

**U.S. Army Corps of Engineers  
Omaha District  
Monthly Drought Report  
June 2006**



**US Army Corps  
of Engineers  
Omaha District**

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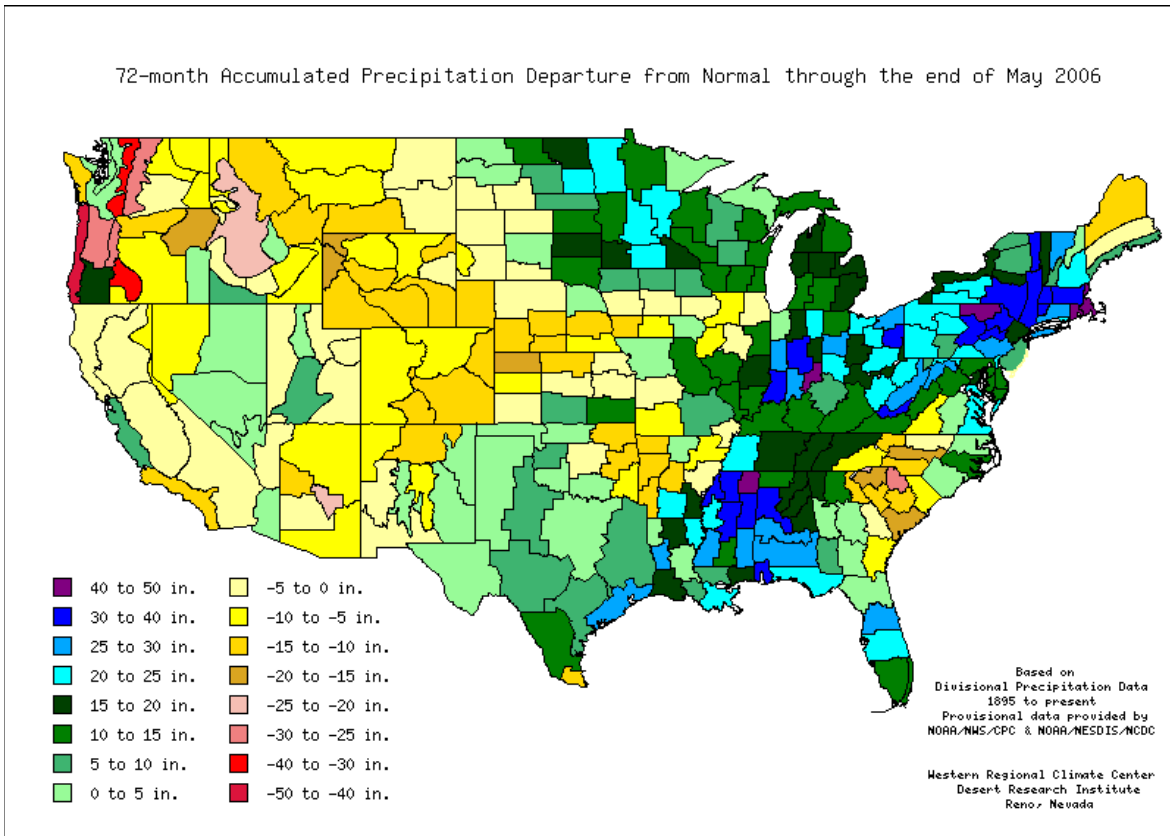
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## **CURRENT CONDITIONS**

The drought, in the Missouri River Basin including the entire Upper Missouri River Basin, which is now in its seventh year, appears to be lessening in intensity, although the end of the dry cycle is still uncertain. Long term (72-month) precipitation departures range from a 25-inch surplus to 25-inch deficits depending on the location within the basin. Water year 2006 snow pack numbers as of June 1 have significantly dropped off and are well below normal. The snow pack above Ft. Peck is at 28% of normal; Ft. Peck to Garrison is 24% of normal; the North and South Platte River Basins are 22% and 11% of normal, respectively. The spring moisture that the basin had been receiving also tapered off triggering an adjustment of forecast runoff from 21.0 Maf to 19.4 Maf. There are currently no areas within the basin that are exhibiting Exceptional drought conditions, however there are small areas exhibiting Severe Drought conditions and an increasingly large area tending toward Abnormally Dry conditions. As previously noted, runoff amounts within the basin have ceased the dramatic improvement and are well below the historical norms for this time of year. However, thanks to the early above average runoff, the reservoirs on the mainstem of the Missouri River are still showing better tendencies than last year.

