on actual swimming rates of wild adult pallid sturgeon in the Yellowstone River has been used to develop a conservative Ucrit for pallid sturgeon of 3.3 feet/sec. In addition, a sensitivity analysis was conducted for the cost effectiveness and incremental cost analysis to identify whether differing input values would result in a different list of cost effective or best buy plans. It does not.
OR-11		28	If the number of Habitat Units provided by the bypass channel is recalculated using only the FPCI for pallid sturgeon (.50 instead of .67), the cost of each Habitat Unit for that alternative becomes greater than the Habitat Unit cost of an open river Multiple Pumps alternative, which guarantees 100% fish passage.	A sensitivity analysis was conducted for the cost effectiveness and incremental cost analysis to identify whether differing input values would result in a different list of cost effective or best buy plans. There is no difference in the listing of cost-effective and best buy plans (see final Appendix D). Of note, per Corps planning guidance (ER 1105-2-100), any of the cost-effective or best buy plans could potentially be selected as a preferred alternative; however, other considerations including total cost, impacts to other elements of the environment (including socioeconomics), constructability concerns, long-term O&M, and a variety of other factors weigh into the decision to select a preferred alternative. This evaluation is described in Section 2.5. The preferred alternative has been selected due to several factors, of which cost-effectiveness and incremental cost analysis is only one factor.
OR-11		29	When its limits are respected, FPCI can be a helpful planning tool, but because of the subjectivity inherent in its numeric inputs, it should not be a primary determining factor for estimating costs, success of upstream passage or selection of a final alternative.	Per Corps planning guidance (ER 1105-2-100), any of the cost-effective or best buy plans could potentially be selected as a preferred alternative; however, other considerations including total cost, impacts to other elements of the environment (including social and economic conditions), constructability concerns, long-term O&M, and a variety of other factors weigh into the decision to select a preferred alternative. This evaluation is described in Section 2.5. The preferred alternative has been selected due to several factors, of which cost-effectiveness and incremental cost analysis is only one factor.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
OR-11		30	The monitoring objective in the DEIS for downstream passage of free-embryo, larval, and young-of-year sturgeon is simply to "assess impingement and entrainment." The DEIS does not specify the response that would occur should survival of young sturgeon be deemed inadequate. And yet, as stated earlier, the alternatives that do not include an open river pose significant risk for entraining or otherwise harming sturgeon embryos, larvae or young, as well as other young fish moving downriver (pg. 2-3, Appendix E).	Additional discussion on the potential for entrainment has been included in section4.9.7. Since installation of the screens at the headworks, there has been a marked shift in the number of fish entrained to generally only the smallest larvae (<10 mm; (Horn and Trimpe 2012; BOR unpublished raw data). Regardless of the alternative selected, it is intended to continue allowing water to gravity flow through the headworks/screens when flows are above 3,000 cfs for alternatives that maintain a weir and 12,000 cfs for alternatives that remove the weir. Thus, potential entrainment and impingement are not significantly different between the alternatives as free embryo drift typically occurs during late June and July when flows are typically above 15,000 cfs
OR-11		31	Yet despite the admission that maintaining the integrity of the bypass channel will be problematic, the Corps will assume monitoring of physical criteria of the selected alternative for just one year, after which the BOR and LYIP will apparently be responsible for maintaining the alternative for life. It is unclear who will monitor biological criteria for the first year and beyond. Identification of these responsibilities is a significant shortcoming in the DEIS.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include Agency roles and responsibilities.
OR-11		32	Adaptive management measures could entail huge costs if the selected alternative fails. Yet the DEIS does not specify the measures, nor what are likely to be significant costs associated with them. If the bypass fails, and an open river alternative implemented – which would be the logical step -- the costs of removing the constructed channel and new dam, and possibly restoring the 4-mile-long, natural high-water channel could be exorbitant and incurred by the Bureau and irrigation districts. The monitoring and adaptive management plans for this project should include a commitment from both agencies assuring that in the end biological criteria – upstream passage of most sturgeon in most years, as well as successful recruitment, will be used to determine the project's performance.	The Monitoring and Adaptive Management Plan (Appendix E) has been updated to include Agency roles and responsibilities. The biological criteria section has also been updated.
OR-12	R. Anderson, Garrison Diversion Conservancy District	1	We are in support of the Bypass Channel Alternative, which includes constructing a new bypass channel and concrete weir. The new bypass channel alternative allows the Lower Yellowstone Project (LYP) to continue operating as a gravity feed system. Utilizing gravity flow for the LYP rather than using pumps is a more efficient and economically feasible way of transporting water for the project. Irrigation already has higher annual cost inputs than dry land farming. Adding pumps to the system would add unnecessary annual costs to an already expensive farming practice.	Comment noted.
OR-12		2	Utilizing pumps over using gravity for the project almost doubles the annual O&M costs for project. The annual savings for O&M costs for the Bypass Channel Alternative as compared to the Multiple Pump Alternative is $2,400,000. Over the course of a 30 year span that savings equals $67,000,000. Also, the Bypass Channel Alternative is typically cheaper in estimated construction costs as compared to the other alternatives. This alternative saves $35,000,000 in construction costs when compared to the Multiple Pump Alternative. Over a 30-year life span going with the Bypass Channel Alternative would save over an estimated $100,000,000.	Comment noted.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
OR-13	M. Penfold, Our Montana, Inc.	1	We have commented on the need for safe recreation boat passage in past letters to you. Needless to say the Yellowstone is a national treasure because of it place in the history of our country and the future opportunities it presents. The River is part of the Lewis and Clark National Trail system.	Comment noted. Recreation, including boating, and the impacts of each alternative on recreational opportunities, have been considered in section 4.11.
OR-13		2	We have reviewed the attached comments to you on the above subject by the Yellowstone Valley Audubon Society dated 28 July, 2016. We are entirely in agreement with those comments and recommendations so will not repeat them here. We ask that you consider those comments as those of Our Montana.	See comments/responses under OR-9 above.
OR-13		3	We recommend that the irrigation facilities of the Lower Yellowstone Project are in critical need to be modernized but the costs of modernization should not be included in the impact analysis of the Lower Yellowstone Intake Diversion Dam Fish Passage Project.	In order to compare alternatives against the No Action, we must account for the costs of the No Action in the future without project condition. Per policy, we consider life cycle costs of the No Action and Action Alternatives for a 50 year planning period. Any rehabilitation that would need to take place within the next 50 years for the irrigation district to remain functional would needs to be included in the life cycle costs for No Action. That is the only way for decision makers to understand the true differences in annual costs (both capital and OM&R) between the No Action and Action Alternatives.
OR-13		4	Studies indicate that the Yellowstone River and it economic and ecological values are at risk. The Cumulative Effects Study sponsored by your agency identifies the future problems. … “4.3.2.5 Consideration of Climate On a state-wide basis, virtually all model simulations developed in support of the state water plan project predict earlier runoff and reduced summer flows (Montana DNRC, 2014). Median daily hydrographs compiled for pre- and post- 1990 data on the Yellowstone River at Livingston corroborate this general pattern; over the past 15 years, runoff has typically started about a week earlier and peaked 10 days earlier than it typically did between 1896 and 1990. Previously published literature (Leppi et al. 2012) shows that reduced late August streamflow can be associated with climatic trends. Low flow analysis from a largely pristine gage at the Yellowstone Lake outlet indicates low August flows have been associated with increased air temperature. Tree-ring analyses of the basin show that the twentieth century was a wet period relative to the several centuries prior, and that droughts have historically been substantially longer and more intense than those recently experienced in the basin. Table 4-3 shows a summary of specific human influences described in this section, along with the associated impact, spatial extent of that impact, and relative magnitude of the impact. Although there are additional factors that will affect the system hydrology such as storm water management, these other influences are either considered to be relatively small or lacking in data. 4.3.3 Primary Human Influences on Yellowstone River Hydrology The results of the hydrologic analyses indicate that the historical hydrology of the Yellowstone River was markedly different than it is today. The influences causing those changes include both consumptive and non-consumptive water uses, which collectively alter both the amount and timing of water delivery in the system. Although there are multiple types of both consumptive and non-consumptive water use, the main alterations to the hydrology of the Yellowstone River are due to irrigation and flood control. Climate trends have been identified as influencing low flow hydrology, and those influences are predicted to become stronger in the future.”	Comment noted. Climate change and hydrology discussed in Sections 3.1, 3.3, and 4.3.

LETTER TYPE/#	COMMENTER	COMMENT #	COMMENT	RESPONSE
OR-13		5	Analysis of the water right claims against the flows of the Yellowstone River are identified by the Thesis of Mr. Trevor M. Watson. His study illuminates further the impending future problems with water quantity availability in the Yellowstone. [NOTE: Website references to this and following statements are included in the letter.]	Comment noted.
OR-13		6	Also, water rights of Crow and Northern Cheyenne Indians, now established, provide for additional water withdrawals from the Yellowstone basin. This will further stress River environments and sustainability of existing economic uses of the River. The Tribe's water compact and legislation provide for modernizing their irrigation systems.	Tribal water rights was referenced and considered in cumulative effects. See section 4.1.4.2.
OR-13		7	The Yellowstone River Conservation District Council has recognized the need to modernize irrigation systems along the Yellowstone River in their Watercraft paper on management practices.	Comment noted.
OR-13		8	The State of Montana policies, as well, identifies the need to update and modernize irrigation facilities and practices in the Montana State Water Plan.	Comment noted.
OR-13		9	The Federal Government through programs of the Natural Resource Conservation Service has funded major programs (Agricultural Water Enhancement Program) to farmers with the intent of improving and modernizing irrigation and water delivery systems for agriculture. It is the policy of the Federal Government to encourage, as well as provide some funding, to improve and modernize irrigation systems.	Comment noted.
OR-13		10	We recommend that the Board of Control of the Lower Yellowstone Project give high priority to modernizing their irrigation system. We recommend that the Board of Control, the Bureau of Reclamation and the Corps of Engineers include modernization of the irrigation system as part of the Intake project but as a separate funding category. Irrigation improvement is a separate critical need for funding and is irrespective of the Intake Project focused on Sturgeon. The calculation of cost of irrigation improvements should not be charged in the COE's cost analysis against the project needed for Sturgeon habitat.	See response to OR-11, #21 OR-13, #3.

Attachment 5
Distribution List

Distribution List

Denis Adams
HPD
2150 N. 10th Road
Wooden, MT 59254
dadams@nemont.net

McCrystie Adams
Defenders of Wildlife, Natural Resources Defense Council
535 16th Street, Suite 310
Denver, CO 80202
madams@defenders.org

Steve Ags
Northern Broadcasting
PO Box 1742
Billings, MT 59270
augi3@northernbroadcasting.com

Jon Agssleo
996 Lincoln Ave NW
Sidney, MT 59270

Joel Albert
102 14th Ave NW
Mandan, ND 58554

Scott Albin
12281 CR 350
Sidney, MT 59270

Richard Albin
1321 22nd Ave NW
Sidney, MT 59270

Richard Albin
1371 22nd Ave NW
Sidney, MT 59270

Richard Albin
1372 22nd Ave NW
Sidney, MT 59270

Robert & Sheree Albin
33791 CR 131
Sidney, MT 59270

Scott Albin
33792 Co Rd 131
Sidney, MT 59270

Robert Albin
624 10th St SE
Sidney, MT 59270

Ralph Allard
408 2nd St NE
Sidney, MT 59270

David Allen
Patagonia
899 Two Rivers Drive
Tellride, CO 81435
dgallen2@gmail.com

John Almond
4918 162nd NE
Redmond, WA 98052

David Andersen
724 Lincoln Ave NW
Sidney, MT 59270

Greg Anderson
City of Sidney
115 2nd St SE
Sidney, MT 59270
sidneyutilities@midrivers.com

Orin E Anderson
11939 Hwy 16
Sidney, MT 59270

Jody Anderson
PO Box 4122
Billings, MT 59102
jgahrco@aol.com

Sandra Angel
PO Box 937
Sidney, MT 59270

Boston Anglesey
309 3rd St SE
Sidney, MT 59270
boston+parfay@gmail.com

Pat Aobeck
35464 CR 132
Fairview, MT 59221

Sean Appelberg
410 7th Avenue SW
Sidney, MT 59270
seanappelberg@yahoo.com

Melissa Appelberg
410 7th Avenue SW
Sidney, MT 59270
mra7173@gmail.com]

Alan Artim
8700 Pershing Drive #5301
Playa del Rey, CA 90293
alan.artim@gmail.com

Mary Beth Artz
1708 E Bryan Ave
Salt Lake City, UT 84108

Patrick Asbeck
13048 Highway 200
Fairview, MT 59221

Hugo Asbeck
Dist 1 LYIP
13048 Hwy 200
Fairview, MT 59221

Glen Asbeck
1398 11th Ave SW
Sidney, MT 59270

Harvey Asbeck
2792 160th Ave NW
Fairview, MT 59221

Gene & Tanya Asbeck
35339 County Road 130
Sidney, MT 59270-4239

James Asbeck
PO Box 195
Fairview, MT 59221

Scott Aspenlieler
7100 Commercial Ave
Billings, MT 59101
scott@performance-cc.com

Robert A Atchison
PO Box 288
Sidney, MT 59270

Donna R Ault
34705 County Road 120
Sidney, MT 59270

William Ault
34707 County Road 120
Sidney, MT 59270-6367

Tim Aveett
PO Box 885
Sidney, MT 59270

Kathy Averett
11991 Highway 16 So
Sidney, MT 59270

Craig Averett
Big Sky Siding & Windows
609 South Central - PO Box 885
Sidney, MT 59270

Kenneth Backes
PO Box 1630
Miles City, MT 59301

Mike Backes
PO Box 1630
Miles City, MT 59201
mbackes@midrivers.com

Mike Backes
PO Box 1630
Miles City, MT 59301
mibackes@mt.gov

Robert J Badt
2452 Red River Dr
Sidney, MT 59270

Robert J Badt
P.O. Box 209
Savage, MT 59262

Gary Bahn
Sunrise Equipment
35537 CR 133
Sidney, MT 59270

Trent Baker
Brennan's Wave
201 W. Main, Ste. 201
Missoula, MT 59802

Marty Bakken
2289 Green Briar Rd
Billings, MT 59105

Thomas A Ball
Missouri River Grass Roots
Network-Sierra Club
1477 Crossbrook Dr
Webster Groves, MO 63119
thomas.ball@sbcglobal.net

Elaine Barone
708 7th Ave SW
Sidney, MT 59270

Tony Barone
708 7th Ave SW
Sidney, MT 59270

Perry Bartel
402 35th Ave NW
Sidney, MT 59270

Gary Basso
641 O'Malley Drive
Billings, MT 59102

Jim & Cathy Basta
33630 CR 103
Savage, MT 59262
bastaranch@midrivers.com

Todd Basta
33649 CR 104
Savage, MT 59262

Max Baucus
United States Congress
222 N. 32nd Street
Billings, MT 59101

Nancy Baue
13781 Co Rd 340
Fairview, MT 59221

Mark Baumler
Montana Historical Society
P.O. Box 201201
Helena, MT 59620-1201

Gene Baxcel
34494 CR 110
Savage, MT 59262

Dirk Baxter
19339 Citation Road
Eagle River, AK 99577-8487

Eric Behnken
530 5th St SE
Sidney, MT 59270
imnotagolfer@yahoo.com

James Beiber
3221 Highway 58
Fairview, MT 59221

Devin Bell
1101 11th ST SW
Sidney, MT 59270

Raymond Bell
Sidney Water Users
Irrigation District
1101 11th St SW
Sidney, MT 59270
rayb@midrivers.com

Rod Bell
1111 Cedar
Sidney, MT 59210

Robert Bell
203 14th St SE
Sidney, MT 59270

Ryan Bell
35056 Hwy 23
Sidney, MT 59270

Raymond & Patricia Bell
Bell Ridge Farms
1101 11th St SW
Sidney, MT 59270

Randy & Carla Bell Family Trust
7225 Jellison Road
Billings, MT 59101

Brenda Bellar
PO Box 40
Billings, MT 59103

Gerald Benock
Bureau of Reclamation
2900 4th Ave
Billings, MT 59101
gbenock@usbr.gov

Libby Beradt
105 9th Ave NW
Sidney, MT 59270
libbyberadt66@gmail.com

Jeff Berger
13309 65th St NW
Williston, ND 58801

James Bergeron
507 6th Ave SE
Sidney, MT 59270
cochise@midrivers.com

Clifton Berglee
PO Box 578
Laurel, MT 59044
cberglee@montavyowest.com

Jerald Bergman
Williston Research Extension
Center, ND State University
14120 Highway 2
Williston, ND 58801
jerald.bergman@ndsu.edu

Jerry Bergman
14418 Hwy 2
Williston, ND 58801

Hank Berry
12267 CR 349 R
Sidney, MT 59270
bberry@vrystalsugar.com

Emily Berry
15624 Hwy 200
Cartwright, ND 58838
emilyberry22@aol.com

Shawn Berry
2901 Cheney Cr Rd
Cartwright, ND 58838

Ron Berry
2942 Cheney Cr Rd
Cartwright, ND 58838

Mavis Berry
2942 Pheney Crk Rd
Cartwright, ND 58838

Cole Beyer
411 2nd St SE
Sidney, MT 59270
beyer_06@hotmail.com

Linda Bieber
103 9th Ave SW
Sidney, MT 59270

Jeff Bieber
16071 33rd St NW
Fairview, MT 59221

Harlow Bieber
3591 159th Ave NW
Fairview, MT 59221

Brian Bieber
BB Electric
PO Box 246
Fairview, MT 59221
bbe@midrivers.com

Diane Binder
1697 Crocus Drive
Sidney, MT 59270

Rick Blanksma
833 Lewis Ave
Billings, MT 59101

Randell Blel
7225 Jellison Rd
Billings, MT 59101

Janet Bloesser
33632 CR 103
Savage, MT 59262
jbloesser@yahoo.com

Trey Bloesser
Basta Ranches
33632 CR 103
Savage, MT 59262
tjbloesser@hotmail.com

Trey Bloesser
3632 CR 103
Savage, MT 59262
tibloesser@hotmail.com

Caleb Bollman
1018 S Cale
Miles City, MT 59301

Larry Bond
35140 Co Rd 125
Sidney, MT 59270

Larry & Brenda Bond
35463 Co Rd 129
Sidney, MT 59270

Rodney M. Bordeaux
Rosebud Sioux Tribe
P.O. Box 430
Rosebud, SD 57570-0430

Lars Borg
1398 15th Street SW
Sidney, MT 59270
borglD@hotmail.com

Vickie Borg
1398 15th Street SW
Sidney, MT 59270
missvickie@midrivers.com

Scott Bosse
321 E. Main Street, Suite 408
Bozeman, MT 59715
sbosse@americanrivers.corg

Keith Bostran
Eagle County Ford
5227 7th St SE
Sidney, MT 59270
ansedch@midrivers.com

Evah Bouchard
12754 Hwy 200
Sidney, MT 59270

Bud Bouchard
34234 Co Rd 120
Sidney, MT 59270

Arthur Bouchard
PO Box 217
Lambert, MT 59243

Ron Bowchard
Box 21
Lambert, MT 59243

George & Shirley Boyce
34901 Hwy 200
Sidney, MT 59270

William Boyer
12843 Co Rd 355
Sidney, MT 59270

Bruce Boyer
814 6th St SE
Sidney, MT 59270

Robert Bramblet
Montana State University
113 E Lewis Hall
Bozeman, MT 59715
bbram@montana.edu

Richard Brannon
Northern Arapaho Tribe
P.O. Box 396
Fort Washakie, WY 82514

Butch Bratsky
Stockman Bank
4381 Hi Line Drive
Billings, MT 59106
bbratsky@stockmanbank.com

Melody Braun
1400 N River
Glendive, MT 59330
melsbaun@hotmail.com

Amanda Breitbach
Glendive Ranger-Review
119 W. Bell
Glendive, MT 59330

Toni Breslean
Land owner
13318 Hwy 200
Fairview, MT 59221

Pauline Bresso
641 O'Malley Drive
Billings, MT 59102
pfb414@gmail.com

Kelly Brester
1638 Shay Rd
Laurel, MT 59044

Greg Breuer
35330 CR 147
Fairview, MT 59221

Greg Breuer
Crop Production Servives
PO Box 405
Fairview, MT 59221
gregory.breuer@cpsagu.com

Rob Brewer
123 N. Central Ave
Sidney, MT 59270

David Brien
Turtle Mountain Band of Chippewa
P.O. Box 900
Belcourt, ND 58316

Kent Briggs
1203 Locke Elms, Apt
Billings, MT 59105

Joe Brings Plenty
Cheyenne River Sioux Tribe
P.O. Box 590
Eagle Butte, SD 57625

Julie Brodhead
Richland County Health Department
1201 W Holly, Suite 1
Sidney, MT 59270
jbrodhead@richland.org

Julie Brodhead
12291 Goss Ave
Sidney, MT 59270
jabhealth@hotmail.com

Mark A Brodhead
12291 Goss Ave
Sidney, MT 59270
markallan1983@gmail.com

Pauline Bromenshenk
4715 Grand Ave
Billings, MT 59106
b.bromenshenk@bresnan.net

David Brooks
Montana Trout Unlimited
PO Box 7186
Missoula, MT 59807
david@montanatu.org

Kenneth Brose
793 Hwy 16
Glendive, MT 59330
kbroser@midrivers.com

Jason Brothen
Lower Yellowstone Rural Electric Cooperative
3200 West Holly Street, P.O. Box 1047
Sidney, MT 59270
jasonb@lyrec.coop

JoAnn Brower
148 S. Maple
Inglewood, CA 90362

James Brower
2327 Lincoln Ave SE
Sidney, MT 59270
jbrower@midrivers.com

James Brower
LYIP
2327 Lincoln Ave SE
Sidney, MT 59270
lyip@midreivers.com

Stacey & Mindy Brower
34515 CR 115
Savage, MT 59262
irrigation4u@gmail.com

Taylor Brown
Senate Dist 28
775 Squaw Creek Rd
Huntley, MT 59037
taylor@northernbroadcasting.com

Steve Brown
Helena Chemical
904 E. Mian St
Sidney, MT 59270

Sen. Taylor Brown
Senate District 28 - Montanta
PO Box 200500
Helena, MT 59620-0500

Bruce Browne
16122 33rd St NW
Fairview, MT 59221

Lance Brunsvold
1452 11th Ave SW #5
Sidney, MT 59270

Tierani Brusett
2700 King Ave
Billings, MT 59102
tbrusett@stockmanbank.com

Ken Buckles
402 7th Ave SE
Sidney, MT 59270

Ken Buckly
402 71st Ave SE
Sidney, MT 59270

Scott Burger
612 S. Laurel Street
Richmond, VA 23220
scottburger@mac.com

Pam Burman
Stockman Bank
301 W. Holly Street
Sidney, MT 59270

Donna Burnett
14446 SE Bonnie Way
Portland, OR 97230

Robert Burnison
620 9th St SE
Sidney, MT 59270

Valerie Burnison
620 9th St SE
Sidney, MT 59270
bbarn@midivers.com

Bob & Beth Buxbaum
13318 Hwy 200
Fairview, MT 59221

Brian Buxbaum
13595 CR 356
Fairview, MT 59221

Scott Buxbaum
16041 34th St NW
Fairview, MT 59221

Anita Buxbaum
16041 34th St. NW
Fairview, MT 59221

Scott Buxbaum
160431 34th St. NW
Fairview, MT 59221
4bfarms1@gmail.com

Doug Buxbaum
Dawson County Commission
207 West Bell Street
Glendive, MT 59330

Edward Buxbaum
34256 Co Rd 107
Savage, MT 59262

Donald & Roger Byer
108 2nd St NE
Sidney, MT 59270

Donald Byer
318 W Main St.
SIDNEY, MT 59270-4038

Steve Cadue
Kickapoo Tribe in Kansas
P.O. Box 2890
Horton, KS 66439

Leon Campbell
Iowa Tribe of Kansas and Nebraska
3345 Thunder Road, No. B
White Cloud, KS 66094-04028

James Campbell
34852 Co Rd 121B
Sidney, MT 59270

Lee Candee
1851 Sage Lily Drive
Sidney, MT 59270
lee@h2oagri.com

Lee Candee
Agri Industries
1834 Sage Lily Dr
Sidney, MT 59270
ice@h20agri.com

Justin Candee
1854 Sage Lily Dr
Sidney, MT 59270
just205@outlook.com

Garey Candee
35296 Co Rd 131
Fairview, MT 59221

Russell & Harriett Carico
PO Box 232
Fairview, MT 59221
rhcarico@midrivers.com

Mike Carlson
112 1st Street
Glendive, MT 59330
mcarlson@midrivers.com

Raymond Carlson
2338 3rd Street NW
Sidney, MT 59270
raymond-carlson@hotmail.com

Richard Carlson
Sidney Sugars
308 5th Ave SE
Sidney, MT 59270

Raymond Carlson
35140 CR 125
Sidney, MT 59270
rcarlson@crystalsugar.com

Barry Carpenter
115 2nd St SE
Sidney, MT 59270

Barry Carpenter
201 W Main
Sidney, MT 59270

Vance Carsten
LYIP
12993 Highway 200
Sidney, MT 59270

Garrick Carter
10398 CR 340
Savage, MT 59262

Jennifer Cartile
PO Box 550
Sidney, MT 59270
Cuttingedgedancestudio
@gmail.com

Edmundo Castro Castro
16091 36th St NW
Fairview, MT 59221

Francis Cayko
1015 7th Ave SW Apt 207
Sidney, MT 59270

Terry Cayko
15852 36th St. NW
Fairview, MT 59221
tcayko@midrivers.com

Adam Cayko
4c Sons, Inc
15882 32nd St NW
Fairview, MT 59221
4csonslivestock@gmail.com

Anna Cayko
15882 32nd St NW
Fairview, MT 59221
annamcayko@gmail.com

Andrew Cayko
15891 32nd St NW
Fairview, MT 59221

Rhonda Cayko
4 C Sons, Inc.
15951 Hwy 200
Fairview, MT 59221
rhonda.cayko@gmail.com

Tim Cayko
15951 Hwy 200
Fairview, MT 59221

Richard Cayko
McKenzie Co. Board of
Commissioners
201 5th Street, NW
Watford City, ND 58854

Todd Cayko
3252 159th Ave NW
Fairview, MT 59221

Todd Cayko
LYIP
3252 59 Ave NW
Fairview, MT 59221

Catherine Cayko
Farmers wife
3691 158th Ave NW
Fairview, MT 59221

Richard Cayko
LYIP
3691 158th Ave NW
Fairview, MT 59221

Richard Cayko
McKenzie County Commissioner
3691 158th Ave NW
Fairview, MT 59221

Nickie Cayko
375 Fire Ln
Anaconda, MT 59711

Daniel Cayko
PO Box 53
Fairview, MT 59221

Marissa Chamberlain
1364 14th St SW
Sidney, MT 59270

Ethan Chamberlain
1364 14th St. SW
Sidney, MT 59270

Wendi Chamberlain
1364 14th St. SW
Sidney, MT 59270
wendi@midrivers.com

Rance Chamberlain
409 3rd St SE
Sidney, MT 59270

Tony Chamberlain
PO Box 887
Sidney, MT 59270

Jacob Chetrit
243 2nd St SW
Sidney, MT 59270

Melissa Chevalier
744 Lambrecht Lane
Billings, MT 59101

Tami Christensen
Tri County Implement Inc.,
& City of Sidney
2429 W Holley
Sidney, MT 59270

Marion Christensen
34948 Co Rd 140
Fairview, MT 59221

Larry Christensen
Tri County Implement Inc.
417 25th Ave NW
Sidney, MT 59270
trientyadm@midrivers.com

Tami Christensen
417 25th Ave NW
Sidney, MT 59270
trichtyadmin@midrivers.com

Ernie Clifton
601 S Central Ave
Sidney, MT 59270

Jacqueline Cloidt
154 Amber Valley Drive
Orinda, CA 94563

Janet Cole
PO BOX 1030
Caliente, NV 89008-1030

Harlan Conradsen
10757 Hwy 16
Savage, MT 59262

Conrad & Linda Conradsen
10761 CR 344
Savage, MT 59262

Troy Conradsen
Triple C Farms, Inc.
34127 CR 107
Savage, MT 59262
htconradsen26@hotmail.com

Shawn Conradsen
34187 CR 107
Savage, MT 59262

Donna Conwell
810 3rd St NE
Sidney, MT 59270

Luann Cooley
2085 Crocus Drive
Sidney, MT 59270
luann7284@hotmail.com

Luann Cooley
2085 Crocus Drive
Sidney, MT 59270
sidneyservice@stockmanbank.com

Albert Cooley
Rt 1 Box 173
Grand Forks, ND 58201

Brent Coon
410 4th St NE
Sidney, MT 59270

Heather Cotler
219 3rd Avenue NE
Sidney, MT 59270

Curt Cotton
35 Althoff Road
Bridger, MT 59014

Pete Council
12775 Co Rd 352
Sidney, MT 59270

Robert Cournoyer
Yankton Sioux Tribe
P.O. Box 248
Marty, SD 57361

Lyle Courtnage
Magic City Fly Fishers
PO Box 21693
Billings , MT 59104
lyle.courtnage@gmail.com

Robert Crandall
35001 Co. Rd 122
Sidney, MT 59270

Stacy Creek
Stockman Bank
101 S Central Ave
Sidney, MT 59270
screek@stockmanbank.com

Howe Crockett
16004 NE 43rd Street
Vancouver, WA 98682
taycro5@comcast.net

Dan Crockett
7015 Siesta Drive
Missoula, MT 59802
dancrockett63@gmail.com

Dana & Kay Crosby
315 8th Ave SW
Sidney, MT 59270

Brady Cullen
The Nature Conservancy
821 SE 14th Avenue
Portland, OR 97219

Ross Cumin
Big Ditch Co.
1555 Campus Way
Billings, MT 59017

Bill Cundiff
35058 LR 129
Sidney, MT 59270

Tom Curran
603 8th Ave SW
Sidney, MT 59270

Mike Currey
35338 CR 131
Fairview, MT 59221
currey_2cold@hotmail.com

Buck G Dabill
10362 CR 342
Savage, MT 59262

Phyllis Dahl
Victor Buxbaum, Inc.
12295 Highway 200
Sidney, MT 59270

Jacklyn Damm
Richland County Health
Department
1201 W Holly, Suite 1
Sidney, MT 59270
jdamm@richland.org

Jaclyn Damm
15891 30th Street NW
Fairview, MT 59221
damfamle@gmail.com

Jacob Damm
15891 30th Street NW
Fairview, MT 59221

Merle Daniel
805 4th St
Sidney, MT 59270

Duane Danielson
15951 32nd St NW
Fairview, MT 59221

Kory Danielson
15951 32nd St NW
Fairview, MT 59221

Doug & Bev Danielson
16071 30th ST NW
Fairview, MT 59221
dougdan@rocketmail.com

Dale Danielson
Danielson Farms
16081 30th St NW
Fairview, MT 59221
daled53333@yahoo.com

Diane Danielson
16081 30th ST NW
Fairview, MT 59221

Dot Danielson
16881 30th St NW
Fairview, MT 59270
aaled5333@yahoo.com

Mary Ann Danielson
Danielson Farms
3051 160 Ave NW
Fairview, MT 59221
thieedz@gmail.com

Barb Dankosky
623 161st St SE
Sidney, MT 59270

Virginia Dardis
11292 Hwy 16
Savage, MT 59262

Gary Dardis
11294 Hwy 16
Savage, MT 59262
gpd@midrivers.com

Gary Dardis
11294 Hwy 16
Savage, MT 59262
gpdardis@midrivers.com

Sherri Dardis
11294 Hwy 16
Savage, MT 59262
ssdardis@gmail.com

Katie Dasinger
Richland Eco Development
1060 S. Central Ave, Ste 3
Sidney, MT 59270
redc@midrivers.com

Katie Dasinger
2328 3rd St NW
Sidney, MT 59270
katiedasinger@gmail.com

Steve Davies
Bureau of Reclamation
PO Box 30137
Billings, MT 59105
sdavies@usbr.gov

Chris Davis
206 9th Ave SW
Sidney, MT 59270
christoph.davis56@gmail.com

Arne Degn
1830 Westwood Dr
Billings, MT 59102

James Deherrera
1300 Pleasant Street
Poplar, MT 59255
mrdeherrera@yahoo.com

James Deherrera
PO Box 1413
Poplar, MT 59255
mrdeherrera@yahoo.com

Paul Denowh
GDAR
12637 Hwy 16
Sidney, MT 59270

Wayne Denowh
2563 Clearwater Way
Billings, MT 59105
wdenowh@gmail.com

Tim Denowh
3244 155th Ave NW
Cartwright, ND 58838

Nick Denowh
34750 CR 127
Sidney, MT 59270

Michael Denowh
34753 Co Rd 127
Sidney, MT 59270

James Deherrera
PO Box 1413
Poplar, MT 59255
deherres@yahoo.com

Arnold Dige
1013 Lincoln Ave NW
Sidney, MT 59270

Albert Dige
102 Bonaventure Ave
Billings, MT 59102

Russell Dige
996 Lincoln Ave NW
Sidney, MT 59270

Melody Dobson
1436 Parkhill Drive
Billings, MT 59103
melodydobson@bresnar.net

Dale Dombrowsky
623 14th Street RE
Sidney, MT 59270

Julia Doney
Gros Ventre and Assiniboine Tribe of Ft. Belknap
Rural Route 1, Box 66
Harlem, MT 59526-9705

Gordon Donohoe
624 S Berry Pine Rd
Rapid City, SD 57702

Dann Donuls
3051 160th Ave NW
Fairview, MT 59221
hreed2@bymark.com

Ryan Dore
12905 CR 350
Sidney, MT 59270

Richard Dore
2693 Hwy 200
Sidney, MT 59270

Dede Draper
3618 Hwy 32
Ashton, ID 83420
dedemdraper@aol.com

Janet Duda
PO Box 467
Fairview, MT 59221

Chad Dunn
925 3rd Ave SE
Sidney, MT 59270
chad_3030@msn.com

Mike Dunn
Sidney Sugars, Inc.
925 3rd Ave SE
Sidney, MT 59270
mdunn@gmail.com

Chris & Walter Durfey
11303 CR 345
Savage, MT 59262
walter_durvey@ntm.org

Sherman Dynneson
12784 HIGHWAY 200
Sidney, MT 59270

Keith Dynneson
13102 CR 342
Sidney, MT 59270

Keith Dynneson
13115 CR 342
Sidney, MT 59270

John Dynneson
Richland County RCL&JC
300 12th Ave NW, Suite 1
Sidney, MT 59270
jdynneson@richland.org

Alexis Dynneson
35157 CR 129
Sidney, MT 59270

Kaelyn Dynneson
Dynneson Ranch
35157CR 129
Sidney, MT 59270
katelyn.dynneson@gmail.com

Loren Ebner
PO Box 7953
Missoula, MT 59807
sebnerx@gmail.com

Kayla Eckert Uptmon
USACE
1616 Capitol Ave
Omaha, NE 68102

Christopher & Joyce Eckhoff
11463 HIGHWAY 16
Savage, MT 59262

Joyce Eckhoff
1501 N. Central Ave
Sidney, MT 59270
joyc.eckhoff@montana.edu

Joan Eldridge
16111 37th St NW
Fairview, MT 59221
ironworks.eldridge@gmail.com

Paul Eldridge
16111 37th St NW
Fairview, MT 59221

Joan Eldridge
3702 HIGHWAY 58
FAIRVIEW, MT 59221

Broc Ellis
Helena Chemical
1000 Dale Ave
Fairview, MT 59221

Broc Ellis
11375 Cr 345
Savage, MT 59262

Paul Ellis
8345 Camp Creek Road
Manhattan, MT 59741
ellispaul4@aol.com

Archer Ellweing
PO Box 333
Sidney, MT 59270

Roger S Emery
2144 S CENTRAL AVE
Sidney, MT 59270

Harold & Elaine Emly
34992 Highway 23
Sidney, MT 59270

Geraldine Entzel
2333 S. Central Ave.
Sidney, MT 59270
gentzel@richlandfcu.com

George Entzel
2333 S. Central Avenue
Sidney, MT 59270

Garland Erbele
North Dakota State Water Commission
900 E Boulevard Ave, Dept 770
Bismarck, ND 58505-0850

Kenny & Renee Erickson
12300 COUNTY ROAD 351
Sidney, MT 59270-6305

Wes Erickson
13345 Hwy 200
Fairview, MT 59221

Connie Erickson
205 S. Pleasant
Fairview, MT 59221

Todd Erickson
2097 Bitterroot Dr
Sidney, MT 59270

Teresa Erickson
Northern Plains Resource Council
220 South 27th Street, Suite A
Billings, MT 59101

Jonetta Erickson
546 35th Ave NW
Sidney, MT 59270
jmdahl13@gmail.com

Margaret Erickson
790 Lincoln Ave NW
Sidney, MT 59270

Wes Erickson
Box 301
Fairview, MT 59221

Torbin Erikstrup
35216 Co Rd 128
Sidney, MT 59270

Deb Errington
1111 Bay Road
Amherst, MA 01002
dbgewertz@amherst.edu

Fred Errington
1111 Bay Road
Amherst, MA 01002

Thomas M. Erskine
Interstate Engineering, Inc.
1211 Grand Avenue - PO Box 20953
Billings, MT 59104
tom.erskine@interstateeng.com

Tom Erskine
2811 Treasure Drive
Billings, MT 59102
tom.erskine@interstateeng.com

Donn Eskridge
PO Box 45
Crane, MT 59217

Scott Estergard
Tetra Tech
3030 N 3rd St., #200
Phoenix, AZ 85012

Ron Etzel
Box 102
Savage, MT 59262

Diane Etzel
Stockman Bank
PO Box 716
Sidney, MT 59270
dketzel@midrivers.com

Erika Euston
35167 CR 120
Sidney, MT 59270

Erika Euston
35167 CR 128
Sidney, MT 59270

Kirk Evenson
Marra, Evenson & Bell, P.C.
2 Railroad Square, Suite C, P.O. Box 1525
Great Falls, MT 59043-1525
kevenson@marralawfirm.com

Burton Exzel
7 Lonesome Pine Road
Park City, MT 59063
etzels@hotmail.com

City of Fairview
PO Box 426
Fairview, MT 59221

Edward Falkenhagen
2992 160th Ave. N.W. #536
Fairview, MT 59221

Buxbaum Family Trust
PO Box 433
Fairview, MT 59221

Bruce Farling
Montana Trout Unlimited
PO Box 7186
Missoula, MT 59807

Payette Farms
104 Interstate Ave. N
Fairview, MT 59221

Daniel T. Farr
Sidney Public Schools
1107 11th Street SW
Sidney, MT 59270
dfarr@sidneyk12.mt.us

Dean Faulkner
35133 Co Rd 124
Sidney, MT 59270

Gary Fee
1101 Terrace View Drive
Alberton, MT 59820
gjfee@blackfoot.net

Rick Fehrs
1728 Orange Ave E
St. Paul, MN 55106

Edward Fergurson
3118 Ramada Dr
Billings, MT 59102

Collyn Ferris
451 Grant Way
Yuba City, CA 95125
collynferris@gmail.com

Clinton Filler
16101 38th St NW
Fairview, MT 59221
fillertracking@msn.com

Tim Fine
412 2nd St NE
Sidney, MT 59270
tfine8@gmail.com

Tim Fine
701 2nd St NE
Sidney, MT 59270

Marvelle Fink
35009 Co Rd 126
Sidney, MT 59270

Darrell Finsaas
15925 36th St NW
Fairview, MT 59221
dfinsaas@gmail.com

Orvin Finsaas
15952 28th St NW
Fairview, MT 59221

Devin Finsaas
LYIP
15952 298th St NW
Fairview, MT 59221

Darrell Finsaas
16112 35th St NW
Fairview, MT 59221

Gabriel Fischer
11338 Hwy 16
Savage, MT 59262

Gabriel Fischer
34314 COUNTY ROAD 111
Savage, MT 59262

Cindy Fischer
42 Prince Charles Drive
Billings, MT 59105
svheol@gmail.com

Donna Fisser
1072 Duna Dr
Laramie, WY 82072

Charles Flynn
15962 Hwy 200
Fairview, MT 59221

Scott Flynn
2601 Cheney Creek Rd
Cartwright, ND 58838
flynnfarm@hotmail.com

Elden Flynn
Flynn Farms
2641 Cheney Creek Road
Cartwright, ND 58838

Steve Forrest
4040 Ravlli Hwy 68
Bozeman, MT 59718
sforrest@defenders.org

Steve Forrest
4040 Rocky St
Bloomfield, MT 59718

Nick Frandsen
12282 1st Street
Sidney, MT 59270
nickfrandsen@hotmail.com

Peter Frandsen
P & C Trucking, Inc.
12282 1st Street
Sidney, MT 59270

Connie Frandsen
12613 CR 351
Sidney, MT 59270

David Frandsen
12645 Hwy 200
Sidney, MT 59270

John M Franklin
34611 Hwy 200
Sidney, MT 59270

Brad Franklin
449 12 Ave SW
Sidney, MT 59270

Ray Franz
Franz Ranch
13221 CR 330
Sidney, MT 59270

Jon Franz
Franz Ranch
13221 CR 339
Sidney, MT 59270

Don Franz
Franz Construction Inc
PO Box 1046
Sidney, MT 59270
franz@midrivers.com

Don Franz
Box 787
Sidney, MT 59270
franz@midrivers.com

David Frazdeen
12613 CR 351
Sidney, MT 59270

Kayla M Freeman
Quinnell Electric
PO Box 131
Savage, MT 59262
dodgecountygal13@hotmail.com

Brett French
Billings Gazette
401 North Broadway
Billings, MT 59101

Christopher Fryer
10 Country Lane
Cornwall, NY 12518-1021
Mofry.512@hotmail.com

Brandon Fuhrman
11710 351 R
Sidney, MT 59270

Brandon Fuhrman
Box 124
Sidney, MT 59270

Gary Fuhrman
Box 129
Sidney, MT 59270

Braden Fuhrmann
4336 Murdny Ave
Billings, MT 59101
fuhrmannation@gmail.com

Brian Fullerton
7510 Monad Road
Billings, MT 59106

Cody Fulton
1775 S. Central Ave
Sidney, MT 59270
cody@h20agri.com

Thomas Gable
13249 Co Rd 356
Fairview, MT 59221

John Gable
PO Box 854
Sidney, MT 59270

Brian Galik
Gallik and Bremer, P.C.
777 East Main Stree, Suite 203
Bozeman , MT 59771-0070

Lisa Garder
Garder Trenching
11685 CR 350
Sidney, MT 59270
garder@midrivers.com

William Gardner
624 NE Washington Street
Lewistown, MT 59457
billanne@midrivers.com

David Garland
Sidney Sugars, Inc.
35140 CR 125
Sidney, MT 59270
dgarland@crystalsugar.com

Tracy Garland
611 2nd St NE
Sidney, MT 59270
dtginent@midrivers.com

David Garland
Sidney Sugars, Inc.
611 2nd St. Ne
Sidney, MT 59270
dgarland@crystalsugars.com

Colin Gartner
34631 CR 127
Sidney, MT 59270
colin_gartner@outlook.com

Colin Gartner
34631 CR 127
Sidney, MT 59270
colingartner@outlook.com

Bryan Gartner
702 11th St SE
Sidney, MT 59270

John Gaskin
820 9th Ave SW
Sidney, MT 59770
jfgasking@midrivers.com

Lisse Gebel
Farm wife
1862 N 3rd Rd
Huntley, MT 59037

Arthur Gehnert
108 2nd Cottonwood Grove
Glendive, MT 59330
artgo@midrivers.com

Jerry Geiffer
807 Kendrick
Glendive, MT 59330

Jim Gentry
Gentry Land & Livestock, Inc.
1077 Road 303
Glendive, MT 54330
eatbeef@midrivers.com

Alice A Gifford
1010 9th Ave SW
Sidney, MT 59270
johnsonh@midrivers.com

Blaine Gifford
1010 9th Ave SW
Sidney, MT 59270
johnsonh@midrivers.com

Kristine Gifford
1010 9th Ave SW
Sidney, MT 59270
johnsonh@midrivers.com

Chip Gifford
Johnson Hardware
PO Box 1006
Sidney, MT 59270
johnsonh@midrivers.com

Steve Gil
136 Eager Ct
Evansville, WI 53536
stevegil3@gmail.com

Debra Gilbert
121 3rd Ave NW
Sidney, MT 59270
des@richland.org

Debra Gilbert
Richland County DES
123 West Main
Sidney, MT 59270
dgilbert@richland.org

Debra Gilbert
221 3rd Avenue SW
Sidney, MT 59270
tikasmom.debra@gmail.com

Bob Gilbert
Montana Walleyes Unlimited
PO Box 1228
Sidney, MT 59270

Bob Gilbert
Walleyes Unlimited of Montana
PO Box 1228
Sidney, MT 59270

Susan Gilbertz
2606 Longfellow Pl
Billings, MT 59101

May Gireard
611 2nd St NE
Sidney, MT 59270
dtg_inmt@midrivers.com

Jake Godfrey
12218 CR 348
Sidney, MT 59270

Jonathan Goetz
Agri Industries
1775 South Central Ave
sidney, MT 59270
goetz.agri@gmail.com

Shane Gorder
11685 CR 350
Sidney, MT 59270

Shane Gorder
Richland County Commissioner
201 West Main
Sidney, MT 59270
sgorder@richland.org

Martha Gorder
PO Box 1268
Sidney, MT 59270

Julie Goss
Richland County
Conservation District
2745 West Holly St
Sidney, MT 59270
julie.goss@mt.naednet.net

Patty Graham
Po Box 713
Terry, MT 59349
pgraham@stockuarbark.com

Thomas Graves
Mid-West Electric Consumers Association
4350 Wadsworth Blvd, Suite 330
Wheat Ridge, CO 80033

Bob Gregoire
1105 Woodland Drive
Bozeman, MT 59718
rob.gregoire@gmail.com

Chris P Griffith
Stockman Bank
35090 CR 129
Sidney, MT 59270
cgriffith@stockmanbank.com

Anne & Bud Groskinsky
34851 C R 1202
Sidney, MT 59270

Ronald Gross
15882 Hwy 200
Fairview, MT 59221

Linda Grosskopt
Western Ag Reporter
PO Box 85
Billings, MT 59103
editor@westernagreporter.com

Douglas Gullikson
12441 Co Rd 352
Sidney, MT 59270

Doug Gullikson
15592 30th St NW
Cartwright, ND 58838

James Gullikson
3492 157th Ave NW
Cartwright, ND 58838

Rachel Gunderson
Sidney Sugars
399 12th Ave SW
Sidney, MT 59270

Russell Gurney
11457 Hwy 16
Savage, MT 59262

Ronald Gurney
12533 Co Rd 352
Sidney, MT 59270

Joe Gutkoski
Montana River Action Network
304 N. 18th Ave
Bozeman, MT 59715

Blake Haakenson
PO Box 988
Dickinson, ND 58602

Tom Hafele
PO Box 121
Savage, MT 59262

Philip Hafemann
33465 CR 114
Savage, MT 59262

Jeff Hagener
Montana Fish, Wildlife and Parks
1420 East Sixth Avenue
Helena, MT 59620-0701

Jeff & Keri Hagener
Montana Fish Wildlie & Parks
PO Box 200701
Helena, MT 59320

Brent Hagler
10896 Co Rd 344
Savage, MT 59262

Joanne Hagler
10898 Co Rd 344
Savage, MT 59262

Wade Hagler
10924 Co Rd 344
Savage, MT 59262

Barbara Hagler
2830 Providence Pl
Billings, MT 59101

Sarah Haines
11553 Hwy 16
Crane, MT 59270

Roger Hall
PO BOX 17082
Missoula, MT 59808-7082

John F. Haller
345 Blaine Street
Missoula, MT 59801
john@hallerweb.com

Daniel & Teresa Halley
PO Box 558
Sidney, MT 59270-0558

Quenten Hallonguisi
Agri Industries
2022 O Wyoming
Glendive, MT 59330
hallonguisifam@gmail.com

Greg Hallsten
MT Department of Environmental Quality
1520 East 6th Ave
Helena, MT 59620-0901

David Halvorson
704 3RD ST SE
Sidney, MT 59270-4721

Marcy Hamburg
PO Box 84
Savage, MT 59262
mhamburg58@gmail.com

Bill Hamburg
PO Box 84
Savage, MT 59262
bhamburg@midrivers.com

Bill & Marcy Hamburg
PO Box 84
Savage, MT 59262
mhamburg@midrivers.com

Arnold Hamer
Hansen Ranch
207 2nd Ave NW
Sidney, MT 59270
lola@midrivers.com

Ray Hamer
Hansen Ranch
207 2nd Ave NW
Sidney, MT 59270
lola@midrivers.com

Lou Hanebury
656 Oasis Drive
Billings, MT 59105
lbhanebury@msn.com

Lou Hanebury
Yellowstone Audubon Society
9873 US Highway 212
Joliet, MT 59041
sregele@juno.com

Jim Hanks, Jr
3162 160th Ave NW
Fairview, MT 59221

Ken Hanna
Walleyes Forever
PO Box 21852
Billings, MT 59104

Lola Hansen
207 2nd Ave NW
Sidney, MT 59270

Ray Hansen
82 Dry Creek Road
Wibaux, MT 59353

Robert & Betty Hansen
835 Amethyst Dr
Santa Maria, CA 93455

Linda Hanson
402 7th St SE
Sidney, MT 59270

Mary Hanson
Montana Land Reliance
P.O. Box 171
Billings, MT 59103-0171

Rick Haraldson
216 14th Ave SW
Sidney, MT 59270

Timothy & Alexandria Hardey
333 160th Ave NW
Fairview, MT 59221

Boyd Hardy
13265 Hwy 200
Fairview, MT 59221
shirleyh@midrivers.com

Shirley Hardy
13265 Hwy 200
Fairview, MT 59221
shirleyh@midrivers.com

Hannah Hardy
3131 160 Ave NW
Fairview, MT 59221
hannahjhardy@gmail.com

Scarlett Hardy
3131 160 Ave NW
Fairview, MT 59221

David Hardy
3131 160 Ave NW
Fairview, MT 59221

Jack Hardy
Plainview Farms LLP
3162 160th Ave NW
Fairview, MT 59221

JW Hardy
3162 160th Ave NW
Fairview, MT 59221

Linda Hardy
Plainview Farms LLP
3162 160th Ave NW
Fairview, MT 59221
jklin@midrivers.com

Jack Hardy
Larmer
3162 160th Ave NW
Fairview, MT 59221

Jim Hardy
3164 160th Ave NW
Fairview, MT 59221

Mary Hardy
3164 160th Ave NW
Fairview, MT 59221

Mark Hardy
818 9TH ST SW
Sidney, MT 59270-4812

Howard Harmon
11297 COUNTY ROAD 345
Savage, MT 59262

Wagner Harmon
Horizon Resources
209 Washington Ave
Williston, NT 58801

Howard Harmon
PO Box 41
Crane, MT 59217

Alex Harrington
Sidney Sugar
PO Box 225
Sidney, MT 59270

David & Kathleen Harris
PO Box 1
Crane, MT 59217

John Hart
Montana Environmental
Information Center
P.O. Box 1184
Helena, MT 59601

Clarence Hartle
12076 Hwy 16
Sidney, MT 59270

Randi Hass
PO Bo 172
Sidney, MT 59270
reni1@hotmail.com

Randi Hass
PO Box 172
Sidney, MT 59270
renii1@hotmail.com

Dave Haverkamp
34719 Co Rd 119
Sidney, MT 59270

Chanele Hayden
PO Box 424,
1116 W. 8th Street
Fairview, MT 59221
cfhopeful21@aol.com

John Heath
PO Box 816
Fairview, MT 59221

Gina Heckey
209 3rd Ave SW
Sidney, MT 59270

Arvin Heinle
16032 35th St NW
Fairview, MT 59221

Vernon C. Heinrich
502 Fir Street
Glendive, MT 59330
dvhein@idrivers.com

Harold Helland
13359 Hwy 200
Fairview, MT 59221

Dale Helm
10898 W 30th Place
Lake Wood, CO 80215

Don Helm
15942 35th St NW
Fairview, MT 59221

Jill Helmuth
Bartlett & West, Inc.
Box 250
Watford City, ND 58854
jill.helmuth@bartwest.com

John Helvey
567 Cayuse Trail
Bozeman, MT 59718

Curtis Helvey
6220 Elkhorn Road
Helena, MT 59602

Patricia Helvey
6220 Elkhorn Road
Helena, MT 59602

Bill Henderson
PO Box 1050
Sidney, MT 59270

Thomas Henderson
PO Box 62
Crane, MT 59217

Heather Herrman
Triple C Farms, Inc.
34127 CR 107
Sacage, MT 59262
htconradsen26@hotmail.com

Sashua Hier
12920 CR Rd 333
Lambert, MT 59270
sashuabeen14@hotmail.com

William Hier
LYIP
12920 CR 233
Lambert, MT 59243
hier333@hotmail.com

Michaela Hier
12921 CR 333
Lambert, MT 59243

Mike Hier
12921 CR 333
Lambert, MT 59243

Shawn Higley, PE
WWC Engineering
1275 Maple Street, Suite F
Helena, MT 59601
shigley@wwcengineering.com

Doug Hill
Walleyes Unlimited (Mon-Dak) Chapter
304 4th Street SE
Sidney, MT 59270

Chester Hill
34752 CR 119
Sidney, MT 59270
chet.hill@hephyseed.com

Howard Hill
35554 CR 133
Fairview, MT 59221
howeird1976@hotmail.com

Howard Hill
818 5th St SE
Sidney, MT 59270

Chris Hillesland
1517 6th St SE
Sidney, MT 59270

Donald Hillman
35362 COUNTY ROAD 129
Sidney, MT 59270-4256

Charles Hillman
35362 CR 129
Sidney, MT 59270

Molly Hilton
5052 Christy Court
Troy, MI 48098
mollyehilton@yahoo.com

Cathy Hintz
2405 W. Holly St
Sidney, MT 59270
hintzinsur@midwest.com

Ron His Horse Is Thunder
Standing Rock Sioux Tribe
Admin. Service Center, Bldg #1, North Standing Rock Avenue
Fort Yates, ND 58538

Jeff Hiutz
812 7th St SW
Sidney, MT 59270
sidneydpw@midrivers.com

Rita Hoch
35448 County Road 131
Fairview, MT 59221
darihoch@yahoo.com

FRED D Hoeger
PO Box 480
Terry, MT 59349

Melvin N Hoferer
4721 US Hwy 310
Juliet, MT 59041
mhoferercows@gmail.com

Kenneth Hoff
12675 Co Rd 352
Sidney, MT 59270

Steve Hoffman
Montana Audubon
P.O. Box 595
Helena, MT 59624

Venture Holding Company
409 14th St SW
Great Falls, MT 59404

Rankin Holmes
Montana Water Trust
140 S. 4th St. West, Unit 1
Missoula, MT 59801

Maci Holst
1201 W. Holly, Ste 1
Sidney, MT 59270
mholst@gmail.com

James Holst
803 14th St SE
Sidney, MT 59270

John C. Hoon
270 5th Ave S
Savage, MT 59262

Jessica Hoon
City of Sidney
720 22nd Ave NW
Sidney, MT 59270

John Hoon
PO Box 183
Savage, MT 59262

Travis Horton
Upper Basin Pallid Sturgeon Recovery Workgroup
1420 East Sixth Avenue P.O. Box 200701
Helena, MT 59620-0701

Tom Hougen
Box 127
Melstone, MT 59059

John Houle
Chippewa Cree Tribe of the Rocky Boys' Reservation
Rural Route 1, Box 544
Box Elder, MT 59521-9724

Sandy Houston
Richland County
117 8th Street SE
Sidney, MT 59270
shouston@richland.org

Jami Howell
1825 Milan Road
Huntley, Mt 59037
jhowell@northernbroadcasting.com

Allen Hrubes
1320 Cootest
Glendive, MT 59330
metalal@midrivers.com

Amber Hrubes
320 Cooke St
Glendive, MT 59330
ahrubes@mt.com

Layton Hrubes
820 Coche St
Glendive, MT 59330
rideshowwin1995@hotmail.com

Rhonda Hunter
13988 CR 347
FAIRVIEW, MT 59221

Rodney Hurley
14479 COUNTY ROAD 355
Fairview, MT 59221

Dale Hurley
15852 33rd St NW
Fairview, MT 59221

Timothy Hurley
3137 160th Ave
Fairview, MT 59221
hurley_41@icloud.com

Philip Hurley
3291 160th Ave NW
Fairview, MT 59221

Ty Hurley
35531 CR 147
Fairview, MT 59221

Vess E Hurley
PO BOX 200
Fairview, MT 59221

Patty Hurst
118 11th Ave SW
Sidney, MT 59270

John Hutter
3152 Hwy 58
Fairview, MT 59221

Hugh Hutton
12794 Hwy 200
Sidney, MT 59270

Peggy Iba
1 Sussex Ct
Glendive, MT 59330
peggy.iba@gmail.com

Kat Imhoff
The Nature Conservancy of Montana
32 S. Ewing, Suite 215
Helena, MT 59601

Mark Iszler
505 Lincoln Ave S
Sidney, MT 59270
mi1302@iszler.net

Dick Iversen
13749 CR 332
Culbertson, MT 59218
rsi@midrivers.com

Ruth Iversen
35177 Co Rd 128
Sidney, MT 59270

Mark Iversen
35193 Co Rd 126
Sidney, MT 59270

Kathy Iversen
35193 CR 126
Sidney, MT 59270
mkinc@midrivers.com

Dale & Mark Iversen
35201 Co Rd 128
Sidney, MT 59270

Dale & Char Iversen
35201 CR 128
Sidney, MT 59270
iversen@midrivers.com

Bill Iversen
35205 CR 128
Sidney, MT 59270
bpns@midrivers.com

Neil Iversen
PO Box 1166
Williston, ND 58802

Marlow Iversen
PO Box 158
Savage, MT 59262

Ken Iverson
Farmer & Bucher
35188 CR 128
Sidney, MT 59270

Theresa Iverson
35188 CR 128
Sidney, MT 59270

Kathleen A Iverson
35193 C R 126
Sidney, MT 59270
mkinc@midrivers.com

Albert Jackson
907 14th St SE
Sidney, MT 59270

Michael Jandreau
Lower Brule Sioux Tribe
187 Oyate Circle
Lower Brule, SD 57548-0187

Harry & Lucille Jensen
735 6th St NE
Sidney, MT 59270

Michael Jepsen
11110 Co Rd 345
Savage, MT 59262

JH Farms LLC
4653 E Iona Rd
Idaho Falls, ID 83401

JLDM, LLC
13705 Co Rd 351
Fairview, MT 59221

Kirk Johhnson
3041 Cheney Creek Rd
Cartwright, ND 58838

Cassey Johnson
1045 15th St SW - Apt D
Sidney, MT 59270

Sam Johnson
Montana DNRC
1371 Rimtop Dr
Billings, MT 59105
sam.johnson@mt.gov

Theresa Johnson
Country Lane Farms
15932 29th Ave NW
Fairview, MT 59221

Richard Johnson
16112 36th St NW
Fairview, MT 59221

Henry Johnson
Richland County Commission
201 West Main
Sidney, MT 59270

Paul Johnson
2426 3rd St. NW
Sidney, MT 59270

Ray Johnson
2700 Red River Drive
Sidney, MT 59270
rayjohnson@midrivers.com

Heather Johnson
2700 Red River Dr
Sidney, MT 59270

Anita Johnson
3041 Cheny Creek Rd
Cartwright, ND 58838

Hubert Johnson
319 3rd Street SW
Sidney, MT 59270

Calvin Johnson
34172 CR 131
Sidney, MT 59270

Irene Johnson
429 3rd Street, SE
Sidney, MT 59270

Russell Johnson
510 10th Ave SE
Sidney, MT 59270

Warren Johnson
P.O. Box 354
Fairview, MT 59221

Terry Johnson
PO Box 249
Mission, SD 57555-0249

Hubert Johnson
PO Box 351
Sidney, MT 59270

Collins Johnson
PO Box 354
Fairview, MT 59221

Carol Johnson
PO Box 51224
Billings, MT 59105

Josh Johnson
Interstate Engineering, Inc.
PO Box 648 - 425 E. Main
Sidney, MT 59270
josh.johnson@interstateeng.com

April Johnston
American Wildlands
321 East Main, Suite 418
Bozeman, MT 59715

Randy Jones
1101 Sunflower Ln
Sidney, MT 59270
phesant@007.com

Justin Jones
Mon-Dak Walleyes Unltd
2502 3rd St. NW
Sidney, MT 59270
www.justin@nickjonesre.com

Rob Jones
Lyons Communications, LLC
P.O. Box 1403
Lyons, CO 80540
lyonstv@gmail.com

Clifford Jones
PO Box 1489
Sidney, MT 59270

Justin Jones
PO Box 767
Sidney, MT 59270

Dara Jonsson
34379 CR 110
Savage, MT 59262

Kjeld Jonsson
34379 CR 110
Savage, MT 59262
jonsson@midrivers.com

Char Jonsson
34494 CR 110
Savage, MT 59262
charj@midrivers.com

George Jordan
United States Fish and
Wildlife Service
2900 4th Ave N Suite 301
Billings, MT 59101

R Jorensen
Box 117
Crane, MT 59214

Dave Jorgensen
10986 Co Rd 342
Savage, MT 59262

Lanette Jorgensen
10986 CR 342
Savage, MT 59262

Bryce Jorgensen
11012 CR 342
Savage, MT 59262
brycejorgensen@gmail.com

Suzy Jorgensen
11012 CR 342
Savage, MT 59262

Ken Jorgensen
11297 CR 345
Savage, MT 59262

Keri D Jorgensen
AJNK, Inc.
11297 CR 345
Savage, MT 59262
jnkinc5@gmail.com

Dee Jorgensen
John & Dee Farming, INC
11375 CR 345
Savage, MT 59262

Jeff Jorgensen
2248 S. Safflower Lane
Sidney, MT 59270

Jeff Jorgenson
11297 CR 345
Savage, MT 59262

Jonathan Jorgenson
Farmer
11375 CR 345
Savage, MT 59262

Don & Christine Josephson
1998 BITTEROOT DR
Sidney, MT 59270

Steve Joslin
12751 County Rd 353
Sidney, MT 59270

Annette Joslin
12751 CR 353
Sidney, MT 59270

Sage Joyce
PO Box 2256
Billings, MT 59103
sage.l.youce@usace.army.mil

Cathy Juhas
US Army Corps of Engineers
P.O Box 2256
Billings, MT 59103

Garth N. Kallevig
Stockman Bank
101 S Central Ave
Sidney, MT 59270

Garth Kallevig
2098 Sagelily Dr
Sidney, MT 59270

Brent Kallevig
Box 55
Sidney, MT 59270

Garth & Joyce Kallevig
Stockman Bank
PO Box 1123
Sidney, MT 59270

Ted Karst
16022 30th St NW
Fairview, MT 59221
tedkarst@hotmail.com

Jim Karst
16032 Hwy 200
Fairview, MT 59221

Arlene Karst
16052 30th St NW
Fairview, MT 59221

Virgil Karst
16082 30th St NW
Fairview, MT 59221

Richard Karst
3171 160 Ave NW
Fairview, MT 59221

Justin Karst
3211 Hwy 58
Fairview, MT 59221

Donald Karst
PO Box 225
Fairview, MT 59221

Taylor Kasperick
51 N. 15th Street, Ste. 1
Billings, MT 59101
tkasperic@gmail.com

Scott R Keibel
806 2nd St. SW #4
Sidney, MT 59270

Scot R Keig
806 2nd St SW, #4
Sidney, MT 59270

Lloyd Keller
34743 Co Rd 119N
Sidney, MT 59270

Dave Kelsey
1902 Molt Rapelje Rd
Molt, MI 59057
dkelsey@yvec.com

Brian Kendsforth
618 27th Avenue
Laurel, MT 59044

Aaron Kessel
35010 HIGHWAY 23
Sidney, MT 59270

Allen Kessler
316 Valley Rd
Fairfield, AL 35064

Key Rocky Mtn
TAX DEPARTMENT
Houston, TX 77010

Roger Kimble
1370 22nd Ave NW
Sidney, MT 59270
rkimble@gmail.com

Rae Jean Kimble
1370 22nd Ave. NW
Sidney, MT 59270
rkimble43@gmail.com

Gary Kindopp
140 Orchard Lane
Billings, MT 59102

Ken Kios
Box 27
Trenton, ND 58853

Cathy Kirkpatrick
Senator Walsh office
112 W. Towne St
Glendive, MT 59330
cathy_kirkpatick@walsh.senate.gov

Cathy Kirkpatrul
300 College Dr
Glendive, MT 59330
dcedc@midrivers.com

William R Kirschner
PO Box 79
Sidney, MT 59270
thekirsch44@mgak.com

Dennis Kittleson
33993 CR 146
Culbertson, MT 59218

Kent Klein
15981 35th St NW
Fairview, MT 59221

Jeff Klempel
34984 Co Rd 122E
Sidney, MT 59270

Jeremy Klempel
35146 Co Rd 126
Sidney, MT 59270

Kevin D Klose
13072 160 Ave NW
Fairview, MT 59221

Kent Klose
15981 35th St NW
Fairview, MT 59221
klosera@yahoo.com

Vernon Klose
3031 1th Ave NW
Fairview, MT 59221

Kent Klose
3032 160 Ave NW
Fairview, MT 59221

Vernon Klose
Klose Farms Inc
3032 160th Ave NW
Fairview, MT 59221

Vernon C. Klose
Klose Lands, LLP
3032 160th Ave NW
Fairview, MT 59221

Ken Klose
Klose Farms
3072 Hwy 160 NW
Fairview, MT 59221

Kim Klose
Klose Farms
3072 Hwy 160 NW
Fairview, MT 59221

Joseph Knapp
14405 CR 355
Fairview, MT 59221
brotherjosephk@yahoo.com

Ken Knels
Farmer
16061 33rd St NW
Fairview, MT 59221

Larry Knels
555 EL PASO ST
Billings, MT 59101-6868

Rep. Austin Knudsen
MT House of Representatives
PO Box 624
Culbertson, MT 59218
austinforhouse@yahoo.com

Stacy Kober
Agri Industries, Inc.
941 14th St. SW
Sidney, MT 59270
stacy@h20agri.com

Stacy Kober
941 14th Street SW
Sidney, MT 59270
sskober@gmail.com

Gene Koch
12776 Co Rd 352
Sidney, MT 59270

Tim Koffkey
LYIP
PO Box 36
Savage, MT 59262

Tom Koffkey
LYIP
PO Box 36
Savage, MT 59262

Don Kopecky
PO Box 90
Sidney, MT 59270

Lenny Kortes
1000 Dale Ave
Fairview, MT 59221

Lenny Kortes
Helena Chemical
904 E. Main Street
Sidney, MT 59270
kortesl@helenachemical.com

Lenny Kortes
Helena Chemical
PO Box 532
Fairview, MT 59221
kortesl@helenachemical.com

Chad Kostelecky
34575 CR 117
Sidney, MT 59270

Gordon Kotherge
207 Prospect Dr
Glendive, MT 59330

Rick Kraft
7590 Neiland Road
Billings, MT 59106
randrkraft@gmail.com

Douglas Kramer
3134 South 56th W
Billings , MT 59106

Joel Krautter
City of Sidney
703 6th St SE
Sidney, MT 57270
JoelKrautternlo@midrivers.com

Betty Kringen
12118 Hwy 16
Sidney, MT 59270

Randy & Suzie Kringen
2508 LINCOLN AVE S
Sidney, MT 59270

Randal Kringen
2700 Lincoln Ave SE
Sidney, MT 59270

James Krivec
5320 Sandalwood Dr
Billings , MT 59106
jlkrivec@gmail.com

Lauren Krives
5931 Sandalwood Dr
Billings, MT 59106

Curtis Kruer
PO Box 753
Sheridan, MT 59749
kruer@3rivers.net

Justin Kucera
226 Ave D
Billings, MT 59101
jfkucera@gmail.com

Gary Kuelsforth
608 27th Ave W
Laurel, MT 59044

Loren Kutzler
Reynolds Market
401 N. Central
Sidney, MT 59270
loren.kutzler@reynoldmarket.com

Jessica Kwasney
P.O. Box 582
Circle, MT 59215

Gary L LaCasse
PO Box 67
Plentywood, MT 59254-0067

Susan Lake
Lake Farms, Inc.
59969 Hwy 93
Ronan, MT 59864
jlake@ronan.net

Justin E Lander
1837 Sage Lily Drive
Sidney, MT 59270
just1205@outlook.com

Denise Lang
Sidney Sugars, Inc.
312 2nd Ave SE
Sidney, MT 59270
dlangel5@gmail.com

Doug Lang
629 9th Ave SW
Sidney, MT 59270
dougl@midrivers.com

Robert Lange
33649 CR 109
Savage, MT 59262

Nesha Lange
33649 CR 109
Savage, MT 59262

Howard Langeveld
1912 8th Avenue West
Seattle, WA 98119
hlangeveld@comcast.net

Lucy Langwald
2892 160th Ave NW
Fairview, MT 59221

Tim Langwald
3781 Hwy 58
Fairview, MT 59221

Judy LaPam
517 4th Street SE
Sidney, MT 59270
m3jlapan@gmail.com

Lowell Larson
316 44th Ave So
Moorhead, MN 56560

Alan Larson
32589 CR 137
Lambert, MT 58243

Lowell Larson
PO Box 423
Sidney, MT 59270
llarson@cord.edu

Ben Larson
Safflower Tech Int.
PO Box 485
Fairview, MT 59221
blarson@safflowertech.com

Dennis Latka
34954 Hwy 23
Sidney, MT 59270

Eric Laux
USACE
1616 Capitol Ave
Omaha, NE 68102
eric.a.laux@usace.army.mil

Dereke Lawrance
12755 Co Rd 352
Sidney, MT 59270

Dennis LeDoux
47 Rd 240
Glendive, MT 59330

Jackyln Lee
15051 58th St. NW
Williston, ND 58801
jlee@horizon resources.coop

John Leintz
412 25th Ave NW
Sidney, MT 59270

John Leintz
416 35th Ave NW
Sidney, MT 59270

John Leintz
Sidney Sugars
419 35th Ave NW
Sidney, MT 59270

Dalton Lemburg
Shepherd, FFA
5230 Equestrian Road
Shepherd, MT 59079
dalton.lemburg@gmail.com

Dale Lentz
4224 David Mark Trail
Billings, MT 59101

Bert Lepel
34994 CR 122 E
Sidney, MT 59270
lepel@midrviers.com

Mavirda Lepel
34994 CR 122 E
Sidney, MT 59270
blegal@juno.com

Paul Lepisto
Izaak Walton League
of America
1115 S Cleveland Avenue
Pierre, SD 57501-4456
plepisto@iwla.org

David Ler
10727 CR 340
Savage, MT 59262
dc ranch@yahoo.com

Matt Ler
10743 COUNTY ROAD 340
Savage, MT 59262

Lloyd Lester
3752 Hwy 58
Fairview, MT 59221

William Lewis
34134 Hwy 201
Fairview, MT 59221

Nate Linde
3023 Western Bluffs Blvd
Billings, MT 59106

David G. Linde
34880 CR 132
Fairview, MT 59221
davidlinde250@hotmail.com

Sierra Linde
4330 Dobrinka Drive #4
Billings, MT 59106
slinde3@hotmail.com

Bill D Lindsay, Sr
Agri Industries
311 21st Ave NW, Lot 10
Sidney, MT 59270
lindsman2425@yahoo.com

John Little
Montana Fish,
Wildlife and Parks
Industrial Site West
Miles City, MT 59301

Dennis Lokken
12283 Sidney Circle
Sidney, MT 59270
led2491@gmail.com

Cara Lokken-Frandsen
12282 1st Street
Sidney, MT 59270
caralokken@hotmail.com

Tim Lorenz
12113 CR 350
Sidney, MT 59270

Joel Lorenz
Lorenz Concrete
13346 Hwy 200
Fairview, MT 59221

Dennis Lorenz
Sidney Rental
2508 S. Lincoln Ave
Sidney, MT 59270
dl@sidneyrental.com

Tom Lorenz
34839 Co Rd 122
Sidney, MT 59270

Rick Lovec
121 7th Ave SW
Sidney, MT 59270

Red Lovec
121 7th Avenue SW
Sidney, MT 59270

Linda Lovgren
Lovgren Marketing Group
809 N 96 St, #2
Omaha, NE 68114
lovgren@lovgren.com

Dennis Lowery
Sidney Rental
12108 CR 350
Sidney, MT 59270
dl@sidneyrental.com

Charles Lowman
12749 CR 352
Sidney, MT 59270
clowman@midrivers.com

Marleen Lowman
12749 CR 352
Sidney, MT 59270

Scott Ludwig
117 7th Ave SW
Sidney, MT 59270
scottludwig247@yahoo.com

Steve Lunderby
Lunderby Feedlots
12314 CR 351
Sidney, MT 59270

Robert Lunderby
12348 Co Rd 351
Sidney, MT 59270

Lance M
10677 CR 342
Savage, MT 59262
jbellady@yahoo.com

Andy Madison
LYIP
306 Washington St
Crane, MT 53217

Sheri Madison
621 5th St. SE
Sidney, MT 59270

Gary Malsam
13329 Hwy 200
Fairview, MT 59221

Gary Malsam
PO Box 393
Fairview, MT 59221

Tami Maltese
113 West Main St
Sidney, MT 59270

Patti Mann
309 3rd Ave SW
Sidney, MT 59270
pmann@midrivers.com

Forrest Markle
35361 Co Rd 128
Sidney, MT 59270

Randy Marmon
16061 39th St NW
Fairview, MT 59221

Matt Marsh
WAPA
2900 4th Ave N
Billings, MT 59101
mmarsh@wapa.gov

Marion Martin
15942 34th St NW
Fairview, MT 59221

Monte Martin
3621 160 Ave NW
Fairview, MT 59221

Ken Martin
Retired - US Army Corps of Engineers
PO Box 117
Chinook, MT 59523
km12724@yahoo.com

Sheridan Martin
PO Box 632
Culbertson, MT 59218
rounduppreporter@gmail.com

Randy Matsue
5083 Bennett Industial
Williston, ND 58801

Nicole McClain
Yellowstone River Conservation District Council
1371 Rimtop Dr
Billings, MT 59105
yellowstonerivercouncil.org

Nicole McClain
Yellowstone River Conservation District Council
P.O. Box 148
Livingston, MT 59047

Brian McDanold
Glendive Walleyes Unltd
407 Chestnut
Glendive, MT 59330
brian.mcdanold@wbip.com

Dorene & Jim McDonald
319 7th Ave SW
Sidney, MT 59270
rose84mcdonald@hotmail.com

David McDonald
PO Box 265
Sidney, MT 59270

Lisa McFarlands
8201 Molt Road
Billings, MT 59106
mtbluedogs@gmail.com

Robert McGinnis
1515 Sunflower Ln
Sidney, MT 59270

Brian McGinnis
814 Lincoln Ave NW
Sidney, MT 59270

Kathy McLane
377 FAS 254
Glendive, MT 59330
kathleen.mclane@midrivers.com

Kathy Newton McLane
377 FAS 254
Glendive, MT 59330
kmacinmt@hotmail.com

Kathy McLane
Mid Rivers Communications
377 FAS254
Glendive, MT 59330
kathleenmclane@midrivers.coop

Jerry McMillen
10090 Hwy 261
Sidney, MT 59270

David McMillen
1675 W. Holly St
Sidney, MT 59270

Norma McNiven
3512 Boothill Rd
Huntley, MT 59037

Walter McNutt
110 12th Ave SW
Sidney, MT 59270
walt@midrivers.com

William McNutt
304 Yellowstone Drive
Sidney, MT 59270
Wpmcnutt@yahoo.com

Alexis McPherson
82 CR 555
Glendive, MT 59330

Carly McPherson
82 CR 555
Glendive, MT 59330

Alex McPherson
McPherson Farms, Inc.
82 CR 555
Glendive, MT 59330
alexmcp@hotmail.com

Craig McPherson
82 Road 555
GLENDIVE, MT 59330-1937

Zach McPherson
86 Road 555
Glendive, MT 59330
z-mcpherson@hotmail.com

MDU
PO Box 5650
Bismarck, ND 58501

Davis Meehan
1420 W Holly
Sidney, MT 59270
meehan@midrivers.com

Alan Mehl
11361 Hwy 16
Crane, MT 59217

Roy Melroy
12581 CR 349R
Sidney, MT 59270

John Mercer
11807 Highway 261
Sidney, MT 59270
john@mercerfarm.com

Leslie Meson
1060 S Central Ave
Sidney, MT 59270
lmredo@midrivers.com

Leslie Messer
1060 S. Central Ave
Sidney, MT 59270
lmredc@midivers.com

Pat Micheletto
33878 CR 101
Savage, MT 59262

Patty Micheletto
33878 CR 101
Savage, MT 59262

Daniel Miller
122 Glenwood Ave
Glendive, MT 59330

Kris & Kirk Miller
12218 CR 349 N
Sidney, MT 59270

Curtis Miller
USACE
1616 Capitol Ave
Omaha, NE 68102
curtis.j.miller@usace.army.mil

Carl Miller
2902 161 Ave NW
Fairview, MT 59221

Toby Miller
2912 161 St Ave NW
Fairview, MT 59221

Greg Miller
323 23rd Ave NW
Sidney, MT 59270

Daniel Miller
3765 HIGHWAY 58
Fairview, MT 59221

Tatum Miller
7205 S. 56th ST W
Billings, MT 59106
gotmiller@gmail.com

Thomas Miller
8700 SILA PL
Rapid City, SD 57702-9084

Diane Miller
PO Box 550
Fairview, MT 59221
dynamo@midrivers.com

Gary Mindt
13128 Hwy 200
Fairview, MT 59221

Henry Mischel
312 Cooke Street
Glendive, MT 59330

Dorothy Mitchell
11843 Highway 16
Sidney, MT 59270

Clyde & Duane Mitchell
11843 Hwy 16
Sidney, MT 59270

Duane Mitchell
Richland Co. Commissioner
201 W Main St
Sidney, MT 59270
dmitchell@richland.org

Duane Mitchell
221 S. Lincoln Ave
Sidney, MT 59270

Wayde & Lisa Mitchell
Highground Services
P.O. Box 963
Baker, MT 59313
wayde398@gmail.com

Everett Mitchell
PO Box 338
Glendive, MT 59330

Robert & Renee Mitzner
517 N. 10th St. PO Box 662
Livingston, MT 59047
wingandfin@gmail.com

Stefanie & Craig Moen
TriCounty Implement
616 9th St SW
Sidney, MT 59270
stefsev@ymail.com

Gregory Mohr
1809 14th Street SW
Sidney, MT 59270
GMohr@mt.gov

Julie Montes
PO Box 335
Lambert, MT 59243
jmontes63@aol.com

Andy Moore
306 Washington Street
Crane, MT 59217

Matthew Moore
PO Box 542
Baker, MT 59313-0542

Lee Moore
PO Box 604
Baker, MT 59313

Jeremy Morgret
Stockman Bank
1040 Strawberry Ave
Billings, MT 59105
jmorgret@stockmanbank.com

Bud Morrill
13179 Hwy 2
Sidney, MT 59270

Dale Mortenson
446 Caravan
Billings, MT 59101
PLM644@bresnan.net

Desly Movius
10 Country Lane
Cornwall, NY 12518-1021
Mofry.512@hotmail.com

Cheryl Murphy
295 Bitterroot Rd
Miles City, MT 59301

Michael E Murphy
Montana Water Resources Assn.
PO Box 4927
Helena, MT 59604
mwra-h20@msn.com

Mike Murphy
PO Box 4927
Helena, MT 59604

Leslie Mved
1060 S. Central Avenue
Sidney, MT 59270
lmved@midrivers.com

William Nankivel
35338 Co Rd 131
Fairview, MT 59221

Philip S Naro
21 Crescent Point Rd
Bozeman, MT 59715
pnaro21@gmail.com

Gerald & Mary Ellen Navratil
12026 Hwy 16
Sidney, MT 59270

Pat Neiss
803 3rd St NE
Sidney, MT 59270
flipside@midrivers.com

Gary Nelsen
187 North
Savage, MT 59262

Larry Nelson
187 North
Savage, MT 59262

John M Nelson
210 4th Ave SW
Sidney, MT 59270
jmn@midrivers.com

John M Nelson
210 4th Ave SW
Sidney, MT 59270
reford@midrivers.com

Keith Nelson
34469 CR 110
Savage, MT 59262

Gary Nelson
PO Box 177
Savage, MT 59262

Linda Nelson
Valley Garage, Inc.
PO Box 177
Savage, MT 59262

Charlene Netzer
12127 County Road 348
Sidney, MT 59270

Don Netzer
12127 CR 348
Sidney, MT 59270

Sheila Neu
PO Box 123
Fairview, MT 59221

Fe Neumann
883 3RD AVE SE
Sidney, MT 59270

Donna L. Nevins
Nevins Farms, Inc.
12689 CR 336
Sidney, MT 59270

Peggy Newton
Dawson County Conservation District
102 Fir Street
Glendive, MT 59330

Mike Newton
Montana Walleyes Unlimited
316 Chesnut Ave
Glendive, MT 59330
mnewton@fisherind.com

Phyllis Newton
377 FAS 254
Glendive, MT 59330
kmacinmt@hotmail.com

Robert D. Niehart
Performance Engineering & Consulting
7100 Commercial Ave, Ste 4
Billings, MT 59101
rob@performance-ec.com

Rex A Niles
329 Jib Ct
Lakeside, MT 59922
rexniles@hotmail.com

Del Nollmeyer
34461 CR 112
Savage, MT 59262

Kim Nollmeyer
34461 CR 112
Savage, MT 59262
kim_nollmeyer@hotmail.com

Palmer Norby
12255 Co Rd 350
Sidney, MT 59270

Marlin Norby
15932 29th St NW
Fairview, MT 59221

Rocky Norby
35244 CR 126
Sidney, MT 59270
pnorby@hotmail.com

Rick Norby
903 14th St SW
Sidney, MT 59270
richard.norby@yahoo.com

Harvey Noteboom
16037 West Sandia Park Dr
Surprise, AZ 85374

John Notebuum
1163 Moon Valley Rd
Billings, MT 59105
j.notebuum@bresnan.net

Lisa Notebuum
1163 Moon Valley Rd
Billings, MT 59105
l.notebuum@bresnan.net

Cindy & David Nygaard
LYIP
1998 Goldenroad LN
Sidney, MT 59270

Jerry Nypen
Lower Yellowstone Irrigation District
2327 Lincoln Avenue Southeast
Sidney, MT 59270

Ryan Obergfell
11497 CR 350
Sidney, MT 59270

Katie O'Clair
Richland County Treasurer's Office
201 West Main
Sidney, MT 59270
koclair@richland.org

Leonard Odenbach
11051 CR 44
Savage, MT 59261

Leonard Odenbach
604 Rock Spring Rd
Naperville, IL 60565

Will O'Laughlin
160 Brayton Road
Boston, MA 02135
wbol314@gmail.com

Joel Olson
12924 Co. Rd. 353
Sidney, MT 59270

Randy Olson
2025 Sage Lily Dr
Sidney, MT 59270

John K Olson
2025 Sage Lily Drive
Sidney, MT 59270

Adam M. Olson
306 Washington Street
Crane, MT 59217

Barb Olson
3503 Briarwood Blvd
Billings, MT 59101
baolson46@yahoo.com

Andy Olson
Box 33
Crane, MT 59217

Highland Operating LLC
PO Box 5103
Enid, OK 73702-5103

Zoe Opie
Big Horn Alliance
PO Box 7884
Fort Smith, MT 59305
absaraka@bhwi.net

Steve Ortiz
Prairie Band of Potawatomi Nation
16281 Q Road
Mayetta, KS 66509

Mike Otterstetter
Horizon Resources
605 South Ellery Ave
Fairview, MT 59221

Larry Paitsel
PO Box 4
Crane, MT 59217

Mike Pannell
12985 Hwy 200
Sidney, MT 59270

Naomi Pannell
12985 Hwy 200
Sidney, MT 59270

Skyla Paplia
Sidney Sugars, Inc.
516 26th Ave NW
Sidney, MT 59270

Pepe Paquin
3495 Racquet Plave
Billings, MT 59102
pepe@nutralix.com

Grant Parker
Parker LawFirm
655 East Beckwith
Missoula, MT 59801
grant.parker.parkerlaw@gmail.com

Mitchell Parker
Omaha Tribe of Nebraska
P.O. Box 368
Macy, NE 68039-0368

David Parsheill
224 Mitchell St
Deerlodge, MT 59722

Lyle E. Partin
Montana Dakota Utilities
35184 County Road 127
Sidney, MT 59270

Allyn Partin
35190 CR 127
Sidney, MT 59270

Anita Paschke
425 Merrin St
Billings, MT 59105

Ted Paschke
425 Mervin St.
Billings, MT 59102
tedpaschke@hotmail.com

Katherine Paschke
Sweetwater Retirement
Apt 206;
3140 Sweet Water Drive
Billings, MT 59102

Tom Pavek
1911 14th ST SW
Sidney, MT 59270

Charlotte Payette
104 Interstate Ave. N
Fairview, MT 59221

Myra Pearson
Spirit Lake Dakotah Nation
P.O. Box 359
Fort Totten, ND 58335

Raleigh Peck
1575 10th Ave SW
Sidney, MT 59270
rgpeck@electriclanding.com

Raleigh G. Peck
Electric Land, Inc
1575 10th Ave SW
Sidney, MT 59270
elcland@midrivers.com

Deb Peck
410 N Central Ave
Sidney, MT 59270

Raleigh Peck
410 N Central Ave
Sidney, MT 59270
elcland@midrivers.com

Kent Pedersen
McKenzie County SCD
1952 136th Ave NW
Arnegard, ND 58835

Mike Penfold
3552 Prostuck Rd
Billings, MT 59101

Michael Pepsin
110 CR 345
Savage, MT 59262

James Pesek
14514 Hwy 200
Alexander, ND 58831

Lyle Peters
Horizon Resources
11390 CR 345
Savage, MT 59262
peters@horizonresources.coop

Maria Peters
1148 Safflower Lane
Sidney, MT 59270
peters5@midrivers.com

Duane Peters
Sidney Sugar
1148 Safflower Lane
Sidney, MT 59270
dpeters@crystalsugar.com

J Petersen
1411 22nd Ave NW
Sidney, MT 59270

Kermit Petersen
1411 22nd Ave NW
Sidney, MT 59270

Kagney Petersen
34959 CR 126
Sidney, MT 59270

Gail Petersen
Sidney Redi-Mix
PO Box 788
Sidney, MT 59270

Vernon Peterson
11196 Co Rd 344
Savage, MT 59262

Lyle Peterson
1600 S EAGLE RIDGE DR #112
Renton, WA 98055

Roger Peterson
1707 14th St SW
Sidney, MT 59270

Lynn Peterson
2822 3rd St NW
Sidney, MT 59270
us56639295@midrivers.com

GAIL PETERSON
35052 COUNTY ROAD 123
Sidney, MT 59270-6307

Lynne Peterson
Savage Public Schools
368 Mesa
Savage, MT 59262
lynn&pete@gmail.com

Darren & Jeffry Peterson
57 Franklin Pl
Montclair, NJ 07042

Mark Peterson
621 N. 17th Ave.
Bozeme, MT 59715
mdandib@qwestoffice.net

Lynne Peterson
Savage School
PO Box 110
Savage, MT 59267

Gene Peterson
PO Box 93
Crane, MT 59217

Nancy Petula
Lovgren Marketing Group
809 N. 96 Street
Omaha, NE 68114
petula@lovgren.com

Warren Pierce
1917 W Towne
Glendive, MT 59330
wing@midrivers.com

Mathew Pilcher
Winnebago Tribe of Nebraska
P.O. 687
Winnegabo, NE 68071-0687

Plainview Farms LLP
3164 160th Ave NW
Fairview, MT 59221

Bing Poff
101 7th Ave NW
Sidney, MT 59270

Vanessa Pooch
Sidney Sugar
321 W Mail St
Sidney, MT 59270
vpooch@crystalsugar.com

Ivan D. Posey
Eastern Shoshone Tribe
P.O. Box 538
Fort Washakie, WY 82514

Stephen Potts
United States Environmental
Protection Agency
10 West 15th St., Suite 3200
Helena, MT 59626

Bob Prepp
516 9th St W
Fairview, MT 59221

Fred Prevost
26 Rd 555
Glendive, MT 59330

GEORGE PREVOST
33161 COUNTY ROAD 128
Lambert, MT 59243

Walter Prevost
33713 Co Rd 100
Savage, MT 59262

Elwin Prevost
33862 Co Rd 101
Savage, MT 59262

Wilma Prevost
PO Box 32
Savage, MT 59262

Rodney Prewitt
815 3rd St NE
Sidney, MT 59270

Arlen & Lonnie PRICE
2397 S CENTRAL AVE
Sidney, MT 59270

Grace Price
3104 Gregory Court
Billings, MT 59102

Robert Price
3104 Gregory Dr
Billings, MT 59102
bericend@gmail.com

Robert Price
3104 Gregory Drive
Billings, MT 59102
bprie@gmail.com

Dale Price
34373 Co Rd 111
Savage, MT 59262

Susan Price
34373 CR 111
Savage, MT 59262

Craig Price
915 11th St SW
Sidney, MT 59270
mtlioncp@midrier.com

Donald Provost
Lower Yellowstone Electric
3200 W Holly St
Sidney, MT 59270
donp@lyrec.com

Dan Pust
11 CR 240
Glendive, MT 59330

Arline Pust
11151 Hwy 16
Savage, MT 59262

Marilyn Pust
Steve Pust Farms Inc
11153 Hwy 16
Savage, MT 59262
Pustvarm@midrivers.com

Steve Pust
11153 Hwy 16
Savage, MT 59262

Doug Pust
11199 Hwy 16
Savage, MT 59262

Wayne Quinnel
Quinnel Electric
15012 Mesa Street
Savage, MT 59262

Wasu Quinnell
130 N Mesa St
Savage, MT 59262

Kayla Quinnell
150 Mesa St
Savage, MT 59262
Dodgecountygal3@hotmail.com

Emagene Quinnell
Quinnell Electric
PO Box 114
Savage, MT 59262
quinnell@midrivers.com

Barry Rahn
Buffalo Rapid Dist II
Box 183
Fallon, MT 59326

Barry Rakes
Rakes Famrs
Box 183
Fallon, MT 59326
rakesfarms@midrivers.com

Gordan Rambur
Montana Turf N Wheels
1055 Red River
Sidney, MT 59270
mtturf@midrivers.com

Howard Rambur
34790 Co Rd 118
Sidney, MT 59270

Dale Rambur
Route 1
Sidney, MT 59270
rootsbyreamur@gmail.com

Cheryl Rankin
Sidney Millwork Co
34451 CR 112
Savage, MT 59262

Kerry Rasmussen
34539 CR 128
Sidney, MT 59270

Ellen Rasmussen
35390 Co Rd 147
Fairview, MT 59221

Greg Rauschendorfer
31256 CR 143
Poplar, MT 59255
gregr@lyrec.com

Robert Rauschendorfer
PO Box 4
Sidney, MT 59270

Jessica Redfield
City of Sidney
409 3rd St SE
Sidney, MT 59270
sidneycity@midrivers.com

Redfren
Billings Walleyes Unltd
PO Box 1891
Billings, MT 59103

Beth Redlin
1128 8th Ave NW
Sidney, MT 59270
rem@midrivers.com

Beth Redlin
1500 N Central Ave
Sidney, MT 59270

John R Redman
11733 Hwy 261
Sidney, MT 59270

Holly Redman
PO Box 115
Crane, MT 59217
holly_redman@yahoo.com

Patte Redmond
PO Box 985
Sidney, MT 59270

Alex Reese
USACE
1616 Capitol Ave
Omaha, NE 68102

Arlo Reese
USACE
1616 Capitol Ave
Omaha, Ne 68102

Steve Regele
Yellowstone Audubon Society
9872 US Highway 212
Joliet, MT 59041
sregele@juno.com

Deb Regele
Yellowstone Audubon Society
9874 US Highway 212
Joliet, MT 59041
sregele@juno.com

Kim Rehbein
11800 CR 348
Sidney, MT 59270
rehbeink@midrivers.com

Denny Rehberg
United States House of Representatives
1201 Grande Avenue, Suite 1
Billings, MT 59102

Kim Rehbein
1180 CR 347
Sidney, MT 59270

Gerhard Reichenbach
2772 162 Ave NW
Fairview, MT 59221

Walter & Pearl Reichenbach
35184 Co Rd 124
Sidney, MT 59270

Greg Reid
51 N. 15th St.
Billings, MT 59101
greid@wweengineering.com

David & Becky Reidle
Reidle Farms
1013 Lincoln Ave NW
Sidney, MT 59270
dbreidle@midrivers.com