## Precipitation Departures

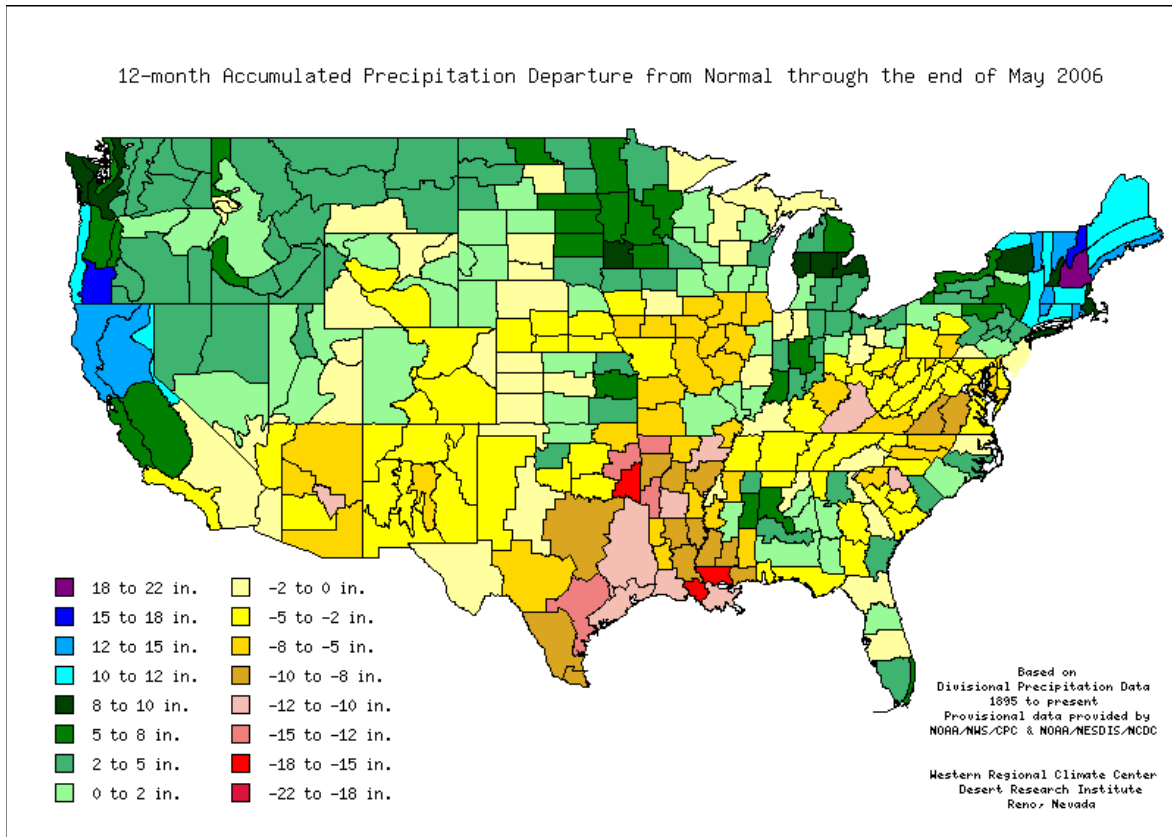
Precipitation departures from normal during the last 72 months for the United States are shown in Figure 1. In Montana, accumulated precipitation ranges from near normal to nearly a 25-inch deficit. The majority of Wyoming's accumulated precipitation is 10 to 15 inches below normal for the observation period. Southeast Nebraska and southwest Iowa have received from near normal to 15 inches less than normal precipitation. The Dakotas generally range from near normal to a 25-inch surplus. The South Platte River Basin in Colorado still shows precipitation deficits of 5 to 15 inches during a majority of the 72-month period.



**Figure 1 – 72 month Precipitation Departure From Normal**

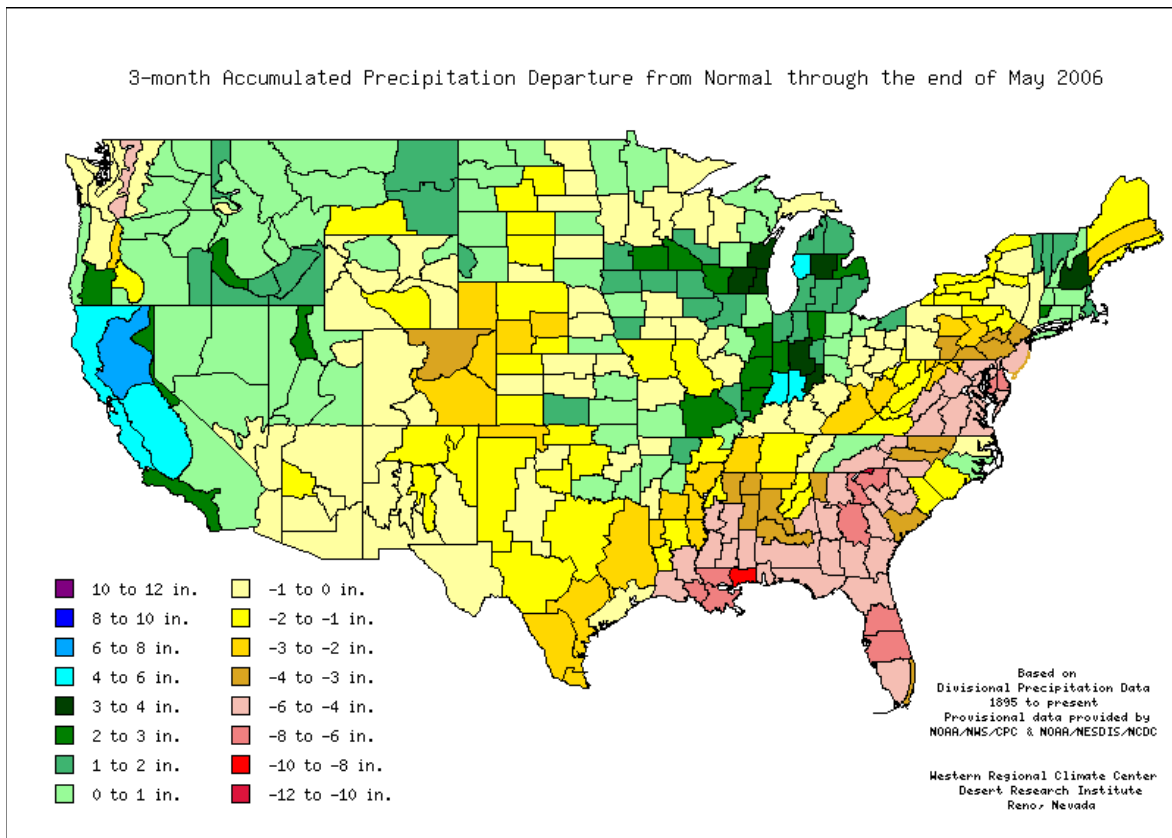
<http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep72>

The 12-month precipitation accumulation in Figure 2 indicates that precipitation throughout much of the western and northwestern District is from normal to eight-inches above normal. However, large areas of deficits can still be found in Nebraska and Colorado.



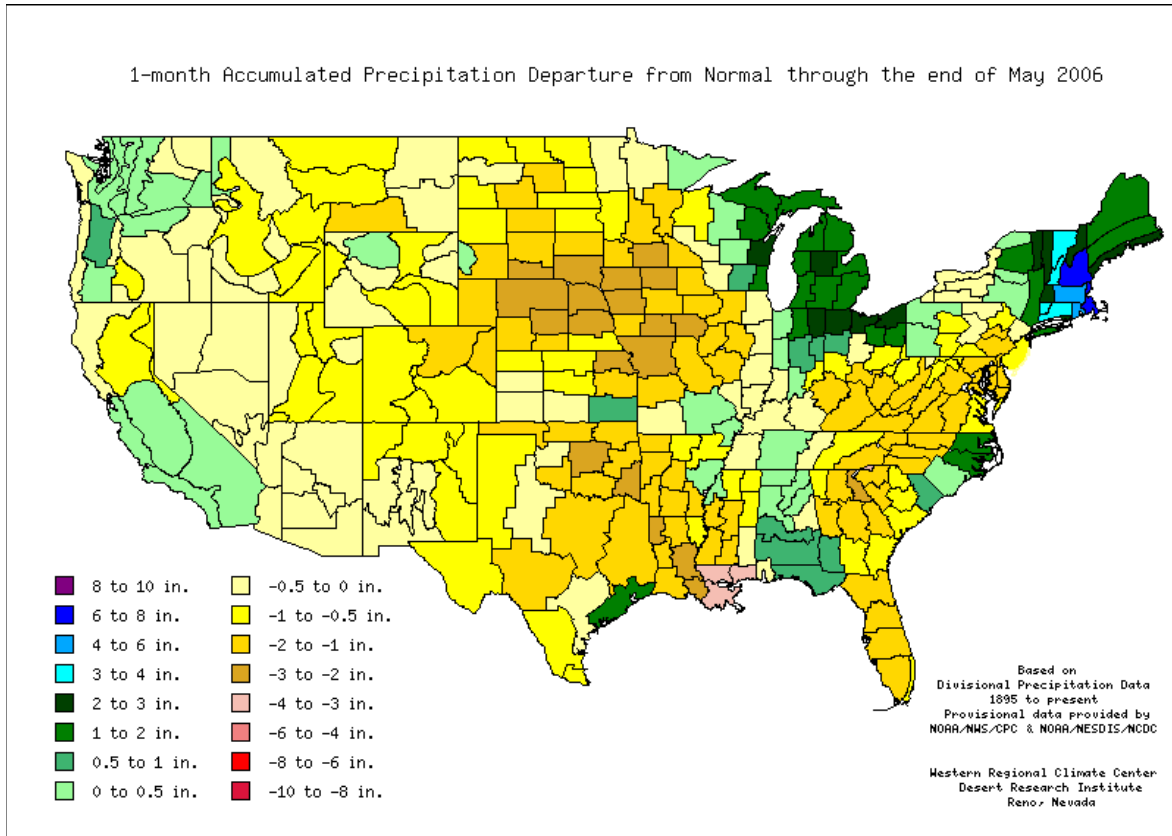
**Figure 2 – 12 month Precipitation Departure From Normal**  
<http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep12>

The three-month period (Figure 3) shows from a two-inch precipitation surplus to a two-inch precipitation deficit across the basin. This graphic exhibits the basin shifting towards a “drier” state compared with last month’s information.



**Figure 3 – 3 month Precipitation Departure From Normal**  
<http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep03>

During May, a significant portion of the basin shifted from a surplus of precipitation to a deficit (Figure 4).



**Figure 4 – 1 month Precipitation Departure From Normal**

<http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep01>

**Water Year 2006 Mountain Snow (from USACE Northwest Division Missouri River Water Management Division).**

**Summary of Winter 2005-2006.** The Missouri River runoff for 2005 was 20.3 MAF, 81% of normal. This marked the sixth consecutive year of less than normal runoff in the basin. The continued drought has taxed the System storage leaving upstream reservoir levels very low, much like what occurred in the drought of the mid 1980's and early 1990's. The forecasted runoff for 2006 is 19.4 MAF, 77% of normal. The runoff for January - March 2006 was 4.0 MAF, 84% of normal. The runoff for April 2006 was 2.9 MAF, 99% of normal. The runoff for May 2006 was only 2.8 MAF, only 83% of normal. As of June 1, the snowpack in the basin is at below normal levels. The snowpack above Fort Peck is at 28% of normal for this time of the year. The snowpack in the reach from Fort Peck to Garrison is 24% of normal. The North Platte and South Platte River basins in Wyoming and Colorado are also below normal, 22% and 11% of normal, respectively. The snowpack above Fort Peck peaked at 108% of normal on April 20. The snowpack between Fort Peck and Garrison peaked at 88% of normal on April 3.

The following tabulation is a summary of this year's mountain snowpack accumulations and the CY 2006 runoff forecast for the first of each month. The main stem reservoirs are significantly below their base of the annual flood control zones due to six consecutive years of drought and the system stands poised to handle significant runoff if that were to occur during 2006.

<b>CY 2006 Mountain Snowpack Accumulations in Percent of Normal Peak</b>							
Location	Jan	Feb	Mar	Apr	May	Jun	Jul
Above Fort Peck Dam	108%	112%	105%	105%	93%	28%	.
Fort Peck to Garrison	97%	99%	96%	92%	75%	24%	.
Percent of Normal Total Acc.	102%	105%	100%	98%	84%	26%	.
South Platte	131%	117%	111%	106%	83%	11%	.
North Platte	122%	117%	107%	107%.	83%	22%	.