Shelby Reidle
1013 Lincoln Ave NW
Sidney, MT 59270
shelbyreidle@gmail.com

Nina Reidle
2121 E Echo Dr
Billings, MT 59105
ninareidle@gmail.com

Richard Reidle
3242 Hwy 58E
Fairview, MT 59221

Barbara Reidle
3341 Hwy 58
Fairview, MT 59221
oasis@midrivers.com

Earl Reidle
3341 Hwy 58
Fairview, MT 59221

Jay E Reidle
341 Hwy 58
Fairview, MT 59221

Ruth Reidle
923 12th St. SW
Sidney, MT 59270
rreidle@midrivers.com

Arlene Reidle
Box 64
Fairview, MT 59221

Linda Reisig
311 11th St SE
Sidney, MT 59270
lreisig@crystalsugar.com

Lincoln Reisig
Sidney Sugars, Inc.
311 11th Street SE
Sidney, MT 59270
lreisig@crystalsugar.com

Tom Reiter
Montana Pike Masters
3827 River Rd
Laurel, MT 59044

Ted Reitz
35284 CR 129
Sidney, MT 59270

Seth Rekdal
Shepherd, FFA
7280 Horseman Way
Shepherd, MT 59079
seth.rekdal@gmail.com

William (Butch) Renders
1311 S. Central Avenue
Sidney, MT 59270
butchr13@gmail.com

Lynn Rettig
15 Main
Musselshell, MT 59059
rettig@midrivers.com

John Reynolds
1204 14th St. SW
Sidney, MT 59270

Samree Reynolds
Sidney Sugars
265 S 1st Ave
Savage, MT 59262
islandgirl59262@yahoo.com

Samree Reynolds
PO Box 111
Savage, MT 59262
islandgirl 59262@yahoo.com

George & Jenny Rice
122 RD 555
Glendive, MT 59330

Jenny Rice
127 Rd 555
Glendive, MT 59330

Dave Rice
2324 Hwy 16
Glendive, MT 59330
rcakes@midrivers.com

Delneta Rice
2324 Hwy 16
Glendive, MT 59330
reake@midrivers.com

Jim Rice
3503 Briarwood Blvd
Billings, MT 59101
lort10@aol.com

Taylor Richter
322 3rd Street SW
Sidney, MT 59270

Beth Ridlin
112 8th Ave NW
Sidney, MT 59270
rem@midrivers.com

Cheryl Riedel
16032 Hwy 200
Fairview, MT 59221

Lillian Riedel
16042 HIGHWAY 200
Fairview, MT 59221

CT Ripley
PO Box 186
Huntley, MT 59037
cthatranch77@hotmail.com

Sam Ritter
35269 Co Rd 127
Sidney, MT 59270

Dave & Bobbie Roberts
201 Dry Creek Rd
Wibaux, MT 59353

Pat Roberts
713 9th St SW
Sidney, MT 59270
marketa@midrivers.com

JB Roberts
919 13th St SW
Sidney, MT 59270

Pat Roberts
Mon-Kota Fertilizer & Irrigation
Box 487
Fairview, MT 59921
monkota@midrivers.com

Jim Robinson
Department of Natural Resources and Conservation
P.O. Box 201601
Helena, MT 59620-1601

Jay Rosaaen
12601 COUNTY ROAD 333
Lambert, MT 59243-9403

Melissa Rosaaen
Richland County Justice Court/Sidney City Court
300 12th Ave NW, Suite 6
Sidney, MT 59270
mrosaaen@mt.gov

Stan Rosaaen
Niehenke Welding
312 N. Central Ave
Sidney, MT 59270
niehenkewleding@gmail.com

Ross Rosaaen
312 North Central Ave
Sidney, MT 59270
niehenkewelding@gmail.com

JEAN Rosendale
1954 HIGHWAY 16
GLENDIVE, MT 59330-9218

Matt Rosendale
Intake Irrigation Project
1954 Highway 16
Glendive, MT 59330
linden@midrivers.com

Matt Rosendale
Montana State Senate
1954 Hwy 16
Glendive, MT 59330
mattrosendale@midrivers.com

Marty Ross
610 5th St SW
Sidney, MT 59270
marty.ross13@gmail.com

Kevin Roth
1634 Alter CT
Sidney, MT 59270
kroth@crystalsugar.com

Kevin D Roth
1634 Aser Ct
Sidney, MT 59270
kevin@crystalsugars.com

Kevin D Roth
Sidney Sugars, Inc.
35140 CR 125
Sidney, MT 59270
kroth@crystalsugar.com

Deb Rowe
12107 Christina Ct
Fredrickson, VA 22407

Margaret Rowley
826 Pine Forest Trail
Port Orange, FL 32127

Mike Ruddy
1212 N Meade
Glendive, MT 59330
mikedavidruddy@gmail.com

LeRoy Rudle
PO Box 64
Fairview, MT 59221

Wendy Ruggles
225 Feldor Way
Billings, MT 59106
emeralds26@hotmail.com

Ashley Russell
12145 CR 352
Sidney, MT 59270
anrr08@gmail.com

Joe Russell
48 Spring Tree Rd
Great Falls, MT 59404

Fred Rykman
North Dakota Fish & Game
100 N Bismarck Expressway
Bismarck, ND 58501
fryckman@nd.gov

Clarence Sanders
4416 Morning Sun Dr
Bozeman, MT 59715
sandora99@msn.com

Andrew Sanders
PO Box 98
Sidney, MT 59270
andrewsanders33@gmail.com

Matt Sar
10725 CR 340
Savage, MT 59262
dunranch@midrivers.com

Janet Sargeant
City of Sidney Federal Credit Union
PO Box 235
Sidney, MT 59270

JERRY SATRA
216 15th Ave SW
Sidney, MT 59270

Bob Sazama
2035 Rd 261
Glendive, MT 59330
blsazama@midrivers.com

Dennis Scarnecchia
University of Idaho
P.O. Box 3192
Moscow, ID 83843-1907

Dennis Scarnecchia
University of Idaho - Department of Fish & Wildlife Resources
PO Bo 441136
Moscow , ID 83844
scar@uidaho.edu

Charlie Schaubel
12922 Hwy 200
Sidney, MT 59270

Wayne E Scherbacher
11235 Highway 16
Savage, MT 59262

Lonnie Schipman
12335 Co Rd 351
Sidney, MT 59270

Racquel Schipman
709 5th St NE
Sidney, MT 59270
racquelschipman@hotmail.com

Dirk Schlothaner
HD Farms, Inc.
15942 30th St NW
Fairview, MT 59221
dirkschlothaner@hotmail.com

Don Schlothauer
13351 Hwy 200
Fairview, MT 59221
leedon@yahoo.com

Harold Schlothauer
15922 30th St NW
Fairview, MT 59221
hdfarms@gmail.com

Casey Schlothauer
2851 160th Ave NW
Fairview, MT 59221

Ken Schlothauer
2891 160th Ave NW
Fairview, MT 59221

Stephanie Schlothauer
2891 160th Ave NW
Fairview, MT 59221

Rob Schlothauer
409 7th Ave SW
Sidney, MT 59270

Kim Schlothauer
Blue Carriage Farm
7851 160th Ave NW
Fairview, MT 59221

Don Schlothauer
PO Box 474
Fairview, MT 59221

Lee Schmierer
1 Mile S of Savage
Savage, MT 59262

Charity Schmierer
10598 Hwy 16
Savage, MT 59262

Lee Schmierer
10598 Hwy 16
Savage, MT 59262

Karen Schmierer
34071 DR 106
Savage, MT 59262

Justin Schmierer
Box 13
Savage, MT 59262
jschmierer@horizonresources.coop

Dennis Schmierer
PO Box 124
Savage, MT 59262

Charity Schmierer
PO Box 92
Savage, MT 59262
schmier@midrivers.com

Charity Schmierer
PO Box 92
Savage, MT 59262
schmier@midrivers.com

LeeRoy Schmierer
PO Box 92
Savage, MT 59262

Fred Schmitt
35241 Co Rd 127
Sidney, MT 59270

Marissa Schoepp
1008 9th Ave SW
Sidney, MT 59270
ecfmarissa@midrivers.com

Gary Schoepp
1399 22nd Ave NW
Sidney, MT 59270
action@midrivers.com

Karen Schoepp
1399 22nd Ave NW
Sidney, MT 59270

Chris Schoepp
920 11th Street SW
Sidney, MT 59270
Chris.Schoepp@yahoo.com

Hallie Schofill
PO Box 98
Sidney, MT 59270
hallienicolesanders89
@yahoo.com

Luella Schow
Security Abstract Co
106 2nd St SW
Sidney, MT 59270
lschow@thetitleteam.com

Gary Schow
11065 Hwy 16
Savage, MT 59262

Luella Schow
Stockman Bank
11365 Hwy 16
Savage, MT 59262

Marion Schow
Box 215
Savage, MT 59262
Mlshow@outlook.com

Dennis Schroeder
Miles City Walleyes Unltd
817 S Custer
Miles City, MT 59301
denfishon@midrivers.com

Vernon Schroeder
PO Box 25
Crane, MT 59217

Charlote Schroeder
PO Box 52
CRANE, MT 59217-0052

Claire Schultz
318 11th Ave SW
Sidney, MT 59270
cschultz@sidneyhealth.org

Dan Schumacker
35173 Co Rd 129W
Sidney, MT 59270

Max Schwart
11553 Hwy 16
Crane, MT 59270

Max Schwartz
Box 4
Crane, MT 59217

Max Schwartz
Box 8
Crane, MT 54217

Bernard Schwartzenberger
710 8th Street, SE
Sidney, MT 59270

Tom Scott
4340 Mariental Dr #1
Billings, MT 59106

Randall & Patti Jo Searer
34518 COUNTY ROAD 115
Savage, MT 59262

Gary Sedlacek
16042 35th St NW
Fairview, MT 59221

Ben Sedlacek
16072 35th St NW
Fairview, MT 59221

Pat Sedu
2476 South 27 R
Ballanturo, MT 59006

Craig Seeve
10837 Co Rd 340
Savage, MT 59262

Donna Seeve
10837 CR 340
Savage, MT 59262

Chris Seeve
91 Morgan Creek Lane
Bozeman, MT 59718
chris@cvasinc.com

Alan Seigfreid
PO Box 387
Sidney, MT 59270
seigfreidagency@midrivers.com

Dave & John Seitz
114 2nd Ave SE
Sidney, MT 59270

John Seitz
Seitz Insurance
1204 2nd Ave NE
Sidney, MT 59270

William J & Philip Seitz
PO Box 326
Sidney, MT 59270

Steve Seldow
603 8th Ave SW
Sidney, MT 59270
steveseldow@rocket.com

Jamie Selting
35501 CR 131
Fairview, MT 59221

Michael I. Selvage
Sisseton-Wahpeton Sioux Tribe
P.O. Box 509
Agency Village, SD 57262-0509

Janet Sergent
301 14th Ave SW
Sidney, MT 59270

Linda Severson
12908 Co Rd 353
Sidney, MT 59270

Kami Sevier
204 W Bell
Glendive, MT 59330
ksevier@stockmanbank.com

Craig Sharpe
Montana Wildlife Federation
P.O. Box 1175
Helena, MT 59624

Willie Sharpe
Blackfeet Nation
P.O. Box 850
Browning, MT 59417

Zachary Shattuck
Upper Basin Pallid Sturgeon Workgroup
1420 East 6th Avenue, P.O. Box 200701
Helena, MT 59620-0701
ZShattuck@mt.gov

B.B. Shepard
65 9th St. Island Drive
Livingston, MT 59047

Ned Shinniel
11499 Highway 16
Savage, MT 59262

Olivia Sifwentes
806 2nd St. SW
Sidney, MT 59270

Harold Simard
PO Box 787
Glendive, MT 59330

Edward Simmons
PO Box 211
Fairview, MT 59221

Cindy Singer
113 7th Ave SW
Sidney, MT 59270

H. Jay Sisel
3213 3rd Ave NE
Sidney, MT 59270

Steve Skaalure
3613 Corbin Drive
Billings , MT 59102
sskaalure@betasped.com

Camilla Skinner
Seitz Insurance Agency
PO Box 326
Sidney, MT 59270
ccs.skinner@gmail.com

Matt Skosland
NRDC
317 Mendenhall
Bozeman, MT 59715
mskosland@nrdc.org

Henning Skov
35167 CR 128
Sidney, MT 59270
hskov@midrivers.com

Thomas Sluiter
11650 N FORK RD
Polebridge, MT 59928-9791

Geri Small
Northern Cheyenne Tribe
P.O. Box 128
Lame Deer, MT 59043

Adam Smith
Richland County Public Works
2140 West Holly Street
Sidney, MT 59270
asmith@richland.org

Lindsay Smith
242 Red Wisng Road
Sidney, MT 59270
lindsayholum@hotmail.com

Doug Smith
DS Farms
6047 CR 1011
Bainville, MT 59212

Joe Solf
409 3rd St SE
Sidney, MT 59270
joe.solf@gmail.com

Eugene Sondeno
13695 Co Rd 356
Fairview, MT 59221

Eugene Sondeno
PO BoX 321
Fairview, MT 59221

Matt Sondero
34693 R 117
Sidney, MT 59270
msondero@hotmail.com

Nate Sorensen
10459 Co Rd 340
Savage, MT 59262

Harold Sorensen
11199 HIGHWAY 16
Savage, MT 59262

Harold Sorensen
117 10th Ave SW
Sidney, MT 59270

Gary Sorensen
506 3rd St NE
Sidney, MT 59270

Lyle Sponheim
3651 Hwy 58
Fairview, MT 59221

Jim Squires
110 Janiper Ave
Glendive, MT 59330
csquires@midrivers.com

Mike Staff
35117 CR 125
Sidney, MT 59270

Gail Staffanson
3404 CR 122
Sidney, MT 59270
gailamiller@hotmail.com

Scott Staffanson
Montana HD 35 Representative
34704 CR 122
Sidney, MT 59270
scottstaffanson@gmail.com

A. T. Stafne
Assiniboine and Sioux
Tribes of Fort Peck
P.O. Box 1027
Poplar, MT 59255

LaVondra Stanley
Sidney Chamber of Commerce &
Agriculture
909 S. Central Avenue
Sidney, MT 59270
schamber2@midrivers.com

Teresa Stedman
Norby Inc.
715 9th Ave SW
Sidney, MT 59270

Sabrina K Steer
252 77th
Delano, MN 55328

Mike Steffan
12550 Co Rd 351
Sidney, MT 59270

Chadd Steffec
321 W. Main Street
Sidney, MT 59270

James F Steffen
10203 Co Rd 340
Savage, MT 59262-9455

Andrew Steiger
37020 State Avenue
Billings, MT 59101
apsteiger@westernsugar.com

Craig Steinbeisser
11812 Co Rd 348
Sidney, MT 59270

Don Steinbeisser
11812 CR 348
Sidney, MT 59270
donjr@midrivers.com

Dan Steinbeisser
11918 CR 348
Sidney, MT 59270

Don Steinbeisser
Lower Yellowstone Irrigation
Commission
11918 CT 348
Sidney, MT 59270

Craig Steinbeisser
12246 Country Road 348
Sidney, MT 59270
craigs@midrivers.com

Karen Steinbeisser
12246 CR 348
Sidney, MT 59270

Ryan Steinbeisser
12246 CR 348
Sidney, MT 59220
ryanstein96@hotmail.com

John Steinbeisser
1599 9TH AVE SW
Sidney, MT 59270

Jim Steinbeisser
33974 CR 127
Sidney, MT 59270
jamesse@midrivers.com

Jim Steinbeisser
33974 CR 127
Sidney, MT 59270
jamese@midrivers.com

Russel Steinbeisser
34629 CR 120
Sidney, MT 59270
ristein@midrivers.com

Shay Steinbeisser
Sidney Sugars
34629 CR 120
Sidney, MT 59270
shay_steinbeisser@hotmail.com

Bill Steinbeisser
35154 Co Rd 128
Sidney, MT 59270

David Steinbeisser
35166 Co Rd 128
Sidney, MT 59270

Larry & Paula Steinbeisser
35258 CR 130
Sidney, MT 59270

Janet Steinbeisser
5931 Sandalwood Dr
Billings, MT 59106

Joe G. Steinbeisser
690 22nd Ave NW
Sidney, MT 59270
jmstein@midrivers.com

Joe Jr Steinbeisser
690 22nd Ave NW
Sidney, MT 59270

Mary Ann Steinbeisser
690 22nd Ave NW
Sidney, MT 59270
jmstein@midrivers.com

Craig Steinbeisser
PO Box 1315
Sidney, MT 59270

Shay Steinbeisser
34629 CR 120
Sidney, MT 59270
shay.steinbeisser@hotmail.com

Don Steinbeisser Jr
11812 CR 348
Sidney, MT 59270
donr@midrivers.com

Cole Steinberger
1599 9th Ave SW
Sidney, MT 59270
c.steinberger 2011@yahoo.com

Cody Steinbussen
1599 9th Ave SW
Sidney, MT 59270

Cole Steinbussen
1599 9th Ave SW
Sidney, MT 59270
csteinbussen@yahoo.com

Johnny Steinbussen
1599 9th Ave SW
Sidney, MT 59270

Larry Steinbussen
1599 9th Ave SW
Sidney, MT 59270

Garry Steinley
12838 Co Rd 353
Sidney, MT 59270

Robbie Stepan
3213 Hwy 58
Fairview, MT 59221

Louis Stepan
PO Box 376
Helena, MT 59601

Michael Steppe
12706 Co Rd 353
Sidney, MT 59270

Mark Stermitz
Crowley Fleck
305 South 4th Street
Missoula, MT 59801-2701

Sharon Stevens
1901 Bitteroot Dr
Sidney, MT 59270

Leonard Stevenson
34705 CR 122
Sidney, MT 59270

Sandy Stimson
209 Soth B Street
Livingston, MT 59047

Henry Stip
808 9th Ave SW
Sidney, MT 59270

Jeri Stone
721 3rd St. NE
Sidney, MT 59270

Russell Stotts
35081 CR 123T
Sidney, MT 59270

Tami Stotts
35081 CR 123T
Sidney, MT 59270
dealer1@midrivers.com

Jane Strasheim
109 Lincoln Ave So
Sidney, MT 59270

Marvin & Toni Strasheim
12520 CR 352
Sidney, MT 59270

Matt Strecker
Stoecker Ecological
PO Box 2067
Santa Barbara, CA 93120
matt@stoeckerecological.com

Philip S Strobel
US Environmental
Protection Agency
1595 Wynkoop Street
Denver, CO 80202-1129

Rick Strohmyer
Department of Natural Resources and Conservation
321 Main Street
Miles City, MT 59301

Billy Struckman
Struckman Corp.
11217 CR 344
Savage, MT 59261

Bradley Strupp
PO Box 22
Crane, MT 59217

Tim Stubstad
35223 Co Rd 127
Sidney, MT 59270

Floyd Sullivan
1003 Spirit Avenue
Fairview, MT 59221

Linda Sullivan
103 S. Pleasant Avenue
Fairview, MT 59221

Mark Summerville
PO Box 1666
Sidney, qMT 59270

Lora Sundheim
2811 Niehenke Dr
Sidney, MT 59270

Robert & Renee Sundheim
35194 Hwy 201
Fairview, MT 59221

Donna Sundsted
3205 CR 120
Sidney, MT 59270

Byron Sunwall
PO Box 83
Savage, MT 59262

Diane Swanson
Box 1207
Sidney, MT 59270
adsales@esidney.com

Joyce Sweley
35178 Co Rd 127
Sidney, MT 59270

George B Swenson
954 Lincoln Ave NW
Sidney, MT 59270

Brett Swift
American Rivers –
Northwest Regional Office
320 SW Stark St., Suite 412
Portland, OR 97204

Jim Taylor
Yellowstone Bank
PO Box 7
Laurel, MT 59044

Gene Terland
Bureau of Land Management
5001 Southgate Drive
Billings, MT 59101

Jon Tester
United States Congress
122 West Towne
Glendive, MT 59330

Kathleen Teter
1994 RD 3 N
Huntley, MT 59037
kteter@yecomt.com

Casey Thiel
1807 S. Central
Sidney, MT 59270

Dexter Thiel
Agricultural Enterprises
807 S Central Ave
Sidney, MT 59270
thielbro@midrivers.com

Dwitht Thiessen
33503 CR 116
Savage, MT 59262

Lester Thompson
Crow Creek Sioux Tribe
P.O. Box 50
Fort Thompson, SD 57339-0050

George Thurman
Sac and Fox Nation of
Missouri in Kansas & Nebraska
305 North Main Street
Reserve, KS 66434

Jeff Tiberi
Montana Association of
Conservation Districts
501 North Sanders
Helena, MT 59601

Don Tiffany
201 Georgetown Dr
Glendive, MT 59330

Patricia Tjelde
35359 Co Rd 129
Sidney, MT 59270

Jim Todd
R35 Green Mt. Drive
Ryegate, MT 59074
gmar@midrivers.com

Tyler Tombie
6480 CR 342
Savage, MT 59262
tctombie@gmail.com

Mark Tombre
10477 Co Rd 342
Savage, MT 59262

Mark Tombre
34185 CR 105
Savage, MT 59262
tombre@midrivers.com

Joe Topp
12281 Cr 347c
Sidney, MT 59270

Colleen Topp
Sidney Job Service
211N Central Ave
Sidney, MT 59270
ctopp@mt.gov

Joe Topp
34790 CR 120
Sidney, MT 59270
diamond-t@yahoo.com

Mandi Tows
251 Wind Cave Cr
Billings , MT 59103
mandi-jo40@hotmail.com

Kim Trangmoe
Glendive Chamber of
Commerce and Agriculture
808 North Merrill
Glendive, MT 59330

David Trimpe
Bureau of Reclamation
2021 4th Avenue N
Billings, MT 59102

Kevin D Tripp
12281 CR 347
Sidney, MT 59270
k5tjk@yahoo.com

Roger Trudell
Santee Sioux Nation
108 Spirit Lake Avenue, West
Niobrara, NE 68760

Brittany Trushel
717 N Montana Ave
Bozeman, MT 59715

Long Family Trust
5928 S VAN GORDON ST
Littleton, CO 80127

John Tubbs
Montana Natural Rescoure &
Conservation
PO Box 200701
Helena, MT 59620

Larry Tveit
2075 Sage Lily Drive
Sidney, MT 59270

Wyatt Uecker
509 8th Ave Sw
Sidney, MT 59270

Michelle Ueruaga
Law Office of Michelle
Uberuaga Z
PO Box 711
Livingston, MT 59047

Michael Ulrich
212 Interstate Ave
Sidney, MT 59270

Doug Unruh
431 Rd 523
Bloomfield, MT 59315
unruh@midrivers.com

Ron Utgaard
805 6th St SE
Sidney, MT 59270
utgrwg@midrivers.com

Lori Utter
1602 Bitterroot Dr
Sidney, MT 59270

Jeff Van den Noort
Montana Chapter of the Sierra Club
P.O. Box 231
Missoula, MT 59806

Cheryl Van Every
12877 CR 353
Sidney, MT 59270
cvanevery@stockmanbank.com

Wade & Cheryl Van Every
12877 CR 353
Sidney, MT 59270
vanevery@midrivers.com

Kenny Vannatta
724 2nd St. NE
Sidney, MT 59270

Tiffany Vanosdall
USACE
1616 Capitol Ave
Omaha, NE 68102
tiffany.k.vanosdall
@usace.army.mil

Carl Venne
Crow Nation
P.O. Box 159
Crow Agency, MT 59022

Richard Verhasselt
10814 Co Rd 340
Savage, MT 59262

Stephanie Verhasselt
Richland County Clerk &
Recorder/Election
Administrator
201 West Main
Sidney, MT 59270
sverhasselt@richland.org

Terry Verhasselt
35019 Co Rd 122
Sidney, MT 59270

Nancy Verschot
Box 96
Lambert, MT 59243
nverschot@richlandfair.com

High Plains Veterinary
Clinic, Inc.
1010 10th Ave SE
Sidney, MT 59270

Kaitlyn Vitt
1116 W Main St
Sidney, MT 59270

Matt Vitt
1116 W Main St
Sidney, MT 59270

Kurt Voight
Box 543 Buffalo Jump Ranch
Nye, MT 59061
kvoight@nemont.net

Daniel G. Voolkann III
3925 Fox Farm Road
Missoula, MT 59802
sandyvolkmann@bresnan.net

William Voss
35379 Co Rd 131
Fairview, MT 59221

Gary Wachechek
PO Box 488
Sidney, MT 59270

Jeffrey W. Waddell
12282 Western St
Sidney, MT 59270

Craig Wagner
1 Fairgrounds Road
Glendive, MT 59330

Barbara & Steve Walla
416 35th Ave NW
Sidney, MT 59270

Kathleen Waller
Box 203
Medraine Lake, MT 59247
kaw71952@gmail.com

John Wardell
EPA Region 8 Montana Office
Federal Building, 10 W 15th St, Ste 3200
Helena, MT 59626

Jackie Washecheck
PO Box 488
Sidney, MT 59270

James Watts
13209 Co Rd 354F
Fairview, MT 59221

George Watts
712 7th Ave SW
Sidney, MT 59270

Sravy Wayra
1 Fairgrounds Road
Glendive, MT 59330

Mike Weber
PO Box 447
Fairview, MT 59221

Marcus Wells
Three Affiliated Tribes
404 Frontage Road
New Town, ND 58763

Jody Wells
The Roundup
PO Box 1207
Sidney, MT 59270
publisher@esidney.com

Joshua Weston
Flandreau Santee Sioux Tribe
P.O. Box 283
Flandreau, SD 57028

Brandi Wevley
1171 Hwy 16
Sidney, MT 59270

Ron Whited
10745 CR 355
Sidney, MT 59270

Tracy Whitehead
1 Bus Lane
Laurel, MT 59044
dtjwg2@msn.com

Wade Whiteman
2109 Bitteroot Drive
Sidney, MT 59270

Dennis Wick
35252 Co Rd 127
Sidney, MT 59270

WILDCAT MINERALS LLC
Wildcat Minerals LLC
Box 18311
Golden, CO 80402

Lynda Williams
1202 Cedar
Sidney, MT 59270

Burt Williams
The Nature Conservancy
2721 2nd Ave North
Billings, MT 59101

Neil Williams
516 9th Ave SW
Sidney, MT 59270

Gordon Wind, P.E.
Wind Engineering, LLC
38246 Pinewood Drive
Polson, MT 59860
windengineeringllc@gmail.com

Terry Wink
3026 Morledge St
Billings, MT 59102

Keith Winter
2162 High Creek Road
Williston, ND 58834

Kevin D Winter
8791 Silverberry Ave
Elk Grove, CA 95624

Rebecca Wodder
American Rivers –
National Office
1101 14th Street NW,
Suite 1400
Washington, DC 20005

Shelley Wold
1251 Wold Rd
Laurel, MT 59044
ashlawn22@gmail.com

Larry Wright
Ponca Tribe of Nebraska
P.O. Box 288
Niobrara, NE 68760

Judy Wyman
305 8th Ave NE
Sidney, MT 59270

Larry Wyman
814 6th Ave SE
Sidney, MT 59270

Danny Wyruas
Box 81705
Billings, MT 59108
dwyruas@gmail.com

Ellen Wznick
Sidney Herald
310 2nd Avenue NE
Sidney, MT 59270
heraldsales@sidneyherald.com

Anne Yates
Montana Department of
Natural Resources and Conservation
1625 11th Ave
Helena, MT 59601

John Yellow Bird Steele
Oglala Sioux Tribe
P.O. Box 2070
Pine Ridge, SD 57770

Mike Yinger
PO Box 307
Bigfork, MT 59911
earmountain@gmail.com

Dan Young
Richald Co Conservation District
13689 CR 352
Fairview, MT 59221

Loren H Young
Loren Young Inc
13705 CT 351
Fairview, MT 59221
lyoung@richland.org

Danny Young
Richland Co.
Conservation District
2745 W Holly St
Sidney, MT 59270

James Young
PO Box 588
Sidney, MT 59270

Hugh Zackheim
315 Ming Place
Helena, MT 59601
montanazac@mac.com

Gregory Zadow
35201 Co Rd 127
Sidney, MT 59270

Andrea Zelinsky
34982 Highway 23
Sidney, MT 59270
andzelin@midrivers.com

Zenergy Inc
1600 S Yale Ave
Tulsa, OK 74131

Lisa Ziler
12647 CR 350
Sidney, MT 59270
ziler@midrivers.com

Scott Ziler
12647 CR 350
Sidney, MT 59270

Penny Zimmerman
Senator Testee
121 W Towne
Glendive, MT 59330
penny.zimmerman@testee.senate.gov

Clyde Zimmerman
340 21st Ave NW
Sidney, MT 59270

Bill Zimmerman
903 11th St Sw
Sidney, MT 59270

Clyde Zimmerman
PO Box 317
Sidney, MT 59270
clyde7130@gmail.com

Anaconda Sportsmens Club
#2 Cherry
Anaconda, MT 59711

Oneok
BAKKEN PIPELINE LLC
100 W 5th St
Tulsa, OK 74103-4279

Riverbed Engineering, LLC
102 Third St - PO Box 2979
Pagosa Springs, CO 81147
cphilips@riverrestoration.com

Hubert Fisheries
Consulting, LLC
1063 Colina Drive
Laramie, WY 82702-5014
hubertfisheries@gmail.com

Art Gehnert
1089 2nd Cottonwood Grove
Glendive, MT 59330
artge@midrivers.com

Montana Association of Conservation
Districts
1101 11th Ave
Helena, MT 59601
macdnet.org

Gavilon Grain LLC
11th Con Agra Drive
Omaha, NE 68102

J & S Farms, LLC
12 Stoney Acres Ln
Glendive, MT 59330

Green Gable Inc
12026 HIGHWAY 16
Sidney, MT 59270-6334

Sidney Public Schools
121 5th St SW
Sidney, MT 59270

Exploration Drilling
12653 Co Rd 352
Sidney, MT 59270

A&M Structuring 7 LLC
13819 60TH ST NW
Williston, ND 58801

Williston Herald
14 West 4th Street
Williston, ND 58802

Montana Fish Wildlife & Parks
1420 E 6th Ave
Helena, MT 59601

Pheasant Run Apartments LLC
151 LOWER LUTHER RD
Red Lodge, MT 59068-9534

Oakland Fischer LLC
15341 31ST ST NW
Cartwright, ND 58838-9641

Ridgeview 20 LLC
1801 TIBURON BLVD,
Tiburon, CA 94920

Meridian Pacific
1801 Tiburon Blvd, Ste 800
Tiburon, CA 94920

Richland County
201 W MAIN ST
Sidney, MT 59270-4035

Great Falls Tribune
205 River Drive South
Great Falls, MT 59405

Applied Geomorphology, Inc.
211 N. Grand - Suite C
Bozeman, MT 59715
kboyd@appliedgeomorph.com

Miller Ecological
Consultants, Inc.
2111 S. College Ave, Unit D
Fort Collins, CO 80525
wjmiller@millereco.com

Northern Plains Reource Council
220 South 27th Street, Ste A
Billings, MT 59101
info@northernplains.org

Eagle Oilfield Services, LLC
225 14TH ST SE
Sidney, MT 59270-6310

Montana Convention of
7th Day Adventist
2475 S CENTRAL AVE
Sidney, MT 59270

MPEG Land Development LLC
2825 3RD AVE N STE 600
Billings, MT 59101-1961

Yellowstone Farms LLC
2901 CHENEY CREEK RD
Cartwright, ND 58838-9742

Josh
Coffee Commercial LLC
2944 GREGORY DR S
Billings, MT 59102-0500

Sidney Herald
310 2nd Avenue NE
Sidney, MT 59270

Dawson County Economic Development Council
313 West Valentine
Glendive, MT 59330

Watco Companies, LLC
315 West 3rd St
Pittsburg, KS 66762

Northwest Pipe Fittings INC
33 S 8TH ST W
Billings, MT 59102-5840

Western Outfield Supply Co
3404 STATE RD
Bakersfield, CA 93308-4538

KDN Farms, Inc.
34469 CR 110
Savage, MT 59262

Custom Fencing & Welding, Inc.
34609 HIGHWAY 200
Sidney, MT 59270

Taylor
34705 CR 120
Sidney, MT 59270

KC Transport LLC
35212 COUNTY ROAD 127
Sidney, MT 59270

Big Blackfoot Riverkeeper
35701 Nine Mile Prairie Road
Greenough, MT 59823
joconnell@blackfoot.net

NST IP LLC
527 MARQUETTE AVE, SUITE 500
Minneapolis, MN 55402

Western Catering Service. Inc.
600 S MAIN ST
Butte, MT 59701-2534

Mongoose Trucking & Hot Shot LLC
727 N Waco Suite 400
Wichita, KS 67203

Prewitt & Company LLC
756 10TH AVE SE
Sidney, MT 59270

Glendive Chamber of Commerce
808 N. Merrill
Glendive, MT 59330
chamber@midrivers.com

XTO Engery, Inc.
810 HOUSTON ST
Fort Worth, TX 76102-6203

Sidney Chamber of Commerce
909 S Central Ave
Sidney, MT 59270
schamber@midrivers.com

Buffalo Rapids #2
Terry, MT 59349

Craig Wagner
Fairgrounds Road
Glendive, MT 59330
craigwagner@midrivers.com

Minot Daily News
P.O. Box 1150
Minot, ND 58702

Miles City Star
P.O. Box 1216
Miles City, MT 59301

Banner Transportation Company
P.O. Box 3866
Enid, OK 73702

Bismarck Tribune
P.O. Box 5516
Bismarck, ND 58506

Randy
Blackfoot Challenge
PO Box 103
Ovando, MT 59854

Sierra Club
PO Box 1290
Bozeman, MT 59771
montana.sierraclub.org

Shannon
PO Box 1401
Sidney, MT 59270

Savage Farm LLC
PO BOX 1408
Hamilton, MT 59840

C & M Oilfield Service LLC
PO BOX 164
Baker, MT 59313-0164

Parks & Fish Wildlife
PO BOX 200701
Helena, MT 59620-0701

Ravalli Co. Fish &
Game Assoc.
PO Box 238
Hamilton, MT 59840

Rosebud-Treasure Wildlife Assoc.
PO Box 262
Forsyth, MT 59327

Custer Rod & Gun Club
PO Box 303
Miles City, MT 59301
custerrodandgun@gmail.com

Western Area Power
Administration
PO Box 35800
Billings, MT 59107
hanebury@wapa.gov

Montana Partners for Fish & Wildlife
PO Box 66
Ovando, MT 59854
greg_neudecker@fws.gov

Red Rock Power Inc
PO Box 725
Havre, MT 59501-0725

Clark Fork River Coalition
PO Box 7593
Missoula, MT 59807

Nature Conservancy
PO Box 8316
Missoula, MT 59807

Headington Oil LP
PO Box 870849
Mesquite, TX 75187

Trout Headwaters Inc.
PO Box 222
Livingston, MT 59047
troutheadwaters.com

Comradsen Brothers, Inc.
RR 2
Savage, MT 59252

Diahn Ruffatto
Yellowstone Bank
120 2nd Street NW
Sidney, MT 59270

Barbara Reidle
3341 Hwy 58
Fairview, Mt 59221-9357

Name	Email Address
A Adams	mailndp-gop@yahoo.com
A Bonvouloir	ra3ajw@sbcglobal.net
a c	anthonyhelps@gmail.com
a c	aries200@optonline.net
a f	elaan2@yahoo.com
A Frey	Aefrey03@gmail.com
A Haley	soleil2k2@yahoo.com
A Keller	AKeller@KeltekTool.com
A L	Aalisbin@gmail.com
A Mueller	afogarty8@hotmail.com
A S	marzallie@msn.com
A Stavros	coyotebreath09@gmail.com
A Thebeau	thebeau@sccoast.net
A Titelman	Concordegp@aol.com
A. Joan Gravel	ajgravel29@yahoo.com
A. Kathleen PANCAKE	akpancake33@gmail.com
A. Marbro Rush-Osborn	glendos@earthlink.net
A. Titelman	Concordegp@aol.com
A. Todd	Todd87701@gmail.com
A. Zamudio	akzamudio@yahoo.com
A.B. Gunn	magunn@centurytel.net
A.G. Hansen	rustyrange@aol.com
A.J. Rosenbohm	ajrosenbohm@att.net
A.L. Hern	Originalthinkr@sbcglobal.net
A.L. Steiner	asteinerny@gmail.com
A.M. Volz	ellaminnowpeas@hotmail.com
Aaeron Robb	antigonemydear@gmail.com
Aaron Bland	aaronnbland@gmail.com
Aaron Gayken	agayken75@yahoo.com
Aaron Honore	aaron_honore_@hotmail.com
Aaron Hopkins	aborialis1@aol.com
Aaron Infante-Levy	aaronil@yahoo.com
Aaron LaMont	Ajlamont7@gmail.com
Aaron Libson	aali4919@aol.com
Aaron Marr	aaronbaron01@hotmail.com
Aaron Moore	a1ronmore@aim.com
Aaron Ucko	amu@alum.mit.edu
Abby Bateman	Ajb422@gmail.com
abby miller	abikmiller@gmail.com
Abdallah Al-Khataybeh	pink_flyer@hotmail.com
Abigail Ann Fanestil	abbiesroad@gmail.com
Abigail Bates	abbiebates@hotmail.com
Abigail Gindele	agindele@gmail.com
Abigail Howes	abigail_howes@yahoo.com
Abigail Lang	langlang8@gmail.com
Abigail Robinson	chornco@aol.com
Abigail Rome	abirome2@gmail.com
Abigail van Alstyne	avanalstyne@qcwdr.com
Acadia Cutschall	acadia.experiment@gmail.com
Achmad Chadran	dunia.deeds@gmail.com
Ada Khoury	inthemoment007@yahoo.com
Adam Blumenthal	graphicspot@yahoo.com
adam cole	adam@clipper.net
Adam Cornford	adamfcornford@yahoo.com
Adam Elson	advancleave@yahoo.com
Adam Haas	Adamhaas@mac.com
Adam Savett	asavett@gmail.com
Adam Sullivan	asulliva79@hotmail.com
Adam Trauger	AdamT9@gmail.com

Adama Hamilton	eshyouhod@earthlink.net	Akankha Perkins	akankhap@gmail.com
Addie Lucas	Ajjlucas@aol.com	Akila Mosier	soulhunter379@gmail.com
Addie Smock	addiesmock@yahoo.com	Al Ainsworth	chewah@teleport.com
Adele Gamble	adelegam@pacbell.net	Al Brockway	apbrockway@aol.com
Adele True	True.adele@yahoo.com	al chazin	allen.chazin@verizon.net
Adeline Wong	catailynn@yahoo.com.sg	al ezell	ezell777@comcast.net
Adella Albiani	aka3@proev.us	Al McCullough	mmc@hiwaay.net
Adina Parsley	dickandpat3@gmail.com	Al Monroe	al_monroe@veyance.com
Adria Siraco	Asiraco25@aol.com	Alan Bundy	laandy1@yahoo.com
Adrian Bergeron	adrianbergeron@yahoo.com	Alan Canfield	canfield.alan@gmail.com
Adrian Smith	adsmith57@charter.net	Alan Christianson	almchri@aol.com
Adriana Bryan	searoad2@msn.com	Alan Dahl	Macfrugel@gmail.com
Adriano Janezic	adriano.janezic@gmail.com	Alan Fraser	afraser@ix.netcom.com
Adrienne Altman	laconda@sbcglobal.net	Alan Goodrich	bigal7491@yahoo.com
Adrienne Bortree	ablariel@yahoo.com	Alan Haggard	quantumcipher@gmail.com
Adrienne Ross	Ahlight@gmail.com	Alan Hild	enahilden@bresnan.net
Adrienne Simmons	ajs89@humboldt.edu	Alan J Nishman	jodypenny@crocker.com
Adrienne Tucker	atucker2573@gmail.com	Alan Jasper	alj2727@gmail.com
Aerie Youn	Teamgoodkarma@yahoo.com	alan johnson	alanjohn@hawaii.edu
agneta lambert meuller	elsaagneta@hotmail.com	Alan Lambert	lechefgerard@yahoo.com
Agnetha Broecker	agnethabroecker@yahoo.de	Alan Leavitt	Lionofzion477@cs.com
Ah-li Monahan	ahlimonahan@yahoo.com	Alan McAfee	alm@loylangebox.com
ahmad abdul rahmaan	muhammad305@yahoo.com	Alan Michels	ammichels@fsu.edu
Ai McCarthy	aym73@hotmail.com	Alan Olander	aolander@arvig.net
Aida Sheets	aida@tampabay.rr.com	alan papscun	alan@papscun.com
Aimee Coogan	aimeecoogan@verizon.net	Alan Reynolds	alrey@cox.net
Aimee Had	aimeehad101@hotmail.com	Alan Shute	ahshute@msn.com
Aimee Morein	photochk1@aol.com	Alan Strauss	ajlex@rcn.com
Aisling Eller	ae226@nau.edu	Alan Wojtalik	alan_wojtalik@hotmail.com
Aixa Fielder	aixa1@sbcglobal.net	Alana Paul	alanaNpaul@yahoo.com

ALBA MORILLO	albitamorillo@gmail.com	Alex Vollmer	abv5@cornell.edu
Albert Bechtel	bigjbechtel4711@msn.com	Alex Vuorinen	avuorinen1698@gmail.com
Albert Marra	tonytke@yahoo.com	alexa kasper RN	alexaoct@hotmail.com
albert rogat	arsailman1@yahoo.com	Alexander Dolowitz	adolowitz@yahoo.com
Albert Ward	aldw40@yahoo.com	Alexander Flemmer	a2flemmer@gmail.com
Alberto Agirre	aagirre@anbiotek.com	Alexander Knopf	alexander.knopf@ssa.gov
Alberto Vazquez	avazquez2334@gmail.com	Alexander Yeung	alexyeung2009@hotmail.com
Alec Hendrickson	alechendrickson@mac.com	Alexandr Yantselovskiy	yalexandr@ukr.net
Alec Mento	amento8@gmail.com	Alexandra Charney	sashatrvl@yahoo.com
Alek Hyra	886426@gmail.com	Alexandra Denman	alexandradenman@aol.com
Aleks Kosowicz	guerillawordfare@yahoo.com	Alexandra Eaton	herbqueen1@aol.com
alena jorgensen	aj.1156@yahoo.com	Alexandra Sale	alexandra42@q.com
alessa lanning	alessalanning@yahoo.com	Alexandra Tumarkin	msatduck@verizon.net
Alex Almeida	Apogee711@gmail.com	Alexandre Kaluzhski	kaluzhski@att.net
Alex Barnes	alexbarnes1234@gmail.com	Alexey Korzuchin	alexey525@yahoo.com
Alex Benjamin	alex@homesurgery.com	Alexis Fernandez	alexisfernandez1978@yahoo.com
Alex Borichevsky	audi4cs@yahoo.com	Alexis Morris	amorris@gate.net
Alex Boucher	thebooch@gmail.com	Alexis Nazario	Anazario83@yahoo.com
Alex Escott	alexbescott@gmail.com	ALEYNE LARNER	aleyne00@gmail.com
Alex Graas	alexgraas@hotmail.com	Alfred Ackerknecht	al.ackerknecht@sbcglobal.net
Alex Harris	alex.harris@mcckc.edu	Alfred Andersen	a_andersen@live.com
Alex Keir	alexkeir01@yahoo.com	Alfred Burk Jr	Alburkjr@msn.com
Alex Kosnett	alex.kosnett@gmail.com	Alfred Mancini	alfredmancini@verizon.net
Alex Kuhl	alexrkuhl@hotmail.com	alfred staab	astaab@sbcglobal.net
Alex MacCollom	alexmacc@juno.com	Ali Van Zee	yourali747@gmail.com
Alex Overton	alexoverton7@gmail.com	Alice & Robert Stevenson	alicejeanstevenson@gmail.com
Alex Par	petisa57@yahoo.com	Alice Bartholomew	aiw777@yahoo.com
Alex Posey	AHPosey@gmail.com	Alice Bowron	lupinsgalore@gmail.com
alex robbi	amarcrobbi@gmail.com	Alice D Gray	ia23.wing@gmail.com
Alex Stone	ralexstone@gmail.com	Alice Goss	allie@whidbey.com

Alice Green	alice_green@msn.com	Allain Hale	allainhale@hotmail.com
Alice Henneberg	alicehenneberg@gmail.com	Allan Peterson	apeterson71@mchsi.com
Alice Kinser	aliceandrew@hotmail.com	Allen Aronson	aronsonad@yahoo.com
Alice McGough	wind333life@live.com	Allen Olson	tctcdaboyz@gmail.com
Alice Naegele	acn727@yahoo.com	Allen Royer	algroyer@yahoo.com
Alice Parra	alice.e.parra@gmail.com	Allen Terrill	aterrill@flash.net
Alice Polesky	askalice@pacbell.net	Allie Tennant	allietennant@gmail.com
Alice Ross-Smith	arsilvermtn@gmail.com	allison alberts	aaalberts@hotmail.com
Alice Shields	afshields@earthlink.net	Allison Anderson	alliesw@yahoo.com
Alice Stehle	astehle@zoominternet.net	Allison Bartlett	bartlett.ae@gmail.com
Alice Thigpen	alicediving@yahoo.com	Allison Bening	abening1186@yahoo.com
Alice WILLIAMS	mamaleo1224@gmail.com	Allison Matthews	apaige071703@att.net
Alicia Jackson	Lametreza@yahoo.com	Allison Ostrer	aostrer@hotmail.com
Alicia Kern	aliciajkern@yahoo.com	Allison Petroccia	allisonrmp@gmail.com
Alicia Ricketts	alricketts2013@gmail.com	Allyn Talg	allyn.talg@gmail.com
Alicia Rues	aarues@att.net	Aloysius Wald	ajwaldtwo@yahoo.com
Alicia Snow	alicia_snow@sbcglobal.net	Alva Pingel	AFPing3@charter.net
Alisa Battaglia	innerdiamond@gmail.com	Alvin Goldman	goldmanalvin@me.com
Alisa Dunn	dunn_alisa@yahoo.com	Alyce Long	loviepete@aol.com
Alisha BeGell	abegell@yahoo.com	Alycen Ozawa	atruevessel@live.con
Alison Anderson	anderaa@upenn.edu	Alyss Sanner	nevada01@aol.com
Alison Horn	alisonbhorn@gmail.com	amado nunez	necrowraith9@yahoo.com
Alison Kellom	alison.kellom@verifiedbeef.net	Amalia Ramirez Garcia	marihinita@gmail.com
Alison Massa	massa_alison@yahoo.com	Amanda Clark	939aclark@gmail.com
alison merkel	peepsandbaby@gmail.com	Amanda Collins	Amandachasecollins@yahoo.com
alison sebesta	alyakm80908@yahoo.com	Amanda Davis	kethry212@gmail.com
alison van dusen	alisonvandusen@yahoo.com	Amanda Dickinson	bettyyakima@aol.com
Alison Vergenont	alison-vergenont@daines.senate.gov	Amanda Fenick	amandafenick@gmail.com
Alison Wasielewski	alisonwas@aol.com	Amanda Hardesty	tomoamha@evcohs.com
Alix Keast	Alixk3@gmail.com	Amanda Hayes	hope_247@hotmail.com

Amanda Jungkuntz	ajjungkuntz@yahoo.com	Amy Kazary	amyk136@gmail.com
Amanda McLaughlin	mcla603@gmail.com	Amy Kazary	kazary@msn.com
Amanda McNeill	amcneill@dinecollege.edu	Amy Lashinski	amlashinski@stcloudstate.edu
Amanda Scuder	mandy375@yahoo.com	Amy Lippert	amy_lippert@hotmail.com
amanda seissian	chubby8@aol.com	Amy McClintock	amy.cindiman@gmail.com
Amanda Sue Rudisill	stapleton23@q.com	Amy McCoy	amyrealmccoy@gmail.com
amanda taylor	amandahipschman@hotmail.com	Amy Roberts	homerjim82@gmail.com
Amanda Tenney	Chillout8@hotmail.com	Amy Robinson	sail4days2@yahoo.com
Amanda Zangara	amandarosy@yahoo.com	Amy Robison	renaeme@yahoo.com
Amber Angel	amber.angel@mcgarrybowen.com	amy s	asm617@aol.com
Amber Coverdale Sumrall	acsumrall@cruzio.com	amy Schumacher	amyschu37@yahoo.com
Amber Gilchrist	amber.gilchrist@yahoo.com	Amy Shepard	a.shepard30@yahoo.com
Amber Haseltine	amhaseltine@gmail.com	Amy Smereck	apsmereck@att.net
Amber Lancaster	ambermwpt@yahoo.com	Amy Spude	amy.spude@gmail.com
Amber MacPherson	amacpher@gmail.com	Amy St. Clair	amy@woodsprite.org
Amelia Fusaro	afusaro@pobox.com	Amy Stoddard	atoz7978@yahoo.com
Amelie Shadout	Asamura9@hotmail.com	Amy Tajdari	a.tajdari@hotmail.com
Amitav Dash	adash@dubsanddash.com	Amy Tidd	actidd@yahoo.com
amrit khalsa	amritemt@khalsa.com	Amy Wolfe	amy17@me.com
Amy Biggs	abiggs66219@yahoo.com	Ana Alvarez	aairis@aol.com
Amy Bueno	a.bueno85@hotmail.com	Ana Chou	88anazhou@gmail.com
Amy Daugherty	adaugherty@davidedward.com	Ana Ferrus-Garcia	anafg@aol.com
Amy Dombek	amy.dombek@gmail.com	Ana Herold	anarudolph@gmail.com
Amy Hansen	pittle.r.us@gmail.com	Ana Herrero	aherrero1@hotmail.com
Amy Harlib	aharlib@earthlink.net	Ana Miller	anamiller2@gmail.com
Amy Henry	Aries4455@gmail.com	ana n	anabelnunez4321@gmail.com
Amy Heyneman	amyheyneman@gmail.com	Ana Perkins	Anajones@live.com
Amy Hiley	achiley@yahoo.com	ana ramirez	melilla68@gmail.com
Amy Holt	amylou313@hotmail.com	AnaLisa Crandall	analisa_duran@yahoo.com
Amy Hopkins	hopkinsus@cs.com	Ana-Paula Martins-Fernandes	Anapaulamfernandes@gmail.com

Anastasia Hanifan	staciehanifan@gmail.com
Anastasia Vvedenskaya	nastiav2@gmail.com
Anatoliy Pavelko	anatoliy_pavelko@yahoo.com
Anca Vlasopolos	vlasopolos@sbcglobal.net
Anddrew Sellman	sellmana@verizon.net
Andi Shotwell	andreia_shotwell@hotmail.com
Andra Dillard	Andradillard@hotmail.com
Andre West	andregwest@yahoo.com
Andrea Alexander	andidalex@gmail.com
Andrea Beltran	blastedqueen@gmail.com
Andrea Bonnett	aesabet11@yahoo.com
Andrea Cain	lygiamarie@gmail.com
ANDREA DONOHOE	adonohoe47@yahoo.com
Andrea Estrella	andrea_estrella1@yahoo.com
andrea f.	and9930@yahoo.com
Andrea Kanter	akanter53@comcast.net
Andrea Lewis	alewis@copper.net
Andrea Lieberman	anlieberman@verizon.net
Andrea Mercier	mercier.andrea2@gmail.com
Andrea Nutley	handrea@turtle.com
Andrea Silverman	yellowstone15@hotmail.com
Andrea Smith	andreasmith1985@aim.com
Andrea Snyder	Asnyder_hky@yahoo.com
Andrea Turner	windanser27@yahoo.com
Andrea Valenzuela	avalenzuela321@yahoo.com
andrea vazquez	draavc@hotmail.com
Andrea Zinn	andreazinn050@aol.com
andreas vlasiadis	avl5787@gmail.com
Andrew Bell	andrew@twintown.com
Andrew Benson	etatch@aol.com
Andrew Cadot	aacaac73@gmail.com
Andrew Calderella	007@consultingace.com
Andrew Donakowski	andy.donakowski@gmail.com
Andrew Fisher	fanof2012@gmail.com
Andrew Foy	andrewcfoy@gmail.com
Andrew Frishman	auseklis@hotmail.com
Andrew Gresko	greskoscience@aol.com
Andrew Ireland	andrewireland@mac.com
Andrew J Krotje	trout26805@aol.com
Andrew Lucia	andrewlucia3@gmail.com
Andrew Mumford	galacticempire63006@yahoo.com
Andrew Olsen	andyolsen9233@gmail.com
Andrew Pagel	glacier1134@hotmail.com
andrew pederson	soundharma@yahoo.com
Andrew Potts	andrew.potts@gmail.com
Andrew Richter	andrew.richter@aya.yale.edu
Andrew Steel	tomcarly@austin.rr.com
ANDREW TIMAN	andytiman@gmail.com
Andrew Trowbridge	adtrowbridge@liberty.edu
Andrew Williams	awilliamsmedia@gmail.com
Andris & Clarissa Jakobsosns	ajak@windstream.net
Andy Hughes	andy_hughes_99@yahoo.com
Andy Lupenko	fccsd@sbcglobal.net
Andy Lynn	ascottlynn@yahoo.com
Andy McCracken	drewmccracken@yahoo.com
Andy Parker	andy.w.parker@gmail.com
Andy Sheppard	dash1@me.com
Angela Bellacosa	angelabella100@yahoo.com
Angela Bernal	anbe80@yahoo.com
Angela Burkart	aburkart@hotmail.com

Angela Esslinger	angieesslinger@hotmail.com	Angie Dixon	angied@whidbey.com
Angela Ferrari	ferrariangela@ymail.com	Angie Heinecke	Angelajean2000@yahoo.com
Angela Galloi	Agallo@umich.edu	Angie Hris	angiehris7@yahoo.gr
Angela Hughes	scampyhughes@aol.com	Angie Mackey	asarrault@hotmail.com
angela humphries	aqhumphriesins@yahoo.com	Angie Sieb	anglsieb@aol.com
Angela Kelly	angiesfemail@yahoo.com	Angie Unruh	angie.unruh@comcast.net
Angela Kohn	angelakohn@alice.de	ANGRY VOTER	nojunk07@gmail.com
Angela Leventis	aleventi@comcast.net	Anita A	acct926@yahoo.com
Angela M. Garcia-Johnson	angie_garcia_johnson@yahoo.com	Anita Brandariz	anna12lago16@aol.com
Angela Mallard	angelabyrdmallard@yahoo.com	Anita Brehm	gypceyes@hotmail.com
Angela Martinez	angela2bella@yahoo.com	Anita Coolidge	anita@angelbase.com
Angela Mchugh	mchugh.ajc@hotmail.com	Anita Faulkner	at1faulkner@hotmail.com
Angela Miller	angela@alteredfitness.com	Anita Gwinn	alunamcwolf@gmail.com
Angela Morales	amorales@howardcountymd.gov	Anita Lock	anitalock@oberlin.net
Angela Negri	Angebaby1036@aol.com	Anita Merrigan	Anitamerrigan@rocketmail.com
Angela Orozco	angelag.orozco@gmail.com	Anita Parish	phantomcreations@msn.com
Angela Peters	aepbuffalo@aol.com	Anita Romaniuk	aromaniuk@uniserve.com
Angela Plagge	angela.plagge@gmail.com	Anita Roselius	Nenenoy@sbcglobal.net
Angela Rabon	ARabon1166@aol.com	Anita Ross	anitaross530@yahoo.com
Angela Smith	enlitened@earthlink.net	Anita Shanker	ashanker@bellsouth.net
Angela Smith	Thehairangel@gmail.com	Anita Shumaker	eanniesattic@yahoo.com
Angela Stertz	ebww234@att.net	anita simons	asimonsays@gmail.com
Angela Stuebben	Stuebben3@msn.com	Anita Von Himmel	emailavh@aol.com
Angela Sylvester	ang_s01@yahoo.com	Anita Waters	anita406@yahoo.com
angela white	angela300@live.com	Anita Woodruff	anitaw1610@gmail.com
Angelica Gomez	angieg2012@gmail.com	Anje" Waters	anjewa@gmail.com
Angelika Altum	altumjpd@hotmail.com	Anjelina Galbadores	polkadotpandaz05@yahoo.com
Angelika Braxton	angelikasbraxton@gmail.com	Ann and Doug McInnis	admcinnis@cccwifi.com
Angeline Albright	lizpicktru@yahoo.com	Ann Barnes	amnbarnes@verizon.net
Angelita O"Connor	angelita.oconnor@att.net	Ann Barton	Annbarton56@gmail.com

Ann Bein	abein@ucla.edu	Ann Seip	d56erann@aol.com
Ann Bianchi Quota	annbq.box@gmail.com	Ann Stratten	strats2@sbcglobal.net
Ann Bicking	annieweb55@gmail.com	Ann TAGAWA	anntagawa@msn.com
Ann Blanchard	blannie1@aol.com	Ann Tait	anntait@mac.com
Ann Bosworth	annbosworth@gmail.com	Ann Wiley	awileycoyote@earthlink.net
Ann Coz	acoz1966@yahoo.com	Ann Wright	anwright@umich.edu
Ann Craig	ahcraig@aol.com	Anna Cruikshank	alcruikshank1@gmail.com
Ann Dentel	aldentel@sbcglobal.net	Anna Elparin	ladyanna54@yahoo.com
Ann Eastman	annkezar@gmail.com	Anna Engdahl	annaengdahl@yahoo.com
Ann El-Moslimany	annelmoslimany@yahoo.com	Anna Jacus	wakened@gmail.com
Ann Gulick	andav@sbcglobal.net	Anna Jasiukiewicz	irbis77@wp.pl
Ann Haviland	nannniehaviland@gmail.com	Anna Kendall	kendall7879@gmail.com
ann hernday	ahernday@sonic.net	Anna Lambert	anna@annasemail.com
Ann Johnson	asalvjohn@gmail.com	Anna Louise E. Fontaine	annalouisefontaine@yahoo.ca
Ann Khambholja	candyannkhams@yahoo.com	Anna Shaughnessy	anamar325@windstream.net
Ann King	King.kay64@yahoo.com	Anna Shenk	ashenkpa@gmail.com
Ann Koppelman	Ask@volksmail.com	Anna Simle	asimle@gmail.com
Ann Lewis Shields	annlshields@gmail.com	Anna Stein	annastein28@gmail.com
Ann Long	annkinneylong@gmail.com	Anna Szaszorowska	kothelmut@o2.pl
Ann Marie Ross	Kamots73105@yahoo.com	Anna Van Lynden	annavanlynden@gmail.com
Ann Marie Sardineer	acynk@yahoo.com	Anna Wieder	anycgirl@aol.com
Ann Marie Teli	ateli@sbcglobal.net	Annabella Morse	zeeland.amorse@gmail.com
Ann McCabe	amccabe4@aol.com	Annah Gardner	ajgardner@stthomas.edu
Ann McCormack	ebmccormack.em@gmail.com	Anna-Marie Soper-O"Rourke	amsoper9@hotmail.com
Ann Neef	chris_neef@hotmail.com	Anne Ambler	anambler@gmail.com
Ann Nowicki	tazzannie@q.com	Anne and Murl Borts	macborts@aol.com
Ann Powlas	acpow@carolina.rr.com	Anne Carlson	acarlson@seattlecca.org
Ann Rafkin	Annrafkin@comcast.net	Anne Cook	acook30632@yahoo.com
Ann Rainey	Ann.rainey6622@gmail.com	Anne Devore	getahedinpa@yahoo.com
Ann Sandritter	Asndrttr@aol.com	Anne Dwyer	annedwyer1@gmail.com

Anne Elkins	rustyanne1@yahoo.com	Anneke Andries	annekea1@hotmail.com
Anne Erikson	terikson6@netscape.net	Anneliese Lipinski	annelieselipinski@yahoo.com
Anne Gregory	xagregoryx@yahoo.com	Anne-Marie Mallon	amallon@keene.edu
Anne Haflich	anne.haflich@gmail.com	Annette Ancel-Wisner	Annette317@gmail.com
Anne Harvey	aharvey@ucsd.edu	Annette Aspillaga	Annetteaspillaga@hotmail.com
Anne Henley	lirio@mindspring.com	Annette Overstreet	starchild6@verizon.net
Anne Henry	Cindalou5@yahoo.com	Annette Pieniazek	anoushka5@comcast.net
Anne Hereford	Loverocks@gmail.com	Annette Wilson	acadosi@earthlink.net
Anne Kerby	kerbyanne@yahoo.com	Annick Smith	annick@blackfoot.net
Anne Keys	keysbalta@aol.com	Annie Davidson	anniezep@yahoo.com
Anne Kollender	akollender@yahoo.com	Annie Dawid	annie@anniedawid.com
Anne LaBouy	enuf4@charter.net	Annie Hallatt	masques@mindspring.com
Anne Millbrooke	anne27m@yahoo.com	Annie Katzman	catbird258@yahoo.com
Anne Moeller	afmoeller@mac.com	Annie McCombs	amccombs269@netscape.net
Anne Montarou	anne.montarou@orange.fr	Annie McCuen	mccuen7691@comcast.net
Anne Normandin	Annesananax3@aol.com	Annie McMahon	river@centurylink.net
Anne Olivares	olimarie@cox.net	Annie Peterson	annekristinpeterson@gmail.com
Anne Phillips	nckp@siu.edu	Annie Phillips	annie95@mac.com
Anne Pinkerton	annepinkerton800@comcast.net	Annie Spear	Anniespear64@gmail.com
Anne Reiley	aareiley@earthlink.net	Annie Winstead	winsteadam@suddenlink.net
Anne Robinson	Bhape2ar@yahoo.com	Annise Adams	annise3@gmail.com
Anne Ryland	annejory@aol.com	AnnMarie DiNatale	adinatale@gmail.com
Anne Ryland	annejory@aol.com	Ann-Marie Graham	annmarie.italia@gmail.com
Anne Schreibe	ANNESCHREEIBE@YAHOO.COM	Anpeo Carpenter	anpeo.carpenter@gmail.com
Anne Seidlitz	Aseidlitz1@aol.com	Anssi Haapala	raybsnow@nic.fi
Anne Sheldon	ayne99@yahoo.com	Anthony Buch	maritoni_buch@yahoo.com
Anne Sherwood	westiedogs2@sbcglobal.net	Anthony Capobianco	acapobia1@verizon.net
Anne Veraldi	Anneveraldi@hotmail.com	Anthony J. Regusis	tonyregusis@earthlink.net
Anne Young	anneyoung@epix.net	Anthony Maista	lostorico1940@yahoo.com
Anne5112480000617660 Craig	ennagiarc@gmail.com	Anthony Mansell	xdiver71@gmail.com

Anthony McQuarrie	anthonymcquarrie@gmail.com
Anthony Mehle	amehle123@gmail.com
Anthony Owen	TonyNemo@galleriarusticana.com
Anthony P. Vessicchio	anthonyvess@aol.com
Anthony Raiber	T_raiber@yahoo.com
Anthony Ricciardi	ricciard8@aol.com
Anthony Somkin	abcdu@icloud.com
Anthony Tsang Yee	anthonytsangyee@yahoo.com
Antoinette Beglar	toniglory@yahoo.com
Antoinette Gonzales	lolo.tonetone@yahoo.com
Antoinette Wright	antoinettewrig@aol.com
Anton McInerney	antonmac3@gmail.com
Antonia & Andrew Chianis	tonyaandandreas@charter.net
Antonia Shouse	A.lhamo@hotmail.com
Antonio Bayona	bayona5@yahoo.com
Antonio Garcia-Palao Redondo	lordarnold@telefonica.net
Antonio Pierola	antoniopierola@gmail.com
April Brumson	aperolling@yahoo.com
APRIL Burchardt	silver.wolf530@gmail.com
April Eversole	icecat302000@yahoo.com
April Ewaskey	antiki.blue@verizon.net
April Ezell	aprilezell@comcast.net
April Jacob	Apriljacob44@hotmail.com
April Kohles	afkohles@peoplepc.com
April Vaughan	cherokeeirish77@gmail.com
Apurva Dave	Apurva@apurva.net
Ara Marderosian	ara@sequoiaforestkeeper.org
Arden Green	ardenj13@yahoo.com
Ardeth L. Weed	frogdog13@comcast.net
Ardis Johnston	ajohnstonizmcz@gmail.com
Ardis Skillett	ardisskillett@gmail.com
Argia Capponi	capponi.argia@gmail.com
Ariel Calmes	ariel.calmes@gmail.com
Ariel Gomez	aktiv8hope@gmail.com
Ariel Shatz	ariel.shatz@gmail.com
Arleen Barber	Rainbow_722@yahoo.com
Arleen Ferrell	arleenferrell@yahoo.com
Arleen Weiss	Terrieweiss@yahoo.com
Arleen Whitmore	arleenw0@gmail.com
Arlene Aquino	gone2thedogz2004@yahoo.com
Arlene Aughey	hywelda@inbox.com
Arlene Baker	baker_eliz@yahoo.com
Arlene butters	arlenebutters@yahoo.com
Arlene Dobra	wdob@aol.com
Arlene Forwand	aforwand@optonline.net
Arlene Leas	Jamimah1@frontier.com
Arlene Norris	arlenenorris@comcast.net
Arlene Zuckerman	arlenenyc@hotmail.com
Arline Mathews	ArlineMathews@gmail.com
Arlyne London Kessler	Arlyne_london@yahoo.com
Armando A. Garcia	mondopwr@aim.com
Arnold Haber	arne@arnoldhaber.com
arnold johnson	amj.0169@yahoo.com
Aron Ralston	captainfunhog@hotmail.com
Arshad Ameen	aameen@aol.com
Art and Carol Stroede	chines7433@sbcglobal.net
Art Conner	acconner819@kconline.com
Art Hanson	ahanson47@comcast.net
art jacobson	artworks101@q.com
Art Meeder	Atmduke1@gmail.com

Art St. Clair	Ajstclair@gmail.com	Athena Grill	Athena.a.grill@gmail.com
Art Valdez	valdezaa@yahoo.com	Aubrey Guilbault	aubreykg@yahoo.com
Art Wilkinson	aawilkinson@prodigy.net	Aubrey Wilson	linnchris2003@yahoo.com
Arthur & Shirley Wolfe	artcwolfe@gmail.com	Audra Bulut	AudraAshtonB@Gmail.com
Arthur Connor	abconnor62@gmail.com	Audra Soulias	audrasoulias@aol.com
Arthur Fornari	arthurfornari@mac.com	Audrey Blumeneau	Blumeneau@yahoo.com
Arthur Hammond	art.hammond@outlook.com	Audrey Clarke	littlefirecracker52333@gmail.c
Arthur Ide	arthur_ide@yahoo.com	Audrey David	writeali@optonline.net
Arthur Kemish	artkemish@aol.com	Audrey Mannolini	Audreyspuppy@aol.com
Arthur Kendy	oscky@hotmail.com	Audrey Moskowitz	audrey622@verizon.net
Arthur Minto	topdogg5521@gmail.com	audrey nichols	msgracefla@bellsouth.net
Arthur Noble	Vidanob@gmail.com	Audrey Tillinghast	till1441@bellsouth.net
Arthur Olson	aromolson@gmail.com	August Scheer	augustscheer@optimum.net
Arthur Rosato	arthurj37@me.com	Augustine Roth	ajroth879@gmail.com
Arthur van der Harten	5hearts@q.com	Austin Fite	austinf@aol.com
Arthur W. Gehnert	artge@midriver.com	Autumn A. Ratliff, DVM	autumnratliffdvm@yahoo.com
Arthur Webb	webb_28622@msn.com	Autumn Brook	autumn279@live.com
as er	reilsshera@aol.com	Autumn Gonzalez	Autumnrg@gmail.com
Asha Gangasarran	asha@hubnj.com	Avery James	abryanj@yahoo.com
Ashleigh Steil	oooluckystarooo@aol.com	aviva shliselberg	ashliselberg@gmail.com
Ashley Boyce	Ashley_reitz@ymail.com	Axel Ringe	onyxfarm@bellsouth.net
Ashley Carter	acarter2985@gmail.com	Ayesha Gil	kag2308@earthlink.net
Ashley Curtin	smithgurl83@aol.com	Azia Singh	aziasingh@hotmail.co.uk
Ashley Hawkins	ashleykhawkins@gmail.com	B A	Brandy_avila@hotmail.com
Ashley Head	ashleyhead@mac.com	b coniglio	saucemops@yahoo.com
Ashley Parker	aparker_02@arcadia.edu	B Eggleston	snowglitter@yahoo.com
Ashley R.	Pandora6242@cs.com	B G	pantheratigrisgrl@gmail.com
Asphodel Denning	asphodeldenning@hotmail.com	B G	pantheratigrisgrl@yahoo.com
Athena Anderson	serenitynowkay@aol.com	B Levy	Squeaky2@hotmail.com
Athena Clevenger	Xorbes@yahoo.com	B Lloyd	belloyd10@hotmail.com

B Scherrer	Brigettescherrer@hotmail.com	Barbara Brown	nodbarb@aol.com
B Wolfe	bwolfej@yahoo.com	Barbara Burghart	burghartb@optimum.net
B. Rodriguez	calursus44@gmail.com	Barbara Burton	barbburton17@gmail.com
B. Tepp	briteppr62@gmail.com	Barbara Campbell	campbellbarbara76@yahoo.com
B. Thomas Diener	texasbtdiener@gmail.com	barbara chestney	chestneyd@bellsouth.net
Babara McKasson	babitaji@aol.com	Barbara Ciasco	bciasco@yahoo.com
Babette Bruton	bbruton3@yahoo.com	Barbara Clewett	barbaraclewett@gmail.com
Bambi Magie	Mosaicgal22@comcast.net	Barbara Cohn	barbc624@gmail.com
Barb Hasty	skotzdayle1@aol.com	Barbara Cole	barbaracole216@gmail.com
Barb Holtz	bholtz69@yahoo.com	Barbara Consbruck	bconsbruck@hotmail.com
Barb Kern	barbara.kern@us.kline.com	Barbara D"Esposito	bdesposi@yahoo.com
Barb McCarthy	blica1@verizon.net	Barbara Delgado	delgado_barbara@yahoo.com
Barb morrison	sxylad7@msn.com	Barbara Deur	deuronimo@aol.copm
Barb Olson	barbieolson@yahoo.com	Barbara Domanchuk	bad@humboldt1.com
Barb Rogers	barb_rogers@yahoo.com	Barbara Doucet	1celticwomyn@gmail.com
Barb Stoneburner	bs@msktd.com	Barbara Engel	b.engel888@gmail.com
Barb Watts	Corgirlbarb@netscape.net	Barbara Erlich	Barbara_erlich@yahoo.com
Barb Woods	bjwoods12@att.net	Barbara Ferguson	barbfergie1@verizon.net
Barbara and Jim Dale	nonrev909@neitel.net	Barbara Fletcher	bf8542@att.com
Barbara Anderson	auntdan76@yahoo.com	Barbara Fry	fry.barbara@twc.com
Barbara Andrew	teep1@me.com	Barbara Gross	barbara.gross48@gmail.com
Barbara Aronowitz	aronobarb@hotmail.com	Barbara Gross	bobbie.gross@gmail.com
Barbara Becker	duckie3x@aol.com	BARBARA HANNAH	BARB.HANNAH@MYGAIT.COM
Barbara Behrens	behrens.barbara@yahoo.com	Barbara Hanson	Patamadre@aol.com
Barbara Bennigson	BBennigson@aol.com	Barbara Harper	jandbharper@yahoo.com
Barbara Benzwi	Drmombb@sbcglobal.net	Barbara Hauck	figarosings@yahoo.com
Barbara Bersell	bersellcast@earthlink.net	Barbara Hegedus	hpixel@peopepc.com
Barbara Bonfield	bgbonfield@gmail.com	Barbara Hershey	awhershey@earthlink.net
Barbara Borden	borden_barbara@yahoo.com	Barbara Holcomb	duckdoorstop1@yahoo.com
Barbara Bradshaw	Barbbradshaw@yahoo.com	Barbara Kantola	blkantola@comcast.net

Barbara Kellerman	Barbarakellerman@yahoo.com
Barbara Kenemuth	bkenemuth@earthlink.net
barbara kepley	bkpower2@att.net
Barbara Kojis	bkojis@hotmail.com
Barbara Krantz	Bwieland1@earthlink.net
Barbara Krieger	barbarakrieger336@hotmail.com
Barbara Larson	btmsldl@aol.com
barbara lasley	buddadrum3@yahoo.com
Barbara Letiecq	letiecqb@yahoo.com
Barbara Mallett	mallettb7@gmail.com
Barbara Mathes	lilydeanamy89@live.com
barbara mcgrath	barnmcgrath80@yahoo.com
Barbara McMahan	b.mcmahan@epbfi.com
Barbara Methvin	barbaramethvin@yahoo.com
Barbara Meyer	bwmp2052@verizon.net
Barbara Miller	stemon0608@icloud.com
Barbara Mrozek	barbara.mrozek@yahoo.com
barbara murray	barbaram@yogananda-srf.org
Barbara Nardone	nardone2@verizon.net
Barbara Nelson	barbnelson2@comcast.net
Barbara O'Connor	barbaraoconnor12@gmail.com
Barbara Olson Pasqualino	bop151@yahoo.com
Barbara Osada	Riverbingo21@yahoo.com
Barbara Parker	blob75@outlook.com
Barbara Passero	bpassero@sandpipercreative.com
Barbara Poulsen	barbarapoulsen@earthlink.net
Barbara Rain	barbara135@centurytel.net
Barbara Rizzardi	berizzardi@msn.com
Barbara Robinson	barbie53@msn.com
Barbara Rosenkotter	skye@ucdavis-alumni.com
Barbara Rosensimon	rosensib@email.arizona.edu
Barbara S. Nadel	bsnbsn16@gmail.com
barbara schlitz	bebar50@aol.com
Barbara Schrader	barbara443@centurytel.net
Barbara Schwartz	vallabha@cox.net
Barbara Singer	bsreadsalot@aol.com
Barbara Sorensen	blsorensen@cox.net
barbara stamp	bestamp7@yahoo.com
Barbara Stenross	Stenross@gmail.com
Barbara Supplee	barbarasupplee2@gmail.com
Barbara Sweet	barbrablossom3@gmail.com
BARBARA SWYDEN	QuietStorm.Swyden@Gmail.com
Barbara Testa	bstesta@aol.com
Barbara Tetro	btetro@tampabay.rr.com
BARBARA THORSON	bjthorson1959@sbcglobal.net
Barbara Timmons	timmons51@yahoo.com
Barbara Vieira	edv710@outlook.com
Barbara Washburn	ggary61@msn.com
Barbie Graper	barbie12@tcsn.net
Barney Bryson	bdbbryson@gmail.com
Barrett Goldflies	barrett.goldflies333@gmail.com
Barrie Newell	Marknbari@aol.com
Barry Bennett	hilltower12@yahoo.com
Barry Brenner	bcreative@ca.rr.com
Barry Cutler	bcutler529@gmail.com
Barry Draper	bgd@metrocast.net
Barry Kaufman	barrykaufman@earthlink.net
Barry LeBeau	blebeau123@yahoo.com
Barry Lentz	uncbrl@gmail.com
Barry Oaks	barrysoaks@gmail.com

Barry Plunkett	bwp112@gmail.com	Belinda Dodd	bdodddesign@msn.com
Barry Reutzel	mrdodgers@yahoo.com	Ben Arnold	BenArnoldJr@yahoo.com
Barry Saltzman	bjsaltzman@yahoo.com	Ben Badger	badger_benjamin@yahoo.com
Barry Williams	sacredseed@yahoo.com	Ben Battat	babattat@yahoo.com
Barry Zuckerman	b_zuckerman@yahoo.com	Ben Busack	rhythmatist2002@yahoo.com
Bartley Deason	iambart@q.com	Ben Cantrell	ben.a.cantrell@gmail.com
Barton Grimm	bartongrimm@wowway.com	ben carpenter	bcarpenter@meca.edu
Basey Klopp	bklopp@gmail.com	Ben Cody	Nemophilism@gmail.com
Bear Albrecht	ebear.socorro@gmail.com	Ben Dotson	bendotson@yahoo.com
Beatrice Nelson	Riciepets@gmail.com	Ben F. Garcia, Ph.D.-ABD	bfgarcia@ecentral.com
Beatrice Seifert	bseifert@dplanet.ch	Ben Goodin	ibedone@hotmail.com
Beatrice Simmonds	Beatrice_Simmonds@yahoo.com	Ben King	kingbirdtours@earthlink.net
Beatrice Simmonds	brownsugar3@verizon.net	Ben Kuechenhoff	benk@opmbx.org
Beatriz Pallanes	ez2beawith@yahoo.com	Ben MCGOWAN	benrmc@bellsouth.net
Beau Ryba	beauryba@yahoo.com	Ben Oscar Andersson	oscarsito1057@wildmail.com
Bebe Elsamahy	yasmena@netzero.net	Ben Pinti	bpinffam@comcast.net
Bebe McCarthy	bebesmc@yahoo.com	Ben Power	betpower@yahoo.com
Becky Andrews	becand025@aol.com	Ben Ruwe	benruwe@hotmail.com
Becky Bell-Greenstreet	beckybellgreenstreet@yahoo.com	Ben Schmidt	benschmidt5@gmail.com
Becky Daiss	beckydaiss@verizon.net	Ben Welborn	ben@kauaistyle.com
Becky Herman	becky.herman98@gmail.com	ben whitten	wbwhitten@hotmail.com
becky hinson	marykhinson2@bellsouth.net	Benita Crow	benitacrow@cox.net
Becky Lechner	kiasmommy@gmail.com	Benita Smith	benitaledersmith@gmail.com
Becky McElhiney	hondagurl121185@yahoo.com	Benjamin Bryce	benjaminladdbryce@gmail.com
Becky McKibben	Beckyann31@aol.com	Benjamin Joannou jr	benjr@jbi.bike
Becky monger	kittymommy57@gmail.com	Benjamin Knapp	bknapp@chaminade-hs.org
Becky Mulkern	dr@centerfornaturalhealth.com	Benjamin Rossell	medic4fire@yahoo.com
Becky Painter	becky.l.painter@gmail.com	Benjamin Serpa	bs582@nau.edu
Becky Stack	beckyjo148@gmail.com	Benjamin Steckler	bsteckle@gmail.com
Belen Munoz Garcia	blm9818@yahoo.com	Benjamin Swan	btswan87@gmail.com

Bennett Pearson	Bcpearson24@gmail.com
Bennie Scott	benniesuzan@gmail.com
BENNIE WOODARD	bwoodard44@yahoo.com
Berenice Cedillo	berenicecedillo@hotmail.com
Bernadette Azuh	Chijiazuh@yahoo.com
Bernadette Belcastro	bell20@hotmail.com
Bernadette Foti	LAPDRacing@aol.com
Bernadette Lato	b.lato@yahoo.com
Bernadette Payne	bmbuchholz@yahoo.com
Bernard Lizak	lizakmvc@aol.com
bernard rafferty	brafferb@gmail.com
Bernard Rubb	bernierubb@aol.com
Bernard Schroeder	btschroeder64@gmail.com
bernard swierszcz	bernardswierszcz@gmail.com
bernardo alayza mujica	beralmu@hotmail.com
bert greenberg	bertli@sbcglobal.net
Beth Anderson	anderson.sb@att.net
Beth Angel	angel_computer_llc@hotmail.com
Beth Bennion	bethbennion@yahoo.com
Beth birnbaum	BethSPB@aol.com
Beth Bishop	bethbishop@aol.com
Beth Braun	Bethdance11@gmail.com
Beth Carbine	betho78@yahoo.com
Beth Copanos	bcopanos@yahoo.com
Beth Doherty	catbeth528@verizon.net
Beth Hall	mbhtech@aol.com
Beth Jensen	beth_jensen@yahoo.com
Beth Lowe	beth@jplnet.net
Beth Mathewson	mathfam@actionnet.net
Beth McHenry	bethannez2002@yahoo.com
Beth Minear	beth.minear@gmail.com
Beth Muetzel	dian@hickorytech.net
Beth O"Brien	beobrien25@gmail.com
beth peterson	bethmark@frontiernet.net
Beth Rodriguez	BethLaZara@gmail.com
Beth Stanberry	rdtrtle@gmail.com
Beth Thebaud	Beththebaud@msn.com
Beth Wallace	beth.wallace.tn@gmail.com
Beth Williamson	bethwilliamson55@gmail.com
Beth177 Patterson	purrrpaws@gmail.com
Bethany Sattur	bethany.sattur@gmail.com
Beti Webb Trauth	lightpow@arcatanet.com
Betina Mattesen	bmattesen@hotmail.com
Betsey Porter	betseyp@hotmail.com
betsy feiker	bfeiker1@aol.com
Betsy Maestro	bcmaes@aol.com
Betsy Restly	betsyrestly@yahoo.com
Bette-Burr Fenley	bbfenley3@gmail.com
Bettemae Johnson	bjohn13131@yahoo.com
Bettie Auble	Btauble@aol.com
Bettina Bickel	bbickel08@gmail.com
Betty A. And Peter J. Micheloz	bettspj@cruzio.com
Betty Buchanan	sisseycollins1@gmail.com
Betty Byrne Ware	bettybware@verizon.net
Betty Clark	bjclark1948@gmail.com
Betty Delaney	piranha@rof.net
betty karpen	loons@lakenet.com
Betty Kish	bettykish@me.com
Betty Lininger	Liningba@gmail.com
Betty Nogues	bettynogues@yahoo.com

Betty Norris	bettysgarden@gmail.com	Bijan Foroutan	Bforoutan@aol.com
Betty Pappas	twelve.paws@yahoo.com	Bill Abel	LAPDRacing@aol.com
Betty Smisek	getpd2save@yahoo.com	Bill and Fran Stenberg	gsten70138@aol.com
Betty Stewart	abby109@cox.net	Bill Blessing	bill.blessing@gmail.com
Betty Trentlyon	bettysvat@gmail.com	Bill Boyd	whboyd@mac.com
Betty Whitaker	bgwhit22@comcast.net	Bill Brady	wm_brady@yahoo.com
betty winholtz	winholtz@sbcglobal.net	bill brandenburg	wbbrandenburg@gmail.com
Betty_Ann Duggan	ykoob@aol.com	Bill Carlson	mefarmboy@myfairpoint.net
Bettye Short	BShort246@aol.com	Bill Chockla	schockla@gmail.com
Bev Doman	oyeswedo@yahoo.com	Bill Christie	billygardener19@hotmail.com
Bev Goodell	ghostcat07@yahoo.com	Bill Crumrine	billoutdoors7@att.net
Bev Mcdaniel	Bevmcdaniel@gmail.com	Bill Davis	bwdavis4444@gmail.com
Beverlee Goynes	greythoundmom@comcast.net	Bill Gardner	bgard95942@att.net
Beverlu Antonio	Niloflightrn@msn.com	Bill Giese	wildbill3502@gmail.com
Beverly Adams	bebo1379@gmail.com	Bill Hamm	harp216@hotmail.com
Beverly Conroy	Beverlyannconroy@icloud.com	Bill Hansen	bdhansen@charter.net
Beverly Fannin	bev_fan@yahoo.com	Bill Hooson	bhooson@aol.com
Beverly Harris	bevaharris2@yahoo.com	Bill Jenkins	nawr01@msn.com
BEVERLY HOEFFLIN	iamjah@aol.com	Bill Liddle	bill.liddle@gmail.com
Beverly Hoff	bash16803@yahoo.com	Bill Macartney	Billmac67@sbcglobal.net
Beverly Janowitz-Price	bevjano@msn.com	Bill Martens	martyrt2@gmail.com
Beverly Johnson	bevjohnson007@gmail.com	Bill Marvin	wmarvin1@udayton.edu
Beverly Lane	tigereye20x@yahoo.com	Bill Nelson	orangejello@sbcglobal.net
Beverly Linton	thessada@comcast.net	Bill Polesnak	bpolesnak@YAHOO.COM
Beverly Poncia	bmp1950@mchsi.com	Bill Rakowski	e080c5@yahoo.com
Beverly Rae	beverly_rae@yahoo.com	Bill Rattunde	Bill.rattunde@gmail.com
Beverly Simone	beverly.simone@verizon.net	Bill Ridgeway	w.ridgeway@hotmail.com
Beverly Stewart	gldnmaxretriever@aol.com	Bill Rosenthal	brosent@hunter.cuny.edu
Beverly Williamson-Pecori	bwp97@verizon.net	Bill Rubin	BillRubin@TheFlatsAtRiverwalk.
Bianca Molgora	biancamsf@yahoo.com	Bill Rubin	BillRubin@TheFlatsAtRiverwalk.