<b>Forecasted CY 2006 Missouri River Basin Annual Runoff in MAF</b>							
Location	Jan	Feb	Mar	Apr	May	Jun	Jul
Above Sioux City, Iowa.	21.0	20.0	20.0	19.5	21.0	19.4	.
Percent of Normal 25.2 MAF	83%	79%	79%	77%	83%	77%	.

SNOTEL Mountain snowpack station data is provided by the National Resource Conservation Service. Normally by April 15, 100% of the peak accumulation has occurred. The January through June 2006 forecasted runoff above Sioux City is 13.2 MAF, 80% of normal. The 2006 Calendar Year runoff forecast for above Sioux City is 19.4 MAF, 77% of normal. As stated earlier, the Missouri River basin is enduring its sixth consecutive year of drought. As per the National Weather Service drought severity index, as of May 30, 2006, the current drought intensity is considered "normal" in most portions of the Missouri River basin east of the Missouri River. West of the Missouri



River, where most of the inflow to the System occurs, the drought is considered "normal" in most of Montana and North Dakota and "abnormally dry" or "moderate" in most of Wyoming, Colorado, Nebraska and western South Dakota. There are **no** areas in the Missouri River basin in the "extreme" or "exceptional" drought levels as there has been in previous years. Historically, precipitation accounts for 25% of the total inflow into the System. Runoff from mountain snowpack and plains snow account for 50% and 25%, respectively.

The table above labeled [CY 2006 Mountain Snowpack](#), gives information in percent of average for the two significant snowpack accumulation reaches of Fort Peck and Fort Peck to Garrison. The snow melts during the May through July timeframe and provides significant main stem inflow which is stored to prevent downstream flooding and later used to meet main stem authorized project purposes. Even knowing the amount of snow at the first of each month for selected mountain snowpack areas results in considerable runoff variability because the weather conditions during the melt period greatly influences the runoff yield. The total percent of normal accumulation are shown for the first of each month through May. For the period of May through July the percentages shown are a percent of the peak accumulation for the year to indicate the remaining snow to melt in the mountains.

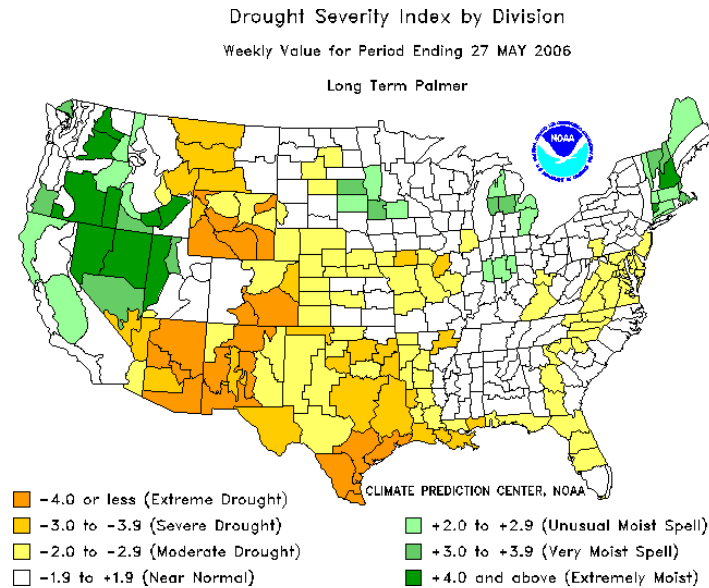
## Drought Indicators

The Palmer Drought Severity Index and the Drought Monitor are two commonly used drought-indicator products that convey both short-term and long-term drought conditions and impacts. Both the Palmer Index and Drought Monitor depict some regions exhibiting varying degrees of drought in Nebraska, South Dakota, Wyoming, and Montana, which have been suffering from drought since 2000.

## Palmer Drought Severity Index

The Palmer Drought Severity Index (PDSI) is a meteorological drought index that monitors the hydrologic water balance including the basic terms such as precipitation, evapotranspiration, soil recharge, runoff, and moisture loss. The purpose of this index is to provide standardized measurements of the moisture balance in a region without taking into account streamflow, lake and reservoir levels, and other hydrologic impacts. PDSI is a multi-month drought index; therefore, it responds well and is more suitable for short-term droughts.

Changes to the PDSI are more immediate in response to heavy precipitation over short periods. The PDSI shown in Figure 5 reflects near normal to moderate drought conditions in the majority of the Omaha District.



**Figure 5 – Long-Term Palmer Drought Indicator Ending 27 MAY 2006**

[http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/regional\\_monitoring/palmer.gif](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/palmer.gif)

## **Drought Monitor**

The Drought Monitor is a multi-agency comprehensive drought classification scheme updated weekly by the National Drought Mitigation Center. The Drought Monitor combines information from the Palmer Drought Index, the Climate Prediction Center's soil moisture model, USGS weekly streamflow percentiles, the standard precipitation index, the crop moisture index, and during the snow season basin snow water content, basin average precipitation, and the surface water supply index. Since this product considers streamflow conditions and reservoir water supply, and it allows manual adjustment; it is a good depiction of long-term drought impacts to the affected areas. The Drought Monitor uses four levels of drought classification (moderate, severe, extreme, and exceptional), and it notes the type of impact caused by the drought (agricultural and hydrologic).

Omaha District drought has steadily improved throughout the spring. Above-normal rainfall and increased pool levels in Oahe Reservoir, Lake Sakakawea, and Ft. Peck reservoir have helped reduce the drought impacts. Portions of Nebraska, South Dakota, and Colorado are currently classified as Abnormally Dry to Severe Drought. North Dakota and Montana are generally classified as exhibiting Normal conditions. Currently, there are no portions of the basin classified with Extreme or Exceptional drought.