Bill Schoene	williamschoene@gmail.com	Bob Keller	bobo430@aol.com
bill sutton	w-sutton@illinois.edu	Bob Komorous	rkomorous@hotmail.com
Bill Vail	sheilabill@usa.net	Bob Kostelecky	bobkos829@hotmail.com
Bill Watt	snowcatoperator@yahoo.com	Bob Layton	bozebob@yahoo.com
Bill Witherspoon	kamispoon@yahoo.com	Bob Lepo	bob_leppo@yahoo.com
Billie Leyendecker	billie711@yahoo.com	Bob McConachie	bmcconachie@mac.com
Billy Angus	wizardofhamilton@hotmail.com	Bob Miller	bm2foto3@aol.com
Billy WOODS	wolfe91@hotmail.com	bob murray	bomurray1@gmail.com
Birgit Hermann	Bhermannsf@aol.com	bob petermann	bwpetermann@gmail.com
bj hedahl	bjhedahl@hotmail.com	Bob Rayburn U.S. Veteran 1963-	brayburn44@yahoo.com
BK Young	sunsaura@aol.com	Bob Rodman	brodman64@gmail.com
Blaise Brockman	fatherblaise@holyangelsarcadia	Bob Rosenberg	endobob@earthlink.net
Blake Hillenbrand	beezor@hotmail.com	Bob Segal	beelzeblob@yahoo.com
Blake O"Quinn	youngpweet@gmail.com	Bob Shippee	rsoxbob@gmail.com
blake wu	skbkms@mail.com	Bob Shoberg	bobshoberg@aol.com
Blanche Jones	jbcexpress@aol.com	bob sigmund	bsgm2@aol.com
Blaze Bhence	bbhence@yahoo.com	Bob Simons	utt2000@yahoo.com
Bo Baggs	bo5483@netscape.net	Bob Steininger	steininger.bob@gmail.com
Bo Matson	Lars2223@yahoo.com	Bob Thomas	rockthomas@hughes.net
Bo Svensson	bophoto@sonic.net	bob vail	bobvail7@gmail.com
Bob Atwood	bda2016@aim.com	Bob Zai	zaibob@hotmail.com
Bob Atwood	bobatwood60@gmail.com	Bobbi Farrell	dsugar904@gmail.com
bob belton	trouto@embarqmail.com	Bobbi Jo Harvey	Bobbijoharvey@yahoo.com
Bob Boland	bboland79@yahoo.com	Bobbie Flowers	bobbie_flowers@hotmail.com
Bob Farrell	bobjpfar@yahoo.com	Bobbie Hensley	spud676@yahoo.com
Bob Gendron	bobgendron@mindspring.com	Bobby Belknap	rebelknap@gmail.com
Bob Hahele	bobhagele@gmail.com	Bonita Staas	51940@aeroinc.net
Bob Hamel	bob@arkansasrivertours.com	Bonnie Blitzstein	bblitz2000@sbcglobal.net
Bob Haugen	crystalbobh@gmail.com	Bonnie Breckenridge	wwe13775@yahoo.com
Bob Hershey	wildtrout22@gmail.com	Bonnie Bross	brossb@sbcglobal.net

Bonnie Carol	Bonnie@BonnieCarol.com
Bonnie Faith	whiteowl1@comcast.net
Bonnie Farmer	bnb93@mac.com
Bonnie German	bgerman054@yahoo.com
Bonnie Gestring	bgestring@earthworksaction.org
Bonnie Hearthstone	bhearths@middlebury.edu
Bonnie Hernandez	bonniemlh@gmail.com
BONNIE HOFFMAN	bonnieh739@gmail.com
Bonnie Hughes	Bonniewalsh@cox.net
Bonnie L. Tanner	mtbltanner@gmail.com
Bonnie Lynn MacKinnon	bmackinnonwitherspoon@yahoo.com
Bonnie Margolis	Openingstar@aol.com
Bonnie Mayger	bmayger@gmail.com
Bonnie Mc Cune	mccunesfla@aol.com
Bonnie Miller	bmiller@sonic.net
Bonnie Steiger	bonnie@bonniesteiger.com
Bonnie Svec	Fruitcakes101@aol.com
bonnie uffman	bonuff@gmail.com
Bonnie Williams	bonniewilliams53@gmail.com
Borg Hendrickson	borghendrickson@gmail.com
Boris Rappoport	sergeychyb@rambler.ru
Boyce Booth	quantumpainter@yahoo.com
Boyce Sherwin	bsherwin02@yahoo.com
Boyd Nansel	pbnansel@cox.net
Br. Ken Homan, SJ	kenhomansj@gmail.com
Brad DeArk	bdeark@gmail.com
Brad Gilbert	bradgilbert013@gmail.com
Brad Higgs	bhiggs@ksu.edu
brad kalita	natrlovr@retreatfornaturelover
Brad Nelson	bwnSSurfn7@hotmail.com
Brad Raughley	Raughlbs@hotmail.com
Brad Stanback	castanea@bellsouth.net
Brad van Scriver	brad@heliodor1.com
Brad Walker	bawalker@hotmail.com
Brad Webb	bradsweb@yahoo.com
Bradford Goodwin	bikergoody@comcast.net
Bradford Kral	bkral2@msn.com
Bradley Clark	clark_b@fortlewis.edu
Bradley Houseworth	bradleyhouseworth@hotmail.com
Bradley Mefford	bradster128@aim.com
Brandace Myrtue	brandacelynn@hotmail.com
Brandi McCauley	mccauleyf@mchsi.com
Brandi Pratt	Brandii.yo@gmail.com
Brandie Deal	Laughsalot0579@yahoo.com
Brandon Cadwell	brandon.g.cadwell@gmail.com
Brandon Liebig	Bgliebig@gmail.com
Brandon Spring	bpspring3@gmail.com
Brandy Avila	brandy_avila@hotmail.com
Brandy Cline	brandy@coastalmosaics.com
Bredo Johnsen	bredoj@yahoo.com
Brenda Bell	grambell@comcast.net
Brenda Cummings	brensiv2@yahoo.com
Brenda Eckberg	barity@yahoo.com
Brenda Farrow	brenda_farrow@yahoo.com
Brenda Frey	brenda.frey@rocketmail.com
Brenda Haig	brendajoyce4@earthlink.net
Brenda Harrop	brenda@brendaharrop.com
Brenda James	beastybren@yahoo.com
Brenda Johnson	brendaj88@avvanta.com
Brenda Michaels	brenda@conscioustalk.net

Brenda Raus	brendarraus@gmail.com	Brian Buechle	buech347@yahoo.com
Brenda Robinson	bjr58@hotmail.com	Brian Buhman	Bbuhman@gmail.com
Brenda Rodriguez	alvarado.bja@gmail.com	Brian Burns	Blueeyedclimber@gmail.com
Brenda Sanders	sandwebb@cox.net	Brian Buxbaum	btbuxbaum@msn.com
Brenda Scheffler	Bscheff45@att.net	Brian Clark	brianclark12@hotmail.com
Brenda Stone	plantnerd249@gmail.com	Brian Cochilla	bcoch@optonline.net
Brenda Trueblood	corndogger2@msn.com	Brian Cochran	briancochran@mac.com
Brenda Weber	brendaweber@cavtel.net	Brian Comiso	pdxfire@hotmail.com
Brenda Wyrick	crwyrick19@yahoo.com	Brian Dalton	brmdtn@yahoo.com
Brenden Cronin	brenden.cronin@gmail.com	Brian de Castro	bdtrooper@aol.com
Brenna Murphey	brenna.murphey@gmail.com	Brian Debasitis	bdebasitis@mauby.com
Brent Bray	brentster_1@yahoo.com	Brian DiLenge	morpwr4bri@yahoo.com
Brent Harding	Bhharding@comcast.net	Brian Fink	bfink@prodigy.net
Brent Mcconnell	Irishiz1258@gmail.com	Brian Fitzgerald	fitzgerald@madriver.com
Brent Rocks	brent_rocks@comcast.net	Brian Gagnon	brianggnn76@gmail.com
Brent Ross	brentross@gmail.com	Brian Gingras	briangin54@beld.net
Brent Spencer	blamar59@aol.com	brian girard	briangirard264@yahoo.com
Bret Polish	brednjam1@yahoo.com	Brian Glover	bdglover@yahoo.com
Brett Dennison	brettwd6@gmail.com	Brian Henning	bhenning2200@gmail.com
Brett Jensen	hillsidefarms@hotmail.com	Brian Inouye	briannnora@gmail.com
Brett Mitchell	bmitch58@hotmail.com	Brian Josey	brianjosey.virginia+spam@gmail
Brett Striffler	brstriff@gmail.com	Brian Keleher	Brian@briankeleher.com
Brett Thomsen	brettthomsen@hotmail.com	Brian Kirk	rbkirkabc@sbcglobal.net
Brett Tighe	bretttighe@gmail.com	Brian Klubek	bklubek@siu.edu
Brett Williams	art2me@yahoo.com	Brian Kolek	bkolek@solzon.com
bri ericksen	brittlit713@yahoo.com	brian kundinger	hotrodharry57@yahoo.com
Brian Ainsley	Brian.Ainsley@gmail.com	Brian Kuru	kuru.1@osu.edu
Brian Bienkowski	bbienkowski@att.net	Brian Kwiatkowski	bkwiatkowski@zoomtown.com
Brian Bouchard	big_b_97@hotmail.com	Brian Larson	rocnoggin@gmail.com
Brian Brown	brianpetebrown@gmail.com	Brian Leonard	chiofthree@hotmail.com

Brian Losee	blosee@riefberglaw.com	Brooke Goodhue	brooke_goodhue@yahoo.com
Brian McKee	brianrossmckee@hotmail.com	Brooke Newell	brooke@cjgreen.net
Brian Mitchell	brimitch1@comcast.net	Brooke Prim	nellelwick@yahoo.com
Brian Murphy	bmur1946-pending@yahoo.com	Brooke Weatherly	brooke.marrinan@verizon.net
Brian Paradise	bgparadise@comcast.net	Brooks Barnes	skoorb59@hotmail.com
Brian Pike	brian.pike@usa.net	Bruce Abbott	bsdk4@verizon.net
Brian Reynolds	liberalbri@yahoo.com	Bruce Allen	ballen@cogeco.ca
Brian Sherwood	Brian1204@gmail.com	Bruce and Liza Eng	tillie81@hbci.com
Brian Simurdiak	briansimurdiak@sbcglobal.net	Bruce and Maureen DeNunzio	milano3031@yahoo.com
Brian Smalley	Briansma@sbcglobal.net	Bruce Blackwell	polit@gator.net
Brian Venable	brainscience2003@yahoo.com	Bruce Burns	burnsb319@earthlink.net
Brian Wheeler	Bbwheeler@me.com	Bruce Catlin	bruceypilar@aol.com
Brian yanke	muzic2umann@yahoo.com	Bruce Coburn	coburn01@charter.net
Briana Amberger	Brie248@yahoo.com	bruce cohen	bcohen@worcester.edu
Brianna Onken	brianna.newby@gmail.com	Bruce Cook	dutchman317@hotmail.com
Brianne Giddis	giddis.brianne@gmail.com	Bruce Cratty	brucecratty@gmail.com
Bridget Irons	whitetaileddeer@verizon.net	Bruce Culver	turtledaddio@yahoo.com
Bridgett Heinly	Kbmdogs@att.net	Bruce Cutts	brucecutts13@gmail.com
Brieaux Poche	Brelulz@me.com	Bruce Darby	bdarby@pinehill.org
Brigitte Blackburn	brgttblackburn@yahoo.com	Bruce Dobson	hosho@whidbey.com
Brigitte Loper	brigittecloper@aol.com	Bruce Donnell	b_donnell@msn.com
Brisn Gillian	gillian_bk@yahoo.com	Bruce Geldine	bcgeldine@icloud.com
Brittany Rivera	Brittanyarivera3@gmail.com	Bruce Higgins	behiggins@sbcglobal.net
Brittny O"Connor	Britann@gmail.com	Bruce Hlodnicki	bjh55@sbcglobal.net
Brock Roberts	Brock.roberts@zgf.com	Bruce Jackson	central_scrutinizer12@yahoo.co
Bronwen Cousins	bronwen.cousins@vcontractor.co	Bruce Litus	blitus@msn.com
Bronwen Cousins	bronwen.cousins@vcontractor.co.za	Bruce Moffatt	brucemoffatt3@gmail.com
Bronwen evans	bronwynnevans@hotmail.com	Bruce Montney	montneyhome@comcast.net
Bronwen Hartranft	bronwen_sossity@yahoo.com	Bruce Moorman	Zerb21@aol.com
Brooke Crowley	bcrowley@pmc.ucsc.edu	Bruce Olson	bruceolson@everestkc.net

Bruce Perry	Intermixdesign@att.net	C Emerson	chelmybell@gmail.com
Bruce Roberts	Bhroberts221@gmail.com	c fisher	swordfish_1099@yahoo.com
Bruce Rosenblum	1spiritcatcher@gmail.com	C G	cag_92122@yahoo.com
Bruce Ross	brucetwin62@yahoo.com	C George	Canngeo1@yahoo.com
Bruce Sadowskas	besad@ptd.net	C K	dudette53147@yahoo.com
Bruce Shilling	bruceshilling@yahoo.com	c keating	kfredsam@aol.com
Bruce Smith	cascadiansmith@yahoo.com	C Lambert	quintonio1@yahoo.com
Bruce Sowden	bruce_sowden@yahoo.com	C longmore	cllongmore@cox.net
Bruce Stegman	stegbone@yahoo.com	C R Moses	crmoses0110@yahoo.com
Bruce Strathearn	bstrath334@hotmail.com	c s	crystals13@hotmail.com
Bruce Wheeler	bruce7@cheerful.com	C Walsh	wm_walsh@sbcglobal.net
bruce white	twenty150bye@aol.com	C Wizeman	seawize@earthlink.net
Bruno Moschetta	bjm1271@yahoo.com	C. Coles	cwc61@comcast.net
Bryan Burke	bryantburke@hotmail.com	C. Collins	zkzkac@gmail.com
bryan coggins	bryancoggins@gmail.com	C. Gribble	Corinegribble@att.net
Bryan Gelegonya	crclehk@gmail.com	C. Lambert	quintonio1@yahoo.com
Bryan Martin	btm_th@hotmail.com	c. martinez	camiz@sbcglobal.net
Bryan McCarthy	bryan.mccarth@gmail.com	C. Michael Nelson	mike.nelson@uky.edu
Bryan Ruff	bryan_ruff@yahoo.com	C. Morrison	semperfelix76@gmail.com
Bryant Belli	bbaykermit@yahoo.com	C. Ortiz	clcortiz@prodigy.net
Bryce Baker	goldenprairieinn@midrivers.com	C.A. Rose	critterland26l@sbcglobal.net
Bryce Hutchinson	hutchinsonsigns@mac.com	C.C. Hollis-Franklyn	chollisfranklyn@yahoo.com
Bryce Smith	tallpine123@yahoo.com	Cab Grayson	cab.grayson@gmail.com
BRYON BIESMAN	BZZ073@HOTMAIL.COM	cailtin muelder	cm11_@hotmail.com
Bud McAllister	mcbud4@yahoo.com	Caitlin David	cdavid11@kent.edu
byron nuckols	bnux@sbcglobal.net	Caitlin Schneider	ccampbell421@gmail.com
c Boor	ctboor909@charter.net	Caleb Bollman	cbollman@mt.gov
C Cass	Lzmsc1028@gmail.com	Caleb Laieski	Caleb_M_Laieski@yahoo.com
C Davis	cee2lee2@yahoo.com	Caleb Laieski	Caleb_M_Laieski@yahoo.com
C Dorsey	Dorseycansd@optonline.net	Calesse Carter	calessec@yahoo.com

Calli Madrone	joynewhart@hotmail.com	Cara DeFlorian	deflorian.cara@yahoo.com
Calvin Johnson	johnsoncal@midrivers.com	Cara Lea Willoughby	ctallulah@sbcglobal.net
Cameron Torre	Cameron.torre@gmail.com	cara Nardone	cmnardo@hotmail.com
Cami Leonard	Dreamweavertheatre@yahoo.com	Cara Stanley	clstanley245@yahoo.com
Cami Winikoff	Cami@sobini.com	Carey Peterson	carey.mail@gmail.com
Camie Rodgers	rodeogyrl@aol.com	Cari Brookbanks	cllbrookbanks@gmail.com
Camilla Comanich	Glykes@comptonfilms.com	Caridad Romaine	Thefrogrules@aol.com
camilla lockwood	cam@agileair.com	Carina Perez	perez.adela@ymail.com
Camille Gilbert	camillegilbert@aol.com	Carina Ramirez	crami162@epcc.edu
Camille Johnson	camiejohnson@hotmail.com	carl couret	ccouretjr@yahoo.com
Camille Norman	c.normanrnc@gmIl.com	Carl Hayes	cih149@yahoo.com
Cammy Colton	Curby38@hotmail.com	Carl Honaker	myhardbody@yahoo.com
Canan Tzelil	canant@hotmail.com	Carl Kohls	Carlkohls@yahoo.com
Candace Batchelder	kwutting@gmail.com	Carl Kuester	Cakuester@yahoo.com
Candace Batten	candace@kaimanlaw.com	Carl Lehner	carl.lehner@alum.mit.edu
Candace Gabriel	CandaceG47@gmail.com	Carl Oerke Jr	carl_oerke@yahoo.com
Candace Keskitalo	rkeskitalo@prodigy.net	carl patterson	cw3po@yahoo.com
Candee Gordon	ready13019@sbcglobal.net	Carl Stapler	wystaplers@hotmail.com
Candice Barnett	cans1@me.com	carl tyndall	ctyn2000@yahoo.com
Candice Kraemer	ckraemer@richland.org	Carl Zimmerman	carlandjuliez@cox.net
Candice Lowery	pickleberry00@yahoo.com	Carla Allen	carallen@gmail.com
Candice Schellenger	chowgrl@outlook.com	Carla Babrick	carlajeanbabrick@outlook.com
Candidus dougherty	pcdougher@gmail.com	Carla Behrens	yayacarlita@comcast.net
Candie Glisson	jnpr2316@aol.com	Carla Cordoves	cordovescarla@yahoo.com
Candra Neff	candraneff1@yahoo.com	Carla Hervert	chervert@peacehealth.org
Candy Bowman	canbowring@yahoo.com	Carla L	carla2276@yahoo.com
Candy LeBlanc	telvari9@care2.com	Carla Morin	cfapjm@aol.com
Candy Rocha	candy8027@aol.com	Carla Neal	carlajneal@gmail.com
Car H	Teachercaryn@yahoo.com	Carla tuke	tukiefive@yahoo.com
Cara Ammon	clammon@yahoo.com	Carleen Wuitschick	cdwuitschick@hotmail.com

Carleen Yerrano	actlvnv123@aol.com	Carol Bruns	carolmkt@aol.com
Carlene Estacion	carlene@npgcable.com	carol carne	ccarne43@hotmail.com
Carlene Meeker	cmeeker@hotmail.com	Carol Chappell	ccngbrazil@hughes.net
Carleton Vickers	carvik@verizon.net	Carol Collins	ccollins54@msn.com
Carlos Laboy	LosLab01@twc.com	carol coons	gumchewer910@gmail.com
Carlos Quiroga Lassepas	carlosql@yahoo.com	Carol Davidek-Waller	cadawa@hotmail.com
Carlotta Camacho	carly.camacho@sbcglobal.net	Carol Davis	clannyd@yahoo.com
Carly Steel	tomcarly@austin.rr.com	Carol DeMuth	caroling@q.com
Carmel Ammon-Mulloli	malini.ammon@gmail.com	Carol Devoss	cadevo@gmail.com
Carmella Gioio	sintsinck@aol.com	Carol Dodoson	cdodson7@hotmail.com
Carmen Blakestad	grasshopper1123@hotmail.com	Carol Doud	NannyLvsJ@aol.com
Carmen Chacon	starrose1@live.com	Carol Edwards	polebridgemod@gmail.com
Carmen Elisa Bonilla-Jones	consulraaj@aol.com	Carol Facey	krystalintentions@comcast.net
Carmen Sánchez Sadek	csssadek@gte.net	Carol Felton	carol.felton@insightcirclepr.c
Carmen Sebastian	Keel.sebastian@gmail.com	Carol Fly	carfly@workmail.com
Carmony Corley	Carmony.corley@gmail.com	Carol Forbes	Ceforbes12@gmail.com
Caro Anderson	rattlebrat92@yahoo.com	Carol Fordonski	stormy5@atlanticbb.net
Carol Adams	cfadams320@aol.com	Carol Fox	carolrfox@aol.com
Carol Affleck	Cjaffleck@aol.com	Carol Garber	clgarber55@comcast.net
Carol Ann Sherratt	downeast1@charter.net	Carol Gehl	bkwiatkowski@zoomtown.com
Carol Anna Lind	carolanna@sbcglobal.net	carol gelfand	carolgelfand@mac.com
Carol Baier	cbaier@hotmail.com	carol glau	carolglau2004@yahoo.com
carol banever	feebleton@gmail.com	Carol Gold	carolgold@earthlink.net
Carol Bentley	cabonbike@gmail.com	Carol Goslant	clackim@mac.com
Carol Berard	calla004@gmail.com	Carol Hanson	chanson44@icloud.com
Carol Bergesen	sewinbody@hotmail.com	Carol Hatfield	chatfield@uindy.edu
Carol Berkeley	carolberkeley@verizon.net	Carol Hay	cmhay.lessmess@gmail.com
Carol Blaney	clblaney@yahoo.com	Carol Hewitt	hewitt@arrakis.es
Carol Brady	ladybear1147@yahoo.com	Carol Hill	carol.jhill@hotmail.com
Carol Brooks	Seabrooks68@gmail.com	Carol Hollomon	chollo233@aol.com

Carol Hossan	merryrun@toadaway.net
Carol Howell	Wmp3214@Yahoo.com
Carol Hults	carolhults@gmail.com
Carol J. Loomis	caroljloomis@gmail.com
Carol Jackson	cjackson@lanterngroup.org
carol jagiello	cjags91@optonline.net
Carol Joan Patterson	joanie.patterson@yahoo.com
Carol Johnson	cadoann@hotmail.com
Carol Johnson	carolj@cybermesa.com
Carol Johnson	rockymtn.girl64@gmail.com
Carol Jones	carjonesy@yahoo.com
Carol Jones	crljns@verizon.net
Carol Kanzig	Sleptbear@aol.com
Carol Karsner	karsnerbird@yahoo.com
Carol Keller	Cpkeller@webtv.net
Carol Kuelper	ckuelper@comcast.net
Carol Lake	c_lake@comcast.net
Carol Lapetino	carolandkj@att.net
Carol Lawrence	Greysful@suddenlink.net
Carol Licini	carollicini@me.com
Carol Linderborn	cylinder810@gmail.com
Carol Lipper	lipper@aya.yale.edu
carol long	cjlong3@sbcglobal.net
Carol Marion	carol.marion@hotmail.com
Carol McMahan	carolmcmahan@ymail.com
Carol McMahon	BlueBrownie2@hughes.net
Carol Melroy	tesselated@aol.com
Carol Metzger	aa4kp@genset.com
Carol Miller	drcarolann@rcn.com
Carol Mochizuki-Elrod	carolmelrod@gmail.com
Carol Mock	cmock@att.net
Carol Neill	clneill6312@att.net
Carol Nowak	canowak50@gmail.com
Carol Noyes	krollrae@hotmail.com
Carol O"Brien	carolobr3@comcast.net
Carol Ohlendorf	laceepacee@yahoo.com
Carol Paddock	ckp1129@aol.com
Carol Perkins	cuestageo@live.com
carol pruner	prunedoc@cox.net
Carol Sanders	707sanders@gmail.com
carol schaaf	cjs312@yahoo.com
Carol Sills	carolbsills@gmail.com
Carol Soroos	soroos@mindspring.com
Carol Steinhart	cesteinhart@gmail.com
Carol Stevens	animalfreak98037@yahoo.com
Carol Stokrocki	cstokrocki@corelogic.com
Carol Storthz	csthz@sbcglobal.net
Carol Taggart	cbtaggart@earthlink.net
Carol Thompson	mcact8@gmail.com
Carol VanDeVeire	carol10306@aol.cm
Carol Walker	carol1561@yahoo.com
Carol Walker	carwalker@comcast.net
Carol Wauters	cwauters@bresna.net
Carol Weber	clweber@earthlink.net
Carol Whitehurst	whitehurstcj@gmail.com
Carol Wiley	earthlingwiley2000@yahoo.com
Carol Williams	delgaia@yahoo.com
Carol Zuckerman	Lanygal714@aol.com
Carol-Ann Dearnaley	willdd2246@gmail.com
Carole Ann Cole	caroleannc@aol.com

Carole Courtney	cecda@yahoo.com	Carolyn Berkowitz	Flamebaby63@yahoo.com
Carole Duckworth	Caroleduck@aol.com	Carolyn Bratton	carolyn@lifestreamcenter.org
Carole Farrar	carinva9@gmail.com	Carolyn Burns	lyn.burns@cox.net
Carole H	photosandbooks@msn.com	Carolyn Clark Pierson	ccselavy@frontiernet.net
Carole Hartleb	caralena@embarqmail.com	Carolyn Frazee	cxfrazee@gmail.com
Carole Henry	xmas_carole@hotmail.com	Carolyn Heppner	sungazer1@live.com
Carole Hossan	merryrun@toadaway.net	Carolyn Iversen	civersen@richland.org
Carole Ingram	silverarabmare@aol.com	Carolyn Kenton	carolynkenton@embarqmail.com
Carole Jackson	cracklin.rosie@bigpond.com	Carolyn Kiel	mcmcbkiel@gmail.com
Carole klumb	lylecaroleklumb@centurytel.net	Carolyn LaBerta	laberta1123@yahoo.com
Carole Osborn	longing4desertskies@gmail.com	Carolyn Leamer	c.c.cohen@atlanticbb.net
Carole Plourde	witching9green@yahoo.com	Carolyn Marion	nyyankes23@aol.com
carole pooler	runher1@sbcglobal.net	carolyn massey	claudia1112003@outlook.com
Carole Powell	sassy1_19803@yahoo.com	Carolyn Raasch	wolveshowl2@hotmail.com
Carole Shelton	cnspeed@outlook.com	Carolyn Ricketts	clynnline@verizon.net
Carole Smudin	luvs2compost@comcast.net	Carolyn Riddle	ridddlegame@gmail.com
Carole Stephan	detail99@bellsouth.net	Carolyn Smith	Lorraine_sm@yahoo.com
Carole Wilmoth	clwilmoth@aol.com	carolyn suchenicz	carolyn2368@cox.net
Carolina Rozo	caro_rozo@yahoo.com	Carolyn Tinus	kellykelso2002@yahoo.com
Caroline Cunningham	dianacunningham62@gmail.com	Carolyn Villanova	cvillanova820@gmail.com
Caroline Deegan	dukiebluedoc@mac.com	Carolyn Wacaser	cjspirit2000@yahoo.com
Caroline Druschke	cgd.uri@gmail.com	Carolyn Wallace	Ccwallacebar@aol.com
Caroline Miller	cmiller1049@outlook.com	Carolyn Whiting	crwhit99@aol.com
Caroline Oliveira	caroline.r.oliveira@gmail.com	CarolynKay Almond	ckaa31@yahoo.comxc
Caroline Satterfield	enilor@frontier.com	Carolynn Griffith	carolynngrif@gmail.com
Caroline Themm	ninacw@aol.com	Carolynne Cullerton	cculler52@gmail.com
Caroly Pettis	ecokare2@yahoo.com	Carrie Chilson	Carrie_chilson@yahoo.com
Carolyn & Robert Rowlson	bcrowlson@comcast.net	Carrie Fawcett	fawchog@yahoo.com
Carolyn A. Kidder	kiddermus@yahoo.com	carrie Morrison	iriebreeze@live.com
Carolyn Bartholomew	carbar39@yahoo.com	Carrie Mullen	Ciemullen@gmail.com

carrie ousley	ousleyc@yahoo.com	Catherine Clark	cccquilter@yahoo.com
Carrie Swank	caswank1@gmail.com	Catherine Clifton	cliftonc@frontiernet.net
Carrie Watson	Hillcountrycarrie@gmail.com	Catherine Corwin	catcorwin@gmail.com
carrie whitley	carriewhitley35@yahoo.com	Catherine DeGraw	catdegraw@gmail.com
Carrington Petras	schpetras@gmail.com	Catherine Fasy	cathyfasy@verizon.net
Carroll Arkema	arkemac@verizon.net	Catherine France	Purelily@cox.net
Carroll Arkema	arkemac@verizon.net	Catherine Gorman	cgorman@wildblue.net
Carter Marian	carterwstcvn@aol.com	Catherine Hamel	catgoil@gmail.com
Cary Farr	farroutnetworx@gmail.com	Catherine Hirsch	chkh@earthlink.net
Cary Helms	cchelms26@aol.com	Catherine Holzman	catherine290@hotmail.com
Cary Semit	ballinakil@aol.com	Catherine Jensen	gammybklyn104@aol.com
Caryl Sawyer	cmsawyer90@gmail.com	catherine jobling	CATHERINEJOBLING4677@comcast.n
Caryn Corriere	corrierecl@gmail.com	Catherine Johnston	kmbjoh@gmail.com
Caryn Graves	caryn@lmi.net	Catherine King-Chuparkoff	cnscrfan24@aol.com
Casey Coe	caseyc201@gmail.com	Catherine Lacey	catherinelcy@yahoo.com
Casey Pittman	pittman.casey@gmail.com	Catherine LaCroix	clcquality@juno.com
Casey Talbot	Caseymaci93@yahoo.com	Catherine Loudis	CRLoudis@gmail.com
Cassandra Browning	rechildes@netscape.net	Catherine Malin	jtctywmnmpr@yahoo.com
Cassandra Gallina	c_gallina@msn.com	Catherine McNamara	cdmcnamara@msn.com
Cassandra Graves	cassandragraves@cox.net	Catherine Miller	mmemiller.cathy@gmail.com
Cassandra Treppeda	la.belle.au.bois.dormant19@gma	Catherine Mills	cabobmills@aol.com
Cassandra Voss	Bonsaiblues@aol.com	Catherine Morris	catissem@jeffnet.org
Cassidy Boulan	casstech@umich.edu	Catherine Ross	ross.catherine05@gmail.com
Cassie Cooper	Luckyfrogsc@gmail.com	Catherine Stephens	Cstephen@risd.edu
CAT ALLEN	etheric888@gmail.com	Catherine Swan	Cswanseris@gmail.com
Catharine C. Volpe	dearcatharine@cox.net	Catherine Turner	Catbtu@sbcglobal.net
Catherihe Bailey	cat@freedoment.com	Catherine Tyler	ctyler_incredible@hotmail.com
Catherine Atkinson	catherine.atkinson3580@yahoo.c	Catherine Williams	dairyqueen@uwalumni.com
Catherine Carlin	cathielc1@att.net	Cathie Bird	iam2hawk@gmail.com
Catherine Carney-Feldman	Carneyfeldman@yahoo.com	Cathryn Dufort	cjdufort@comcast.net

Cathy Almeida	cathy.almeida@icloud.com	Cecilia Moller	cillamoller@gmail.com
Cathy Barton	cj_bart_2000@yahoo.com	Cecilia Nakamura	ca3ns@aol.com
Cathy Basta	bastaranch@midrivers.com	Cecilia Pipitone-Oliveto	byteme2ok@aol.com
cathy bolton	cathyfb@aol.com	Cecilie Davidson	tigers@islandnet.com
CATHY BROOKS	cathylyn@earthlink.net	Celeste Bianco	gaiaone@sbcglobal.net
Cathy Brownlee	serendipitycat@hotmail.com	CELESTE HONG	celestehong@earthlink.net
Cathy Brunick	cbrunick@carolina.rr.com	Celeste Tindall	Lil_pixie_69@yahoo.com
cathy crum	cscanatomyarts@earthlink.net	celia okelley	celiaand@hotmail.com
Cathy Elizabeth Levin	silverdoubloon@yahoo.com	Celia Scott	twinks2@cruzio.com
Cathy Geist	cathy.geist@minneapolis.edu	Celia Thilgen	celiathilgen@yahoo.com
Cathy Goodrich	cathyg1941@gmail.com	cem ozkok	ozkokusa@gmail.com
Cathy Kenderski	cathykenderski@yahoo.com	cenie cafarelli	mollyclelia@aol.com
Cathy Loewenstein	langpath@optonline.net	cerise giovannetti	cerisebg@sbcglobal.net
Cathy Maloney	clmaloney54@gmail.com	Chad Fuqua	Fuqua24@gmail.com
Cathy Nieman	cathy.nieman@gmail.com	Chad Johnson	ckenjohnson@gmail.com
Cathy Powers	cdpowers7@gmail.com	Chad Leming	Chadleming@aol.com
Cathy Revis	criller1@aol.com	Chad Nieboer	nieboer@me.com
Cathy Sikes	C.sikes54@att.net	Chad Williams	cwilliams@crystalsugar.com
Cathy Sims	cathyennis1972@aol.com	Chaitanya Diwadkar	cdiwadkar@hotmail.com
Cathy staniunas	cassandraroxieginger7@verizon.	Chance Rearden	chancesr@earthlink.net
Cathy stansell	lbcat1960@yahoo.com	Chanda Farley	Raptured_Night18@Yahoo.com
Cathy Thomas	WolfClan27@yahoo.com	Chandler Bathrick	jralcesalces@gmail.com
Cathy Wolfe	Silversnow97@aol.com	Chandra Chase	chasechandra@yahoo.com
cave man	mrrails@yahoo.ca	Chandra Stephens	chandras@sonic.net
Cay White	yac22@msn.com	Chantal Benjamin	petitpiaf@suddenlink.net
cc Mullen	cgmullen@prodigy.net	Chantal Buslot	chanti@odie.be
cece frazier	cecilia.frazier@verizon.net	Charity Moschopoulos	charity.rome@hotmail.com
Cecelia Samp	ceceliasamp@triton.edu	Charleen Steeves	Charadr@me.com
CECIL PHILIP	CECILKPHILIP@HOTMAIL.COM	Charlene Boydston	cdboydston@yahoo.com
cecilia crocker	ceciliacrocker@yahoo.com	Charlene Breedlove	chabrel@sbcglobal.net

Charlene Cooper	FenAnnie@aol.com
Charlene Davies	charlene4047@gmail.com
Charlene Fershin	wolfsouls@citlink.net
Charlene henley	judgemoo@aol.com
Charlene Kerchevall	ramblin@cox.net
Charlene Knop	cknop@catocorp.com
Charlene Root	firebyrd@earthlink.net
Charlene V. Maker	cmaker@mac.com
Charles Alexander	ch_a_alex@hotmail.com
Charles Almack	almackc@gmail.com
Charles Bame	cobame@yahoo.com
Charles Brexel Sr.	cbrexel@aol.com
Charles Bunting	buckchunting@gmail.com
Charles Calhoun	clcalhoun@pacbell.net
Charles Castle	Chas_K_Castle@yahoo.com
Charles Clusen	cmclusen@gmail.com
Charles Cohen	charlie.cohen@att.net
Charles Cotter	ccotter@rock.k12.nc.us
Charles Daugherty	Charlie1600@comcast.net
Charles Davids	cdmacjack@yahoo.com
Charles Erwin	hgdec@wk.net
Charles Frach	frach@paulbunyan.net
Charles Froelich	frodaddy125@yahoo.com
CHARLES GARNER	encoreint@msn.com
Charles Grimmnitz	cgrimmnitz@yahoo.com
Charles Hammerstad	chamerstad@aol.com
Charles Hellingson	amidstdesign@gmail.com
Charles Hillman	hillman@midrivers.com
Charles J Whittle Jr	cleanthenew@embarqmail.com
Charles Jonaitis	n0vathecat@aol.com
Charles kennedy	ckennedy2@nyc.rr.com
Charles Kop	charleskop@centurylink.net
Charles Kovac	treeglides@aol.com
Charles L. Krugman	ckrugman@sbcglobal.net
Charles Mackie	yellowstone1@cox.net
Charles Martin	design@charlesmartin.com
Charles Massey	Cfminspection@gmail.com
Charles McRae	mcmarion38@gmail.com
Charles Mullen	c.b.mullen@sbcglobal.net
Charles Opalenik	CTOPALENIK@YAHOO.COM
Charles Perez	Chicperez@att.net
Charles Phillips	ozark-wild@att.net
Charles Price	charlespnj@aol.com
charles prostak	postcharles@aol.com
Charles Retherford	retherford@beasleylaw.com
charles shelton	crsheltn@verizon.net
Charles Smith	cssasmith@yahoo.com
Charles Snakard	csnakard@sbcglobal.net
charles steevens	clsteevens@charter.nert
Charles Summers	Cksummers@acm.org
Charles Walsh	chas.thom.walsh@gmail.com
Charles Warner	chucklw444@sbcglobal.net
Charles Webb	webbdnc@aol.com
Charles Wegrzyn	politics@garbagedump.com
Charles Wilmoth	cmwilmoth@sonic.net
Charles Wittman	cfw86@aol.com
charlie burns	charlie@envsite.com
Charlie Hitchingham	cahitch2000@yahoo.com
charlie houchins	magnolian2@live.com
charlie mccullagh	c.mtoole@verizon.net

Charlie Speno	chaspeno@gmail.com	Cheryl Dorris	chere50@yahoo.com
Charline Ratcliff	c_e_ratcliff@yahoo.com	Cheryl Dykstra	wordpecker@netzero.net
Charlotte Edwards	chared178@gmail.com	Cheryl Dzubak	cadzubak@gmail.com
Charlotte Gallardo	cegalla@sbcglobal.net	Cheryl Fergeson	cfxena888@gmail.com
Charlotte Husteck	chusteck@msn.com	Cheryl Frank	Cherylmfrank@yahoo.com
Charlotte Jorgensen	canyonwren@mac.com	Cheryl Hewitt	chewitt@sunflower.com
Charlotte Lundemo	charlotte@computercoop.com	Cheryl Holzle	c.holzle@sbcglobal.net
Charlotte Matthews	camscm12@gmail.com	Cheryl Ivey	agapai80631@mypacks.net
Charlotte Mullen	Kricket768@aol.com	Cheryl Kallenbach	ckallenb@icloud.com
Charlotte Shnaider	charsing@comcast.net	Cheryl Lechtanski	paboxies@hotmail.com
Charlotte Skuse	cwh3@cornell.edu	Cheryl Mcdaniel	cheryl.mcdaniel1@gmail.com
Charlotte Smith	Abqnurse44@gmail.com	Cheryl Mitchell	MiLawOff@aol.com
Charlotte Vardan	charlottevardan@yahoo.com	Cheryl Nenn	cheryl_nenn@milwaukeeriverkeep
Charmaine Lemmie	charlem53@aol.com	Cheryl Owen	cjhooverowen@att.net
Charmaine Pulgados	cpulgados@gmail.com	Cheryl Pace	Cherylpace47@icloud.com
Chas Martin	chasmartin2004@yahoo.com	Cheryl Remington	cremingt@hotmail.com
Chase Norfleet	chasen012@gmail.com	Cheryl Shushan	cherylhasmail@gmail.com
Chelsey Stuart	chelsey.collins@gmail.com	Cheryl Stankovich	cheryl92647@yahoo.com
Cheri Carlson	cjbaw@hotmail.com	cheryl terry	conch215@hotmail.com
Cheri Gaspero	coeurduvent@live.com	Cheryl Wait	grnwillow@hotmail.com
Cherie Erwin	cherieerwin@yahoo.com	Cheryl Walker	Cherylwalker423@yahoo.com
Cherie Hawley	cheriehawley@mac.com	cheryl watters	cheryl40978@aol.com
Cherish Aquino	Trinitycherish1@gmail.com	Cheryl Williams	cannw2006@att.net
Cherry Robinson	Cherrydr@pacbell.net	cheryl young	cher7007@gmail.com
Cheryl Arthur	cheryj414@hotmail.com	Cheryl Youngs	imagesvcs@aol.com
Cheryl Atkinson	kaceyrock@aol.com	Cheryl Zellmer	czellm@verizon.net
Cheryl Carnahan	crcarnahan@frii.com	Chey Richmond	cheylynn@cox.net
Cheryl Colopy	cgcolopy@gmail.com	Cheyenne Russo	iadorepink8@aol.com
Cheryl Dammeyer	cheryld81@yahoo.com	Chilton Gregory	chilton@unm.edu
Cheryl Dare	cmdare38401@yahoo.com	Chip Henneman	ww2buff39_45@msn.com

Chip Herron	chipski73@yahoo.com	Chris Morrow	C.morrow@frontier.com
Chip Perry	chip@chipperry.com	Chris OBrien	Chrisbauerobrien@yahoo.com
Chris Davis	chrisdavis@yahoo.com	Chris Olson	heliotropicnorsk@gmail.com
Chris Abery	aberyc@yahoo.com	Chris Ottosen	ottosen2002@yahoo.com
Chris Applegate	cdapplegate@gmail.com	Chris Pumpelly	c.pumpelly@performancepop.com
Chris Barbato	christianbarbato@yahoo.com	Chris Robertson	car650@gmail.com
Chris Bihler	cbnasti@cox.net	Chris Sanders	csanders@pipeline.com
Chris Casper	casper4427@gmail.com	Chris Scholl	Christopherscholl007@gmail.com
chris cayton	imrusalon@gmail.com	Chris Sermons	biowayfarm@gmail.com
chris chouteau	chrischouteau@earthlink.net	Chris Simmons	cbs1974@hotmail.com
Chris Dacus	chriscat2014@hotmail.com	Chris Skinner	troutfishr@hotmail.com
chris danne	chrisdanne@live.com	Chris Viegaard	cviegaard@yahoo.com
chris dickinson	cadickinson81@yahoo.com	Chris Walker	califguy5473@yahoo.com
Chris Drumright	astrohoops@aol.com	Chris Washington	cwashington@wlrk.com
Chris Gomez	Rngomez56@gmail.com	Chris Watson	watsonce@sbcglobal.net
Chris Guillory	chris_no51@yahoo.com	Chris Yuengel	Chrisyuengel@mac.com
Chris hazynski	mchazy77@hotmail.com	Christa Hladky	colomebabe65@yahoo.com
Chris Holtzhausen	chris.tl@iafrica.com	christa romppanen	christaiceforest@yahoo.com
Chris Johnson	Johnson.santiago@gmail.com	christel Markevich	christelmarkevich@gmail.com
Chris Joslyn	christinejoslyn@sbcglobal.net	Christi Dillon	racegirl1971@yahoo.com
Chris King	clking_sf@yahoo.com	Christi Jackson	laughing.horse@hotmail.com
Chris Lihou	clihou@yahoo.com	Christi Segari	Christi.segari@yahoo.com
Chris Lish	lishchris@yahoo.com	Christiaan Petersen	chrisjpetersen@yahoo.co.uk
Chris Loo	cdloo@hotmail.com	Christian & Lea Andrade	olympiclights@rockisland.com
Chris Lopez	psulionz7@aol.com	Christian Bookter	hoka1949@qnect.net
Chris MacNeil	PigfatRalph@aol.com	Christian Czingula	krsnan11@yahoo.com
Chris Maier	7lbsmallmouth@gmail.com	Christian Dollahon	wchristiandollahon@gmail.com
Chris Mendel	Camc987@yahoo.com	Christiane Freer-Parsons	biblioniomaniac@gmail.com
Chris Middleton	cpnpals@comcast.net	Christiane Pistor	elemi8@aol.com
Chris Moore	photogcam@comcast.net	christiane schneebeli	c_schneebeli@bluewin.ch

Christie Vaughn	Clv55@aol.com	Christine King	slacker_cricket@yahoo.com
Christina Babst	seamusminnie@hotmail.com	Christine Koehler	cioci0357@aol.com
Christina Bueno	buenochristina@rocketmail.com	Christine kudlate	cccupcake1963@yahoo.com
Christina Campbell	Cdodd409@yahoo.com	Christine Kuntz	Puretrixie@gmail.com
Christina Crosby	cathech24@yahoo.com	Christine LaPorte	saints_3@yahoo.com
Christina Encinas	Revellica@hotmail.com	Christine Mariani	antoin52@gmail.com
Christina Hoagland	cghwater@yahoo.com	Christine Menefee	chrmenefee@gmail.com
Christina Kazantza	nkosikana17@yahoo.gr	Christine Moody	christinehmoody@hotmail.com
Christina Marcus	j94eva@aol.com	Christine Morrissey	merryminion@tds.net
Christina Nekho	Cnekho83@gmail.com	Christine Oszak	coszak@aol.com
Christina Nillo	seamusminnie@att.net	Christine Parus	christineparus@yahoo.com
Christina Pasillas	snowmoodogs@gmail.com	Christine Payden-Travers	paydentravers@verizon.net
Christina Riegel	Christina_riegel@yahoo.com	Christine Powell	krisztin@yahoo.com
Christina Turrone	hazelturrone@hotmail.com	Christine Pylypowycz	chris210s@hotmail.com
Christine Ambrose	chrisambrose001@gmail.com	christine raffetto	cleo_sf@msn.com
Christine Anderson	chris@lafmore.com	Christine Razmus	razmus@earthlink.net
Christine Austin	stine_310@yahoo.com	christine schnebly	seamaries@msn.com
Christine Becker	kikgirl8@yahoo.com	Christine Skorberg	cfskorberg@aol.com
Christine Canavan	puckeysmom@hotmail.com	Christine Southwick	clsouthwick@q.com
Christine Coons	coons_christine@yahoo.com	Christine Stewart	atticuss@pacbell.net
Christine Ellis	Christine@winyahrivers.org	christine TATE	ctate520@att.net
Christine Etapa	gunsaulus@yahoo.com	Christine Trela	c.trela@att.net
Christine Finch	Chris.finch111@gmail.com	Christine V Fink	cfink@hotmail.com
Christine Fluet	cris539596@aol.com	Christine Wagner	cmwagner3@verizon.net
Christine Gasco	Runbunny1961@Yahoo.com	christine woodward	christinemlw@gmail.com
christine harker	charker@truman.edu	Christine Wordlaw	chrisniner_49@yahoo.com
Christine Harris	cmhrjhnop@yahoo.com	Christopher Ahrens	bonds81cda@gmail.com
Christine Harvey	CJHAKATINA@OPTONLINE.NET	Christopher Allen	chrisbrianallen@gmail.com
Christine Hayes	hayescb@hotmail.com	Christopher Benjamin	apostolicboylargo@yahoo.com
Christine Johanson	Cjnaughti@optonline.net	Christopher Boggs	Bogman84@aol.com

Christopher Dill	cdillfly@yahoo.com	Chuck Donegan	chucknet@optonline.net
Christopher Dowling	cod188@outlook.com	Chuck Hamblen	amblin@comcast.net
Christopher Ecker	cecker@me.com	Chuck Smith	videosmith@coldreams.com
Christopher Feehan	cjfeehan@hotmail.com	Chuck Vrasich	vrasich@sbcglobal.net
Christopher Fries	baldwinkiln@yahoo.com	Chuck Wirth	pcw@iwon.com
Christopher Fries	baldwinkiln@yahoo.com	Cierna Ritts	clritts@yahoo.com
Christopher Gecik	gecik.1@osu.edu	Cinda HANSEN-NORTON	hancin8@gmail.com
Christopher Kornmann	chris@spitandimage.net	Cindi Kestrel	cindikestrel@aol.com
Christopher Kowalski	p007bb@yahoo.com	Cindy Arneson	Cindyarneson8@yahoo.com
Christopher Lanski	chrislanski@hotmail.com	Cindy Blue	heronflying@gmail.com
Christopher Lawrence	ramgold101010@comcast.net	Cindy Borske	clborske@yahoo.com
Christopher Lee	CLeeEnterprises@aol.com	Cindy Carper	cindy18@suddenlink.net
Christopher Lima	Limasherps@aol.con	Cindy Charles	Cindy@ccharles.net
Christopher Lish	lishchris@yahoo.com	Cindy DiCarlo	cindy5659@cox.net
Christopher Loch	christopherloch@hotmail.com	cindy graham	cgraham13601@yahoo.com
Christopher Logan	oldflytyer49@yahoo.com	Cindy Grimes	NCKittenbird@aol.com
Christopher Lopez	judaspaladin@aim.com	Cindy Jensen	cindyjensen9290@comcast.net
Christopher Marcille	chrsmrcll@yahoo.com	cindy Lamont-Clure	cmlamontclure@yahoo.com
Christopher Nilo	cpnilo@gmail.com	Cindy Lance	cindylouwho@hawaiiantel.net
Christopher Panayi	immortal1958@gmail.com	Cindy Landis	cindy2001@animail.net
Christopher S. Minich	mystyryman7@yahoo.com	Cindy Landis	cindyjlandis@yahoo.com
christopher toye	hampden57@yahoo.co.uk	Cindy Lynch	cindylynch7@gmail.com
Christopher Tuch	christophertuch@yahoo.com	Cindy Page	Cepagewms3h3@yahoo.com
Christophet Lord	clord4103@yahoo.com	Cindy Parrone	cparrone@diederichgroup.com
Christy Brown	christiannealexandra@gmail.com	Cindy Shoaf	cindshoaf@yahoo.com
Christy Carosella	Cacarosella@gmail.com	Cipra Nemeth	cipran@gmail.com
Christy Dunn	christycdunn@yahoo.com	Cj Gainer	redwing-9@hotmail.com
Christy Kurtz	kurtzchristy@yahoo.com	CJ James	puma969@hotmail.com
Chuck Ainsworth	guadalupecanoe@gmail.com	Claire and Hilkka Egtvedt	chegtvedt@comcast.net
Chuck Dolan	chucklesd2@hotmail.com	Claire Chambers	csc2938@verizon.net

Claire Gartner	cguille1@jhu.edu	Claudia Prather	cprather@sprintmail.com
Claire Joaquin	cjoaquin@comcast.net	Claudia Reed	claud2re@aol.com
Claire McKay	clmckay53@gmail.com	Claudia Richner	claudia.richner@yahoo.com
Claire Morgan	carley_bluemel@hotmail.com	Claudia Sabine	cvslaw5610@aol.com
Claire Perricelli	ceperr@sbcglobal.net	Claudia Schwartz	claudia@bellocchio.com
Claire Russell	jessamyn_russell@yahoo.com	Claudia Van Gerven	claudia.vangerven@colorado.edu
Claire Wayner	claire@wayner.org	CLAUDY ASSALIT	freespirit23@comcast.net
Clara Cracchiolo	chiaramarie331@hotmail.com	Clay St John	cs_719@yahoo.com
Clara Meldrum	clara.meldrum@yahoo.com	Clayton Jones	seajay21649@gmail.com
Clare Cloutier	ccloutier@comcast.net	Clayton Troegle	claytontroegle@gmail.com
Clare Deucher	cmdeucher@comcast.net	Clif Van Auken	vanaukenclif1@verizon.net
Clarence Sanders	sandora99@msn.com	Cliff Johnson	gemsun9@gmail.com
Claressa Guyette	Coolmom007@hotmail.com	Cliff Rimler	Rn4cin@yahoo.com
Clarinda Karpov	rwhite6666@msn.com	Cliff Wilkinson	cliff_jason_wilkinson@yahoo.com
clarisse holman	madamec914@gmail.com	Clifford Hawkes	clifford.l.hawkes@gmail.com
Clark Pittman	publicaddress@verizon.net	Clifford Hritz	clifford_hritz@yahoo.com
Claude guillemard	claude@jhu.edu	Clifford Provost	provost-draper@earthlink.net
claude krampe	ckandut@yahoo.com	Clifford Spencer	cliffordspencer@ymail.com
Claude McDonald	mcdonald.3434@gmail.com	Clinton Nagel	clint_nagel@yahoo.com
Claude Robert	Ldruide@hotmail.com	Clive O"Donoghue	cliveodonoghue@gmail.com
Claudette Ashley	cwidman40@yahoo.com	Clotilda G. Devlin	DevlinClotilda_g@hotmail.com
Claudia Adamson	claudiaadamson@sbcglobal.net	Clover Seely	cloverseely@aol.com
Claudia Castillo	ccastillo10@gmail.com	Clyde Williams II	ccw2crl@gmail.com
Claudia Chaffin	agcwgrl@yahoo.com	CM Lahr	cleibing3@gmail.com
Claudia Chaffin	agwgrl@yahoo.com	Codi Hamblin	codi_hamblin@hotmail.com
claudia correia	claudia-correia@live.com.pt	Cody DeLong	cody@codydelong.com
Claudia Dannelly	cd6314@bellsouth.net	Cody Kenyon	kim01nostromo@gmail.com
claudia devinney	tippynine@yahoo.com	Cody Walters	fomocode@yahoo.com
Claudia Greco	bukigreco@aol.com	Cody Winstead	winsteadcd@suddenlink.net
Claudia Heilke	cheilke@gmail.com	cole ethridge	coethrd@sbcglobal.net

Coleen Lyon	cmlyon@live.com	Connie Jones	cbjones@upnatlanta.com
Coleen Welch	Coleen.welch@gmail.com	Connie Kirkham	cks2email@yahoo.com
Coleman Kline	ckline@fandm.edu	Connie Lippert	indigo55@bellsouth.net
Colene Flaherty	barcol@myfairpoint.net	Connie Nelson	cj49@earthlink.net
Colette Chance	coletchan@aol.com	Connie Tate	conniedtate@gmail.com
colette love-battista	colette.love-battista@aps.edu	Connor Wilkinson	cmwilkinson24@yahoo.com
colette wilson	colettelwilson@aol.com	Connor Hansell	landrovie@yahoo.com
Colin Donovan	cdonovan@rennersports.com	Connor O"Brien	coobrien@gmail.com
Colin Lindsly	dlca1325@comcast.net	Constance Colvin	CCB5Flamekeeper@aol.com
Colin Ploscaru	cploscaru@live.com	Constance Gadt	wcgadt@sbcglobal.net
Colleen Beck	Msbeck6067@aol.com	Constance Heym	conhey@mail.com
Colleen Madden	colleenothegreen62@gmail.com	constance stephens	grancon2@aol.com
Colleen McGlone	crmcglone@moose-mail.com	Constance Wessel	ewebrain@yahoo.com
Colleen Robinson	justicefire1@yahoo.com	Constance Youens	omconstance@gmail.com
Colleen Sheppard	colleen@nashvillekey.com	Consteve1952	consteve1952@comcast.net
Colleen Weiler	cmweiler77@gmail.com	Conway Cruickshank	chetcocliff@hotmail.com
Colleen Wilkinson	colleen_62@hotmail.com	Cooper Lambla	coop.lambla@gmail.com
Collin Szewczyk	dharmabum_74@hotmail.com	Copley Smoak	omnirodman@gmail.com
Colonel Meyer	RonM430@AOL.com	Corbett Kroehler	corbettkroehler@yahoo.com
Conchi Barquin	barquic@yahoo.com	Cordale Brown	c.nick.brown6@att.net
Conni Gratop Lewis	connigl@aol.com	Corey Jaseph	cljaseph@yahoo.com
Connie Bishop	connieb@charter.net	Corey Parker	iblamemysister@yahoo.com
Connie Boltz	connieboltz@yahoo.com	Corey Schade	coreyschade@hotmail.com
Connie Chambers	chambers.connie@gmail.com	Cori Bishop	animeluvr666@hotmail.com
Connie Colina	connie_colina@yahoo.com	Cori Fukuchi	corifukuchi@gmail.com
Connie Cranford	conniecranford@yahoo.com	Cori Yzaguirre	cayzaguirre@gmail.com
Connie Devine	squirelfox@aol.com	Corina Ploscaru	corinaploscaru@yahoo.com
Connie Dunn	yogart@bellsouth.net	Corinna Fritsch	ccfritsch@cox.net
Connie Fowler	creekwolf28@comcast.net	Corinna Hasbach	corinnahasbach@gmail.com
Connie Hansen	jandchansen@tx.rr.com	Corinne Greenberg	corinnelouisedesign@yahoo.com

Corinne Lambden	cplambden@gmail.com	Craig Keiser	cwkeiser12586@gmail.com
Corinne Rockstad	corinnerockstad@edinarealty.co	Craig Kerber	kerbersinniles@peoplepc.com
Corinne Van Houten	corinnevha@hotmail.com	Craig Mackie	beachbum@nehalemtel.net
corinne vanbegin	corinne.vanbegin@hotmail.be	Craig Mankowski	csmankowski@yahoo.com
Cornelia Shearer	keelabear@q.com	CRAIG SAKO	crssurf@hawaii.rr.com
Cornelia Teed	joteed2000@yahoo.com	Craig Shisler	craig_shisler@ekit.com
Corrie Brown	avsfan4928@msn.com	Craig Simpson	cs4202144@yahoo.com
Corrina Parker	corrina.parker@gmail.com	Craig Steinbeisse	craigs@midriver.com
Cortney Sumpter	yourpersonalbeauty@yahoo.com	craig terrell	ctctrll@aol.com
Cortney Zaret	cortneyzaret@hotmail.com	Craig Warren	cnk_wrrn@yahoo.com
Cory & Jean Washechek	1stchoice2@midrivers.com	Craig Zimmerman	dragonfly6160@yahoo.com
Cory Monty	cory.monty@gmail.com	Crickett Miller	myluckycrickett@att.net
Cory Wheeler	wheeler@midrivers.com	cris bhaiji	blkdog96@hotmail.com
Courtney England	Cocoa77055@yahoo.com	Cristian Contreras	cris006@sbcglobal.net
Courtney Franklin	courtfranklin.cf@gmail.com	Cristina Beltran	Cristybeltran83@yahoo.com
Courtney Morris	Steep.3@gmail.com	Cristina Brydges	clbrydges@gmail.com
Courtney Stefano	Cjnsync311@msn.com	Cristina Novelo	lestat_th@hotmail.com
Courtney Wall	courtneywall54@gmail.com	Cristina Roberts	robertscristina@hotmail.com
covi lopez	cuevahonda58@hotmail.com	Cristina Sherer	cshererrex@hotmail.com
CPT (Ret.) Cliff Snedeker	snedekercw@verizon.net	Cristina Tamayo	cristina.tamayo@gmail.com
Craig and Nancy Phillips	naphillips12750@gmail.com	Cristina Wenzl	cwenzl@me.com
craig brooks	clbrooksmd@yahoo.com	Cristine Van Dyke	cris_vandyke@yahoo.com
Craig Brown	cbrown@monkeybridge.com	Croitiene ganMoryn	adanto@jps.net
Craig Brown	craigmacbrown@me.com	Crystal Grubbs	th0rn7@yahoo.com
Craig Campbell	Gravitasdriftboats@yahoo.com	Crystal Hart	pirates0171@yahoo.com
craig conn	connpgh@aol.com	Crystal Howell	Ratsy69303@aol.com
Craig Griffith	clgriffith27@gmail.com	Crystal Reamer	crreamer@yahoo.com
Craig Hanson	sweetenlucky@cs.com	Crystal Wolf	Cawolf79@gmail.com
Craig Jensen	drcraigj@comcast.net	CT Bross	ctbis@sbcglobal.net
Craig Johnson	craig4jr@midrivers.com	Curt Barnett	curtilicious@gmail.com

Curtis Porach	cporach@mpdlaw.com	Cynthia Swanson	Cjswanson16@yahoo.com
Curtis Sanders	Csand1949@aol.com	Cynthia Willette	cynthiawillette@yahoo.com
Cyndi Fritzler	danilleea@hotmail.com	cyrene liang	arabian.rains@gmail.com
Cyndi Hunt	chunt_mata@comcast.net	Czerny Auyang	czerny777@aol.com
Cynthia Baker	baker.c.leigh@gmail.com	D Ashurst	retiredcat@dm-tech.com
Cynthia Brooks-Fetty	libsncatsrule@gmail.com	D Dixon, Sr.	Ddixon@invitationsforless.com
CYNTHIA BROWN	cynmoon@yahoo.com	D Durham	deswest1122@yahoo.com
Cynthia Dantzic	cdantzic@liu.edu	d fischer	drf551@gmail.com
Cynthia Davis	calicojordan@aol.com	d g	dana.m.gurley@pepsico.com
Cynthia edwards	comfrey@earthlink.net	D Haltom	jstdi101@yahoo.com
Cynthia Fell	alphalakota1@yahoo.com	D Huber	dianemhuber@msn.com
Cynthia Harris	cjharris5@hotmail.com	d lap	donnakerslake2000@yahoo.co.uk
Cynthia Hartley	cghartley13@gmail.com	d mcinnes	repent@aol.com
Cynthia Hines	jodybobbiehines@yahoo.com	D Rader	drader2@bellsouth.net
Cynthia Hull	cmeow2000@yahoo.com	D Schoech	dschoech@sbcglobal.net
Cynthia Ingelfinger	Cingelfinger@verizon.net	d Trykowski	trykowsd@uww.edu
cynthia jobling	jobling1221@yahoo.com	d"Anne MacNeil	goofyme@cox.net
Cynthia Johnson	jonsnent@yahoo.com	D. Bryan	D.Bryan@Rocetmail.com
Cynthia Kirschling	ccviot@gmail.com	D. Fieri	d-j-f@sbcglobal.net
Cynthia Lee	uscdlee@yahoo.com	D. Rincon	moz710@gmail.com
Cynthia Liss	cynliss88@yahoo.com	Dacia Murphy	daciavu76@gmail.com
Cynthia Marrs	marrs_cynthia@yahoo.com	Dakota Newbry	Dakotanewbry@yahoo.com
Cynthia McMath	cynmcm@yahoo.com	Dakotah Woller	whisper_on_the_winds@yahoo.com
Cynthia Meyer	cyncam50@hotmail.com	Dale Alan Zurbrick	dzurbri@aol.com
Cynthia Moir	cyn.moir@gmail.com	Dale Ball	dalehball@gmail.com
Cynthia Murphy	baileyscr@aol.com	Dale Birdsell	dbirdsell@comcast.net
Cynthia P Vartenuk	vartenuk@yahoo.com	Dale Cannon	cannodw@wou.edu
Cynthia Patterson	cynthiapurchase@gmail.com	Dale Carpenter	dcarpman@yahoo.com
Cynthia Rice	whiteopalwolf@yahoo.com	Dale D. Miller 282 Blue Store	milled@bellsouth.net
Cynthia Small	csmall103@comcast.net	Dale Danielson	daled5333@gmail.com

Dale Ellis	dalee@turnkeysolutions.com
Dale Evilsizer	Dale_evilsizer@yahoo.com
Dale LaCognata	dalelacognata@comcast.net
Dale Mattes	dalemattes@yahoo.com
Dale McKenna	movie.dale@verizon.net
dale riehart	dale@daleriehart.com
Dale Shero	dasred@msn.com
Dale Sims	dale@cleanfish.com
Dale Wood	dalewoodrugby2@yahoo.com
Dallas Windham	Medic4059@yahoo.com
Dameta Robinson	dameta@gmail.com
Damian James	damian.j@att.net
Damian McDonnell	dmcjhmc70@yahoo.com
Damian Velez	sethnjas@hotmail.com
Dan & Jeanne Olson	jeaolson@cyberport.net
DAN ANDREE	danandree@loretel.net
Dan Behl	dmb193@hotmail.com
dan bowers	dbowers@junodonuts.com
dan cappello	louis21329@gmail.com
dan cignoli	danpc5@hotmail.com
Dan Crockett	dancrockett63@gmail.com
Dan Doepker	ddoepker@woh.rr.com
Dan Esposito	danjesposito@yahoo.com
Dan Grassi	dangrassi@gmail.com
Dan Hubbard	danielhubbard@peoplepc.com
Dan LeMieux	dglem09@att.net
Dan Lombardo	DanLombardo42@gmail.com
Dan Mckenzie	Dhmckpdx@comcast.net
Dan Morgan	nasaduck@gmail.com
Dan Murchison	danmurchison@gmail.com
Dan Nelson	dannelson99@live.com
Dan Nolan	flotndan@sbcglobal.net
Dan Perdios	danpinps@aol.com
Dan Silver	dsilverla@me.com
Dan Streeter Jr	legaldanny@hotmail.com
Dan Wood	Daw2103@gmail.com
Dana and Nelda Snider	dnasnider@frontier.com
Dana Banks	dana.banks@gmail.com
Dana Craig	navigator662003@yahoo.com
Dana Markey	dmarkey99@yahoo.com
Dana Sklar	sklartech@verizon.net
Dana Slawson	slawson.dn@gmail.com
Dana Stickney	danastickney@knanel.com
Danby Whtmore	rdanby@veirzon.net
dani bigley	gr8fuldani325@gmail.com
Daniel Davis	ddavis528@gmail.com
Daniel Sanbeg	daniel.sanbeg@gmail.com
Daniel & Karen Natt	natt1971@epix.net
Daniel Aunkst	dan1955@windstream.net
Daniel Brogan	buckhtr@gmail.com
Daniel Capurro	litos_capurro@hotmail.co.uk
Daniel Carawan	carawandr@vcu.edu
Daniel Carrillo	spike4385@yahoo.com
Daniel Demetzky	dannybacsi13@yahoo.com
DANIEL DENIS	danieldenis728@gmail.com
Daniel Driver	old1one@hotmail.com
Daniel Fernandes	dpf_1982@hotmail.com
Daniel Gonzales	danleslie13@gmail.com
Daniel Hawley	svskier@cox.net
Daniel Jones	djdestin2003@yahoo.com

Daniel Jourdan	danieljourdan@gmail.com	Dara Murray	daralynn_10021@yahoo.com
Daniel L. Harris	youthgoji@yahoo.com	Dara Rider	stewballrider@gmail.com
daniel leffler	lefflerda@yahoo.com	Darcee Guttilla	Dguttilla@gmail.com
Daniel Maddux	danielmaddux@npgcable.com	Darcy Bergh	darcybergh@gmail.com
Daniel Maguire	djm2150@yahoo.com	Darcy Nielsen	darcynielsen74@yahoo.com
Daniel Mink	Howls_with_Wolves@comcast.net	DARCY OLSEN	odarcy@qwest.net
Daniel Mongno	danny.mongno@wernerpaddles.com	Darcy Quinn	darcysquinn@yahoo.com
Daniel Newell	danielnewell@gmail.com	Darla Daniel-Seabolt	mydar2003@yahoo.com
Daniel O"Keeffe	Brilliantgenius1@hotmail.com	Darla Kravetz	Pitser@ptd.net
Daniel R. Balogh	manjursidan@aol.com	darleen cox	decox@twc.com
Daniel Roberts	dr@carcoinc.com	Darleen Moranobrown	Booboo1109@comcast.net
Daniel Salmen	dsalmen@verizon.net	Darlene Ellison	dellison@shipperswarehouse.com
daniel saltz	dsaltz@mail.sdsu.edu	Darlene Falk	roobieru5@gmail.com
Daniel Sanbeg	daniel.sanbeg@gmail.com	Darlene Jakusz	jdjakusz@wi-net.com
Daniel Sude	djsude@gmail.com	Darlene Marley	djmarley@gmail.com
Danielle Charney	shineshuge@gmail.com	Darraline Salmon	1hipit@gmail.com
Danielle Graham	danjo01@sbcglobal.net	Darrel Snyder	darrel.snyder@colostate.edu
Danielle Richardson	dani143200@yahoo.com	Darrell Schwalm	schwalmie2@aol.com
Danika Esden-Tempski	paper.tigre@gmail.com	Darren Showers	showersd@yahoo.com
Danita Strand	dstrand@telluridemtnschool.org	Darrin O"Connor	Darrinoconnor@yahoo.com
Danna Hoffmaster	missnhit@yahoo.com	Darryl San Souci	boxer07@msn.com
Danna Williams	dlwillia@uga.edu	Daru Rini	darurini@yahoo.com
Danny Lannen	d.lannen@frontlkineeag.com	Darvin Schild	Ddees53@gmail.com
Danny Paccaasassi	ifishmemphis@yahoo.com	Daryl Pullen	legalegl43@gmail.com
Danny Wyrwas	dwyrwas@gmail.com	Darynne Jessler	darynnej@yahoo.com
danuta radko	danutaradko@aol.com	Dashiell Dunkell	dash_sc@yahoo.com
Danuta Watola	facebok@op.pl	dave alexander	dalexander3@raytheon.com
Daphne Lambright	daphne.lambright@verizon.net	Dave Atkinson	renmandave@hotmail.com
Daphne Vestal	vestal@healthscopebenefits.com	Dave Barger	tgiacb717@yahoo.com
Dar Bertsch	Drdar@sbcglobal.net	dave delson	daveiscrazy@hotmail.com

Dave Freeman	dkfreeman@npgcable.com
dave gliva	davegliva@att.net
Dave Harrington	Daveha13@live.com
Dave Holt	dholt@cableone.net
Dave Howard	d_howard2001@yahoo.com
Dave Kraus	dkraus3@gmail.com
Dave Krupa	dakrupa@aol.com
Dave Lindblom	dlindblom1@gmail.com
Dave Mills	lockhartrealty@sbcglobal.net
Dave Morizio	morizio5@aim.com
Dave Rezab	drezab@gmail.com
Dave SEaborg	davidseaborg@juno.com
Dave Searles	ecotopian@charter.net
Dave Smith	dave.smith.32566@gmail.com
Dave Spencer	hawkvet1@outlook.com
Dave Spildie	drspildie@yahoo.com
Dave Starke	vino4us@gmail.com
Dave Strunk	strunkdave@yahoo.com
Dave Werntz	dwerntz@gmail.com
Dave&Barb Cassidy	adc1128@frontier.com
Daviann McClurg	chevy_thunder_z@yahoo.com
David & Cindy Linde	davidlinde250@hotmail.com
David & Lanette Jorgensen	djorgy@midrivers.com
David A. Smith	dasmith@uci.edu
David A. Woolsey	woolsey.david.violinmaker@gmai
David Abalos	dabalos1@verizon.net
david ackley	ann.dackley@yahoo.com
David Adams	ctrarcht@nccn.net
David Adamson	Adamsond@gmail.com
David and Helen Gill	david.helen.gill@cox.net
David and Sally Mikkelsen	dmikkelsen@princeton.edu
David Anderson	dca1892@yahoo.com
David Anderson	dca1949@yahoo.com
David Arnson	davidarnson@sbcglobal.net
David Ashley	dashley372@yahoo.com
David B. Brooks	goofotografx@gmail.com
David Ball	dball@smith.edu
David Barnett	davidcbarnett@gmail.com
david beam	dbeam@mdsci.org
David Billups	davidtbillups@gmail.com
David Bohn	alohabear@mailpride.com
David Boyajian	angularhp@gmail.com
David Brayfield	urb_forest@hotmail.com
David Brodnax	brodnax@alumni.northwestern.ed
David Broer-LeRoux	rouxed1@gmail.com
David Brooks	david@montanatu.org
David Brooks	poppaotter1@icloud.com
David Bryson	dfbryson@yahoo.com
David Carrothers	davidc@ellensburg.com
David Chisholm	chisholmdj@aol.com
David Christman	dgxmn@yahoo.com
David Clifford	DCliff33@Charter.net
David Coffin	davidpagecoffin@mac.com
David Collins	dacollins46@hotmail.com
David Cook	dncook1@gmail.com
David Copper	davecinthewoods@gmail.com
David Cottrell	davidcottrell73@yahoo.com
David Crawford	drdmcrawford@gmail.com
David Dalton	davedalton3@aol.com
David Daniels-Lee	ddanielslee@gmail.com

David Davis	dadavis7@aol.com
David DeQuasie	brkbat3220@att.net
David Dorn	Davdorn@gmail.com
David Doty	politicos@dbdoty.com
David Draksler	dave33771@gmail.com
David Duncan	lolocreek@gmail.com
David Earle	earlethesquirrel@yahoo.com
David Edge	davedge2@cox.net
David Edwards	david@riverbird.com
David Elfin	elfind@verizon.net
David Ellenberger	davidellenberger@hotmail.com
David Elliot	dbelliot@comcast.net
David Elmendorf	delmendorf01@yahoo.com
David Enevoldsen	david.enevoldsen@kla-tencor.co
David Florkowski	florkowskidr@gmail.com
David Forbes	dforbes@ieee.org
David Fosdick	Tetonia@swbell.net
David Freeburg	dfreeburg@charter.net
David Freed	audiquattrofan@yahoo.com
David Friend	daviddfriend@hotmail.com
David Fura	yellowrabbit66@gmail.com
David Gallipoli	dgdjconst@aol.com
David GArdner	dgardner@aol.com
David Gerke	dggerke@hotmail.com
David Gill	davidgill787@yahoo.com
david giordano	giordanodavid779@yahoo.com
David Girvin	dwgirvin@gmail.com
david goist	gocon@aol.com
David Greene	David.greene5@comcast.net
David Gross	davidgross12@yahoo.com
David Guleke	dguleke@yahoo.com
David H Pflieger	almost_heaven@verizon.net
David H Walker	davidhdhwalker@gmail.com
David Hammond	tripper@wildblue.net
David Hand	gardendude@optonline.net
David Hanna	davehanna123@gmail.com
David Harris	open7oceans@gmail.com
David Hedges	david@hedges.name
David Heenan	david.heenan@gmail.com
David Henning	dghenning@tds.net
David Hermanns	dhermann@earthlink.net
David Hillbrand	sj4david@gmail.com
david holmes	dhpbi@aol.com
David Hrobuchak	Hrobuchakd@aol.com
David J. Wilson	djw1ls0n@sbcglobal.net
David Jackson	David.w.jackson.jr@gmail.com
David Jay	djay@htvq.com
David Johnson	dj.jj@icloud.com
David Jutt	djjutt@verizon.net
David Kagan	dbkagan@comcast.net
David Kanter	Kanter.David@Comcast.net
David Kizer	dkizer21@gmail.com
David Klass	dklass@verizon.net
David Kleiman	cactuskleiman@gmail.com
David Klinke	lorddavud1@msn.com
David Knight	KnightNocturnal@msn.com
David Koser	mtnbik8888@aol.com
David Kurland	dknykurland@yahoo.com
David Laing	davidlaing@aol.com
David Lais	housewren@tds.net

David Laramie	dglaramie@yahoo.com	David Osinga	WereOutThere@msn.com
David Larson	crusty95@verizon.net	David Osterhoudt	dostermail@yahoo.com
David Lauder	dlauder0303@gmail.com	David Perkins	davidmuteman@aol.com
David LaVerne	backpack2@comcast.net	David Prystal	Dprystal@hotmail.com
David Lewbin	davidlewbin@sbcglobal.net	David Randall	lightfoot_32@yahoo.com
David Lindsey	davekl69@aol.com	David Rawlings	Skijetre@msn.com
David Losie	earthrisingsanctuary@yahoo.com	David Reimers	dreimers@globalccs.org
David Lowe	Swedish_chef_dave@yahoo.com	David Ringle	d.ringle@ieee.org
David Luxem	Daluxem1@yahoo.com	David Romain	servearth@comcast.net
David lynn Grimes	Corin.po.crow@gmail.com	David Ross	davidthewhalewatcher@gmail.com
DAVID M. DUNN	dunndm1949@hotmail.com	David Rufner	drufner@gmail.com
David Margolis	davemargolis@fastmail.net	David S. Nichols	davemult@aol.com
David Marsden	dam4299@verizon.net	David Sams	fishnhunt47@yahoo.com
David Marshall	davidmarshall1@verizon.net	David Saperia	saperia@earthlink.net
David Mauller	mauller1@frontier.com	David Scharf	david@scharfphoto.com
David Mayeske	Davidmay@toad.net	David Schmitt	djs@corsbassett.com
David Mazurek	northwoodsdave@yahoo.com	David Schwartz	Interiorfabricator@yahoo.com
David Melegari	davidgmelegari@gmail.com	David Schwartz	Schwartz67@gmail.com
David Menchell	dmenchell@aol.com	David Seldin	dws871@verizon.net
David Mitchell	dave2mkh@gmail.com	David Sell	dsell4@cox.net
David Moon	davidmoondavidmoon@gmail.com	David Skelton	dsbaseballfan@yahoo.com
David Moser	moser.wct@gmail.com	David Snope	ds31ds@centurylink.net
David Myers	dkmjunk@verizon.net	David Speakman	kspurplesage@gmail.com
David N	modeler762@aol.com	David Springer	springer331@att.net
David Neevel	lolaatbay@gmail.com	David Stetler	davidhstetler@gmail.com
David Nelson	dbn409@q.com	David Stockland	dastock@hotmail.com
David Nelson	drnelly07@yahoo.com	David Taggart	aletterteeheehee@aol.com
David Newton	dsnewt10@gmail.com	David Tall	tallflyfish@hotmail.com
David Nez	dnez@hevanet.com	David TALLEAGLE	dreagle2679@yahoo.com
David Opman	dimarybka@hotmail.com	David Thompson	lelon2222@yahoo.com

David Toth	dltengr@verizon.net	Daysha Deen	Dayshadeen@yahoo.com
David Valentino	disney3@optonline.net	DC Katten	mrpanashe@gmail.com
David Vigil	dbvigiljr@yahoo.com	Dea Smith	theperfectsolution@yahoo.com
David Ward	djward2003@yahoo.com	Dean Amel	damel@alum.mit.edu
David Waters	hellodw@gmail.com	Dean Baxter	Dbaxter3@comcast.net
David Webb	dleonwebb@q.com	Dean E. Sheldon Jr.	seedbed@frontier.com
david white	dvdwhte09@gmail.com	Dean Frick	DFrick2518@Aol.com
David Wilcox	moink64@yahoo.com	Dean Kendall	deankendall48@epix.net
David Wilcox	wilcoxdavid3@outlook.com	DEAN Knauer	deank@vcn.com
David Wilson	wilsondavid@mac.com	Dean Rocissono	rocissono@aol.com
David Wilson	wilsonrunningbare@yahoo.com	Dean Ruscoe	ecomaniac@bellsouth.net
David Wolfson	davidwolfson@sbcglobal.net	Dean Silver	dean@silvagio.com
David Woronecki-Ellis	ellisd012@gmail.com	Dean Webb	dm_webb@live.com
David Young	bongodave@rocketmail.com	dean weiss	deanhillel@yahoo.com
David Zentner	dzentner@charter.net	Dean Wilson	enapay3@aol.com
David Zielinski	davez385@frontier.com	Deana Sidney	deanasidney@mindspring.com
David Zimney	dzimney@mac.com	Deann Piehl	sdpiehl@sbcglobal.net
Dawn Albanese	dawnie_angel@hotmail.com	Deanna Boddicker	boddidl@yahoo.com
dawn baier	lilbaier@yahoo.com	Deanna Draudt	dmariephoto@yahoo.com
Dawn Barber	dbarber80@yahoo.com	Deanna Gentle	deanna.gentle@gmail.com
Dawn Carr	mich7474@bellsouth.net	Deanna Horton	dlh@dmsgs.com
Dawn Florio	florioski@yahoo.com	Deanna Merrill	Deannaj34@hotmail.com
Dawn Kosec	dawnkosec@yahoo.com	Deanna Morse	deannavoce@aol.com
Dawn Mason	dawn783121@yahoo.com	Deanne O"Donnell	hottdeanne@hotmail.com
Dawn Mason	mason_dawn@comcast.net	Deatra Barclay	Deebar@me.com
Dawn Sharif-Coon	dawnsharifcoon@gmail.com	Deb Adler	Twinmom4@verizon.net
Dawn Silver	dawnsilver@ameritech.net	Deb christensen	jenizakc@sbcglobal.net
Dawn Sink	dsink@clofinedairy.com	Deb Ford	deborah_demoss@hotmail.com
Dawn Star	dawn22star@aol.com	Deb Hirt	aviannovice@aol.com
Dawn Tiffin	cubatron@comcast.net	Deb Hooley	hoooley@att.net

Deb Lincoln	deb.lincoln@gmail.com	Debbie Williamson	williamsondebbie2@gmail.com
Deb Lincoln	deb_lincoln@yahoo.com	Debby Rybovich	rybodeb@aol.com
Deb Teger	Debteger@gmail.com	Debi Darnell	debi.darnell@yahoo.com
Deba Rehn	BibleeoGirl@aol.com	Debi Holt	debilholt@yahoo.com
Debbie Alderson	jdalderson@email.com	Debi Martinez	martinez94550@yahoo.com
Debbie Balasko	dbalasko@generalformulations.c	Deborah Allison	dallison58@yahoo.com
Debbie Brawner	debbrawner@att.net	Deborah Ann Welton	twomoons1010@care2.com
Debbie Brozak	debbiedew22@yahoo.com	Deborah Ann Welton	twomoons1010@yahoo.com
Debbie Carroll	dmaecarroll@gmail.com	Deborah Armbrust	tenaciousmum@yahoo.com
Debbie D	debaduley@yahoo.com	Deborah Boomhower	Housershoney@yahoo.com
Debbie Dominguez	debsinfla@yahoo.com	Deborah Bradford	creature@sopris.net
Debbie Foley	Deb.foley2@verizon.net	Deborah Buchanan	dlbadger@gmail.com
Debbie Friesen	dfriesen@email.arizona.edu	deborah cady	ddcady3013@sbcglobal.net
Debbie Fulkerson	fulksfish@yahoo.com	Deborah Capps	thomcap4@gmail.com
Debbie Hatcher	debrath7@aol.com	Deborah Carroll	carrolldeborah8@gmail.com
Debbie Hebrard	Debbielynell@yahoo.com	Deborah Chevalier	grannie4jasb@yahoo.com
Debbie Hunt	debbie@debbie-hunt.com	Deborah Crump-Doyle	dkcrump@aol.com
Debbie Imhoff	johnbskdeb@gmail.com	Deborah Dahlgren	dadahlgren@earthlink.net
Debbie Jackson	Debbiejxn@gmail.com	deborah dall	momdall724@hotmail.com
Debbie King	debbieking999@comcast.net	Deborah Doolittle	dsd@cox.net
Debbie King	dking69186@aol.com	Deborah Ebersold	ebersocats@att.net
Debbie Koundry	ddonofrio@snet.net	Deborah Fobes	nissapom@aol.com
Debbie Lyons	debbiekyons716@yahoo.com	Deborah Gorman	xyzdebg@optonline.net
Debbie McCarthy	galaxygoon@tds.net	Deborah Hall	dhall3@elmore.rr.com
Debbie Neimark	neimark@sbcglobal.net	Deborah Hauser	debhauser@aol.com
Debbie Schlinger	sunflower033010@gmail.com	Deborah Kreuser	dkreuser78751@gmail.com
Debbie Sequichie-Kerchee	galacticcherokee@gmail.com	deborah lancman	lucylanc@aol.com
Debbie Sierchio	divadangles@gmail.com	Deborah Laun	Deborahlaun@gmail.com
Debbie Stadler	Debbiestadler@gmail.com	Deborah Leader	djtphn1@gmail.com
Debbie Starr	coexist@cox.net	Deborah Lee Chill	bubbalee58@yahoo.com

Deborah Lipman	deborah.a.lipman@gmail.com	debra Kaplan	dakaplan@aol.com
Deborah Long	Deborahfino@hotmail.com	Debra Marge	deb7570@hotmail.com
Deborah Marchand	dmarchand4@gmail.com	Debra Miller	debra_m@comcast.net
Deborah Miller	Danddmiller@att.net	Debra Moore	ilenem_1@yahoo.com
Deborah Parker	firstplanetarian@hotmail.com	Debra Moray-Brach	brachdebbie@gmail.com
Deborah Parks	debbieonsml@gmail.com	Debra Morse	debramorse@mchsi.com
Deborah Ramos	desertwindartist@gmail.com	Debra Nichols	fender0s@hotmail.com
Deborah Reeves	debhead06@yahoo.com	debra poscharscky	debforevers@gmail.com
Deborah Reiter	reiter@sbs.umass.edu	Debra Pratt	djp802290@yahoo.com
deborah sargent	sargentdeb@yahoo.com	Debra Reckling	dbrlynn@gmail.com
Deborah Schechter	DeborahSchechter@aol.com	Debra Roberts	roberts-m@att.net
DEBORAH SMITH	deborah993@cox.net	Debra Shepler	debbieshepler2207@gmail.com
Deborah Smith	ssdowind@yahoo.com	Debra Skup	pdscon@gmail.com
Deborah Voves	dkvoves@gci.net	debra temple	debra.temple@usa.net
Deborah Walsh	deborah.walsh@tufts.edu	Debra Vandenbroucke	dbvdb_2000@yahoo.com
deborah wellington	debbie_wellington@yahoo.com	Debra Walker	magdala666@yahoo.com
Deborah Willette	debbytg1@yahoo.com	Debra Wolfley	ironwolf4321@yahoo.com
Deborah Williams	dgwill1217@yahoo.com	Debra Yanko	tersolar@comcast.net
Debra Atlas	debraatlas@gmail.com	Debz Jones	dbzjones7@gmail.come
debra broughman	sunconurespirit@yahoo.com	December Oglesby	kekemapa35@yahoo.com
Debra Combs	DebiC743@mac.com	Dede Chejlava	dedelc@sbcglobal.net
Debra Culwell	rocky42000@netzero.net	dee deville	fulfillmentforum@q.com
Debra Davino Patzer	dpatzer@cityofbuchanan.com	Dee Hilbert	dlh180@aol.com
Debra Emery	debraemery02@gmail.com	Dee Jorgensen	jondee79@gmail.com
debra espinoza	dle266@yahoo.com	Dee Steele	Ccredhead22@gmail.com
Debra Gakeler	gakeler@everestkc.net	dee williams	wouldsy@yahoo.com
Debra Giannetti	Dpgiannetti@gmail.com	DeeDee Mirmak	cyberscriber@att.net
Debra Gleason	misshuganah@gmail.com	Deena Sadek	dsdogdr@comcast.net
Debra Guel	dguel728@yahoo.com	Deenie Tallant	deenie_tallant@yahoo.com
Debra heatherly	dheatherly.alcom@sbcglobal.net	Deirdre Arntz	wdarntz@comcast.net

Deirdre Brownell	Dbdc125731@aol.com	Denise Halbe	cabngirl@pacbell.net
Deirdre Coval	akdazed@yahoo.com	Denise Hall	dnsdruidess@yahoo.com
Deirdre Morris	kittyhawk12348@earthlink.net	DENISE HAYES	denise-hayes@att.net
Deirdre Scott	d248scott@gmail.com	Denise Hosta	mash.mojo88@gmail.com
Deja Lizer	Dayjah219@aol.com	Denise Janssen Eager	djansseneager@gmail.com
Deke Gliem	gliemdm@msn.com	Denise Jennings	Niseyjenn@gmail.com
Del Gomes	gomesdd@pweh.com	DENISE KASTNER	denise@platinum-universe.com
Del Nollmeyer	dknmt@midrivers.com	Denise Keeton	denijo2@hotmail.com
del stiewert	adi1del@aol.com	Denise Kobylarz	denisekoby@optonline.net
DeLane Bredvik	dbredvik@aol.com	Denise Lytle	centauress6@live.com
Delaney Milbourn	Laneytoe@yahoo.com	Denise Mayosky	dmayosky835@gmail.com
Delbert Carnes	ncharter@alaska.net	Denise McConnell	dns_mcconnell@yahoo.com
Delivery	delivery@actionsprout.com	Denise Pedersen	pedersenfam@comcast.net
Della Pangborn	dellapang@aol.com	Denise Romesburg	mysa_nal@yahoo.com
Delores Tyre	delorest1@gmail.com	Denise Scholz	dababico@ix.netcom.com
Delwin R Holland	hollaj8_5@q.com	Denise Shapiro	spankyshapiro@optonline.net
Demaris Hollembeak	demaris@udel.edu	Denise Smith	sdlakota@centurylink.net
Demelza Costa	Hotep@centurytel.net	Denise Thunderhawk	eyeswideopen0325@gmail.com
Dena Garcia	mittens1120@aol.com	Denise Tratolatis	dtratolatis@att.net
Dena Shelangoski	brookbru@yahoo.com	Denise Turner	deturner61@gmail.com
Denia Price	deniaprice@aol.com	Denise Walsh	Denise.walsh2@yahoo.com
Denis Andrews	itsdenisw1n@gmail.com	Denise Wilson	Dewilson226@comcast.net
Denis DellaLoggia	DenisDL@comcast.net	Denise Yesland	dyfeb2254@gmail.com
Denise Auld	Denise.auld@goddard.edu	Deniuse Martini	martini187@aol.com
Denise Comiskey	treehouse13@suddenlink.net	Dennis Wick	dennis@nickjonesre.com
Denise Conte	dac1951bear@gmail.com	Dennis Adkins	Dden632@yahoo.com
Denise Denton	dbabydd012@gmail.com	Dennis Allen	dallen4191@aol.com
Denise DesLauriers	dmdeslauriers@gmail.com	Dennis Bahr	dennisbahr@yahoo.com
Denise Gonzalez	Denise@360.com	Dennis Davie	dendavie@cruzio.com
Denise Griffin	everafter4e@hotmail.com	DENNIS DELATORRE	drbendover@att.net

Dennis Feichtinger	djfeich@aol.com	derek cheever	ukulele.derek@gmail.com
Dennis Hall	denformation@yahoo.com	Derek Gendvil	dgendvil@gmail.com
Dennis Hipple	dleehipple@gmail.com	Derek Johnson	hizzgrace@gmail.com
dennis kreiner	djkreiner2@comcast.net	Derek Maes	brooer@aol.com
Dennis Landi	dob12121956@yahoo.com	Derek Meyer	dmmeyer@email.com
Dennis Landi	dob1956@yahoo.com	Derek Neis	neisrangers2011@gmail.com
Dennis Ledden	lcs5779@gmail.com	Derek Osborn	derek.osborn@graybar.com
Dennis Lorenz	dl@sidneyrental.com	Derek Pippin	derekpippin@gmail.com
dennis love	lan2000@earthlink.net	Derek Walker	liquidoshin@gmail.com
Dennis luna	dennis.luna82@gmail.com	Desiree Nagyfy	dnagyfy@msn.com
Dennis Manske	newfman@yahoo.com	Desiree Penaranda	homeloans333@yahoo.com
Dennis Mathews	Dennis.mathews54@icloud.com	Devan Cain	rdcain120@bellsouth.net
Dennis McGarvey	dogsmanden@gmail.com	Devin Brown	devin.g.brown@gmail.com
Dennis McGee Jr	dennisrmcgeejr05@yahoo.com	Devin Henry	mrdsir@hotmail.com
Dennis Miller	blackguard71@yahoo.com	Devin Lee	devinlee@me.com
Dennis Morley	dadcos@optonline.net	Devin Olsen	devino@nezperce.org
Dennis O"Brien	dobrien5@hotmail.com	Devon Benton	devo1afi@gmail.com
Dennis Oliver	doliver923@yahoo.com	Devon Kerbow	dvnkrbw@yahoo.com
Dennis Pennell	bluespaddler@gmail.com	Devon Seltzer	daikaijutanuki@gmail.com
Dennis Presson	dennispresson@comcast.net	Devorah Heyman	voheyman@hotmail.com
Dennis Radcliff	bonniedennis@centurytel.net	Dharma Best	Bestdharma@gmail.com
Dennis Raney	fshfrme@hotmail.com	Dia Schumacher	mrs.schu@yahoo.com
Dennis Robinson	zeke842@cableone.net	dia tsung	diatsung@yahoo.com
Dennis Rogers	derogers_98@yahoo.com	Diana Aylward	dianaaylward@mac.com
Dennis Schaef	dshifdy@aol.com	Diana Baumgartner	ZglSsgoddessdiana@gmail.com
Dennis Schvejda	dschvejda@gmail.com	Diana Beardsley	Dbyoga100@gmail.com
Dennis Waterhouse	Waterhousedennis@gmail.com	Diana Ciolli	d.0069@yahoo.com
Dennis Wolff	d_wolff59@yahoo.com	Diana Covington	ladyofthelake_9@yahoo.com
Dennis Ziober	dennisziober@gmail.com	Diana Dee	Dianahtlne@aol.com
Denny Barnes	den.sha07@yahoo.com	Diana Dill	dianadill51@yahoo.com

Diana Dorsett	dyanalou@gmail.com	Diane Brazil	dvbrazil@live.com
Diana Douglas	dianaddouglas@hotmail.com	Diane Calkins	calkinsdm5@yahoo.com
Diana Druga	Dcdruga@aol.com	Diane Cantwell	diane-cantwell@pacbell.net
Diana Duffy	Resurrectionfarm@sbcglobal.net	Diane Carr	dianelmt1@gmail.com
Diana Franco	dianafranco1@aim.com	Diane Chatigny	dchatign@northshore.edu
Diana Gazzola	dianagazzola@gmail.com	Diane Clark	diane718@centurylink.net
Diana Gebczyk	dianag121269@gmail.com	Diane Danielson	daled5333@gmail.com
Diana Greenhalgh	diana12759@gmail.com	Diane Faircloth	dcfaircloth@care2.com
Diana Hartel	diana.hartel@gmail.com	Diane Ferrari	drferrar@optonline.net
Diana Hughes	dianaghughes@aol.com	Diane Finley	diane.finley@sbcglobal.net
diana keyser	dkeyser@aspenhospital.org	Diane Franks	dianefranks63@gmail.com
Diana Kliche	Klichediana@gmail.com	Diane Garetz	storyteller4@gmail.com
Diana Knowland	diana.knowland@dignityhealth.o	diane geary	hardworkinmom@mail.com
Diana Lemus	dlemus214@hotmail.com	Diane Hendricks	ddhend@hotmail.com
Diana Miller	diana411@earthlink.net	Diane Kadomoto	dkadomoto@yahoo.com
Diana Morrow	Dianmorr@aol.com	Diane Kelly	dianekellybooks@gmail.com
Diana Philip	dieli1@verizon.net	DIANE Kent	jdkent@aol.com
Diana Polsky	DJPolsky@aol.com	Diane Kokowski	dicarko@gmail.com
Diana Regan	Tyggerzmom@att.net	Diane Kossman	kossdg@icloud.com
Diana Rothman	darothman95060@yahoo.com	Diane Kraft	samson3809@gmail.com
Diana Saxon	moondaughter72@hotmail.com	Diane Lansing	dialansing@verizon.net
Diana Smith	monet7936@hotmail.com	diane libman	stormyinchicago@hotmail.com
Diana Townsend	dbanana12@aol.com	Diane Lilly	dlillyartist@msn.com
Diane Alpern	DAlpern702@aol.com	Diane London	moviemagicat@yahoo.com
Diane and Syd Marcus	savelolitap@yahoo.com	Diane Luck	dianeluck@mac.com
Diane Arnal	Diane_Arnal@msn.com	Diane McJunkin	dmcjunkin@papersystems.com
Diane Ashcroft	dashcroft39@yahoo.com	Diane Mikulan	Jdcl4321@aol.com
Diane Berlin	berlinbiz.diane@aol.com	Diane Miller	dinchas@aol.com
Diane Bolman	dbmar@sonic.net	Diane Moschetta	dmoschetta@yahoo.com
Diane Bouska	dbouska@bellsouth.net	Diane Norris	dncatlover@gmail.com

Diane Nowak	dianemnowak@msn.com	Dieter Bartels	dieter@nunusaku.com
Diane Nye	joyful_virgo@yahoo.com	Dina Belmir	Dinabelmir@hotmail.com
Diane Patton	NYSnowflake2K@yahoo.com	Dina Koehly	Dkoehly@sbcglobal.net
Diane Pease	wapdap@gmail.com	Dini Schipper	dini.schipper@casema.nl
Diane Petersen	pamperdiane@yahoo.com	Dioniscio Abing	dya21rainlander@hotmail.com
Diane Phillips	dianeEphillips@gmail.com	Dirk Reed	dirkdirkreedreed@gmail.com
Diane Roche	droche@rscj.org	Dirk Rogers	1dog2dogs3dogs@gmail.com
diane rohn	rohn.diane@gmail.com	Dita Obler	Ditaobler@gmail.com
Diane Sadowski	sadowski2771@msn.com	Ditra Walsh	ditralist@hotmail.com
Diane Salsitz	ladyofdogs@aol.com	Dixie Myers	democrat3@att.net
Diane Schiks	dschiks@outlook.com	DJ Wagner	ltldjw@comcast.net
Diane Schroeder	darkdave03@yahoo.com	DK Bolen	dkbolen@gmail.com
Diane Shaughnessy	dshau1@aol.com	Dmitry Landa	landadave@hotmail.com
Diane Shifrin	shifrin_d@yahoo.com	Dolores Arndt	dolores3206@yahoo.com
Diane Thomson	djtpeony@yahoo.com	Dolores Foscherari	buy4reso@yahoo.com
Diane Vandiver	dianev72@aol.com	Dolores Moes	dbq2360@yahoo.com
Diane Ward	dmward33@yahoo.com	Dolores Parra	herreralavin@hotmail.com
diane winkler	diane.winkler@kimball.com	Dolores Pino, B.A., J.D.	dcpino@yahoo.com
Diane Wright	dianewright13@comcast.net	Dolores Piper	dolorespiper@sbcglobal.net
Diane Zentner	capozen@yahoo.com	Dolores Sherwood	jsherwood33@gmail.com
Dianna Hamilton	dragondi@bellsouth.net	Dolores Sloan	dsloannow@gmail.com
Dianna Hoyt	littlehoyt5@yahoo.com	Dolores Weiss	Danalor02@windstream.net
Dianna Wood	dwood22@msn.com	Dolph Lohwasser	dolphlohwasser@yahoo.com
Dianne Douglas	dianne.douglas@asu.edu	Domingo Hermosillo	dhermosillo@protonmail.com
Dianne J. Stein	dianne619@yahoo.com	Dominic Libby	libb_00@yahoo.com
Dianne Miller	dianne918@att.net	Dominic Melita	sordfisch32960@yahoo.com
Dianne Winne	dmwinmd@earthlink.net	DOMINIQUE PERKINS	scarlatti@aol.com
Dick Dierks	dickdierks@gmail.com	Don B. Meriwether	alien_don@yahoo.com
Dick Evans	dick944@gmail.com	Don Badt	dbadt@crystalsugar.com]
dick hogle	dick.hogle@gmail.com	Don Burton	wan2bfishn@gmail.com

Don Casavant	doncasavant@peoplepc.com	Donald Heyden	donnie@theheatband.com
Don Clapp	donclapp@hotmail.com	donald hnatowich	djhnatowich@gmail.com
Don Der	donwder@yahoo.com	Donald Hyatt	dhyatt3@columbus.rr.com
Don Derby	derb.derb@gmail.com	Donald J. Shaw	donshawcats@mac.com
Don Dobesh	don@pdainc-sd.com	Donald King	WYDKing@gmail.com
Don Dumond	ddumond@uoregon.edu	Donald Lintner	dlintner@earthlink.net
Don Faia	dfaia@cruzio.com	Donald Murphy	djmenj@gmail.com
Don Gilbert	dlgilbert1@bellsouth.net	Donald Richey	vethospital@kconline.com
Don Herden	dherden@aol.com	Donald Schwartz	DRSRay54@cs.com
Don Hon	dphon4@aol.com	Donald Seaman	deseaman@juno.com
don hughes	oacep@att.net	Donald Spencer	dspencer36@comcast.net
Don Lichtblau	flatsandfins@verizon.net	Donald Steele	steele1217@earthlink.net
Don Mastvelton	dmastvltn@holnad.com	Donald Stuart	Donestuart@yahoo.com
Don McGowan	don@earthsongphotography.com	Donald Studebaker	rhinoceroslodge@pon.net
Don McKelvey	donmckelvey38@gmail.com	Donald Tayloe	marathonds@aol.com
Don Moreau	donster_r@hotmail.com	Donald Taylor	cplii@sbcglobal.net
Don Moulds	don.moulds@gmail.com	Donald W Argus jr	argusd@att.net
Don Pew	nobrainsurgeon022@yahoo.com	Donald Wallace	donaldjwallace@yahoo.com
Don Regan	donaldj.regan@att.net	DONALD WATSON	dbw49@comcast.net
Don Sherman	realtor94@gmail.com	Donette Erdmann	Dde2662@hotmail.com
Don Steinbeisse Jr.	donjr@midrivers.com	Donlon Mcgovern	mcgovern@hevanet.com
Don Wiltsie	chil4356@msn.com	Donna Roberts	dmroberts01111980@yahoo.com
Dona LaSchiava	dslaschiava@comcast.net	DONNA ALADEEN	daladeen48@yahoo.com
Donald Barker	wolvesdenobx@gmail.com	Donna Austin	billaus376@aol.com
Donald Betts	DonaldBetts14@yahoo.com	Donna Barrett	mjb146@aol.com
Donald C. Karcz Sr.	9153@comcast.net	Donna Bing	donnalbing@aol.com
Donald Coyne	dacoyne@gmail.com	Donna Blue	donnablue@twc.com
Donald Di Russo	di.russo@verizon.net	Donna Bookheimer	vampire524@yahoo.com
Donald Garlit	donaldgarlit@yahoo.com	Donna Brown	donna@fvogelmann.com
Donald Harland	dharland@bellsouth.net	Donna Brown	msbrowm2u@optonline.net

Donna Burrows	herder@flash.net	donna morang	donnamorang@yahoo.com
Donna Buscemi	donmarweims@zoominternet.net	Donna O"Berry	littlechinarose@gmail.com
Donna Capalbo	donnamcappy@aol.com	Donna Pagan	freeaftr30@gmail.com
Donna Carr, M.D.	DonnaCarrMD@aol.com	Donna Parente	Dp0783@yahoo.com
donna commey	donnacommey@hotmail.com	Donna Pedroza	donnageorge2@gmail.com
Donna Corse	mountainwa@comcast.net	Donna Pemberton	grackle17@yahoo.com
Donna D Varcoe	dmdv45@hotmail.com	Donna Pemmitt	dpemmitt@gmail.com
Donna Davenport	donnadav2000@yahoo.com	Donna Pope	donnapope_relo@yahoo.com
Donna Davis	djd15@hotmail.com	Donna R. D"Fini	donnardfini@verizon.net
Donna DeProspo	ddeprospo@comcast.net	Donna Ream	dream_13_friday@yahoo.com
Donna Duran	dani@calvistaa.com	Donna Repsher	gemgal14@gmail.com
Donna ellis	donnaaellis@gmail.com	Donna Rich	drich@brimldry.com
Donna Fountain	donnafountain@gmail.com	Donna Roberts	dmroberts01111980@yahoo.com
Donna Frye	dmaefrye@hotmail.com	Donna Rose	equusrose@aol.com
Donna Gellman-Rodriguez	dongelrod@gmail.com	Donna Shinkawa	dshinkawa@gmail.com
Donna Gensler	donnahg706@msn.com	Donna Shroyer	d_shroyer@yahoo.com
Donna Grace	donnaj.grace@gmail.com	Donna Smith	lwolf42gsd@live.com
Donna Hamilton	donnabrattychick@yahoo.com	Donna Turiano	Sashaturiano@aol.com
Donna Harris	DHarris1234@aol.com	Donna Turner	truex63@yahoo.com
Donna Houghton	dmhis@earthlink.net	Donnette Lafleur	mrslafleur@gmail.com
Donna Ingenito	Samdon76@yahoo.com	Donnette Thayer	donnette.thayer@gmail.com
Donna Koechner	dmkoechner@usa.net	Donny Seals	sealsknox18@aol.com
Donna Kowzan	dkowzn@gmail.com	Doreen Forbes	dkforbes@att.net
Donna L	donna-lagomarsino@comcast.net	Doreen Tignanelli	doreentig@aol.com
Donna l Leavitt	donnaleav@gmail.com	Dori Cole	dpernicka@yahoo.com
Donna L. Harris	harrisdl@earthlink.net	DoRi Miles	dori@capital.net
Donna Leslie-Dennis	dazegoneby@aol.com	Dorian Atchison	dorianatchison@gmail.com
Donna Lovick	dhnlov@yahoo.com	Dorian May	dorianmay@comcast.net
Donna Lozano	Donna.Lozano@sbcglobal.net	Dorie Green	dorie_green@hotmail.com
Donna Malvin	donnamalvin@cox.net	dorinda kelley	dorindask@gmail.com

Dorinda Scott	dorinda04@yahoo.com	Doug Gould	dg0uld@yahoo.com
Doris Applebaum	ibis4247@sbcglobal.net	Doug Hay	haydoug_linda@yahoo.com
Doris Barnard	85f28346@opayq.com	doug krause	dougkrause@mts.net
Doris Carey	carey58@verizon.net	Doug Landau	popcomic@tampabay.rr.com
Doris Hoffman	doris@pdainc-sd.com	doug meikle	duggmeek@yahoo.com
Doris Inslee	dlanins@aol.com	Doug Mishler	eggzakly26644@gmail.com
Doris Kester	kester@sccfcolorado.org	Doug Morse	dem5@nyu.edu
Doris Rhine	kalijunfan2000@yahoo.com	Doug Wingeier	dcwing@main.nc.us
Doris Telles	tellesdoris@yahoo.com	Douglas Baker	douglasbaker@mail.com
Doris Verkamp	Vad11_11@yahoo.com	Douglas Cooke	squirreltree@yahoo.com
Doris Vician	wwdmvician@msn.com	Douglas Elliott	calypsoseaocean@yahoo.com
dorothea herman	dade4@cox.net	Douglas Gammell	dugamel@gmail.com
Dorothea Vecchiotti	div@ocs-oe.com	Douglas Gower	mesa797@hotmail.com
Dorothy and Robert Osborn	dottieo@nc.rr.com	Douglas Henderson	dhender@gmail.com
Dorothy Anderson	gramdot@hotmail.com	Douglas Lass	dabigdoodah@yahoo.com
Dorothy Hornby	dorcar@comcast.net	Douglas Leppink	Dougleppink@gmail.com
Dorothy Kethler	dkethler@gmail.com	Douglas Mason	dmm551@psu.edu
Dorothy Lynn Brooks	amberitha@hotmail.com	Douglas McCormick	mfiinsure@cox.net
Dorothy Muir	muird@comcast.net	Douglas McNeill	peter.cares@wap.org
Dorothy Neff	neffd99@yahoo.com	Douglas Miller	douglasmiller35@gmail.com
Dorothy Poppe	dotpoppe@bellsouth.net	Douglas Rives	brives@windstream.net
Dorothy Roeder	dorothyroeder@gmail.com	Douglas Rohn	lymfatic@me.com
Dorothy Shelton	Tollivershelton@gmail.com	Douglas Sedon	sedond@yahoo.com
Dorothy Varellas	djvarellas@comcast.net	Douglas Sward	dgsward@hotmail.com
Dorothy Wilkinson	deegee43@gmail.com	Douglas Wagoner	dwag253610@aol.com
Dorothyy Schultz	dhschultz@cox.net	Douglas Witmore	dougwit@sbcglobal.net
Dottie Butler	Dottieandstanbutler@gmail.com	Douglass Turner	turner.douglasst@gmail.com
Doug B	doug.blazer@gmail.com	Doyle Adkins	dradkins@swbell.net
Doug Broadie	dbroadie@isomedia.com	Dr Cenythia	cenythia@yahoo.com
Doug Gemmell	doug.gemmell3@frontier.com	Dr Kathleen M Lynch	Lynch.kathleen@att.net

Dr Robert (LTC USA Ret) and Gi	RJBonometti@gmail.com	Dudley and Candace Campbell	cdcampbl@roadrunner.com
Dr. Bob Albiston	rkalbi@BellSouth.net	Dudley McClaire	Dudley@mailexpire.com
Dr. Chris Mazzola	cmazzo46@gmail.com	Duncan Andrews	dtandrews@comcast.net
Dr. D.W. Johnson	dwjnrc@live.com	Duncan Brown	dbuteob@hotmail.com
Dr. Dan Graham	grahamdn@bellsouth.net	Dunja Moeller	dunja@workshopsforabetterlife.
Dr. David D. Markwardt	drddmarkwardt@yahoo.com	Dusty Hallman	dusty@harmonyhilltop.com
Dr. James Lazell	hq@theconservationagency.org	Dusty Vinson	dustyvinson@hotmail.com
Dr. L. Steele	wentwest@peoplepc.com	Dwayne Dassing	Ddassing@gmail.com
Dr. Matthew Berg	mattberg03@gmail.com	Dwayne Munar	dwayne_munar@yahoo.com
Dr. Maurice Luker	msluker@ehc.edu	Dwight Allbee	d960hfincbk@yahoo.com
Dr. Mha Atma S Khalsa	earthactionnetwork@earthlink.n	Dwight Poffenberger	Dpoffenberger@whepatent.com
Dr. Peter Geidel	drpg23@hotmail.com	Dwight Wanhala	guidedog@att.net
Dr. Prisca Gloor	priscagl@aol.com	Dyana Riley	DyanaRiley@Yahoo.com
Dr. Ron LR. Nixon	ronnix108@comcast.net	Dylan Flather	dylan.flather@gmail.com
Dr. Scott Whitener	whitener.scott@gmail.com	E BEBAY	Enochb@owlphabet.com
Dr. Walter R. Hoeh	randy.hoeh@gmail.com	e c	cecebop1@gmail.com
Dr. William and Nancy Butler	WmCButlerPhD@wmconnect.com	E L Frazier	elfin@comcast.net
Dr.Anthony R. Peluso	greenport1@optonline.net	e neiman	e.neiman@web.de
Dr.Virginia Jones	jones1911@att.net	E Pajak	epajak@hotmail.com
Dragana Lisonek	dklisonek@gmail.com	E ralston	zaraprovidence@yahoo.com
Drew Cucuzza	dcucuzza@snet.net	E Robbins	eloise.g.robbins@lmco.com
Drew Irby	irbysan@hotmail.com	e Rosser	momcat2287@wowway.com
Drew Martin	DMandCH@aol.com	e s	eiveg@yahoo.com
Drew Pelton	drew_pelton@yahoo.com	E. Gallagher	eg@tltd.com
Drucilla Mothley	Celticthorn49@aol.com	E. George Strasser	egstrasser@aol.com
Drusilla Winters	wintersdru@gmail.com	E. Neal	endant@yahoo.com
Duane Peters	dpeters@crystalsugar.com	E. P	liz1952@gmail.com
Duane Mitchell	dmitchell@richland.org	E.B. Zukoski	Tzactivist@gmail.com
Duane Nascimento	soth130@hotmail.com	EA Beck	theshift33@aol.com
Duane Smith	SLKPC@midrivers.com	Earl Gregg Swem III	gswem@aol.com

Earl Poteet	wallacecotton@yahoo.com	edna anderson	chaplainmamabear@aol.com
Earla Kirkwood	kirkwoodmjk@aol.com	Edna Rankine	ednamrankine@gmail.com
eben schaefer	eben@hubya.com	Edquna Thompson	edqunat@yahoo.com
ed Atkins	hearthdance@yahoo.com	Edward Bielaus	ljbar@msn.com
Ed Attanasio	iconatt@charter.net	Edward Butler	epb223@gmail.com
Ed Benner	ebennr@yahoo.com	Edward Cammann	gar.eden@att.net
Ed Bernas	Ed.bernas@yahoo.com	Edward Cavasian	cavasian@gmail.com
ed blanch	panamajax69@hotmail.com	Edward Clebsch	eclebsch@utk.edu
Ed Bradley	Jebradley51@gmail.com	edward colerich	e.colerich@yahoo.com
Ed Chamberlain	%60grobdash@yahoo.com	Edward Cowan	edward@sportea.com
Ed Dobson	edobson@iglide.net	Edward Craig	epcraig@gmail.com
Ed Fiedler	sparkplug2525@gmail.com	Edward Day	eddy.day55@gmail.com
Ed Giguere	edgiguere@gmail.com	Edward DeFrancia	moabdefrancias@peoplepc.com
Ed Gould	ps2os2@yahoo.com	Edward Enriquez	enriquez051@gmail.com
Ed Jackson	edjackson624@gmail.com	Edward Freeman	edwardfreeman48@gmail.com
Ed Jocz	edjocz@verizon.net	Edward Gerster	ealexg@yahoo.com
Ed Loosli	Ed-L@sbcglobal.net	Edward Hall	edhall@sopris.net
Ed Noonen	enoonen@comcast.net	Edward Hanson	hansbear@centurylink.net
Ed Perry	edpgsa@earthlink.net	Edward Hubbard	edhubbard@gmail.com
Ed Vieira	edvjr63@aol.com	Edward Kern	amazinggrace3@sbcglobal.net
Edalin Koziol	edalinkoziol@gmail.com	Edward Kush	edkush@hamptons.com
Eddie Nardone	ednardone@hotmail.com	Edward Lasker	tedlasker@excite.com
Eddie Ward	warde4@live.com	Edward Lee	edandnok@yahoo.com
Edeltraut Renk	edeltraut.renk@alice.it	Edward McFarlin	eddymcfarlin@gmail.com
Edh Stanley	itsEdh@softcom.net	Edward Michael	Michaeled223@comcast.net
Edith Mann	Backacres1947@gmail.com	EDWARD MIKAN	littleredhen21@yahoo.com
Edith Ogella	edithogella@msn.com	Edward Norkus	enorkus@aol.com
edith Root	jroot@fairpoint.net	Edward Rengers	edreng@gmail.com
Edmund Nespoli	Ejnespoli@AOL.com	Edward Rowell	eproakgrove@embarqmail.com
Edmund Weisberg	edmundweisberg@yahoo.com	Edward Rubin	lindaandedrubin@gmail.com

Edward Savage	nedsavage@gmail.com
Edward Shelley	egshelley@earthlink.net
Edward Spevak	zoospevak@hotmail.com
Edward Thomas	edward.64@verizon.net
Edward Thornton	ert@sas.upenn.edu
Edward Tischbern	tdstudio1@sbcglobal.net
Edward Walworth MD	ezwalworth@gmail.com
Edward Whitney	Nedwhitney@gmail.com
Edwin Colberg	edwincolberg@hotmail.com
Edwin Johnson	abraxis37@gmail.com
Edwin nielsen	edwsen@yahoo.com
Edwin Quigley	equigley3@comcast.net
Edwina Nuccio	edwinanuc@gmail.com
Edwina White	edwinaw8@yahoo.com
Efrain Sanchez	camelpr@yahoo.com
Eileen Anglin	whiterose@whiterosepath.com
Eileen Bill	billeileen@sonic.net
Eileen Brown	Eileenmaranatha@hotmail.com
Eileen Chieco	ekchieco@yahoo.com
Eileen Coffee	coffee316@comcast.net
eileen fonferko	marshfieldphoto@aol.com
eileen juric	eileenjuric@att.net
EILEEN PUTMAN	SKY@GALAXYINTERNET.NET
Eileen Reznicek	wayneileen@gmail.com
Eileen Roberts	Dragonflydaisy@gmail.com
Eileen Trainor	eileen_trainor@yahoo.com
Eileen Welch	Jebwelch@yahoo.com
Eileen Wysocki	ewysocki@holycross.com
ELAINE AL MEQDAD	ebenson14@yahoo.com
Elaine Baldwin	elainebaldwin@comcast.net
Elaine Balgemann	ejb1221@aol.com
Elaine Becker	elainebecker@yahoo.com
Elaine Cuttler	Njnurse22@aol.com
Elaine Donovan	donovaneb@frontier.com
Elaine Eudy	alpha_b@bellsouth.net
Elaine Fischer	efischer@workmail.com
Elaine Johnson	larryjohnson1950@bellsouth.net
Elaine Kluever	elaine.dkluever@gmail.com
Elaine Larson	elainelars@gmail.com
Elaine Mont-Eton	bears2398@aol.com
Elaine Parker	parkereleit@aol.com
Elaine Rettig	emrettig@gmail.com
Elaine Ryan	elainearyan@yahoo.com
Elaine Simon	psimon901@aol.com
Elana Katz rose	Elanakatz@yahoo.com
Eldean & Sandy Flynn	esf@midrivers.com
Eldean Flynn	esf@midrivers.com
Eldon Leuing	eleuning@gmail.com
Eleanor Ansback	Eleanoransback@gmail.com
eleanor arons	eleanor.arons@rcn.com
Eleanor Cohen	elliecoh@gmail.com
Eleanor Conroy	Ele630@sbcglobal.net
eleanor shive	eshive@cox.net
Eleanor Smithwick	pacmail@mindspring.com
Elena Busani	eleswolf@gmail.com
Elena Ennouri	boussakato@icloud.com
Elena Perez	eleartemis@yahoo.com
Elena Sopoci	sopocibelknap@msn.com
Eli Solesby	Bitsolesby@gmail.com
Elinore Krell	erkrell@yahoo.com

Eliot Brown	eliot@mayaair.com	Elizabeth Ceron	bethceron@yahoo.com
Eliot Schickler	ESchickler@aol.com	Elizabeth Cherubin	eacherubin@yahoo.com
Elisa Rivera-Boyles	eriveraboyles23@yahoo.com	Elizabeth Chestnut	eachestnut@swcp.com
Elisa Townshend	esjq@msn.com	Elizabeth Cliff	elizabeth9cliff@gmail.com
Elisabeth Bechmann	elisabeth.bechmann@kstp.at	Elizabeth Clouspy	Liz@soutexlam.com
Elisabeth Brackney	elisabeth.brackney@gmail.com	Elizabeth Cunningham	eliznmaeve@gmail.com
Elisabeth Casamitjana	elicasamitjana@hotmail.com	Elizabeth Dawson	thirdrockwalk@gmail.com
elisabeth guss	56growltigerkat4@hotmail.com	Elizabeth De Guise	beth.deguise@epsilon.com
elisabeth null	enul@starpower.net	Elizabeth de Rivera	esderivera@gmail.com
Elisabeth Peterson	Foxhill2625@gmail.com	Elizabeth DeLoma	Eonyx134@aol.com
Elisabeth Price	ejprice@zianet.com	Elizabeth Denning	bethdenning2@centurylink.net
Elisabeth Spaeth	Schlosshohenfels@yahoo.com	Elizabeth Duvert	eduvert@gvtc.com
Elise A Tollner	ldavtoll@aol.com	Elizabeth Eddy	Edianeeddy@aol.com
Elise Adibi	eliseadibi@gmail.com	Elizabeth Grater	Ecgrater@gmail.com
Elise Johnston	ejohnston2010@gmail.com	Elizabeth Grovenstein	eagmt1@gmail.com
Elise McCoubrie	emccoubrie@centurytel.net	Elizabeth Guthrie	lizguth1@frontiernet.net
Elise Phillips Margulis	elisemar@hotmail.com	Elizabeth Hale	bhale2000@hotmail.com
Elisenda Toda	elitoda@yahoo.es	Elizabeth Hegarty	elizabethmhegarty@gmail.com
Elissa Gordon	ealgordon@msn.com	Elizabeth Heller	sbetty369@gmail.com
Elisse De Sio	elissedesio@yahoo.com	Elizabeth Hestnes	TwoHFarm@aol.com
Elizabeth Allen	shadowylynx@yahoo.com	Elizabeth Hickman	hickman.beth@comcast.net
Elizabeth ball	btygry@gmail.com	elizabeth Hopkinson	bhopkid@gmail.com
Elizabeth Banov	ebanov@rcn.com	Elizabeth Jache	Esheltie@hotmail.com
Elizabeth Beatty	spunkerd@yahoo.com	Elizabeth Kitson	Eli_kit@yahoo.com
Elizabeth Bettenhausen	elizabethbettenhausen@gmail.co	Elizabeth Kramer	kramerscove@yahoo.com
Elizabeth Bird	lizzbird1@gmail.com	Elizabeth Lengel	lengels@mac.com
Elizabeth Bogacz	bdb3000@aol.com	Elizabeth MacKelvie	litsi@att.net
Elizabeth Bradshaw	lizbradshaw@twcny.rr.com	Elizabeth Manske	she_manske@yahoo.com
Elizabeth Brooks	betsybrk@bellsouth.net	elizabeth marcellus	ecmflowers@optonline.net
Elizabeth Butler	littlegrove1110@gmail.com	Elizabeth McCormack	rusty0814@yahoo.com

Elizabeth Merz	merz@prtel.com
Elizabeth Meszaros	avmevermine@gmail.com
Elizabeth Milliken	beth@spottswoode.com
elizabeth myrin shore	bmyrin@mail.com
Elizabeth ODear	ekodear@gmail.com
Elizabeth Panus	eapanus@verizon.net
Elizabeth Paulette	elizabeth_paulette@yahoo.com
Elizabeth Peterson	bassaxhorn@aol.com
Elizabeth Pritchard	Epritchard5314@gmail.com
Elizabeth Putnam	eputnam@snet.net
Elizabeth Reese	mszippi406@yahoo.com
Elizabeth Roberts	robertsliz9@gmail.com
Elizabeth Root	betsy@betsyroot.com
Elizabeth Ryan	Epryan13@gmail.com
Elizabeth Schweizer	eliz1147@aol.com
Elizabeth Seltzer	ees01@earthlink.net
elizabeth smith	libby91@yahoo.com
Elizabeth Smith	Lizziemuir66@hotmail.com
Elizabeth Stange	kabrah2@att.net
Elizabeth Taylor	emtseattle@GMAIL.COM
Elizabeth Taylor	etaylor7@gmail.com
Elizabeth Thatcher	patpoint@suddenlink.net
Elizabeth Treat	eatreat@yahoo.com
Elizabeth Trought	batrought@gmail.com
ELIZABETH TUCKER-GRAHAM	CUSHY39@HOTMAIL.COM
Elizabeth Tuminski	ftuminski57@gmail.com
Elizabeth Walters	beth_walters7@hotmail.com
elizabeth watts	bettymart_98@yahoo.com
Elizabeth Watts	elizabeth.watts@verizon.net
Elizabeth Werner	bethwerner@snet.net
elizabeth whitlam	elizafl7@aol.com
Elizabeth Williams	wethbilliams@gmail.com
Elizabeth Wince	e.wince@yahoo.com
Elizabeth Zengel	bazengel@ohsnd.org
Elke Passarge	Elke18@aol.com
Ellaine Lurie Janicki	simkal@att.net
Ellen Atkinson	Jeanne184490@gmail.com
Ellen Bardo	ellen.bardo@yahoo.com
Ellen Desruisseaux R.N.	katsuki67@hotmail.com
Ellen Domke	domkone@yahoo.com
Ellen Edelman	merlinone63@gmail.com
Ellen Edwards-Thrasher	cantonellen@aol.com
Ellen Franzen	ellen_franzen@yahoo.com
ellen goodman	egoodman1942@yahoo.com
Ellen Halbert	ellenhalbert@hotmail.com
Ellen Hogarty	hotdigdog11@hotmail.com
Ellen Homsey	ehomsey@yahoo.com
Ellen Jahos	echaladoff@ne.rr.com
Ellen Koivisto	offstage@earthlink.net
Ellen McConnell	cats4all@optonline.net
Ellen McKinley	ellen_davin@yahoo.com
Ellen McNeirney	ellen.frank@verizon.net
Ellen Middleditch	middleditch.ellen@gmail.com
Ellen North	Enorthrider@gmail.com
Ellen Osborne	Peaceeao7@aol.com
Ellen P. Ayalin	ellena@ameritech.net
Ellen Quinn	ellen5r2q2@aol.com
Ellen Roos-Marr	Eroosmarr@aol.com
Ellen Rosher	rosher01@centurylink.net

Ellen Sanford	esanford@q.com	Emily Lapham	e_eade@hotmail.com
Ellen Seeherman	Ejaneseeherman@aol.com	Emily Manning-Mingle	manningmingle@gmail.com
Ellen Sharkey	Ellensharkey@ymail.com	Emily McDonald	egmcdon@gmail.com
Ellen Smiley	mdsca@aol.com	Emily Metz	ztem@mindspring.com
Ellen Smith	ellenandjay@gmail.com	Emily Ohare	Eohare2@att.net
ellen walsh	lightining@bellsouth.net	Emily Osterstock	Eosterstock@gmail.com
Ellen Wasfi	EWasfi@aol.com	Emily Peppers	drpeppers1126@gmail.com
Ellen Williams	Ellenwilliams321@gmail.com	Emily Rothman	DrEmily@live.com
Ellie Gillespie	greyparrot@mac.com	emily smith	etsmith@optonline.net
Ellie Karr	elliekarr1@nyc.rr.com	Emily Willoughby	emilya57@comcast.net
Ellie Vaughter	onemissellie@comcast.net	Emily Wyman	ewyman@verizon.net
Ellin Stiteler	estiteler@yahoo.com	Emma Fitzsimmons	emma.fitzsimmons802@gmail.com
Elliott Hansen	elliottshansen@gmail.com	Emma Spurgin Hussey	spurginhussey@wildmail.com
Elliotte Skinner	elliottes50@gmail.com	Emmanuel Pérez De Ayala	guaracoai@yahoo.com
Ellis Heyer	Ellisheyer@att.net	Enoch Bledsoe	Enochrawk@gmail.com
Ellis Woodward	yoellis@earthlink.net	Enrico Pelausa	ricop2003@yahoo.com
Ellon Carpenter	Ellon.Carpenter@ASU.Edu	enzo mulas	e.mulas@libero.it
Elma Tassi	elma_itkahs@yahoo.co.uk	Eowyn Grecco	kerowyn15@yahoo.com
Elsy Shallman	gomerlu@yahoo.com	Eric A	Sleepy_Weasel_Orig@yahoo.com
elyette weinstein	elyette_w@yahoo.com	Eric Bernhard	aberic@sbcglobal.net
Emerald DuCoeur	bijousong@aol.com	eric biemuller	ebiemuller@mail.com
Emerson Burkett	emerson-maria@comcast.net	Eric Brooker	Ericbrooker2112@gmail.com
Emil Scheller	es628@columbia.edu	Eric Carlson	elcphd@gmail.com
Emilie Tropiano	starmommie@yahoo.com	Eric Czerwony	Czerwony@aol.com
Emily Boliver	senilenurse@yahoo.com	Eric Dykes	Ericd1@live.com
Emily Brown	ewbrown@frontiernet.net	Eric Edwards	eeguinness@hotmail.com
Emily Dickinson-Adams	emmytwin2@cox.net	Eric Eidsmoe	erieid@charter.net
Emily Fite	Ewcrechr@hotmail.com	Eric Firchow	ericfirchow@yahoo.com
Emily Gross	gross@pdq.net	Eric Fosburgh	ericfosburgh@gmail.com
Emily Hightower	emily@ondalu.com	Eric Gonzalez	Eric.Gonz5@yahoo.com

Eric Hartman	ewhartman@yahoo.com
Eric Hintsa	ehintsa@gmail.com
Eric Hirshik	universal73@yahoo.com
Eric J. Arroyo	ejarroyo@aol.com
Eric Johnson	mr_natural692003@yahoo.com
Eric Lane	ericmlane@yahoo.com
ERIC MCMANUS	emac610@aol.com
Eric Moore	ericwsmoore@gmail.com
eric Nylen	ENYLEN@GMAIL.COM
Eric Ott	dancingcarmen73@yahoo.com
Eric Patterson	epatterson@hws.edu
Eric Plaisance	epgreycloud@aol.com
ERIC POLCZYNSKI	ERICSKI75@YAHOO.COM
Eric Polczynski	ericski75@yahoo.com
Eric Ranvig	EricRanvig@hotmail.com
Eric Reidelberger	atomicrooster9@yahoo.com
Eric Robson	eric.robson@hotmail.com
Eric Schiffman	Corprosant@gmail.com
Eric Schmidt	quahog55@yahoo.com
Eric Schmitt	eric@kincaidsmusic.com
eric schultz	simken48462@yahoo.com
Eric Siebert	ejs41248@me.com
Eric Simpson	etjs721@yahoo.com
Eric Snyder	eric@eksnyder.com
Eric Steffen	esteffen1@aol.com
Eric Stiff	estiff71@aol.com
Eric Stordahl	wuffybruno@yahoo.com
Eric Tauer	erictauer@gmail.com
Eric Voorhies	ericv63@msn.com
Eric West	eagleyachts@gmail.com
Eric Zakin	zippyzakin1964@gmail.com
Eric Zeiler	emzeiler@yahoo.com
Erica Antos	Erica.antos@yahoo.com
Erica Himes	bhimes2@tampabay.rr.com
Erica Mootz	gcluver1193@aol.com
Erica Penna	penna_erica@yahoo.com
Erica Porter	brporter1970@gmail.com
Erica St.John	ericaevonne@yahoo.com
Erich Hantsch	ehantsc@comcast.net
Erick Burres	burres777@gmail.com
Ericka Kohn	Eakwolf@ymail.com
Erik Husoe	Erik@Husoe.net
Erik Johnson	erik@johnsonlanddesign.com
Erik LaRue	pacific2626@gmail.com
erik schreiner	erik.schreiner@gmail.com
Erik Swenson	eswenson@u.washington.edu
Erika Boka	Csoszi@yahoo.com
Erika Bruno	erika@ebruno.org
Erika Miller	healer36@hotmail.com
Erika Mohos	emmohos@gmail.com
Erika Somlai	serika@operamail.com
Erika Vadopalas	evadopa@yahoo.com
Erika Wanenmacher	ewanenmacher@gmail.com
Erika Whitton	efortuny73@gmail.com
Eriks Abrahamsson	eaax@msn.com
Erin Cleere	boognish3@yahoo.com
erin garcia	airingrc2@aol.com
Erin Gregoire	eagalien@hotmail.com
Erin Parker	doctorbatduke@yahoo.com
Erin Snyder	epolcene@juno.com

Erin Walsh	erin_ann_walsh@hotmail.com	Eugenia L Gates	euggat@gmail.com
erin yarrobino	thecatlady2015@outlook.com	Eugenia Marcus	eugenia.marcus@gmail.com
Erline Towner	etownr@aol.com	Eva Cernik	evacernik@earthlink.net
Erma Lewis	elewisnyc@yahoo.com	Eva Gersbach	eva.g@shaw.ca
Erma Lowe	Nermie83@yahoo.com	Eva Hofberg	SwedeWmn@aol.com
Erna Beerheide	b_erna@hotmail.com	eva orlowski	eorlowski78@gmail.com
ernest boyd	ernestboyd@gmail.com	eva thiemann	eva.thiemann@gmail.com
Ernest Montoro	montoroe43123@yahoo.com	Eva Zucker	ez18et@gmail.com
Ernie Looney	Earthling109@msn.com	Evan Jackson	jacksone24@gmail.com
Ernie Walters	ernwalt@aol.com	Evan Morgan	emorgan1958@hughes.net
Ernst Bauer	ernst.bauer@asu.edu	Evan Ryland	evanbr@mac.com
Ernst Mecke	ernstmecke@yahoo.com	Eve Chapple	echapple@wakemed.org
ERV AMDAHL	EAMDAHL@AOL.COM	Eve Forde	eveforde@yahoo.co.uk
Erwin F. Sawall Jr.	edsawall@frontiernet.net	Eve Ilsen	shesings@indra.com
Essa Jallad	essajallad@yahoo.com	Eve McFarland	jjwcem@ix.netcom.com
Esteban Molina	molina93@nmsu.edu	eve oconnor	ceve2001@yahoo.com
Estelle Glarborg	estelleg@cox.net	Eve Reynolds	eve@arcolution.com
Esther Allman	palinc2@aol.com	Evelyn Bell	evbell22@yahoo.com
Esther Castillo	esthercastillo@msn.com	Evelyn Burros	eburros@cox.net
Esther Siderman	esthersiderman2@aol.com	Evelyn Flowers	eflowers@srsofcharity.org
Ethan Buyer	ethan.buyer@gmail.com	Evelyn Fraser	Evelynsfraser@hotmail.com
Ethan Decaprio	preunit13@gmail.com	Evelyn Haas	oldleft@hotmail.com
Ethan Eisenberg	epeisenberg@gmail.com	Evelyn Nitka	evy52@verizon.net
Ethan Hattendorf	e_mercurius@hotmail.com	Evelyn Nitka	evy52@verizon.net
Ethan Middlebrooks	ethan.middlebrooks@gmail.com	Evelyn Verrill	im2valla@gmail.com
Eugene Brusin	gene4deb@verizon.net	Everett Mitchell	countrycrossranch@hotmail.com
Eugene Bunch	genebunch1932@yahoo.com	Evette Garcia	evettedgarcia7@gmail.com
Eugene Gorrin	egorrin@comcast.net	Evgeniya Vyatchanina	evgeshnica@gmail.com
Eugene Timpe	servus1926@gmail.com	Evi Meuris	Evimeuris@gmail.com
Eugenia Ahern	eugenia.ahern@gmail.com	EWA KUCZENSKA	ekuczenska@lincoln.com.pl

Ewa Stein	zew777@gmail.com
F G	fg@ptd.net
F Meek	ftalker@gmail.com
F Sylvester	Freyaraya@yahoo.com
F. Harding, Ph.D.	fannharding@gmail.com
F. Robert Wesley	frw2@cornell.edu
Fabio Hennessy	fabiohennessy@hotmail.com
faith franck	ffranck1@yahoo.com
Faith Freewoman	faith199@att.net
Faith Strailey	kantor@digitalpath.net
Fann Harding, Ph.D.	fannharding@gmail.com
Fatima Baker	Bakerstarchick5@aol.com
Fawn Rainy	fond15275@gmail.com
Fay Benson	wombatfay@gmail.com
fay forman	fayf355@yahoo.com
Fay Payton	paytonplace1225@yahoo.com
Fayaz Kabani	kabong66@hotmail.com
Faye Clements	fayecharlene@gmail.com
Faye Lehner	fayerl@earthlink.net
Faye Pineda	beetle1731@gmail.com
Faye Soares	faye.soares@sbcglobal.net
Felicia Chase	Bdlmnia@aol.com
Felicia Williams	badger5@operamail.com
Felicity Hohenshelt	licy75@aol.com
Felicity Lamb	flikrfly@gmail.com
ferd klamik	feklamik@hotmail.colm
Fern Schlesinger	fern.schlesinger@gmail.com
Fern Stearney	fz.stearney@verizon.net
fernando soler	fsoler@sosglobal.com
Fiona Priskich	fionapriskich@hotmail.com
Fiona Roberts	illume@cox.net
Fletcher Chouinard	fchouinard@aol.com
Flo Schneider	Fschnei@hotmail.com
Flora Pino García	florapino@bme.es
Florence Harty	flharty@yahoo.com
Florence Morris	khawk734@yahoo.com
Florence Sandok	fsandok@charter.net
Florence Wagner	flojac@interisland.net
Florencia Benitez Boiardi	flor.bb@gmail.com
Floyd Nudi	fanudi@msn.com
Ford Barr	fkb51@hotmail.com
Forest Frasieur	frforest@sbcglobal.net
Forest Shomer	inspass@whidbey.net
FORREST RODE	onlyonesf@yahoo.com
Forrest York	forrest.york@gmail.com
Foster Boone	tfb@sisqtel.net
Fran Cox	simianline@gmail.com
Fran Farrell	buffalohibernia2001@yahoo.com
fran malsheimer	fm1103@aol.com
Fran McEwen	franom227@gmail.com
fran sherry	fransherry121@yahoo.com
Fran Terry	bestmadelemonade@gmail.com
Fran Walker	Rfwalk52@optonline.net
Francelia Lieurance	flieuran@gmail.com
Frances Averitt	faveritt@su.edu
Frances Blythe	francesb5601@att.net
Frances Carpenter	fbcfrances@gmail.com
Frances Darcy	ofdarcy@gmail.com
Frances Davenport	Frances.v.davenport@gmail.com
Frances Emanuel	wawatasi@yahoo.com

Frances Greenlee	frangreenlee@bendbroadband.com	Frank Fredenburg	flf1955@yahoo.com
Frances Harriman	fmrharriman@gmail.com	Frank Gonzales Jr.	ydeepsg@yahoo.com
Frances Lovett	wflovett@gmail.com	Frank Graves	gravyinmex@gmail.com
Frances Pfohl	nefret38@verizon.net	Frank Hartig	frankhartig@yahoo.com
Frances Wesson	bali_hi@pacbell.net	Frank Hill	au760@lafn.org
Francie Fillatti	Francief@zenarts.com	Frank Holleman	holl2759@bellsouth.net
Francine Cohen	wales13@aol.com	Frank J Perruccio	F2JP@aol.com
Francine Dolins	fdolins@umich.edu	Frank Kuziel	frank.kuziel@gmail.com
Francine Dolins	francine.dolins@charter.net	Frank Longo	longofrank@hotmail.com
Francine M. Storey	fmsphelps@gmail.com	Frank Lorch	franklorch@yahoo.com
Francine Traniello	MidnightBlue_22@webtv.net	Frank Matalone	matalone1@comcast.net
Francis Kintz	oneeyedfranc@gmail.com	Frank McCrary	fcmcc@sbcglobal.net
Francis S.	NCE1988@Yahoo.com	Frank Noble	frank121234@gmail.com
Francis Scheuer	citizen237@gmail.com	Frank Ortiz	fjortiz564@yahoo.com
Francis Smith	mail@francisleesmith.com	Frank Pilholski	pilgura@verizon.net
Francisco Dacosta	FMDacosta@Verizon.Net	Frank Sennett	frankrsennett@gmail.com
Francisco Koch	francisco.koch67@gmail.com	Frank Stieber	kickball.jesus@gmail.com
Francy Elkins	francy_elkins@yahoo.com	Frank Stroupe	flsjr55@aol.com
Frank Adamick	frankadamick@rcn.com	Frank Wilsey	fwilsey@verizon.net
Frank B. Anderson	fbmjet@aol.com	Frankie Seymour	frankie@webone.com.au
frank belcastro	fpbelcast@gmail.com	Franz Kitzberger	franzjk@newulmtel.net
Frank Benjamin	spiritgecko@cox.net	Franziska Eber	franziskaeber@t-online.de
Frank Bodine	frankthesurfer@yahoo.com	Fred Fall	fred08034@whale-mail.com
Frank Boggio	kurn3@msn.com	Fred Ingram	car54@spiritone.com
Frank Cundiff	fcundiff@crystalsugar.com	FRED KAHN	FLONEWOLF99@YAHOO.COM
Frank Curtis	tulldrivefrank@yahoo.com	fred karlson	fkarlson@frontier.com
Frank Daroci	roach11272002@yahoo.com	Fred Lavy	fred-cheryl@msn.com
Frank Davis	F_MO_D@yahoo.com	Fred Lih	southxnorthwest@gmail.com
Frank Duffy	duffyaz@cox.net	Fred Litten	aflitten@yahoo.co.uk
Frank Elder	frankelder8@gmail.com	FRED MARSCHNER	fred.marschner@nm.com

Fred McKenna	fredincarson@cmsinter.net	Gabriel Lautaro	Djriddm@gmai.com
Fred Nadelman	fpn2003@nyu.edu	Gabriel Morner	gmorner@gmail.com
fred plachta	fred.plachta@gmail.com	Gabriela Cirne Lima	gcirnelima@gmail.com
Fred Rinne	fredrinne@yahoo.com	Gabriele Markert	gabrielemark17@yahoo.com
Fred Sabine	FredLSabine@gmail.com	Gabriele Thompson	cody.petrov@gmail.com
Fred St Goar	Fstgoar@aol.com	Gabriella Steele	Gabriellasteele3@gmail.com
Frederica Acora	freddiacora@gmail.com	Gabrielle Karras	gk2829@hotmail.com
Frederick Doster`	fpdoster@gmail.com	Gaby Macias	macias_ch@yahoo.de
Fredric Griffin	fredricgriffin@gmail.com	Gaia Cooksey	martiandogstars@gmail.com
Friend Robert Anderson	mrbyte@charter.net	Gail Blatt	ebrockfish@aol.com
Fritz H.	este.el_paz@yahoo.com	Gail Fries	gffries@gmail.com
fritzi cohen	nahcotta2@aol.com	Gail Gaebe	gailgaebe@yahoo.com
fritzi redgrave	redgravef@gmail.com	Gail Graff	gailgraff999@gmail.com
G Allen Daily	gadaily@gmail.com	Gail Harty	harty.gail@mayo.edu
G Boness	gboness@hotmail.com	Gail Inzerillo-Latella	gailinzerillo@yahoo.com
G Claycomb	gacus@yahoo.com	Gail Jacobson	roanasnickers@hotmail.com
G Hardiman	ghardiman@fafmc.com	Gail McDaniel	gailpmcdaniel@gmail.com
G Kern	alsipiii@zoomtown.com	Gail McMullen	gjmcm48@yahoo.com
G L	mkbnlt@sbcglobal.net	Gail Meese	gailmeese@hotmail.com
g m	gmackertich@yahoo.com	Gail Musante	gail.musante@gmail.com
G Yuzawa	hydesign1@aol.com	Gail Noon	gailmaria51@att.net
G. Countryman-Mills	gaylelcm@gmail.com	Gail Ormsbee	baileymaygail@aol.com
G. Cruz	Binky42204@yahoo.com	Gail P Runnels	gailprunnels@gmail.com
G. G. Johnson	ggjohnson@comcast.net	Gail Rains	gail.rains314@gmail.com
G. paxton	gregpaxton2001@yahoo.com	Gail Roberts	igailroberts@gmail.com
G.W. Cheney	gwcheney@ymail.com	Gail Ryland	Gailryland@comcast.net
gabe fogg	g_fogg@outlook.com	Gail Snyder	gailsnyder88@gmail.com
Gabe Magtutu	gmagtutu@yahoo.com	Gail Staffanson	gstaffanson@richland.org
gabriel abate	gabe315@verizon.net	Gail Vosler	gailv1910@gmail.com
Gabriel Furshong	gfurshong@gmail.com	gail walter	gailwalter@att.net

Gail Wilcox	glwilcox@msn.com	Gary Keimig	Keimigg@gmail.com
Gail Wing	gwing06418@gmail.com	Gary Keir	garykeir@aol.com
Gail Yborra	gail.yborra@gmail.com	Gary Keir	garykeir@aol.com
Gaile Carr	bgcarr@finestplanet.com	Gary Kolb	Gpkolb@gmail.com
Gaile Fish	seacrow@verizon.net	Gary Kuehn	frump55@earthlink.net
Gale Johnson	galej.katrinkets@yahoo.com	Gary Kuehn	frump55@earthlink.net
Gale Rullmann	galerullmann@embarqmail.com	Gary Leonardo	garygcd@aol.com
Galloway Allbright	gway22@gmail.com	Gary Ludi	ludig@bellsouth.net
Garland Hicks	gary.hicks@valpo.edu	Gary McAleer	creationsociety@tds.net
GARRINE PETERSEN	RICKANDJERI@COPPER.NET	Gary Mierau	Gary.Mierau@ChildrensColorado.
Garry M. Doll	gmadoll789@verizon.net	Gary Nelson	largojock@yahoo.com
Garry Taroli	gtaroli@rjglaw.com	Gary Newton	Gnewt912@hotmail.com
Garth Kallevig	gkallevig@stockmanbank.com	Gary Pavek	Gary.pavek@wispertel.net
Garth Saalfield	regni2011@gmail.com	Gary Purcell	gep1528@gmail.com
Gary Wolf Ardito	greywolf06457@yahoo.com	Gary R. Toms	vantuylsearch@yahoo.com
Gary Alderette	alderette-g@sbcglobal.net	Gary Ramacher	garyr@centralmcgowan.com
Gary and judy ewald	GARYANDJUDYEWALD@GMAIL.COM	Gary Reese	reefster2@aol.com
Gary Bagnall	bag@zoomed.com	gary rejsek	garyrejsek@sbcglobal.net
Gary Binderim	gary_binderim@yahoo.com	Gary Sexton	skiepilot72@gmail.com
Gary Bowers	gb1nature@aol.com	gary stickel	pythoslok@yahoo.com
Gary Christensen	gchris36@yahoo.com	Gary T Pederson	garytpederson@gmail.com
Gary Cook	garrickkoch@gmail.com	Gary Thaler	4gary4thaler4@gmail.com
Gary Cook	garrickkoch@yahoo.com	Gary Tonkin	gwtonkin@charter.net
Gary Cronin	gcroninsf@yahoo.com	Gary Vesperman	garyvesperman@yahoo.com
Gary Dunavant	Gwdun@bellsouth.net	Gary Wolf Ardito	greywolf06457@yahoo.com
Gary Feemster	gfeemster@socal.rr.com	Gary Yeomans	geyeo@msn.com
Gary Goode	gsg54@hotmail.com	Gary Zahler	gmlzahler@aol.com
Gary Hull	realcheap60@yahoo.com	Gatha Pierucki	obie49030@core.com
Gary Johncox	Thecreekchub@hotmail.com	Gavin Dillard	gavco@me.com
GARY JONES	garytjones@sbcglobal.net	Gavin Lantry	gml999@cox.net

Gay Williamson	gaywilliamson@hotmail.com	George Boggs	GBoggs@suddenlink.net
Gaye Georges	calistacorgis@yahoo.com	George Bourlotos	mcgb50@hotmail.com
Gayle Alston	gayleals@gmail.com	George Burnash	george.burnash@att.net
Gayle Doukas	cookied755@aol.com	george craciun	gcraciun1@verizon.net
Gayle Janzen	cgjanzen@comcast.net	George Davis	kenwoodgwd@yahoo.com
gaynl farmer	gaynlf@gmail.com	George Dietz	geestrees@aol.com
Gemma Geluz	gemms70@yahoo.com	George Erceg	rubot@comcast.net
gemma lila	gemmalila@yahoo.com	George Fabbiani	gtfsr@yahoo.com
Gena Anderson	genag@q.com	George Ferrell	jesebus@verizon.net
Gena Crow	gena56@gmail.com	George Ferris	geowheel@yahoo.com
Gene Ammarell	ammarell@ohio.edu	George Hanas	beanmanbud2@suite224.net
Gene Anderson	gene@ucr.edu	George Hartman	rxgh3@yahoo.com
gene daniels	gdanielsc8@yahoo.com	George Hug	jorgbh@gmail.com
Gene Fox	harborshire@yahoo.com	George Joseph	animals_not_ours@yahoo.com
Gene Jones	genejones7@msn.com	George Killat	tugeorgek@charter.net
Gene Polito	gendavideo@optonline.net	George Layton	glayton77@comcast.net
Gene Ulmer	gulmer@mcn.org	George Leddy	gleddy@mac.com
Genevieve Dahl	genedahlhouse@gmail.com	George Lewis	glewis@calpoly.edu
Genevieve Deppong	gdeppong@ix.netcom.com	George Little	george.wilbur.little@gmail.com
Geoff Bond	Grbondo@gmail.com	George Louis Mayer	georgemayer1@aol.com
Geoff Browne	gbrowne123@yahoo.com	George Love	mbrglove@yahoo.com
Geoff Regalado	gregalado74@hotmail.com	George Mackison	gnmackison@gmail.com
Geoff Skews	geoffskews@yahoo.com	George Melendrez	georgemelendrez@gmail.com
Geoff Stradling	notesonthepage@gmail.com	George Merryman	George.merryman@comcast.net
geoff whiting	gwhiting@frontier.com	George Neste	nastygeorge59@earthlink.net
Geoffrey Greer	nspekter@yahoo.com	George Paul	georgie5356@gmail.com
geoffrey saign	geoffreysaign@centurylink.net	George Rodgers	gcrodgersjr@gmail.com
Geoffrey Schaney	Gschaney@icloud.com	George Schneider	grs92138@gmail.com
Geoffrey Stewart	gssstewart@gmail.com	George Sidoti	Georgesidoti@aol.com
George Bennett	akgroy3006@gmail.com	George Simmons	gsimmons41@gmail.com

George Smith	smithgeorge600@gmail.com	Gerald Mills	gerald.mills10@verizon.net
George Stadnik	gstadnik@hotmail.com	Gerald Orcholski	Gerryjim@sbcglobal.net
George Staff	gstaff@austincc.edu	Gerald Smith	geraldsmi@pcom.edu
George Tolleson	gtoll2@charter.net	Gerald St. Germaine	gerald1951@sbcglobal.net
George Walberg	geowalberg@yahoo.com	Gerald Zedler	zwarf7@gmail.com
George Wilder	gwilder@naplesgarden.org	Geraldine Card	geraldinecard87@gmail.com
George Wybenga	GWYBENGA@OPTONLINE.NET	Geraldine May	Huerhuero@gmail.com
George Yuhasz	gyuhasz@hotmail.com	Geraldine Rodgers	JuliaMurtha@aol.com
Georgeanne Samuelson	bgsamuelson@gmail.com	Geralyn Gulseth	gpirategirl@yahoo.com
Georgette R Dunn	gdachshund@aol.com	GERALYN LLOYD	geralynlloyd@hotmail.com
Georgia and John Locker	grlocker@outlook.com	Gerard Rohlf	gerard.rohlf@gmail.com
Georgia Antonopoulos	GeorgiaAnton@comcast.net	Gerard van Tol	gvantol@kpnplanet.nl
Georgia Braithwaite	georgiabraithwaite@yahoo.com	Gerri Baer	gerribaer@comcast.net
Georgia Libbares	glibbares@yahoo.com	Gerrilynne Blsttner	dynamouse@aim.com
Georgia Lynn	nitella40@hotmail.com	gerrit woudstra	gwo.woudstra@hccnet.nl
Georgia Mattingly	glmattingly@earthlink.net	Gerritt and Elizabeth Baker-Sm	egbakersmith@gmail.com
Georgia Peterson Hensley	georgialeep@hotmail.com	Gerry Ahrens	mustang.shelby2@yahoo.com
Georgia Shankel	georgia.shankel@gmail.com	Gerry Martin	mecoviper@hotmail.com
Georgina Wright	gxwrigh99@cox.net	Gerry Milliken	dolphin@communitynet.org
Gerald Borleis	geese@charm.net	Gerry OConnor	goconnor65@hotmail.com
Gerald Christiansen	jechris@peoplepc.com	Gerry Quirk	gerryquirk@att.net
Gerald Hallead	jerryhallead@gmail.com	Gerry Walsh	laxbears@comcast.net
Gerald Hassett	popeofgv@verizon.net	Gertrude Battaly	merlin@pipeline.com
Gerald Kelly	kelly.gerald@gmail.com	Gertrude Caruso	Simplyoldmom@yahoo.com
Gerald Kline	geraldkline@verizon.net	Gertrude Crowley	trudybull@comcast.net
Gerald Kretmar	kretmar@sbcglobal.net	GF Wade Jr	gfwadejr@gmail.com
Gerald Leitzell	jleitzell@yahoo.com	Ghazale Jamsheed	gjamsheed@gmail.com
Gerald Lorenz	gjlorenz@aol.com	gigi vento	mrvee618@aol.com
Gerald Lysne	glysne@aol.com	Gilbert Wald	waldrec@aol.com
Gerald Mcnellis	gerrrysprairie@sbcglobal.net	Gilda Carrington	gildasalta@gmail.com

Gilliam Hicks	gshicks50@gmail.com
Gillian Miller	gillianmiller@virginmedia.com
GINA BILWIN	ginmonbil@gmail.com
Gina Capra	gc.snailmail@yahoo.com
Gina Carollo	gfc223@yahoo.com
Gina Cavitolo	Ginac0311@aol.com
Gina Gatto	Gattopaws16@aol.com
gina johansen	gina01880@yahoo.com
Gina Matteucci	Gma2chi@att.net
Gina Mondazze	Gdazze@gmail.com
Gina Norman	ginan5@yahoo.com
Gina Obrien	ginaobrien@rocketmail.com
gina osburn	countrypoetess02@yahoo.com
Gina Paige	glpaige@mac.com
Gina Pindroh	ginapindroh@yahoo.com
Gina Verdini	gio.acco@verizon.net
Gina Writz	lolany07@gmail.con
Ginger Culbertson	odellgirl@aol.com
Ginger Florian	persian621@msn.com
Ginger Hill	glhendersonville@yahoo.com
Ginger Hipszky	ghipszky@gmail.com
Ginger Ikeda	ginger.ikeda@gmail.com
ginger witmer	gcwit@aol.com
Ginny Jackson	olechick83@yahoo.com
ginny johnson	zoeylyric@yahoo.com
Gino Czaster	jsome89@yahoo.com
Gisela Zech	gzech@gmx.com
Gladys Eddy-Lee	gladyseddylee@gmail.com
Gladys Littlejohn	glalit@att.net
Gladys Murphy	gmurphy@regis.edu
Glen Albertson	gricka@mac.com
Glen Anderson	glenanderson@integra.net
Glen Banks	twistbanks@mac.com
Glen Li	Li_dragons@yahoo.com
Glen Potter	gpotter.hbf@gmail.com
Glen Venezio	sethspeaksnyc@gmail.com
Glenda Gray	Gggray.777@gmail.com
Glenda Lamb-Wilson	glenda937675@yahoo.com
Glenda Lilling	gsl2@optonline.net
Glenn Letourneau JR	gillebhrighde@yahoo.com
Glenn Bristol	gbristol@hotmail.com
Glenn Church	churchglenn77@aol.com
Glenn Eklund	glostluggage@hotmail.com
Glenn Hawkes	doggydaddy883@hotmail.com
Glenn Hufnagel	gphufnagel@hotmail.com
Glenn Jones	gjsooner@aol.com
Glenn Koehrsen	gkoehrsen@prodigy.net
Glenn Pratt	pratt8460@gmail.com
Glenn Short	glenn.short@gmail.com
Glenna Mayer	GlennaLMayer@gmail.com
Glenna Waterman	Amiezuni7@gmail.com
Gloria Cameron	MissGehra@aol.com
Gloria Clements	thistle809@yahoo.com
Gloria Cole	gloriag808@gmail.com
Gloria Cummings	gloria_cummings@frontier.com
Gloria Diggle	glfd@yahoo.com
Gloria Donn	glodonn@aol.com
Gloria Gannaway	globogal@aol.com
Gloria Grotjan	ggrotjan@yahoo.com
Gloria Linda Maldonado	glmaldonado68@gmail.com

Gloria Morrison	gloriaje@classicnet.net	Graciela Huth	pesceto@gmail.com
Gloria Picchetti	picchetti707@sbcglobal.net	Graeme Magruder	graemagruder@icloud.com
Gloria Shen	gloshen@yahoo.com	Graham Ellia	grahamellis2@aol.com
gloria taber	g_dtaber@yahoo.com	Graham MacKenzie	grammack@hotmail.com
Gloria Towers	gtowers1944@gmail.com	Grant Campbell	wildlife@southfloridaaudubon.org
Gloria Wurst	gwurst@weber.edu	Grant Low	melvingladys@yahoo.com
Gloria Zimny	gloriazimny@yahoo.com	Grant Smith	Smithgrant.la@gmail.com
Gloria-Jean Berberich	Gloj29@hotmail.com	grant wilson	grantcorvair@yahoo.com
Glyn Deputy	glyntravis@msn.com	Greg Albright	Galbright100@gmail.com
Glynda Ray	dogger838@gmail.com	Greg Allbee	fender777@gmail.com
Gordon Belcher	afscmewv@aol.com	Greg Bennett	greg@lionfishadvisors.com
Gordon Elkins	glelkins@gmail.com	Greg Bok	greg.bok@gmail.com
Gordon Gerbitz	gforce1@aol.com	Greg Brown	gbtrigeek@aol.com
Gordon James	gtjames1940@yahoo.com	Greg Collins	gcollins@imperialmetalproducts
Gordon Price	gordoneprice@gmail.com	Greg Correll	gcorrell@smallpackages.com
gordon reed	gordonreed20@att.net	Greg Epstein	gephoto@gmail.com
Gordon Wood	transhuman@earthlink.net	Greg Everett	gbakere@gmail.com
Gordon Young	RevGordonYoung@comcast.net	Greg Fowler	Gafowler@yahoo.com
Gorman Reynolds	gleereynolds2@gmail.com	Greg Goodrum	goodrum.greg@gmial.com
GP Avery	buzzavery@yahoo.com	Greg Hamby	cypressmooninn@mindspring.com
Grace Golata	ggolata@sbcglobal.net	greg keefer	keefersva@verizon.net
Grace Holden	gmh829@aol.com	Greg Koshak	02aab48a@opayq.com
Grace Holman	holmanchildress@att.net	Greg Lonewolf	greg.lonewolf@hotmail.com
Grace Huang	Gracehuang03@yahoo.com	Greg Navarro	Gnav11@hotmail.com
Grace Johnstone	gracejohnstonedc@gmail.com	Greg Pelham	gdpelham@yahoo.com
Grace Mullen	gracemullen@ymail.com	Greg Roll	groll313@aol.com
Grace Neff	Graceswallow@aol.com	Greg Rosas	thesro15@yahoo.com
Grace Payne	gpay13@hotmail.com	Greg Sells	gsells@austin.rr.com
Grace Strong	gahstrong@gmail.com	Greg Singer	gregsinger@nyc.rr.com
Graciela Gerber	gragru7@gmail.com	Greg Speer	gcspeer@comcast.net

Greg Slone	gslone@buildingcrafts.com	Guy Merckx	guymrx@yahoo.com
Greg Stawinoga	RKL9763@cs.com	Guy Perkins	gaperklake@aol.com
Greg Steuck	gsteuck@aol.com	Guy Schwartz	guy_schwartz@hotmail.com
Greg Zyzanski	Greg4011@sbcglobal.net	Guy Zahller	gop.r.war.criminals@gmail.com
Gregg Johnson	gregg8878@att.net	Gwen Ferry	lakegrace@yahoo.com
gregg norma	stereofoam@live.com	Gwen Gay	Gwendolynmgay@yahoo.com
Gregory Amour	greg.amour@yahoo.com	Gwen Jennier	gwen.j@verizon.net
Gregory Andronaco	gregory.andronaco@gmail.com	Gwen Marston	gwenjoymarston@gmail.com
Gregory Austin	gregaustin@mindspring.com	Gwen Melsha	buschmelsha@gmail.com
Gregory Esteve	gregesteve@outlook.com	Gwen Nolte	gwennolte@aol.com
Gregory Fite	greg.fite@gmail.com	Gwen Richards	ladygwen400@yahoo.com
Gregory Glenn	gregory_glenn@hotmail.com	Gwendolyn Sky	bluerider23@gmail.com
Gregory Kampwirth	dragoncatcher43@yahoo.com	gwenn meltzer	gwenn2006@hotmail.com
Gregory Karpf	gregkarpf@yahoo.com	gwyn wahlmann	gwahlmann@sbcglobal.net
Gregory Kendall	gregorykendall1@yahoo.com	Gwynne McCue	gwynnemccue@yahoo.com
Gregory Prosen	g.s.prosen@sbcglobal.net	h drda	hadsm9@yahoo.com
Gregory Rouse	g1rouse@yahoo.com	H Ellis Griffin	igfellis@aol.com
Gregory Smith	pudgywonder1@hotmail.com	H Harris	harley.harris33@gmail.com
Gregory Timm	gregorydtimm@yahoo.com	h masih	hlmasih@yahoo.com
Gregory Walls	gregorywalls1967@yahoo.com	H. Guh	hguh7@yahoo.com
Greta Henderickson	cookwiththesun@gmail.com	H. Hergianto	hergi@att.net
Gretchen Corkrean	Jgcorkrean@msn.com	H.D. Horton	waitescorner@hotmail.com
Gretchen Randolph	grrando@yahoo.com	Ha Phan	Hphan4266@hotmail.com
Gretchen Zeiger-May	gretchenmay1@comcast.net	hai nguyen	iahneyugn@yahoo.com
Grover Syck	groversyck@yahoo.com	Haili Friedrich	haili.m.friedrich@gmail.com
Guadalupe Yanez	lupe.yanez49@gmail.com	Hamed Hamad	armany02@aol.com
Gudrun Dennis	gdennis2@cox.net	Hank Ramirez	latinleo@sbcglobal.net
Gudrun Matthaus	gmatthaus@gmail.com	Hannah Beadman	deerhoof3x@yahoo.com
Gunter Wendland	Gudgun@me.com	Hannah Butcher	hannahmbutcher@gmail.com
guy eve	guyeve@theeves.fsnet.co.uk	Hannah Butcher	hannahmbutcher@gmail.com

Hannah Curzio	blondie52428@gmail.com	Harry Cunningham III	HCIIIatEsL@aol.com
Hannah King	hannahkking@gmail.com	Harry Grace	htg385@gmail.com
Hannah Lange	langehannah26@gmail.com	Harry Harrison	hjh9@columbia.edu
Hannah Potes	hpotes@billingsgazette.com	Harry Hochheiser	hshoch@gmail.com
Hannah Rees	hrees101@gmail.com	Harry Hudson	harryhudsonjr@hotmail.com
Hannahlore Trickett	spoutcove@gmail.com	harry knapp	h.knapp@charter.net
Hans-Peter Heinrich	hp_heinrich@yahoo.de	Harry Newell	Harry@caliper.com
Harley Armentrout	xzekes@gmail.com	Harry Ruffner	Harry_ruffner@yahoo.com
Harmony Abercrombie	activistharmony@gmail.com	Harry Wohlsein	harryjwjr@gmail.com
Harold Denenberg	denenber@verizon.net	HART Françoise	frendoohart@gmail.com
Harold Kovac	mohawker33@gmail.com	Harvey Metzger	hdmgolf@yahoo.com
Harold Robinson	vtyankee@charter.net	Harvey Neese	waco34tx@hotmail.com
Harold Stewart	Oceanfrogg@gmail.com	Harvey Spears	Redmonkey2@mac.com
Harold Sweet	cochiseco@aol.com	Haven Knight	havennoche@aol.com
Harold Turner	gertrudt@msn.com	Haven Livingston	wavehaven@yahoo.com
Harold Watson	watsonh1956@gmail.com	Hazel Rudich	hazelr@yahoo.com
Harold Wilkinson	hrwilk@steuber.com	Heath Corley	heath_corley@cable.comcast.com
Harriet Adamo	nuface4u2@yahoo.com	Heath Post	dragonlinch666@gmail.com
Harriet Berson	hberson@verizon.net	Heather Carman	blackbirdpondred@gmail.com
Harriet Cohen	yeehaw7@aol.com	Heather Cross	trashwoman@hotmail.com
Harriet Damesek	hscdamesek@yahoo.com	Heather E. Drees	hethboo7@yahoo.com
HARRIET GROSE	ADGROSE@VERIZON.NET	Heather Florian	heathershay.florian@gmail.com
Harriet Jernquist	hjernquist@yahoo.com	Heather Hundt	hhundt@earthlink.net
Harriet McCleary	mccleary@stolaf.edu	Heather Little	yapper@nbnet.nb.ca
harriet mitteldorrf	harriet@redshift.com	Heather Luinstra	hluinstra@richland.org
Harriett Clementson	cheyenne-bodie@live.com	Heather Madden	hmadden715@yahoo.com
Harrison HILBERT	harrisonhilbert49@hotmail.com	Heather Payne	helsimon@yahoo.com
Harry Albright	hb348@bresnan.net	Heather Potthoff	Hahall1@yahoo.com
Harry Bord	overtheluvofu@yahoo.com	heather rebuck	synthesis45@msn.com
Harry Cleaver	hmcleave@austin.utexas.edu	Heather Ruckman	heatheruckman@gmail.com

Heather Scheiderer	hscheiderer@yahoo.com
Heather Sees	hmsees79@gmail.com
Heather Smith	heather.smith.10@hotmail.com
Heather Smith	Hmsforever@gmail.com
Heather Turbush	hturbush@gmail.com
Heather Walker	Heather@kimonwellness.com
Hector Parra	Hector.parra@yahoo.com
Hedda Haning	hedda.l.haning@gmail.com
HeHeinz Remold	hremold@rics.bwh.harvard.edu
Heide Catherina Coppotelli	goodshepherd@citcom.net
Heidi Ananthakrishnan	heidiella@yahoo.com
Heidi Baruch	hbbuffalo@yahoo.com
Heidi Bresilge	conoverschnuck4@yahoo.com
Heidi Krouskup	krouskup9@hotmail.com
heidi lynn ahlstrand	ironrancher@yahoo.com
Heidi Miller	hmiller914@gmail.com
Heidi Sikina	heidisikina@gmail.com
heidi upp	heidiup1@aol.com
Heidi Winslow	heidiwinslow6@gmail.com
Helen & Leo Studabaker	s5659h@yahoo.com
Helen Anderson	helen@mathbox.com
Helen Bushnell	sunhelen@fastmail.net
Helen Coronado	helen.coronado@gmail.com
Helen Cu	helen_c_cu@hotmail.com
Helen Dagley	Helenhasapersonalemail@yahoo.c
Helen Dickey	hwdretired@gmail.com
Helen Edwards	helenhey@aol.com
Helen Greer	helen2wheels@gmail.com
Helen Harrell	hharrell@indiana.edu
Helen Hays	hlhays@ccgmail.net
Helen Jones	shej95032@yahoo.com
Helen Kunz	helenbronte@gmail.com
helen mcallister	hkmcallister@yahoo.com
Helen Moissant	hmoissant@aol.com
Helen Obenchain	hwoben@juno.com
Helen Rogers	hcsrogers@cox.net
Helen Strader	neleh17@yahoo.com
Helen Stuehler	hastuehler@gmail.com
Helen Syen	Shhhhhsilenceisgolden@gmail.co
Helen Tam-Semmens	htamsemmens@gmail.com
Helen Webb	helweb857@yahoo.com
Helen Y Margolies	hymargolies@optimum.net
Helena Doerr	Helena.doerr@yahoo.com
helena hackel	hchackel@centurylink.net
HELENA HEFFINGER-HERNANDEZ	HELMAR816@AOL.COM
Helena Wilcox	ritaviola@sbcglobal.net
HELENE FRANKEL	PRC595@AOL.COM
Helene Lisy	natctr@aol.com
helene Rosen	hrosen80@hotmail.com
helene steinhardt	helenesteinhardt@gmail.com
helene weinstein	abishop108@gmail.com
Helga Klein	helgasklein@yahoo.com
Helga S.	firma.hummel@yahoo.de
Hendricka Samytowski	nanasamoldbird@hotmail.com
Henrietta McClellan	henriettamcclellan@att.net
Henry Berkowitz	hlemc@verizon.net
Henry Kimbell	hankkimbell@yahoo.com
Henry M.	hfm69@hotmail.com
Henry Ma	silverkwandao@yahoo.com

Henry Mitchell	Gringomitchell@yahoo.com
Henry Mobley	eaglelover34@yahoo.com
Henry Rhyne	harhyne6172a@att.net
Henry Russ	Henryprisma@yahoo.com
Henry Schlinger	hschling@hankschlinger.com
Henry Schueller	henry.schueller@me.com
Henry Tillman	hctillman@aol.com
Henry Weinberg	whweinberg@gmail.com
Henry Worobec	henry_worobec@yahoo.com
Herbert Garland	colven2@hutchtel.net
herbert grench	surlyherby@aol.com
Herbert Gross	handjgross@aol.com
Herbert Sayas	hlabws@earthlink.net
HERBERT SHROYER	hlscss@windstream.net
Herbert Stein	hstein@hvc.rr.com
Herman S. Simms, Jr.	hsimms49@live.com
Hersha Evans	hnurhle@yahoo.com
Herta Choquet	choqueth@yahoo.com
Hieu Buu	mzhieuboo@gmail.com
Higby Laurie	travleryh@gmail.com
Hilarey Benda	hilareybenda@gmail.com
Hilarie Ericson	hilariee@hotmail.com
Hilary Back	hilary@drhilaryback.com
Hilary Capstick	hkcapstick@yahoo.com
hilary malyon	hmalyon@mindspring.com
hilary tulloch	htulloch@mail.roanoke.edu
Hildy May	hildymay@earthlink.net
Hillary G. Buckingham	hg2bee@gmail.com
Hillary Leonard	Hillary.leonard@gmail.com
Hillary Ostrow	hillaryostrow@yahoo.com
Himaddri Halgamuwa	himaddri.halgamuwa@gmail.com
HL Tyler	hltyler@animalfirm.com
HMM Millard	millardhm@gmail.com
Hollie Hollon	catlver5@att.net
Holly Atkinson	Hatkinson970@gmail.com
Holly Burgin	BURGIN.HOLLY@GMAIL.COM
Holly Evans	channel13@roadrunner.com
Holly Heighberger	jollyhon@care2.com
Holly Korzilius	Holly.Korzilius@gmail.com
Holly Loff	hollyloff@gmail.com
Holly Marczak	hollylee57@yahoo.com
Holly McDuffie	seeriuscat@yahoo.com
Holly Potthoff	earthmom@nc.rr.com
Holly Smallwood	Hojo70@aol.com
Holly Smith	hollis28@live.com
Holly Stachnik	hstachni@twcny.rr.com
Holly Van Dyk	hollyjvandyk@yahoo.com
Homa Assar	whitesnow12@hotmail.com
Homer Stevens	sarss1@hotmail.com
Horace Gaims	hgaims@aol.com
horace smith	suley78757@gmail.com
Hosea McAdoo	hwmcadoo@sbcglobal.net
Howard Bridgman	Hsb0255@bellsouth.net
Howard Cohen	howard@cohensw.com
Howard Eisenberg	jazzze@astound.net
Howard Emerson	howard@howardemerson.net
Howard Erbe	howard_erbe99@yahoo.com
Howard Jones	howard.jones06@gmail.com
Howard Kligerman	hklige61@yahoo.com
Howard Lanus	hlanus@outlook.com

Howard Miller	mmmhunify@aol.com	Ina Blejan	ibleu325@yahoo.com
Howard Moore	papaoso@mac.com	Ina Cantrell	ina_cantrell@yahoo.com
Howard Petlack	petlack@hotmail.com	Ina Pillar	aigheannach@yahoo.com
Hugh Ashcraft	hugh@firstchoicesigns.net	Inez Hileman	imaginez@mac.com
Hugh Freund	hugh.freund@gmail.com	Inge Bjorkman	inge.bjorkman@junette.se
Hugh Havlik	htuna37@comcast.net	inge ness	in2429@yahoo.com
Hugh Lentz	lentzh@evergreen.edu	ingeborg glier	inggli64@mac.com
Hugh McFadden	hbmcfadden@yahoo.com	Ingrid Bangers	imbangers@windstream.net
Hugh Wilson	hhwilson@icloud.com	Ingrid Boehl	cat_rescue@hotmail.com
Hugo Loquet	Dhaulagiri@skynet.be	Ingrid Broecker	ibcrazyhorse04@yahoo.de
huib vriesendorp	hvriesendorp@gmail.com	Ingrid Eichenbaum	Ingrid538@gmail.com
Hunter Sellari	hsellari@bellsouth.net	Ingrid Ford	tulipinusa@comcast.net
Huron Wright-Campbell	huronbw@gmail.com	Ingrid Jones	jones@socket.net
Hy Cohen	hcogency@gmail.com	ingrid piel	ipiel24@verizon.net
Hylin McNeeley	Hylinmcneeley@yahoo.com	Ira Abrams	iraabrams@att.net
I T Start	interest.too@gmail.com	Irena Franchi	BLUABIRDO@HOTMAIL.COM
I. Engle	1ieengle@gmail.com	Irena Gabut	bacardi_cola@poczta.onet.pl
Ian Cooke	ian.cooke25@gmail.com	Irena Jankunas	Irenagj@yahoo.com
Ian Haggerty	inhaggerty@gmail.com	Irene Cooke	Irene@ireneco.com
Ian Hannon	ihannon60@gmail.com	Irene Franzis	irenefranzis@gmail.com
Ian Peisner	Ipeisner@yahoo.com	Irene Gabut	bacardi_cola@poczta.onet.pl
Ian Smith	drwinstonoboogy@hotmail.com	Irene Lloyd	dlloyd1@comcast.net
Ileana Sune	ile1913@aol.com	Irene Lutz	lutznet@pacbell.net
Ilene Beninson	ilene.beninson@gmail.com	Irene Miller	irenemiller71@yahoo.com
Ilene Kazak	kazak@umich.edu	Irene Mills	missirene@live.com
Ilsa Lottes	lottes@umbc.edu	Irene Osten	irena626@yahoo.com
Ilse Ziemann	ilseziem@yahoo.com	Irene Radke	irenelillian@juno.com
Ilya Turov	iturov@yahoo.com	Irene Roos	iroos1951@yahoo.com
Imants Slegelis	unionyes61@gmail.com	Irene Schmidt	kayakersandcat@gmail.com
Immaculate Wesley	mackiewesley@gmail.com	Irene Snavely	peacefulfairie@yahoo.com

Irene Willey	willeyirene@yahoo.com	J Manning	joaniemanning@yahoo.com
Iris Relis	fredrelis@yahoo.com	J MASSETTI	PUSS-PUSS711@HOTMAIL.COM
iris Robledo	irisrobma76@gmail.com	J Richard Fikuart	jfikuart@gmail.com
Iris Rochkind	hemabug@aol.com	J Rigney	lakeswimmer139@aol.com
Iris Shelton	ips429@yahoo.com	J Scott	jmanoscott@gmail.com
Irma Bobroff	Ipetronila@aol.com	J Stephen Adams	stadams@aol.com
Irwin Hoenig	irwinhoenigcst@gmail.com	j talbot	talbot@talbotworld.com
Irwin Schpok	ischpok@hotwiremail.net	J. Atwell	jenniferandlisa@yahoo.com
Isaac Schrock	iyoderschrock@gmail.com	J. Barry Gurdin	gurdin@hotmail.com
isabel esteve	isagato66@gmail.com	J. David Scott	scott0547@rogers.com
Isabel Hepburn	issi.hepburn@hotmail.com	J. Moreira	jaydiam@cox.net
Isabel Kopp	ikopp@windstream.net	J. Yao	jyao23@yahoo.com
isabel rimanoczy	isabel.rimanoczy@legacycoachin	J.A. Loving	jal_1998@yahoo.com
Isabella Vega	bell0149@gmail.com	J.I. Farlow	jifarlow@earthlink.net
Isabelle Alvarez	isabell.alvarez@verizon.net	J.M. Hiatt	hiattjm@hotmail.com
Isaura Vazquez-Reid	nuevitas129@gmail.com	J.P. SPENCER	jpgallery@yahoo.com
Itala Rutter	italatc505@gmail.com	J.T. Smith	ACE910046SCA1@hotmail.com
Ivan Womboldt	iwomboldt@icloud.com	jacalyn b	gateways@ojaimail.com
Ivana Dzobova	ivanadzobova2@gmail.com	Jacalyn Strouble	ajaks7@juno.com
J Anderson	jadaar@gmail.com	Jaci Wilkins	jaciwilkins@gmail.com
J Angell	jangell@earthlink.net	Jack Studebaker	jackstudebaker@san.rr.com
J Bauer	joebauer@silverstar.com	Jack Gegner	jacargeg@juno.com
J Beverly	jbeverly@illinois.edu	Jack Gould	brooke.marrinan@outlook.com
J Blagen	jblagen@yahoo.com	jack hogan	harleyhoagy@yahoo.com
J Bocchino	jacklou77@gmail.com	Jack Lloyd	jack02l24@gmail.com
J C	Jaaeek@gmail.com	Jack Lupo	jackblupo@gmail.com
J C GAYHARTT	jcgayhartt@gmail.com	Jack Meyer	Jackmeyer8@gmail.com
j cardullo	j.cardullo@yahoo.com	Jack Mitchell	Jhmthree@gmail.com
J Holland	judithhol@yahoo.com	Jack Nichols	jd_ni@hotmail.com
J LESLIE CRAWFORD	lesliecrawford0@gmail.com	Jack Schlotte	photojack53@yahoo.com

Jack Sparks	jd94510@yahoo.com	Jacob Litoff	jlitvlnvla@gmail.com
Jack Stanford	drjflbs@gmail.com	Jacob McNeal	salmonFilmsLLC@yahoo.com
Jack Stansfield	jstansfield8981@gmail.com	Jacob R. Raitt	luvnstuff2@gmail.com
Jack Studebaker	jackstudebaker@san.rr.com	Jacob Rodriguez	jacoob189@gmail.com
jackee van akin	lilbitodat85@yahoo.com	Jacob Sweezy	jakesweezy@gmail.com
Jacki Coughlin	jcmagick@yahoo.com	Jacob Warren	Sebesta66@yahoo.com
jacki masar	jackimasar@gmail.com	Jacob Wyand	jrwyand@gmail.com
Jacki Ruby	rubyfox@lmi.net	Jacque Lefler	jlefler@sonic.net
Jackie Cole	jlwmcole@comcast.net	JACQUELINE ADAMSON	jackieadamson309@yahoo.com
Jackie Demarais	jackiedemarais@charter.net	Jacqueline Bell	jbell@tiedemann-assoc.com
Jackie Dow	jackieldow@gmail.com	Jacqueline Christenson	lukechristenson@msn.com
Jackie Duba	jacduba@gmail.com	jacqueline cuthbertson	jacqcuth@aol.com
jackie grguric	chloefla@aol.com	Jacqueline Hollis	jacqueline20000@aol.com
Jackie Hanser	jacquelinehanser@bhhsmi.com	Jacqueline Jacoby	jacqui_jacoby@yahoo.com
Jackie Johnson	janeeyre58@att.net	Jacqueline Komninos	jackie4eng@aol.com
jackie johnston	imabroke@msn.com	Jacqueline Robinson	jacquelinermike@yahoo.com
Jackie Martinez	jackiea10@verizon.net	Jacqueline Zimmerman	Jzimmerman677@cs.com
Jackie Pomies	jbpomies@yahoo.com	Jacquelyn Barnes	nikione1970s@gmail.com
Jackie Powers	Jpowers906@charter.net	Jacquelyn Long	jacquelynlong98@gmail.com
jackie schon	jackieschon@aol.com	Jacques Zakin	zakin.1@osu.edu
Jackie Stewart	jackiestewart4@me.com	Jacqui Skill	jjinparadise@gmail.com
Jackie Stolfi	jacqueline4sight@aol.com	Jade Madrid	havokprelude1221@yahoo.com
Jackie Tryggeseth	jtrygges@hotmail.com	Jade Reyor-Kelly	bagheera409@gmail.com
Jaclyn Lee	jackielee108@gmail.com	Jae Bevan	jaehbevan@hotmail.com
Jaclyn Truppi	jaclyntruppi@gmail.com	Jaesa McGee	mclinjw@yahoo.com
Jacob Callaway	bcallaway54@yahoo.com	Jaime Becker	jsbecker@ucdavis.edu
Jacob Davis	davi2043@umn.edu	Jake Cseke	jake_other@yahoo.com
Jacob DeJong	jdej12@gmail.com	Jake Hodie	Skicopmtn@aol.com
Jacob Garrison	jacob.97.garrison@gmail.com	JAKE HODIE	skicopmtn@aol.com
Jacob Kocic	Kakejocic@gmail.com	Jake Schwartz	jakeslives@gmail.com

Jamee Warfle	Buffy12242@aol.com	James Feichtl	kkidguy@gmail.com
James Hughes	hughesjm@estreet.com	James Gavacs	jim.gavacs@gmail.com
James Ramsay	jamieramsay2@gmail.com	James Gerontzos	jgerontzos@aol.com
James & April Thompson	jimjan48norf@gmail.com	James Goodhart	jgoodhart56@aol.com
James Adams	James.L.Adams@usace.army.mil	James Hartley	jwhartley77@msn.com
James Adams	jmadams@eckerd.edu	James Henriksen	amazinghendo@gmail.com
James Alexander	Craigalexander@premiermove.com	James Herther	jnherther48@yahoo.com
james angerer	jangerer1@msn.com	James Hickman	jimh652013@yahoo.com
james balder	jamesbalder@yahoo.es	James Hoose	jhoose@gmail.com
James Barber	barberdoug@yahoo.com	James Hopkins	jimhopone@att.net
James Baron	jredbaron@earthlink.net	James Howard	JamesakaBambi8389@gmail.com
James Bateman	jbateman54@yahoo.com	james hughes	hughesjm@estreet.com
James Bell	jtylerbell@yahoo.com	James Jachimiak	jjinfrk@yahoo.com
James Bess	jabess@charter.net	James Johnson	jamesgjohnson@gmail.com
James Bishop	Mummydust23@Yahoo.com	James K Hadcroft	jamzac@hotmail.com
james brock	brock090759@gmail.com	JAMES KAPPAS	JPKAPPAS@FUSE.NET
James Brunton	jimbrunton@yahoo.com	james keats	harpo52@netzero.net
James Carr	jjrosscarr@msn.com	James Keil	jkeil@howard.edu
james clark	clark131@mac.com	James Klein	jeklein64@yahoo.com
James Cleghorn	jstephencleghorn@yahoo.com	James L Wolcott	mr_james_l_wolcott@live.com
James Cooke	iago@james-cooke.com	James L. Holman	HolmanJLGW@gmail.com
James Cunningham	james.cunningham@earthlink.net	James Livingston	jlivings@nmu.edu
James Cusano	jfcusano@yahoo.com	James Lowe	jameslowe43@gmail.com
James D Johnson	jimandsam@aol.com	James Marahrens	jimmarahrens@yahoo.com
James Daugherty	jamesbdaugherty@gmail.com	James McCarthy	jamesmccarthy43@msn.com
James Dawson	james-dawson@sbcglobal.net	James Mejuto	jamesmejuto4@gmail.com
James Didomizio	Jimmyfrom23@aol.com	James Messer	Pmgcaver@hotmail.com
James Dixon	james@harehill.com	James Mills	Jaymills1@mac.com
James Donahue	sagamon@hotmail.com	James Mitchell	jamesmitchell5619@yahoo.com
James Engstler	jengstler@yahoo.com	James Mockaitis	J_Mockaitis@yahoo.com

James Morley	Jms.morley@gmail.com	James Stone	choice@choiceimaging.com
James Mulcare	xsecretsx@cableone.net	James Thoman	jrthoman1410@gmail.com
James Murphy	j.murphy.7@mac.com	James Thrailkill	jym157@icloud.com
James Murphy	Jim303murphy@aol.com	James Togashi	jtogashi@hotmail.com
James Naylor	spkdmc@wctc.net	James Tornatore	jt1330@yahoo.com
James Neal	Jim_neal@msn.com	James Turner	clariceturner00@gmail.com
James Olson-Lee	rbdragonfly@sbcglobal.net	James Ulness	ulness@cord.edu
James P. Sherman	jps3844@gmail.com	James Van Dinter	jvandinter@clenturylink.net
James Paik	Jpaik@outlook.com	James Van Nada	Nadanon@yahoo.com
James Pluskota	disaguy@yahoo.com	James Vragel	henryhawke@gmail.com
James Pruitte	rpruitte@greenvillecounty.org	James Wallace	jwallace576@yahoo.com
James R Monroe	randy@monroescienceed.com	James Walters	jandjwalters@gmail.com
James R Myron	jrmyron@airmail.net	James Watson	jimtesa@bellsouth.net
James R. Foley	jim@foleygroupinfo.com	James Wood	aquaticmind@gmail.com
James Reeder	jrr.reeder@gmail.com	Jameson McDonnell	jayones@live.com
james reynolds	jlr4619@gmail.com	Jamesw Flanagan	bubbasblues007@hotmai.com
James Rice	cleotisleeroy@yahoo.com	Jamie Boots	jimsjewlery@yahoo.com
James Richardson	JimRich1@Comcast.net	Jamie Castaneda	jamiekweber@gmail.com
James Roberts	jimrobj@yahoo.com	Jamie Dos santos	Jjd1215@yahoo.com
James Roper	jjroper@gmail.com	Jamie Fischer	vintagevixin@gmail.com
James Ropicki	jropicki@yahoo.com	Jamie Green	springhead@qnet.com
James Salkas	jimsalkas@yahoo.com	Jamie Greer	Myinnerstrength@icloud.com
James Schall	tchapi@icloud.com	Jamie Harris	blueharris@q.com
james schoonover	oldschoolmx@att.net	Jamie L	jledent43@gmail.com
James Senger Jr	jrsiceman@aol.com	Jamie Lindsay	jamiemieraulindsay@gmail.com
James Shelton	James_Shelton32@yahoo.com	Jamie Louis	jlouis@hawaii.edu
James Sliney	jgslineyjr@ieee.org	Jamie Oxley	ejames_oxley@bellsouth.net
James Smith	jameka@md.net	Jamie Reifman	jlr2416@sbcglobal.net
James stark	starkjim@hotmail.com	Jamie Roach	owlbeeokya@gmail.com
James Staszewski	jjs@cmu.edu	Jamie Shultz	hadleys1@hotmail.com

Jamie Thomas	jamiedt2003@gmail.com	Jan Sownie	sowniej@gmail.com
Jamie Toden	grimone66@yahoo.com	Jan Stautz-Hamlin	sunshine-of-integrity@tampabay
Jamie Trask	jleetrask57@yahoo.com	Jan Sutherland-Wells	imacheadgraphics@gmail.com
Jamila Garrecht	jamila@sonic.net	Jan Tervydis	jantervydis@sbcglobal.net
Jan Beauchamp	janbeauchamp@mac.com	Jan Tullis	Jan_Tullis@brown.edu
Jan Blaire	envirojb@gmail.com	Jan Walsh	jan@janwalsh.com
Jan Bloesser	picperfect@midrivers.com	jana austin	jjnomads@verizon.net
Jan Church	termite2@comcast.net	Jana Doak	janad@reagan.com
Jan Cowan	jecowan2@gmail.com	Jana Freiberger	Jana.freiberger@gmail.com
Jan Crowder	ctcrowder@aol.com	Jana Gibbons	janagibbons10@yahoo.com
Jan daker	dakerjan@gmail.com	Jana Lalanne	janalalanne1@telia.com
Jan Elliott	whitebirdsdancing@yahoo.com	Jana Lynne Webb Niernberger Mu	janarosa@sonic.net
Jan Emerson	janemerson777@gmail.com	Jana Perinchief	janasg@gmail.com
Jan Fortini	pudin14e@gmail.com	Janae Bailie	janaecbailie@gmail.com
Jan Gerstlauer	Jang77@centurytel.net	Jane butler	butlertwins97@aol.com
jan hansen	doctorj133@gmail.com	Jane Chambers	clay63lady@yahoo.com
Jan Kampa	happykampas@cruzio.com	Jane Chischilly	claygoddess541@gmail.com
Jan Kimbrough	JanKimbrough@Gmail.com	Jane Church	janechrch@yahoo.com
Jan Leonardy	jan_leonardy@yahoo.com	jane dexter	janeharveydexter@gmail.com
Jan Lindner	jan43212@yahoo.com	Jane Drews	jcd907@aol.com
Jan Lowrey	jlowrey828@gmail.com	jane edsall	jedsall2003@yahoo.com
Jan McCall	jan71mccall@gmail.com	Jane Fawke	laragna.web@gmail.com
Jan McCreary	cascabel@gilanet.com	Jane Fencl	jane_sarah6@hotmail.com
Jan Modjeski	jangenem@sccoast.net	Jane Graham	jgraham@greyrock.org
Jan Novotny	jnovotny@comcast.net	Jane Gulley	t.janegulley@gmail.com
Jan Peddy	rcpeddy@aol.com	Jane H Beattie	rbmt80@yahoo.com
Jan Pfeiffer-Rios	jpfeifferrios@gmail.com	Jane Halsey	byhellespont@hotmail.com
Jan Repp	Jcr2510@icloud.com	Jane Harada	jtharada@yahoo.com
jan salas	jancsalas4@att.net	jane herrmann	jrherrmann1@me.com
Jan Schmidt	jenniesmom1@gmail.com	Jane Klinedinst	jane.kl@verizon.net

Jane Lewis	janeguill@hotmail.com	Janet Dietrich	janetrdietrich@gmail.com
Jane Lyon	mountan6@gmail.com	Janet Duran	Jan_duran@hotmail.com
Jane Marquet	janemarquet@yahoo.com	Janet Falcone	jand1907@gmail.com
Jane McCullam	cattermole@windstream.net	Janet Flinkstrom	jlflink@aol.com
Jane McGraw	jmcgraw2004-j@yahoo.com	Janet Fotos	Janfotos@charter.net
Jane Murphy	leoasc@fairpoint.net	Janet Ginepro	Janet9Cats@gmail.com
Jane Nachazel	antjn4tprch@sbcglobal.net	Janet Heinle	janetheinle@yahoo.com
Jane Neave	jane.neave@yahoo.com	Janet Heller	Janet.wright.h@gmail.com
Jane Nicholson	nicholsonjane@yahoo.com	Janet Hendrick	tobewind4@yahoo.com
Jane Oakley	ladyjaneoakley@gmail.com	Janet Kern	jkny256@gmail.com
Jane Reading	jane@watersongs.org	Janet King	janetthornking@yahoo.com
Jane Rigney	Jane.Rigney139@gmail.com	Janet Kuncl	jaykay34@att.net
Jane Rudner	jnhrudner@bellsouth.net	Janet L Aldrich	jaldrich@presbyterianhomes.org
Jane Schnee	sunwrent@aol.com	Janet Laur	Janetharasz@gmail.com
Jane Simeth	jsimeth@cox.net	Janet Lenius	janet@jalenenterprises.com
Jane Steinberg	dyedivajane@gmail.com	Janet Lyons-Fairbanks	whisper07@embarqmail.com
Jane vanWert	jvanwert@usa.net	Janet Martucci	auntigen58@aol.com
Jane Whitaker	azjaniem@hotmail.com	Janet McCalister	natal780@sbcglobal.net
Jane Whiteside	janewhiteside@earthlink.net	Janet Monfredini	janet@bridgessf.com
Janeene Porcher	janeene52@gmail.com	Janet Moser	Janet630@optonline.net
JaneI"m not a bad August	janeaugust100@yahoo.com	Janet Nugent	nugentkev@sbcglobal.net
Janel Brattland	janelkaye@gmail.com	Janet Paisley	janetpaisley@comcast.net
Janell Cooper	janellcooper@cox.net	Janet Potenza	bronx1313@icloud.com
Janet Bender	tjbender@juno.com	Janet Pribyl	jpribyl@d.umn.edu
Janet Bircheff	Bebircheff@yahoo.com	Janet R Snow	jrsnow07@myfairpoint.net
Janet Campbell	janet.campbell@verizon.net	Janet Rafferty	tootieraff@gmail.com
Janet Chase	JanetChase108@gmail.com	Janet Reynolds	janetr5@prodigy.net
Janet Cowden	onebadshebear@cox.net	Janet Robinson	bocacatlover@gmail.com
Janet Crist-Whitzel	jcristw@aol.com	janet savaiano	jsavai@yahoo.com
Janet Delaney	jld215@sbcglobal.net	Janet Smith	janet_p_smith@yahoo.com

Janet Smith	janetpsm@uga.edu	Janis Frazee	janisfrazee@gmail.com
Janet Thew	gavelgoddess@gmail.com	Janis gummel	jgummel75@yahoo.com
Janet Tice	starjet@mindspring.com	Janis King	janis6798@sbcglobal.net
Janet Way	Janetway@yahoo.com	Janis Thompson	janthompson0817@gmail.com
Janette Horchar	Jhorch5@aol.com	Janis Todd	Jbtodd26@verizon.net
Janette McFarland	n9420m_210@yahoo.com	Janlee Myers	jwjoto7@yahoo.com
Janette Rosman	janette@ronan.net	Jann Johanson	Jannjade2@icloud.com
Janice Banks	jabanks@tds.net	Janna Kepley	weyrcat@gmail.com
Janice Boyd	geminigurl@charter.net	janna piper	jaqalthehybrid@yahoo.com
Janice Briggs	janbriggs@valleymedia.com	Jannis Conselyea	jconselyea@gmail.com
Janice Clark	janicerclark@gmail.com	János Vargha	janos.vargha@gmail.com
janice dannhauser	janndann88@gmail.com	Jan-Paul Alon	jpalon@yahoo.com
Janice Digirolamo	angel@netsync.net	Janus Woods	janusw@yahoo.com
Janice Gams	janio100@yahoo.com	JANUSZ MAKA	januszmaka@sbcglobal.net
Janice Gloe	rainglo@msn.com	Jared Baecker	jaredbaecker@gmail.com
Janice Hallman	jrhallman2@gmail.com	Jared Brenner	jgbrenner1@aol.com
Janice Johnson	jannygar53@yahoo.com	Jared Collins	jcollins2112@gmail.com
Janice Lovell	madonnamama2@gmail.com	Jared Cornelia	jaredc1200@gmail.com
Janice M. Hunter	mcjmh@nemont.net	Jared Goor	jbgoor@gmail.com
Janice Messer	jcmesser60@yahoo.com	Jared Howe	jaredchowe@gmail.com
Janice Phelps	14leatherwizards@gmail.com	jared rex	erikthephantom88@hotmail.com
Janice Phillips	janp931@yahoo.com	Jaremy Lynch	JPL92077@comcast.net
Janice Rogers	thepenspeaks@sbcglobal.net	Jarrett Cloud	jadacloud9@gmail.com
Janice Shannon	jjstpafla33612@yahoo.com	Jasmeen Burton	jasmeenburton@gmail.com
Janice Speed	speedandspeed@msn.com	Jasmina Bricic	keiji_miashin@hotmail.com
Janice Weiland	jlwwildviolets@gmail.com	Jasmine Reppen	jasmine.reppen@gmail.com
Janie Martinez	jgfm1969@att.net	Jason Balogh	jbalogh73@yahoo.com
Janiece Staton	ms.jdstaton@frontier.com	Jason Bowman	xyamuchax@care2.com
Janine Comrack	janine@ojaimail.net	Jason Brock	Jbrocksd@yahoo.com
Janine Moore	jmmoore@maine.rr.com	Jason Burch	jasontburch@yahoo.com

jason byrd	bjasby@gmail.com	Jason Ziemba	jasonpziemba@gmail.com
Jason Chin	Jerekko@yahoo.com	Javier Del Valle	jdelvalle@dvacommercialre.com
Jason Crawford	jrobcrawf@aol.com	Javier Mendez	mendezj@hawaii.edu
jason davis	freethepirate@gmail.com	Javier Rivera	javierocker@aol.com
Jason Davis	freethepirate@gmail.com	Jay Billings	jjonatah@gmail.com
Jason Fish	collectivesole@aol.com	Jay Bodner	jay@mtbeef.org
Jason Fox	Jason.gerard.fox@gmail.com	Jay Brown	jayhadassah5@aol.com
Jason Hanania	Hananiaj@yahoo.com	Jay Casello	Jaycasello@yahoo.com
Jason Hayes	hogsrgood@yahoo.com	Jay Gehrke	jghjlane@aol.com
Jason Heritage	jheritage.317@gmail.com	Jay Humphrey	blue1jay@yahoo.com
Jason Hightower	hightowerexp@gmail.com	Jay McCalmont	chantfirst@yahoo.com
Jason Himick	JHimick@yahoo.con	Jay McKell	chanyen.0@juno.com
Jason Hladik	1jhladik@gmail.com	Jay Morren	jdmor2000@hotmail.com
Jason Hollington	Jhpt2000@hotmail.com	Jay Powell	rbpowell1@verizon.net
jason husby	jcobainfan@aol.com	Jay Rozner	jayrozner@gmail.com
Jason Kemple	sbrules@hotmail.com	Jayla Poppleton	jaylapop@gmail.com
Jason Leach	jalteipper@yahoo.com	Jayna Williams	jaynawilliams@yahoo.com
Jason Manviller	Weteach56@gmail.com	Jayne Boyer	dr.jayne.boyer@gmail.com
jason Morgan	morganja1978@att.net	Jayne Burdick	jayne@jayneburdick.com
Jason Nichols	william.nichols@elavon.com	Jayne Mcgurrin-Feshold	jaynefeshold@yahoo.com
Jason Park	Jasopark@yahoo.com	jayne schell	lilalulu9@gmail.com
Jason Post	jasonpost@verizon.net	JB Marks	skramj@aol.com
Jason Rushouch	jasonrushouch@yahoo.com	JC Louie	jclouie55@yahoo.com
jason smith	jdsmithknox@aol.com	Jean Allgood	allgood.jean10@gmail.com
Jason Steadmon	jasonsteadmon@hotmail.com	Jean Ames	Sundaralyn@yahoo.com
Jason Stuart	rrreporter@rangerreview.com	Jean Ann Marwick	Annbosslady@gmail.com
Jason Thomas	jtbigmtnman@gmail.com	Jean Baker-Stapleton	j2bak2stap3@comcast.net
jason trentlyon	jason@streetguerilla.com	Jean Balgrosky	jbalgrosky@ucla.edu
Jason Triest	jtriest@centurytel.net	Jean Cameron	j-cameron@suddenlink.net
Jason Williams	andingela@gmail.com	Jean Conley	jean.conley@t-mobile.com