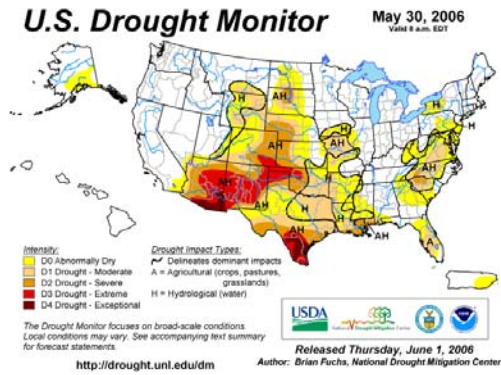
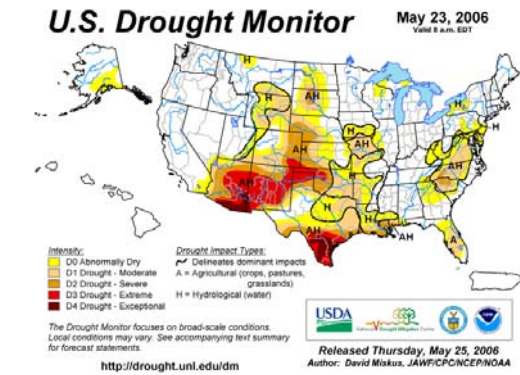
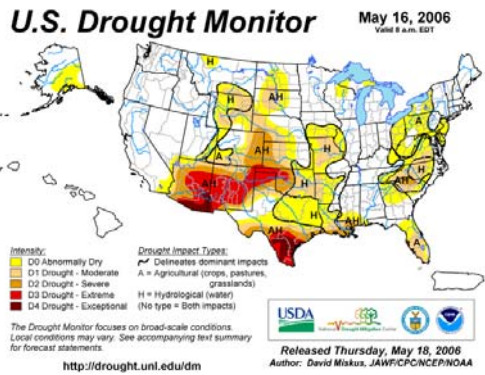
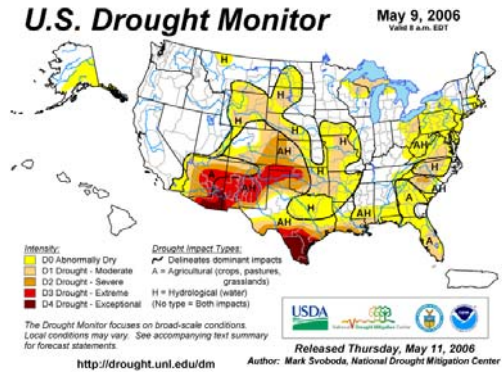
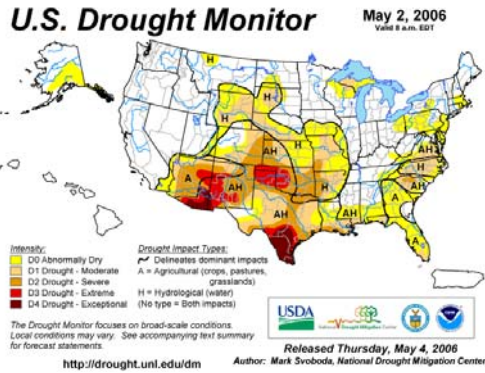


Figure 6 – U.S. Drought Monitor – May 2, 2006 through May 30, 2006  
<http://www.drought.unl.edu/dm/monitor.html>

## DROUGHT OUTLOOK

The basin drought outlook uses several expert products that indicate precipitation needs necessary to reduce the Palmer Drought to normal conditions, a one- and three-month climate outlook, and the impacts that future climate predictions could have on the current drought situation. The three-month Drought Outlook (Figure 7) indicates that the majority of the basin is returning to normal moisture conditions with the exception south-central and western Nebraska and portions of Colorado and Wyoming. The South Dakota region around Oahe reservoir is predicted to improve with respect to the drought.