Jean Craft	jujube1227@aol.com	Jean Standish	jestandish@hotmail.com
Jean Eunson	jeaneunson@live.com	Jean Thornsbury	jean_thornsbury@hotmail.com
Jean Farris	jcfarris@bellsouth.net	Jean Warp	delsanto@umn.edu
Jean Frederick	jeanf1923@gmail.com	Jeane Harrison	jlhggy@gmail.com
Jean Furlan	jurlan611@hotmail.com	jeanette capotorto	capotro@aol.com
Jean Gillespie	jhgmagick@frontier.com	Jeanette French	widdle9876@gmail.com
Jean Goetinck	jfgoet@email.arizona.edu	Jeanette Louis	jnlouis@hotmail.com
Jean Grace	Jeangrace@me.com	Jeanette Thorpe	thortran@yahoo.com
Jean Heaps	jeanheaps@comcast.net	Jeanie Harvey	jeanie_harvey@yahoo.com
Jean Hopkins	jhopkins302@yahoo.com	Jeanie Taylor	jtaylorgardening@gmail.com
Jean Jean	jeanmjean57@aol.com	Jeanine Dimmick	jmdimmick44@gmail.com
Jean Jearman	jjearman@gmail.com	jeanine greene	jeaninegreene@gmail.com
Jean Jenks	jeankjenks@npgcable.com	Jeanna Thompson	jeannat50@gmail.com
jean john	jeanjohn@centurylink.net	Jeanne Bradbury	jeannebradbury@gmail.com
Jean King	whjaking@comcast.net	jeanne Clement	clementjeanne5@gmail.com
Jean Kuntz	jeaniekuntz@yahoo.com	Jeanne Fletcher	jfprincesstasha@aol.com
Jean Langford	jeanlangford@hotmail.com	Jeanne Flynn	jlf635@gmail.com
Jean Layton	Jeanlayton@optonline.net	Jeanne Held-Warmkessel	Jheldwarmkessel@yahoo.com
Jean Marie VanWinkle	jean_pawsforgod@jetbroadband.c	Jeanne Leclair	iscus@aol.com
Jean McAulay	chesbayretr@juno.com	Jeanne Leske	jeanne.leske@gmail.com
Jean Naples	jeannaples7@gmail.com	Jeanne Moenk	jmoenk@ndc.edu
Jean Phillips-Calapai	jcalapai@verizon.net	Jeanne Peters	petersjeanne51@gmail.com
Jean Public	jeanpublic1@yahoo.com	Jeanne Robinson	robinson_jeanne@bellsouth.net
Jean Roberts	jeannier65@gmail.com	Jeanne Schlatter	sionyx@hotmail.com
Jean Ross	jfross@umn.edu	Jeanne Stidham	Jstid@hotmail.com
Jean Saja	jtsaja@yahoo.com	jeanne sumner	ajeanne94547@gmail.com
Jean Siegel	aquajean4@yahoo.com	Jeanne Young	jywhiz@gmail.com
jean slocum	jslocum222@yahoo.com	Jeannette Allan	Shakti700@aol.com
Jean SmilingCoyote	maiinganikan@yahoo.com	Jeannette Welling	bongodrum@gmail.com
Jean Staats	jeanstaats@aol.com	Jeannine Bloss	dalgal9682@aol.com

Jeannine Guerci	J9g@me.com	Jeff Root	3k@taconic.net
Jeannine Johnson	Sunshinekid1957@cox.net	Jeff Schroeder	jeff.paul755@att.net
Jed Fitzpatrick	bitterrootriverguides@gmail.com	Jeff Schwefel	jrschwefel@yahoo.com
Jeff Albrecht	jalbre7058@aol.com	Jeff Somers	jdsomers@yahoo.com
Jeff Andersen	mvgardens@msn.com	Jeff Stromgren	jeff@ricestromgren.com
Jeff Bailey	jeff.bailey@gmail.com	Jeff Tanner	jefftanner@npgcable.com
Jeff Blanton	jbwolfman@gmail.com	Jeff Thomas	jkthomas56@centurylink.net
jeff bohan	jejo@bellsouth.net	Jeff Trapp	jefftrapp247@gmail.com
Jeff Cox	jcox68@gmail.com	Jeff Widmer	jeff@nwmobiletechs.com
Jeff Crane	jtwg58@yahoo.com	Jeff Wiedner	jeffwiedner@gmail.com
Jeff Creech	jeffcreech1959@gmail.com	Jefferson Baum	baumjefferson@yahoo.com
Jeff Dean	jrdengenv@aol.com	Jefferson Deweber	jefferson.deweber@oregonstate.
Jeff DeLuca	musipoliticojeff@gmail.com	Jeffery Garcia	jeffery@mcn.org
Jeff Dorer	jeffdorer2002@yahoo.com	Jeffery Olson	luckyolsun@yahoo.com
Jeff Fellows	jeff.fellows@gmail.com	Jeffrey Bains	jebains@gmail.com
Jeff Freels	jeff@jeffwerx.com	Jeffrey Christo	Jeffreychristo@yahoo.com
Jeff Gearding	sgt1439@yahoo.com	Jeffrey Cody	oldeparse@gmail.com
Jeff Hatcher	jhatcher_md@yahoo.com	Jeffrey DeCristofaro	jeffreydecristofaro@gmail.com
Jeff Hibbard	jhibbard@riseup.net	jeffrey Dickemann	dicke.mannjeff@hotmail.com
jeff hopkins	jhop-90@earthlink.net	Jeffrey Eiffler	jeiffler@aol.com
Jeff Johnson	jgjohnson@mgh.org	Jeffrey Evans	jrevans3@gmail.com
Jeff Johnston	jnjisloving@gmail.com	Jeffrey Freilich	mocosoj@gmail.com
Jeff Komisarof	jeffrey.komisarof@uphs.upenn.e	Jeffrey Hearn	jjmh57@hotmail.com
Jeff LaFlamme	jlaflamme2002@comcast.net	Jeffrey Hemenez	jh2897@att.com
Jeff Martin	skngwisdom@hotmail.com	Jeffrey Hurwitz	jahurwitzhome@cs.com
Jeff McNair	McNair_jeff@yahoo.com	Jeffrey Phillips	jeffmphillips@me.com
Jeff Metzger	jrmetzger@prodigy.net	Jeffrey Plackis	LITroutBum@yahoo.com
Jeff Muck	Muckje@yahoo.com	jeffrey sanders	yellowstart5@yahoo.com
Jeff Olsen	clojro@verizon.net	Jeffrey Stone	stonepitts2@gmail.com
Jeff Reynolds	wutsup1@yahoo.com	Jeffrey Taylor	jstaylor@comcast.net

Jeffrey White	rogue576@gmail.com	Jennifer Graham	leonesse56@yahoo.com
Jelica Roland	jroland@email.t-com.hr	Jennifer Hagens	j.hagens8@hotmail.com
jen ei	jen1972@gmail.com	Jennifer Hall	solitarydragon77@gmail.com
Jen H	JenMail7975@knology.net	Jennifer Harris	psychstudent09@yahoo.com
Jen Pelz	Jsoice@yahoo.com	Jennifer Harrison	jenniferclairesf@gmail.com
Jen perlaki	jenperlaki@gmail.com	Jennifer Hayes	xandysmom@aol.com
Jen Scibetta	Bebebird6@yahoo.com	Jennifer Headley	Jaheadley67@yahoo.com
Jena hallmark	jena.hallmark@yahoo.com	Jennifer Hennes	Jillehennes@gmail.com
Jenai Stokesbary	Jenu88@yahoo.com	Jennifer Hill	jennifer_ann_hill@yahoo.com
Jenefer Ellingston	jellygreen3@gmail.com	Jennifer Jimenez	anonemouse514@yahoo.com
Jenifer Frost	xeperx@gmail.com	Jennifer Johnson	veg4katz@gmail.com
Jenifer Hartman	jhartman111@gmail.com	Jennifer Keys	jenniferk123@hotmail.com
Jenifer Malone	joy4life1990@gmail.com	Jennifer Lanham	photojourno2003@yahoo.co.uk
Jenn Earnest	desiredeffect9@yahoo.com	Jennifer Larson	jenlars@tctwest.net
Jenna Fallaw	jenna_grimm@hotmail.com	Jennifer Lockett	lockettjk@gmail.com
Jennie Brawner	jennie.brawner@mac.com	Jennifer Lowans	ezrawey@gmail.com
Jennifer Ashley-McCall	jamfan38@bellsouth.net	Jennifer Martini	jmartini1994@yahoo.com
Jennifer Brandon	rottdoc@aol.com	Jennifer Miller	jen@termship.com
JENNIFER BREITIGAN	jbreitigan@laverne.edu	Jennifer Moix	Doverinc@rocketmail.com
Jennifer Cartwright	Jenseizethemoment@yahoo.com	Jennifer Nitz	grizzalo@hotmail.com
Jennifer Claunch-Meyers	jclaunchmeyers@gmail.com	Jennifer O"Brien	evoliffer@yahoo.com
Jennifer Cohen	jen.cohen@pobox.com	Jennifer Pelz	jsoice@yahoo.com
Jennifer Cook	Jencrawfordcook@yahoo.com	Jennifer Pittman	jennifurseal@gmail.com
Jennifer Cunningham	sensei.jc@gmail.com	jennifer prevost	jennifermprevost@gmail.com
Jennifer Direnzo	foxescreek@aol.com	Jennifer Quick	soindebt@hotmail.com
Jennifer Downing	zop3@juno.com	Jennifer Radecki	bgdia@aol.com
Jennifer Edelen	Elvenmommy3@yahoo.com	Jennifer Roberts	Roberts.jennifer23@yahoo.com
Jennifer F	endeavour105@yahoo.com	Jennifer Romans	Jennifer.Romans@gmail.com
Jennifer Flynn	riverflynn.activist@gmail.com	Jennifer Schally	NordicChicMN@aol.com
Jennifer Gitschier	Jgitch@aol.com	jennifer schultz	jellogg@juno.com

Jennifer Scott	jjscott9@gmail.com	Jerily Robinson	sinnamon_spider13@yahoo.com
Jennifer Sellers	buckingham72@hotmail.com	Jerome Glassmaan	poftd@yahoo.com
Jennifer Shaw	shaw000@earthlink.net	Jerome Roth	jerome_roth@cox.net
Jennifer Shontz	Jshontz@msn.com	Jerome Schaack	jerry.schaack@ucdenver.edu
Jennifer Smith	smithjj3@aol.com	jerre allen	jerreallen@yahoo.com
Jennifer Stewart	Larkspur@magnoliaroad.net	Jerre Miller	jerrem@centurylink.net
Jennifer Sumiyoshi	bignarutofan19@yahoo.com	Jerree Lewis	jlewis97045@yahoo.com
Jennifer Tisdell	Jennifer.tisdell@gmail.com	Jerri Jarvis	jerrij1@verizon.net
Jennifer Toth	toes2toes2011@att.net	Jerrold Osborn	jrrldosbr@aol.com
Jennifer Tulo	bunnifred@gmail.com	Jerry Cecere	skyy105@comcast.net
jennifer valentine	faboo1028@yahoo.com	Jerry Curow	jerryc@inorbit.com
Jennifer Waggoner	aselin.j@gmail.com	Jerry Davis	specmar@comcast.net
Jennifer Waters	lyricessence@aol.com	Jerry Fitzgerald	jldfitzger@att.net
Jennifer Wiley	jennifermhw@gmail.com	Jerry Flis	jerry.flis@gmail.com
Jennifer Wittlinger	jjsingleton@hotmail.com	Jerry Jorgenson	jerry@j3iss.com
Jenny Bramlette	jenny.bramlette@va.gov	Jerry Mawhorter	head42446@gmail.com
Jenny Hayes	pajamas70@yahoo.com	Jerry McGee	jjmcgee99@aol.com
Jenny Pierucki	jingles49030@core.com	Jerry miller	jermil64@hotmail.com
Jenny WILDER	jensoasis@aol.com	Jerry Mylius	j.mylius@sbcglobal.net
Jens Hansen	jhrose@posteo.de	jerry persky	jpersky48@aol.com
Jeremiah Avins	jya@ieee.org	Jerry Rasmussen	ijrivers@aol.com
Jeremy Bennett	Lonestarstate84@yahoo.com	Jerry Swaim	jerry_s85@hotmail.com
Jeremy Brown	jeremy@axint.net	Jerry Unruh	jerryunruh42@msn.com
Jeremy Diner	jdiner@americanrivers.org	JERRY WHEELER	born2hike@hotmail.com
jeremy france	jeremyfrance18635@gmail.com	Jes File	jesfile@gmail.com
Jeremy Greene	swirlyjg76@yahoo.com	Jess Fauchier	fauchier@goldengate.net
Jeremy Spencer	jpspencer@gmail.com	Jesse Bearheart	jbearheart@rocketmail.com
Jeremy Taylor	dreamrev@comcast.net	Jesse Boeckermann	jessebach7@gmail.com
jeri pollock	jeripollock@gmail.com	Jesse Bracken	jesslee2@juno.com
Jeriene Walberg	jerienewalberg621@gmail.com	Jesse Gore	jessegore@yahoo.com

Jesse Kirkham	jlkirkham@earthlink.net	Jessie Petty	jpettyent@gmail.com
Jessenia Winstanley	wjessyone@aol.com	Jessie Thomas-Blate	jthomas@americanrivers.org
jessi DeMartini	jdemartini@dupageforest.org	Jessie Vosti	songbird899@gmx.com
Jessica Allan	jess.allan487@gmail.com	Jessye Heilman	jessyeonion@yahoo.com
Jessica Beaudry	jessica11beaudry@gmail.com	Jesus Hernandez	t2rios@yahoo.com
Jessica Black	jdblack@primalx.com	Jett Metcalf	Jettmet@gmail.com
Jessica Card	jessicap0924@gmail.com	JG Tentler	algonquinarcher@gmail.com
Jessica Cresseveur	jmcress@gmail.com	jil andrew	jandrew503@gmail.com
Jessica Ehmke	jessica_ehmke@yahoo.com	Jill Alibrandi	jillalibrandi@gmail.com
Jessica Fielden	jesigata@yahoo.com	Jill B.	jillkb@earthlink.net
Jessica Foster	jessfost@gmail.com	Jill Badyrka	jbadryrka@snet.net
Jessica Goody	PinnipedPerson@aol.com	Jill Berkowitz-Berliner	jillberliner@optonline.net
Jessica Justice	Jessicajustice05@yahoo.com	Jill Blaisdell	jillblaisdell@earthlink.net
Jessica Kronika	flyngypsy@hotmail.com	Jill Bohr Jacob	bohr@kpunet.net
JESSICA LANDON	jk_landon@yahoo.com	Jill Brothers	JillBro1@yahoo.com
Jessica Lederman	jlederman1027@gmail.com	Jill Dahlman	jilldahlman@yahoo.com
Jessica Locicero	Jessica.Locicero@nau.edu	JILL JONES-SODERMAN	JILL@THEOPENMIND.US
Jessica Luna	jessica.luna2009@Hotmail.com	Jill Kaptur	Jkaptur@yahoo.com
Jessica Macomber	jessmacomber@hotmail.com	Jill Kellogg	dkellogg4104@comcast.net
Jessica Nathan	itsmeeejessica@gmail.com	Jill Orsatti	Jillorsatti@ymail.com
Jessica R	pink_pirate_punk@yahoo.com	Jill Robison	jrobtex@sbcglobal.net
Jessica Richter	Starz61181@yahoo.com	Jill Stassinos	Jstassinos@aol.com
JESSICA SEGREST	segrjess1@yahoo.com	jill strasburg	joeymatildas@yahoo.com
Jessica Soza	jess.soza@gmail.com	Jill Tew	rockus352@yahoo.com
Jessica Sprehn	dataqueen42@gmail.com	Jill Wiechman	Jillwiechman@yahoo.com
Jessica Sunderlannd	Kayakjess@gmail.com	Jillian Fiedor	jfiedor19@hotmail.com
Jessica Tavaglione	jasmineviiolet@gmail.com	Jillian Forschner	jillian234@aol.com
Jessica Towns	Nappyfro81@yahoo.com	Jim & Liliana & Lucia Traweek	jltraweek@hotmail.com
Jessica Whitfield	sunshine0213@hotmail.com	JIM ABBONDANTE	JNJABBY@GMAIL.COM
Jessie Cauch	Litolover3@aim.com	Jim Altree	paradise99@q.com

Jim Ambort	jimambort@yahoo.com	Jim Snee	JimSnee@Mac.com
Jim and Betty Mast	jandbmast@aol.com	Jim Steinbeisser	jamese@midrivers.com
Jim and Mary Abendroth	abenfam@verizon.net	Jim Steitz	jimsteitz@mac.com
Jim and Virginia Wagner	JimWagner@safe-mail.net	Jim Thomas	jmichaelthomas2005@gmail.com
JIM Andaloro	jim_andaloro@yahoo.com	jim traweek	jltraweek@gmail.com
Jim Bennett	Starrattler@gmail.com	Jim Turek	rockfish01@cox.net
Jim Bosanny	jbosanny@gmail.com	Jim Watkins	welovegr@att.net
Jim Bush	jdbush49@aol.com	Jim Wilson	jim4415@att.net
Jim Cokas	Jcokas@me.com	Jim Wilson	rockworm46@gmail.com
Jim Davis	bnbadenuf22@bresnan.net	Jim Wingate	James.wingate@ymail.com
Jim Durocher	jurocher@yahoo.com	Jima Rice	jimasv@cox.net
Jim Elliott	jim.elliottmarine@gmail.com	Jimmie Smith	gemsmith@airmail.net
Jim Fary	jimfary@earthlink.net	Jimmy Dick	jdick@eqrllc.com
Jim Forbes	jim4bs@sbcglobal.net	Jimmy Lopez	jimlo420@gmail.com
Jim Geear	jimgeear@charter.net	Jimmy Thigpen	jimmythigpen@ymail.com
jim gergat	jkeaera@netzero.com	Jinger Pulkrabek	jnpul@hotmail.com
Jim Hajek	JHAJEK1938@YAHOO.COM	JINNY LEE	blueberi@windstream.net
Jim Hemmingsen	hemming@cyber-dyne.com	Jinny St. Goar	jinny@tiac.net
Jim Kline	jkljim@gmail.com	Ji-Young Kim	jiyoungk98@hotmail.com
Jim Landua	leonato1@aol.com	JL Burns	chef_cathi@yahoo.com
Jim Leske	Gooddogsaretrained@yahoo.com	JL Charrier	jcharrier21@gmail.com
Jim Lockhart	Videoactivepdx@gmail.com	JL Mulligan	flawfleur@aol.com
Jim Long	jp.long@earthlink.net	jnn hoo	bog18boo@gmail.com
jim luebke	jl441@att.net	Jo Ann Abate	jaabate@gmail.com
Jim Marsden	jamesmarsden1130@gmail.com	Jo Ann Wein	flaneuse.jgw@verizon.net
Jim Massey ND	drmassey@gmail.com	Jo Anna Hebberger	jhebberger@yahoo.com
Jim McElveen	jmcelve@ufl.edu	Jo Cuffari	Cuffarij@aol.com
Jim Melton	eagledriverjm@aol.com	Jo Davis	enfpj53@verizon.net
Jim Nordstrom	basso17@yahoo.com	Jo Ellen Woodrpw	gem2005us@yahoo.com
Jim Simmons	jimons@yahoo.com	Jo Garrett	Jogarrett2@gmail.com

Jo Harvey	cailinfili@yahoo.com	Joan Murphy	murphyrich62@gmail.com
Jo Hines	Jkileysgirl@yahoo.com	Joan Murray	Jsmurray24@gmail.com
Jo K	jkolsen1@verizon.net	Joan Palmer	joanplmr@aol.com
Jo Podvin	jopodvin@yahoo.com	Joan Parrish	ferd101010@yahoo.com
Jo R. Jones, DVM	jojones.co@gmail.com	Joan Patch	joan@covetouscat.com
Joan Abruzzo	joanbayside@yahoo.com	Joan Paul & PJ Sullivan	Punkinsullivan4@aol.com
Joan Bailey	joan.bailey@swanvalleypress.com	Joan Pilz	jpspluv@aol.com
Joan Balfour	solfjoanb@aol.com	Joan Quinn	joanquinn58@yahoo.com
Joan Breiding	liteuptheroom@yahoo.com	Joan Ragland	jmragland@gmail.com
Joan Delauro	Joandelauro@gmail.com	Joan Samsel	Samseljoan@gmail.com
Joan DeMarree	demarree1@comcast.net	Joan Schumaker	Jschumaker38@gmail.com
Joan Dobranski	jdob33@optimum.net	Joan Tangen	bellatangen@yahoo.com
Joan Earnshaw	joanearnshaw@gmail.com	Joan Walker	jbmwalker13fr@gmail.com
Joan Farber	jcfmob@verizon.net	Joan Walker	jmabwalker@verizon.net
Joan Forman	joanforman@earthlink.net	Joan Ward	joantheloon@care2.com
Joan Furtado	zrn50@cox.net	Joan Yater	jeyater@os2bbs.com
Joan Gabrie	omtwa@enter.net	Joan Yates	releasebooksalot@gmail.com
Joan Graves	575hlg@live.com	joanie alexander	jalexana@mac.com
Joan Griffiths Vega	jdragon87@earthlink.net	Joan-Marie Bauman	joanmariebauman@hughes.net
Joan Heartfield PhD	joan@talkinghearts.com	joann butkus	jb7698@att.net
Joan Heron	eldergoddess@mcn.org	JoAnn Hediger	j.hediger@att.net
Joan Hoeborn	hobojoann@yahoo.com	Joann Hunter	Joann.hunter48@yahoo.com
Joan Kocsis	kocsis@verizon.net	Joann Koch	jmjkla@yahoo.com
Joan Kolessar	joanniecool@gmail.com	JoAnn Lowes	joannlowes@att.net
Joan Kyler	joanehkyler@gmail.com	JoAnn Nurmi	jrumino@yahoo.com
Joan MacDonald	joan_wally_macdonald@calalum.o	JoAnn Pichiarello	Esjoann@gmail.com
JOAN MCBRIDE	JBMCBRIDE@OPTONLINE.NET	JoAnn Polley	joann@windermere.com
Joan McCormick	joandouglas@att.net	Joann Ramos	joannspa@yahoo.com
Joan McGrath	joanfmcgrath@comcast.net	JoAnn Seaver	joann.seaver@verizon.net
Joan Mitchell	justjoan10@hotmail.com	Joann Stoltz	Shotseygirl@aol.com

Joanna Cutting-Brady	gaiaborn@msn.com	Jody Gentles	jody.gentles@gmail.com
Joanna Soren	jodoean@me.com	Jody Gibson	jodyg8@msn.com
Joanna Stiehl	js_lemur@yahoo.com	Jody Immell	Jodycody11@live.com
Joanna Ward	joannaw39@hotmail.com	Jody Lewis	mawgaw4748@yahoo.com
Joanna Welch	jlasken22@gmail.com	Jody Mahnken	mahnkenj@juno.com
Joanna Williams	prusty@berkeley.edu	Joe Atkinson	jfatkinsonjr@sbcglobal.net
Joanne Coffey	jknunley@yahoo.com	Joe Azzarello	environjoe@yahoo.com
Joanne DeCuollo	cashmerejo@aol.com	Joe Baggett	Joewbaggett@yahoo.com
Joanne DeHart	joannedh1@aol.com	Joe Biviano	Jabiviano@verizon.net
Joanne Dixon	jvdix@yahoo.com	Joe Brazie	jbrazie@jps.net
Joanne Doherty	doherty4us@yahoo.com	Joe Buhowsky	jbuhowsky@sbcglobal.net
joanne Gant	chey11937@yahoo.com	Joe C	ilraptoro@yahoo.com
joanne grabek	jograb@earthlink.net	joe caballero	joepoison60@gmail.com
Joanne Habrecht	joannehabrecht@comcast.net	Joe Carrera	trubloner@yahoo.com
Joanne Holman	Joanlanc@gmail.com	Joe Faris	drschwa@gmail.com
Joanne Kondratieff	JamaGenie@gmail.com	Joe Foy	jpfoy2@juno.com
Joanne Kreil	joco953@gmail.com	Joe Hutton	jhutton1957@hotmail.com
Joanne Larsen	Jannlarsen13@gmail.com	Joe Kelsey	JkKlsy@aol.com
Joanne Linden	Donjol16@gmail.com	Joe Leonhard	Jpleonhard@gmail.com
joanne lipton	greenmayim@gmail.com	Joe Marsala	KCjoe108@yahoo.com
Joanne Mack	joma169@yahoo.com	Joe Maryanski	jmaryanski@msn.com
Joanne Mainiero	masshumane@aol.com	Joe Mikulan	FLEETGURU@aol.com
Joanne Parascandola	jpaz1128@aol.com	Joe Moye	joemoye@gmail.com
Joanne Ryan	jryan79209@aol.com	Joe Muscara	americanrivers.20.jmuscara@xoxy.net
Joanne Sieck	jpsieck@gmail.com	Joe Phillips	joephil282@yahoo.com
Joanne Willis	joannew2@verizon.net	Joe Polasik	spacedsnake@gmail.com
Joannee Barber	joannebarber009@gmail.com	Joe Rogers	jwat2@yahoo.com
Jocelyn B	skydive96@verizon.net	Joe Salazar	houseofsavoy2000@yahoo.com
Jodi Rodar	Hooppole@gmail.com	joe shaw	joershaw@comcast.net
Jody Fritzke	thefritzkes@aol.com	Joe Shum	shumdini@yahoo.com

Joe Sinzer	jsinzer@gmail.com	Johanne Zell	jemzell@gmail.com
joe stanley	jmustang69mach1@aol.com	John Stewart	jslegal@humboldt.net
joe swierkosz	joeswierkosz@sbcglobal.net	John Whitman	jwhi304359@msn.com
Joe Torres	jtorres55901@gmail.com	John & Martha Stoltenberg	jpstolten@frontier.com
Joe Weis	jdkwww@hotmail.com	John Adams	jtadams57@gmail.com
Joe Wiederhold	jwiederhold47@gmail.com	John Akins	jgakins@aol.com
Joe Williams	Joefish1268@yahoo.com	John and Janice Hahn	jandjhahn@yahoo.com
Joe Wolcott	Joe@honeyboy.com	John AND Jean Fleming	johnandjeanfleming@msn.com
joe wolf	beta123g@netzero.com	John and Robbie Wertin	jrranch4@gmail.com
Joel and Mary Bonham	joelandmarybonham@verizon.net	John and Rose Martin	roznjon@sbcglobal.net
Joel Finley	joel_finley2002@yahoo.com	John Anderson	jtanderson54@gmail.com
Joel Fithian	joelfithian@mac.com	John Arguell	john.arguell@coldwellbanker.com
Joel Jensen	joel.k.jensen@gmail.com	John Aulgur	john.aulgur@yahoo.com
Joel Johnson	greenplanter@hotmail.com	John Baldwin	baldwin_john@comcast.net
Joel Libman	joellibman1@yahoo.com	John Bayer	johnbayer10@yahoo.com
Joel Meza	jdemeza@yahoo.com	John Beamer	jabeamer@aol.com
Joel Ogonowski	joelogonowski@gmail.com	John Best	john.best@ugs.com
Joel Perkins	fauvegem@earthlink.net	john bjergen	john_bjergen@msn.com
Joel Peterson	joelqp@earthlink.net	John booker Grab	John.b.grab.ca@gmail.com
Joel Russell	cpamba4u@yahoo.com	John Bradshaw	jbradshaw10@att.net
Joel Trupin	ktrupin@msn.com	John Bremer	johnpaulbremer@gmail.com
Joel Vignere	aba303@centurytel.net	John Brennan	GM_EA@yahoo.com
JOELLE CULLEN	asap@asapentertainment.com.au	John Brewer	brwrj1@msn.com
Joelle Porter	joellefraser@yahoo.com	John Brewer	jfb@rawlingscompany.com
JoEllen Rudolph	jobee949@charter.net	John Broussard	kpterra@gmail.com
Joey Henson	joey_23456@msn.com	John Bunton	Jpbuntonjb@gmail.com
Johann Lepel	jlepel@midrivers.com	John Burridge, veteran, US Arm	burridge@cox.net
Johanna Elias	fuzz0624@optonline.net	John Bush	jbush7@hotmail.com
Johanna Lepel	jlepel@midrivers.com	John Butterworth	butter_60@yahoo.com
Johanna Lindsay	Jolindsay@comcast.net	John Byrd	johnbyrd360@gmail.com

John Canavan	jhcanavan@comcast.net	John Eddy	woodymcfarley@yahoo.com
John Carroll	johnantcarr@aol.com	John Essman	essman.john@yahoo.com
john cassidy	thongkster@gmail.com	John Eyles	jge@cs.unc.edu
John Cenc	pokerguytony@aol.com	John Fargnoli	buddhi-1@juno.com
John Christopher	threepaws@ameritech.net	John Florack	john_florack@yahoo.com
John Clark	hkyjck@gmail.com	John Foley	Jfoley@buckeye-express.com
John Cochrane	jcanglican@att.net	John Fox	jgf2@lti.org
John Colgan-Davis	j.colgan-davis@att.net	John Frey	jwfrey2@aol.com
John Comella	john.comella1@gmail.com	John Gaguine	Jgaguine@aol.com
John Concannon	bashes54077@mypacks.net	John Gambriel	jfg-drop@infomania.us
John Connelly	Jmconnelly3@gmail.com	John Gavis	jmgavis@flash.net
John Conway	jfc6@cornell.edu	John Gordon	jwg98368@gmail.com
John Cooper	jcinparadice@gmail.com	John Haller	john@hallerweb.com
John Cottingham	johncottingham96@yahoo.com	John Hammel	jhammel77@gmail.com
John Crotty	jmcrotty1467@gmail.com	John Harpold	Johnharpold@mac.com
John Culp	John.Culp@web.de	John Haydock	Haydockj@yahoo.com
John D"Agostino	jvd228@yahoo.com	John Helisek	hippsnang@aol.com
John Dalla	johndalla81@gmail.com	John Heminway	John@heminway.net
john Day	jgdayny@aol.com	John Heyneman	jpheyneman@rochester.rr.com
John de Yonge	Jdeyonge@icloud.com	John Hila	johncatfang66@hotmail.com
john deddy	jmdeddy@aol.com	John Holton	jandaholton@msn.com
john delaney	jmd922@gmail.com	John Hourihan	Johnnyhourihan@gmail.com
John Dierig	jdierigaction@hotmail.com	John Howe	jdhowe4@hotmail.com
John Doe	johnpdoe999@gmail.com	John Hutchens, Jr.	johnhutchensjr@gmail.com
John Doucette	jwdoucette@gmail.com	John J. Covas	johnjcovas@icloud.com
John Dulik	jadulik@verizon.net	John Jacobs	apachedevil@gmail.com
John Dunn	jdunn936@yahoo.com	John Joadwine	johnjoadwine@yahoo.com
John Ebersberger	j.ebersberger@yahoo.com	John Jolley	jolleymon@earthlink.net
John Eckler	j.eckler@hotmail.com	John Jones	johanjonus@gmail.com
John Eckler	jrecklerjr@gmail.com	John Jumonville	jobeville@yahoo.com

John kalinchok	piperjohnak@hotmail.com	John Meeks	j.meeks5@yahoo.com
John Kallestad	Jak7383@comcast.net	JOHN MESERVE	flintlock95@msn.com
John Kasper	jkcr3435@cox.net	John Meshna	greenstateorganics@yahoo.com
John Klima	jklima1936@aol.com	John Michael Timms	michael_timms@comcast.net
john koperczak	john.koperczak@sato-global.com	John Miller	Jhmiller49@msn.com
John Krumrein	ann-john@artisansart.com	John Miskelly	wdstockjc@aol.com
John Kunick	johnleni@bellsouth.net	John Moorhouse	pauljmoor@msn.com
John Kyser	Jekyser@gmail.com	John Moreno	scouterific@yahoo.com
John Laing	jlaing@wt.net	John Mugge	jamugge@yahoo.com
John Lamb	johnlamb46@gmail.com	John Mullan	mullan8743@gmail.com
John Landers	jjlndrs@otelmail.com	John Myott	john.myott@gmail.com
John Landt	Jwlandt@yahoo.com	John Nelson	nelsonj@bethelu.edu
John Langevin	johnnymoon51@hotmail.com	John Niendorf	jrniendorf@cs.com
John Larsen	thorjl@att.net	John Noland	johncnoland@gmail.com
John Legel	Patlegel@aol.com	John O"Connor	mroconnor2002@yahoo.com
John Light	johandmol@verizon.net	john o"sullivan	johnsully57@gmail.com
John Limbach	vutava@gmail.com	John ochs	jforph@gmail.com
John Lisowski	alaskalynx@yahoo.com	John Oda	Jandjoda@aol.com
John Livingston	Livingstonjohn@att.net	John Ota	johnota@sbcglobal.net
John Ludwig	jludwig@chartermi.net	John Outland	outlandjb@hotmail.com
John Lundquist	bablien@yahoo.com	John P. Davis	johnpdavis@yahoo.com
John Lynch	jlynch@studioj2.com	John Packer	jpacker@flyfishingoutfitters.n
John M. Steyh	doba81@yahoo.com	John Panko	jpanko@msn.com
John Mainprize	jmain6@yahoo.com	john papandrea	jpap100@aol.com
John Mammoser	jjm4714@sbcglobal.net	john pasqua	killself5150@yahoo.com
John Markham	jpm790@yahoo.com	John Peeters	peeterscsv@yahoo.com
John Marquis	jbadmar@att.net	John Pepple	jackattack70@yahoo.com
John Massman	massmjw55@att.net	John Phelan	Phelanjj2@aol.com
john mathwin	jmathwin@hotmail.com	John Praprotnik	praprotnik527@gmail.com
John Mazza	john_m02919@yahoo.com	John Pugzles	orca7j@aol.com

john reckling	jcrdlr@gmail.com	John Straight	jask12rs@aol.com
John Reid	foxridge@embarqmail.com	John Sullivan	jls124@verizon.net
John Reilly	joreil23@msn.com	John Sutkowski	johnjsut@frontiernet.net
John Rhodes	Johnrhodes786@gmail.com	John swiencicki	friarjon79@aol.com
John Roig	johnjroig@gmail.com	John Teevan	jptrugger@gmail.com
John Rossi	jrhondo56@yahoo.com	John Townes	jactownes@gmail.com
John Ruhl	jhn_ruhl@yahoo.com	John Varga	jlvarga9@gmail.com
John S. Sonin	sojohn61@hootmail.com	John Venter	Jdventer@yahoo.com
John Saccardi	john.r.saccardi@seagate.com	John Vermillion	jctcverm@yahoo.com
John Sames	jmsames@yahoo.com	John Viacrucis	catchaway@yahoo.com
John Satchell	satchelljohn29@gmail.com	John W. Parana	jparana1969@windstream.net
john scahill	Johnpatrickscahill@yahoo.com	John Watson	Watson.johnscott@gmail.com
John Schmidt	topcatjs@charter.net	John Wedum	wedum@sopris.net
John Schmittauer	jcschmittauer@yahoo.com	John Wienert	johnwienert@earthlink.net
John Schultz	john.schultz3@mchsi.com	John Wiesner	jcwiesner@ieee.org
John Schumacher	johnnyponytail@yahoo.com	John Yeh	Jyehcondor@aol.com
john schwarzenbach	jjs.bach@verizon.net	John Young	forjohnandbarbara@gmail.com
John Scott Massman	sasnak1@cox.net	john zahos	subzerohc@yahoo.com
john seeburger	chakrawind@msn.com	John Zimmermann	zwordsmith@earthlink.net
John Seidel	johnhseidel@gmail.com	John Zippert	jzippert@aol.com
john selove	choss2live@yahoo.com	John Zortman	kjjoy49@yahoo.com
John Shepherd	jcs621@gmail.com	john&christine nicoud	jjmn1975@aol.com
John Simmons	teacherguy61@yahoo.com	Johnnie Prosperie	jop49@live.com
John Singer	zingmanjs@gmail.com	Johnny Armstrong	Jarmstrongwcr@gmail.com
John Sinner	sinner4john@yahoo.com	Johnny Hopkins	johnnyhopkins28160@gmail.com
John Stella	stella.jc@gmail.com	Joie Budington	Joie4windspirit@aol.com
John Stephens	instantkarma90@gmail.com	Jolayne Justice	fhandar@gmail.com
John Steponaitis	steponaj@takas.lt	Jolyne Kane	Jpk4feb@hotmail.com
John Stetka	Johnstetka@gmail.com	Jon Batson	jontree13@aol.com
John Stewart	jslegal@humboldt.net	Jon Cameron	joncameron@hoeven.senate.gov

Jon Conner	jonrconner@gmail.com	Jordan B. Weiner	jordanbarnet@hotmail.com
Jon Fox	jfox2726@gmail.com	Jordan Hashemi-Briskin	jordan.briskin8@gmail.com
Jon Jette	jjjette8@gmail.com	Jordan Howells	JordanRock2000@aol.com
Jon Krueger	sumsym@yahoo.com	Jordan Hunnicut	jleighfox15@yahoo.com
jon longsworth	jon@longsworth.com	Jordan Kanemoto	jordankanemoto@yahoo.com
Jon Porter, MD	fossilsrfr@aol.com	Jordan Kaplowitz	jewpanesekid@aol.com
Jon Ritchey	jonbrick@sprynet.com	Jordan Longever	jsalmanowicz@gmail.com
Jon Rosenblatt	jonlee2wtc@aol.com	Jordan Moniuszko	jwm7r@virginia.edu
Jon Rutkowski	jon_rutkowski@hotmail.com	Jordan Osterman	Jordan.Osterman@gmail.com
Jon Singleton	photoniqueer@gmail.com	jorge belloso-curiel	jbcuriel@aol.com
Jon Snyder	jon@snydersembalming.com	Jorge Marques	joma.pimar@gmail.com
Jon Steenhoven	jonsteenhoven@yahoo.com	Jorge Velez	Jmvvdv@hotmail.com
Jon Stewart	jon_m_stewart@yahoo.com	jorgen ramstead	jramstead@gmail.com
Jon Wood	jonwoodartist@gmail.com	Jose Figueroa Jr	eagle1jf@att.net
Jonathan Boyne	boyne@hawaii.edu	Jose Luis Salazar	Josa0226@gmail.com
JONATHAN brainard	jonbrainard@gmail.com	Joseph Bradley	joe.bradley@anotherfineacme.net
Jonathan Dirrenberger	jonathan.dirrenberger@gmail.co	Joseph Candelaria	netbizal@verizon.net
Jonathan Erickson	jona1945@hotmail.com	Joseph Davies	jmdtower@yahoo.com
JONATHAN FUTCH	YAHNESUA@GMAIL.COM	Joseph & Arlene Mercurio	songbird538@gmail.com
Jonathan Gottlieb	jhgottlieb@gmail.com	Joseph Bartolucci	Bartolucci@mac.com
Jonathan Hancock	jbeahancock@sbcglobal.net	Joseph Boone	jboone@calpoly.edu
Jonathan Matthews	jmatthews@carroll.edu	Joseph Bowers	joepatmd@aol.com
Jonathan Mitchell	throwaways@yahoo.com	Joseph Braun	joebraun@optonline.net
Jonathan Peter	yachtpj@hotmail.com	Joseph Breazeale	brezebra@yahoo.com
Jonathan Rettmann	jonrettmann@gmail.com	Joseph Britt	josephbritt61@gmail.com
Jonathon Loos	jonathon.loos@gmail.com	Joseph C Murray	alice_joe@verizon.net
Jonelle Matthias	jonellematthias@ymail.com	Joseph Collins	spellbind@earthlink.net
Jonelle Reynolds	rjonelle@aol.com	Joseph Dadgari	dadgarijm@gmail.com
Joni Mulder	mulderjk@icloud.com	Joseph Davies	jmdtower@yahoo.com
Jonnie Allert	sevendawgs@yahoo.com	Joseph DiMaggio	jjdimaggio@yahoo.com

Joseph Erdeljac	josephspectrum@verizon.net	Joseph Quirk	jq66@earthlink.net
Joseph Fitzgerald	jfitzdp@gmail.com	Joseph Rand	jrand@berkeley.edu
Joseph Frazzetta	jjfrazzetta@gmail.com	Joseph Robles	oneforyoutoo@yahoo.com
Joseph Freeman	mr.freeman203@gmail.com	Joseph Sapirito	Mrjoesaporito@aol.com
Joseph Gilman	lu817@aol.com	Joseph Shulman	jhshulman1@cox.net
Joseph Golinveaux	jhg0898@sbcglobal.net	Joseph Skalecki	Jskalecki@roadrunner.com
Joseph Guzman	joeguzzyy@aol.com	Joseph Smith	gugleit123@gmail.com
Joseph H. Brown	twoblackdogs@charter.net	Joseph Szabo	josbeck2001@yahoo.com
Joseph Haemmerle	jlhammer@optonline.net	Joseph Tremonti	sejanus@hotmail.com
Joseph Harris	harrisj@greatoaks.com	Joseph Underwood	pcolajoe@yahoo.com
Joseph Heininger	jheininger@dom.edu	Joseph Vincent	conrua@juno.com
Joseph Hoess	josephhoess@yahoo.com	Joseph Weinstein	jweins123@hotmail.com
Joseph Holmes	jh@josephholmes.com	Joseph Wengier	wengerjo@netvision.net.il
Joseph Iglehart	phoenix2695@gmail.com	Joseph Wenzel	josephwenzel@msn.com
Joseph Kaleel	joekaleel@yahoo.com	Joseph Wiesner	joewiesner@gmail.com
Joseph Klym	jkdiver1@yahoo.com	Josephine Irvine-Groves	josie236@frontier.com
Joseph Lattomus	jcklatt@comcast.net	Josephine Salata	jjs4062@sbcglobal.net
Joseph Lawson	josephglaw@aol.com	Josephine Scherer	sprocketlady@hotmail.com
Joseph Leedy	jleedy1@cox.net	josh boyle	tarheeljb@aol.com
Joseph M. Varon	jvaron613@aol.com	Josh Kuhn	J.shua.Kuhn@gmail.com
Joseph Marotta	gunlover2004@yahoo.com	Josh Lenderman	lendy1010@gmail.com
Joseph Matarrese	souljam76b@aol.com	josh pelleg	pelleg@bgu.ac.il
Joseph McPherson	alicesresturantm@bellsouth.net	josh pucci	drjpooch@msn.com
joseph moore jr	moorejoseph16@yahoo.com	Josh Vorwaller	javorwaller@gmail.com
Joseph Naidnur	jnaidnur@gmail.com	josh wainwright	joshkwa1@gmail.com
Joseph O"Sullivan	josullivan58@hotmail.com	Joshua Angelus	joshuaangelus@yahoo.com
Joseph Parascandola	jpaz104@aol.com	Joshua Heffron	PirateDragon73@aol.com
Joseph Phillips	pmtjoe@yahoo.com	Joshua Herman	joshua@hermaninc.net
Joseph Pluta	jpluta2@att.net	joshua krasnoff	joshwolfrobe@yahoo.com
Joseph Porporino	grizzlywulff76@aol.com	Joshua Messinger	Joshuamessinger@mac.com

Joshua Rettenmayer	joshrett33@gmail.com	Joyce Leggatt	joyce@harbor-properties.com
Joshua Rockley	joshrockley@sbcglobal.net	Joyce Moscowitz, MD	joymd718@aol.com
Joshua Seff	mv9508@sbcglobal.net	Joyce Overton	doverton19@verizon.net
Josie Cristobal	jbcristo@hawaii.edu	Joyce Prince	joyceprince1@aol.com
josie lopez	jalop48@msn.com	Joyce Pusel	jpusel@mindspring.com
Josie peper	peper.jo@gmail.com	joyce robinson	orcawolf@cablespeed.com
Jospeh Scanlan	drkillinut@me.com	Joyce Rohr	joyce.rohr@gmail.com
Joy Cassidy	serbogal52@frontier.com	Joyce schwartz	disneyfan01@yahoo.com
Joy Keeping	keepjoy@sbcglobal.net	Joyce Selig	tobie@frontiernet.net
Joy LaClaire	forthrightradio@gmail.com	JOYCE SHIFFRIN	JSHIFFRIN200111213@YAHOO.COM
Joy Leftow	Violetwrites@gmail.com	JOYCE SMITH	joycesmith165@gmail.com
Joy Mamoyac	salmonberries@msn.com	Joyce Stoffers	jfforests@gmail.com
Joy Strasser	angelsofjoy@hotmail.com	Juan Hernandez	jhgreen715@yahoo.com
Joy Turner Brown	Joyt435@gmail.com	Juan Rodriguez	gti2501@yahoo.com
Joyce Angleberger	greenwayld@yahoo.com	Juanita Dawson-Rhodes	Balance210@aol.com
Joyce Blanchard	bwanchard1949@aol.com	Juanita Hepler	dylanhepler@icloud.com
Joyce Blumenshine	joblumen@yahoo.com	Juanita Hull	utahkittymom@yahoo.com
Joyce Cousino	meanolebat47@msn.com	Juanita Romero	esmeray@sbcglobal.net
Joyce Crowley	sirona1@aol.com	Jude Fletcher	jude@pacbell.net
Joyce Dixon	kcc2jhd@aol.com	Jude Lotz	Judelotz@att.net
Joyce Erickson	jhesings@earthlink.net	Jude Misurelli	jude3465@mac.com
Joyce Evans	Kitsilano03@shaw.ca	judi kerr	byitchp@sbcglobal.net
joyce flaherty	richflaherty1@yahoo.com	Judi Kidd	judithkidd66@yahoo.com
Joyce Hoikka	Hoikka@frontier.com	Judi Poulson	judpeace@gmail.com
joyce hoikka	joycehoikka@gmail.com	Judi Trecartin	jmcalvi01832@yahoo.com
Joyce Johnson	dogsknitter@gmail.com	Judith A Baxter	jbaxter@jbaxterlaw.com
Joyce Kantoff	Roaura13@yahoo.com	Judith Abel	mohawkwoman2@ymail.com
Joyce Kelly	Jkellyopm@gmail.com	Judith Barnard	jbarbear@gmail.com
Joyce Kennedy Raymes	joycekennedy1845@yahoo.com	Judith Busse	bussejudith@yahoo.com
joyce larry	joyceskyeandstorme@yahoo.com	Judith Castiano	hewayzha@hotmail.com

Judith Collas	jcollas@ix.netcom.com	Judith Sutton	missjudy1941@att.net
Judith Costello	jcbcv@verizon.net	Judith Vincent	jwvincent1@msn.com
Judith Desert-Moriarty	Proartist@aol.com	Judson Somerville	Somervillejudson@netscape.net
Judith edwards	edwa@lundbeck.com	Judy Bensinger	judy@ed-n-judy.com
Judith Embry	emb661@verizon.net	Judy Childers	judy.childers@etcconnect.com
Judith Finn	judith@judithfinn.com	Judy Denberg	urubamb@yahoo.com
Judith Foran	ja_foran@yahoo.com	Judy Desreuisseau	judy.desreuisseau@yahoo.com
Judith Fordham	jfordham@verizon.net	Judy Fore	jofore@icloud.com
judith Garson	jgarson@rscj.org	Judy Fukunaga	judysfinag@a0l.com
Judith Heartsong	snazzbo3@socket.net	Judy Jessee	judy@meyeres.com
Judith Heideman	adriannah@paonia.com	Judy Krach	JHawk3989@aol.com
Judith King	jbeegee@yahoo.com	Judy Mason	ajudymason@hotmail.com
Judith Kliban Bixby	kiwitabby@gmail.com	Judy McDonald	skyhi50@gmail.com
Judith Lamb	Jalamb@fuse.net	Judy McKinney	judyorvmck@cox.net
Judith Lienhard	lienjud@aol.com	Judy Moran	timstarjudy@aol.com
Judith Little	jkl1@humboldt.edu	Judy Oates	stockma123@yahoo.com
Judith Long	judithlong30@yahoo.com	Judy Ogburn	jogburn@cox.net
Judith Neal	Coffeegoon@gmail.com	judy pizarro	jxp411@yahoo.com
Judith O"Callaghan	ardenpress@aol.com	Judy Rees	judrees@hotmail.com
Judith O"Callaghan	devapress@aol.com	Judy Shackelford	judyshack7448@sbcglobal.net
Judith Osterman	judithgreenlife@gmail.com	Judy Shively	jashively01@gmail.com
Judith Parker	Jdthprk@aol.com	Judy Sutton	jksutton@cox.net
Judith Peter	pete22roc@aol.com	Judy Tervalon	Tervalonj@bellsouth.net
Judith Russo	Judith3556@gmail.com	judy voss	judy.voss@gmail.com
Judith Ryan	jfrybros@yahoo.com	Judy Whitehouse	jkwhitehouse@cox.net
Judith S Anderson	jskanderson@earthlink.net	judy wisboro	jwdem@aol.com
Judith Sandeen	jsandeen@windstream.net	Judy Wood	ladytrill2001@aol.com
Judith Sanders	vulfhild@gmail.com	Judy Yll	jyll33442@gmail.com
Judith Shematek	jshematek119@yahoo.com	Jules Fraytet	jlfray@ix.netcom.com
Judith Smith	axisdance@comcast.net	jules Kempinsky	mogranne@yahoo.co.uk

Juli Nimitz	juli.nimitz@yahoo.com	Julie Ford	jford29105@aol.com
Juli Wiseman	juli@adshopetc.com	Julie Gandulla	jagandulla@hotmail.com
Julia Amsler	jmams1@verizon.net	Julie Griffith	jjgrif2@juno.com
Julia Boas	julia@roanokeoutside.com	Julie Griffith	Julieg500@gmail.com
Julia Bottom	J.bottom1@yahoo.com	Julie Hale	halerlk79@gmail.com
Julia Deasley	jamcg-@hotmail.com	Julie Holtzman	paleobotanybabe@yahoo.com
Julia Fitzgerald	jfitzgerald100@hotmail.com	Julie Knauer	jknauer@wesleyan.edu
Julia Gumper	julia@centennialcanoe.com	Julie Kramer	jekramer@gmail.com
Julia Hathaway	Beaniebabylover@gmail.com	Julie Krasin	jkrasin@verizon.net
Julia Mastrototaro	Jt.mastrototaro@gmail.com	julie lawyer	julielaw2@aol.com
Julia McGovern	mcgovern.je@gmail.com	Julie Martin	julamartin10@gmail.com
Julia McLellan	carnelia@cox.net	Julie McCarroll	gstimpson@mac.com
Julia Poirier	juliapoirier1@mac.com	Julie Mckee	jhmckee021849@yahoo.com
Julia Thollaug	jthollaug@yahoo.com	Julie McLauchlin	Juliemclauchlin@hotmail.com
Julia Wade	dragongal35@yahoo.com	Julie Mills	snowfitness1@hotmail.com
Juliann Rogers	Juliann4321@hotmail.com	Julie Miro	julie@juliemiro.net
Juliann Rule	schugrule@aol.com	Julie Phillips	juliephillips199@gmail.com
JULIANNA BENEFIELD	kajbene@bellsouth.net	Julie Sabin	jsabin@bresnan.net
Julianne Ramaker	ramaker@coinet.com	Julie Sasaoka	sasaokaj@yahoo.com
Julie Adams	firehunden@gmail.com	Julie Schampel	jm7o@andrew.cmu.edu
Julie Adelson	jpadelson@gmail.com	Julie Sears	jcsears@gmail.com
Julie Alt	Altfam@centurytel.net	Julie Stuart	jnbstuart@gmail.com
Julie Braunlich	julieb@allsites.com	Julie Viergutz	drvjsv@sbcglobal.net
Julie Brickell	juliebrickell@sbcglobal.net	Julie Wade	Weliwonder@yahoo.com
Julie Bush	Bushjulie92@yahoo.com	julie walters	jwrdog@verizon.net
Julie Cannon	music_girl34@hotmail.com	Julie Watkins	nativeyel@gmail.com
Julie Clayman	claymanjulie@yahoo.com	Julie Wisz	jlw_equestrian@hotmail.com
Julie Cooke	jhcooke@att.net	Julie Wong-Conway	juliwong15@gmail.com
julie ellis	julieellis52@gmail.com	Julie Woodbury, PhD	julie_woodbury@earthlink.net
Julie Fair	juliemfair@gmail.com	Julie Wreford	juliewreford@ymail.com

Julie Zimmerman	jz1234us@yahoo.com	Justine Warford	justinewarford@gmail.com
Juliet Johns Pearson	julietjohns@mac.com	Jyrica Gough	jyricagough@yahoo.com
Juliet Menditto	julesnyc420@yahoo.com	Jytte Springer	jyttespringer@verizon.net
Julija Merljak	sky_space@hotmail.com	K A Herman	herman.kathy@att.net
Julio Andujar	cybernut1@gmail.com	k Ard	ard654@hotmail.com
Juls Robertson	robertsonjuls@gmail.com	k danowski	silver_kd@yahoo.com
June Cattell	cattellmail@hotmail.com	k h	kimgroom@hotmail.com
June Hurst	junehurst@yahoo.com	K Kay Bircher	kkbircher722@gmail.com
June Jarka	rm1000@xtra.co.nz	K Krupinski	kkbluerose@hotmail.com
June MacArthur	portmacarthur@msn.com	K R	kos.noemail@neverbox.com
June Meek	meakler@aol.com	k sugarman	kathysugarman@gmail.com
June Picard	winddancercenter@gmail.com	K. Ard	ard654@hotmail.com
June Stuner	jstuner96@yahoo.com	K. Holliday	kbar475@aol.com
Juno Enoch	Juno@aenoch.com	K. Medford Moreland	kmmpsyd@twc.com
Justin Boucher	Jtboucher13@yahoo.com	Kacie Shelton	kacie@ofb.net
Justin Chambers	allstarchambers@yahoo.com	Kacy Harnedy	Kharnedy30@yahoo.com
Justin Grover	jg513jg@yahoo.com	Kaitlin Colligan	Kmcolligan@gmail.com
Justin Hotovy	Jhotovy44@yahoo.com	Kaitlin Fitch	xxkate152xx@aol.com
JUSTIN LEU	jcleu13@gmail.com	Kaitlin Ross	Kc.ross8@yahoo.com
Justin Lotak	justinlotak@gmail.com	Kaitlyn & Matthew Vitt	kaitlyn.v.hardy@gmail.com
Justin Madia	dallmodog@yahoo.com	kaitlyn johnston	k.johnston416@gmail.com
Justin Mears	jusmears@gmail.com	Kaleb Remski	Kremski1@gmail.com
Justin Peterson	justinborn2play@yahoo.com	Kaleigh Foley	foleykaleigh@yahoo.com
justin short	mrkyleshort@yahoo.com	Kalliope M.	Kalliope@yahoo.de
Justin Small	jsmall1019@gmail.com	Kamia Taylor	bigblackdogrescue@gmail.com
Justin Tobias	JustinTob@aol.com	Kamilla Dietrichson	spirila@hotmail.com
Justin Toledo	justoledo@gmail.com	Kara Beebee	kleigh2001@yahoo.com
Justin Wesche	joycelubin@aol.com	Kara Duffy	duffykara245@yahoo.com
Justine King	justineking@netscape.net	Kara Graul	kgraul@gmail.com
JUSTINE TILLEY	spiritsoncall063@gmail.com	Kara Hayes	Karamariehayes@gmail.com

Karen and Edward Osgood	karenedo@yahoo.com	Karen Good	kgoodhh@aol.com
Karen Anderson	keanderson17@gmail.com	Karen Goshaney	Karengosh@comcast.net
Karen Banker	banker1947@yahoo.com	Karen Green	Karen.leafygreen@gmail.com
Karen Berger	kareneliseberger@gmail.com	Karen Hardin	foggybottomgal@me.com
Karen Berkowitz	kfb1075@optonline.net	karen hilliard	khjunior1954@gmail.com
Karen Bethune	Karen.bethune@gmail.com	Karen Hughes	ksdickel@gmail.com
Karen Borgardt	kborgardt@yahoo.com	karen intorcia	intorciake@aol.com
Karen Bown	karianderic@hotmail.com	Karen Jacques	threegables@macnexus.org
Karen brant	karen_brant@hotmail.com	KAREN JONES	khjones1949@yahoo.com
Karen Brashears	Mabra0900@aol.vom	Karen Kawszan	kkawszan@comcast.net
Karen Bunch	klb57@juno.com	Karen Kennedy	kmoreyk@comcast.net
Karen Cappa	kjcappico@earthlink.net	Karen Kindel	k.kindel@att.net
Karen Chinn	kbchinn@sbcglobal.net	Karen Kravcov Malcolm	kkmalcolm@msn.com
Karen Christian	kcaz1@cox.net	Karen Kummer	dizispell@me.com
Karen Clarke	kplants@juno.com	Karen Laakaniemi	klaakan@gmail.com
Karen Collins	Gcollin1@bellsouth.net	Karen Larsen	jdbfan@aol.com
Karen Cowen	kc02@txstate.edu	Karen Levins	bastetcase@yahoo.com
Karen Dallow	kkanaga57@yahoo.com	Karen Lozow	woodelf3004@gmail.com
karen debraal	thestayfreekarebear@gmail.com	Karen Mallonee	karma1221@hotmail.com
Karen Deckel	kdeckel@maritime.edu	Karen Martellaro	Kar4earth@gmail.com
Karen Deora	karendeora@gmail.com	Karen Maskew	karen_maskew@yahoo.com
Karen Donaldson	kdonaldson@nccn.net	Karen Matthews	kapatmat@gmail.com
Karen Eikeland	kareneikeland@gmail.com	karen maxa	kmmaxa@aol.com
Karen Erickson	Blacktwig56@gmail.com	Karen McHugh	Kcristinamchugh@aol.com
Karen Fedorov	karen.fedorov@gmail.com	karen milstein	midbarnm@aol.com
Karen Fitzgerald	kmfitzgerald_3@yahoo.com	Karen Multer	kamuler@gmail.com
Karen Fleming	kcfsgf@verizon.net	Karen Naifeh	karenaifeh@sbcglobal.net
Karen Garnett	klbgarnett@gmail.com	Karen Naiman	klnaiman@earthlink.net
Karen Geahlen	winddancer4@charter.net	Karen Olden	kolden@verizon.net
Karen Gilbride	karenmgilbride@gmail.com	karen oreilly	oreillykaren444@gmail.com

Karen Orner	korner365@yahoo.com	Karin Peck	atze@comcast.net
Karen P Johnson	johnson.k@comcast.net	Karin Ralph	karinlindr@gmail.com
Karen Parlette	sahaja@sonic.net	Karina Black	kblack.ot@gmail.com
Karen Pavek	karen.pavek@wispertel.net	Karina Otero	Misskiekie64@aol.com
Karen Peterson	karenp735@att.net	Karine Reiter	karine_karine_karine@hotmail.c
Karen Quaritius	kquaritius@aviationrecruiting.	Karisha Kirk	karishakirk@gmail.com
Karen Raccio	kfraccio@aol.com	Karl Armens	armensbooks@live.com
Karen Rankin-Baransky	krbsky@verizon.net	karl breitenbach	karl_breitenbach@yahoo.com
Karen Rarick	kjrarick@ix.netcom.com	Karl Hahn	hahn_k@cox.net
Karen Romano	mithril92000@yahoo.com	Karl Hamann	erikster424@gmail.com
Karen Rubino	rubino113@aol.com	Karl Koessel	karl.koessel@gmail.com
Karen Saum	karen.saum@stanfordalumni.org	Karl Lohrmann	karllohrmann@sbcglobal.net
Karen Scanlon	karen@intuitnutrition.com	Karl Stolk	Kalle.Stolk@Hotmail.com
Karen Schmidt	1wolfchick@att.net	Karla Brom	karlab89@yahoo.com
karen scotese	ksco@att.net	Karla Everett	Everett619@hotmail.com
Karen Sewick	ksewick@sbcglobal.net	Karla Frandson	karla.frandson@gmail.com
Karen Spradlin	wohlbold_2000@yahoo.com	Karla Hair	kjhair@msn.com
Karen Stapelfeldt	phoenix50@metrocast.net	Karla Klueter	cederkleeder@yahoo.com
Karen Suit	Klsuit@frontier.com	Karol Bryan	wcbryan@yahoo.com
Karen Sullivan	ksull2001@gmail.com	Karol Hickman	hickmank@yahoo.com
Karen Swanson	swany@prodigy.net	Karolin Lund	damalursol@hotmail.com
Karen Vayda	Kziovay@yahoo.com	Karralena Castaway	amhranai@localnet.com
Karen Welles	knwelles@yahoo.com	Karrie Vrabel	Karriedelicious@gmail.com
Karen Wilson	kwilson@uchicago.edu	Karsten Mueller	K.mueller@yahoo.com
Karen Witkus	karwi06@hotmail.com	Karyn Barry	karynbarry@yahoo.com
Karen Wolf	karenw69@hotmail.com	Karyn Goff	wingnutball@yahoo.com
karenina schuller	highsierramtdogs@att.net	Karyn Graham	Grahamkaryn@aol.com
Karin Braunsberger	karin.braunsberger@gmail.com	Karyn Heym	karyn.heym@gmail.com
Karin Gluth	narik64@aol.com	Karyn Loveless	karynloveless@yahoo.com
Karin Lindberg	Karinlindberg@yahoo.se	Karyn Sederberg	Kcsederberg@yahoo.com

Karynn Merkel	kelyrnn2001@hotmail.com	Katherine Barrett Zywan	kbar720@aol.com
Kat Bowley	katbowley108@aol.com	Katherine Blum Russell	kamlon2911@aol.com
Kat Raisky	kat.rollergirl@gmail.com	katherine dander	kat.dander@yahoo.com
Kat Shield	ktshield@gmail.com	katherine Davis	fatluckie@yahoo.com
kat thomas	kathomas206@yahoo.com	Katherine Denison	kdcreate@bearmeadow.com
Kate Ague	kateague@earthlink.net	Katherine Gould-Martin	kgouldmartin@gmail.com
Kate Belykh	Kbelykh@gmail.com	Katherine Hinson	angelfishhinson@aol.com
Kate Campana	katecampana@msn.com	katherine johnson	katherinejohnson1@cox.net
Kate Gribskov	kategribskov@hotmail.com	Katherine Kautz	kmkautz97@gmail.com
Kate Gualtieri	Kategvp@gmail.com	Katherine Kormanik	pomkak@aol.com
Kate Harder	myshadowinil@hotmail.com	Katherine Lawrence	katherine@lawrenceresources.co
Kate Hardwick	Kates.hardwick@yahoo.com	Katherine Montague	katherine.montague@gmail.com
Kate Kenner	faunesiegel@gmail.com	Katherine Mouzourakis	sogoodjazzie@yahoo.com
Kate Knels	kate.knels@gmail.com	Katherine Murdock	kmurdock@cox.net
kate krader	kkrader@gmail.com	Katherine Robertson	LoneWolf999K@yahoo.com
Kate Masterson	Masterson.kate@gmail.com	Katherine Rodbro	Katerodbro73@gmail.com
Kate Ravenstein	kateraven58@msn.com	Katherine Rykowski	rykowski@earthlink.net
Kate Sherwood	kt3632003@yahoo.com	Katherine Schock	rswkate@gmail.com
Kate Skolnick	Krs1123@gmail.com	katherine tildes	tildesk@gmail.com
Kate Taylor	kalamityk8@gmail.com	Katherine Tucker	bartley.tucker@gmail.com
Katelyn Dynneson	katelyn.dynneson@gmail.com	Katherine Wright	katherine.wright@yahoo.com
Katelyn Taylor	katiebt17@yahoo.com	Katherine Wright	kmhgw@yahoo.com
Katen Hall	Starfish223@aol.com	Kathi Lyons	KATHI.LYONS@VALERO.COM
Katharine Cotrell	kath@cotrell.net	Kathi Ridgway	ridgkathi43213@msn.com
Katharine Ruthroff	katiemruthroff@gmail.com	Kathie Caflisch	ksc1949@earthlink.net
Katharine Tussing	kathytussing@yahoo.com	Kathie E Takush	ktakush@yahoo.com
Katharine Wert	kkwert@comcast.net	Kathie Noga	ksongk2000@yahoo.com
KATHERIN BALLES	kab2632@netzero.net	Kathie Phillips	kath.phillips@yahoo.com
Katherine Babiak	kmbnyc@aol.com	Kathleen A. O"Connell O"Connel	koconne@iupui.edu
katherine barnhart	kate_barnhart@yahoo.com	Kathleen Alexander	dogone1205@aol.com

Kathleen Brentlinger	kw0lfkay@aol.com
Kathleen Canavan	Kathleencanavan@verizon.net
Kathleen Carr	tuesint@gmail.com
kathleen Chippi	oshalee1969@yahoo.com
kathleen conroy	conroyka17@yahoo.com
Kathleen Corby	corbydesign@fairpoint.net
Kathleen Doyle	caseydkcd@aol.com
Kathleen Doyle	kathy_cleary_doyle@yahoo.com
Kathleen Eaton	sce9590@verizon.net
Kathleen Furness	kmfurness26@gmail.com
Kathleen Gasper	Ksgasper@gmail.com
Kathleen Graves	kathleendgraves@gmail.com
Kathleen Grossman	kgtigerlily@gmail.com
Kathleen Helmer	kath51@sbcglobal.net
Kathleen Henley	Henleyjks@att.net
Kathleen Hobbs	khobbs@swana.org
Kathleen Hogan	khogan9@gmail.com
Kathleen Hunt	jai@samadhi-yoga.com
Kathleen J Welsh	kathyjwelsh@hotmail.com
Kathleen Kaitis	Westernkat@msn.com
Kathleen Kascewicz	martykathy@centurytel.net
Kathleen Kennedy	kakennedy27@gmail.com
Kathleen Keske	klkeske@yahoo.com
kathleen kiely	kielyk77@sbcglobal.net
kathleen king	kaking2@wisc.edu
Kathleen Koenig	kmrph8@gmail.com
Kathleen Kubinak	postalkathy@yahoo.com
Kathleen Kuczynski	katski47@cox.net
Kathleen Lawrence	k.e.lawrence@icloud.com
Kathleen Lowney	Splat@deathcomesunexpectedly.c
Kathleen M Brown	heargrassgrow@aol.com
Kathleen Martin	kmartin@hammondelec.com
Kathleen McDougall	Kitmcdougall@yahoo.com
Kathleen McKeehen	kmckeehen@centurytel.net
Kathleen McLane	islandkat9@aol.com
Kathleen Medina	k_medina@hotmail.com
Kathleen Mireault	kam8897@comcast.net
Kathleen Moraski	kmoraski45@gmail.com
Kathleen Nelson	fordcoupe29@yahoo.com
Kathleen O"Donnell	odonnellkathleen@aim.com
Kathleen Pelton	kmpelton@midtel.net
Kathleen Salvas	twograndmas@sbcglobal.net
Kathleen Seltzer	kathycossel@gmail.com
Kathleen Shabi	shathorpe@aol.com
kathleen spencer	kaspencer2@yahoo.com
Kathleen Stephenson	Musicgalrn@yahoo.com
Kathleen Sumida	bodhikt@aol.com
Kathleen Tyson	tyson_kathleen@yahoo.com
Kathleen Voisin	ksghosthuntress@gmail.com
Kathleen West	kathleenmwest3@gmail.com
Kathleen Wheeler	kaswheeler@hotmail.com
kathleen zins	ktzns@aol.com
Kathlene Kowalchick	kvkowal@gmail.com
Kathlene Rohm	kathy.rohm@gmail.com
kathrin heisig	kathrin.1609@web.de
Kathrina Spyridakis	pawskat@aol.com
Kathryn Akural	kathryn_akural@berea.edu
Kathryn Cayko	ckayco@crystalsugar.com
Kathryn Cayko	kcayko@crystalsugar.com
Kathryn Chaney	cecil296@aol.com

Kathryn Garland	colven2@hutchel.net	Kathy Grant	hilgrant@sbcglobal.net
Kathryn Good Hanson	oldwhitebirch@aol.com	kathy grieves	kgg007@aol.com
Kathryn Irby	gulfcoastgal49@yahoo.com	Kathy Gritz	Kgritz8@gmail.com
Kathryn Justman	kathijustman@yahoo.com	Kathy Groth	kgroth@comcast.net
Kathryn Lemoine	truth58@outlook.com	Kathy Gruber	ag1kg1@sbcglobal.net
Kathryn Long	longkathryn@att.net	Kathy Hart	Kathyyhart@gmail.com
Kathryn Miller	gardengirl_77@comcast.net	kathy haverkamp	khaverka@courts.state.ny.us
Kathryn Mosher	kmosher3@yahoo.com	kathy hilt	mutroom1@yahoo.com
Kathryn Plitt	kplitt@centurytel.net	Kathy Ison	kathy.ison@harley-davidson.com
Kathryn Rice	rice.kathryn@gmail.com	Kathy Jacobs	kathejake@msn.com
Kathryn Richardson	corwynte@hughes.net	Kathy Johnson	kathbjohnson09@gmail.com
Kathryn Riley	arjamul@cox.net	Kathy Kearns	kkearns11542@gmail.com
Kathryn Rose	mizkate52@msn.com	Kathy Kelly	kasiakelly@att.net
Kathryn Slagle	katfaerie@gmail.com	Kathy Kent	kentsfla@yahoo.com
Kathryn Stege	kath22steg@gmail.com	kathy kestell	jkestell@q.com
Kathryn Thompson	katethompson@frontier.net	Kathy Krasenics	Kathyk.solar@yahoo.com
Kathryn Webers	kwebers@hotmail.com	Kathy Kroll	kkroll@ptd.net
Kathy Abby	abbykatherine@yahoo.com	Kathy L Evans	kohavah@msn.com
Kathy Alter	kninemom@twcny.rr.com	kathy lahmeyer	klahmeyer@yahoo.com
Kathy Aprile	kclassvision@yahoo.com	Kathy Lewis	anilov6044@msn.com
Kathy Bouvier	kathy.bouvier@yahoo.com	Kathy Lindsay	kathy@kathylindsay.com
Kathy Bradley	khayb55@aol.com	Kathy Mallory	mallory525@comcast.net
Kathy Coffman	Kathymerry45@gmail.com	Kathy Marie Behl-Whiting	behlwhiting@yahoo.com
Kathy Cohen	woody3956@aol.com	KATHY MCGROGAN	cdolfin51@gmail.com
Kathy Collins	shoesbabe@att.net	Kathy Michaelson	jak_michaelson@msn.com
Kathy Colton	kathymcolton@gmail.com	Kathy Moody-Arndt	kmoodyarndt@gmail.com
Kathy Day	kathy.day@comcast.net	Kathy Motsinger	kmmotsinger@cableone.net
Kathy Duffey	klduffey@charter.net	Kathy Nance	loftynotions1@yahoo.com
Kathy Fraser	kajf1220@hotmail.com	Kathy Nelson	kathynelson222@comcast.net
Kathy Govreau	rambozhouse@verizon.net	Kathy Newman	txkbn@yahoo.com

Kathy Nix	katkat2000@email.com	Kay Johnson	kajohnson5@windstream.net
Kathy OBrien	cooperhenry00@gmail.com	Kay Lowe	saki13@att.net
Kathy Oppenhuizen	salzberryhill@gmail.com	kay morgan	dandydojen@yahoo.com
Kathy Peters	Kathypeters50@mac.com	Kay Peters	kaypeters2000@yahoo.com
Kathy Rapp	rappaho@aol.com	Kay Randall	kmrandall64@gmail.com
Kathy Semic	kathysemic@comcast.net	Kay Reinfried	kmreinfried@gmail.com
Kathy Shimata	kshimata@hawaiiantel.net	Kay Steinauer	kstein416@peoplepc.com
Kathy Smith	kittkatt2074@yahoo.com	Kay Sundstrom	raptorempress@gmail.com
Kathy Summers	Katgirl2971@aol.com	Kayan Sherrer	kismymail@comcast.net
Kathy Watson	cvista3@icloud.com	Kaye Stahlecker	msstahlie@earthlink.net
Kathy Williams	reachkw@yahoo.com	Kaz Thea	kazthea@mac.com
Kathy Wright	katw@nc.rr.com	keefe nghe	knghe77@gmail.com
Kathyrn Dawson	tandkdawson@earthlink.net	Keegan Roehr	keeganroehr@gmail.com
Katie and Bill Dresbach	katiescleaning10@gmail.com	Keelan Smith	concreteblonde27@gmail.com
Katie Harris	Ktharris08@gmail.com	Keelin Magnus	creaturecove@gmail.com
katie hurley	khurley212@yahoo.com	Keely Mizell	Mackerelbrowntabby@yahoo.com
Katie Martens	kmartens@pa.gov	Keenan Percival	9doctorbanana@gmail.com
Katja Irvin	katja.irvin@sbcglobal.net	Keiko M.	anoodlehead@gmail.com
Katlyn Harvey	katlynmarie7083@gmail.com	Keith Bates	keithbatesnc@gmail.com
Katrin Rosinski	dancingqueen312000@yahoo.com	Keith Bein	kjbein@ucdavis.edu
Katy DeMangelaere	katyd@richland.org	Keith Bentz	keithbentz@gmail.com
Katy Kotiadis	kjk214@gmail.com	Keith Butkovich	klbutkovich@yahoo.com
Katy Whitehouse	wileyonez@hotmail.com	Keith Collins	Sunsetrim@hotmail.com
Kay and John Bengston	jkbengston@msn.com	Keith Cox	Kcoxx2004@gmail.com
Kay Brainerd	Klbrainerd@gmail.com	Keith D"Alessandro	keith_dalessandro@outlook.com
Kay Caskey	fallingwaterkay@yahoo.com	Keith Gagomiros	k_gagomiros@hotmail.com
Kay Doherty	kaydoherty@beld.net	Keith Hanson	kchanson89@gmail.com
Kay Garriott	skgarriott@gmail.com	Keith Jarvis	jarviskw@gmail.com
Kay Hudson	rabbit24018@msn.com	Keith Kleber	kekleb@aol.com
kay jay	kj@earthlink.net	Keith Larson	keith.l@frontier.com

Keith Levinthal	therailroadcut@aol.com	Ken Bush	kenjbush@earthlink.net
Keith Parker	kekrparker@yahoo.com	Ken Epstein	kepstein@hotmail.com
Keith scott	Keithscottblues@gmail.com	Ken Glanden	glankenden@yahoo.com
Kellee Herington	kelleehk@aol.com	Ken Goldberg	nwpce@jps.net
Kelley Anderson	Kellisland2000@yahoo.com	Ken Goldsmith	Kenconserv@gmail.com
Kelley Clare	Kelleyclare@hotmail.com	Ken Greenwald	ken.filmman@gmail.com
Kelley McGinnis	kammak@comcast.net	ken gunther	ecocosm@icloud.com
Kelley Scanlon	SunGlowAura@aol.com	Ken Lavacca	Kenlavacca@gmail.com
Kelley Slack	kelleycoleman77@gmail.com	Ken Lavine	ken@lavine2020.com
Kelli Lewis	krlprl67@yahoo.com	Ken Lucas	drluke0079@gmail.com
Kelli Morgan	5morganpk@comcast.net	Ken Martin	sunaru8@yahoo.com
Kelli Reynolds	kellir@outlook.com	Ken Mauney	kennethdmauney@yahoo.com
Kellie Smith	kelf.nh@live.com	Ken Maurice	kenjosephmaurice@aol.com
kelly byrnes	kellbex@yahoo.com	Ken Neubecker	kneubecker@americanrivers.org
Kelly Choi	kellymchoi@gmail.com	Ken Vannatta SR	kvdudes52@outlook.com
Kelly Dunn	Snobunnie1992@yahoo.com	ken wertz	kensun@earthlink.net
Kelly Hibbert	K.lynn.hibbert@gmail.com	Ken Windrum	kwindrum@earthlink.net
Kelly Irwin	Kellyir01@yahoo.com	Kendall Vande Kamp	kendall.vandekamp@gmail.com
Kelly King	kdking6227@yahoo.com	Kendra Appelman-Eastvedt	eastvedts@yahoo.com
KELLY KRAMER	midgey1@me.com	kendra brooks	kendrakbrooks@gmail.com
Kelly McCastland	kmccastland@sbcglobal.net	Kendra Holt	kendra_music@hotmail.com
Kelly Riley	khanlon74@yahoo.com	Kendra Ireton	Kayentash@gmail.com
Kelly Walker	911phatchick@gmail.com	Kendra Mackenzie	duakymk@gmail.com
Kelly Webb	kellybwebb@gmail.com	kenn ballou	kenn_ballou@yahoo.com
Kelly Witt	Kelly78901@yahoo.com	Kenneth Althiser	kalthiser@riversideca.gov
Kelly Wright	kellynwright@gmail.com	Kenneth Bowmank	kbowman@prodigy.net
kellyann morander	miagirl20@aol.com	Kenneth Carolus	k.carolus@me.com
Kelsie Greenfield	Kelsielee11@gmail.com	Kenneth Corti	kcorti@mbakerintl.com
Ken and Donna Bubb	kenbubb1@yahoo.com	KENNETH DEED	ken@kendeed.us
Ken Barber	bfightinirish74@comcast.net	Kenneth Ellsperman	kenellsperman@hotmail.com

Kenneth Fisher	kfisher5050@yahoo.com	Kermit Easterling	kerm.east@gmail.com
Kenneth Gakeler	klg@kc.surewest.net	Kerry C. Kelso	loveabugtoo@gmail.com
Kenneth Galica	kgalica@jrsjlaw.com	Kerry Heck	cjandthebears@optonline.net
kenneth gillette	kgillett@harris.com	Kerry Heck	kerry_heck@yahoo.com
Kenneth Goodman	kgoodman00@gmail.com	Kerry Kringer	kkrininger@gmail.com
Kenneth Hyche	kennethhyche@yahoo.com	Kerry McCarthy	vkdvtch9@gmail.com
Kenneth Kron	kron@aikido.com	Kerry Moore	kdmoore@toledotel.com
Kenneth Lump	kennethlump@gmail.com	Kevin Anderson	klanderson@email.com
Kenneth Mullens	santafestar@gmail.com	Kevin Avery	kevinus7@verizon.net
Kenneth Mundy	kendrum@aol.com	Kevin Bauman	kevinbauman@gmail.com
Kenneth Nahigian	appalonius@netzero.net	Kevin Bobletz	renewu77@yahoo.com
Kenneth Payne	kennethpayne@earthlink.net	KEVIN CHACKO	KEVINCHACKO22@YAHOO.COM
Kenneth Rowe	electfry@yahoo.com	Kevin Charnas	kcharnas@yahoo.com
Kenneth Rush	preacherxl@yahoo.com	Kevin Darcy	darcykevinj@gmail.com
Kenneth Schilling	kyschilling@gmail.com	Kevin Donnelli	ataxia42973@yahoo.com
Kenneth Upchurch	Kennetgs_upchurch@yahoo.com	Kevin Hill	gdtrfb8@hotmail.com
kenneth walters	kennywaltersphoto@gmail.com	Kevin Hughes	anevolver@gmail.com
Kenneth Wilcox	threegables1@macnexus.org	Kevin Isola	Khisola@aol.com
Kennith Lassalle	Lassallekennith@cox.net	Kevin Jablow	kj242424@gmail.com
Kent Coburn	pyramidbilliards@zoominternet.	Kevin Kennedy	kjkennedy805@yahoo.com
kent lennnox	kentlennox@yahoo.com	Kevin Kostiuk	kevin.kostiuk1@gmail.com
Kent McClelland	JuKeMa2@aol.com	Kevin Krywko	KevinKrywko@cox.net
Kent Templeton	scotsman1792@att.net	Kevin Malone	malone_env@yahoo.com
Kent Wright	pyewright@mchsi.com	Kevin Mcnamara	Kmcnamara12000@yahoo.com
Kenton Lindley	ken_kc_959@yahoo.com	Kevin Millard	Kmillard16@yahoo.com
Kenyon Shubert	kenyon.shubert@gmail.com	Kevin Oldham	koldham61@gmail.com
Ker Cleary	ker@efn.org	Kevin Olson	Kevin.olson@outlook.com
Kerby Miller	MillerK@missouri.edu	Kevin ONeill	oneillcarpet@gmail.com
Keri Bennett	Keribennett@msn.com	Kevin O'Shea	kvinoshea@gmail.com
Keri Bowling	irekbowling@gmail.com	Kevin Owens	kcaseyowens@gmail.com

Kevin Petty	kevindpetty@cox.net	KIM Hall	kimmaynard2@gmail.com
Kevin Reisenbichler	Reisenbichlerkevin@gmail.com	Kim Harnish	Activist_connor@yahoo.com
Kevin Schmidt	kevin@kevinschmidt.com	Kim Hilt	kimmhilt@icloud.com
Kevin Silvey	silveycpa@aol.com	Kim Johnson	maricopa_man2008@live.com
Kevin Stepelton	kstepelton@sbcglobal.net	kim kost	kost@centurytel.net
Kevin Synan	kcsonbass@gmail.com	Kim Maull	kimw98@yahoo.com
Kevin Trotta	turfipmguy@aol.com	Kim McCary	kim@mccarycreative.com
Kevin Vaught	klvaught@bellsouth.net	Kim McDonald	macke496@hotmail.com
Kevin W. McAlister	KevinWMcAl@hotmail.com	Kim Messmer	kimmessmerphoto@yahoo.com
Kevin Walker	q2qq@yahoo.com	Kim Nollmeyer	kim_nollmeyer@hotmail.com
Kevin Walsh	walshkevink@yahoo.com	kim perry	KIM.PERRY13@GMAIL.COM
Kevin Warren	kevin.h.warren@gmail.com	Kim Peterson	rose_5823@yahoo.com
Kevin Wightman	kkwightman@gmail.com	Kim pow	kodimeg8@yahoo.com
Kevine Cove	thejunkiebox@gmail.com	Kim Ramert	MayKim@mchsi.com
Kezia Lechner	keziarenee@gmail.com	kim sears	ksears17@yahoo.com
Kian Daniel	kvondaniel@msn.com	Kim Sellon	kimsellon@gmail.com
Kicab Castaneda-Mendez	kicabcm@yahoo.com	Kim Stevens	kstevensca@earthlink.net
Kierstin Carlson	frogination@gmail.com	Kim Wiseman	dkimw@earthlink.net
Kierstin Masse	kierstin.masse@gmail.com	Kim Zwicker	kimczwicker@yahoo.com
Kiesha Pearson	kmwest@prodigy.net	Kimball Cutler	kkcutler@yahoo.com
Kiley Brown	Kybrow01@gmail.com	Kimberley Law	Outlawsx2@hughes.net
Killian Hicks	k33hicks@gmail.com	Kimberley Vought	vjunior94@aol.com
Kim Alarie	kralarie@gmail.com	Kimberly Hart	kimberlyrhart1@yahoo.com
Kim Beeler	kim@beelermarketing.com	Kimberly Jackson	kjacks35@baker.edu
Kim Chavez	chavezkimaaa@yahoo.com	Kimberly Allen	kalleninteriors@aol.com
Kim Coates	kimcoates@me.com	Kimberly Bach	kbsebastianbach22@gmail.com
kim crawford	kimcrawford@bellsouth.net	Kimberly Bouchard-Shapiro	kimberly.bouchard-shapiro@dlne
Kim Forrest	Kim_Forrest@comcast.net	kimberly cresic	kcresic@yahoo.com
kim grunden	kmgrunden@aol.com	Kimberly Frey	mikyerf@comcast.net
Kim Halizak	Kim.halizak@gmail.com	Kimberly Huff	kimahuff@gmail.com

Kimberly Hurtt	kimmer760@yahoo.com	Kjersten Gmeiner	gmeiner.k@gmail.com
Kimberly Jackson	kjacks35@baker.edu	Ko Tanaka	tangoko2@aol.com
Kimberly Jones	inlovewithlizardsnsnakes@gmail	Kortney Jackson	kortneyjackson217@yahoo.com
Kimberly Potucek	kimmie525@att.net	Kraig and Valerie Schweiss	schweiss@thewisp.net
Kimberly Rigano	krigano2009@my.fit.edu	Kris Aaron	Emory_Kris_Aaron@hotmail.com
Kimberly Seger	kimmiland@hotmail.com	kris b	selkiensam@yahoo.com
Kimberly Spiegel	kspiegel82@gmail.com	Kris Brinsky	Kcolerich@yahoo.com
Kimberly Tafoya	tafoyakim@yahoo.com	Kris Head	lwzahed@hotmail.com
Kimberly Thomas	kim_one@yahoo.com	Kris Hoover	krish662@yahoo.com
Kimberly Torre	Kjt4124@aol.com	Kris Pagenkopf	kris_pagenkopf@hotmail.com
Kimberly Walker	walker34k@hotmail.com	Kris Strate	klslla@yahoo.com
Kimberly Wright	kimberlyw369369@gmail.com	Kris W	kwigand84@gmail.com
Kinga Salierno	k.salierno@gmail.com	Kris White	Kris11789@gmail.com
Kinney Evitt	killemall76@hotmail.com	Krista Gobby	pixibunni@yahoo.com
Kiona Silvertooth	kionaonas@yahoo.com	Kristen Allbritton	kristen_allbritton@hotmail.com
kip smith robinson	csmithrob@hotmail.com	Kristen Bauman	bauman.kr@gmail.com
Kira Schabram	k_schabram@yahoo.com	Kristen Brown	kristenalair@yahoo.com
Kirby Hutto	Krhutto@yahoo.com	Kristen Haugen	khaugenphotography@gmail.com
Kirk Bails	bailsjm@gmail.com	Kristen Howard	jandkhoward0420@gmail.com
Kirk Meyers	kirkmey@comcast.net	kristen lightbody	hororbiz@epix.net
Kirk Phillips	kirk59@frontiernet.net	Kristen Renton	roxygirl2@msn.com
Kirk Rhoads	kirkrhoads@hotmail.com	Kristen Tan	kristentan2@yahoo.com
kirsten henefelt	kkirt99@gmail.com	Kristen Witt	kristenawitt@gmail.com
Kirsten Strom	stromk@gvsu.edu	Kristi Johnson Michiels	kjm@inkimage.net
Kirsten White	kew1211@yahoo.com	Kristi Lin	califacirce@gmail.com
kirstin mcmillan	kirtsin134@yahoo.com	Kristin Downing	kristins540river@gmail.com
Kitty Fowler	kittylfowler@gmail.com	Kristin Green	kmg_14@hotmail.com
Kitty Savage	kittysavagenyc@aol.com	Kristin Lewis	Maryjane713@gmail.com
Kitty Vincent	kitty@ida.net	Kristin Sunada	sunada@lamar.colostate.edu
KJ Linarez	kjlinarez@yahoo.com	Kristin Usher	mjdsu@aol.com

Kristin VanHorne	Kkv4@cornell.edu	Kyle Handley	handleyk@gmail.com
Kristin West	krisco1971@yahoo.com	Kyle Jones	kylecjones@aol.com
Kristina Cliff-Evans	tinaeva@verizon.net	Kyle Lorenson	kylelorenson@yahoo.com
Kristina Fukuda	kmfukuda@yahoo.com	Kyle Velasquez	kylevelasquez0201@gmail.com
Kristina Harper	wow_kz@hotmail.com	Kyri Freeman	kyrifreeman@yahoo.com
Kristina Heiks	kheiks@yahoo.com	Kyung Lee	kyungnam67@gmail.com
Kristina King	kristinarey@yahoo.com	L A	lorialaniva@yahoo.com
Kristina Lamons	kmilgner@gmail.com	l b	lukeproductionscontact@gmail.com
Kristina Lozon	klozon@fastmail.com	L Blue	lb9365@gmail.com
Kristina Younger	Key12061@gmail.com	L Koch	Bbboc09@yahoo.com
Kristine Cassar	kmcassar@gmail.com	L Krausz	Lisalkrausz@comcast.net
Kristine Horton	kmhorton45@gmail.com	L Nelson	nelsonlb2002@yahoo.com
Kristine Moy	kmoy819@gmail.com	L Onate	Saintlacey@yahoo.com
Kristine Stein	Steink26@hotmail.com	L W	law382cpw@aol.com
kristy ray	tgreeyore@yahoo.com	L. L. Wilkinson	taosk9five@gmail.com
Kuniko Yasuda	markuniko@hotmail.com	La"ne Sa"an	dulmu@aol.com
KURT CRUGER	cruginator@yahoo.com	Lacey Hicks	Laceyhicks@hotmail.com
Kurt Gross	tigercat3@sbcglobal.net	LaDene Mayville	ladene01@gmail.com
Kurt Lieber	kurt@oceandefenders.org	Laila Atallah	lailaatallah@hotmail.com
Kurt Lucas	kurt.braves@gmail.com	Laila Sabet	laila.sabet@gmail.com
Kurt Meyerpeter	kmeyerpeter1077@att.net	Laird Lorenz	Lairdlorenz@yahoo.com
kurt Ohm	kurto.az@gmail.com	LaJuana Grief	goodgrief@andycable.com
Kyle Bracken	kylebracken@yahoo.com	LAM WEISMAN	baba_lam@yahoo.com
Kyle Brent	Stellprod@aol.com	Lana Henson	lanarh@aol.com
Kyle Collins	kalelcollins85@gmail.com	Lana May	lanamay300@gmail.com
Kyle Embler	Kembler@hotmail.com	Lana May	lanamay300@gmail.com
Kyle Gage	Gagekm@twc.com	Lana Schmitt	wally21953@hotmail.com
Kyle Gardner	kylegard81@gmail.com	Lance and Jenny Peterson	Roseyrose316@hotmail.com
Kyle Hahn	vatoverde@gmail.com	Lance Groff	groff.lance@gmail.com
Kyle Hall	ptgarcia@comcast.net	lance jimenez	lanceflys@aol.com

lance jordan	lanceg47@hotmail.com	Larry Goodman	agoodcruz@aol.com
Lance Kammerud	lance2479@gmail.com	Larry Hovekamp	larryhovekamp@gmail.com
Lance Mason	lancemason2@yahoo.com	Larry Hulst	larry_hulst@yahoo.com
Lance Polya	lpvt14@gmail.com	Larry Jackson	lowcountrylarry@gmail.com
Lance Rava	lancerava@hotmail.com	Larry Kimball	marshakimball@hotmail.com
Landon Petrie	lpetrie@barrington220.org	Larry Lambeth	llamrtment@hotmail.com
Landon Wiedenman	Landonwiedenman@gmail.com	Larry Lundberg	lumpyl@sbcglobal.net
Lane Rolland	lrollan69@sbcglobal.net	Larry McDaniel	will110@hotmail.com
Laney Goodman	womenonair@aol.com	Larry Rod	clrod@mail.com
Lanier Hines	theplantman@mac.com	Larry Sanazaro	tigerslair316@gmail.com
Lanny Olson	tigerman.lanny@gmail.com	Larry Weingart	larweing@hotmail.com
Laquitta Andrews	koyagrace3@yahoo.com	larry whisenhunt	whize@q.com
Lara Fuller	lgfuller07@gmail.com	Larry Wiesner	Rowanworks@msn.com
Lara Polatas	larasgalaxy@gmail.com	Lary McKee	lary@larymckee.com
Lara Wertheimer	larawertheimer@gmail.com	Lary McKee	lary@larymckee.com
Laraine Lebron	lstarwood1@msn.com	Lascinda Goetschius	lascindag@Yahoo.com
Larisa Long	larisa.long@icloud.com	Lasha Wells	Cocobuddr@hotmail.com
Larissa Gula	aniu15228@gmail.com	Laura Anderson	landerson@richland.org
Larissa Matthews	Larissa.Matthews16@gmail.com	Laura Adams	lauraellen52@yahoo.com
Larry & Sandra Bader	lsbader@frontiernet.net	Laura Aldridge	crazyred_49849@yahoo.com
Larry And Barbara Robertson	bjlgrobertson@bellsouth.net	Laura Anastasio	LauraMafiaMom@aim.com
Larry and Elaine Larimer	lelarimer@yahoo.com	Laura Balocca	lauramichelle31@hotmail.com
Larry Anderson	larscoyote@yahoo.com	Laura Bellato	laura.bellato@hotmail.it
Larry Beard	larbeard@yahoo.com	Laura Bentzen	laura.bentzen@gmail.com
Larry Best	Lwbest0623@gmail.com	Laura Boss	lvduncan@spacefox.org
Larry Bogert	Larry@Bogert.org	Laura Campbell	thelaurjc@comcast.net
Larry Brown	brownl028@hawaii.rr.com	Laura Chase	laurachase63@gmail.com
Larry Burgoon	larry.burgoon@yahoo.com	Laura Collins	Lkielman@att.net
Larry Carter	birder43@yahoo.com	Laura Craun	laura@wetreatyourfeet.com
Larry Gaugler	gauglerl@ptd.net	Laura DeHaven	laura_dehaven@yahoo.com