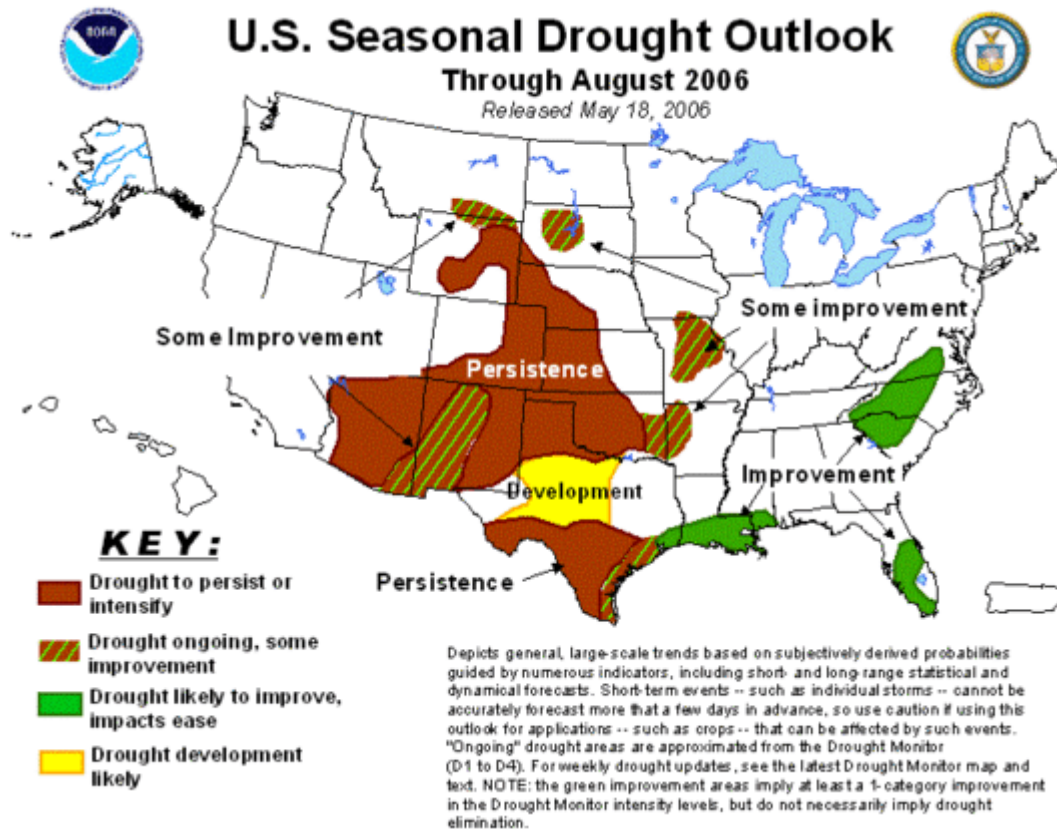
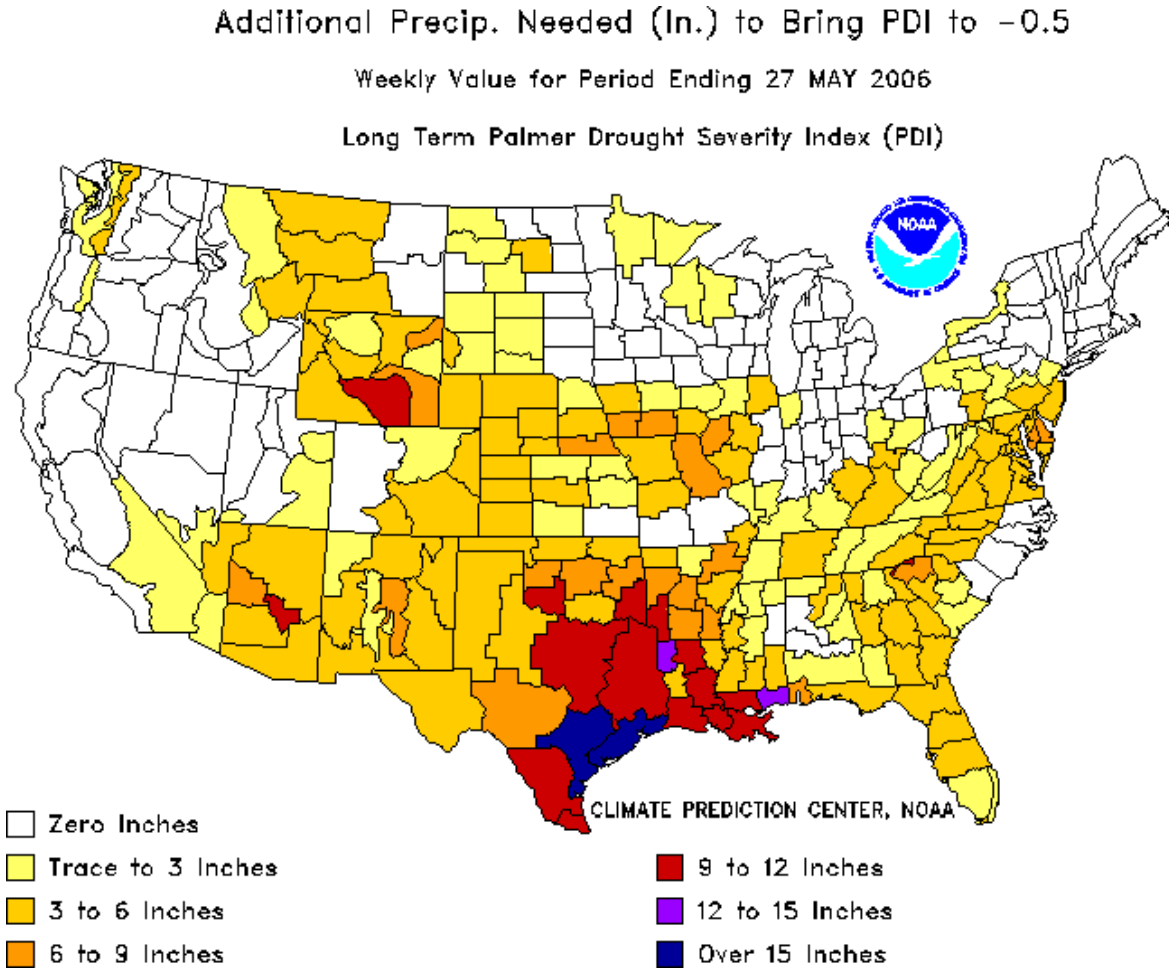


Figure 7 – Three-Month Seasonal Drought Outlook through August 2006

[http://www.cpc.ncep.noaa.gov/products/expert\\_assessment/seasonal\\_drought.html](http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html)

## Weekly Precipitation Need

Figure 8 is the weekly precipitation needed to reduce the current Palmer Drought Severity Index value to -0.5 or near normal conditions.



**Figure 8 – Weekly Precipitation Need to Bring PDI to -0.5**

[http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/regional\\_monitoring/addpcp.gif](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/addpcp.gif)

In order to reach near normal Palmer Drought conditions, Montana would need approximately up to 6 inches of precipitation across the western portion of the state, the North Platte River basin in Wyoming would require up to 3 to 12 inches of precipitation while Nebraska would require from 3 to 12 inches. Water supply deficits in large reservoirs, groundwater reserves, and possibly subsoil moisture reserves would receive limited benefit from the weekly Palmer precipitation needs. Mitigation of a multi-year drought would likely require multiple years of normal and above-normal water inflow conditions.