Laura Della Nina	LauraCarla@mail.com	Laura Sipes	ljsipes2@gmail.com
laura dickey	poetfire40@gmail.com	Laura Staples	ldeitemey@aol.com
Laura Fain	laura.h.fain@gmail.com	Laura Stewart	heyndrix@gmail.com
Laura Friedrichs	lfreddy3266@yahoo.com	Laura Waterworth	snip-first@att.net
Laura Furman	Laura_furman@yahoo.com	Laura Weinstein	lauraweinstein@cox.net
Laura Herndon	laura.herndon@disney.com	Laura Wells	lwells11@gmail.com
Laura Horowitz	12newmoons@gmail.com	Laura Wheeler	happycamper101@ymail.com
Laura J. Peskin	laurajpeskin@gmail.com	LAURA YOKOCHI	lyokochi26426@gmail.com
Laura Jones	jonesparg@gmail.com	laureen picciani	picciani@earthlink.net
Laura Jones-Bedel	catcorp1@gmail.com	Laurel Brewer	magickhours@gmail.com
laura kaufman	lkaufman@umich.edu	Laurel Burns	laurellee99@gmail.com
Laura Kennell	Lkennell@sbcglobal.net	Laurel Colton	pipacs@msn.com
Laura Ketcham	tkcrystal2@gmail.com	Laurel Hieb	hesper79@gmail.com
Laura Koeninger	laurauki ahamb@yahoo.com	Laurel Hughes	ljhughes22@gmail.com
Laura Link	lblink@ziplinkmail.com	Laurel Scott	laurel_scott@msn.com
Laura Long	lauralynn7@gmail.com	Laurel Venable	laurelandcj@gmail.com
Laura Manz	lauramanz@rocketmail.com	Lauren Burns	bestopnewf@gmail.com
Laura McGowan	lmcgowan50@aol.com	Lauren Eaton	leaton@westwood.k12.ma.us
Laura McKee	Lmckee1065@aol.com	Lauren Haley	fairygurl2006@yahoo.com
Laura Moore	imecru62@hotmail.com	Lauren Kupp	le.wylde@yahoo.com
Laura Napoleon	lnap252@aol.com	Lauren Maclise	loreal1018@yahoo.com
Laura Nevins	ljnevins@yahoo.com	Lauren McCullough	Lauren@ktmb.org
Laura Odonnell	odonnell411@gmail.com	Lauren Murdock	murdock_ls@hotmail.com
Laura Overmann	overmann@earthlink.net	Lauren O"Keefe	lauren-o@sbcglobal.net
Laura Park	laurabpark@gmail.com	Lauren Porosoff	porosoff@gmail.com
laura perez-harris	lperezh@alumni.risd.edu	Lauren Ramsay	ramsay3.lauren@gmail.com
Laura Philbrook	Philbrooklaura@yahoo.com	Lauren Rapp	laurenrapp@ymail.com
Laura Pitt Taylor	pitttaylor@gmail.com	Lauren Salvador	Laurenbsalvador@gmail.com
LAURA SALANITRO	lsalanitro@goaxiom.com	Lauren Sucich	laurenjm28@verizon.net
Laura Schafer	lschafer01@mail.com	Lauren Thompson	lbthompson3@gmail.com

Lauren Williams	Lwilliams@paulhobbs.com
Laurence Frishman	larryjf@aya.yale.edu
LAURENCE JANQUART	laurencefj@aol.com
Laurence Margolis	margolislaurence@gmail.com
Laurence McNamara	laurencemcnamara09@gmail.com
Laurene Zemis	lauzrvr@gmail.com
Lauretta Roche	dragonflyroche@embarqmail.com
Lauri Coffman	srldog@aol.com
Laurie Benham	lauriebenham@msn.com
Laurie Beringer	Lberinger@hotmail.com
Laurie Conroy	laurieconroy@me.com
Laurie Fisher	lauriefisher55@gmail.com
Laurie Goldner	lgoldner@sage-env.com
Laurie Habel	lhabel@comcast.net
Laurie Izzo	Energyhealer1964@hotmail.com
Laurie Millette	nobluefood@gmail.com
Laurie Neidich	laurieneidich@gmail.com
Laurie Puca	rclp@optonline.net
Laurie Raymond	laurieraymond16@comcast.net
Laurie Ritter	applesandoranges669@gmail.com
Laurie Schmidt	lk6793kl@gmail.com
Laurie Storm	koostorm@yahoo.com
Laurie Woodward	laurie.woodward@siemens.com
Lauro Reveles	Lauroaustin@gmail.com
lavaune guenther	princessa200145@yahoo.com
Lawren Rudley	Lrartemis621@yahoo.com
Lawrence Berardi	l.berardi22@gmail.com
Lawrence Cromwell	slcromwell@gmail.com
Lawrence Crowley	magic@ecentral.com
Lawrence East	rstyeast@aol.com
Lawrence Fischman	lfisch@maine.rr.com
Lawrence Green	larrygnyc@mindspring.com
Lawrence Jimenez	lawrenj@pacbell.net
Lawrence Loosmore	sirxj6@yahoo.com
lawrence mitchell	unclellm@juno.com
Lawrence Nitishin	ldnruns@gmail.com
Lawrence robinson	cmpnylarry@gmail.com
Lawrence Rosenblum	Larryjrosenblum@gmail.com
Lawrence Scrima	lscrima@gmail.com
Lawrence Tetenbaum	emtlarry@aol.com
Lawrence Toush	warblrwatchr@aol.com
Lawrence Turk, RN	butch@wildrockies.org
Lea Black	leapblack@gmail.com
Lea Coreau	Lcoreau@aol.com
Leah Imwalle	leah_imwalle@yahoo.com
Leah Jacobs	Ljacobs@convolve.com
Leah LeFebvre	leah34@msn.com
Leah Waterworth	Pixwaterworth@aol.com
Leanne Friedman	ljfriedman@ucdavis.edu
Lee Anderson	undaunted2@gmail.com
Lee Bhattacharji	somdevlee4@earthlink.net
Lee Derus	Leederus@hotmail.com
Lee Fister	Leesbeach6@aol.com
Lee Hudson	LHudson782@gmail.com
Lee James	leejames@cableone.net
lee karkruff	lee.karkruff@gmail.com
Lee L"Enfant	saluki70@earthlink.net
LEE LOE	leeloe@igc.org
Lee Mitchell	lmitchell@flahertylegal.com
Lee O"Brien	colobrien@bajabb.com

Lee Schmidt	leeschmidt1938@gmail.com	leonard bildstein	leonardbildstein@yahoo.com
Lee Schondorf	adventure_kayak@yahoo.com	Leonard Heether	heetherl@att.net
Lee Stanley	ljs4@lehigh.edu	Leonard Klikunas	len.klikunas@gmail.com
Lee Winslow	ldurango@msn.com	Leonard Mole	lmole1941@yahoo.com
Lee Wisdom	staggerlee@gmail.com	leonard parks	lparks.nidaho@outlook.com
Lee Wolf	whitewolf31@aol.com	Leonard Sklar	leonard@sfsu.edu
LeeAnn Bennett	lbennett@ku.edu	Leonard Thomas	thomas2258@att.net
Lehman Holder	tripsguy@aol.com	LeRoi Armstead	leRoi.Armstead2@gmail.Com
Leigh Ann McCulla	leighann@thecleanwaterbusiness	les roberts	hobo17pollie@gmail.com
Leigh Saunders	peace2@ihug.co.nz	Les Waters	leswaters52@gmail.com
Leila Zaharopoulos	leilanizam@gmail.com	Leslee McPherson	lesleemcp@att.net
Leisha Monet	leishafm62@hotmail.com	Leslene Dunn	leslene@lagroup.co.za
Leland Baldwin	lbaldwin@jensonusa.com	Lesley Anderson	clearsky@centurylink.net
Leland Brun	penguinpix@aol.com	Lesley Hudak	elevenlights@hotmail.com
Leland Long	lplong@yahoo.com	Lesley Hunt	ldhunt@astound.net
Len Jennings	lenandmimi@usfamily.net	Lesley Poisson	lesleypoisson@comcast.net
Len Messina	skiptcat@comcast.net	lesli hattaway	leslihattaway@yahoo.com
Lena Williams	lwfriesian@hotmail.com	Leslie Bradford	lesliebradford@hotmail.com
Lenie Molendijk-Schipper	lmolendijkschipper@hotmail.com	Leslie Calambro	biketrekker1@yahoo.com
Leno Sislin	leno27@sbcglobal.net	Leslie Cassidy	leslie_cassidy@hotmail.com
Lenora C	lleecc1@gmail.com	leslie danielle brown	ninevah.brown@utah.edu
Lenore Madeleine	lenorekw@yahoo.com	Leslie Ferrante	lferrante@carmelunified.org
Lenore Reeves	lerves@gmail.com	Leslie Hardyman	lhardyman@verizon.net
Lenore Sheridan	lenores93@hotmail.com	Leslie Hines	scarlettexan@yahoo.com
lenore sivulich	msivulic@maine.rr.com	Leslie Leslie	2xleslie@gmail.com
Leo Kucewicz	J14Lion@Gmail.com	Leslie Lindsay	pkgdiva@rcn.com
Leo Tobin	ltobin@twcny.rr.com	Leslie Low	lesliellow@hotmail.com
Leon Epperly	leonepperly@aol.com	Leslie Marsden	Lmarsden@mac.com
Leon Fager	desertf@swcp.com	Leslie Richardson	lbardolino@aol.com
Leona Klerer	leona@klerer.net	Leslie Rudnicki	Sandlrudnicki@comcast.net

Leslie Sharlock	GetSharkware@aol.com	Liliana Silvano	lillys999@hotmail.com
leslie spoon	tikibirdgreen@yahoo.com	Lilith Rogers	rachelcarsonreturns@gmail.com
Leslie Spurling	Lesliespurling@yahoo.com	Lilithe Magdalene	abodhilove@msn.com
Leslie Sutliff	dlsutliff13@frontier.com	Lillian Anderson	lillibelle@q.com
Leslie Winston	winstonl@humnet.ucla.edu	Lillian Beckett	oceanpond777@aol.com
Leslie Young	leslieyoung@infinite-monkeys.o	Lillian Gueli	rustybabee425@aol.com
Lester and Judy Hoyle	jalh2@frontiernet.net	Lillian Hyland	Lillianpatches@hotmail.com
lester shugars	lesshugars@yahoo.com	Lillith Lascoue	lillithlascoue@yahoo.com
Leticia Henriquez	ljhenr58@yahoo.com	Lillyam Barberi	Lillyambarberi@yahoo.com
Letitia Noel	tishnoel@aol.com	lillyan cendejas	robertecendejas@aol.com
Lettice Rhodes	ttarhodes@sprintmail.com	Lily Doris	lmdoris@yahoo.com
Lew Okun	Lewonline@aol.com	Lily Mejia	lily29@verizon.net
Lew Wilson	tworiverstwolands@gmail.com	Lilyana Srnoguy	mslilyana@gmail.com
Lewis Kuhlman	lewis.kuhlman@me.com	Lina Poskiene	lposkiene@yahoo.com
Liam Maloney	landsanddx@gmail.com	Linc Cole	prunemstr@aol.com
Liana Stanton	valentinstanton@att.net	Lincoln Sills	lsills81@gmail.com
Liane Conn	ljhc51@msn.com	Linda (McEachron)Taylor	lmctaylor@gmail.com
Lib Smith	tigann210@bellsouth.net	Linda Allen-Tawes	tawes1@juno.com
Libby Esther berman	libbybermann@gmail.com	Linda Arndt	Larndt6225@gmail.com
Libby Haycock	ljohay@comcast.net	LINDA AUSTIN-BUSS	BILOXIGRANMA@YAHOO.COM
Libby Jones	mattysgran@aol.com	Linda Bell	lbell3107@yahoo.com
Liberty Brigner	libbybrigner@yahoo.com	Linda Bescript	sadie8882@gmail.com
Liberty Michaels	PeaceintheGalaxies@mail.com	Linda Boccia	casaboccia@comcast.net
Lida Abbassian	Linalina.1968@gmail.com	Linda Brebner	lbbreb@aol.com
Lida Skrzypczak	lida1664@verizon.net	Linda Bridges	terry_bridges@sbcglobal.net
Lida Stevenson	lida.durant@gmail.com	Linda Brown	lkbrown5@verizon.net
Lidia Lucaciu	llucaciu12@gmail.com	Linda Bruner	lk.bruner53@gmail.com
Lidia Mori	wluecke@comcast.net	Linda Burton	Lburto1@yahoo.com
Lila Cornell	ginkgo@zoominternet.net	linda campbell	lscoutcampbell64@yahoo.com
Lilian Caughlin	sunneearabian@citlink.net	Linda Canter	ak.drmr@hotmail.com

Linda Carroll	lindalouise701184951@yahoo.com	Linda Headley	parrotheadley@aol.com
linda centorrino	lmc2va@yahoo.com	Linda Howie	lhowie890@gmail.com
Linda Cerne	LCerne22@gmail.com	linda hunt	lhunt@zoominternet.net
Linda Chase	lindachase72@att.net	Linda Jacobs	antilinda2@yahoo.com
Linda Chen	llunkwitz@hotmail.com	Linda Jennings	jenningsla@aol.com
Linda Childs	lindachilds136@gmail.com	Linda Johnson	lj1015@charter.net
Linda Devries	Kidfarm961@yahoo.com	Linda Jones	catslady3@verizon.net
Linda DeWitt	tigress522005@gmail.com	Linda Jordan	ljordan94611@yahoo.com
Linda Dulicai	linda@the-healthy-zone.com	Linda Jorgenson	gina3014967@mail.com
Linda Eaton	piratele@frontiernet.net	Linda K Letts	lkletts@umflint.edu
Linda Farley	farleywoman@gmail.com	Linda Kane	dlkane1@cox.net
Linda Fay Sampson	battlemaiden33@gmail.com	Linda Kennedy	lkennedy1126@sbcglobal.net
Linda Fenton	Lcfenton@sbcglobal.net	Linda Kiernan	Linkiernan1@gmail.com
Linda Ferland	tibetsun1@gmail.com	Linda Kobler	lkobler@twu.edu
Linda Fielder	malankad@hotmail.com	Linda Kollmar	Lindakollmar@aol.com
linda firestone	lindafirestone@hotmail.com	Linda Lawson	Lindall5010@gmail.com
Linda Fowler	christafowler@hotmail.com	Linda m	linda@lindamartindesign.com
Linda Freeman	graywolfsp@yahoo.com	Linda M. Butler	maxinefl50@aol.com
Linda Freeman	lindaf121@hotmail.com	Linda Macias	linda@casademacias.com
Linda Gazzola	xenafan431@aol.com	Linda Marble	psquid@msn.com
Linda Gewiss	billinus@yahoo.com	Linda Martin	gentrymartin@yahoo.com
Linda Ghelfi	linda.ghelfi@verizon.net	Linda Massey	mlinda16@msn.com
Linda Gibbs	Love.gibbs@gmail.com	Linda Mccarthy	lmccarthy5@sbcglobal.net
Linda Gioia	Chazcat@gmail.com	Linda Mccrosky	klmccrosky@gmail.com
Linda Glave	Lglave@gmail.com	Linda McKillip	dragonwolf52@comcast.net
Linda Graae	lgraae03@aol.com	Linda Medeiros	Linedamed@gmail.com
Linda Granato	l_granato1@yahoo.com	Linda Meisinger	meisf@embarqmail.com
Linda Groves	lgroves@vrr.com	Linda Mellen	lmellen1@gmail.com
Linda Hartman	namtrahadnil@yahoo.com	Linda Melski	lmelski@charter.net
Linda Hayes	lindahayes92@yahoo.com	Linda Mooney	paleflag@yahoo.com

Linda Muntner	peterpan2121@earthlink.net	Linda Waine	lmwaine@comcast.net
Linda Myers	horsefarm85@gmail.com	Linda Wallace	linwallace@comcast.net
Linda NIcholes	plugpositive@gmail.com	linda williams	peddlepaddle@comcast.net
Linda Nicoletto	lbirdgirl@gmail.com	Linda Williams	Warthog.mk1@gmail.com
Linda Nicoletto	lbirdgirl@gmail.com	Linda Williard	lwilliard@eastern-ind.com
Linda Null	lindadarleennull@gmail.com	Linda Wilson	lindaannwilson@mac.com
Linda Null	lindadarleennull@gmail.com	linda winchester	lawrcy05@aol.com
Linda Oeth	lindaoeth@adelphia.net	Linda Wolff	iam@lindawolff.com
Linda Peck	jandlpeck@cloudnet.com	Linda Zastrow	linz19@att.net
Linda Pflugrad	wirefox212@gmail.com	Linda Zigler	Lsmallia@cox.net
Linda Prostko	lprostko@gmail.com	Lindak Kotan	kapaahi@cox.net
Linda Reik	LMReik@msn.com	Lindi Higgins	lindi.higgins@aecom.com
Linda Reilly	lindareilly@q.com	Linds Chen	Llunkwitz@hotmail.com
Linda Schmid	Linda_Schmid@intuit.com	Lindsay Johnson	lindsayejohnson@comcast.net
Linda Schmidt	Leschmidt@gmail.com	Lindsay Mugglestone	lindsmuggl@aol.com
Linda Schrader	lschra@iowatelecom.net	Lindsey Caudill	mrscaudill@hotmail.com
Linda Shirey	lrs0670@yahoo.com	Lindsey Densing	cruiserld@aol.com
Linda Smathers	lindasmathers@hotmail.com	Lindsey Hird	ehlers.lindsey@gmail.com
Linda Smith	cauzjoy@yahoo.com	Line Ringgaard	miss_bmw2007@hotmail.com
Linda Smith	lovesrisingspirit@gmail.com	Linley Fray	linley10@cox.net
Linda Sparks	ptagrandma@aol.com	Linwood Laughy	lochsalaughy@yahoo.com
Linda Szurley	Tasteefreez@aol.com	Lionel Olson	laolson2000@yahoo.com
Linda Tang	Itstangy@aol.com	Lisa Ziler	lziler@crystalsugar.com
Linda Thompsen	lindathompsen@gmail.com	Lisa Ann Kelly & Family	bluesunflowersb@gmail.com
Linda Thompson	Angsandm@aol.com	Lisa Annecone	bettylea7@hotmail.com
Linda Thompson	lindahartneythompson@gmail.com	Lisa Anthony	proflowerchild@aol.com
linda tibbets	keepingthelordfirst@yahoo.com	Lisa Armendarez	elisabethneef@gmail.com
Linda Tift	lindatift@united.net	Lisa Barrett	leezalu72@yahoo.com
Linda Tomlinson	LTsw8ing4u@aol.com	Lisa Brennan	labrennan12@me.com
Linda Townill	ltownill8@comcast.net	Lisa Buehler	chipmunk5@centurytel.net

lisa clark-kahn	lisaclarkkahn@yahoo.com
Lisa Cossettini	lisagab@earthlink.net
Lisa Daloia	Lisa.daloia@yahoo.com
Lisa Dantonio	Kashmir0705@aol.com
Lisa Davidson	lisaxxdavidson@mail.com
Lisa Deckert	lisawiththevizsla@yahoo.com
Lisa DeVaney	Asefirotpractice@yahoo.com
Lisa Douglass	douglass.designer@gmail.com
lisa dunphy	lkcoffey@verizon.net
Lisa Elias	lisa_farm@yahoo.com
Lisa Farrand	lisafarrand@earthlink.net
Lisa Feehely	Sekoni1977@gmail.com
Lisa Fenstermacher	lisamacdonald78@yahoo.com
Lisa Foley	stardusty7@gmail.com
Lisa Fues	ljfues@hotmail.com
Lisa Gee	inion@earthlink.net
Lisa Geyer	geyerl@ymail.com
Lisa Gilbert	lgilbert1963@yahoo.com
Lisa Gilles	momgilles@yahoo.com
Lisa Goldman	perfiktangel@yahoo.com
LISA HAMILTON	SEASAMBLUE@ATT.NET
Lisa Hammermeister	necrohead56@gmail.com
lisa herthel	herthelyasomi@yahoo.com
Lisa Hollingsworth-Segedy	swvastorylady@yahoo.com
Lisa Hopkins	NYCGirl8367@aol.com
Lisa Howell	isahowell100@hotmail.com
Lisa Hughes	lisa.hughes54@gmail.com
Lisa Hutcherson	jmsquirt5@yahoo.com
Lisa Iannucci	liannucc@yahoo.com
Lisa Kenion	Lskenion@yahoo.com
Lisa King	lkinglmt@yahoo.com
Lisa Knight	lisalknight@verizon.net
Lisa Koehl	lkoehl@snet.net
Lisa Leech	l_leech@yahoo.com
Lisa Lester	lsunshine15904@aol.com
Lisa Lewis	alis.wisel@gmail.com
Lisa Mazzola	lmazzola@tampabay.rr.com
Lisa Mcnany	lrm114@hotmail.com
Lisa McQuarrie	MCQUARRIELISA@GMAIL.COM
Lisa Neal	neal4law@yahoo.com
Lisa Neste	lilmouse1213@earthlink.net
Lisa Patrick	lpatrick410@gmail.com
Lisa Phillips	lisaphillipscft@bellsouth.net
Lisa Ramaci	l.ramaci@hotmail.com
Lisa Randall	greglisa@frontiernet.net
Lisa Read	writelread@aol.com
Lisa Roland	ll_roland@yahoo.com
Lisa Saltalamacchia	Lsmumu316@aol.com
Lisa Sanning	lsanning_finallyfree@yahoo.com
Lisa Scharin	lscharin909@yahoo.com
Lisa Scott	Lscottsop2@gmail.com
Lisa Selby	lisaselby13@netzero.net
Lisa Sfeir	blowingacross1000winds@yahoo.c
Lisa Simms	Lisaesimms1@gmail.com
Lisa Stevenson	markstevensonbsu@sbcglobal.net
Lisa Stewart	lstewart@artsbma.org
Lisa Stirling	jadeandconor@hotmail.com
Lisa Stone	lestone@aya.yale.edu
Lisa Telomen	Revlisat@yahoo.com
Lisa Thomas	lrhody@msn.com

Lisa Walthers	Ldwalthers@yahoo.com
lisa watson	lisawatson1331@gmail.com
Lisa Wendland	Llonglois@gmail.com
Lisa Whalen	bossalmw@yahoo.com
Lisa Zalenski	greyhoundlz@yahoo.com
Lisabette Brinkman	brinkstock@gmail.com
Lisbeth Kallaes	lisbeth.kallaes@home.se
lise susi	susi4@optonline.net
Lisha Doucet	lisha_doucet@hotmail.com
Liv Biron	sweetpea11639@gmail.com
Liz Chuz	lchuz@mt.gov
Liz Dahl	erdahlmd@aol.com
Liz Fowler	lizzart@sbcglobal.net
Liz Garratt	erpeldinggarratt@gmail.com
Liz Kellor	elkjlee@yahoo.com
liz krum	lizk71@yahoo.com
Liz Rodgers	liz_rodgers@yahoo.com
Liza Accornero	Luvandnuts2@yahoo.com
Lizann Michaud	lizann314@gmail.com
Lizzie Tracy	elizabeth.tracy@ncf.edu
Ljiljana Milic	kali@orion.rs
LL Kauffman	zBarneycanoe@yahoo.vom
Lloyd Guptill	hvfleet@verizon.net
Lloyd Hedger	lloydmhedger@msn.com
Lloyd Lutterman	indianheadpenny@ymail.com
Lloyd Smith	smitho@mchsi.com
LM Drucker	lmdrucker@earthlink.net
Logan Miller	domcfly@hotmail.com
Logan Miller	unmarkedg@gmail.com
lois baker	1solobaker@gmail.com
Lois Battersby	lrbnj@aol.com
lois bernstein	lmbny2az@yahoo.com
Lois Denaut	ldenaut@yahoo.com
Lois Dunn	dunnlois@yahoo.com
Lois Melegari	melegarilois@yahoo.com
Lois Nottingham	rosie2639@gmail.com
Lois Sotelo	lsotel@yahoo.com
Lois White	loeyw1@gmail.com
Lois Zeidman	fhzlagz@aol.com
LOLA CUADRADO	cuadrado1955lola@hotmail.com
Lollie Ragana	lragana.lr@gmail.com
Lolly Extract	lollypuppets@yahoo.com
Loni Phariss	bugaloogoose@yahoo.com
lonna richmond	lonnajean@gmail.com
Lonnie Albrecht	lonniealbrecht@hotmail.com
Lonnie Patterson	londonpatt@aol.com
Lonny LeFever	mlefever@woh.rr.com
lora losi	losi.loral@gmail.com
Lora Schwartzberg	watr3colr@yahoo.com
Lora Smith	lc689535@gmail.com
Lora Steiner	lora.steiner@yahoo.com
Lorah Green	lorahg962@gmail.com
Loree Stinson	spudcakes70@yahoo.com
Loren Young	lyoung@richland.org
Lorena Loubsky	Wildlor@gmail.com
Lorenz Steininger	schreibdemstein@posteo.de
Lorenzo Fumagalli	lorfum_92@hotmail.com
Loretta Bolton	iwalh1@yahoo.com
Loretta Herger	dogy330@gmail.com
Loretta Kerns	ret105@aol.com

Loretta Larkin	loretta.larkin@gmail.com
Lori Benjamin	loribmedia@gmail.com
Lori Conley	llori522@aol.com
Lori Domich	loridomich@yahoo.com
Lori Erbs	lorieji@cs.com
Lori Esposito	lori_esposito@yahoo.com
Lori Geiger	lniles@cox.net
Lori Korioth	L_routh@yahoo.com
Lori Lerner	yankeesmets2@verizon.net
Lori Lester	llestersc@gmail.com
Lori Mulvey	tlkangel@charter.net
Lori Nemeth	nemethlori@hotmail.com
Lori Smith	Loriprosound@mac.com
Lori Stoner	stonerbunny1960@yahoo.com
Lori Ugolik	ugolikdc@gmail.com
Lori Weber	Diversified8@yahoo.com
Lorna Anderson	Lorna.anderson.wy@hotmail.com
Lorna Wallach	Lwallach01@gmail.com
Lorne Miller	mlcm@alaska.net
Lorraine Blaszczak	tbear52@optonline.net
Lorraine Brown	lorrainebrown@hotmail.com.au
Lorraine Dumas	spanishlo@twc.com
Lorraine Forte	L.forte@earthlink.net
lorraine foster	lorraine@spiretech.com
Lorraine Gilmore	Quizgil@aol.com
Lorraine Gray	llgray@umich.edu
Lorraine Heagy	lmheagy@ptd.net
Lorraine Lowry	lmurphy_2006@hotmail.com
Lorraine Martinez	martinez454@wildblue.net
Lorraine Nauman	lorraine@lornauman.com
Lorraine Pedersen	ridgebacksrule@mindspring.com
LORRAINE SANNICANDRO	LSANNICANDRO@TOWNOFPOUNDRID
LORRAINE THOMPSON	laura451@live.com
Lorretta Marcel	loret44@yahoo.com
Lou Illes	lilles@linnllc.com
Lou Illes	louilles@linngroup.com
lou paller	loupall@hotmail.com
Louann Lanning	louannl@hotmail.com
Loubov Mintas	mintaslv@gmail.com
Louella Green	Greenhouselady2002@yahoo.com
Louis Anasinis	Lou@tapmc.com
Louis Discepola	loudny@yahoo.com
louis gauci	lgauc8@gmail.com
LOUIS PALAZZINI	MASTERALL2000@YAHOO.COM
Louis Rhodes	an_doc@yahoo.com
LOUIS SABOTTO	lsabotto@yahoo.com
Louise B ANGELIS	louise2011@me.com
Louise Gardner	Elgczstars@gmail.com
Louise LaFrancis	lafrancis51@hotmail.com
Louise Mann	mnzoo@comcast.net
Louise Murphy	murpl23@aol.com
Louise Nolta	jpicssps@yahoo.com
Louise Pinson	palmbeachvintage@gmail.com
Louise Rangel	weezyf@roadrunner.com
Louise Rose Blume	gblume1933@gmail.com
Louise Wallace	lfdw4@aol.com
Lourdes Acevedo	acevedo1284@yahoo.com
Lourdes Cornier	lcornier3173@yahoo.com
Lowell Palm	evrettbgo@yahoo.com
Lowell Young	mtnfolks@gmail.com

Irwin Hoenig	irwinhoenigcst@gmail.com
LTC Sam Booher, retired Army	sbooher@aol.com
Luann Mcvicker	Mcvickerlc@gmail.com
LuAnn Stenclik MD, PhD	lstenclik@comcast.net
Luanne Mierow	rm843575@hotmail.com
Lucas Phillips	phillips.lucas@gmail.com
Lucas Range	grangly@mailexpire.com
Luci Fowler	elismom@gmail.com
Luci Howard	lott@howardstx.com
lucia ruffato	luciaruffato@mlabs.it
Lucille Nelson	sexynunique@ymail.com
Lucille Robustelli	robustelli@cox.net
Lucille Trujillo	lucilletrujillo@q.com
Lucinda Greene	moozandsqrl2001@yahoo.com
Lucinda Windsor	lucindawindsor@att.net
Lucy Cassidy	casadicassidy@verizon.net
Lucy Gibson	lucygibson@yahoo.com
Lucy Lack	lucy.lack@gmail.com
lucy norman spencer	lans.art@verizon.net
Lucy Schneider	englishwriter1@yahoo.com
LUCY TYNDALL	beaverfalls1@yahoo.com
Luis Bravo	lujbravo@hotmail.com
Luis Fernandes	jvargas9@comcast.net
Luis Fernando Andrade	sangasz@hotmail.com
Luis Fuentes	Luisgfuentes10@gmail.com
Luis Lozano	llozano@aol.com
Luis Lozano	llozano784@gmail.com
Luis salavarria	z36700@yahoo.com
Luisa Cox	lj984@cox.net
Luise Widitz	emilwiditz@yahoo.com
Luke Berry	lukeberry@aol.com
Luke Platt	lukeplatt4790@gmail.com
Luke Van keuren	Lbpanzer774@gmail.com
Luna Gooding	lunasee52@hotmail.com
Lura Irish	lbirish@earthlink.net
Lydia Garcia	lydiagarcia218@gmail.com
lydia garvey	wolfhowlmama@yahoo.com
Lydia Howard	lydandgreg@gmail.com
Lydia Mathis	lydiaandtodd@hotmail.com
Lygea San Pedro	untmdheart@aol.com
lyn capurro	datura101@excite.com
lyn ward	ayupduk@sbcglobal.net
Lyn Younger	ekcbsnan@yahoo.com
Lynda Guckert	threeat8@yahoo.com
Lynda Murphy	Lyndapaul07@yahoo.com
Lynda Ross	boypitty@yahoo.com
Lynee Mcmillan	polsonmcm@yahoo.com
Lynette Elliott	maxermoo@hotmail.com
Lynette Henderson	lynettekhenderson@mac.com
Lynette Notte	crazycatlady1103@yahoo.com
Lynette Ridder	captain_nerful@yahoo.com
Lynette Schultz	lynetteschultz65@gmail.com
LynMarie Berntson	rlbernt@earthlink.net
Lynn And Edward Smith/Hill	smithlynnc@gmail.com
Lynn Armstrong	cvuzu@att.net
Lynn Barnes	lynnsmskitty@yahoo.com
Lynn Barron	lbarron@iitri.org
Lynn Bengston	lynnb@psych.umass.edu
Lynn Blackwell	lynn.gb230@gmail.com
Lynn C. Lang	lynn_lang@hotmail.com

Lynn Costa	ldgcosta@gmail.com	lynne stokes	lynnestokes39@yahoo.co.u
Lynn Fischer	fish009@bellsouth.net	Lyric McKnight	mcknightlg@yahoo.com
Lynn Funkhouser	lynnfunkhouser@cs.com	M Garrett	madega@comcast.net
Lynn Gazik	lynn.mg9756@gmail.com	M H	maryh213@verizon.net
Lynn Hillman	lynn@greenworldlandscapedesign	m Hyland	cavanlongford@verizon.net
Lynn Kouzel	lynnkouzel@yahoo.com	M Kimberly Dalinowski	crowmerriweather@gmail.com
Lynn Kush	lynn.kush001@gmail.com	M Langelan	mjlangelan@gmail.com
Lynn Learch	lynn_learch@yahoo.com	M Leszczynski	kochski@chartermi.net
Lynn Markert	lemarkert@comast.net	m may	mmp2u@cox.net
Lynn McDaniel	lynn.mc@att.net	m moran	mmmmahalo2000@aol.com
Lynn Montgomery	sunfarm@toast.net	M OConnor	Joemarsn@comcast.net
Lynn Morris	catmorris@live.com	M Redden	michaela@computerguru.org
Lynn Pekkanen	lynnpekk@yahoo.com	m rivera	riverwitha@yahoo.com
Lynn Price	wintress@gmail.com	M S Dillon III	msdillon@earthlink.net
Lynn R	lynnfroebuck@att.net	M Stroup	grslnd@charter.net
Lynn Schneider	whadifmarco@comcast.net	M Timmins	mjt@murieltimmins.com
lynn snyder	lynnrsnyder@aol.com	M. Canter	mcanter1@comcast.net
Lynn Welch	lwelch1990@comcast.net	M. Dürrenberg	RubinaGh@gmail.com
Lynn Wilbur	kalei.lw@gmail.com	M. Lou Orr	youandmekid@comcast.net
Lynne Atherton-Dat	lynneadat@aol.com	M. Mooney	moonking.charity@gmail.com
Lynne Bannerman	lynneabann@gmail.com	M. Olson	Olson@thebigbluefish.com
Lynne Chimiklis	lchimiklis@yahoo.com	M. Repp	mer0825@yahoo.com
Lynne Clark	th_bookfiend@yahoo.com	M.A. Kinnaman	rancherfromhell@yahoo.com
Lynne Cleary	danesburyave@yahoo.com	M.E. Scullard	mes@mescullard.com
Lynne Glaeske	lglaeske@comcast.net	M.G. Pappaducas	mgp25@hotmail.com
Lynne Rooney-Katsma	laroonkat@gmail.com	Mac Lewis	maclewis1@gmail.com
lynne rosenfield	lynne@ski.com	Macie Schriner	macie.schriner@gmail.com
Lynne Salomon Miceli	turquoisefire3836@gmail.com	Mack Freestone	mack_freestone@hotmail.com
Lynne Sendejo	Lsendejo@aol.com	Macrina Rodriguez	rods97@sbcglobal.net
lynne sootheran	sootly01@luther.edu	Macyle Candela	2mpcnew@gmail.com

Madalena Hutcheson	luvmypet@bellsouth.net	Malisa DeOchoa	fancypantz17@yahoo.com
Madeleine Bateman	m.ibateman@yahoo.com	Malka Essig	dkmouser@aol.com
Madeleine Fisher Kern	metropet2000@yahoo.com	Mallory Lawton	mallory_fae@hotmail.com
Madeline Klinko	madeline@digiphase.com	Mallory Nowak	mallorylee117@att.net
Madeline Seveland	bansc002@umn.edu	Mandy Devine	Mandycdevine@gmail.com
Madeline Shaw	mshaw13@frontiernet.net	Mandy Tshibangu	Mandytshibangu@gmail.com
Madeline Wright	snowbear913@sbcglobal.net	Manisha Singhal	H32o@aim.com
Madonna Mullin	mullin98@bellsouth.net	Manny Garcia	Rodeobuck@rocketmail.com
Madria Everson	madria11@gmail.com	manou cassel	sinaziwin@gmail.com
Mafalda Castro	Mafaldafonsecacastro@gmail.com	Manuel Fuentes	fuentesmanuel.mf60@gmail.com
Magda Paiva	magda@fullnoon.com	Manuel Rodriguez	mars734@yahoo.com
Magdalena Quilichini	magdalenaquilichini@yahoo.com	Manuela Rohm	mrohm@att.net
Magdalena Szaszorowska	m3magda@buziaczek.pl	manuela wolter	mwolter61@gmail.com
Maggie Gaines	gaines.maggie@gmail.com	Marc and Alice Imlay	ialm@erols.com
Maggie Gumble	maggie@gumble.net	Marc Conrad	marcarthur@comcast.net
Maggie Kohanek	magsgarden@cableone.net	Marc Daniel	zappa@cnw.com
Maggie Lefford	magslefford@cheerful.com	Marc Draper	marcdraper@earthlink.net
Maggie McGuinness	mcguinnessmag123@hotmail.com	Marc Fleisher	marc.fleisher@gmail.com
Maggie Meade	margaretmmeade@gmail.com	Marc Kagan	decomarc@aol.com
Maggie Rhoades	Maggie.rhoades@verizon.net	Marc Laverdiere	Melaverdiere@yahoo.com
Maggie Schafer	feline@wyo2u.com	Marc Lionetti	theface514@gmail.com
Maggie Shontz	maggieb508@me.com	Marc McCord	marc@canoeman.com
Mahesha De Silva	kamsdesilva@yahoo.com	MARC REA	MARC.REA@UNITED.COM
Maia de Raat	karolinade@yahoo.com	Marc Reynolds	marcreynolds@yahoo.com
Maki Murakami	makim@hiokiusa.com	Marc Silverman	dhalgrn@pacbell.net
Mal Gaff	malgaff@gmail.com	Marc Tyson	Marctyson1987@aol.com
Malcolm Cleaveland	mcleavel@uark.edu	Marc Zimmerman	marczman@earthlink.net
Malcolm Groome	otorongo@earthlink.net	Marce Walsh	marcewalsh@yahoo.com
Malin Moench	malin.moench@cox.net	Marcel Liberge	pmasiac@yahoo.com
Malinda Coleman	Colemanmalinda@gmail.com	Marcel Montoya	arteeluz@gmail.com

marci robinson	marcirobinson@gmail.com	Margaret Chasson	mchasson@aol.com
Marcia Garceau	mgarceau@san.rr.com	Margaret Christine Robinett	chrisdc@flash.net
Marcia Halligan	cocoon@mwt.net	Margaret Cornelius	mcornelius_50@yahoo.com
Marcia Hoodwin	Marcia@accentsaway.com	Margaret Crane	margatecrane@sbcglobal.net
Marcia Kellam	marciakellam@hotmail.com	Margaret Crane	Mncrane@gmail.com
Marcia Meyer	Marciam.meyer@ncrr.com	margaret demott	louisfeldman@sbcglobal.net
Marcia Weese	mw@marciaweese.com	Margaret dePasquale	depasq@megalink.net
Marcie Mott	mott_marcie@yahoo.com	Margaret Fish	fishm@gotsky.com
Marcina Motter	sunimae@aol.com	margaret frest	msfrest@gmail.com
Marco Baracca	mrcbrcc2@gmail.com	Margaret G. Banta	mgbantan8@sbcglobal.net
Marco Pardi	MPardi@aol.com	Margaret Gallagher	margeegal63@yahoo.com
Marcos Carrillo	marcoscarr@netscape.net	Margaret Gonsalves	meg62356@yahoo.com
Marcus Hansen	marcuschristian@hotmail.com	Margaret Goodman	messgwg@gmail.com
Marcus Whitfield	whitfield.marcus@gmail.com	Margaret Goodwin	margaretmg1942@yahoo.com
marcy bernstein, RN	marcy212j2@bellsouth.net	Margaret Gordon	Mgordon1101@gmail.com
Marcy Crane	mouseychic@gmail.com	Margaret Gunderson	margaret.gunderson@nau.edu
Maren Kentfield	mkentfield36@gmail.com	Margaret Harrell	margyharrell@aol.com
Marg Marianacci	Margmarianacci@aol.com	MARGARET HASHMI	sakibaytu@comcast.net
Margaret Johnson	msj8947@yahoo.com	Margaret Hayslip	margarethayslip@gmail.com
Margaret Richards	magginkat@gmail.com	Margaret Hodgkins	ZookeeperM1@msn.com
margaret *tatum	mtatum@kt.com	Margaret Hollenbeck	pegnplace@gmail.com
Margaret Adam	margaret_adam@yahoo.com	Margaret Johnson	msj8947@yahoo.com
Margaret Aguilar	almanest@aol.com	Margaret Keene	mgrtkeene@gmail.com
Margaret Barrar	mbarrar@HOTMAIL.COM	Margaret Lohr	sweepyzero@yahoo.com
Margaret Baxter	mbaxt686@aol.com	Margaret M Leusch	margaretmaryleusch@gmail.com
Margaret Brady	mfbrady31@sbcglobal.net	Margaret Madsen	rosiemadsen@yahoo.com
Margaret Brown	jcbrownco@centurylink.net	Margaret Matzinger	Marmat@ix.netcom.com
Margaret C. McHugh	mcmchugh60@hotmail.com	Margaret Maxwell	freakingzoolady@yahoo.com
Margaret Carter	mawcarter@verizon.net	Margaret McGinnis	margaretmcginnis@verizon.net
Margaret Cathey	maggie_cathey@hotmail.com	Margaret Merino	pmerino@sandiego.gov

Margaret Mogg	sheepdog1@wcta.net	Margo Zadow	margoz@lyrec.coop
Margaret Morey	margaretmorey@yahoo.com	Marguerite Boyens	Hellonana@me.com
Margaret Mueller	mjmueller@cinci.rr.com	Marguerite Foster	margueritef8@gmail.com
Margaret Powell	msmaggiepowell@comcast.net	Marguerite Shuster	mshuster@verizon.net
Margaret Rangnow	rangnowcm@gmail.com	Marguerite Smuker	peggysmukler@yahoo.com
Margaret Remington	Maggie44rem@yahoo.com	Marguery Lee Zucker	lee@thelocomotive.com
Margaret Rogers	Peggysong@yahoo.com	Mari Dominguez	Maridelsol34@gmail.com
margaret runfors	murun53@hotmail.com	Mari SMET	litayu@aol.com
Margaret Sayvetz	msayvetz@verizon.net	Maria Aragon	aragon64@yahoo.com
Margaret Schultz	margaret_schultz@yahoo.com	Maria Bon	pbon@att.net
Margaret Scripp	peggy7989@yahoo.com	Maria Bosch	lulabosch@me.com
Margaret Sedlack	peggysedlack@gmail.com	Maria Celia Hernandez	her84754@verizon.net
margaret silver	cattleya@comcast.net	Maria Clair-Howard	mchrealtor@gmail.com
Margaret Silvers	marsilvers@gmail.com	maria emmetti	memmetti@verizon.net
Margaret Szayna	mszayna@yahoo.com	Maria Gillem	ziblick@hotmail.com
Margaret Thompson	molokaibetsy@hotmail.com	Maria Gonzalez	tracyg36@gmail.com
Margaret Truman	metruman@verizon.net	maria gritsch	mariafgritsch@yahoo.com
Margaret Vernon	vernon.margaret0@gmail.com	Maria Hernandez	malena412@sbcglobal.net
Margaret Waltershausen	mwaltershausen@yahoo.com	Maria Kalousi	mkalousi@yahoo.com
Margarita Zamora	margarimzam@gmail.com	Maria Kolins	Markoli5@aol.com
Marge Biase	jadegreenne@aol.com	maria lasorsa	marialasorsa@yahoo.com
marge dakouzlian	footstepsinthesand@hotmail.com	Maria Lewytzkyj-Milligan	mariahalyna@gmail.com
Margery Race	mraceop@sbcglobal.net	Maria Long	mml7182@gmail.com
Margery Schiff	margies929@yahoo.com	Maria Magana	mariamagana@gmail.com
Margery Stone	pelstone@windstream.net	maria MINERVA	MYLESPRESLEY1@OPTONLINE.NET
Margi Mulligan	margimulligan@yahoo.com	Maria Nowicki	mnowicki45@yahoo.com
Margie Hancock	daisydog222@hotmail.com	Maria peteinaraki	mpeteinaraki978@gmail.com
Margie Zalesak	mezalesak@msn.com	Maria Plochocki	bastet801@att.net
Margo Wilson	Dutcholive@gmail.com	Maria Pugliese	mapuglia22@gmail.com
margo wyse	bodica6086@yahoo.com	Maria Svorenova	svorenova@kozsr.sk

Maria Teresa Schollhorn	schollhorn@outlook.com	Marianne White	mariannewhite@ymail.com
Maria Tourino	Mtourino@bellsouth.net	Marie Abramo	salemite4ever@yahoo.com
Maria white	capa_7@yahoo.com	Marie Bayus	littleoldveganlady@gmail.com
Mariam Shah-Rais	yatrika@shivaloka.com	Marie Calire DeLuna	dferrarini@sbcglobal.net
Marian Aument	maument13@aol.com	Marie Curtis	dandmcurt@optonline.net
Marian Blue	blueyude@whidbey.com	Marie DAnna	madanna102@aol.com
Marian Chamberlin	chamberlinmarian@gmail.com	Marie Driscoll	omamarie@att.net
Marian Cooley	mariancooley@att.net	Marie Etzel	marieiniowa@aol.com
Marian Cruz	marian.cruz2903@gmail.com	Marie Garescher	marfogar@gmail.com
Marian Gould	m.gould@verizon.net	Marie Gildehaus	ralph@nha.org
Marian Liza Mientus	marian@wpa.net	Marie Jones	nen4265@aol.com
Marian Meinen	marianmeinen@web.de	Marie Kovar	fpbears@gmail.com
Marian Porter	oxyspa@earthlink.net	Marie Lange	mlange20@gmail.com
Marian Scena	mangua.mrs63@gmail.com	Marie Leven	marieleven@att.net
Mariana Lukacova	lacko.marianka@gmail.com	Marie Michl	loveapeke@yahoo.com
Marianna Mejia	lamarianna@aol.com	Marie Mock	marie@peak.org
Marianne Amann	amannm@yahoo.com	Marie Nickell	prosperplayhouse@mabeltel.coop
Marianne Bentley	m.s.bentley@comcast.net	Marie Perkins	mtp51053@yahoo.com
Marianne Bithell	pacbmarianne@pacbell.net	Marie Plante	emplante@starpower.net
Marianne Boschen	marianne.bo@gmx.de	Marie Roberts	atownlandofoz@gmail.com
marianne carper	petrea1@yahoo.com	Marie Rossachacj	mariercj@msn.com
Marianne Cinaglia	Mcinaglia@al.com	Marie Schopac	mschopac@gmail.com
Marianne Corona	mjcorona@comcast.net	Marie Simmons	marie.simmons73@gmail.com
Marianne Devine	mdevineart@gmail.com	Marie Snavely	fatmainecat@yahoo.com
marianne flanagan	marianneflanagan@hotmail.com	Marie Veek	shego2drakken@gmail.com
Marianne Frusteri	biagiobingo@aol.com	Marie Wakefield	wakefieldm_2000@yahoo.com
Marianne Lazarus	mlazarus1@aol.com	Marie Walker	lady2cats2@yahoo.com
Marianne Shaw	stringshaw@comcast.net	Marie Weis	marieweis@yahoo.com
Marianne Tornatore	mat5504@yahoo.com	Mariko Kaonohi	mariko_kaonohi@yahoo.com
Marianne Verhagen	bmgbtv@gmail.com	Marilee Nagy	Mmcnagy@aol.com

Marilyn Lee	mblee1@una.edu
Marilyn Baldo	Marilynbaldo@gmail.com
Marilyn Berkon	marbkn@aol.com
Marilyn Brogan	marilynbrogan@gmail.com
Marilyn Carse	mlcarse@yahoo.com
Marilyn Egan	marilyn.k.egan@gmail.com
Marilyn Evenson	lowrider3111@yahoo.com
Marilyn Flynn	mflynn4461@aol.com
Marilyn Fuller	mdfuller1@aol.com
Marilyn Hill	snowsquidmax@gmail.com
Marilyn Katz	samandvenu@mindspring.com
Marilyn King	mernparsons@yahoo.com
Marilyn Koff	5ded6eb6@opayq.com
Marilyn Logan	Mklogan19@aol.com
Marilyn Mazuzan	pmazuzan@aol.com
Marilyn Mick	chuyee-8@hotmail.com
Marilyn Mooshie	mmooshie@frontier.com
Marilyn Mueller	mmuelle7@hotmail.com
Marilyn Mullane	marilynmullane@me.com
Marilyn Nicol	nicolmd@yahoo.com
Marilyn Olson	marilyn.olson13@hotmail.com
Marilyn Pierson	mpier36@bellsouth.net
Marilyn Rose	mlwr46@centurylink.net
Marilyn Schiller	mdonahueschiller@gmail.com
MARILYN Shrewsberry	mmarbull@ptd.net
marilyn shup	marilynshup@gmail.com
Marilyn Smit	marilyn.smit@m45.com
Marilyn Snyder	Partyferrett@aol.com
Marilyn Sutliff	msnorth74706@gmail.com
Marilyn Vallejo	marval714@aol.com
Marilyn Waltasti	mwaltasti@msn.com
Marilynn Knauer	marilynnk@vcn.com
Marilynn Mitchell	mmitchell98@cox.net
MARINA ABBOTT	MBBOTT586@AOL.COM
Marina Barry	mbs789@verizon.net
Marina Buscarello	smbusco@gmail.com
Marina Ploscaru	marina.ploscaru@yahoo.com
Mario Jennaro	mjennaro2620@gmail.com
marion barry	callersmom@ncbb.net
Marion Cooney	mtnrainbow@yahoo.com
Marion Lakatos	mplakatos@gmail.com
Marion Marsh	Mmarsh1937@gmail.com
Marion Momaly	marion@momalycpa.com
Marion Stewart	Sam0289@aol.com
Marion Tidwell	marilat@aol.com
marisa landsberg	marisalandsberg@verizon.net
Marissa Ferraro	Msconzo@hotmail.com
Marita Mayer	Maritaann@sbcglobal.net
Marites Reimann	maritesreimann@gmail.com
Maritte Rahav	ph7mr@hotmail.com
Mariu Suarez	mariusita@aol.com
MARJEAN DODEN	mdoden@rocketmail.com
Marjorie Angelo	joliecoeur@bellsouth.net
Marjorie Barton	marjbarton-vegas@att.net
Marjorie Coey	Marjorie.Coey@KPU.ca
marjorie curci	rainbowbend@olypen.com
Marjorie Ivey	m_ivey@shcglobal.net
Marjorie Jones	Mjjines@gmail.com
Marjorie Joyner	mhjoyner@yahoo.com
Marjorie King	mbetsyking@gmail.com

marjorie knodle	msknodle@gmail.com	Mark Gallagher	mgdoolin@aol.com
Marjorie Krueger	rockeyandacey2000@yahoo.com	Mark George	jorge8212@hotmail.com
Marjorie Quon	JJC310@aol.com	Mark Gillingham	Markgill@uwalumni.com
Marjorie Rathbone	jorie.rathbone@gmail.com	mark gillono	mgillono@gmail.com
Marjorie StPierre	mjstpierre1@yahoo.com	Mark Gotvald	mgotvald@berkeley.edu
Marjorie Streeter	streetmm@mindspring.com	Mark Gowan	gowansperspective@yahoo.com
marjorie xavier	marjorie618@aol.com	Mark Grotzke	garagekey2001@yahoo.com
Marjorie` Coey	Marjorie.Coey@KPU.ca	Mark Gubbels	mgubbels@cbu.edu
Mark & Kathy Iversen	mkinc@midrivers.com	Mark Hall	Msphall@sopris.net
Mark Alexander	anonymooseguy@gmail.com	Mark Hallett	mahallett@gmail.com
Mark Arias	markma9783@aol.com	Mark Hanisee	markhanisee@charter.net
Mark Ashley	mashed@outlook.com	MARK HANKS	luvmi2boys@gmail.com
Mark Aziz	mrkzz76@gmail.com	Mark Haslem	mark@haslemlaw.com
Mark Berggren	Berggrenmark@gmail.com	Mark Hayduke Grenard	grenardmarkhayduke@yahoo.com
Mark Betti	mark.betti@gmail.com	Mark Hirschman	mahirschman@aol.com
Mark Bisanzo	Mbisanzo@gmail.com	Mark Hollinrake	mark.hollinrake@ntlworld.com
mark blandford	oblomov237@gmail.com	Mark Holmgren	markholmgren_1@msn.com
Mark Blitzer	pfeffer828@comcast.net	Mark Holoubek	mark_holoubek@yahoo.com
Mark Bousquet	mbousquet@alum.rpi.edu	Mark Hosley	ma_hosley@yahoo.com
Mark Busto	mbusto1951@gmail.com	Mark Joffe	rawrapids@gmail.com
Mark Canright	rchorse11@aol.com	Mark Kassal	Markkassal@gmail.com
Mark Carroll	mark.caroll63@gmail.com	Mark Kieran	doyouhearcolors@gmail.com
mark caso	rsvpmcaso@yahoo.com	Mark Klugiewicz	tmklugs@sbcglobal.net
Mark Coates	mcoates@sau88.net	Mark Koritz	mkoritz2002@yahoo.com
Mark Davis	yougogoogle@yahoo.com	Mark Lee	secondline@mindspring.com
Mark DeLorenzo	ahpminis@gmail.com	Mark Levengood	levenma@gmail.com
Mark Elman	mbelman@optonline.net	Mark Lusch	mlusch@hughes.net
Mark Feldman	happeevegan@gmail.com	Mark M Giese	m.mk@att.net
Mark Finkelstein	retailstrategies@gmail.com	Mark Mccallister	Markmccallister@hotmail.com
Mark Galbraith	mjgalbraith@yahoo.com	Mark Meinders	meinders.mark@gmail.com

Mark meyer	mmyer1018@att.net	Mark Zollo	zoccho@gmail.com
Mark Meyer	mmyer1018@att.net	Markus Krämer	markus.kraemer1970@web.de
Mark Molloy	mgmolloy@gmail.com	marla feierabend	mfeierabend@seedmackall.com
Mark Morehead	Mark@markmorehead.net	MARLA HESS	Marla1001@msn.com
Mark Neitenbach	markneitenb@ball.com	Marla Widurska-Wright	eiskincare@yahoo.com
Mark Neitenbach	mneitenb@ball.com	marlen elias	jm3868@gmail.com
MARK OFFERMAN	kryptik494@aol.com	Marlen Hdz	Marlepotter31@gmail.com
Mark Parr	parrmt@aol.com	Marlene Hutchison	marlenesmail@att.net
Mark Peltan	DancermanDCS@yahoo.com	Marlene Miller	marlenes_mail@yahoo.com
Mark Pepper	sparks11757@hotmail.com	Marlene Tendler	marlene.tendler@comcast.net
Mark Peterson	ecofishconsulting@gmail.com	Marlene Wulf	mlwulfie@gmail.com
Mark Porter	shipepic@msn.com	Marley Swanson	mswanson77@comcast.net
Mark Reback	mark@consumerwatchdog.org	Marley Whistler	marleysharpe@yahoo.com
Mark Richmond	greywolf051@yahoo.com	Marly Wexler	marlywexler@cox.net
Mark Scheingold	mschein@optimum.net	marna herrington	marnah@mindspring.com
Mark Schenkel	shinklemark@hotmail.com	Marney Bruce	marneyb@earthlink.net
Mark Soenksen	moonshadow_studios@msn.com	Marrisha Abbot	marrishaa@gmail.com
Mark Stuber	rainydayboater@gmail.com	Marsha Adams	adams_marsha@fastmail.fm
Mark TOLLEY	tolleymm@yahoo.com	Marsha Bomar	shiregypsy1111@yahoo.com
Mark Tolpin	marktolps@aol.com	MARSHA GAINES	Mparkerg@aol.com
Mark Van Valkenburgh	jordan52@berkeley.edu	Marsha Kimball	marshakimball@hotmail.com
Mark Waltzer	mlwaltzer@verizon.net	Marsha King	kshistarch@att.net
mark warning	mrkwarning@yahoo.com	Marsha Lowry	Ms.Marsha-V-L@Pacbell.Net
Mark Wenger	wengerm@email.sc.edu	Marsha Malone	marshamello9@hotmail.com
Mark Westbrook	Mwca44@gmail.com	Marsha McCroden	memccroden@aol.com
Mark Whiting	mlw1307@verizon.net	Marsha Schaub	marshaschaub@gmail.com
Mark Wilson	mwilsonut@yahoo.com	Marsha Smith	mercretroms@att.net
Mark Wirth	Mark.Purple@Gmail.Com	Marsha Stelzer	marshastelzer@yahoo.com
Mark Wise	mdwrrp@yahoo.com	Marsha Wiseltier	Marsha.silverman@gmail.com
Mark Zolandz	Zolandz81@yahoo.com	Marshall Sorkin	ms22eco@yahoo.com

Marta Calleja	jlbiggs@att.net	martha Winsten	coyote77waiting@yahoo.com
Marta Odriozola	marta.odriozola@gmail.com	Martha Yoshida	mmybands@earthlink.net
Martha Adams	marthamjadams@att.net	Martha+W+D Bushnell	marthawdb@comcast.net
Martha Agnew	Agnew.maggie@gmail.com	Martie Enfield	martiecatlady@gmail.com
Martha Atkinson	marcieatkinson@hotmail.com	Martin Diedrich	martinrdiedrich@gmail.com
Martha Cetina	Martha4Cetina@gmail.com	Martin Hazeltine	mhazeltine@atmc.net
martha chambers	mldchambers@att.net	Martin Henderson	beechcleener@gmail.com
Martha D. Perlmutter	mdp225@yahoo.com	Martin Horwitz	martin7ahorwitz@yahoo.com
Martha Dingilian	muffettk@yahoo.com	Martin Iseri	iseri@sbcglobal.net
Martha Ennis	marthaleeennis@gmail.com	Martin Jordan	martinmjj@gmail.com
Martha Fait	Enchantedmango@yahoo.com	Martin Keller	makbuilder@hotmail.com
Martha Izzo	marthalovesoso@gmail.com	Martin Laufe	mblaufe@verizon.net
Martha Jane Ripple	calamity-jane@cox.net	Martin Marcus	abba_eama@yahoo.com
Martha Johnson	hillsshoulder@comcast.net	Martin Martinko	mmartinko3@sbcglobal.net
Martha Johnson	marti_johnson@yahoo.com	martin niemi	cmniemi@gmail.com
Martha Lorin	marthalorin@yahoo.com	Martin Riley	martinriley2006@yahoo.com
Martha Mallett	Martym81@sbcglobal.net	Martin Rugger	mdrtorimaru@yahoo.com
Martha Martin	mauimartha@gmail.com	Martin Wilson	iamgoingtobe@cox.net
Martha Mattes	mmattes60010@gmail.com	martina hainke	tinatae11@sbcglobal.net
Martha Novak	novakc.m@gmail.com	Marty Adams	madams32931@frontier.com
Martha Powell	toplessfilly@aol.com	Marty Adams	Martyoflodi@aol.com
Martha Shogren	tellgram@comcast.net	Marty Crowley	puddleduck@whidbey.com
Martha Spann	Mspann10@gmail.com	Marty Landa	marty@faceuptopeace.com
Martha Spencer	spencer_martha@hotmail.com	marty martens	martymartens@hotmail.com
Martha Thomae	mlt5678@verizon.net	MARVIN COHEN	marvin.truth.cohen@gmail.com
Martha Tyler	marthagale@yahoo.com	Marvin Feil	mfeil@writeme.com
Martha Utz	utzmartha@gmail.com	Marx Andrews	xram9103@bellsouth.net
Martha Vest	mvest@bitstream.net	Mary A Carroll	carroll2828@earthlink.net
Martha Webb	webbm3445@gmail.com	Mary A Leon	leon3@twc.com
Martha Williamson	mart.wmson@gmail.com	Mary Adams	adamsmaryc@hotmail.com

Mary Agee	mhagee@excite.com
Mary Allen	allen.mary.c@gmail.com
Mary Allen	mallen@americangramaphone.com
Mary Almendarez	maryalmendarez@aol.com
Mary Ann Baier	maturtle@gmail.com
Mary Ann Barrett	ma8barrett@verizon.net
Mary Ann Black	maryablack@msn.com
mary ann Calvert	mary14@cox.net
Mary Ann De La Cruz	madsam310@yahoo.com
Mary Ann Leitch	maleitch@live.com
Mary Ann Millay	animallvr2@gmail.com
Mary Ann Pollett	mapollett@att.net
Mary Ann Smith	mas1071@verizon.net
Mary Ann Sodrel	trashforce@twc.com
MARY ANN TILL	matbear@aol.com
Mary Ann Toy	Rabid30676@aol.com
Mary Anna Jun-Morris	majm@optonline.net
Mary Anna Thompson	maryt_101@hotmail.com
Mary Anne Joyce	maj7900@yahoo.com
Mary Anne Kornbau	mkornbau@gmail.com
Mary Barbezat	Mary.ellen.barbezat@gmail.com
Mary Barchman	mbarchman@yahoo.com
Mary Beckman	maryzoh@yahoo.com
mary benson	pollpoll@comcast.net
mary brady	thebradylady2010@gmail.com
Mary Bristow	mf57902@bellsouth.net
Mary Brown	marybdvm@aol.com
mary c grimaldo	mycarlisle@verizon.net
Mary Camardo	mcamardo315@comcast.net
mary campbell	glasgowe@comcast.net
Mary Chesterman	marychesterman@gmx.com
Mary Chiappetta	Thismomkix1@aol.com
Mary Christman	leozzian1@yahoo.com
Mary Cray	Mjcray@yahoo.com
mary dean	madean@hardparts.com
Mary Detrick	mary13ld@yahoo.com
mary duda	mcmduda@aol.com
mary e hunt	maryehunt@hotmail.com
Mary Eastman	mary.eastman@icloud.com
Mary Eliades	eliadesmary@gmail.com
Mary Ellen Bowen	meb-99@hotmail.com
mary ellen weiner	maryellenweiner@aol.com
Mary Etta Moose	maryetta.moose12@gmail.com
Mary Fanelli	maryfan@att.net
Mary Ferraro	ferrarmt@hotmail.com
Mary Fitzgerald	Mimifg@sbcglobal.net
Mary Garrett	marygarrett@me.com
Mary Graf	maryagraf@verizon.net
Mary Grant	mclgrant@centurylink.net
Mary Gutierrez	mary.earthethics@cox.net
Mary Hanley	marykh51@yahoo.com
Mary Harbison	maharbison@msn.com
Mary Heath	LadyInMInnLookin@aol.com
Mary Heinz	maryheinzphillips@gmail.com
Mary Hickey	maryhickey@earthlink.net
Mary Hughes	mehughes@gmail.com
Mary Jane Pagan	paganm@georgetown.edu
Mary Jane Rhodes	mjrscn@scnky.org
Mary Jane Smith	welshsmith@gmail.com
Mary Jean Sharp	angelmoon2783@yahoo.com

Mary Jean Wamble	mjdesigns@msn.com
mary jo minick	m.minick@sbcglobal.net
Mary Jo Nagy	chieflickymoo3@att.net
Mary Johannsen	moonrubytuesday@yahoo.com
Mary Kalinowski	kalimarynowski@gmail.com
Mary Kamermans	liamsnanna@yahoo.ca
Mary Kathleen Goodman	kathgoodman@verizon.net
Mary Kay Buinger	Marykaybuinger@att.net
Mary Keithler	Mkeithler@yahoo.com
Mary Keller	kellerkeegan@tctwest.net
Mary Kelly	catwoman50@verizon.net
Mary Long	marylouwho55@yahoo.com
Mary Lorna Greenway	lorna@atlasadventuretrips.com
Mary Losh	maryn679@aol.com
Mary Louise Whitlow	marylw5044@att.net
Mary Lynn Hanley	mlhanley@aol.com
Mary Lynn Parodi	mlwp1@comcast.net
mary m. mason	mickey3ms42net@aol.com
mary macvicar	merrymac4@gmail.com
Mary Madeco-Smith	blaureiterhorse@yahoo.com
Mary Mahoney	mar_mah@msn.com
mary mallas	marym@ugl.com
Mary Malo	maryjomalo@gmail.com
Mary Masters	mmasters@stanfordalumni.org
Mary McGann	mmcgann@rscj.org
Mary McGaughey	marymcgaughey@yahoo.com
mary mckenzie	mary.gaye.n@cox.net
Mary Mobley	marymobley1919@gmail.com
Mary Morris	m2morris@sbcglobal.net
Mary Morris	m2morris@sbcglobal.net
Mary Nausadis	mnaus43@gmail.com
Mary OByrne	Ptahosiris7@yahoo.com
Mary Olson	m.olson1377@yahoo.com
Mary Ornee	mary.ornee@gmail.com
Mary Pat White	mwhite@rscj.org
Mary Peterson	mary.peterso@gmail.com
Mary Price	Glimmeron2@aol.com
Mary Puffenberger	kgpuff@comcast.net
Mary Quimby	monk6769@gmail.com
MARY RAMOS	vikings1183@aol.com
Mary Rand	mbridgers7@gmail.com
Mary Rawl	mary.rawl@gmail.com
Mary Reed	ripple@thereeds.me
mary rivas	rv221@aol.com
Mary Robert	c_m_robert_939@q.com
MARY ROJESKI	jero.book@gte.net
Mary Rowell	maryrowell29@yahoo.com
Mary Sanchez	sanchezmf1121@hotmail.com
Mary Schmotzer	marykschmotzer@yahoo.com
Mary Sebek	mamasebek@yahoo.com
Mary Seegott	mseegott@aol.com
Mary Shabbott	Mshabbott@sbcglobal.net
Mary Small	maryksmall@msn.com
mary smith	yvonne64@sbcglobal.net
Mary Sojourner	shebetsherlife@gmail.com
Mary Spano	maryspano@hotmail.com
Mary Splan	mjsplan@yahoo.com
Mary Stevenson	marystevenson@optonline.net
Mary Stone	freddyduck@gmail.com
Mary Taitt	mstebbi@yahoo.com

Mary Tanoury	Stanoury@comcast.net	MaryFaith Colon	MERRYFEYTH@yahoo.com
Mary Tarallo	esfarms@gmail.com	Mary-Helen Sullivan	sulgray4@verizon.net
Mary Thayer	mc_thayer@yahoo.com	marylee fahlstrom	mfahlstrom@yahoo.com
Mary Thiel	rontiel3@gmail.com	marylen kincer	empressmarylen@yahoo.com
Mary Thoma	thomamaryjo@gmail.com	Marylyle McCue	mahsitti@yahoo.com
mary tindukasiri	mjhdesignarts@gmail.com	Marylyn Irrgang	mirrgang@juno.com
Mary True	streamgirlll@yahoo.com	Masheighla Fuscella	truedivagoddess@yahoo.com
mary tulloch	absoultemonarch@aol.com	Mason Arion	mason.arion@gmail.com
Mary Waitz	mwaitz@comcast.net	Mason Gerena	mason.gerena25@gmail.com
Mary Webb	apacheandtrinity@Gmail.com	Massimiliano Urso	maurso@gmail.com
Mary Weir	escapetheads@hotmail.com	Mat Erickson	mathew.w.erickson@gmail.com
Mary Wellington	mary@wellingtonfarm.com	Matea Leon	regressionist@yahoo.com
Mary White	Keeterbee@aol.com	Mathew Vipond	mviperpond@gmail.com
Mary Whitehead	thewhiteheads@tyler.net	Mathias van Thiel	mvthiel@sbcglobal.net
Mary Wolney	mary_wolney@att.net	Matilde Navarro	mdnavarro@sbcglobal.net
Mary Wood	mjkw31@gmail.com	Mato Davis	laughingbear13@gmail.com
Mary Zack	mlzack@web.de	Mats Salomonsson	matssalomonsson@aol.com
Marya Lucca Thyberg	luccathyberg@yahoo.com	Matt Addessi	mattaddedsi@hotmail.com
Marya Zanders	caravanz2@yahoo.com	Matt Bray	Mathaobre@ggmail.com
MaryAnn Burch	maryannils@hotmail.com	Matt Brzezinski	Bonoone@aol.com
Maryann G. Strain	mgs2400@aol.com	Matt Devine	fishinkid9@hotmail.com
MaryAnn Gregory	Mhjfgd-npo@yahoo.com	Matt Freedman	drmatt@yahoo.com
Maryann Haller	iluvacat@cox.net	Matt Grimm	mjgrimm@hotmail.com
MaryAnna Foskett	maryanna@foskettco.com	Matt Janzen	Majikmj@hotmail.com
Maryanna Skowronski	horsegal1878@verizon.net	Matt Jewett	mattyjewett@gmail.com
Maryanne Preli	mxprel@yahoo.com	Matt Johnson	northfalke@gmail.com
Marybeth Conrad	conradmarybeth@gmail.com	Matt Kroner	chongo_mk@yahoo.com
MaryEllen Noel	elpurfect@yahoo.com	Matt LaPlante	activism@theplante.net
Maryellen REDISH	mredish@aol.com	matt loper	mloper1213@Yahoo.com
Maryellen Todd	mtodd718@gmail.com	Matt Malina	mm1566@nyu.edu

Matt McGrew	Matt.mcgrew1@gmail.com	Matthew Schaut	mschaut22@yahoo.com
Matt Melnicoff	mmelnicoff@gmail.com	Matthew Skinner	skinnermatthew27@gmail.com
Matt Mozier	Mozi69@gmail.com	Matthew Travers	Cheifbroom@hotmail.com
Matt Noel	Accuratehvacr@gmail.com	Matthew W Erickson	matthew.w.erickson@gmail.com
Matt Richardson	richardson034@gmail.com	Matthew Williams	mmwwwil@aol.com
Matt Rosa	bluerock513@aol.com	Matthieu Brillet	matthieugrillot@hotmail.com
Matt Stedman	matt@nativeplants.net	Maud van Tol	maudvantol@kpnplanet.nl
Matt Stoecker	pvgriz@yahoo.com	Maureen Burke	jumby8@yahoo.com
Matt Tritt	windgooroo1@att.net	Maureen Burness	Moburness@gmail.com
matt woodward	mattwoodward@hotmail.com	Maureen Collins	Moco1949@hotmail.com
Matt Woolery	mattwoolery@hotmail.com	Maureen Ebner	biffthebuff@yahoo.com
Matthew A. Weaver	bmweaver2624@frontier.com	Maureen Gibson	m.mccurrie@att.net
Matthew Butler	mbutler0007@gmail.com	Maureen Grzanna	pianojoy4y@gmail.com
Matthew Butter	matthewbutter007@gmail.com	Maureen Hayes	mbh817@aol.com
Matthew Carson	mtrentc@hotmail.com	Maureen Kerwin	kj1018sarah@gmail.com
Matthew Davila	bemesot@outlook.com	Maureen Knutsen	maureen.knutsen@gmail.com
Matthew Franck	cnjmatt@optonline.net	Maureen Manzene	mmanzene@yahoo.com
Matthew Genaze	aquarover@hotmail.com	Maureen McCarthy	mscribe9@yahoo.com
Matthew Gnabasik	matt@blueprairiegroup.com	Maureen McCullough	mclaremccullough@gmail.com
Matthew Hastings	Hastingsmr@hotmail.com	Maureen McMillan	mtmcmillan@att.net
Matthew Hunter	offsomewhere1@gmail.com	Maureen Mehler	gramamo@hotmail.com
Matthew Lipschik	vze2xv5n@verizon.net	Maureen North	mnorth2009@gmail.com
Matthew Logalbo	mjlogalbo@gmail.com	Maureen O"Neal	momoneal77@gmail.com
Matthew Lund	Matthew.lund0@gmail.com	Maureen OConnor	maujskt@hotmail.com
Matthew Myerson	myartist11218@icloud.com	Maureen Pisani	maureen_pisani@yahoo.com
Matthew Palmer	mattpalm@gmail.com	Maureen Powers	circlesofrainbows@yahoo.com
Matthew Parks	park6728@yahoo.com	maureen roche	enhanceress1@frontier.com
matthew phillipy	professorphillipy@gmail.com	Maureen Ryan	mkrtoo@gmail.com
Matthew Reid	matt.reid@att.net	Maureen Sheahan	masheahan@aol.com
Matthew Richter	petition@matthewrichter.com	Maureen Wheeler	maureen_d_wheeler@yahoo.com

maurene conway	angelconway@cox.net	Megan Hoerler	hoerlerm@msn.com
mauricio carvajal	carvaggro666@hotmail.com	Megan Kardos	meganbkardos@gmail.com
Mauricio Ramírez	paul_rah@hotmail.com	Megan Martinez	meganlambmartinez@gmail.com
Maurine Canarsky	canarskyyomo@gmail.com	Megan Warren	alicencyberland@hotmail.com
Mauro Monia	severedthought@optonline.net	Meghan McGowan	Mghnmcgowan@gmail.com
Max Kiefer	mkiefer@andrew.cmu.edu	Meghan Welsh	meghanwelsh@gmail.com
Max Salt	zelkovapress@gmail.com	Mehdie Vakili	mehdie.vakili@gmail.com
Maxann Kasdan	mkasdan08@gmail.com	Meilin Chuang	genalt.staff@gmail.com
Maxine Bernstein	mberns0511@gmail.com	Mel Cup Choy	melcupchoy@gmail.com
Maxine Clark	maxclark90@gmail.com	Mel Henshaw	gloof@cox.net
Maxine Goodyear	purdyhouse@indytel.com	Mel Hickman	mhickman@watershedenvironmenta
Maxine Hayes	hayesmaxine95@gmail.com	Melania Padilla	melpadillapag@gmail.com
Maxwell Nettler	maxnettler@yahoo.com	Melanie B Goldman	avofarm1@gmail.com
Maxxcell Higdon	Bluebelt1235@yahoo.com	Melanie CANTUA	3minuteactivist@gmail.com
May O"Neal	Mayoneal@yahoo.com	Melanie Feder	oregonmjf@hotmail.com
Mayo Underwood	earthmama.eh@gmail.com	melanie fisher	melanie.fisher@sbcglobal.net
Mayumi Knox	Mayumi@echemexpo.com	Melanie Gade	Gademk@gmail.com
McCree Williams	mccreelw@hotmail.com	Melanie Pate	Melaniepate@bellsouth.net
McGregor Hayslip	McGregor.wells.hayslip@gmail.c	melanie watson	mctw925911@aol.com
MD Fein	pattonpacific@cox.net	Melchor Peiro	melchorpeiro@hotmail.com
meade cadot	cadot@harriscenter.org	melinda clausing	mdclausing@aol.com
Measha Daynes	measha@soapdish.us	Melinda Gleason	mindyg@oars.com
MEDI VALAJI	mediv@walla.co.il	Melinda Lagerquist	mlagerquist@yahoo.com
Medo Gozdni	mordor.pu@gmail.com	Melinda MacInnis	mmmacinnis1@yahoo.com
Meg Curtis	littleditches@gmail.com	Melinda Otto	mindotto@sbcglobal.net
Megan Baker	mbake1@hotmail.com	melinda themm	mrt4cats@aol.com
megan burkholder	megacatz@ptd.net	Melissa Arra	melaa@earthlink.net
Megan Emory	figtreefree@gmail.com	Melissa Bauer	melissa@tinydesignstudio.com
Megan Faber	megancatherinefaber@gmail.com	Melissa Berkshire	melberk@aol.com
Megan Grusenmeyer	Megan@healthygulf.org	Melissa Bishop	mmorga10@yahoo.com

Melissa Dodson	juhaszm@sbcglobal.net	Melvin Taylor	melvin-taylor@usa.net
Melissa Dorval	MsMelissaDorval@gmail.com	Mercedes Benet	benetmercedes@gmail.com
Melissa Elder	melissa.elder@hotmail.com	Mercedes Lackey	helloelsie@gmail.com
Melissa Galarza	Uhmellyx3@aol.com	Mercy Drake	mercy.drake@cox.net
Melissa Gaskins	gaskinshockey@gmail.com	mercy myers	aylantisioi@yahoo.com
Melissa Green	Imagimoe@yahoo.com	Meredith Barrioz	meri@meribarrioz.com
Melissa Hastings	princess_ryoko@msn.com	Meredith George	mergeorge@sbcglobal.net
Melissa Hillen	melissahillen@ymail.com	Meredith Needham	pianohag@hotmail.com
Melissa Katterson	egk032630@yahoo.com	Meredith West	mawest06@gmail.com
Melissa Martin	earthchngr@yahoo.com	Merelyn Dolins	merelyndolins@gmail.com
Melissa Mazias	mgmazias@yahoo.com	Merlin Levan Wilkins	elderbillionaire777@yahoo.com
Melissa Mewborn	Mellmew@yahoo.com	Merlyn Heyman	jheyman@elp.rr.com
Melissa Milano	missyannmilano@gmail.com	Merrie Thornburg	merriethorn@gmail.com
melissa miller	califpoppy55@yahoo.com	Meryl Pinque	merylpinque@yahoo.fr
Melissa Norman	missyno@bellsouth.net	Meryl Rogers	merjrrog@aol.com
Melissa Reynolds	melisstiss@yahoo.com	Meryle A. Korn	meryle.korn@gmail.com
Melissa Ritchey	msritchey817@gmail.com	Metta Lieb	bedrich88@sbcglobal.net
Melissa S	msorg@zoomtown.com	Meytal Bat Or Johnson	Meitalbator@gmail.com
Melissa Saunders	bluebird1058@gmail.com	Mia Kitner	miakit@att.net
Melissa SchultzAhearn	missy_london@yahoo.com	Mia Moss	miabmoss@gmail.com
Melissa Wales	zeta369@gmail.com	Mia Moss	miabmoss@gmail.com
Melissa Warfield	melissawarfield@yahoo.com	Micah Cox	Cox.Micah@gmail.com
Melody Draper	WhtShaman@aol.com	Micah Dyer	dyermicah@yahoo.com
Melody Grigg	melody.muzette@gmail.com	Michael Enk	trouter@q.com
Melody Knight	melodyknight@prodigy.net	Michael & Kathryn Kevany	kkevany@earthlink.net
Melody Martin	opalmm@att.net	Michael & Libby Robold	mrobold000@centurytel.net
Melody Nielsen	Melodynielsen@yahoo.com	Michael Aguilera	leadsled51merc@yahoo.com
Melvin Bautista	morenci62@hotmail.com	michael ahern	mikekbc@optonline.net
Melvin Bautista	morenci622000@yahoo.com	Michael Ahern	mikekbc@optonline.net
Melvin Hughes	melvin.hughes@gmail.com	Michael Ahern	Redryder750mc@aol.com

Michael Balsai	vze3vhpv@verizon.net	Michael Eichenholtz	Mytsuris@yahoo.com
michael bertrams	michael_bertrams@yahoo.com	Michael Eisenberg	mikeeeisen@yahoo.com
Michael Blazewicz	michael@roundriverdesign.com	MICHAEL ERSKINE	ERSKINEEVP1@AOL.COM
Michael Bondoc	mikeybondoc@yahoo.com	Michael Faoro	michael.faoro@gmail.com
michael bordenave	mbordenave1016@gmail.com	Michael Fashoway	mfashoway@gmail.com
michael bordenave	mbordenave5467@att.net	Michael Fine	fine16@msn.com
Michael Bradley	mobradley07@yahoo.com	Michael Fitzgerald	michaelfitzgerald2013@gmail.co
Michael Brown	mmbrown1@frontier.com	Michael Follman	mafsynth@yahoo.com
Michael Bugbee	michael_bugbee@yahoo.com	Michael Freeman	csd64@yahoo.com
Michael Burdette	mburdett@cisco.com	Michael Friedman	mrfriedman47@gmail.com
Michael C. Ford and Richard B.	samudra@charter.net	Michael Gan	mfgan@hotmail.com
Michael Caire	mjcaire@hotmail.com	Michael Garitty	garitty@nccn.net
michael caputo	nomargarciaparra372@yahoo.com	Michael Gelineau	mjg322@aol.com
Michael Carlile	agramp3usa@netscape.net	Michael Gnat	michaelgnat@yahoo.com
Michael Carpenter	mccarp@dakotacom.net	Michael Godlewski	Mike@godlewski.net
MICHAEL CARPENTER	MICHAELJCARPENTER2003@YAHOO.CO	Michael Gorr	mjgorr@yahoo.com
michael chase	mchase1@bellsouth.net	Michael Gorski	Mikegorski@comcast.net
Michael Cloud	Nihil1318@hotmail.com	Michael Grant	barbara_wy050@yahoo.com
Michael Cook	socalrailroader@gmail.com	michael green	Alcon1956@cuvox.de
Michael Cote	mikecote13@aol.com	Michael Guckian	m_guckian@yahoo.com
Michael Crooks	nolipirate1@gmail.com	Michael H	mgh102@iowatelecom.net
Michael Darling	fubalbubal@gmail.com	Michael Halloran	mshalloran2605@gmail.com
Michael Davenport	michaeld@webbox.com	Michael Haseltine	michael.haseltine@gmail.com
Michael Dax	mjdax30@gmail.com	Michael Hegemeyer	michaelhegemeyer@yahoo.com
Michael Diaz	m.a.diaz@sbcglobal.net	Michael Hewitt	shootingstarsranch@gmail.com
Michael Donovan	donovangmike@gmail.com	Michael Hill	theElbeHills@gmail.com
Michael Dorer	malibucountry@yahoo.com	Michael House	mhaus7@gmail.xcom
Michael Duclos	mike@eeassociates.com	Michael Hurd	mscd1947@gmail.com
Michael Duffy	the7thmule@me.com	Michael Iltis	mgiltis@hotmail.com
Michael Eckhardt, Sr.	maeckhardt@gmail.com	Michael Japack	michael.japack@fcbdd.org

Michael Johnson	majohn3@msn.com	Michael McCartin	tchmm@aol.com
Michael Kavanaugh	michael.kavanaugh@oracle.com	Michael McClennen	michaelm@umich.edu
Michael Kay	mtkay@dow.com	Michael McFadden PE	memcf3@gmail.com
Michael Keepper	mwk1309@gmail.com	Michael McGregor	mynamemcgregor@hotmail.com
Michael Keough	putitupmlk@yahoo.com	Michael McGuire	patmcg1202@aol.com
Michael Kessler	michael@armstrong-kessler.com	Michael McMahan	mcmahan44@yahoo.com
Michael Kirkby	kirkbymichael@gmail.com	Michael McManus	macme@wowway.com
Michael Kitchen	mail@socialview.org	Michael McMurtrey	skyking918@verizon.net
Michael Klausing	mike_klausing@hotmail.com	Michael McQuown	mchlmcquown@gmail.com
Michael Krall	mkrall_wyo@yahoo.com	Michael Melin	melinmike@gmail.com
Michael Kwitt	mikek47@sbcglobal.net	Michael Michalk	michaelmichalk@gmail.com
Michael LaGassey	mickeynow@gmail.com	Michael Mitsuda	mmitsuda@earthlink.net
Michael Laird	mwlaird@yahoo.com	Michael Molder	nohtd@hotmail.com
michael landess	hitchhikepro@hotmail.com	Michael Muhs	mmmuhs54@gmail.com
Michael Langlais	mikebike1@verizon.net	Michael Murphy	murfmovie@aol.com
Michael LaPan	lapan@sidneyhealth.org	Michael Nagy	mjn62250@hotmail.com
Michael Lee	maleect@aol.com	Michael Nuss	mrnuss68@gmail.com
Michael Letendre	maletendre877@comcast.net	Michael O"Brien	alpinepainting@hotmail.com
michael levitt	mlevitt4@yahoo.com	Michael O"Brien	jcfmob@verizon.net
Michael Lewandowski	mlewand@gmail.com	Michael Ofjord	mofjord@yahoo.com
michael lewis	mkslewis@gmail.com	Michael Olenjack	stcknstl@att.net
Michael Lindsay	mel8452@msn.com	Michael Parsons	weezyblossom@gmail.com
Michael Lombardi	mike.lombardi@rcn.com	Michael Perez	mingdurga@hotmail.com
Michael Lyman	mike@mikelyman.com	Michael Phillips	mikesgate@yahoo.com
Michael MacDougall	mmacdougall2@excite.com	Michael Popham	michael.popham@gmail.com
Michael MacGuire	mikemacguire@comcast.net	michael quillin	bigtreesq@msn.com
michael maggied	pbcup@mindspring.com	Michael R. Watson	bison@sonic.net
Michael Markic	markicmj@pacbell.net	Michael Rhodes	taropatchprod@att.net
Michael Martin	mike@maloofcontracting.com	Michael Richardson	envirosaver3@yahoo.com
Michael Martin	seraphmichael@hotmail.com	michael riley	mtriley@statestreet.com

Michael Ryan	mwrathome@aol.com	Michael White	mickey.white@att.net
Michael Rynes	discubs697@hotmail.com	Michael Wichman	michwichre@gmail.com
michael santelli	santelli001@gmail.com	MICHAEL WITT	baldeaglephoto@sbcglobal.net
Michael Sawicky	MichaelSawicky@gmail.com	Michael Wolfe	sscycleworks@comcast.net
Michael Schramm	mcs363@cornell.edu	Michael Yowell	mikeyowell@hotmail.com
Michael Seager	michael_seager@att.net	Michael Zagone	mazagone@gmail.com
Michael Shores	shoresko@aol.com	Michael Zuckerman	mzuckerm@upenn.edu
Michael Skehen	skehen@sbcglobal.net	Michaela Estes	kila@levercolors.com
Michael Smith	miked53smith@yahoo.com	Michaela Rohr	micharoh@web.de
Michael Smith	mikesmith1340@yahoo.com	Michaelene Manion	michaelene_m@q.com
michael smithe	michaelsmithe@gmal.com	Michal Lynch	michalcathy@cox.net
Michael Spadafino	fineblade@aol.com	Michal Simpson	msimpson6@cox.net
Michael Spradlin	mcs5@earthlink.net	Micheal Barry	michealbarry@cableone.net
Michael Stuart	mike3116@msn.com	Michele Balfour	noybfl@yahoo.com
Michael Sunfire	michaelsunfire@rocketmail.com	michele cagnetta	mimi.5000@hotmail.com
Michael Swiger	mibigbear1@yahoo.com	Michele Coakley	mygacky@gmail.com
Michael Tinsley	michael10sley@msn.com	Michele Edwards	scotamb@bellsouth.net
Michael Tomlinson	mt_trout@hotmail.com	michele hinerman	michlmh@yahoo.com
Michael Trepkowski	michatus@yahoo.com	MIchele Johnson	goldw36@aol.com
Michael Tsang	Miketsang9@gmail.com	Michele Langston	faeryraindancer@otbp.org
Michael Tucker	mtuck_2012@yahoo.com	Michele Lauren	mikki.60@gmail.com
Michael V L Bennett	michael.bennett@einstein.yu.ed	Michele Ledesky	daisyme13@aol.com
Michael Varichak	animlman@hotmail.com	Michele Mattioli	michele@opengatefarm.net
Michael Vaughan	Mikvaugh@aol.com	Michele May	ambmay@sbcglobal.net
Michael Vernam	hlstsl318@comcast.net	michele mcferran	mlmcferran@hotmail.com
Michael Vogel	Mpvogel313@me.com	Michele Miller	mmiller9931@yahoo.com
Michael Wallace	mmwfile@hotmail.com	Michele Nihipali	nihipalim001@hawaii.rr.com
Michael Waterhouse	needles22@aol.com	michele page	michele0526@hotmail.com
Michael Webb	mbw750@yahoo.com	Michele Pellman	michele416@cox.net
Michael Webb	stagsleap109@verizon.net	Michele Romeo	gojiberrygranola@hotmail.com

Michele Sievers	micheleeagle@aol.com	Michelle Sewald	masewald@yahoo.com
Michele Symington	michele@azmediaservices.com	Michelle Webb	mdwebb10@gmail.com
Michele Temple	mt1142@juno.com	Michiele Jones	angorastar.jones@gmail.com
michele wojnar	wojnarma@gmail.com	Mickey Ramirez	schmick54@yahoo.com
Michelle Almazon	cindy.guarnieri@hotmail.com	Miguel Flores	mmflores67@gmail.com
Michelle Ash	Ashmichelle99@gmail.com	Miguel Ramirez	Rumirezr@gmail.com
Michelle Carter	Michelle@carterfries.com	Miguel Ramos	mantecax@gmail.com
Michelle Davis	Rjdandmvd@sbcglobal.net	Mihail Bancu	bancum@yahoo.com
michelle dust	dusty46322@att.net	Miia Suuronen	miia.suuronen@gmail.com
Michelle FitzGibbon	michrfitz@gmail.com	Mija Gentes	m.gentes@comcast.net
Michelle Goldfeder	Riseupnabha@gmail.com	Mika Stonehawk	mikachu51@hotmail.com
Michelle Gorton	Michelle.gorton@gmail.com	Mikaela Gray	mgray11@emich.edu
michelle hayden	mhseahag@yahoo.com	Mike Albar	malbar2001@hushmail.com
Michelle Hoff	hofmich22@yahoo.com	Mike and Cathy Szymczak	MSZYMCZAK@BRESNAN.NET
Michelle Jung	mjung1111@gmail.com	Mike Backes	mibackes@mt.gov
Michelle Kaufman	Marsupigal@aol.com	Mike Bessler	mbessler@wavecable.com
Michelle Lee	misllee@yahoo.com	Mike Bushaw	mikenstarr@att.net
Michelle Lenz	michmlenz@gmail.com	mike butkiewicz	sweetpea04@ecybermind.net
michelle lesmond	lesmond@bigpond.net.au	Mike Carlson	mcarlson@midrivers.com
Michelle Miranda	smmiranda48@gmail.com	Mike Chatlosh	moike.chatlosh50@gmail.com
Michelle Mondragon	Mishka.mondragon@gmail.com	Mike Cluchey	mgc8839@gmail.com
Michelle Morris	mrlmorris@yahoo.com	mike cluster	mjcluster@earthlink.net
Michelle Murphy	murph121@verizon.net	Mike Dotson	snorlaxmd@yahoo.com
Michelle Palladine	mpalladine@earthlink.net	Mike Heyl	Mgaread@aol.com
Michelle Parsons	chiarianite@hotmail.com	Mike Hittle	mhittle24@yahoo.com
Michelle Pepitone	cochefille@gmail.com	MIKE HLAT	MAHLAT1@YAHOO.COM
Michelle Rice	shellaroo@yahoo.com	Mike Jones	mike.d.jones@umusic.com
Michelle Schamach	schamach@sbcglobal.net	Mike Jones	mike.d.jones@umusic.com
Michelle Schneider	lunabear79@gmail.com	mike kaufman	mrmikek63@hotmail.com
Michelle Schramm	montecarlo98ms@yahoo.com	Mike Kelly	mikekelly6521@gmail.com

Mike Lanka	mwlanka@yahoo.com	Millicent Sims	menucha65@verizon.net
Mike M	mikeynsf@gmail.com	Millie Colquitt	millie@basspecan.com
Mike McCool	mike_mccool@yahoo.com	Milo Mattelin	bmattelin@gmail.com
Mike McGilaway	mmcgilaway@yahoo.com	Milt Desgrandchamp	Miltonjames1@yahoo.com
Mike Nelson	nelsonmike@live.com	Milva DeLuca	Avlim@aol.com
mike panza	mikepanza@rocketmail.com	Mindye Fortgang	MindeezMuzik@aol.com
Mike Peale	mikepeale@msn.com	Miranda Leiva	MWolfL@aol.com
mike petro	mike.petro@wslife.com	Miranda Stoddard	miranda.stoddard@tds.net
Mike Radke	mikeradke@juno.com	Miranda V	Dm110104@gmail.com
Mike Raymond	knight_train@hotmail.com	Mireille Urbain	mirurbain@numericable.fr
Mike Reed	windsorp@gmail.com	Miriah Reynolds	mlr5037@gmail.com
Mike Rolbeck	mrolbeck@aol.com	Miriam Baum	miriambaum@aol.com
Mike Schuhow	captmike_e29@hotmail.com	Miriam Green	mgreenchicago@gmail.com
Mike Schutt	fishincoug@yahoo.com	Miriam Hillson	mhmiriamh@gmail.com
Mike Seyfried	mseyfriedjr@msn.com	Miriam K.	Umtalia62@aol.com
Mike Simmons	argonaut2002@comcast.net	Miriam Saraiva	maysaraiva@hotmail.com
Mike Souza	mikesouza@gmail.com	Misa Cajnko	acta_non_verba@hotmail.com
mike Streber	michstreb@gmail.com	Misha George	mishachiani@gmail.com
Mike Tramontina	Miketram01@aol.com	miss loyland	amethystwings32@gmail.com
Mike Vandeman	mjvande@pacbell.net	Miss Susan D.	cougarsue@hotmail.com
Mike Wease	mwease@speedfab-crete.com	Missie Smith	missiestatts@aol.com
Mike Wickman	mwick18@gmail.com	Missy Kendrick	missykendrick@msn.com
Mikelle Peterson	Mikellepeterson@hotmail.com	misty clack	clackmd@att.net
Miklos Bosarge	Cardinalmick@aol.com	Misty McIntyre	meowkitty15@yahoo.com
Milan Vigil	milanvigil@yahoo.com	Misty Stoneburner	ms140806@ohio.edu
mildred griffin	griffin11501@comcast.net	Mitch Dalition	mitchdsf@gmail.com
Milene Johnson	Maitai731@aol.com	Mitch Parker	mitch1950usa@gmail.com
Miles W McLennan	mwmcl3@cox.net	mitchell donian	mitchdonian@gmail.com
Milla Kherson	millaone10@yahoo.com	Mitchell Dormont	btrbrdgdn2@gmail.com
Miller Graves	millergraves@gmail.com	mitzi frank	mitzif59@yahoo.com

Mo Kafka	mokafka@gmail.com
Moktar Salama	moktarsalama@yahoo.com
Mollie Schilling	schillingd@windstream.net
Mollie Simpkins	mosimpkins@hotmail.com
Mollie Vreeland	cookie813@comcast.net
Molly Brown	Molly.dowling.brown@gmail.com
Molly Hauck	mollyphauck@gmail.com
Molly Mendez	Teachermollyg@yahoo.com
Molly Moriarty	mmoriarty15@gmail.com
Molly Walker	mollyswalker@gmail.com
Mona Chatterji	slp1993@yahoo.com
Mona Evans	mevans1059@aol.com
Monica Appleby	monica_appleby@yahoo.com
Monica Black	blackcats2003@embarqmail.com
Monica Gilman	monicagilman@yahoo.com
Monica Padilla	Apad885334@aol.com
Monica Raymond	femmevox@hotmail.com
Monica Steensma	monica@vom.com
monika romero	fractalmonkey7@gmail.com
Monique Edwards	sankhara.makare@gmail.com
Monique Lowther	momadogy@yahoo.com
Monique Musialowski	moirae07@att.net
Monitta Lowe	mializ01@yahoo.com
monnie levin	8housedogs@gmail.com
Monte Beaver	beavertales@gmail.com
Mor Vimmer	mor_vimmer@yahoo.com
Morgan Blade	Earthessence333@me.com
Morgan Clark	morgan.cl@gmail.com
Morgan Cormia	mcormia@hotmail.com
Morgan Girling	raventalk@comcast.net
Morgan MacConaugha-Snyder	theosophy369@yahoo.com
Morgan Manuele	morgan.manuele@ymail.com
Morgan Shimabuku	morganshimabuku@gmail.com
Moselle Milner	moselle4@hotmail.com
Mostyn Thayer	mostynthayer@hotmail.com
Mr Lauren & Ginger Brightwell	habibi_07chapala@hotmail.com
MR. & MRS. BRUCE Revesz	NOGBRUTRPT@gmail.com
Mr. Ford	Elemental4D@hotmail.com
Mr. Shelley Dahlgren, PhD	shelley@dahlgren.com
Ms Zentura	zeejaz@yahoo.com
Ms. Lilith	ladycat76@hotmail.com
Ms. Sandra Silva	ssilva1@rcn.com
MSgt Michael Pound, US Army, R	netdunker@sbcglobal.net
mubiinah mohamed	mubiinah03@gmail.com
Murlin Goeken	sirmurlin@aol.com
muse ma	earthjustice@care2.com
Mychelle Lee	elfplus7@gmail.com
Mylee Khristoforov	myleemk@icloud.com
Myles Hunt	myleshunt@gmail.com
myra altman	myraaltman@maineline.net
Myra Dewhurst	Mdewhurst@bellsouth.net
Myrna Castaline	myrnac@earthlink.net
Myrna Tuttle	revmom13@gmail.com
Myron Gordon	gordon.myron@gmail.com
N Coyle	moodyseaz1@mac.com
N Deif	Ndeif@yahoo.com
n fregin	nmmgcl@aol.com
n kaluza	natashakaluza@hotmail.com
n Le Baron	nlebaron@mac.com

N Pacheco Theard	nikki.pachecotheard@gmail.com	Nancy Ettl	nkhalsa55@gmail.com
N Rollins	Nell_Rollins@almd.uscourts.gov	Nancy Farha	nancy.farha@yahoo.com
nadia Samuels	Nadiasamuels@gmail.com	nancy fay-muzar	faymuzar@gmail.com
Nadia Webb	drnadiawebb@gmail.com	Nancy Filbin	Nfilbin@gmail.com
Nadine Duckworth	hellof_amom@yahoo.com	Nancy Fomenko	blingomarie@yahoo.com
Nadine Nadow	nadineon@yahoo.com	nancy foudray	nanfoudray@yahoo.com
Nadine Parish	nparish23@aol.com	Nancy Fox	nsnfn@earthlink.net
Nagender Kaushik	nagender.kaushik@gmail.com	Nancy Fuller	bellefuller@sbcglobal.net
Nalei Kahakalau	haloa@kalo.org	Nancy Gates	nancyfaygates@aol.com
Nan Corliss	ncorliss41@aol.com	Nancy Gathing	gathingn@yahoo.com
Nan Stevenson	nanstevenson@yahoo.com	Nancy Gerling	ngerling@microcenter.com
Nancy Smith	nancyasmith@hotmail.com	Nancy Gilleo	gilleo.nancy@gmail.com
Nancy Barber	baysidelady14@gmail.com	nancy godwin	jgodwin6@cox.net
Nancy Barcellona	twobarcellonas@sbcglobal.net	Nancy Gowani	nancyg900@gmail.com
Nancy Beaman	Nbeaman1@yahoo.com	Nancy GutIerrez	Lilgutz11@aol.com
Nancy Beavers	highsmith@charter.net	Nancy Harlow	jhathorcreations@q.com
Nancy Berger	noberger@aol.com	Nancy Hartman	bikegirlnancy@aol.com
Nancy Bergey	bergeynh@nwboronet.com	Nancy Hartman	ng3hart@yahoo.com
Nancy Berman	robinsgaia@att.net	Nancy Hauer	Nancy@Rookhouse.org
nancy blastos	nab1180@verizon.net	Nancy Heck	nancyheck1@aol.com
Nancy Boggs	nlboggs1@hotmail.com	Nancy Hiestand	nancya0624@aol.com
Nancy Booth	boothnancy2011@hotmail.com	Nancy Hines	nancynh@uw.edu
Nancy Brenner	nancybrenner@verizon.net	Nancy Humphrey	Nancyinsv@cox.net
nancy burger	bmardigras@yahoo.com	Nancy Jacobs	bnjacobs@frontier.com
Nancy Casey	ncasey867@gmail.com	Nancy Johnson	nancy-johnson@comcast.net
Nancy Crider	nancinct@fastmail.fm	Nancy Kassim Farran	nkf@fkassociates.net
Nancy Currah	07112g@gmail.com	Nancy Kelley	Ndk47@sbcglobal.net
Nancy Cushwa	tenwa@jps.net	Nancy Kellogg	nancy.kellogg@comcast.net
Nancy Daly	gimmeshelter2@hotmail.com	nancy knox	nknoxbierman@yahoo.com
Nancy Daniel	nancy.daniel@att.net	Nancy L Young Ph.D.	hopesnana2@gmail.com

Nancy Leech	Pwfatm@rarthlink.net	Nancy Rodgers	nsrodgers76@yahoo.com
Nancy Lengel	nklengel@gmail.com	Nancy Roemer	Nlromer@aol.com
nancy lewandoski	nancylmusic@yahoo.com	Nancy Rude	deanrude1@msn.com
Nancy Long	clnannie7@gmail.com	Nancy Rupp	Nancylrupp@yahoo.com
Nancy Lowell	lilyofthefield@tampabay.rr.com	Nancy Russell	n.russell@verizonn.net
Nancy Mallory	nancymallory@msn.com	Nancy Schechterle	nbs6@charter.net
Nancy Martin	nancythefunkwitch@yahoo.com	Nancy Schiller	Inthemystery@gmail.com
Nancy McDonald	ngrey700@aol.com	Nancy Schultz	ns21@att.net
nancy mendiburu	nancmend@yahoo.com	nancy siebert	nancyjsiebert@gmail.com
Nancy Merryman	nmerryman@merrymanbarnesarchit	Nancy Smith	ablend4u@comcast.net
Nancy Meute	bandnentx2@comcast.net	Nancy Stamm	nancystamm@edc-inc.com
Nancy Moore	nancymoore19@hotmail.com	Nancy Stewart	Sagepack@sbcglobal.net
Nancy Moore	NMoor02@gmail.com	Nancy Thompson	nktigerbelle@yahoo.com
nancy morgan	nmorgan@dc.rr.com	Nancy Thompson	nthompson100@hotmail.com
Nancy Newton	Nnewton@iupui.edu	Nancy Walker	njohnstonwalker@gmail.com
Nancy Nicholson	Nlnnancy@aol.com	Nancy Wall	nanwll@aol.com
nancy o	orsetna@aol.com	Nancy Walsh	nlolawalsh@Gmail.com
Nancy Parker	npw91055@yahoo.com	Nancy Ward	nancyward520@gmail.com
Nancy Partin	nancypartin@charter.net	Nancy Wedow	nvwedow@sbcglobal.net
Nancy Peck	sagegrouse3@live.com	Nancy Weishew	kwgnlw@gmail.com
Nancy Petersen	nancypetersen@verizon.net	Nancy White	thentheresnance@yahoo.com
Nancy Peterson	nancy@baymoon.com	Nancy Woolley	superfarmor2004@yahoo.com
Nancy Polito	npolito@earthlink.net	Nancy Yarosis	snowstorm65@yahoo.com
Nancy Quillian	Nqhouseknecht@yahoo.com	Nancy Young	nyoung5152@gmail.com
Nancy Radford	nradford@nvbell.net	nancy zebracki	zebracki1@aol.com
nancy riggleman	yellow93667@yahoo.com	Nandita Shah	nandita_shah@vsnl.com
Nancy Riley	nancyariley@gmail.com	Nanette Morelli	nmorelli@comcast.net
Nancy Rittenhouse	nrittz@yahoo.com	Nanette Oggiono	nanykat@aol.com
Nancy Roberts-Moneir	nrmfunes@yahoo.com	Nanlouise Wolfe	nlzwolfe@gmail.com
Nancy Robinson	Nepr918@gmail.com	Naomi Carey	n.c.carey@comcast.net

naomi sobo	nsobo@att.net	Nathalie QUESNEL	na.quesnel@laposte.net
Naomi Weidner	weidnern@earthlink.net	Nathan Fisher	nperryfisher@yahoo.com
Nasik "Nancy" Sagatelian II	nancysagatelian@yahoo.com	Nathan Gilbert	nathan.gilbert@gmail.com
Nasir Masood	nmasood@nelsononline.com	Nathan Green	nathan.green@mac.com
Nasrin Mazuji	Nmazuji@gmail.com	Nathan Hall	Natefish13@yahoo.com
Nat & Sandee Childs	nat@asis.com	Nathan Holder	nathan.t.holder@gmail.com
Nat Houghton	tallyho4617@hotmail.com	Nathan Van Velson	nathan.vanvelson@huskers.unl.e
Natalie A. Carter	ncarter79@hotmail.com	Nathan Vogel	doctorspook@hotmail.com
Natalie Abram	natalieabram@yahoo.com	Neal Bennett	nealipo@yahoo.com
Natalie Aharonian	Naharonian@yahoo.com	Neal Devine	npdevine@aol.com
Natalie C Robb-Wilder	natrobb@yahoo.com	Neal Keefer	nvkeefer@msn.com
Natalie Fahmy	Natalie.fahmy@gmail.com	Neal Steiner	nrspacific@yahoo.com
Natalie Hanson	nhanson48@comcast.net	Neal Urteaga	ut7592@yahoo.com
Natalie Quiet	Nquietn@gmail.com	Neena Mehra	neenapmehra@yahoo.com
Natalie Ramos	naturally0723@gmail.com	Neil Ferguson	accessneil@yahoo.com
Natalie sunflower	natalie.sunflower@yahoo.com	neil giarrusso	neilio58@hotmail.com
Natalie Treleven	natalietreleven@yahoo.com	Neil Miller	neiljm51@comcast.net
Natalie Van Leekwijck	hoepagirl@gmail.com	Neil Nikirk	nnikirk62@gmail.com
Natasha Glinsky	go3herplane@yahoo.com	Nelida Rivas	nr4684@gmail.com
Natasha Grayson	Nrgrayson@gmail.com	Nell Huggins	nelllamond@comcast.net
Natasha Nitz	natashaturner1@hotmail.com	NELLIE LACY	nmlacy@aol.com
natasha salgado	viega113@bell.net	Nelson Baker	onegoldeneagle@yahoo.com
Natasha Saravanja	nysarav@gmail.com	Nevena Barberic	nevenabarberic@gmail.com
Nate Campbell	ncampbel@gmail.com	Nia Doherty	NiaRunner@hotmail.com
Nate Frey	Novafrey@hotmail.com	Niall Mccarthy	Niall.callahn@gmail.com
Nate Williams	nat-williams@daines.senate.gov	Nic Duong	Nduong1@irf.com
Nate Winkler	nate@rivercare.org	Nicholas Cartabona	goodpaper1@gmail.com
Nathalie Bailey	Nathaliebailey1@yahoo.com	Nicholas Chatfield	nickcharles6050@gmail.com
Nathalie Curry	Nathalie2008@comcast.net	Nicholas DeGroot	nicholas_degroot@yahoo.com
Nathalie Martin	nmm209@gmail.com	Nicholas Ladwig	nick_ladwig@yahoo.com

Nicholas Lenchner	airbat@pacbell.net
Nicholas McRae	kixxmcrae@gmail.com
Nicholas Prychodko	prychdk@yahoo.com
nicholas reyes	nichodude@yahoo.com
Nicholas Romano	Climb5.14@gmail.com
Nicholas Rulli	ohioboyla@aol.com
Nichole Diamond	nic777d@yahoo.com
Nick Amatangelo	namatangelo@kumv.com
Nick Barcott	nbarcott@msn.com
Nick Barron	kayaknickyb@gmail.com
Nick Bohurjak	nbohurja@kent.edu
nick chakos	chakos@earthlink.net
Nick Chakos	chakos@earthlink.net
Nick Hall-Skank	nickh-s@sbcglobal.net
Nick Hinkell	nick@bentlyfoundation.org
Nick Hoy	Nick.hoy01@gmail.com
Nick Lorenz	nick@nectarcreek.com
Nick Mcclaine	Earlyquit@zoominternet.net
Nick Pontius	nickpontius@gmail.com
Nick Szumlas	Szumlasnl@yahoo.com
Nick Verbos	Njverbos@yahoo.com
Nick Walker	nswalker79@yahoo.com
Nicola Foster	nfoster74@gmail.com
Nicole Amador	naamador@gmail.com
Nicole Daspit	nicoledaspit@gmail.com
Nicole Fountain	nicmasterflash@yahoo.com
nicole gambino	coledancin@yahoo.com
NICOLE LAENEN	nicolelaenen@hotmail.com
Nicole Loh	nicying@gmail.com
Nicole Lyon	nmlyon@yahoo.com
Nicole Maschke	mauricemaschke@gmail.com
Nicole Rosa	nicki@totalmath.net
Nicole Shaffer	camarofox24@msn.com
Nicole Terry	nicoleterry2003@yahoo.com
Nicole Weber	nicole4770@yahoo.com
Niels Loechell	nielsloe@gmail.com
Nigel Giraudier	wirenutnkg@yahoo.com
Nigel Lim	nigellwh@gmail.com
Nigel Pickering	picknb@gmail.com
Niki Knauber	Noclue1182@aol.com
Nikki Andrews	draggiesfire@gmail.com
Nikki Doyle	nikkidoyle7@gmail.com
Nikki Pacheco Theard	nikki.pachecotheard@gmail.com
Nikki Weihe	Nweihe@gmail.com
Nikki Wojtalik	nwojtalik@hotmail.com
Nikolaos Milonas	nmilonas@yahoo.com
Nina Aronoff	nlaronoff@gmail.com
nina Black Reid	Exercise@his.com
nina corelli	ncorelli@gmail.com
Nina Council	babunina10@mind.net
Nina Dunn	asl@sopris.net
Nina Gondos	ninaninettev@hotmail.com
nina klippel	ninak223@aol.com
Nina Levison	nl13@hampshire.edu
Nina Rothschild	drnrothschild@verizon.net
Nina Spelter	Nspelter@gmail.com
Nina Wouk	nwouk@ix.netcom.com
NINI BLOCH	ninibloch@verizon.net
Nita Sembrowich	sembro@verizon.net
Nivaldo Bosio	nivaldo.bosio@gmail.com

Nivo Rovedo	rovedonivo@optonline.net
Noah Battat	Battatnoah@gmail.com
Noah Youngelson	sohanmonk@gmail.com
Noel Crim	chedlc@gmail.com
Noel Orr	tepeefortwo@comcast.net
Noel Park	noelparkone@gmail.com
Noel Petra	Noelgpetra@gmail.com
Noel-Anne Brennan	nabrennan1@cox.net
Nolan Hines	nfh44@hotmail.com
Nona Ganz	uanganz@frontier.com
Nona Weiner	nonaweiner@yahoo.com
Nora Ivers	liberryladywy@gmail.com
Nora R. Enyart	nre-imagine@msn.com
nora regan	norarn51@msn.com
Nora Sotomayor	nssotomayor@gmail.com
noreen grassi	femalemick@verizon.net
Noreen Lassandrello	Noreenlas@yahoo.com
Norma Gervasi	Normagervasi@windstream.net
Norma McCulloch	nmcculloch@cox.net
Norma Morgan	vmorgan25@aol.com
Norma Roberts	Normarbzn@gmail.com
Norman Armer	njlarmer1@verizon.net
Norman Baker	ntbakerphd@gmail.com
Norman Bishop	nabishop@q.com
Norman Dowling	Ndowling1@verizon.net
Norman Haussner	dalehaussner@yahoo.com
norman hines	nowhulkmad@sbcglobal.net
Norman Hoffman	norman0915@outlook.com
Norman Kindig	njkindig@mac.com
Norman Stoffle	ragtime77@live.com
Norman Williams	normanw@wans.net
Norva Achenbaugh	Norlyn70@gmail.com
NOURA KASSIS	nemeskar.nk@verizon.net
Nur Ritter	nur@botanize.com
Nyla Bissram	nybissram12@yahoo.com
Nylen Allphin	lallphin@dishmail.net
O C Oliveira	aldifico@gmail.com
O Lewis	ovl@att.net
O. Ruiz	osiel2001@yahoo.com
Ocean Pellett	oceanpellett@yahoo.com
Ohana Foley	ohanafoley@yahoo.com
ohmar sowle	ohmsowle@comcast.net
Oleg Varanitsa	skorpio2685@gmail.com
Olive BakerBrown	omarilynb@comcast.net
Oliver Block	cuschoice27@icloud.com
Oliver Williams	oliverwilliamsnyc@gmail.com
Olivette Orme	olivetteorme@me.com
Olivia Dorothy	odorothy@gmail.com
Olivia Lim	olivialim.us@gmail.com
Omar Siddique	omars1234@gmail.com
Orchid Ra	raorchid@gmail.com
ordell vee	otvee@hotmail.com
Orlando Melendez	om7235@yahoo.com
Orpha Wilson	Gmadess@msn.com
Osborne Lamoree	olamoree@gmail.com
oscar bird	tip.bird@yahoo.com
Oscar Revilla	b5ab69fd@opayq.com
Oscar Revilla	e782108d@opayq.com
Otmar Neuhoefer	ipecacuanha@t-online.de
Otto Hunt	otto9otto@gmail.com

Owen Gustafson	owen362@hotmail.com	Pam Plummer	Pjplummer493@aol.com
p bryer	pbryer@hotmail.com	Pam Sheeler	pam-88@hotmail.com
P Hickey	pmhickey11@aol.com	Pam Slater-Price	pcslater@mac.com
P Horter	lacengh@yahoo.com	Pam Tanimura	Auntiepez@aol.com
P Kmiec	Kmiecpa@yahoo.com	Pam Tezza	pamtezza.pt@gmail.com
P P	esfapps@gmail.com	Pam Thomas-Hill	pthomas33170@yahoo.com
P Scoville	michael799@optonline.net	pam ward	pl.ward@tds.net
p souza	brokenarsfarm@yahoo.com	Pam Wilbourn	pilovecats5@yahoo.com
P Valentin	justsaymeow2@aol.com	Pamela Bayless	allblonde737@gmail.com
P. A. O"Connor	merrymtgbay@gmail.com	Pamela Brocious	pam@citistaffing.com
P. W.	wiberleypj@yahoo.com	pamela burnett	pburnett1331@yahoo.com
PAGE DABNEY	pdabney@dadco.com	Pamela Check	kitty9gypsytoo@yahoo.com
Paige Beverage	paigen2003@yahoo.com	Pamela Clark	1106pclark@gmail.com
Paige Humphreys	Paigehurley73@hotmail.com	Pamela Clark	Pamelyns@yahoo.com
Paige McGlaughlin	eynonpaige@gmail.com	Pamela Clark	pamgreen11@yahoo.com
Paige Nielsen	Paigepmurphy@gmail.con	Pamela Clark	pamgreenclark@gmail.com
paloma navarrete	iam@cybermesa.com	Pamela Dugan	Naplesshelterdog@gmail.com
Pam Abirached	pammy822@gmail.com	Pamela Engelmeier	pengelmeier@charter.net
Pam Alvesteffer	palvesteffer13@yahoo.com	Pamela Evans	gardenqueen@gmail.com
Pam Bacon	pamelabacon@hotmail.com	Pamela Fausty	Pfausty@optonline.net
Pam Borso	borsope@aol.com	Pamela Freeman	pamelascissor@gmail.com
Pam Curtis	pacurtis122765@gmail.com	Pamela Garver	pamjc@att.net
Pam Giardino	Pampoo300@yahoo.com	Pamela Gibberman	pgibberman@gmail.com
Pam Griffin	griffin.pamela.s@gmail.com	Pamela Goodman	psagoodman@aol.com
Pam Koller	Blndbmbo@bellsouth.net	pamela guyon	singer1013@yahoo.com
Pam Lynn	pambolynn@netzero.com	Pamela Hamilton	pamelahamilton@ymail.com
Pam Martin	pbmartin2@bellsouth.net	Pamela Janka	frog60@comcast.net
pam mettier	mettier.pam@gmail.com	pamela joseph	josephbeauty@netscape.net
Pam Miller	Park5050@icloud.com	Pamela Kjono	mantyfan@yahoo.com
Pam Nelson	pamela05n@yahoo.com	Pamela Kunke	garden62@sbcglobal.net

Pamela Lanagan	Planagan44@yahoo.com	Pat Burton	pdjburton@yahoo.com
Pamela Lebowitz	plebowitz963@gmail.com	Pat Churchman	gmapat79@gmail.com
Pamela Levesque	pamelark19@comcast.net	Pat Delapena	joujou1942@yahoo.com
Pamela Lyngen	plyngen25@gmail.com	Pat Dietch	hawkeye21161@yahoo.com
Pamela Mayer	pam53mayer@verizon.net	Pat Dufau	pjd92673@cox.net
pamela mcdonald	plmatdhs@yahoo.com	Pat Duncan	pgnm@comcast.net
Pamela Nowell	nowellpamela1@gmail.com	Pat Halderman	crowruns@yahoo.com
Pamela Osgood	pamelaosgood@att.net	Pat Halter	phalter@scholarshipamerica.org
Pamela Qureshi	qureshipamela@yahoo.com	Pat Hanbury	renolive@sbcglobal.net
Pamela Rogers	rogerspamela6969@yahoo.com	Pat Hobbs	kevin.pat.hobbs@comcast.net
Pamela San Miguel	pam.s.m@sbcglobal.net	Pat Johnson	pawjohnson@wideopenwest.com
Pamela Scott	pamrick@got.net	Pat LeBaron	patkl@centurylink.net
Pamela Shaw	pamelas51@yahoo.com	pat matz	pmatz3@hotmail.com
Pamela Sheridan	pasheridan8@aim.com	Pat Palmer	palmerpatndale@yahoo.com
Pamela Spacek	xntrkme@gmail.com	Pat Pascual	peapat36@hotmail.com
Pamela Sticht	pspam@aol.com	Pat Rabin	pat224@juno.com
Pamela Timmerman	peej@lanl.gov	Pat Rolston	patrolston@optonline.net
Pamela Unger	prairieroots@yahoo.com	Pat Ruotolo	PRUO783474@aol.com
Pamela Zwehl-Burke	milkjug@mac.com	Pat Salomon	drpatsalomon@aol.com
Pamylle Greinke	pamylle1@gmail.com	Pat Tomosky	2018880@romancatholichs.com
Pandora Edmonston	pandora4279@gmail.com	pat turney	pturney@email.com
Paola Dejesus	lolaamidala@gmail.com	Pat Vairo	Pv65@aol.com
Parrie Henderson-O"Keefe	Elodie0808@mac.com	Pat Wolff	partwolff@yahoo.com
Pat Davis	pdavis@midrivers.com	Pati Allen	patiallen4@gmail.com
Pat and Gary Gover	govers@bellsouth.net	Pati Jio	Randp123@yahoo.com
Pat Ander	patander007@msn.com	patric kearns	pk8888@aol.com
Pat Anderson	msanderson33@yahoo.com	Patrice Aiello	paiyai@q.com
Pat Bereczki	pat.bereczki@gmail.com	Patrice GARCIA	pg59@laposte.net
Pat Brooks	pdb879@yahoo.com	Patrice Johnson	pmjrdm@suddenlink.net
Pat Bryan	paturodel@yahoo.com	Patrice LaMariana	Lamariana1@aol.com

Patricia & Peter Ladley	ladley@earthlink.net
Patricia Always	bikerpat@mindspring.com
Patricia Baley	patricia.mcrae@unlv.edu
Patricia Banes Phd	banes_cons@yahoo.com
Patricia Benward	pbenward@att.net
Patricia Berry	pmberry777@aol.com
Patricia Broda	pbroda@dcccd.edu
Patricia C Schwarzlander	pcs@tigerbunny.com
Patricia Cabarga	pphelan@nc.rr.com
Patricia Cachopo	patriciaccdce1@att.net
Patricia Carlton-McQueen	adamaks@msn.com
Patricia Chelmecki	patchel@gmail.com
Patricia Christianson	dcandpc@tds.net
Patricia Claussen	claussenpatricia@gmail.com
Patricia Coffey	drcoffey@whidbey.com
Patricia Cole	patricia_australia@yahoo.com
Patricia Copenhaver	patcope@ymail.com
Patricia Daniels	pdaniels1098@hotmail.com
Patricia DeLuca	rickscustompainting@comcast.net
Patricia Derrough	trderrough@gmail.com
Patricia Dion	pbdion06@yahoo.com
Patricia DiRienzo	zippo0716@care2.com
Patricia Dishman	dishmanx2@aol.com
Patricia Fiedler	pimar361@msn.com
Patricia Fleetwood	patriciafleetwood@yahoo.com
Patricia Foxall	foxall.p@gmail.com
Patricia Frederick	piano.fred@juno.com
Patricia Grames	pat@grames.net
Patricia Greiss	greissp@pa.net
Patricia Hanaford	pathanaford1@gmail.com
Patricia Harris	pharris7700@yahoo.com
Patricia Hatfield	Thekeyisi@aol.com
patricia hennessey	patandpatrickus@yahoo.com
Patricia Herrera	herrerapatricia@gmail.com
Patricia Higley	Evanne1255@msn.com
Patricia Hofer	Ahofer6024@sbcglobal.net
Patricia Holliday	tholliday452@hotmail.com
Patricia Jackman	rajpeg@aol.com
Patricia Jensen	jensenap@aol.com
Patricia Joynes	mjoynes@charter.net
Patricia Kahn	patakdoc@yahoo.com
Patricia Kincheloe	patkincheloe7@gmail.com
Patricia Kortjohn	patkort@hotmail.com
Patricia Kraus	patkraus@att.net
Patricia LaDue	Pladue2987@sbcglobal.net
Patricia Law	yogawoman5@yahoo.com
Patricia Leads	patleads@yahoo.com
Patricia Luck	pat.luck2701@gmail.com
Patricia MacKinnon	gmapat40@yahoo.com
Patricia Mackura	patmack5@gmail.com
Patricia Marino	marinopat43@gmail.com
Patricia Marlatt	patriciamarlatt@me.com
Patricia Mascia	Patricia.Mascia@gmail.com
Patricia McCain	tillypat.mccain@gmail.com
Patricia McCormick	pmccormi99@gmail.com
Patricia McDonald	patmcdonald@cfl.rr.com
Patricia McKelvie	morgyne@yahoo.com
Patricia Miller	patticakes831@aol.com
Patricia Moreno	pam317@cox.net
Patricia Nazzaro	pasn201@yahoo.com

Patricia Neumann	Wyld24@earthlink.net	Patrick Cameron	mrpat4u@cox.net
Patricia Nevi-Maguire	trishnevimaguire@yahoo.com	Patrick Caron	patrick.c.caron@gmail.com
Patricia Packer	pattiac@nycap.rr.com	Patrick Caron	patrick.c.caron@gmail.com
Patricia Parker	pparker2112@gmail.com	Patrick Conn	conntactme@earthlink.net
Patricia Patteson	ppatteson@sbcglobal.net	Patrick Felix	Glackin72@apl.com
Patricia PERRON	patriciaperron@hotmail.com	Patrick Grace	pgrace116@gmail.com
Patricia Petit	pattipetit@myemc.net	Patrick Harrington	beingpatrick@gmail.com
Patricia Pippin-Emanuel	ppemanuel@aol.com	Patrick Lizon	patrick_lizon@live.com
Patricia Pruitt	patricia.p0907@att.net	Patrick Matriscino	pmatriscino@rochester.rr.com
Patricia Roberts	ruth13a@aol.com	Patrick Niese	pniese@hotmail.com
Patricia Rowell	patriciarowell@verizon.net	Patrick Pierce	Tollway60110@yahoo.com
Patricia Savage	patriciasavage@suddenlink.net	Patrick Reyna	pnreyna@mail.com
Patricia Sesoko	pdepechemode@aol.com	Patrick Smith	Patrickjsmithsr@yahoo.com
Patricia Shields-Maher	m_pmaher@sbcglobal.net	Patrick Vogelsong	pvoge73@zoho.com
Patricia Smith	Yellowstone90@comcast.net	Patrick Watson	pw1960@hotmail.com
Patricia Sobel	psobel_gen@yahoo.com	Patrick Whalen	whalend@localnet.com
Patricia Strawbridge	pwstrawbridge@live.com	Patrick Wilson	pbwilson@centurytel.net
Patricia Valadez	pvaladez120.pvg@gmail.com	Patsy Batchelder	patz@sopris.net
Patricia Van Cour	vancourp@yahoo.com	Patsy Shafchuk	pshafchuk2@tampabay.rr.com
Patricia Vineski	pvineski@yahoo.com	Patti Akins	Librapatt@tx.rr.com
Patricia Wilburn	pwilburn69@gmail.com	Patti Baldes	plbaldes@gmail.com
Patricia Wiley	Pattywiley@yahoo.com	Patti Fink	warpedstar1@aol.com
Patricia Wilson	trish22630@comcast.net	Patti Gehring	pegehring722@gmail.com
Patricia Wolongevicz	wolo102@aol.com	Patti Johnson	pjlw16@yahoo.com
Patricia Wyenandt	deedeewyenandt@aol.com	Patti Mann	pmann@midrivers.com
Patricia Wynn	patti@cdamiami.com	Patti Martin	ppattiplcsam@aol.com
Patrick and Connie Berry	connie.m.berry@gmail.com	Patti Mckinley	Princesspattimckinley@gmail.co
Patrick Anderson	J.cornwater@yahoo.com	Patti Prevost	pattiprevost@yahoo.com
Patrick Anderson	J.cornwater@yahoo.com	patti Schultze	benmike12@yahoo.com
Patrick Calvert	pcalvert@jrava.org	Patti Weizel	litehsefrend@webtv.net

Patti-Ann Czipa	manatee660@yahoo.com	Paul Howard	bird041167@yahoo.com
Pattie Meade	plmsurf@cox.net	Paul Huddy	pasha3m@aol.com
Patty Bonney	pattybonney@hotmail.com	Paul Hunrichs	hunrichs@cox.net
Patty Daugharty	pdakfam@gmail.com	Paul Jefferson	paul_jefferson_ks@hotmail.com
Patty Diana	pecabo1338@cox.net	Paul Kalka	pgkzo@yahoo.com
Patty Erwin	patty_erwin@yahoo.com	Paul Kerman	paulkerman@hotmail.com
Patty Poock	Patan2@hotmail.com	Paul Lima	plintn@hotmail.com
Paul Ainslie	spainslie@earthlink.net	Paul Maiden Mueller	derspike@yahoo.com
Paul and Kathleen Lanctot	lanctot@katsnaturalbalance.net	Paul Markillie	barney0331@yahoo.com
Paul Bakstran	bakstran@charter.net	Paul Martin	omg.wtf.itsfate@gmail.com
Paul Black	paul@theblackshome.net	Paul Meyer	papayaman0419@yahoo.com
Paul Borcherding	pb_palomine@hotmail.com	Paul Moser	pmoser16590@yahoo.com
paul bugos	pbugos@yahoo.com	Paul Moss	paul@themailpath.com
Paul Christie	pj_christie@yahoo.com	Paul Muhle	wildmanmuhle@gmail.com
Paul Crouser	p.crouser600@comcast.net	Paul Nasuti	paulnasuti@yahoo.com
paul dawson	pdawson@boisestate.edu	Paul Naylor	Naylorpaul@msn.com
Paul Desjardins	paul.desjardins2@gmail.com	Paul Popiel	Yoghpl@gmail.com
Paul Dodds	paulbdodds@yahoo.com	paul potts	paul_potts@email.com
Paul Dopp	pauldopp@gmail.com	Paul Rafferty	paulvrafferty@yahoo.com
Paul Dougherty	pmd8a@yahoo.com	Paul Ramos	pauldramos@gmail.com
Paul Duncker	pduncker@mac.com	Paul Richards	pauldr44@gmail.com
Paul Eisenberg	eisenber@indiana.edu	Paul Riley	rileypw@gmail.com
Paul FITZPATRICK	paul@earthshare.org	Paul Rosen	ros@rockefeller.edu
Paul Flynn	paflynn65@yahoo.co.uk	paul runion	paulrunion@yahoo.com
Paul Gasser	paul.gasser@gmail.com	Paul Schenk	paulbnhd@yahoo.com
Paul Ghenoiu	peghen3@operamail.com	Paul Schneller	schnelle@indiana.edu
Paul Goodwin	goodwinpf@gmail.com	Paul Schutt	pls1helix@aol.com
Paul Henninger	pauli@asis.com	Paul Spencer	minsliver@msn.com
Paul Henry	crazyivan181@yahoo.com	Paul Szymanowski	pszymanowski@earthlink.net
Paul Hirokawa	phirokawa@socal.rr.com	Paul Teepen	organicconsultant@biologischte

Paul Verzosa	a4merbull@hotmail.com
Paul Vesper	Pontiffp@comcast.net
Paul Vilches	pvilches06@gmail.com
Paul Wilk	danmom6@sbcglobl.net
Paul Williams	democraticsocialist@comcast.ne
Paula Adams	paula.lucia@sbcglobal.net
Paula Asinofsky	paulagc@comcast.net
Paula Bard	Soaring.bard@gmail.com
Paula Beall	psbeall@gmail.com
Paula Boardman	pbboardman@yahoo.com
Paula Cohen	tchr6151@gmail.com
Paula deChelly	pdechelly@yahoo.com
Paula DeFelice	paula.defelice@sbcglobal.net
Paula Eppler	Chryspdx1@aol.com
Paula Fougere	auntiewitch1@yahoo.com
paula hansen	paulajanehansen@yahoo.com
Paula Heady	paulaheady@yahoo.com
Paula Hollie	phollie7@gmail.com
Paula Jampsa	p_jampsa@yahoo.com
Paula Johnson	professorpj@yahoo.com
Paula Kline	kline.paula@gmail.com
Paula Long	ptlong@centurylink.net
Paula Martin	itaigetitdone@yahoo.com
Paula Morgan	paulaym@earthlink.net
Paula Murphy	murphyp0516@yahoo.com
Paula Neville	Commonprayer28@gmail.com
Paula Pebsworth	paula.pebsworth@mac.com
Paula Rosser	pablum84@yahoo.com
Paula Rust	ratniktherat@gmail.com
Paula Rusterholz	paularusterholz@gmail.com
Paula Shafransky	pshafransky@gmail.com
Paula Simmons	paula16012@yahoo.com
paula tytlar	paulastytlar@gmail.com
Paula Wanzer	ucanu@myfairpoint.net
Paula Yurkovitch	paula_belle@hotmail.com
Paulette Schindele	paulette@fastnow.org
Paulette Zimmerman	pzimmerman@ssndcp.org
Paulina Sadowska	lineczka00@yahoo.com
Pauline Berkeley	saphire7526@yahoo.com
Pauline Burak	artistliveshere@gmail.com
Pauline Crawshaw	pollycrawshaw@mac.com
Pauline Druffel	pjdruffel@yahoo.com
Pauline Rosenberg	paulinerosenberg@hotmail.com
Pauline Thomas-Brown	paulinetb@comcast.net
Paulo Freitas	peov@msn.com
Paulo Monteiro	as4100044@sapo.pt
pawel gago	beardzerker@gmail.com
PEARL Baenchantha	ktbaeohana@aol.com
Pearl Follett	pfollett@gmail.com
Peg Bell - Lohr	pebelor@yahoo.com
Peg LeClair	LECLAIRP@GMAIL.COM
Peg Miller	pmiller@forumcomm.com
Peg Thompson	peg.thompson1922@centurylink.n
Peggi Jones	peggijones@yahoo.com
Peggy Acosta	amrani2@verizon.net
Peggy Bergen	peggy_bergen@yahoo.com
Peggy Borjesson	pborje@gmail.com
Peggy Callahan	pegcal45@earthlink.net
Peggy England	biota1513@gmail.com
Peggy Fugate	westernbabe001@yahoo.com

Peggy Gibbs	peggy_verdongibbs@att.net
Peggy Heisel	rosebudaudrey@woh.rr.com
Peggy Mahoney	pmahoney1947@yahoo.com
Peggy Moody	pegblu55@aol.com
Peggy Page	peggy.page@gmail.com
Peggy Quiatt	mquiatt@q.com
peggy richardson	richcraft30@gmail.com
Peggy Roeske	proeske15@aol.com
PEGGY ROSE MORRIS	rickrosetampa@aol.com
Peggy Salas	oha122050@hotmail.com
Peggy White	whitpj431@yahoo.com
Peggy Yeargain-Williams	willpeg@cox.net
Pela Tomasello	p_tomasello@yahoo.com
Penelope Mazza	cyber_soiree@yahoo.com
Penelope Plumb	pplumb@mac.com
Penelope Prochazka	propen@sbcglobal.net
Penny Hammack	penny.hammack@gmail.com
Penny St. John	pshephardstjohn@gmail.com
Penny Sur	pennysur@gmail.com
Percy Hicks-Severn	percyhsevern@yahoo.com
Perri Gaffney	perrigaffney@aol.com
Perry Chapdelaine	genalt.staff@gmail.com
Perry Harris	perryharris1@gmail.com
Perry Smith	prysmith@verizon.net
Perry Thomas	perrysthomas@yahoo.com
Pete Cox	pete73cox@gmail.com
Pete Gibson	p.gibson@comcast.net
Pete Klosterman	petek@accesscom.com
pete rorvik	alceste@ronan.net
Pete Santis	Petesantis@yahoo.com
Peter & Dianna Abbrecht	pulmed@mail.com
Peter Becker	pjbeckerman@yahoo.com
Peter Beves	pbeves@yahoo.com
Peter Bisschop	pbtuc@aol.com
Peter Blue	petersnd@aol.com
Peter C Frank	pcfrank49@gmail.com
Peter Corkey	peter.corkey@gmail.com
Peter Cummins	peter_ac@bigpond.net.au
Peter Drekmeier	pdrekmeier@earthlink.net
Peter Fairley	fairleysub@att.net
peter fantozzi	papafantozzi@q.com
Peter Franklin Davis	Bushveldhaus@live.com
Peter Giffin	pgiffin1851@yahoo.com
Peter Gradoni	pgradoni@yahoo.com
Peter Gunther	avengethecathars@juno.com
Peter Guzman	petg6@netscape.net
Peter Harwood	pbh81547@gmail.com
Peter J. Keiser	peterjkeiser@yahoo.com
Peter Jones	pweebeus@aol.com
Peter Kahigian	mrbristle@comcast.net
Peter Kahigian	peter_kahigian@hotmail.com
Peter Lawlor	plawlornaas@hotmail.com
Peter Lee	peterboothlee@hotmail.com
peter lehnert	oakenpine@gmail.com
Peter Mallory	capt.pete59@yahoo.com
Peter McCumber	peter.mccumber@mail.wvu.edu
Peter Moras	petermoras@yahoo.com
Peter Nicholas	peternich@hotmail.com
Peter Roche	Sunmtnsft@aol.com
Peter Sayre	pmsayre153@hotmail.com

Peter Sieck	bubsirii@sonic.net
Peter Supersano	petesupe@me.com
Peter Swartz	peterswartz9@gmail.com
Peter Tegstad	troutbumandsam@yahoo.com
Peter Townsend	k9townsend@gmail.com
Peter Van Noppen	Pvannoppen2@babson.com
Peter von Christierson	pvonc@olypen.com
Peter von Kleinsmid	pvk@oz.net
Peter Wood	nativeofny1@yahoo.com
Petra Stadtmueller	Meercat128@freenet.de
Phil DJernes	pdjernes@gmail.com
Phil Gaskill	pgaskill@me.com
PHIL TYLER	ptyler@mchsi.com
Philip Bourdon	pabourdon@hotmail.com
Philip Burgert	pburgert@igc.org
Philip Delaplaine	dtwoshoes32@aol.com
Philip Drumm	prdrumm@gmail.com
Philip J. Hyun	PHmech2@aol.com
Philip Jamtaas	pj310@ca.rr.com
Philip Long	antlerwork@aol.com
Philip McMorrow	pmcmorrow@charter.net
Philip Moyer	Philipam@me.com
philip power	bluesailor87@gmail.com
Philip Rampi	prgconsulting@prodigy.net
philip RANDALL	phil@tiedyed.us
Philip Ritter	philiparitter@me.com
Philip Rothman	pjr1@hotmail.com
Philip Shook	huisbaas@yahoo.com
Philip Simon	philsim75@aol.com
Philip Strickland	lihp_21@yahoo.com
Philip T Johnson	pjphilip12@gmail.com
Philippe Charrier	p.c.charrier.m@gmail.com
Phillip Clark	phillip.clark57@gmail.com
Phillip Cripps	pcripps@roadrunner.com
phillip gagliardi	kikiwi@cox.net
Phillip J Crabill	crab430@me.com
Phillip Leija	cuabove82nd@gmail.com
Phillip Mintz	postal_gir@yahoo.com
Phillip Mixon	phillipmixon1970@gmail.com
Phillip Scott	p747scott@gmail.com
Phoebe Gibbs	phoebegibbs@icloud.com
Phoebe McLeod	phoebemcleod@bellsouth.net
phoebe turner	phoeberemax@verizon.net
Phyl Dupret	phyldupret2014@gmail.com
Phyl Morello	1432phyl@gmail.com
Phylis Rossi	phylisr@hotmail.com
Phyllis Altvater	paa807@yahoo.com
Phyllis Brachman	pb1344@aol.com
Phyllis Brault	phybrault@aol.com
Phyllis Chavez	phyllis@phyllischavez.com
phyllis derfner	phyllisderfner@gmail.com
Phyllis Erwin	perwin1943@gmail.com
Phyllis Free	phylfree@mindspring.com
Phyllis Holliday	phyllis.holliday@sbcglobal.net
Phyllis Jaramillo	phyllisjaramillo@gmail.com
Phyllis Lackey	Phyllislackey@aol.com
Phyllis Miller	jeanmiller.miller37@gmail.com
Phyllis Park	phyllpark@yahoo.com
Phyllis Schacher	Travelslu@aol.com
Phyllis Shaw	pjscatwoman@yahoo.com

Phyllis Stanbury	pstanbury@comcast.net	Quinten Stevens	hquintenstevens@aol.com
Phyllis Swank	pswank38@gmail.com	R Brown	rbrown12345@verizon.net
Phyllis Thomidis	flipgr@comcast.net	R David Wicker	davewicker@yahoo.com
phyllis triarsi	phyllisando@aol.com	R Mill	Celticsun@gmail.com
Pierre Del Prato	pdelprato@aol.com	R PALM	yersubconscious@hotmail.com
pierre pino	brajhanf@hotmail.com	R Roy Johnson	rroylois@aol.com
Pietro Poggi	pietro@musiquetropique.com	R Ryce-Paul	roxannerycepaul@netzero.net
Pilar Maschi	Pilarmaschi@gmail.com	R S	rsafron@gmail.com
Pilar Quintana	pilarquintana@comcast.net	r taylor	rita.t8@gmail.com
Piper Burch	piperab@aol.com	r vanstrien	zvan030@gmail.com
Pippa Lawson	pipcompany@aol.com	R Wells	tigerwells@hotmail.com
Pippa Pearthree	ppearthree@mac.com	R. Christopher Bohlman	Rcbohlman@gmail.com
Pj Boyce	margaret.boyce@baltimorecity.g	R. David Poehner	rdavidpoehner@icloud.com
Po e	po@avcprint.com	R. Smith	nokomts@ktc.com
Polly Haynes	pollyhaynes@ntelos.net	R. William Schier	wschier@q.com
Polly O"Malley	loislow@earthlink.net	R. Zierikzee	inor@earthlink.net
Polly Tarpley	tarpleypolly@hotmail.com	R.A.L. West	ralive9@gmail.com
Portland Coates	portlandcoates@sbcglobal.net	Rachael Neffshade	cheesecake113@yahoo.com
Princess Tillman	princesstillman@gmail.com	Rachael Pappano	shamrock.magic@yahoo.com
Pris Wright	pwright@ccu.edu	Rachel DeFauw	rdefauw@yahoo.com
PRISCILLA DELANEY	priscadelaney@verizon.net	Rachel Greenblatt	Greeny1297@icloud.com
Priscilla Martinez	priscillamvaldez@msn.com	Rachel Herriott	rachelherriott@vodafone.co.nz
Priscilla Mezrahi	Psmakh@aol.com	Rachel Kelley	rachelbernota@gmail.com
Priscilla Rocco	dementedgardensprite@gmail.com	Rachel Krucoff	rkru@att.net
Priscilla Tine	prissy.tine@gmail.com	Rachel Leip	rsleip@centurylink.net
Prof. SUDARSHAN KAPOOR	skapoor@csufresno.edu	Rachel Meyer	rmeyerpt@gmail.com
Punky Burwinkle	mail4punky@bellsouth.net	Rachel Rockafellow	dave.rach13@gmail.com
Purnima Barve	Purnima.barve@gmail.com	Rachel White	Rachelann2211@yahoo.com
Quentin Fischer	fischerq@yahoo.com	Raeann Scott	txgirl125@yahoo.com
Quida Jacobs	qlj888@yahoo.com	RaeEtta Richmond	raeetta.richmond@yahoo.com

Rael Nidess, M.D.	rnidess@swbell.net	Randall Foreman	rkforemanapllc@yahoo.com
Raelyn Michaelson	measlecat@hotmail.com	Randall Frank	randyrider@sbcglobal.net
rafael de leon jr.	rafael_d_2000@yahoo.com	Randall Hamlin	globeheadx@att.net
Raina SCOTT	queenrainalee@yahoo.com	Randall Nord	randallnord@centurylink.net
Rainbow Di Benedetto	rainbow@alumni.utexas.net	Randall Webb	lawrkw@comcast.net
Raleigh Gould	raleighgould@comcast.net	Randi Holt	holtr@net.elmhurst.edu
Ralf Schuetz	ralf@urbanallyance.com	Randi Saslow	rsassy@sbcglobal.net
Ralph Bocchetti	riverglen2816@yahoo.com	Randolph Schoedler	randyss12@gmail.com
Ralph Bradburd	ralph.bradburd@gmail.com	Randy Diner	randydiner50@gmail.com
Ralph Campbell	nmralph@gmail.com	Randy Gyory	rgyory@ptd.net
Ralph Collier	sundancehl@yahoo.com	Randy Harrison	ran6711@comcast.net
Ralph Loprz	Santiago-69@att.net	Randy Hawker	randall.h@hotmail.com
Ralph Tobin	turtlerunning@hotmail.com	Randy Kirkpatrick	RKKirkpatrick@yahoo.com
Ralph Ward	rbwtx@msn.com	Randy Lopez	chauncey_945@outlook.com
Ralph Webb	riverwolfmanidoo@hotmail.com	Randy Lovejoy	myfisheye@gmail.com
Ram Nair	vrnair@att.net	randy sailer	rcsailer@beu.midco.net
Rama K Paruchuri	Paruchurirk@gmail.com	Randy Van Der Hulst	rbvdh@datawise.net
Ramon Trumbull	raytrumbull@gmail.com	Raphael Kosek	raphaelkosek@frontiernet.net
Ramon Zapata	razasa759@gmail.com	Rashid Patch	rashid_patch@yahoo.com
Ramoun Cabuhay	ramounc@gmail.com	Rashida Paul	Rdapaul@gmail.com
Ramsay Kieffer	rckieffer@msn.com	Raven Haber	moonlight69raven@hotmail.com
Ramsey Gregory	ramseyg49@gmail.com	Raven Stevens	flyraven@sbcglobal.net
Ran Zirasri	hawkins_j_m@hotmail.com	Ray Derstine	Rderstine@wispertel.net
rand embertson	wayward@fuse.net	Ray Harris	ray.harris@outlook.com
Rand Martin	hippiemailman420@yahoo.com	Ray Johnson	rayjohnson@midrivers.com
Randal Stout	randals36@gmail.com	Ray Kalinski	raykalinski@gmail.com
Randall Beaubien	rsbco@gmail.com	Ray Lou	rlxl@yahoo.com
Randall Bergerud	randallbergerud@gmail.com	Ray Martin	rmartin@sturgisps.org
Randall Boltz	Portofsherwood@att.net	Ray Uriarte	uriarteray@yahoo.com
Randall Daugherty	randalldaugherty@sbcglobal.net	Ray W Cage	raycg4@gmail.com

RAYA ENGLER	RAYA@ENGLERUSA.COM	Rebecca Frey	rebecca.frey@mac.com
Raychel Upright	redupright@gmail.com	Rebecca Gentry	euphoniousraconteur@gmail.com
Raymond Arent	rjarent@gmail.com	Rebecca Howe	swceltaz@yahoo.com
Raymond Bartlett	tbartlett237@aol.com	Rebecca Keaton	becky.keaton@comcast.net
Raymond Bissonnette	Raymondtb@q.com	Rebecca Leas	rrleas@yahoo.com
Raymond Carlson	rcarlson@crystalsugar.com	rebecca lowry	kunstpuppet@gmail.com
Raymond Cooper	raymondcooper98@yahoo.com	Rebecca Marshall	junio1111@yahoo.com
Raymond Farrington	teachart@juno.com	Rebecca McDonough	beckymcdonough@gmail.com
Raymond Gettins	Rsg1708@gmail.com	Rebecca Miller	rebeccamiller4309@gmail.com
Raymond Gibson	rgib1138@yahoo.com	Rebecca Moras	sisterphoenix1978@yahoo.com
Raymond Gonda	gonda05403@gmail.com	Rebecca Muzychka	b.muzyk@yahoo.com
Raymond Grant	r93112@bellsouth.net	Rebecca Neely	rjneely1008@yahoo.com
Raymond Ings	rayings@aol.com	Rebecca Picton	sevenswans7@gmail.com
Raymond Johnson	johnsorn@westelcom.com	Rebecca Rabinowitz	rrabin1054@aol.com
Raymond Keeling	keeling322@comcast.net	Rebecca Savage	rebeccasavage@hotmail.com
Raymond Litzsinger	raymoosch@earthlink.net	Rebecca Sheehan	niallandbecky@yahoo.com
Raymond Nuesch	renuesch@hotmail.com	Rebecca Slisher	bslisher@marlattautomation.com
Raymond Schamel	rayschamel@me.com	rebecca smith	explosure.mode@gmail.com
Raymond Thompson	rthompson@bex.net	Rebecca Spring	rebeccaspring11@gmail.com
Raymond Zahra	raisemail2000-divert@yahoo.com	Rebecca Sundberg	sundberg@whidbey.com
Raymond Zhang	richarzhang@gmail.com	rebecca tippens	rebecca_tippens@yahoo.com
Raymonjd Cooper	raycooper120@gmail.com	Rebekah Laros	rebekahlaros@gmail.com
Rayn Jacks	rbowptown@hotmail.com	Rebekkah M. Sprague	myvw8urs@yahoo.com
Rea Freedom	Realfre@aol.com	Red Diamond	mrreddiamond@yahoo.com
Reb Babcock	rebl58@msn.com	RedLion York	redyork@gmail.com
Rebeca Gomez	gomez.becca15@gmail.com	Reed DuBow	nmbrgeek@optonline.net
Rebecca Barker	opinion5000@gmail.com	Reed Fenton	reefen@aol.com
Rebecca Brown	rebecca_brown5@yahoo.com	regan ebert	reganebert@yahoo.com
Rebecca Canright	rebeccagroovypeace@gmail.com	Regina Alesso	reginaalesso@yahoo.com
Rebecca Connors	Rebeccank@aol.com	Regina Brooks	reginadallasbrooks1@gmail.com

Regina Case	r.case@suddenlink.net	rex franklyn	rexfranklyn@att.net
Regina Goodman	reginaberrygoodman@yahoo.com	Reynaldo Salcedo	reysalcedo@sbcglobal.net
Regina Milione	Harpo1218@gmail.com	Rhea Damon	damonrhead@sbcglobal.net
Regina Phillips	regine.phillips@sbcglobal.net	Rhett Becker	rbecker.becker747@gmail.com
Regina Woiler	woiler.regina@gmail.com	Rhett Lawrence	rhettlawrence@yahoo.com
Rehman Saif	Rehmanedwardsaif@yahoo.com	Rhianna Berrigan	Rlberrigan@gmail.com
reina berner	reinaberner@gmail.com	Rhiannon Gillespie	rhiannon_gillespie@yahoo.com
Reisa Gould-Donath	reisagd@yahoo.com	Rhoda Levine	rhodadir@gmail.com
Relf Star	relfalison@yahoo.com	Rhonda Bast	VINNIESAM2@yahoo.com
Relora Joyce	rejoyce1932@yahoo.com	Rhonda Bradley	rgbradley@charter.net
Ren Huschle	freeforfall@hotmail.com	Rhonda D. Wright, MD	rdwright67@gmail.com
Renata Rollins	renrollins@icloud.com	Rhonda Holt	tereholt@hotmail.com
Renate Dolin	megmir00@aol.com	Rhonda Johnson	rdtgjohnson@hotmail.com
Rene Bobo	renebobo@mac.com	rhonda lawford	rhondalawford@hotmail.com
Rene Fleming	rftkmk@gmail.com	rhonda mandato	mandato.rhonda@yahoo.com
Rene Suarez	quiet_mail@hush.com	Rhonda Marrone	rmm164@yahoo.com
Rene Suarez	quiet_mail@hush.com	Rhonda Oxley	Maxfilm2r@yahoo.com
Renee Bradford	Rmbradford@gmail.com	Rhonda Rumrey	rrumrey@aol.com
Renee Brinker	rbrinker@cpps-ofallon.org	Rhonda Sumner	sumner_rhonda@yahoo.com
Renee Burcham	rburcham131@gmail.com	Ric Melton	rgm1956@hotmail.com
Renee Grant	cadgreen@ptd.net	Ricardo Cottrell	hjarten@gmail.com
Renee Jacobs	botsybaby@yahoo.com	Ricardo Nouel	Ricardonouel@yahoo.com
Renee' Jean	rjean@willistonherald.com	Ricardo Sanchez	rgs332002@yahoo.com
Renee Vincent	white_wolf@att.net	Rich & Jo Heany	bumper8220@aol.com
Rev Linda Love Moore	rewildinglove@gmail.com	Rich Moser	rich@transcendentalastrology.com
Rev. Alison Hyder	RevHyder@gmail.com	Rich Pack	bamboo_water@yahoo.com
Rev. John Ward-Diorio	revjohnwd@outlook.com	Rich Scillia	rscillia@cox.net
Rev. L. Cline	revlcline@optonline.net	Rich Speer	Richncatz@yahoo.com
Rev. Nagi Mato	revnagimato@yahoo.com	Rich Warner	rew1z@aol.com
Reverend Sandra Mackie	smackie8@embarqmail.com	Richard A Rusnak Jr	rarusnak62@gmail.com

Richard A. Surdyk	mr.rich4@verizon.net
Richard and Mary Smythe	dick.smythe@yahoo.com
Richard Arrindell	rarrundell@netscape.net
Richard Arthur	richardarthur@gmail.com
Richard Ashton	rwa15@yahoo.com
RICHARD BARTOLOMEO	RBART54@AOL.COM
Richard Beal	coachdbeal@gmail.com
richard blake	gormanlake@aol.com
Richard Booth	richardthomasbooth@hotmail.com
Richard Brown	kent.brown@q.com
Richard Burcham	findthelight2000@yahoo.com
Richard Capalbo	arceee@aol.com
Richard Carr	richardcarr@cox.net
Richard Causer	richiec@npgcable.com
Richard Cayko	rcayko@midrivers.com
Richard Coolman	rbentscool@yahoo.com
Richard Creswell	rickcreswell@yahoo.com
Richard Crozier	riccrozier@embarqmail.com
Richard Dawson	eagleredwhiteblue@gmail.com
Richard DeSantis	evntprodcr@gmail.com
Richard DiMatteo	richarddimatteo@cox.net
richard duley	dckydoo@yahoo.com
Richard E Cooley	richardecooley@gmail.com
Richard edelman	richard.t.edelman@gmail.com
richard fairfield	rafairfield12@yahoo.com
Richard Fasano	chiefieastoria@nyc.rr.com
Richard Fish	fishrg@yahoo.com
Richard Gatz	dickgatz@gmail.com
Richard Glass	rpglass@netscape.com
Richard Gray	Rlgray9@gmail.com
Richard Han	richan@umich.edu
Richard Healy	rvrrunr@hotmaili.com
Richard HUffman	rhuffman518@gmail.com
Richard Huss	rhuss@sonic.net
Richard Jacobel	bmccc2001@yahoo.com
Richard Johnson	jazzpacnw@yahoo.com
richard jones	rjonesy1949@cs.com
Richard Kaplan	rbkyomama@verizon.net
Richard Keefer	ruichardak@embarqmail.com
Richard Kennedy	political@whovian.name
Richard krulik	richk3.14@hotmail.com
Richard Kuehn	redman53_2001@yahoo.com
Richard LaBudie	rlabudie@hotmail.com
Richard Lemer	tophandglo@aol.com
Richard Lombard	rllombard2@gmail.com
Richard M Stafford	rmsfeb47@gmail.com
Richard M Vartanian	acesrmv@pacbell.net
Richard Madole	rvm.athome@msn.com
Richard Martin	coyotemarten@gmail.com
Richard Meininger	rameininger@gmail.com
Richard Michael Boyden	boydgood@hotmail.com
Richard Miller	Rich105@comcast.net
Richard Montgomery	rmont@ucsc.edu
Richard Neffson	richgold47@aol.com
Richard Owens	xxowens@verizon.net
richard parish	richard.parish@comcast.net
Richard Pecha	sniffals@optonline.net
Richard Peterson	cornytunes@att.net
Richard Puaoi	r.puaoi@comcast.net
Richard Ralston	cyclotourist@bellsouth.net

richard robinson	robinsonm2@aol.com	Rick Calvert	rcal0006@gmail.com
Richard S. Harman	rsh5348@gmail.com	Rick Clark	Riverducky@icloud.com
Richard Schuch	richardandches14@embarqmail.co	Rick Duley	pattmoses2020@hotmail.com
Richard Schulte	rickschulte@cox.net	Rick Easton	jeeprox9@gmail.com
Richard Shannahan	rshannahan@verizon.net	rick Geyer	rkgyr513@gmail.com
Richard Siegel	siegelardster@gmail.com	Rick Hatten	Rickerbock@aol.com
Richard Smith	richard.smith49@yahoo.com	Rick Howard	Rickhoward@sklarfurnishings.co
Richard Spotts	raspotts2@gmail.com	Rick Lanham	rik1360@att.net
Richard Stern	rsisyh@yahoo.com	Rick Luttmann	rick.luttmann@sonoma.edu
Richard Stevenson	sly14u512@yahoo.com	Rick Macala	rick.macala@dot.ca.gov
Richard Stockton	stockton@buffalo.edu	Rick McAnulty	rmcanulty@carolina.rr.com
Richard Stookey	ricncali@sbcglobal.net	Rick Miller	rickgmiller3@gmail.com
Richard Strauss	strauss211@gmail.com	Rick Mutzabaugh	RMUTZABAUGH@YAHOO.COM
Richard Strongman	richstrongman@yahoo.com	rick o"bryan	rickobryan@verizon.net
Richard Swain	rts9097@gmail.com	Rick Osborne	enerchilivingspaces@hotmail.co
Richard Thurston	dubdrx@gmail.com	Rick Pethoud	rick.pethoud@comcast.net
Richard Tidd	downthehatch1@yahoo.com	rick roberson	rick.roberson@pgs.com
Richard Trujillo	ilvprrt53@gmail.com	Rick Sparks	rsparkle@pacbell.net
Richard Trummer	thetrumm514@gmail.com	Rick Thomas	rethomas1951@aim.com
Richard Turek	turekri1@gmail.com	Rickey Westbrooks	rickywestbrooks@aol.com
Richard Turek	turekri1@gmail.com	Ricki Iannitti	lillimarlene@cinci.rr.com
Richard Van Aken	RichSV@comcast.net	Ricki Newman	rickinewman@yahoo.com
Richard Vreeland	rlvreeland@comcast.net	Ricki Stephens	rmissricki@aol.com
richard whitney	rkw1958@yahoo.com	Ricky Taylor	taylorrl@outlook.com
Richard Young	ricoworks@me.com	Rifka Hirsch	rh189@aol.com
Richelle Kogan	kodolphin@yahoo.com	rik albani	albani3000@aol.com
Rick Andrews	rieckiea@gmail.com	Riley Canada II	rvcanada@bellsouth.net
Rick Auman	rfauman@hotmail.com	Riley Pidgeon	xxxitsrileyxxx@gmail.com
Rick Brigham	brigrick@gmail.com	Rita Babie	Maryrita.Babie@sphp.com
Rick Burgess	bur213@live.com	Rita Castillo	itouchedthewire@yahoo.com

Rita Clarke	rwclarke09@gmail.com
Rita Eilenberg	rita@vegan101.com
Rita Glasscock	ritalorena@q.com
Rita Harrington	ritahar@aol.com
rita hogan	Rita@farmdognaturals.com
Rita Jaskowitz	ritajaskowitz@yahoo.com
Rita Kain	tasc88@sbcglobal.net
Rita Lemkuil	chick669@gmail.com
Rita McNany	ritamc112@zoominternet.net
rita meuer	ritameuer@yahoo.com
Rita Pesini	remap1@verizon.net
Rita R. Shaffer	ritash1950@gmail.com
rita racioppo	onetreehugger@verizon.net
Rita Raftery	gildastone9999@yahoo.com
Rita Sorensen	riverbtm@midrivers.com
Rita Thomas	ritakthomas@yahoo.com
Rita Webber	ritzreaina_1999@yahoo.com
Rita Wise	kriscobbles@earthlink.net
Rizwana Shaheen	shaheenrizwana@aol.com
RJ Browne	browne@siskiyous.edu
Rkachea Carpenter	rkachea@aol.com
Rob	gutentag7@me.com
Rob Bell	seamansails@gmail.com
Rob Flesher	Robflesher1@gmail.com
rob fursich	rof9038@nyp.org
Rob Jenkin	are-gee-jay@sbcglobal.net
Rob Lasko	northamericanfoundations@gmail
Rob Masonis	Rmasonis@msn.com
Rob Parker	robandlezlye@hushmail.com
Rob Puc	Rpuc@gmail.com
Rob Purea	rpurea@gmail.com
Rob Rondanini	Rob_rondanini@yahoo.com
rob roy	robertred@frontier.com
Rob Seltzer	rsscpa@earthlink.net
Rob Stangroom	rstangy@gmail.com
Rob Williams	robsand@bellsouth.net
Robb Mottl	rcmottl@hotmail.com
Robert Agar	ragar18@gmail.com
ROBERT ALTOM	robertaltom1@yahoo.com
Robert and Donna Janusko	34b29394@opayq.com
Robert Anderson	robertan@corecomm.net
Robert Angle	rightanglevet@gmail.com
Robert Auer	Energyso@optonline.net
Robert Ayers	ayerskb@gmail.com
Robert B. Kaplan	rkaplan@olypen.com
Robert Basker	bbasker@excite.com
robert bean	bean_al@hotmail.com
Robert Belknap	rebelknap@sms.edu
Robert Bennett	Jrobertbennett@yahoo.com
Robert Berry	r.berry10@yahoo.com
Robert Beverly	sgtwayne@hotmail.com
Robert Blanchard	rblanc1954@gmail.com
Robert Bollert	rjbollert@hotmail.com
Robert Bonazzi	latitudesinternational@gmail.com
Robert Bordbar	rbord@gmx.com
Robert Bunch	robtbunch7@aol.com
robert burch	roburch1236@att.net
Robert Burk	bobbajo@aol.com
Robert Burnett	robert.burnett8@gmail.com
Robert Burns	raburns77usa@yahoo.com

Robert C Brown	bkroadshow@sbcglobal.net	Robert H. Feuchter	roberthfeuchter@me.com
Robert Candelmo	bobcande@warwick.net	Robert H. Wilcox	bobwilcox@uwalumni.com
Robert Cenni	bobcenni@gmail.com	Robert Handelsman	trtfmnlwr@aol.com
Robert Clarke	bobclarke@charter.net	Robert Haslag	bobhaslag@gmail.com
Robert Clauss	R.Clauss@mchsi.com	Robert Hensman	Ralphsmith1969@yahoo.com
Robert Clay	frobertclay@yahoo.com	Robert Hensman	Ralphsmith1969@yahoo.com
robert cobb	cobbking12@aol.com	Robert Hernandez	openhandrdh@yahoo.coim
Robert Conner	bobbycee55@gmail.com	Robert Herzog	Rherzog04@aol.com
Robert Conway	rconwayaz@cox.net	Robert Hill	roberthill19@tds.net
robert davidson	rdavidson51@hotmail.com	Robert Hinely	rhinely32@gmail.com
Robert Dollar	Rldollar5@att.net	Robert Honish	robhonish@yahoo.com
Robert Donahoe	r.donahoe@sbcglobal.net	Robert House	biohouse@cableone.net
Robert Dow	robdow@gmail.com	Robert House	biohouse@cableone.net
Robert E Lynch	relynch@xmission.com	Robert Huber	Rdhuber3@gmail.com
Robert Ebinger	Rebinger@gmail.com	Robert Hull	TrailRidgePhotography@gmail.com
Robert Ertner	doctorob68@hotmail.com	Robert Hunt	rahunt1@hotmail.com
Robert Fingerman	bobbytheburner@charter.net	Robert Husbands	dingus1942@hotmail.com
Robert Fladger	fladger@frontier.com	Robert Icenogle	Bicenogle@mac.com
Robert Foehring	rfoehrin@uthsc.edu	ROBERT J altman	luckyaltman@aol.com
Robert Foley Jr	foleyjrc@live.com	Robert Jacobson	rvj_43@verizon.net
Robert Fuchs	rfuchs@unmc.edu	Robert Jehn	marseillejg27@hotmail.com
Robert Furst	bobbyfurst@yahoo.com	robert jenkins	robert.jenkins8@gmail.com
Robert Gabriel	doctorob@gmail.com	Robert Jenks	9d4a3412@opayq.com
Robert Gemmill	farmerblue@msn.com	Robert Johnson	thebobj@aol.com
Robert Gifford	giffordr@gmail.com	Robert Jones	btj1398@gmail.com
Robert Giusti	Rsgiusti1958@gmail.com	Robert Jones	whaledet@aol.com
Robert Glass	boblglass@mac.com	Robert Jump	bobj1961@yahoo.com
Robert Gondell	rgondell@hotmail.com	Robert K MORGAN	rkmsfo@prodigy.net
Robert Grenfell	robert.grenfell@verizon.net	Robert Kaplan	zadie2@yahoo.com
Robert Griffin	rlgriff@windstream.net	Robert Kasvinsky	bob.kasvinsky@usa.net

Robert Keiser	skeiser2@bellsouth.net	ROBERT MOORE	rpm13@hotmail.com
Robert Keller	keller4384@aol.com	Robert More	robertcmore@gmail.com
Robert Kennedy	barberbarianbob@comcast.net	ROBERT NERGER	SOUTHERNBOBS@GMAIL.COM
Robert Killeen	roberteugenek@sbcglobal.net	Robert North	rknorth@netzero.net
Robert Klein	edaxbeckway@hotmail.com	Robert Obeid	cjo1942@hotmail.com
robert kuhnert	rkuhnert55@gmail.com	Robert Owczarek	urzedowe@hughes.net
Robert L Keith	gummibear760@yahoo.com	Robert Pahlow	rpahlow@gmail.com
Robert Lamb	lambtime@hotmail.com	Robert Pancner	rpancn@yahoo.com
Robert Lee	boblee7@juno.com	Robert Parker	robertpar@mac.com
Robert LeGault	legault@charter.net	Robert Perry	prryrbrt@yahoo.com
Robert Leggett	RNLeggett@aol.com	Robert Phillips	raphillips129@yahoo.com
Robert Levitt	edml2009@gmail.com	Robert Posch	robertposch323@gmail.com
Robert Lindsay	lindsay.robert@gmail.com	Robert Puca	robpuca@gmail.com
Robert Linzmeier	musicman690@hotmail.com	Robert Puchli	rpuchli@att.net
Robert Lombardi	bob532@aol.com	Robert Raskey	Braskey_1947@yahoo.com
Robert Love	relove333@aol.com	Robert Reed	robtsreed@gmail.com
Robert M. Deems	bdeems1@verizon.net	Robert Ricewasser	rbricewasser@aol.com
Robert M/Carol G Reed	rreed@va.metrocast.net	Robert Rivera	robbiemotogp@earthlink.net
robert martin	rjmgrande@gmail.com	Robert Robbins	bobrobbins2@gmail.com
Robert Maurer	robertjmaurer@yahoo.com	Robert Rosas	2ravmn@gmail.com
Robert Mayer	rgmayer@comcast.net	Robert Ross	robertamross@verizon.net
Robert McArtor	robert_mcartor@bellsouth.net	Robert Rossachacj	rossachacj@aol.com
Robert McFarland	bobbymcfly418@hotmail.com	Robert Rutkowski	r_e_rutkowski@att.net
Robert Meyer	rcm475@yahoo.com	Robert Samuelson	rjsamuelson2@icloud.com
Robert Michael	robertmchl@aol.com	Robert Sanders	bsanders@westga.edu
Robert Michaelson	rmichaeldonsatxk@gmail.com	Robert Sheen	sheen.bobby@gmail.com
Robert Miles	robertmiles@bellsouth.net	Robert Shields	bobananda.shields@yahoo.com
Robert Miller	zyor2010@hotmail.com	Robert Slavik	bobslavik@sbcglobal.net
Robert Mitchell	robert.mitchell@eku.edu	Robert Slomer	lexbobbie@aol.com
Robert Mize	1doorgunner@gmail.com	Robert Soltess	Nasaman55@gmail.com

Robert Sorensen	rjscg@mac.com	Roberta E. Newman	robertaellengold@gmail.com
Robert Sothern	sothe001@umn.edu	Roberta Eures	Robbiel3557@comcast.net
Robert Soto	r_soto1@yahoo.com	Roberta Gastmeyer	rgastmeyer@bellsouth.net
Robert Soto	rsoto@rcoe.us	Roberta Knox	rlbknox@aol.com
robert spaccarotelli	robert007@verizon.net	Roberta LaFrance	roberta_lafrance@yahoo.com
Robert Stilson	stilsonr@sbcglobal.net	Roberto Molina	robertomolina_17@yahoo.com
Robert Swab	hbswab@sbcglobal.net	Roberto Pace	paceroberto@hotmail.com
robert swift	ruswift@yahoo.com	Roberto von Ellenrieder	robertovon_ellen@hotmail.com
Robert Thomas	Apollonos@mac.com	Robin Blakesley	Mooney2@frontiernet.net
Robert Thomson	robthom2001@yahoo.com	Robin Blanton	blantonrobin@aol.com
Robert Torre	R.torre@comcast.net	Robin Bressler	robinhbressler@yahoo.com
Robert Towns	rkt40@aol.com	Robin Chambers	robinmchambers@yahoo.com
Robert Triggs	littlestoneflyfisher@mail.com	Robin Cisne	brunhilde@hotmail.com
Robert Tweten	Twetenrobert@aol.com	Robin Craft	Pcqueen@gmail.com
Robert Van Kolken	kolken@comcast.net	Robin Fellner	r.fraggle@suddenlink.net
Robert W McAllister	bobmca@centurylink.net	Robin Freisem	rfreisem@verizon.net
Robert W. Brown	brasspndr@yahoo.com	Robin Gorges	dcwkmv@gmail.com
Robert Wagner	o2travel2@yahoo.com	Robin Harper	hrprrbn@yahoo.com
Robert Walker	breezly@hotmail.com	Robin Heileman	arrowfeatherstone@yahoo.com
Robert Walker	dietrichwalker@gmail.com	Robin Kent	kentro@cox.net
Robert Wallace	last1le@yahoo.com	Robin Martin	rmartin0183@yahoo.com
Robert Walling	Mayfaire5469@yahoo.com	Robin Mayerat	ruberobin@aol.com
Robert West	progressive@thoughtnozzle.com	Robin Mulligan	robinallenmulligan@gmail.com
Robert Whitbeck	Bob_whitbeck@yahoo.com	Robin Peterson	rpeterson1117@gmail.com
Robert Wiehemeijer	robertwiehemeijer@gmail.com	Robin Poppe	robin.poppe@co.pine.mn.us
robert wilbur	bbwilbur@frontier.com	Robin Rudden	ponyexpressions@yahoo.com
Robert Wohlberg	robertwohlberg@gmail.com	Robin Rysavy	rrysavy@aol.com
Robert Wolf	ragmanfl@yahoo.com	Robin Schwarz	blueskies7772003@yahoo.com
Robert Young	flyfysh@comcast.net	Robin Sekerak	sekerakr@gmail.com
Robert Yunus	ware2402@aol.com	Robin Skeie	skeie002@umn.edu

Robin Soletzky	RGSnAZ@aol.com	Roger Daniel	Rogwriter@aol.com
ROBIN TATMAN	robntat@aol.com	Roger Kabat	rdkabat01@charte.net
Robin Van Tassell	rbnvantassell@gmail.com	Roger oborn	rocascade@aol.com
Robin Whitten	whitten@yelcot.net	Roger Vaughan	vaughanbob@ymail.com
Roby & Barbara Odom	msodom@sbcglobal.net	Roger Williams	Rawrajah415@cs.com
Robyn DeCiccio	rad502@ymail.com	Roger Williams	williamsroger097@gmail.com
Robyn LITTLE	robynglittle@netspace.net.au	Roger Wilson	bowden@pwrtc.com
Robyn Little	robynglittle@netspace.net.au	Rohana McLaughlin	rohanamc@hotmail.com
Robyn Phillips	mom2sk@aol.com	rohana wolf	simarohana@gmail.com
Robyn Reichert	scooteacha@aol.com	Roland England	rolandleng@aol.com
Robyn S Walters	robynswalters@gmail.com	Roland McDonald	mcdonaldrevmac@gmail.com
Robyn Taylor	rtaylor@ufl.edu	Rolf Bandle	erbandle@verizon.net
Rochelle Foran	sandl@iquest.net	Rolf Friis	rristrue4u@yahoo.com
rochelle lazio	gustav121@aol.com	Ron Avila	ronavila@hotmail.com
Rochelle Phillips	ivor.rochelle@cox.net	Ron Beck	48ronbeck@gmail.com
Rocio Lario	rocionaples@aol.com	Ron Carlson	roncarlson345@comcast.net
Rocio Luparello	rocioluparello@hotmail.com	Ron D Jones	rondjonesesq@gmail.com
Rocio Muhs	solimar127@q.com	Ron Drees	rondrees@sbcglobal.net
Rod Bell	rbfarming@hotmail.com	Ron Farnsworth	r2farns2@yahoo.com
Rod Guyer	rguyer@sonic.net	Ron Harris	captainrph@charter.net
Rod Snyder	wikata4u@yahoo.com	Ron Hyslop	pigdog3@aol.com
Roderick Brown	rod4376@yahoo.com	Ron Katz	ronaldkatz@ymail.com
roderick stewart	roderickr.stewart@gmail.com	Ron MacArthur	june_macarthur@hotmail.com
Rodney Martin	rodmarmis@aol.com	Ron Meier	ronmeier@live.com
Rodney Wade	rcwade8749@aol.com	Ron Melin	er2melin@gmail.com
Rodney Weathers	Wroady@hotmail.com	Ron Melsha	buschmelsha@southslope.net
Rodolfo Cardona	rcardona56@comcast.net	Ron Meza	ronaldmeza10@gmail.com
Roel Cantú	roelcan2@gmail.com	Ron Molina	rmo3928236@aol.com
Roelfien Boerema	rutgerboerema@yahoo.com	Ron Olson	olsonron1@aol.com
Roger Adams	roger19@suddenlink.net	Ron Orendorf	orencorp@verizon.net

Ron Parsons	flowershots@hotmail.com	Ronald Smith	4ronsmith@gmail.com
Ron Powell	rbpowell1@verizon.net	Ronald Stage	YIPPIE.STAGE@GMAIL.COM
Ron Riskin	acusurfdoc@cox.net	Ronald Thiele	rontiel3@gmail.com
Ron Salmonson	Rons93091@gmail.com	Ronald vaerewyck	jeanineandron@aol.com
ron silver	rhinopias@comcast.net	Ronald W. Hull	ron@ronhullauthor.com
Ron Sonnenberg	Saltydogs2001@yahoo.com	Ronald Woolford	ronwoolford@gmail.com
Ron Taylor	rcttcs@aol.com	Ronald Zampa	organicz@hotmail.com
Ron Tergesen	rtergesen@optonline.net	Ronda Tucker	rondawalker196@yahoo.com
Ron Young	youngcutting@aol.com	Ronelle Moehrke	ronnieastrala@yahoo.com
Ronald Bader	nospam@skyhighway.com	Ronis Bollinger	ronibollingermt@outlook.com
Ronald Bagwell	bagwell.ron@gmail.com	Ronnie Button	luxxwerx@hotmail.com
Ronald Bogin	Bogin@sbcglobal.net	Ronnie Button	luxxwerx@hotmail.com
Ronald Drahos	rdrahos@indiana.edu	ronnie robbs	iocarpevino@gmail.com
Ronald Dunn	hardcharger_43@yahoo.com	Ronnie Ronns	iocarpecino@gmail.com
Ronald Eike	ron.eike2@gmail.com	Ronnie Ronns	iocarpecino@gmail.com
Ronald Elmore	ronelmormusic@gmail.com	Rory Denovan	Slipstart@yahoo.uk
Ronald Gulla	fight848@gmail.com	rory sopoci-belknap	sopoci18@gmail.com
Ronald Harden	hardenrr@msn.com	Rory Tipping	rorytipping@ymail.com
Ronald Hobbs	rhobbs1949@gmail.com	Rosa Brown	torillaface@yahoo.com
Ronald Howard	evergreen5201@tds.net	Rosa Jordan-Guzman	rguzman@rocketmail.com
Ronald Johnson	rodejo2@msn.com	Rosa Strayer	goldenfeather13@yahoo.com
Ronald Lemmert	padreron@verizon.net	Rosalie Sable	rsable@live.com
Ronald Lindblom	lindblomra@gmail.com	Rosalind Andrews	rozyandrewsms@bellsouth.net
Ronald Lineberry	rdlineberry@yahoo.com	Rosalind Bresnahan	rosalind568@gmail.com
Ronald Lockwood	anteater11@verizon.net	Rosalind Kotlar	k_rosalind@hotmail.com
Ronald Prado	prado4567@hotmail.com	Rosalind Mckevitt	rozfromoz@mac.com
Ronald Ratner	bessythree@yahoo.com	Rosalind Milliken	rosalind.milliken@gmail.com
Ronald Russo, Esq.	rrusso1@sbcglobal.net	Rosalyn Jirge	rivermama39@hotmail.com
Ronald Schlesinger	riseronald@hotmail.com	Rosalyn Morrow	rosalyn.morrow@gmail.com
Ronald Shank	annie@rt66.com	Rosalyn Rohloff	corgipackmama@yahoo.com

Rosanne Anderson	fiberart@icehouse.net
Rose Divicino	rdivicino@tampabay.rr.com
Rose Kaszuba	kaszubarose@gmail.com
Rose Magana	rs_mag@yahoo.com
Rose Marie Leather	fleurecerise@aol.com
rose moore	moorerose494@yahoo.com
Roseann Hanigan	roseannhanigan60@gmail.com
Roseanne Yerges	haan53@aol.com
Rosemarie Ceaser	rheaceaser@yahoo.com
RoseMarie Di Giovanni-Norton	caspers1111@aol.com
Rosemarie Overstreet	reoverstreet@t-online.de
Rosemary Caolo	rosemary.caolo@verizon.net
Rosemary Foster	ramf@gci.net
Rosemary Haas	rosemarydhaas@gmail.com
Rosemary Harris	Rosemary.harris93@gmail.com
ROSEMARY SHUFLAT	rshuflat@cccemail.net
Rosemary Tann	rocatgo@gmail.com
Rosemary Ward	arosemary1@yahoo.com
Rosetta Bledsoe	humblood@suddenlink.net
Rosie Wright	DeltaRosie@gmail.com
Rosina Padilla	gemini924@hotmail.com
Rosiris Paniagua	rosiris_paniagua@yahoo.com
Rosita Aranita	rra8665@yahoo.com
Roslyn Huebener	roslyn@ahrlty.com
Roslyn Jones	Buffjones@aol.com
Roslynn Budoff	rozbudoff@yahoo.com
Rosney Fernandez	rosney10@yahoo.es
Ross Gear	rossgear9@aol.com
Ross Heckmann	RossS.Heckmann@gmail.com
Ross Kardon	quantmlp71@verizon.net
Ross Lockridge	murlock@raintreecounty.com
Ross Rosaaen	niehenkewelding@gmail.com
Ross Tedter	rtedter@gmail.com
roth woods	roth.woods@emich.edu
Rothery Gensel	rothery@frontiernet.net
rotraud coffey	rotrauds@hotmail.com
Roxana Huggins	qwiji2@aol.com
Roxane Wolzen	roxwo@hotmail.com
Roxanne Bohana	roxyvirginia@gmail.com
Roxanne Daus	roxannedaus@yahoo.com
roxanne mendoza	cinynj@yahoo.com
Roxanne Warren	rwaa@erols.com
Roxanne Williams	angiecbc@gmail.com
Roxy Gray	roxyjay5@gmail.com
Roy Berberich	Gloj29@gmail.com
roy Conner	rjclrc@comcast.net
Roy Munroe	roymunroe9041@comcast.net
Roy Pearson	rpears0314@earthlink.net
Royal Chamberlain	royalphotography@hotmail.com
Roz goldstein	roz.goldstein@yahoo.com
Rt Rev Donald Studebaker	rhinoceroslodge@pon.net
Rubia Gil	rubia_gil@hotmail.com
Rudolph Ripp	rudykr@verizon.net
Rudy and Barbara Stippec	barbie.stippec@verizon.net
Rui Moreira	rfsmoreira@yahoo.com
Ruka Kato	Ryunaomikato@Hotmail.com
Rukhsana Shanbhag	Srukhsana@aol.com
Rupak Thapaliya	rupakthapaliya@gmail.com
Russ Cross	russc_98@yahoo.com
Russ Manning	russmanning@charter.net

Russ Ramirez	yaquidan@pacbell.net	Ruth Kastner	rekastner@hotmail.com
Russ Wagner	rwagner@genesisconstruction.co	Ruth Kay Souder	ruthkays@gmail.com
Russel Oliver	russel_oliver@yahoo.com	Ruth KEHOE	Ruthenglandkehoe@yahoo.com
Russell Bair	kd9k@sbcglobal.net	Ruth Krausman	rkrausman@msn.com
Russell Donnelly	irsd7@verizon.net	Ruth Mendes	ruthm3m@optonline.net
Russell Donnelly	RDDonnellymd@aol.com	Ruth Miller	ruthmiller@me.com
Russell Green	greenruss@hotmail.com	Ruth Morgan-Bieber	Angelbieb2@sbcglob.net
russell hudson	rehud62@gmail.com	Ruth Pahinui	rmpahinui@yahoo.com
Russell James	rj1845@bellsouth.net	Ruth Ruppel-Maxwell	Ruthmax81@yahoo.com
Russell LaClaire	Russellaclaire@gmail.com	Ruth Siekevitz	Siekevitz@yahoo.com
Russell Miller	rpm12143@msn.com	Ruth Soulier	RuthSoulier@gmail.com
Russell Novkov	rnovkov@gmail.com	Ruth Tisher	ruthtisher@yahoo.com
Russell Skinner	rskinner1100@new.rr.com	Ruth Vickers	vickersrc@comcast.net
Russell Smith	russellsmith4227@comcast.net	Ruthann Duval	ruthannduval1230@aol.com
Russell Ziegler	russellziegler73@yahoo.com	Ryan Anderson	ryana@daktel.com
Russell Ziegler	russziegler2003@yahoo.com	ryan burger	rsburger13@hotmail.com
rusty henderson	rustyhendrson71@gmail.com	Ryan Danell	rdanell@gmail.com
Ruth A Yacko	Ruhann@cox.net	Ryan Draper	raptorred01@yahoo.com
Ruth Adams	tsmass@aol.com	Ryan Keane	rkeane2@student.framingham.edu
Ruth Ann Wiesenthal-Gold	ruthann@woodlandscoalition.com	Ryan Macias	ryamvin@yahoo.com
Ruth Anne Dayton	radayton@sbcglobal.net	Ryan O"Neill	Ryan@MnRealEstateTeam.com
ruth ballard	rballard277@gmail.com	Ryan Persad	ryanpersad@gmail.com
Ruth Braithwaite	MommaRu2853@hotmail.com	Ryan Skeel	skeelr1@gmail.com
Ruth Cameron	hadcam@earthlink.net	Ryan Smith	Lookaway@me.com
Ruth Carlone	rcarlon300@aol.com	Ryan Stander	standerryan@yahoo.com
Ruth Cooper	rhcahimsa@yahoo.com	Ryan Waddington	ryanwadd@gmail.com
Ruth Darden	dseattlered@seanet.com	Ryan Weiss	ryan.m.weiss@gmail.com
Ruth Dule	rirene@hotmail.com	S Burgess	sjpb6183@yahoo.com
Ruth Feldman	rfeldman3@gmail.com	S Carol	Bmg@gmail.com
Ruth Fichter	refichter@aol.com	s cook	swfcook@aol.com

S D	Soniasduffie@hotmail.com
S Dri	Zodri3@hotmail.com
S Hare	Th3fall@aol.com
S Hill	nightwater16@gmail.com
S Jitreun	sjitreun@yahoo.com
S L Vinas	slvinas@yahoo.com
s logan	scott.logan@aon.com
S Lowe	ferretladylowe@yahoo.com
S M	Ktbug74@gmail.com
S Mann	DoRight@isitreal.net
S Mumford	sjmumford@hotmail.co.uk
S Wilson	Yessed5985@mypacks.net
S Woodland	Addiewoodland@aol.com
S. Andrew	frog423@gmail.com
S. Chapek	scc317@earthlink.net
S. Etherton	LazyLinePainter@gmx.net
S. Jordan	mockingbird13@bellsouth.net
S. P. Almskaar	spaspa9@yahoo.com
S. R.	symmacr@aol.com
S. Repp	orkids96@yahoo.com
S. Wolf Britain	wolflegal@hotmail.com
sa re	reilsshera@aol.com
Sabine Williams	sabinekc@yahoo.com
Sabra Morton	sabramorton@gmail.com
Sabrina Hardenbergh	sabrina@midwest.net
Sabrina Zilske	kessy19881@web.de
sacha todd	green_scarecrow@yahoo.com
Sadie Salib	sadiesalib@yahoo.com
Sage Joyce	sage.l.joyce@us.ace.army.mil
sagen smith	sagensmith@msn.com
Sakina Bush	sakina@mcn.org
Sali Seyqour	roxbaby69@yahoo.com
Sallie Park	wildwindsk@earthlink.net
Sally Bates	salzies@outlook.com
Sally Benardo	srbenrusl@gmail.com
Sally Brown	sbrown01@snet.net
sally foti	sjf0327@gmail.com
Sally Goodson	sally.camano@gmail.com
Sally Hodson	sallyhodson@wildhaven.com
Sally Jacques	sallyJ@bluelapislight.org
Sally Marshall	tatanka0329@charter.net
Sally Martin	martinblacksheep@gmail.com
Sally Newman	smn0000@yahoo.com
Sally Parker	sally.park62@yahoo.co.uk
Sally Rings	sallyrings@gmail.com
sally setaro	setarorambo@aol.com
Sally Small	sallyasmall@att.net
Sally Smith	sa.smith345854@gmail.com
Sally Sorensen	sjsorensen@msn.com
SALLY SPELBRING	spinsal@yahoo.com
Salme Armijo	salmek41@yahoo.com
Salome Hawkins	LadySalome257@sbcglobal.net
salvatore cento	snowball07@optonline.net
Sam Butler	Samjbutler@sbcglobal.net
Sam Fargnoli	bulldragon@earthlink.net
Sam Holm	sambo12322@hotmail.com
Sam morrison	catshifi@gmail.com
Sam Oscar	sporkrine@gmail.com
Sam Rising	Strising@go.olemiss.edu
Sama Blackwell	samablackwell@yahoo.com

Samantha Colbert	deathtocomputers@gmail.com
Samantha Garcia	Samanthagarcia3300@comcast.net
Samantha Goodman	Samanthags@aol.com
Samantha Savage	samanthasavage15@yahoo.com
Samantha Steigerwaldt	greenbutterfly7267@yahoo.com
Samantha Turetsky	samituretsky@gmail.com
Sami Diamond	Diamond.13@yahoo.com
Sammy Low	cougarcreek7@gmail.com
Samree Reynolds	islandgirl59262@yahoo.com
Samuel Austin	alexeiurievskii@comcast.net
Samuel Chiodo	Samuelchiodo@verizon.net
samuel ciurca	paleoresearch@yahoo.com
Samuel Durkin	samussr337@hotmail.com
Samuel Eaton	sam.eaton82@gmail.com
Samuel Rametta	samthecardman@ca.rr.com
Samuel Speciale	sgspeciale@yahoo.com
Samuelsamuel Sirianno	sirianno@att.net
Sandi Aden	ibshrt@aol.com
Sandi Aden	ibshrt@aol.com
Sandi Covell	scovell@earthlink.net
Sandra Alto	Sansells@hotmail.com
Sandra Angelini	wolfarctique@htmail.com
Sandra arapoudis	martheo@otenet.gr
Sandra Breakfield	breakfie_charles@att.net
Sandra Burson	humblepie247@yahoo.com
Sandra Ciske	sciske@drizzle.com
sandra conley	stratmom@bellsouth.net
Sandra Cope	sandracope38@gmail.com
Sandra Costa	sandracrystyna@hotmail.com
Sandra Couch	sndrcch@yahoo.com
Sandra Couch	sndrcch@yahoo.com
Sandra Dean	sandy@skdmail.com
Sandra Doney	swdoney@yahoo.com
SANDRA EDGINGTON	SEDGINGTON@LBTMLAW.COM
Sandra F. Kaplan	sfreyakat@yahoo.com
Sandra Franz	sfranz7@sbcglobal.net
sandra geist	sandrasgeist@aol.com
Sandra Hazzard	shazzard@bestweb.net
Sandra Hutchinson	mountainwatermist@gmail.com
Sandra Joy	stsandrajoy@gmail.com
sandra l lawrence	catlady@ktc.com
Sandra Lane	slane78212@yahoo.com
Sandra Leaper	sandyleap@hotmail.com
Sandra Leidenheimer	Sleid47@yahoo.com
Sandra Marschner	amrbunni@hotmail.com
Sandra Mason	sandymason08@aol.com
Sandra Materi	materi44@bresnan.net
Sandra McLuckie	Sa.mcl67@yahoo.com
Sandra McMannis	fengshuigarden@gmail.com
Sandra Meyer	sandram9@comcast.net
Sandra Miller	semiller12@gmail.com
Sandra Perkins	sandraperkins@seanet.com
Sandra Reeves	sandrareeves@yahoo.com
Sandra Safran	sandrasafran@mac.com
Sandra Smith	7schipperkes@gmail.com
Sandra Toomey	shownu5@yahoo.com
Sandra Tucker	meliorist59@gmail.com
Sandra Walker	walkersandy@earthlink.net
Sandra Woodall	lswoodall@gmail.com
Sandra Yagi	Sandrayagi@gmail.com