## **Mainstem Reservoir Information**

The mainstem reservoir system conditions are comparatively better than recent years. The upper three reservoirs are higher than they were June 1, 2005. Specifically, Fort Peck is approximately six feet higher, Garrison is approximately six feet higher and Oahe is nearly the same at only one-half foot higher. Based on the current reservoir conditions and the latest predictions from Northwestern Division Water Management Division, no municipal water intakes within the reservoirs appear to be in jeopardy.

Recent precipitation, both rainfall and snowfall, has contributed to the condition of the reservoirs. Continued moisture will further improve conditions throughout the basin.

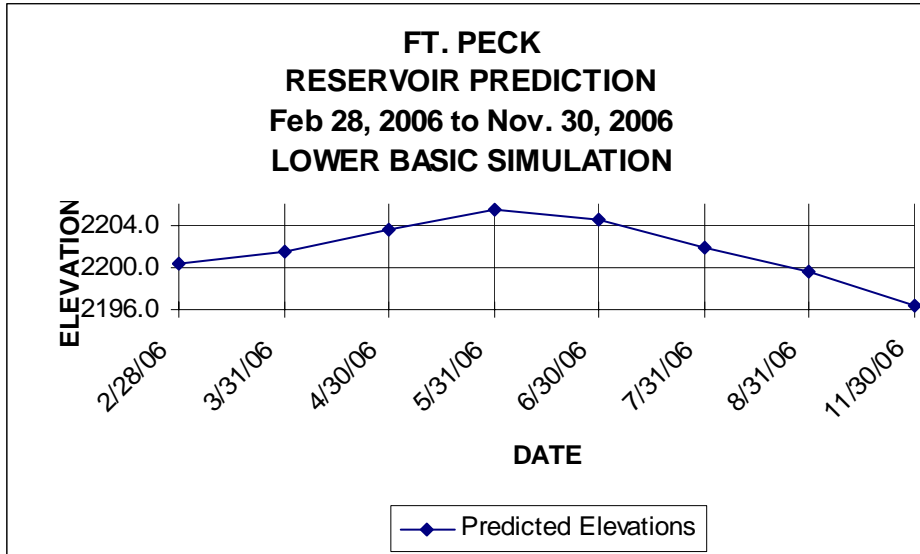
**Fort Peck, Montana**

**Reservoir Elevation Overview**

Lake Elevation 5/31/2005 (ft. msl)	Current Lake Elevation 5/31/2006 (ft. msl)	30-Day Projected Elevation* (6/30/2006) (ft. msl)	180-Day Projected Elevation* (11/30/2006) (ft. msl)
2199.6	2205.5	2204.5	2196.4

**Comments:**

1. Current reservoir elevation is 28.5-feet below the top of conservation pool (elevation 2234.0 ft. msl).
2. \*Projections provided are based upon the Lower Basic Simulation prepared by the Reservoir Control Center.
3. Current elevation is 5.9-ft. higher than elevation on 5/31/05 (2199.6).





### **Water Intake Overview**

Intake	Comments
Hell Creek State Park	No issues. Well completed 22 NOV 2004

### **Access Overview**

1. 8 ramps usable (Corps and State); 3 ramps unusable. No permanent ramps operational.
2. Remaining concessionaires marginal.

### **Noxious Weeds Overview**

1. As the reservoir elevation dropped, the noxious weeds spread along the shoreline.
2. Main concern is Saltcedar, which thrives along the shoreline as the reservoir elevation declines.
3. Noxious weed control will again be addressed Spring 2006.

### **Cultural Resources Overview**

1. No issues to date.

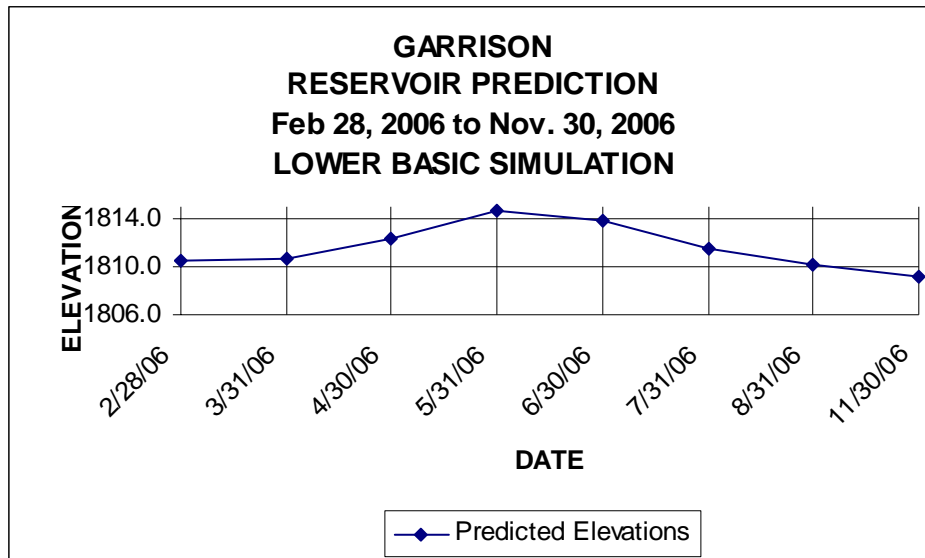
**Garrison, North Dakota**

**Reservoir Elevation Overview**

Lake Elevation 5/31/2005 (ft. msl)	Current Lake Elevation (5/31/2006) (ft. msl)	30-Day Projected Elevation* (6/30/2006) (ft. msl)	180-Day Projected Elevation* (11/30/2006) (ft. msl)
1808.7	1814.6	1813.8	1809.2

**Comments:**

1. Current reservoir elevation is 22.9-feet below the top of conservation pool (elevation 1837.5 ft. msl).
2. \*Projections provided are based upon the Lower Basic Simulation prepared by the Reservoir Control Center.
3. Current reservoir elevation is 5.9 ft. higher than elevation on 5/31/05 (1808.7).