Sandra Young	skayyoung@mac.com
Sandy & Jim Kastner	sanjamoi9@gmail.com
Sandy Beck	Tude128855@aol.com
Sandy Berry	Sberry@centerpointcounseling.o
Sandy Dalcais	plutonique@aol.com
Sandy Dvorsky	ngnut@aol.com
sandy gardner	sandygardner33@aol.com
sandy hall	peanut4@netins.net
Sandy Hansen	Sandyhansen1100@comcast.net
Sandy J.	sj1183@yahoo.com
Sandy Levine	sandylevine@lycos.com
sandy Loney	sandy.loney@charter.net
Sandy Lynch	manycolors@gmail.com
Sandy Norris	sansan1125@att.net
Sandy Paglione	spaglione2@verizon.net
Sandy Petrarca	smpetrac@gmail.com
Sandy POPES HAVE DECLARED CAUS	windsor914@att.net
sandy reese	sandywells63@yahoo.com
Sandy Sobanski	dragonsandy1@yahoo.com
Sandy Tippett-Smith	stippett@rof.net
Sandy Wood	Woodlets@fuse.net
Sandy Zelasko	slzphoto@sbcglobal.net
Sanford Bailey	walt.bailey@patagonia.com
sanja dimitrijevic	fetalouda0@yahoo.com
Saphira Rain	Saphira1@PeoplePC.com
Sara & Norm Bell	nsbell@htcnet.org
Sara Armstrong	Saraw33@yahoo.com
Sara Bachmeier	Goldstar9@yahoo.com
Sara Biggers	missiness@aol.com
Sara Brigham	ladyratsb@earthlink.net
Sara Carroll	uawildcat702@aol.com
Sara Demari	sarademari@yahoo.com
Sara Duane	snduane@gmail.com
Sara DuBois	sarai1944@gmail.com
Sara Egorin-Hooper	segorinhooper@bcps.org
Sara Farneth	sallyfarneth@hotmail.com
Sara Fogan	Calminsensehypnosis@yahoo.com
Sara Gibson	sara7gib@mac.com
Sara Hale	sjhmdiv@msn.com
Sara Hopewell	saraj7@hotmail.com
Sara Miller	saramiller16@yahoo.com
Sara Pandolfi	sararoland@oberlin.net
Sara Paoluzzi	daiaki@libero.it
Sara Parks	Sara.parks1020@gmail.com
Sara Powell	Sarpowell@verizon.net
Sara Rajan	curoi@cruzio.com
Sara Ross	swr0669@yahoo.com
sara sexton	ssexton@sangertexas.org
Sara Shaw	Sarashaw20@hotmail.com
Sara White	Realbutie@aol.com
Sarah A Danielson	SAWynD@aol.com
sarah apfel	mfprtoo@yahoo.com
Sarah Bauman	Sarahweilbauman@gmail.com
Sarah Becker	bckr_srh@yahoo.com
sarah brownrigg	sabrownrigg@yahoo.com
Sarah Cooke	cookess@comcast.net
Sarah Danner	Dannersc@bellsouth.net
Sarah Dennard	dennardsarah@bellsouth.net
sarah dixon	sarahde1@yahoo.com

Sarah Doherty	sarahd@bunkhousephotography.co
Sarah Furno	tinkersarah@yahoo.com
Sarah Greenberg	Sarahtg2Salty@aol.com
Sarah Hadding	Sarah.hadding@icloud.com
Sarah Hafer	sarah.hafer@gmail.com
Sarah Hamilton	bigguy287@twcny.rr.com
Sarah Hysell	twistedplayground@yahoo.com
Sarah Lilley	credo@atmosphile.net
Sarah Lincoln	slincoln556@gmail.com
Sarah MacCarthy	sarahemaccarthy@gmail.com
Sarah McKee	smckee@post.harvard.edu
Sarah Meyers	sarmey@med.umich.edu
Sarah Paulsen	paulsens63@yahoo.com
Sarah Provost	Srprovost@yahoo.com
Sarah Raite	Goddess52352@yahoo.com
Sarah Reese	sreeseuse@gmail.com
Sarah Richey	sasrichey@gmail.com
Sarah Salter	ssalter11@comcast.net
Sarah Sercombe	moe9bean8@wideopenwest.com
Sarah Seufert	sssarhh@yahoo.com
Sarah Stewart	sarahbstewart@yahoo.com
Sarah Topp	scarletgilia@hotmail.com
Sarah Townsend	stownsend88@gmail.com
Sarah Walsh	catandmonkey@gmail.com
Sarah Wiebenson	petillante@gmail.com
Sarah Yergin	sarah-glen2011@hotmail.com
Saran Kirschbaum	sarank@mac.com
Sari Steuber	sari@steuber.com
Sarina Amato	sarina.ann@gmail.com
Sasha Jackson	mssasha3@aol.com
Saul Adelman	adelmans@citadel.edu
Saul Scheinbach	Judisaul@aol.com
Savannah Hawkins	savannahawkins6@yahoo.com
SAVERIA GARCIA-MACRI	reni7@optonline.net
Scott Arellano	Scottyarrllano@gmail.com
Scott ary	crackerasscracker@att.net
Scott Badenoch	badenochjr@gmail.com
Scott Baker	sbdrums08@gmail.com
scott banninga	scottbanninga77@gmail.com
Scott Bathke	sbathke400@att.net
Scott Blum	blumscott@sbcglobal.net
Scott Boller	Sbollers@mac.com
Scott Bosse	scottbosse@hotmail.com
Scott Britton-Mehlisch	hfmscott@earthlink.net
Scott Burger	scottburger@mac.com
Scott Coahran	scoahran@hotmail.com
Scott Coryell	scoryell@bellknott.com
Scott Cottrill	nme.talon@gmail.com
Scott Dorn	scottlivingwell@gmail.com
Scott Dulas	goodbubba@icloud.com
Scott Ellenwood	sellenwood@gmail.com
Scott Emsley	rowdy205@sbcglobal.net
Scott Feighner	Scott.feighner@colliers.com
scott finamore	finamors@gmail.com
Scott Foster	scottertrash@yahoo.com
Scott Gibson	scott.c.gibson@wv.gov
Scott Gorn	survivor7812@gmail.com
Scott Greer	sqgreer@gmail.com
Scott Hood	shood91849@aol.com
Scott MacDougall	turasoir@gmail.com

Scott McCarthy	typethree@gmail.com	Selim Uzuner	uzunerselim@hotmail.com
Scott McMahon	scottmcmahon126@gmail.com	serena vann	serenavann@charter.net
Scott Meachum	smeachum@comcast.net	Serenity Montaño	serenitykmontano@gmail.com
Scott Meyer	trehouse@aye.net	Sergio Rivera	meatbag21@gmail.com
scott mitchell	mitchells@lhcaz.gov	Seshu Vaddey	seshu@operamail.com
Scott Musick	smusick20041966@yahoo.com	Seth Giles	surfinswellsdude@aol.com
Scott Parson	scott485@centurytel.net	Setsuko Maruki-Fox	setsukom@charter.net
scott roney	scott.roney@verizon.net	Shaina Rivera	ilovepets48@yahoo.com
Scott Rubel	scott@scottrubel.com	Shamus Nicholson	shpni@juno.com
scott serpa	serpa_sl@yahoo.com	Shan Albert	shanals@earthlink.net
Scott Seymour	scottseymour573@gmail.com	Shane Ereth	ereths@helenachemical.com
Scott Species	sspecies@yahoo.com	Shane Gorder	sgorder@richland.org
Scott Valenti	ogmandino973@gmail.com	Shane Nodurft	s_nodurft@hotmail.com
Scott Vickers	clownfish@riseup.net	Shane Worth	tatzanx@hotmail.com
Scott White	splatterpig@yahoo.com	Shanie Bradford	shaniebradford@gmail.com
Scott Wilson	Eaglesnest595@gmail.com	Shannin Zevian	shannin.zevian@gmail.com
Seamus Allman	sprinke@riseup.net	Shannon Bownds	lediable_68@yahoo.com
Sean Carroll	slcarroll@me.com	Shannon Catt	cattshannon@yahoo.com
Sean Corrigan	quoll_fnq@optusnet.com.au	Shannon Daniels	roctherocks@gmail.com
Sean Demers	sdemers01@hotmail.com	Shannon Donnelly	sd@sd-writer.com
Sean Ebersole	ebersole.s@hotmail.com	Shannon graham	lvmysaturn2003@gmail.com
Sean Greenwood	jackflash93@yahoo.com	Shannon Griffin	smgriffin77@verizon.net
Sean Hagstrom	mortsgahd@yahoo.com	Shannon Jacobs	sherman1971@yahoo.com
Sean King	kingfarm555@gmail.com	Shannon Lee Mawson	dutchesspilates@gmail.com
Sean McQuilken	hobieracer85@yahoo.com	Shannon Markley	markley.shannon@yahoo.com
Sean Sellers	rssellers@gmail.com	Shannon Neckes	Scneckes@aol.com
Sean Wynne	spw424@gmai.com	Shannon Price	Shannon.price@ultradent.com
Sean Yates	coalandice@yahoo.com	Shannon Taylor	shan880@sbcglobal.net
sebanc susan	virtualslvs@yahoo.com	Shannon Teper	shanteper@cfl.rr.com
Sebastian Cancino	sebastian.e.cancino@gmail.com	Shannon Winter	hbshannonw@yahoo.com

Shara Briggs	sharabriggs@yahoo.com	Sharon Goddard	sharonggoddard@gmail.com
Shari Grounds	sharil5@aol.com	Sharon Goodson	slgoodson82194@gmail.com
Shari Hamilton	sharihamilton@rocketmail.com	Sharon Greening	steammill@aol.com
Shari Kelts	sharikelts@sbcglobal.net	Sharon Griva	Sagriva@yahoo.com
Shari Sutherland	sharisuth@charter.net	Sharon Hale	coloradohikers@msn.com
Shari Wildschutte	shariwild@yahoo.com	Sharon Holford	Watersong41@gmail.com
Sharin Lane	sharingruchala@gmail.com	Sharon Johnson	tigersaregods@yahoo.com
Sharlee Moore	sharlmoore@yahoo.com	Sharon Karsok	s.karsok@yahoo.com
Sharon Adams	sibutlerbabe@hotmail.com	Sharon Ketcherside	ketch07@hotmail.com
Sharon Bailey	sbley13@aol.com	Sharon Klod	sharon214@twc.com
Sharon Baker	skb38goshen@gmail.com	Sharon Koogler	dopey9713@yahoo.com
Sharon Balzano	luvpeace99@comcast.net	sharon lacy	earthhrt@gmail.com
Sharon Bodman	sjwindspirit@peak.org	sharon lampi	sharonlampi@hotmail.com
Sharon Bride	catt38729@comcast.net	Sharon Lebon	sherrilsherrid@hotmail.com
sharon byers	sibyers@gmail.com	Sharon Lee	tekashch@juno.com
Sharon Chakoian	schakoian@ameritech.net	Sharon Levy	Ancientechosarts@gmail.com
sharon chang	lovesbaby57@outlook.com	Sharon Levy	slevycw@aol.com
Sharon Cozzette	scseer@yahoo.com	Sharon Lieberman	sjlieby@mcn.org
Sharon Crane	erineccles@hotmail.com	Sharon Longyear	sharonmlongyear@gmail.com
Sharon Dietrich-Jones	wyldecat@gmail.com	Sharon Moran	smoran1945@sbcglobal.net
Sharon Domon	Otternut4@aol.com	Sharon Morris	skmorris101@gmail.com
Sharon E. LaLond	frogladysharon@gmail.com	Sharon Mueller	greatform4@aol.com
sharon elzey	sdelzey@yahoo.com	Sharon Mylott	mewstermom@aol.com
Sharon Fetter	sfetter@earthlink.net	Sharon Narushoff	sleen44@hotmail.com
Sharon Frank	featherlover59@gmail.com	Sharon Newman	snewman1@comcast.net
sharon friedman	sfriedman55@gmail.com	Sharon Nicodemus	bream@omsoft.com
Sharon Fuller	fuller3995@msn.com	Sharon Paltin	shsharealike@saber.net
Sharon George	swag333@aol.com	Sharon Parshall	parshalls@rocketmail.com
Sharon Giles	cat_lady105@yahoo.com	Sharon Purtell	firing7787@mypacks.net
Sharon Gillespie	pretend@austin.rr.com	Sharon R Christopher	chinagirl2_22@hotmail.com

Sharon Reinstein	sharadacats@mindspring.com	Shawna Ratner	shawna.ratner@gmail.com
Sharon Richey	srichey7@gmail.com	Shawndra Hayes-Budgen	visceral@gmail.com
Sharon Rivers	srivers@mail.com	Shay Rice	shayfake@yahoo.com
Sharon Rothe	rothesj@hotmail.com	She"ree Choy	Jdedrgn1@aol.com
Sharon S Kane	sharonksk@copper.net	Shea Harvey	sheatanner@yahoo.com
Sharon S. Porter	ssporter43@gmail.com	Shea L. Hales	peacesearchr@aol.com
Sharon Sprouse	sharonsprouse999@gmail.com	Shearle Furnish	shearlefurnish@yahoo.com
Sharon Stork	spstork@att.net	Sheila Benson	mstymtn58@gmail.com
Sharon Teagardin	addieteagardin@mac.com	Sheila D	policaudillon@hotmail.com
sharon tkacz	stkacz@kent.edu	Sheila Dalton	sheilardalton@gmail.com
Sharon Torrisi	satvet@aol.com	Sheila Desmond	sheila_desmond@att.net
sharon vander pool	vanderpoolss@comcast.net	Sheila Enright	Senright58@gmail.com
Sharon Walsh	sharonwalsh@hotmail.com	sheila jordan	sheila@sheilajordan.org
Sharon Welborn	Sharon.Welborn@cancer.org	Sheila Miller	efmiller2@verizon.net
Sharon Wojno	wojnosharon@yahoo.in	Sheila Phillips	sfp764342@yahoo.com
Sharron Helmholz	sharron430@yahoo.com	Sheila Reeves	sereeves43@gmail.com
Sharron Laplante MD	Colonialhomes@sbcglobal.net	Sheila Rekdal	she_rek@msn.com
Sharron Stewart	sharronlstewart@gmail.com	Sheila Tran	sheilabearry@yahoo.com
Sharyn St Clair	ssc1@att.net	Sheila Ward	asopao@yahoo.com
Shaun Levin	sirensong711@yahoo.com	Sheila Wentzel	sheilawentzel@yahoo.com
Shaun Walters	Shaunwalters0421@yahoo.com	Sheilagh Daly-Zeras	baileykv@hotmail.com
Shawn Anderson	shawn.anderson.3rd@comcast.net	Shel Grove	Targa66@yahoo.com
Shawn Brooks	Brooks4kids@yahoo.com	Shelby Bevins-Sullivan	shelbybevins.sullivan@yahoo.co
shawn coleman	padlinu@gmail.com	Shelby Golden	shelby.golden222@gmail.com
Shawn Lewis	sklewis@wherecaniplay.com	Shelby Heimbach	shelby.heimbach@ctg.com
Shawn Liddick	brega_10@yahoo.com	Shell Lavender	shell_5291@yahoo.com
Shawn Miulvihill	samdocsolar@yahoo.com	Shelley Brown	curiousr@me.com
Shawn O"Grady	ogrady@live.com	Shelley Driskell	sdriskell@netzero.com
Shawn Sommer	summershere8@yahoo.com	shelley Frazier	fshell1602@yahoo.com
Shawn Zubicek	shanalorraine@yahoo.com	Shelley Hartz	shellhartz@verizon.net

Shelley Ikola	sikola@iamaw.org	Sherry Handy	sherryh2@att.net
Shelley Picou	Sjhegge@aol.com	Sherry Janetzke	janetzke@yahoo.com
Shelly Blank	shellee45@q.com	Sherry kotler	sherrykotler@aol.com
Shelly Katz-Biederman	shellylkb@nyc.rr.com	Sherry Krider	phillieswin2004@yahoo.com
Shelly Paredes	shellyparedes@gmail.com	Sherry Lewis	sllnmhi@gmail.com
Shelly Shivers	shellyzinc@hotmail.com	Sherry Marsh	MTASJ@aol.com
Shelly Wall	Vagabondhause@yahoo.com	Sherry Massaro	camassaro@ysu.edu
shemayim elohim	the8th_chakra@yahoo.com	Sherry Olson	olson_sherwy@hotmail.com
Sherard Harewood	sherard_harewood@yahoo.com	Sherry Quinn	catdragon415@gmail.com
Sheree Slone	samfreos@aol.com	Sherry Sapier	shsapier@yahoo.com
Sheree Wenger	SWenger903@aol.com	Sherry Sharpnack	sherry.sharpnack@yahoo.com
Shereline Cherry	Scherry2@bellsouth.net	Sherry Toelle	stoelle@mchsi.com
Sheri Bresson	SHERIBRESSON@GMAIL.com	Sherry Weiland	sherrylw9@verizon.net
Sheri Henry	Sheri3Star@aol.com	sheryl Gillespie	gillespie@gkbaum.com
Sheri Hewitt	sherih@woodlandmeadows.com	Sheryl Groenenberg	erikandsheryl@surfbvi.com
Sheri McLaughlin	sherimac.raft@att.net	sheryl olson	sheryl@wildernesswise.com
sheri minix	sheri@cabrillomortgage.com	Sheryl Schmatjen	tealirish@msn.com
Sheri Snyder	dreamcatcherco@sbcglobal.net	Sheryl Sussbauer	srsdogfarm@skybeam.com
Sheri Staley	staleyagate@peoplepc.com	Shireen Parsons	pachamama3@gmail.com
Sheri Verges	slv19@aol.com	shirley ann burga	sburga@umich.edu
Sherilyn Coldwell	shericoldwell@att.net	Shirley Beaupre	shirleyannbeaupre@gmail.com
Sherilyn McLaughlin	sherimcl@att.net	Shirley Bensetler	ammi333@yahoo.com
Sherri bernhad	slbernhard@yahoo.com	Shirley Blevins	Shirley.Blevins@sdhc.k12.fl.us
Sherri Hancock	Shp115@aol.com	Shirley Craine	scraine@sbcglobal.net
Sherrie Rozniecki	bestmom686@aol.com	Shirley Fenile	Sfenile@yahoo.com
Sherril Longano	sherril.wheelsnc@gmail.com	Shirley Johannsen	mornsun2@aol.com
Sherrill Futrell	safutrell@ucdavis.edu	Shirley Kane	skane83456@aol.com
Sherrill Gary	Sjgary@att.net	shirley mccarthy	shirley.mccarthy@yale.edu
Sherrill Stone	rpssjs@att.net	Shirley Mcdowell	Shirleylmcdowell@gmail.com
Sherry Hanbury	sherryhanbury@rocketmail.com	Shirley McNall	sjmcnall@yahoo.com

Shirley Reis	sarretired@sbcglobal.net	SJ Stratford	sjstratford@yahoo.com
Shirley Rodman	Philomene101@aol.com	Skylaar Amann	skyamann@gmail.com
Shirley Ruiz	Magnoliablossom76@gmail.com	Skyler Voss	skyler14807@yahoo.com
Shirley Schue	shirleyschue@yahoo.com	Slowomir and Irene Przybysz	p0land81@hotmail.com
Shirley Selig	Rckyrvrs@yahoo.com	Snharo Mayes	sharonmayes@earthlink.net
Shirley Smith	Greshan60@aol.com	Snigdha Mukherjee	Snigdhamukherjee@yahoo.com
Shirley Smith	tennesseerebel1104@yahoo.com	So Allen	digdab@msn.com
Shirley Woods	shirley.woods@erickson.com	Sofia Ramirez	ramirez_sofia@yahoo.com
Shoshana Serxner	sserxner1124@att.net	Sofie Løve Forsberg	sofie.loeve@gmail.com
shyama orum	shyamaorum@yahoo.com	Sondra Boes	jsboes@sbcglobal.net
Sibylle Schwarz	ssn@rupertsland.com	Sondra Craig	sondrac16@yahoo.com
Sick Ten Eyck	rick_pacificrim@yahoo.com	Sonia Chan	sonjwal@gmail.com
sid haney	sidhaney@gmail.com	Sonia Goldstein	msgoldfi@rcn.com
SID JENNINGS	omega_tiger@cox.net	Sonia ImMasche	simmasch@gmail.com
Sid Tice	sidtice@verizon.net	Sonia Rego	soniamaria1959@yahoo.co.uk
Sidney Robles	ansrobles@sbcglobal.net	Sonja Nielsen	nishemi@gmail.com
sidney sisk	evilkitty0@gmail.com	Sonja Stahlhut	sonjastahlhut@yahoo.com
Siegfried Hellring	coolsibby@hotmail.com	Sonja Thompson	himalayasun@verizon.net
siegrid berman	siegridb@aol.com	Sonnta Simon	Sonnta@yahoo.com
Sigmund Holtz	acorn12@optonline.net	Sophia McAskill	sbcm39@gmail.com
Sigrid Asmus	essay@nwlink.com	Sophia Savich	sophiasavich@yahoo.com
silvana borrelli	silbor13@verizon.net	sophia tarte	sophsdobes@aol.com
silvana zelmanovich	dulcesanimalitos@yahoo.com.ar	sophia wright	sophia.wright.blue@gmail.com
Silvia Hall	silviahall@me.com	Soretta Rodack	jasparmom@aol.com
Silvio Fittipaldi	lambtrees@aol.com	Spencer Allen	sallen14@law.du.edu
Simone Meeker	simone.meeker@gmail.com	Spencer Dean	spotabeeme@gmail.com
Simran Khalsa	Simranmati@gmail.com	Spencer Lawley	slawlz@gmail.com
Sinjin Eberle	seberle@americanrivers.org	Spencer Morton	spencer_morton@aol.com
Sister Carol Boschert	carolcpps@yahoo.com	Spencer Stall	spencers@kitcarson.net
Siva Dawn	dragonwood65@att.net	Spyros Braoudakis	sbraoudakis@hotmail.com

Sr. Christina Murphy	cmurphy@ssndwilton.org	Stanley Barreto	barretostanley@yahoo.com
Stacey Bradley	witchykitty@comcast.net	Stanley Charles	srcharles1@comporium.net
Stacey Francis	purple_zep@yahoo.com	stanley e powell	stanleyepowell@yahoo.com
Stacey Govito	staceygovito@yahoo.com	Stanley Peterson	stanart@pacbell.net
Stacey Gunderson	omaha_sunshine@yahoo.com	Stanley Scheller	stanschel@earthlink.net
Stacey Lama	Lupussapiens2000@yahoo.com	Stanley Starbuck	windowsillcactus@gmail.com
Stacey Menendez	gready@bellsouth.net	Stanley Tomkiel	stomkiel@prodigy.net
Stacey Remick-Simkins	sremicks@gmail.com	Stanley Veyhl	sveyhl@gmail.com
Stacey Rohrbaugh	buteosr@yahoo.com	Star Star	grammystar@gmail.com
Stacey Skole	sdskole@gmail.com	stasia spade	blackswordwoman@yahoo.com
Stacey Stepp	yecatsppets@yahoo.com	stefan belza	stefanbelza@sbcglobal.net
Stacey Wolfe	narpet7@aol.com	Stefan Taylor	ststevectaylor8@gmail.com
Staci Stanton	estacia2003@hotmail.com	Stefania Johns	stefania.johns@gmail.com
Staci Tefertiller	seaturtle9999@live.com	Stefanie Watkins	soma.sema@gmail.com
STACIE CHARLEBOIS	armostacie@hotmail.com	Stella Godbey	Stellandon@gmail.com
Stacie Spaeth	spacie25@hotmail.com	Stella Hamilton	Bw85stella@yahoo.com
Stacie Wooley	s.m.wooley@sbcglobal.net	stella lin	linstel@gmail.com
Stacy Bloodworth	stacybradbury@hotmail.com	Stella Staszyn	Mommystellababy@yahoo.com
Stacy Grossman	stacygandadamg@gmail.com	Steph Spencer	poppyspencer@gmail.com
Stacy Lupori	Ayeayebear@yahoo.com	Stephanie Barron	stephanie1142003@yahoo.com
Stacy Muskopf	stacylmuskopf58@gmail.com	Stephanie Bunn	stephanie.bunn@gmail.com
Stacy Parker	Lemonwitch@hotmail.com	Stephanie C. Fox	scfjdqueenbee@yahoo.com
Stacy Reedy	stacyreedy60@yahoo.com	Stephanie Christoff	StephanieChristoff@yahoo.com
Stacy Schrader	schrader336@yahoo.com	Stephanie Christopher	1989sac@gmail.com
Stacy Thompson	4stacythompson@gmail.com	Stephanie Clark	Sclarkenterprises@gmail.com
Stan Arledge	PintheI@aol.com	stephanie clark	scrayess@gmail.com
Stan Fitzgerald	fitzgstan@aol.com	Stephanie Feyne	stefeyne@gmail.com
Stan Rosaaen	ssrosaaen@gmail.com	Stephanie Gajar	Gajar@alum.mit.edu
Stan Samuels	ssamules@mindspring.com	Stephanie Hill Alexander	salexand@ivytech.edu
Stan Thayne	stanyel2001@yahoo.com	Stephanie Honore	stephaniehonore@aol.com

Stephanie Huntington	stephaniehuntington@yahoo.com
Stephanie Jaggard	sajaggard@yahoo.com
Stephanie Koziski	sacredmoon@comcast.net
stephanie lewis	slcribtoy@aol.com
Stephanie Lovell	slovell.rn@gmail.com
Stephanie Manville	stephaniemanville@yahoo.com
Stephanie Miklavcic	stephaniejan23@yahoo.com
Stephanie Mory	Pocanthill@yahoo.com
stephanie Nunez	evilbitch_13@yahoo.com
Stephanie R Haas	stephanierhaas@yahoo.com
Stephanie Ray	Stephsangelcat@yahoo.com
Stephanie Reed	chilledoutchick9@aol.com
Stephanie Schueler	stephanieaclu@spamex.com
Stephanie Schultz	momsteph@optonline.net
Stephanie Seymour	stephanieseymour66@yahoo.com
Stephanie Thompson	Smt61465@yahoo.com
Stephany Haesaert	slharper788@gmail.com
stephen alamango	cookiedog68@hotmail.com
Stephen Alley	s.alley@sbcglobal.net
Stephen Alley	stephenalley69@gmail.com
Stephen and Robin Newberg	crashnewberg@netscape.net
Stephen Badger	stephen.badger@effem.com
Stephen Bailey	stilltruckinsb@yahoo.com
Stephen Battis	sbattis@tmlp.net
Stephen Bohac	stephenbohac56@gmail.com
Stephen Burns	sburns50@msn.com
Stephen Craig Rolston	craigrolston@frontier.com
Stephen Dempsey	chairman@epix.net
Stephen Disch	swd142@verizon.net
Stephen Donato	stephendonato@att.net
Stephen Drosdick	hikebrewfish@gmail.com
stephen durbin	kilo34@cablespeed.com
Stephen Easter	sseaster@umich.edu
Stephen Evans	outhouse161@yahoo.com
Stephen Geldard	sgeldard569@gmail.com
Stephen Glaholt	sglaholt@hotmail.com
Stephen Gliva	steveillini@yahoo.com
Stephen Green	malogatos@yahoo.com
Stephen Grove	wphistorian@aol.com
Stephen Gruber	scgruber@verizon.net
Stephen Hackney	hackney13@hughes.net
Stephen Johnston	timothysjohnston@yahoo.com
Stephen Keener	kaara07@yahoo.com
Stephen Kislock	skislock@yahoo.com
Stephen Maxwell	mecromagnon@yahoo.com
Stephen Mead	mead815@yahoo.com
Stephen Minor	stephenminor99@gmail.com
Stephen Oder	steve.oder@gmail.com
Stephen Owen	Owen@xavier.edu
Stephen Pazdziorko	stevepazdziorko@gmail.com
Stephen Rebello	stephen.rebello2020@gmail.com
Stephen Rosenblum	pol1@rosenblums.us
Stephen Ruff	ruff_stephen@yahoo.com
Stephen Russell	srussell60@gmail.com
Stephen Sanditz	steve01030@comcast.net
STEPHEN SCHMIDT	ssdog@me.com
Stephen Schultz	sschultz@mrbgroup.com
Stephen Smith	scsmith303@verizon.net
Stephen Spears	Scspears@yahoo.com
Stephen Theriault	stevetheriault@snet.net

Stephen Weitz	weitzs@earthlink.net
stephen wogan	steve.wogan@me.com
Stephen Yahn	steveyahn@centurylink.net
Stephenie Ambrose Tubbs	atinc@mt.net
Sterling Proffitt	scproffitt@comcast.net
Stevan Brown	steveb539@aol.com
Steve & Diane Tralles	rodette33@yahoo.com
Steve Arnold	arn100@midrivers.com
steve babb	sp1720@yahoo.com
Steve Berglund	slbunky@sbcglobal.net
Steve Breyman	breyms@rpi.edu
Steve Brown	Stevebrown145@hotmail.com
Steve Christianson	stevenchr@yahoo.com
Steve Clough	clough.mitchell@gmail.com
Steve Connell	chr3327@blackfoot.net
Steve Creech	Obscyre@yahoo.com
Steve Crumrine	cocalbo@me.com
STEVE DUDZINSKI	sjd1255@att.net
Steve Duggan	sduggan16@yahoo.com
Steve Frazier	steve@thebrewersart.com
Steve garrett	smgmkg@gmail.com
steve go	dustbusterz@yahoo.com
Steve Gross	stevegross2845@gmail.com
Steve Hanlon	steve.hanlon@teamone-usa.com
steve hooper	stepahoop@yahoo.com
Steve Irwin	qwiknfree@yahoo.com
Steve Iverson	ryeman4@aol.com
Steve Jackson	stevenejackson@gmail.com
Steve Joslin	sjjalj@gmail.com
Steve Kaub	Kaubsteve@yahoo.com
steve keena	stevenkeena12@yahoo.com
Steve Keim	fletchrider@frontier.com
steve kent	houseandcomfort.ca@gmail.com
Steve Kiffmeyer	torkenflogger@gmail.com
steve kilcullen	stephen.kilcullen@nomura.com
Steve Levine	fsulevine@yahoo.com
steve lucas	slucas78704@gmail.com
Steve Malafy	smalafy@gmail.com
Steve Mattan	stevemattan@comcast.net
Steve May	slmay49@gmail.com
Steve McBride	flyguy_jaden@yahoo.com
Steve McNeill	smac40dim@cableone.net
Steve Morris	morris345@sbcglobal.net
Steve Ollove	sbuff22@aol.com
Steve Ongerth	intexile@iww.org
steve oslund	stevilone@gmail.com
Steve Parmenter	parsc@verizon.net
Steve Perrin	SPerrin1946@outlook.com
Steve Radcliffe	steveradcliffe@peak.org
steve rajeff	srajeff@gloomis.com
Steve Reznick	email@sjferret.com
Steve Robey	steve.robey@gmail.com
Steve Rone	srone@mail.com
Steve Rosin	steverosin@gmail.com
Steve Roth	slroth24@gmail.com
Steve S	washingtonstevesmith@yahoo.com
Steve Schildwachter	spschildwachter@yahoo.com
Steve Schramm	reelsafari@ahoo.com
Steve Schueth	stschueth@hotmail.com
Steve Sheehy	sheehy.s@charter.net

Steve Sugarman	wrathchild62@gmail.com	Steven Hohensee	ongho@lvnworth.com
Steve Swartz	swartzs77@yahoo.com	steven judd	sbjudd@gmail.com
STEVE TARDIF	justme531@verizon.net	Steven Kline	skline57@verizon.net
Steve Troyanovich	stephen.troyanovich@att.net	steven Korson	steven93541@sbcglobal.net
Steve Tyler	abc3dtd@gmail.com	Steven Kostis	steventhechipmunk@mac.com
steve wand	swand52@hotmail.com	Steven Kranowski	skranowski@aol.com
Steve Wanninger	smwanninger@comcast.net	Steven Markgraf	smgraf@yahoo.com
Steve Williams	swilliams70@ctcweb.net	Steven Minier	flaier@charter.net
Steve Wilson	safe_drvr@yahoo.com	Steven Morris	speedracer1@mail.com
Steve Wolfert	swolfert@optonline.net	Steven Nelson	nelson608@sbcglobal.net
Steve Wullert	swull@ptd.net	Steven Nelson	vanaduke@msn.com
Steven Andrychowski	vvcsteve@yahoo.com	steven patterson	stevepatter@hotmail.com
Steven Arnett	sja102@hotmail.com	Steven Phenicie	spphen62@gmail.com
Steven Benner	sdbenner1@cableone.net	Steven Shaffer	wolfdudesteve@gmail.com
Steven Berman	berm0022@umn.edu	Steven Standard	swstandard@yahoo.com
Steven Campbell	hercleez@gmail.com	Steven Steele	tempou812@hotmail.com
Steven Cantner	cantner@gmail.com	Steven Tichenor	steven_tichenor@hotmail.com
Steven Carpenter	scarpenter123@gmail.com	Steven Tweito	stevetweito@yahoo.com
Steven Caton	steven.caton@floberg.com	Steven Vogel	steven.j.vogel@earthlink.net
Steven Chappell	schappell2@msn.com	Steven Waldrip	emptysw@gmail.com
Steven Collins	Stevendouglascollins@gmail.com	Stewart Smythe	stu99smythe@gmail.com
Steven Cozzi	sjcozzi32@gmail.com	Storm Cunningham	storm@revitaliz.com
Steven Davies	steven_m_davies@yahoo.com	Stuart Goldstein	borealis@sunset.net
Steven Esposito	slesposito@optonline.net	stuart stong	firemanstubaby@hotmail.com
Steven Fenster	sjfenster@gmail.com	Sue & Tim Scholl	usafscholl@aol.com
Steven Garron	primatesteve@msn.com	Sue Arter	sarter@wowway.com
steven goodelle	valdrin@sbcglobal.net	Sue Chard	Chard60@comcast.net
Steven Hernandez	stevenhjr@hotmail.com	sue copeland	sueco2@aol.com
Steven Hibshman	shibshman@yahoo.com	Sue Danver	sdanver7@aol.com
steven Hoffman	orcadog85@gmail.com	Sue E. Dean	deanks@juno.com

Sue Ellen Lupien	sueellenlupien@yahoo.com	Susan Allen	su.allen50@gmail.com
Sue Geurkink	suegeurkink@live.com	susan ambrose	lee2410@comcasy.net
Sue Ghilotti	sueg@colfaxnet.com	susan anderson	susan_anderson@iu13.org
Sue Hanlin	moonbeam@centurytel.net	Susan Bannister	suebirch@earthlink.net
sue harrington	csueh1@gmail.com	Susan Bassett	sueb143@q.com
Sue Harrington	wldwmn53@hotmail.com	Susan Bechtholt	kaliel@juno.com
sue hoffman	volvosue49@yahoo.com	Susan Bell	suebell618@gmail.com
Sue King	suefking@aol.com	susan betourne	betourne1967@yahoo.com
Sue Liu	tcyliutx@yahoo.com	Susan Biccum	sbrattcat@hotmail.com
Sue Marton	sue.marton@anixter.com	susan biggs	followingthepathsofangels@yaho
sue mccasey	smccasey@opesadvisors.com	Susan Bond	Wolves4ever53@yahoo.com
Sue McCluskey	mccluskey710@hotmail.com	Susan Boorsma	smboorsma@gmail.com
Sue Nearing	bookwoman72@yahoo.com	Susan Brandes	sbrandes1@cox.net
Sue Nuccio	gutterrx@yahoo.com	SUSAN BROADHEAD	s_broadhead@hotmail.com
sue roberts	goldenpalomino9@aol.com	Susan Brown	Sbcognac@aol.com
Sue Stoeckel	suecon@ymail.com	Susan Buchanan	suzyq36542@yahoo.com
sue swiss	sue.swiss@gmail.com	Susan Burt	seburt1960@gmail.com
Sue Tinkle	tinkandtom@sbcglobal.net	Susan Canada	gatordemi@yahoo.com
Sue Van Loon	vanloons@easystreet.net	Susan Canty	susancanty4@gmail.com
Suesie Hartman	ptah600@ptd.net	Susan Chandler	wobblywarriors@comcast.net
Sumana Raychaudhuri	sraychaudhuri@gmail.com	Susan Clark	Sgpc422@gmail.com
Summer Ankiel	Summer_ankiel@yahoo.com	Susan Clark	susan.g.clark@embarqmail.com
Summer Crabtree	scrabtree7@gmail.com	Susan Clemens	sclemens@snet.net
Summer Devlin	hdevlin1@att.net	Susan Coffi	Slcoffi74@Gmail.com
Summer Smith	Miamisummer21@aol.com	Susan Cole	cgs@prodigy.net
Summerfield Baldwin	sumbaldwin@gmail.com	Susan Covey	mizmadhatter@hotmail.com
sumner ferris	sumner41@verizon.net	Susan D"Amato	sdamato@syr.edu
sun yoo	gesunyoo@gmail.com	Susan Davenport	suedcpa@hotmail.com
suneet srivastava	suneetforcharity@gmail.com	Susan Davis	s.e.davis@icloud.com
Susan Herman	sherman@richland.org	Susan Dawson	lapianta@aol.com

Susan Deemer	sedeemer@msn.com	Susan Hastings	sustings@gmail.com
susan delles	sdelles@jeffnet.org	Susan Hawrylo	shawrylo2@gmail.com
susan dickerson	lola2danz@gmail.com	susan hebert	susan@ecobre.com
Susan Dimmock	susandimmock@frontier.com	Susan Heisler	missfitz@mac.com
Susan Dobbelaere	susan.dobbelaere@gmail.com	Susan Helton	sbssuperior@gmail.com
Susan Dorchin	sdorchin@comcast.net	Susan Hough	dodger_bullet@hotmail.com
Susan Dunaway	katsu5244@live.com	Susan Hubbard-Reeves	sfhubbardr@aol.com
Susan Earle	sooosun@gmail.com	Susan J Llorca	susanjllorca@aol.com
Susan Earle	susand.earle@gmail.com	Susan Jacobson	suezjacobson@gmail.com
Susan Ebershoff-Coles	suzieec@indy.net	Susan Janke	susanjanke47@yahoo.com
Susan Eikenbary	susan.eikenbary@colorado.edu	Susan Johnson	s1964j@gmail.com
Susan Elkin	susanelkin@ymail.com	Susan Jolicoeur	centrehealingeast@yahoo.com
Susan Ellerman	s_ellerman@yahoo.com	Susan Kaar	elementalzapgirl@yahoo.com
susan ellis	shellis@frontiernet.net	Susan Kalan	S_kalan@hotmail.com
Susan Emery	susan_emery@verizon.net	Susan Kelly Ambler	akelly4now@yahoo.com
Susan Eyclesheimer	Suz.eyc@hotmail.com	Susan Kilgore	srktraveler@yahoo.com
Susan Fanning	fanning_susan@yahoo.com	Susan Knight	knight.sue4@gmail.com
Susan Faulkner	2faulkners@att.net	Susan Kozinski	s.kozinski@icloud.com
susan foley	susietwin001@aol.com	Susan Lacy	slacy@kent.edu
Susan Ford	fords208@gmail.com	Susan Lanes	sllanes@comcast.net
Susan G Rives-Denight	hunigram5@yahoo.com	Susan Lannin	susan82@earthlink.net
Susan Galante	rosered857@centurylink.net	Susan laube	susieq2849@gmail.com
Susan Gellert	susruss2002@gmail.com	Susan Lea	suelea5@yahoo.com
Susan Gilcreast	babyangelbiker@yahoo.com	Susan Leahy	sleahy@sbcglobal.net
Susan Goldberg	sgoldb5785@aol.com	susan leber	leber2000@gmail.com
Susan Goldstein	susanrgoldstein@gmail.com	Susan Lefler	Susan_lefler@yahoo.com
Susan Gottfried	suepurr@lookoutnow.com	Susan Leihy	Sleihy@hotmail.com
Susan Hanger	stanifer16@earthlink.net	Susan Levin	sclevin18@att.net
Susan Harby	susanharby@aol.com	Susan Linden	suelinden@yahoo.com
Susan Harman	susanharman1@gmail.com	Susan Markowitz	7puffins@gmail.com

Susan McCarthy	mstfmbl@gmail.com	Susan Schlessinger	schlessingers@bellsouth.net
Susan McGovern	susannasojourner@gmail.com	Susan Schott	srschott614@icloud.com
Susan McGraw Keber	susankeber88@aol.com	Susan Schuchard	sschuchard@tds.net
Susan Mcmillan	Sssswm@aol.com	Susan Schueller	schuellers@yahoo.com
Susan McMullen	slmcm57@gmail.com	Susan Senecal	imjustsuskay@yahoo.com
Susan Meeker-Lowry	smeekerlowry@gmail.com	Susan Shaak	mgsatmsc@gmail.com
Susan Messerschmitt	smesserschmitt@rochester.rr.co	Susan Simone	jonssonsimone@hotmail.com
susan michetti	sunlightrising@gmail.com	Susan Sively	kipsively@prodigy.net
Susan Morem	slevmor@q.com	Susan Souers	sours@gmail.com
Susan Morris	suzmorr1@yahoo.com	Susan Stover	stoversusanm@gmail.com
Susan Munroe	susanfromnh@gmail.com	Susan Sullivan	sjsull55@gmail.com
Susan Nierenberg	QnBear@aol.com	susan sutton	susansutton_21@hotmail.com
Susan P. Vessicchio	susancarolpvess@aol.com	Susan Talbot	susantalbot52@hotmail.com
Susan Pauley	susandawn@hotmail.com	Susan Taylor	ssmagpie1965@gmail.com
Susan Pederson	susanhhpederson@gmail.com	Susan Termini	sjtermini@hotmail.com
Susan Peirce	speirce@prodigy.net	Susan Thing	sething@msn.com
Susan Pelakh	magratgar1ick@yahoo.com	Susan Thompson	suzzeliza@aol.com
Susan Piercy	susanwpiercy@gmail.com	susan thomson	wolves4u2000@yahoo.com
Susan Ponchot	sueponchot@gmail.com	susan tomaselli	tomasellis@aol.com
Susan Ponchot	susanponchot@aol.com	Susan Tucker	robbybob2@gmail.com
Susan Porter	howsue@ptd.net	Susan Ulrich	sueandtedulrich@msn.com
Susan Porter	susansporter@hotmail.com	Susan VanMeter	wolfmoon@citlink.net
Susan Rich	tango4717@msn.com	Susan Watts	susanmwr@aol.com
Susan Roehm	Susanroehm@hotmail.com	Susan Wayne	frdmsprtlvhrs@aol.com
susan Rubin	suerainbowskies@yahoo.com	Susan Wechsler	susanwechsler@comcast.net
susan rudnicki	susanrudnicki@gmail.com	Susan Weinstein	suewein@ecentral.com
Susan Ryan	susanryan2010@gmail.com	Susan White, PhD	swhite43@capellauniversity.edu
susan sander	ssander2325@yahoo.com	Susan Wigfield	susanwigfield@yahoo.com
Susan Sandwell	blinkyr@gmail.com	Susan Wilkie	chris1986@comcast.net
Susan Sanocki	suelynn727@hotmail.com	Susan Winkelman	swinkelm97@gmail.com

Susan Winsberg	susanwinsberg@sbcglobal.net
SUSANA DEL VALLE JIMENEZ	sjimenez@legacy.com.ar
Susang-Talamo Family	wpanet@comcast.net
Susanna Cummings	srcummingss@gmail.com
Susanna Marshall	susypmarshall@gmail.com
susanna minacheili	cocimacicario@yahoo.com
Susanna Purucker	spurucker@bellsouth.net
Susannah Gelbart	gelbartsusannah@yahoo.com
susanne berntsson	susanneberntsson@sbcglobal.net
Susanne Carpenter	wbtscarpenter@gmail.com
Susanne Ellis	ellisus@astound.net
Susanne Groenendaal	stargazerlilly1@verizon.net
Susanne Hesse & Doug Dyer	bridgestohealth@windstream.net
Susanne Murray	firetopaz100@yahoo.com
Susanne Pillay	sitasmom@yahoo.com
Susanne Scott	infotectives@gmail.com
Susi Hulbert	susih1313@yahoo.com
Susie Cassens	susiesart56@gmail.com
Susie Elleman	se2012@sopris.net
Susie Tealdo	susieinmiami@gmail.com
Suzan McGlinch	suemcglinch@yahoo.com
suzan sims	suzansims619@yahoo.com
Suzana Megles	s.megles@att.net
Suzanne a"Becket	8pawprints@sbcglobal.net
Suzanne Birch	s-jbirch@q.com
Suzanne Blackburn	suzanneblackburn@gmail.com
Suzanne Bores	Heartcoach@sbcglobal.net
Suzanne Carter	suzanne1951@windstream.net
Suzanne Challinor	schallfa@hotmail.com
Suzanne Dalton	straburyred@sbcglobal.net
Suzanne Deerlyjohnson	suzannedj3@gmail.com
Suzanne Dickerson	shdickerson@hotmail.com
suzanne emanuel	lousue1913@gmail.com
Suzanne Gordon	sgordon454@gmail.com
Suzanne Hamer	tedsuza@gmail.com
Suzanne Hedrick	suzanne6@tidewater.net
Suzanne Hoedemaker	butterflygrrrL13@yahoo.com
Suzanne Hunter	suzanne.hunter@live.com
Suzanne Johnson	1814reinelt@sbcglobal.net
Suzanne Kirby	skirby3215@gmail.com
Suzanne Kruger	soozikruger@yahoo.com
Suzanne Murphy-Larronde	murphylarronde@gmail.com
suzanne o"meara	suzanneomeara@telkomsa.net
Suzanne Peña	iamsaturnine@yahoo.com
Suzanne Reilly	suzeqreilly@sbcglobal.net
Suzanne Saunders	segnbora@gmail.com
suzanne schaem	suzannemls@yahoo.com
Suzanne Scollon	suzie@geosemiotics.net
Suzanne Wiacek	Svwiacek@yahoo.com
Suzanne Zook	suez51@yahoo.com
Suzette Hoyt	Suzettehoyt@gmail.com
Suzie Fromer	suziefromer@gmail.com
Suzie Savoie	klamathsiskiyou@gmail.com
Suzy Fraser	suzyfraser9@hotmail.com
Suzy Gerard	suzygerard1@gmail.com
suzy henderson	hendersuz@yahoo.com
Suzy Mound	findsuzy@gmail.com
Suzy Siegmann	ssiegmann@gmail.com
Suzy Thayer	suzy@donvaniman.com

Sydney Berner	sydneysstudio.9@gmail.com	Tabitha Tracey	mstracey_1970@yahoo.com
Sydney Schofill	sidneyschofill@yahoo.com	Tahlia Schreiber	tsmudsie811@gmail.com
Sylvia Barnard	sbarnard@albany.edu	Takako Ishii-Kiefer	takiishii@hotmail.com
Sylvia Cardella	sylviadeer@yahoo.com	Talbott Hagood	hap4@meckcom.net
Sylvia Cavener	scavener@tx.rr.com	Tamara Ashley	tamara.m.ashley@gmail.com
Sylvia Dannelley-McCree	sylviadannelleymccree@yahoo.co	TAMARA HULSEY	hulseyrayborn@yahoo.com
Sylvia De Baca	sylviadeba@verizon.net	Tamara Voyles	tamaravoyles@gmail.com
Sylvia DeRooy	oftheforest@att.net	Tami Campbell	Bibiramone99@gmail.com
Sylvia Duncan	sduncan1949@gmail.com	Tami Christenson	tricntyadmin@midrivers.com
Sylvia Eastman	seastman@cavtel.net	Tami Derezotes	tami@mail2yes.com
sylvia idelson	ssuzowsky@charter.net	Tami Maltese	kirby@midrivers.com
sylvia mccune	sylvia.mccune@skybeam.com	Tami Palacky	tpalacky@gmail.com
sylvia ramsey	smramsey1@verizon.net	Tami Phelps	Tameow@att.net
Sylvia Rodriguez	sylvia_lion@yahoo.com	Tammera Hinshaw	jetfueled@comcast.net
Sylvia Rodríguez	sylviarofe@gmail.com	Tammy Anderson	Tamshawaiipipedream@hotmail.co
Sylvia Taylor	syltaylor@bluefrog.com	Tammy Fisher	Lilbud79@comcast.netj
Sylviane Mahaux	sylvianegm@hotmail.com	Tammy King	hotjenday@aol.com
T A Anderson	annaa52@peacemail.com	Tammy Lusciatti	tglusci@me.com
T C	matrixkittikat@yahoo.com	Tammy Moore	tammylynn1962@charter.net
T Grasso	tgrasso@sequoyahcc.com	Tana Gullotta	lunikitties@optonline.net
T J Thompson	tjthompsonmd@centurytel.net	Tangela Kassler	daviatress@gmail.com
T Kozlowski	thkoz78@yahoo.com	tania kurman	freetk01@aol.com
t logan	telogan14@gmail.com	Tania Landauer	landauer.t@gmail.com
T Malchow	t.malchow@yahoo.com	Tania Malven	tmalven@yahoo.com
t mar	tamymayer@shaw.ca	Tanina Linden	tanina@thelindens.org
t mo	shredbetty70@gmail.com	Tanner Calhoun	tlcalhoun0410@yahoo.com
T Patton	Tpatton100@hotmail.com	Tanterrian Taylor	sunshine_23504@yahoo.com
T.S. McMillin	tmcmilli@oberlin.edu	Tanya Baldwin	Tanya_Baldwin@yahoo.com
TABATURA JOB	KITTEN4126@MSN.COM	Tanya Downs	Strutqueen@yahoo.com
Tabitha Maya	Coffee-nicotine@hotmail.com	Tanya Knappman	Tanya.knappman@gmail.com

Tanya Rife	Tanyaann089@gmail.com	Ted Lapis	Ted.Lapis@gmail.com
Tanya Roland	jmenmo@yahoo.com	Ted Paschke	tedpaschke@hotmail.com
Tanya Theobald	peach913@yahoo.com	Ted Pollard	tpollard@health911.com
Tanya Wagner	tsw11236@aol.com	Ted Proske	santed2@sbcglobal.net
Tanya Wenrich	tanyawenrich@yahoo.com	Ted von Hippel, Ph.D.	ted@astro.as.utexas.edu
Tanya Wilson	scootergrrl@pacbell.net	Ted Weissgerber	burger2227@gmail.com
Tara Andrews	taralandrews@yahoo.com	Tedi Ringel	lringel@nyc.rr.com
Tara Appleman	playboymodel666@yahoo.com	Te-Fen Chen	hsitai_yao@yahoo.com
Tara Brantley	taraa27@live.com	Tela Webb	Tela.webb@gmail.com
Tara Conaway	tconaway23@gmail.com	Terence Carroll	terence727@verizon.net
Tara D"andrea	Taradandrea@aol.com	Teresa Ackerman	terik@mac.com
Tara Hottenstein	Thottens@gmail.com	TERESA BLACHOWIAK	rainbowdragon@att.net
Tara Lawrence	tarajlawrence@hotmail.com	Teresa Bosworth	Teresabosworth1@gmail.com
Tara Lulla	liberal_hoosier@yahoo.com	Teresa Cambridge	ricelaw@sbcglobal.net
Tara Martinez	Dantaramar3@sbcglobal.net	Teresa Collins	tdcollins17@hotmail.com
Tara Verbridge	taraverbridge@yahoo.ca	Teresa Hoffelmeyer	teresamhoff@yahoo.com
tara wheeler	tara@thebaldwinlawfirm.com	Teresa Iovino	tmi_darktower@yahoo.com
Taryn Haynes	taryn@khaya.com	Teresa Mayorga	mayorga_teresa@yahoo.com
Tasha Carpenter	whitewaterotter@aol.com	Teresa Mays	tlmays@hotmail.com
Tatiana Gomes	tatianacamcho87@sapo.pt	Teresa Patterson	LadyPegasus059@gmail.com
tatiana kurakin	jbdtmk@yahoo.com	Teresa Richardson	NewChinaDoll@Gmail.com
Tawn Kreider	tmakreider@gmail.com	Teresa Springer	btspring@lhtot.com
Taylor Belshaw	AutumnMists@live.com	Teresa Sullivan	spiritbody@earthlink.net
Taylor Bottar	Tbottar@gmail.com	Teresa Winsor	englishflower@cox.net
Taz Butler	tz1303@gmail.com	Teresa Woods	Teresakwoods2545@gmail.com
TC Lyford	Trucraig@yahoo.com	Teri Belyea	tbelyea@yahoo.ca
Tecari Shuman	tecari.shuman@gmail.com	Teri Bollweg	uktabteri@msn.com
Ted Beringer	beringert@umkc.edu	Teri Forester	tricketts3@comcast.net
Ted Fishman	ted10000@yahoo.com	Teri Matthews	matthewsteri@comcast.net
Ted Knight	ted_knight85@yahoo.com	Teri Travis	teritravis@msn.com

TeriLee Huff	tlclocate@gmail.com	Tg. Gale Green	ggreen@wisc.edu
Terrall Dingman	terrallteacher@yahoo.com	thaddeus shrader	thaddeus@bonsai-design.com
Terri Barreras	tsb@pollina.com	Thane Harpole	Hungryharpole@yahoo.com
Terri David	terri_david@bellsouth.net	Thayer Jordan	ttjbear1@aol.com
Terri DeFilippo	terrildef@gmail.com	The Honorable Tiffany Snyder	tiffany.ashley.snyder@gmail.co
Terri Gallion	vulturewatcher@yahoo.com	The Rev Charles H Hensel	henselgary@att.net
Terri Gits	tntgits@gmail.com	thearin wendel	thearin.wendel@gmail.com
Terri Henry	territude001@gmail.com	Thelma Matlin	thelmamatlin@gmail.com
Terri Levine	t@lifesafetysys.com	Theo Giesy	tedslioness@yahoo.com
Terri Reischl	tarotbyterri@yahoo.com	Theodore Bahn	ted.bahn@cio-2-rent.com
Terri Robb	terri@js-x.com	Theodore Brazeau	t2brz@yahoo.com
Terri Rose	hntrose@man.com	Theodore Burger	theodoreburger@rcn.com
Terri Sorrell	sorrellt@yahoo.com	Theodore C. Snyder	tedcsnyder@gmail.com
Terrie Matson	terriejean1@yahoo.com	THEODORE DICKSTEIN	theostein@comcast.net
Terrie Phenicie	tsphenicie@gmail.com	Theodore Evans	evans.iv36@gmail.com
Terrie Williams	yarddawg_1@att.net	Theodore King	txk13@hotmail.com
Terry Bergeron	sufyr23@gmail.com	Theodore Marszalek	tdmarz3@gmail.com
Terry Church	tcequine@earthlink.net	Theodore Zook	t_a_zook@hotmail.com
Terry Deegan	Terrydeegan@aol.com	Theresa Ann White	theresaann1941@gmail.com
terry felts	drterbear1@aol.com	Theresa Badus	teri2801@gmail.com
Terry Friedman	terry.belnay@gmail.com	Theresa Bradshaw	theresa.bradshaw@yahoo.com
Terry Huey	terry.huey@uky.edu	Theresa Cohen	theresaecohen@aol.com
Terry Jess	Terry.E.Jess@gmail.com	Theresa Corelli	Theresa.corelli@gmail.com
Terry Lightowler	terryleeme2010@hotmail.com	Theresa Digiannantoni	Theresaskippy@gmail.com
Terry McDowell	juniperccw@hotmail.com	theresa fassett	circle33@email.com
Terry Neumann	Terryneumann2000@yahoo.com	Theresa Gratis	t.gratis@verizon.net
Terry Nightingale	tnight@pobox.com	theresa johnson	terrymjohnson@yahoo.com
Terry Tedesco-Kerrick	ttedesco49@cox.net	Theresa Joslin Steppe	theresa.joslinsteppe@edwardjones.com
Tery Gohsman	gohsman@charter.net	Theresa Knapp	tknapp@cableracer.com
Tess Husbands	tushi43@hotmail.com	Theresa McEvoy	tmcevoy122@yahoo.com

theresa miller	igornla@cox.net	Thomas Corcoran	azmailmantjc9@yahoo.com
theresa mitchum	teewashere23@yahoo.com	Thomas Diehl	aerobicf@ptd.net
Theresa Morris	theresahmorris@comcast.net	Thomas Dorsey	solidfurniture@aol.com
Theresa Strom	Theresastrom@yahoo.com	Thomas Estes	twigatruth@yahoo.com
Theresa Terhark	tterhark@msn.com	Thomas Fawell	tfawell@yahoo.com
Theresa Vernon	acuvern@tvernonlac.com	Thomas Frank	tof@cox.net
Therese DeBing	buddhabear88@hotmail.com	Thomas Gardner	gardners3@gmail.com
Therese Ryan	mandm2872@earthlink.net	Thomas Giblin	twgiblin@yahoo.com
Thom Burt	thomburt@att.net	Thomas Hearty	tbhearty@yahoo.com
Thom G.......	Thomagood2@gmail.com	Thomas Hoffman	gopullman@aol.com
Thom Lawson	Thom@macombpetland.com	Thomas J Flowers Sr.	thomasflowerssr@msn.com
Thom Peters	voice4wild@aol.com	Thomas Janzen	nessmuk@live.com
Thomas A Lee	talee@westernsugar.com	Thomas Klein	bgarf41@yahoo.com
Thomas A. Guaraldi	wolftalker7799@yahoo.com	Thomas Knecht, MD, PhD	th.pa.knecht@gmail.com
Thomas Aber	tbzaber@sbcglobal.net	Thomas koven	tomkoven@gmail.com
Thomas Adamski	tadamski8@gmail.com	Thomas Kuehler	tomkuehler@gmail.com
Thomas Allen	Tallen@northbaymgt.com	Thomas Leonard	tomobronx@optonline.net
Thomas and Barbara Schaeffer	btschaeffer@verizon.net	Thomas Ley	tommyley2004@yahoo.com
Thomas Artin	tom@artinarts.com	Thomas Libbey	thomas_libbey@hotmail.com
Thomas Bain	tbain117@yahoo.com	Thomas Linell	tomlinell@yahoo.com
thomas Bark	tombark20@yahoo.com	thomas macaulay	thomas.macaulay@wright.edu
Thomas Bauer	tomhaybauer@yahoo.com	Thomas Mader	tmader84@gmail.com
Thomas Bejgrowicz	baygrowits@yahoo.com	Thomas McCormick	Tommcc325@gmail.com
Thomas Blaney	Onesky11@cox.net	Thomas Miskovsky	miskovsky@me.com
Thomas Blanton	tebmtn@excite.com	Thomas Moore	corruptedcanine@yahoo.com
Thomas Boswell	thomcms@juno.com	thomas more hynes	jchrist101@gmail.com
Thomas Brady	Placerminer@me.com	Thomas Mueller	thomasmueller2@gmail.com
Thomas Brennan	sacoman589@gmail.com	Thomas Nelson	twnelson@erols.com
Thomas Brenner	voohoo@aol.com	Thomas Osborn	tommytoeoz@yahoo.com
THOMAS CONNOR	tconnor@hvc.rr.com	Thomas Peterson	tomp2103uw@gmail.com

thomas Phillips	thp146@yahoo.com	Tiffany Baker	Tanchella@AOL.com
Thomas Pintagro	tjp1069@hotmail.com	Tiffany Baker	Tiffanybmit@aim.com
Thomas R. Janowski	tomjanowski@ymail.com	Tiffany H	gabbystf@hotmail.com
Thomas Reynolds	1941train@nycap.rr.com	Tiffany Hayden	thayden28@gmail.com
Thomas Roby IV	tomroby@sbcglobal.net	Tiffany Howard	tthoward2016@gmail.com
Thomas Rose	tr4302@gmail.com	Tiffany McCleary	tiffmccleary@gmail.com
Thomas Rottmayer	rotts999@yahoo.com	tiffany piscitello	tfpiscitello@yahoo.com
thomas rowlette	tkyancy48cubby@gmail.com	Tiffany Story	tiffo1111@Hotmail.com
Thomas Sarelas	valtom1@sbcglobal.net	Tiffany Vanderslice	Tvanderslice@att.net
Thomas Schofield	tmschof@comcast.net	Tiffany Witmer	t_witmer@yahoo.com
Thomas Scott	tscott@rialto.k12.ca.us	Tim Barrington	tim_barrington@hotmail.com
Thomas Sherer	TGSherer@Gmail.com	Tim Brainerd	timbrainerd@yahoo.com
Thomas Slaback	ThePrescottKid@cableone.net	Tim Brellow	timbrellownetzero.net@gmail.co
Thomas Smith	tom@bajabb.com	Tim Chambo	tjchambo@msn.com
Thomas Sowulewski	tsowulewski@gmail.com	Tim Duda	timduda@aol.com
Thomas Stanley	tom_stanley_51@yahoo.com	Tim Fisher	timshark2002@yahoo.com
Thomas Steeg	thomassteeg@gmail.com	Tim Flood	tjflood@att.net
Thomas Struhsaker	tomstruh@duke.edu	Tim Glover	Tcglover58@hotmail.com
Thomas Swimley	tswimley@gmail.com	Tim Guisinger	guyzinger@aol.com
Thomas Swoffer	swofftr@q.com	Tim Hanson	timhans@gmail.com
Thomas Turiano	tturiano@selectpeaks.com	Tim Hayes	huixli@gmail.com
Thomas Wilmore	twilmore888@gmail.com	Tim Herbstrith	Tim@hodder.tv
Thomas Wolslegel	tomedwol@gmail.com	Tim Hopwood	Hopwoodtim@hotmail.com
THOMAS YOUNG	tommytrout124@yahoo.com	Tim Horan	whome@bresnan.net
Thomasin Alyxander	ubeadquitous@att.net	Tim Keating	info@rainforestrelief.org
Thomasin Kellermann	Kthomasin2@aol.com	Tim Laramore	tlaramore@me.com
Thomasin Ringler	tamsie@spiritone.com	Tim Meier	timeier1@juno.com
Tia Douglass	tdouglass@ec.rr.com	Tim Middleton	tmiddlet@fidnet.com
Tia Pearson	tia.pearson@gmail.com	Tim Milam	broncstim@hotmail.com
Tiffani Long	tiffani952@verizon.net	Tim Miller	tmiller732@aol.com

Tim Oswald	timoswald@mail.com	Tina Brenza	tbrenza@hotmail.com
Tim Ryan	janemarie19@gmail.com	Tina Cade	tc10@txstate.edu
Tim Stein	herekittykittyno1@gmail.com	tina choate	ibisalliance@gmail.com
Tim Stone	mudrock229@gmail.com	Tina Doolen	tina.doolen@wowway.com
tim storer	ttstorer1@gmail.com	tina endicott	schatsilove@att.net
Tim Taylor	timtaylor0001@gmail.com	Tina Gardner	tgardner755@yahoo.com
Tim Tolbert	appraisaladvant@mindspring.com	Tina Herzog	herzog_tina@hotmail.com
tim voeltz	timothyvoeltz@yahoo.com	Tina Marie DaSilva	YGI48@comcast.net
Tim Whaling	timothy_whaling@yahoo.com	Tina Martin	kaydraworm@yahoo.com
Tim Zemba	Tazbike23@yahoo.com	Tina Peak	tmpeak@yahoo.com
timmie smith	scobbydoo38@yahoo.com	Tina Petereit	tinapetereit@yahoo.com
Timothy Baures	tbaures6@yahoo.com	Tina Rogers	tmrogers333@yahoo.com
Timothy Beitel	beiteltimothy@gmail.com	Tina Shurtleff	Tshurt330@icloud.com
Timothy Creekmore	tccreek50@yahoo.com	Tina Tine"	tina.m.tine@gmail.com
Timothy Devine	goosedevine@yahoo.com	Tina Wilson	tinaspigg@yahoo.com
Timothy Dunn	timdunn@optonline.net	Tiska Blankenship	tiska@unm.edu
Timothy Fleischer	timfle@netzero.com	TJ Brooks	tjbrooks2300@gmail.com
Timothy Furst	tim.furst@gmail.com	Tj Hunter	Tjhunter2659@yahoo.com
Timothy Hagerman	timothyhagerman7@gmail.com	TJ Mckillop	Tmckill@gmail.com
Timothy Lippert	tlippert43@msn.com	tlaloc tokuda	tlaloctt@hotmail.com
Timothy McNair	tmcnair@surferie.net	Toby Ann Reese	Tobyareese@zoominternet.net
Timothy Rosser	timothyb_rn@hotmail.com	Toby-Rachel Leder	tleder620@gmail.com
Timothy Schacht	drtim@speakeasy.net	Todd Beguelin	toadbeggie@sbcglobal.net
Timothy Shanahan	tcshan@aol.com	Todd Corbett	htcorbett@hotmail.com
Timothy Shivers	tshivers72@gmail.com	Todd Dickson	tdickson@lumenous.com
Timothy Taylor	levireinald@icloud.com	Todd Elliott	todd.elliott@att.net
Timothy Ulrey	tulrey@yahoo.com	Todd Fisk	toddf99@yahoo.com
Timothy wood	tee_waz50@yahoo.com	Todd Gross	toddjgross@yahoo.com
Tina Ann	8tinaann@gmail.com	Todd Hack	thack86@gmail.com
Tina Arnold	tinamarnold@gmail.com	Todd Holland	thprov@yahoo.com

Todd Johnson	tjnordic2@gmail.com
Todd Lipcsey	nctml@aol.com
Todd Monson	tcmonson@hotmail.com
Todd Patton	tcpatton@mindspring.com
Todd Tanner	todd.tanner@mac.com
Todd Tanner	todd.tanner@mac.com
Todd Weigand	toddparaglide@gmail.com
tom Brown	barisaxual@hotmail.com
Tom Butch	butchy5@gmail.com
Tom Cate	tcate@ezcloud.com
Tom Creswell	creswell@pacifier.com
Tom Davis	langerhanz99@gmail.com
Tom Dodd	tomadodd@gmail.com
Tom Dunlap	H8rain@yahoo.co
Tom Elliott	telliottmbamsc@yahoo.com
Tom Falvey	tefalvey@gmail.com
Tom Guobis	tguobis@msn.com
tom jennings	tjmacky@mailmt.com
Tom Klewe	tomc99@yahoo.com
tom Kovalicky	tolotom@connectwireless.us
Tom Miller	treichm@comcast.net
Tom Peace	hotpeacetom@yahoo.com
Tom Petska	tom.petska@verizon.net
Tom Pitman	thomaspitman@gmail.com
Tom Ress	Resscat@aol.com
Tom Rodgers	trodgers44@fromtier.com
Tom Rust	tgr@gvtc.com
Tom Sanchez	caribeno@sbcglobal.net
Tom Sloan	Sloantj@yahoo.com
Tom Stukel	tomjstukel@gmail.com
Tom Traver	tom_traver@yahoo.com
Tom Trescone	tomtrescone@yahoo.com
Tom Tripp	tripptom@comcast.net
Tom Van Lear	tomvanlear@yahoo.com
Tom Walsh	twalshiii@yahoo.com
Tom Wardell	tomwardell@me.com
Tom Warhol	warholtom@gmail.com
Tom Warren	twarren3598@gmail.com
tom watkins	tom.watkins@shawinc.com
Tom Whiteman	twhiteman@email.com
Tom Willard	willardt_climber@yahoo.com
tom willett	tiowa196@gmail.com
Tom Winner	tomwinner@hotmail.com
Tom Wright	wrights02@bellsouth.net
tom wyman	lzrdo@aol.com
Tom Yahnke Sr	tomyah@att.net
Tommy Ware	Tware@ducks.org
Tona Yao	Audichjinky@yahoo.com
toni bowman	tbowman@m-mcpa.com
Toni Caldwell Clark	sparrowmanymoons@yahoo.com
TONI FREEMAN	tfreeman@cbmove.com
Toni Garmon	tgarmon@yahoo.com
Toni Marzolf	tonimarzolf@gmail.com
Toni McCalley	Tonithetiger1@gmail.com
Toni Poland	toni4000@comcast.net
Toni Thomas	blackjack1976@msn.com
Tonia Deur	toniadeur@gmail.com
Tonia Kittelson	tonia@friends-bwca.org
Tonie Tartaglia	toowongfoo@charter.net
Tony Alberico	nofunctionart@yahoo.com

Tony and Cindy Guarnieri	cindy.guarnieri@hotmail.com
tony gilchriest	tonygilch@yahoo.com
Tony Greiner	applebuoy@me.com
Tony Honick	ashonick@gmail.com
Tony Jones	tony@organicform.com
Tony Lentini	tlentini@webtv.net
Tony Lilich	cheif33@cox.net
tony moore	lm_stokes67@yahoo.co.uk
Tony Pavlantos	Tony@privalusa.com
Tony Ruiz	Rinnaandtony@mac.com
Tony Schollmeier	tony.schollmeier@gmail.com
Tony Segura	segura2112@yahoo.com
Tony Vanoni	tonygvanoni@gmail.com
Tony White	tony.white49@gmail.com
Tonya Dysart	tdysart@sandi.net
Tonya Rose	teradoraellas@gmail.com
Tori Burns	Tori.Burns@questar.com
Tracey Altier	tracey.altier@yahoo.com
Tracey Bonner	tlb8@yahoo.com
Tracey Katsouros	traceycsmallwood@gmail.com
Tracey MacDermott	Macdermottt@yahoo.com
Tracey MacDonald	tsmacdonald@yahoo.com
Tracey Mangus	tracey2@windstream.net
Tracey Smith	TraceySmith6981@gmail.com
Tracey Stinson	beautygrrl67@yahoo.com
Tracey Thomas	tracey@sanzuk.com
Tracie Gabrisko	tdbats@sbcglobal.net
Tracy Brophy	mizbrophy@gmail.com
Tracy Brown	trabrown1@verizon.net
Tracy Cole	r1tbeach@aol.com
Tracy Cutts	Scriptskirt@gmail.com
Tracy Drake	tld1218@hotmail.com
Tracy Ellison	tellison44@gmail.com
tracy faunce	tracyfaunce@bresnan.net
Tracy Ferguson	fltrace@yahoo.com
TRACY FOSTER	tarzafeen@yahoo.com
Tracy Griswold	tgris@optonline.net
Tracy Holthaus	tholthaus@sbcglobal.net
Tracy Johnson	tkjohnson19@yahoo.com
Tracy Leinbaugh	leinbaug@ohio.edu
tracy m	lunarnightfairy@yahoo.com
Tracy McPherson	konawoman1@yahoo.com
Tracy Ouellette	tracyjouellette@gmail.com
Tracy S Troth	moniqueleigh@lycos.com
Tracy Schroepfer	tschroepfer@wisc.edu
Tracy Simard	simardts@yahoo.com
Tracy Smith	blackcatmama13@yahoo.com
Travers Paterson	trav.paterson@gmail.com
Travis Heater	tr_heater@hotmail.com
Travis Kellum	travisk_59@yahoo.com
Travis Miller	travisjessmiller@gmail.com
Travis Scott	travismscott@hotmail.com
Travis Whitney	t_whitney619@yahoo.com
Tre Stewart	trestewatl@gmail.com
Trent Burian	Trentburian@gmail.com
Trevor Williamson	willi698@gmail.com
Tricia Ebert	tricia_ebert@yahoo.com
Tricia van Oers	tvanoers@yahoo.com
Trigg Wright III	golf-nut24@comcast.net
trina cooper	trina.cooper@gmail.com

Trish Kendall	trishohran@icloud.com	V Evan	Agadog@mac.com
Trisha ten Broeke	ttenbroeke@msn.com	V. Euripides	nandep2000@aol.com
Trisha Wuensch	trishawsch@yahoo.com	V. Grubbs	vickigrubs@aol.com
Trois Moore	troimoor@aol.com	V. Klubek	getakluhere@yahoo.com
Troy Bidwell	tbidwell@utk.edu	Vafa Ansarifar	Vafajun@gmail.com
Troy Mason	troy@troyrmason.com	Val Marjoricastle	valmarjoricastle@yahoo.com
Troy Merrill	merrill.troy@gmail.com	Valerie Apel	Cancundiva1@yahoo.com
Troy Mullens	troymullensjr@gmail.com	Valerie Bear	valbear.vb69@gmail.com
Troy Tackett	ttackett131@yahoo.com	valerie brown	valerie@parrotkisses.net
Trudy Crow	trudyocrow@gmail.com	Valerie Crowley	vckitty@att.net
Tumness Kocur	Mcdbaseball7@yahoo.com	Valerie Hildebrand	vintgal009@gmail.com
Twyla Bacon	davtwybacon@juno.com	Valerie Jues	Vjues@yahoo.com
Twyla Meyer	tmmacc15@aol.com	Valerie Leonard	valerieleonard@comcast.net
Ty Hewitt	Aldermonkey@gmail.com	VALERIE MARQUIS	niuccrunner98@yahoo.com
Tye Barrett	Tyebarrett@yahoo.com	Valerie Meluskey, Ph.D.	vmeluskey@comcast.net
Tyler Chapek	ross116939@aol.com	Valerie Romero	valeriesioux@icloud.com
Tyler George	thankyoudonny@gmail.com	Valerie Sherrill	valusa2@msn.com
Tyler Price	tyler.w.price@gmail.com	Valerie Sisson	vlrie69@gmail.com
Ulle Koiv	ukoiv@aol.com	Valerie Sotere	cindy.guarnieri@hotmail.com
Uma Veloo	uveloo@hotmail.com	Vallie Lenzen-DeBad	debadvtl@wavecable.com
Umair Qadeer	umair@post.harvard.edu	Valou Pichon-Rupp	valpichon@googlemail.com
Una Ashcraft	u77@knology.net	Van Bunch	vanb@earthlink.net
Urmila Malvadkar	urmila.malvadkar@gmail.com	vance arquilla	vancetango@yahoo.com
Urmila Padmanabhan	urmila26@yahoo.com	Vanda Blinn	blinnv@me.com
Ursela Rabe	healingarts@healingartsinfo.co	Vanessa McClinchy	v_mcclinchy@hotmail.com
Ursula Ahnelt	uahnelt@yahoo.com	Vanessa Stine	nanvan108@gmail.com
Ursula Neal	Ursula.neal@bastyr.edu	Vaughn Currier	mammoth.mammoth@gmail.com
Uta Cortimilia	utajoens@yahoo.com	Velda Smith	smithvelda@aol.com
V and B Jones	qzxmp@yahoo.com	Velvet LaBudie	labudie6@gmail.com
V Evan	Agadog@mac.com	Velvia Garner	velgarner@aol.com

Vera Brown	verabrown3672@gmail.com	Vicky Linville	vickylinville@gmail.com
Vera Pentcheva	verapencheva@yahoo.com	Vicky Matsui	vickymatsui@hotmail.com
Veronica Bolivar	vbmuisk@yahoo.com	vicky Tindall	morrison1964@hotmail.com
Veronica Bourassa	rorlowske@gmail.com	Vickye Turner	pmsmedic@aol.com
Veronica Cox	tajimagoo@gmail.com	Victor Afanasiev	mariavic@inreach.com
Veronica Davis	sassyitalianbelle@yahoo.com	Victor Escobar	sydbarrett74@gmail.com
Veronica Franco	iroquois.girl@yahoo.com	Victor Kit	victorkit@earthlink.net
Veronica Schweyen	rschweyen@yahoo.com	Victor Malyar	malyar35@verizon.net
Vesna Cajnko	vesna.cajnko@gmail.com	Victor Wittmann	wittmann17@verizon.net
Vi Ligenza	argus3@adelphia.net	Victoria Bell	msbitterroot@earthlink.net
Vic Bostock	care4animals@hotmail.co.uk	Victoria Cripps	vittoriajeancripps@gmail.com
Vic Burton	cvburton@swbell.net	Victoria Cross	victoriac_2010@verizon.net
VICKI & ROD KASTLIE	CALLROD@COX.NET	Victoria Folker	victoria_f@mail.com
Vicki Clemons	vclemons@hotmail.com	Victoria Hilaya	theredphantom93@yahoo.com
Vicki Fischer	fischer6520@yahoo.com	VIctoria Manning	vman899914@aol.com
Vicki Fox	vicki379@verizon.net	Victoria Mathew	riamathew@aol.com
vicki hughes	vdh2810@gmail.com	Victoria Miller	vemiller@earthlink.net
Vicki Kopinski	vrkopinski@gmail.com	Victoria Oltarsh	Victoriatheaterarts@gmail.com
Vicki Manor	manorvicki@yahoo.com	Victoria Silver	vasilver@uci.edu
vicki Matheny	vicki_matheny@hotmail.com	Victoria Swanson	vswans@gmail.com
Vicki Perizzolo	victoria_perizzolo@sbcglobal.n	Victoria Vaske	vickigalloway72@hotmail.com
vicki rammel	vrammel@yahoo.com	Victoria Wollam	victoriawollam@gmail.com
vicki rinehart	vmrinehart@gmail.com	Vidal Salas	vidalsalas@gmail.com
Vicki Smith	vikcismtih@yahoo.com	Viki Rambo	vikirambo@hotmail.com
Vicki Spanogle	vicki@spanogle.net	Vikki Pingle	vlpingle@gmail.com
Vickie Gonzalez	Lavickster9@gmail.com	vince bjork	the72nomad@hotmail.com
Vickie Stimac	vickiestimac@earthlink.net	Vince Mendieta	vinceofdarkness@hotmail.com
Vickie Wagner	vickie.wagner@yahoo.com	Vince Miller	vincewmiller@yahoo.com
Vicky Brandt	brandtv@mac.com	vince szabados	vszabados@gmail.com
Vicky Lescody	tutwilerprojections@gmail.com	Vincent Brandt	Vincent_Brandt@Outlook.com

Vincent Hardt	vvince2001@hotmail.com	Virginia MacLeod	virginia_macleod@yahoo.com
Vincent Longo	vlakrl@optonline.net	Virginia Mattson	shomva@gmail.com
Vincent Lopez	sirquickwit@aol.com	VIRGINIA MENDEZ	virginialefay@gmail.com
Vincent Rusch	vjrusch@acmenet.net	Virginia Mendez	virginialefay@gmail.com
Vincent Serapiglia	vinnie.serapiglia@gmail.com	Virginia Pabst	vpabst@hotmail.com
Vincent Woolums	vwoolums@gmail.com	virginia redman	sebectrout@yahoo.com
Vinnie Montez	starmontez@animail.net	Virginia Rivera	rivera.ssps@gmail.com
Viola Hernandez	violah37@aol.com	Virginia Rosenkranz	ginnyrose22@comcast.net
Violet Gautesen Krukonis	vbkrukonis@hotmail.com	virginia sharkey	v.sharkey@sbcglobal.net
Virgene Link	linkerwan@yahoo.com	Virginia Strom-Martin	strominator@earthlink.net
Virgil Salzman	fernfalls@me.com	Virginia Turner	vajuvet@aol.com
Virginia & Cass Vanini	Virginia.vanini@aol.com	Virginia Utt	uttmost@live.com
Virginia Anderson	mindseyegraphics@earthlink.net	Virginia Waldron	gturtlew@aol.com
Virginia Baksa	vbaksa5@gmail.com	Virginia Wasserman	toadhall2_46@hotmail.com
Virginia Barber	gynbarb@gmail.com	Virginia Watson	Virginiawatson5@icloud.com
Virginia Bennett	vbennett@hawaii.edu	Virginia White	pvonc@olypen.com
Virginia Brandford	gigibrandford@gmail.com	Virginia Winter	gwinter@equinoxconsultancy.com
virginia broadbeck	ginnybroadbeck1@verizon.net	Virginia Wood	ginniwood@earthlink.net
Virginia Caraco	caracov@yahoo.com	Vivian Pierce	vivian1949@verizon.net
Virginia Clark	vfclark@gmail.com	Vivian Schatz	vivianschatz@earthlink.net
Virginia Collins	Sixseven49@aol.com	Vivianne Mosca-Clark	vivianneglorian@yahoo.com
Virginia Dawnswir	Virginia.dawnswir@anarchycreek	Vivienne Simon	vivsimon@earthlink.net
Virginia Douglas	ginny133@aol.com	Vonya Morris	vonzie9@prodigy.net
Virginia Dwyer	gini_dwyer@yahoo.com	W Blair	wblair4318@aol.com
virginia green	youngtiger54@aol.com	W H Wolverton	canyonratbw@scinternet.net
Virginia Griffith	atxmusiclover@gmail.com	W Jansen	wj_mj@hotmail.com
Virginia Harris	gngr8s@gmail.comr	W Kent Wilson	wkentw@gmail.com
virginia jastromb	vjastromb@yahoo.com	W Lynch	wslynch@mac.com
Virginia Krutilek	g.krutilek@att.net	W Mason	weston_mason05@hotmail.com
Virginia Lippert	gini1940@yahoo.com	W. Smith	wally53@verizon.net

W.K. A.	lat22long157@yahoo.com	Wayne Groesbeck	wgroes1308@comcast.net
Wade Stoddard	wadestoddard@yahoo.com	Wayne Heckman	wayeman@sbcglobal.net
Walt Levitus	Jscpw1@yahoo.com	Wayne Kelly	waynekins@hotmail.com
walter bolcon	walter@globalworldboats.com	Wayne Kinney	ltpetrock@earthlink.net
Walter Krysh	nrbrkr@yahoo.com	Wayne Lichtenberger	Waynelichtenberger@gmail.com
Walter Loquet	Taranaki@skynet.be	Wayne Ott	janottinc@gmail.com
Walter Ramsey	walter.ramsey@sbcglobal.net	Wayne Person	w_person@yahoo.com
Walter Schmitt	wjs621@comcast.net	Wayne Steffes	camerashy@shasta.com
Walter Schultz	Graymetallic@gmail.com	Wayne Straight	woichi01@comcast.net
Walter Tulys	walter921@comcast.net	Wayne Teel	teelws@jmu.edu
Walter Weinberg	wnavigator@msn.com	Wayne Toven	wtoven@hotmail.com
Walter Wiszowaty	wizmoworld@yahoo.com	Wayne Wilkinson	rudywdw@hotmail.com
Wanda Almodovar	wanda0306@verizon.net	Wendi Abbott	Wabbott@centurytel.net
Wanda Ballentine	wsb70@comcast.net	Wendi Cohen	wcohen@mac.com
Wanda D Hendrix	hiwandada@charter.net	Wendi Myers	ClwBchBabycakes@gmail.com
Wanda DeTienne	conststeve1952@comcast.net	Wendy Adams	wadams33@yahoo.com
Wanda Mabe	Gerinona@verizon.net	Wendy Balder	wbalder@comcast.net
Wanda Sopotnicka	peglasa@aol.com	Wendy Chrisman	WChrisman@ccad.edu
Wander Richardson	wander9@verizon.net	Wendy Forster	wendyjane25@sky.com
Warren Beattie	beattiew@verizon.net	Wendy Forster	wendyjane25@sky.com
Warren Dennis	cougmantx@gmail.com	Wendy Fossa	jwfossa@verizon.net
Warren Foster	wfoster3513@aol.com	Wendy Holland	barfu@frontier.com
Warren Kilgore	Warrenskilgore@gmail.com	Wendy Howes	wendy.innerspaces@gmail.com
Warren Muller	wwmullerhm@hotmail.com	Wendy Joffe	Wendyjoffe@gmail.com
Warren Shafor	wlshafor@gmail.com	WENDY KELLY	WENDYJKELLY2011@HOTMAIL.CO.UK
Warren Snyder	pregnantguppie@hotmail.com	Wendy King	wking@tulane.edu
Warren Vogt	wllvogt@gmail.com	Wendy Monaghan	1aliikai@gmail.com
Wayne Carr	wayne.carr@rcn.com	Wendy Pabian	Wendyeden@gmail.com
Wayne Ekdahl	wayneek@aol.com	Wendy Raymond	hampster@vzw.blackberry.net
Wayne Goin	goinminion@yahoo.com	Wendy Seesock	Seesowc@auburn.edu

Wendy Shuman	doomaaz@gmail.com	Will Sloan	waveworksllc@gmail.com
Wendy Smith	wendy_h_smith@hotmail.com	Will Tuttle	willtuttle@earthlink.net
Wendy Stevens	wagothro@hotmail.com	Willam Townsend	Townsendbillj@gmail.com
Wendy Weldon	wendylweldon@yahoo.com	William Aldrich	wpAldrich@cox.net
Wesa Sweeney	srvjams@gmail.com	William and Gail Vinett	bill@bigleaf.com
Wesley Banks	vancdanbanks@hotmail.com	William Anderson	andersonwd@cofc.edu
Wesley Finkbeiner	wesfinkbeiner@mac.com	William Barrows	barrowswm@aol.com
Wesley Gunn	w.a.gunn@gmail.com	William Baumgartner	tenor11@q.com
Wesley Hamilton	lawmanwes@hotmail.com	William Beck	Billbeck46@yahoo.com
Wesley Meeker	meeker75@hotmail.com	William Bishop	jackabish@earthlink.net
Wesley Tyler	wesleytyler18@gmail.com	William Blair	paulblair1@Mchsi.com
Weslie Phillips	wwpsan@msn.com	William Blick	roggen51@yahoo.com
West Graham	westggraham@facebook.com	William Boosman	Piscobill@gmail.com
Whitney Cloud	wcloud@hsutx.edu	William Boteler	bbot20008@yahoo.com
Whitney Ward	Wward26@gmail.com	William Brisolara	bill618@earthlink.net
whitney watters	sugaree01@aol.com	William Buss	bbuss@yahoo.com
Wil Weitzel	williamwtzl@yahoo.com	william campbell jr	scampb2065@aol.com
Wilbur Little	littleor0@earthlink.net	William Claiborn	wclaiborn@hotmail.com
Wilford Vaulx-Smith	wilford_g@yahoo.com	William Cook	wwirewilly@aol.com
Wilfredo Rodriguez	Willierod14@hotmail.com	William Cuppoletti	Cupp747@gmail.com
Wiliam Beck	Billbeck46@yahoo.com	William Daniels	forktorque@gmail.com
Wilifred Alire	williealire@gmail.com	William Davis	bdpiano@gmail.com
Will Berry	willberry@aol.com	William Davison	nowandzen7@netscape.net
Will Ellis	Wellis18@us.edu	William Dinger Jr	billdinger@cox.net
Will Feldman	Wfeldman@tulane.edu	William Dokai	wdokai@msudenver.edu
Will Foster	Mywill.foster@gmail.com	William Dolly	bdolly1@yahoo.com
Will Morel	willmorel@gmail.com	William E Pfeiffer Jr	wepfeiffer@gmail.com
Will Ritter	bulwinkl_29@msn.com	William Edwards	tomedwards47@yahoo.com
Will Sage	will.sage@gmail.com	William Elsner	kingquito@hotmail.com
Will Sanborn	xxpossum@gmail.com	William Fast	Wkirkfast@gmail.com

William Ferguson	mrbills4222@gmail.com	William Manners	williamdmanners@yahoo.com
William Fisk	wafisk61@gmail.com	William Maynard	Wlmaynard@eldergnome.com
William Franks	wmtfranks@gmail.com	William McCullough	billmac85@yahoo.com
William Gerdes-McClain	wrgm77@gmail.com	william McFadden	wgmcfadden135@gmail.com
William Glover	william.d.glover@gmail.com	William McGinnis	oort22cloud@cox.net
William Grant	canoe54@charter.net	william mittig	wpmittig@gmail.com
william guthrie	gar22205@aol.com	William Montgomery	wmontgmery@comcast.net
william h. wreath	safari1956@aol.com	William Moore	environ1@sbcglobal.net
william hankins	bhankins60@comcast.net	william napoli	bocci29@gmail.com
William Harker	wcharker@caltel.com	William Nichols	williamnichols16@yahoo.com
William Hay	whay@gmx.de	William Olson	Billybra@aol.com
William Herman	bill_herman@sbcglobal.net	William Persky	mp.64@comcast.net
William Hess	enkido1@charter.net	William Peters, Sr.	krisar1212@yahoo.com
William Holcomb & FAMILY	doslobos@charter.net	william poehnert	william975@centurytel.net
William Holder	bill.holder.13850@gmail.com	william prokop	jprokop40@gmail.com
William Huggins	feerlessw@cox.net	william Ranson	bill.ranson@furman.edu
William Hutchings	WHutc3712@aol.com	William Reamy	stackhawk@comcast.net
William Kelley	tryforthe9@gmail.com	William Rivers	billiamrivers@gmail.com
William Kelly	kellywilliame@gmail.com	William Robinson	wssrobinson@gmail.com
William Kneedler	bkneedler@mindspring.com	William Rouster	wrouster@yahoo.com
William Knudson	Fifteenwindow@yahoo.com	william rowe	browe5225@yahoo.com
william kuestner	kuestner58@gmail.com	William Ryder	wjr44@myactv.net
william lawson	blawson8@verizon.net	William Ryerson	bryerson@comcast.net
William Leavenworth	William.Leavenworth@gmail.com	William Schaffer	schafw@hotmail.com
William Lee Kohler	Potawatomi13@hotmail.com	William Schiek	Billschiek@aol.com
William Lewis	edormary@gmail.com	William Schultz	snuhwolf@aol.com
William Lloyd	williamclloyd@att.net	William Scoble	wscoble@gmail.com
William Mabrey	rrtujim@gmail.com	William Sharfman	sharfman@umich.edu
William Magee	william-magee@msn.com	William Shearer	wshearer51@yahoo.com
William Maharan	Maharan77@mail.com	William Sherman	cen22939@centurytel.net

William Shirey	williamriek@hotmail.com	Wolfgang Glaeser	wolfgla@hughes.net
William Skirbunt-Kozabo	skirbuntkows@vcu.edu	wright gregson	gwrightg@yahoo.com
William Sorrells	sheaffersorrells@yahoo.com	Wu Joong	wu.joong@gmail.com
William Sosa	Countvambula@aol.com	Wyman Rice	wymandrice@gmail.com
William Stern	wpstern90@att.net	Wyman Whipple	rwwhipple@grics.net
william strugatz	strugatzw@gmail.com	XIMENA VASQUEZ	ximena240@gmail.com
William Swinney	strawbill2@q.com	Xyra Harper-Cann	xyra@msn.com
William Swisher	blackwolfbill@gmail.com	Yanisa Anaya	yanisaanaya@gmail.com
william Thornton	wmthornton@yahoo.com	Yazmin Gonzalez	evaunit2001@yahoo.com
William Towne	singapura2@aol.com	Yolanda Clay	yolanda-clay@earthlink.net
William Tripp	wtripp@csc.com	Yolanda Ferguson	yolanda.artist@yahoo.com
William Wallin	wmwallin45@sbcglobal.net	Yolanda Magpantay	ymagpantay@gmail.com
William Ward	wildbillwww@aol.com	yoshi miyamoto	yoshiloop@hotmail.com
William Wekselman	billwesq@mail.com	Yuana Blanke	ylblank@yahoo.com
William Welkowitz	bwelkowitz@gmail.com	Yuka Persico	yuka@persico.net
William Whitaker	wwhitak@boisestate.edu	yvette fernandez	y_fernandez02@yahoo.com
William Willis	williamjohnwillis@yahoo.com	Yvette Lantz	YeLantz@aol.com
William Winstanley	wpwin@genext.net	Yvonne Barker	evonnles@hotmail.com
William Witt	canoeistww@yahoo.com	Yvonne Irvin	irvinjoell@cs.com
William Wright	wrightwh46@gmail.com	Yvonne Lopes	yvonne88.yl@gmail.com
William Zupancic	williamzupancic@yahoo.com	Yvonne Marley	sisterevie21@cox.net
Willie Edwards	wedwards42@aol.com	Yvonne Oelkers	vono@arr.net
Willie Hinze	hinze@wfu.edu	yvonne Pratt	mindandbody@optonline.net
willie hoffart	williehoffart@yahoo.com	Yvonne Quilenderino	mystenamarina@yahoo.com
willis gravelle	bill.gravelle@yahoo.com	Yvonne Smith	leilanismith33@gmail.com
Willoe Traver	willoelove@yahoo.com	Yvonne Snyder	augsksa@yahoo.com
Wilmalyn Puryear	qwkpuryear@Yahoo.com	Yvonne White	ymw42@yahoo.com
Wilson Arabie	wilson.arabie@gmail.com	z a	ZekeAA@Lycos.Com
Wm Hollingshead	Wjhollingshead@gmail.com	Zachary Myers	Zcmyers89@gmail.com
Wojciech Rowinski	Grawojro@charter.net	Zack Blumberg	zackblumberg@hotmail.com

Zak Mettger	zmettger@verizon.net
zak ryersbach	zryersbach@gmail.com
Zandra Price	zonniemp@gmail.com
zelma fishman	zelmafishman@sbcglobal.net
zelma taylor	fleurs4u@verizon.net
Zina Merkin	zrmstuff@gmail.com
Zoe Bird	zozettebird@gmail.com
Zoe Chapman	wolf@asis.com
Zoe Hamilton vom Baur	Zoehamilton@hotmail.com
Zoe Harris	zoehzoeh@yahoo.com
Zola Packman	zmpackman@att.net
Zorina Weber	ZWEB111@aol.com
Zulema Ramos	zulemaramos1994@hotmail.com
Zvika Greensfield	doctorpinhead@gmail.com
	delivery@actionsprout.com