## Water Intake Overview

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Whiteshield	Operational	1814.6	1787	1805	1787	1792	720	N	TAT/BOR

**Comments:**

1. Top of Screen Elevation taken from survey completed by the Corps in 2005. The intake was extended and lowered 2-feet since the Corps' survey in 2005.

**Future Plans:**

1. Ft. Berthold Rural Water System secured \$1.0 million funding through USDA Emergency Community Water Assistance Grant Program for improvements in 2006. Currently, FBRW is working on the appropriate paperwork and the design of the system improvements. The improvements are planned to include:
  - a. Extending approximately 400 to 500 feet from the current intake screen with 8" to 12" casing pipe. The new intake screen elevation would be approximately 1763 (or lower).
  - b. Estimated cost: \$1.16 million.
  - c. Estimated time of completion: Late 2006.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Twin Buttes	Operational	1814.6	1784.4	1805	1788	1790	425	N	TAT/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. In August, Ft. Berthold Rural Water System cleaned the “short tube” side of the existing intake structure and lowered the pump to a new elevation of approximately 1800. Both the “long tube” and “short tube” pumps should be at nearly equal elevations.
3. Erosion due to low reservoir levels have caused increased sediment in the intake piping. This has increased maintenance cost to remove the sediment and increased the cost of treating the water.

Future Plans:

1. Ft. Berthold Rural Water System has secured funding through the Indian Health Services, the Bureau of Reclamation, and the USDA Emergency Community Water Assistance Grant Program to improve the system in 2006. The FBRW is currently completing the necessary paperwork and working on the design for the improvements. The current plans are to:
  - a. Install a new casing approximately 450-feet into the lake.
  - b. Install a new 10” to 12” supply line, approximately 300- to 400-feet beyond the current location to approximate elevation 1780.0.
  - c. Provide bank stabilization and erosion control over the new line.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Mandaree	Operational	1814.6	1786	1789.0	1789	1794	780	N	TAT/BOR

Comments:

1. The new intake screen is at elevation 1786.
2. Grant monies for the project were secured from USDA Emergency Community Water Assistance Grant Program and Indian Health Services.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Four Bears	Operational	1814.6	1789.9	1800.0	1792	1794	900	N	TAT/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. The screen has been checked by divers and it was confirmed that approximately 20-feet of water is over the intake.
3. Erosion due to low reservoir levels have caused increased sediment in the intake piping. This has increased maintenance cost to remove the sediment and increased the cost of treating the water.

Future Plans:

1. Ft. Berthold Rural Water System has secured funding through USDA Emergency Community Water Assistance Grant Program to improve the intake in 2006. FBRW is currently completing paperwork and working on the design for the following:
  - a. Exploration and mapping of the intake area.
  - b. Replacement/extension approximately 200- to 250-feet from the current intake screen with 8" to 12" casing pipe. The new intake screen would be at approximate elevation 1785 (or lower).
  - c. Estimated cost: \$942,500
  - d. Estimated time of completion: 2006.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Parshall	Operable	1814.6	1803.6*	1806.6	1797.5	1801.5	1000	N	Parshall

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. The City had a telescoping riser attached to the intake by 30 July 2005. The riser extended the intake to within 3- to 4-feet of the water's surface.
3. Require at least 3 feet of water over the intake for proper operation.
4. Water quality at current level is good following water treatment.

Future Plans:

1. Discussions have been held between Parshall and New Town regarding future water supply. No formal decisions have been reached.

\*Screen is raised or lowered according to reservoir elevations.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Pick City	Operational	1814.6	1795	1800	1798	1800	200		Pick City

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. At least 5-feet of water is necessary to operate this intake. If continued usage is planned, the intake will have to be lowered.

Future Plans:

1. Rural water is available to the City, however, they have chosen to continue using their intake until the water no longer meets State Health Standards or work is required on their intake.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Garrison	Operational	1814.6	1787.2	1805	1792	1792	1830	N	Garrison

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.

**Access Overview**

1. Ft. Stevenson State Park Marina design to be completed in FY 06. However, no federal funding is available for construction.

Updated 5/4/2006

**Reservoir Elevation 5/31/06 – 1814.6**

<b>Location</b>	<b>Type</b>	<b>Top Elevation</b>	<b>Bottom Elevation</b>	<b>Comments</b>	<b>Managing Agency</b>	<b>Contact Person</b>	<b>Phone</b>
<b>Beaver Bay (low-water-COE)</b>	poured concrete	1829	1808	<b>Usable</b>	Corps of Engineers	Linda Phelps	654-7411
<b>Beulah Bay</b>	poured concrete	1852.4	1799	<b>Usable</b>	Beulah Park Board	Bev Sullivan	870-5852
<b>Camp of the Cross</b>	Slide-in metal sections	1819	1806	<b>Usable</b>	Lutheran Bible Camp	Larry Crowder	337-2246
<b>Charging Eagle Bay (1st low water)</b>	poured concrete	1829.2	1810.6	<b>Usable</b>	Three Affiliated Tribes	Jim Mossett	880-1203
<b>Dakota Waters Resort (low-water)</b>	poured concrete, planks	1853.4	1797	<b>Usable</b>	Beulah Park Board	Kelvin Heinsen	873-5800
<b>Deepwater Creek (2nd low water)</b>	concrete planks & metal	1820	1808	<b>Usable</b>	Corps of Engineers	Linda Phelps	654-7411
<b>Deepwater Creek (1st low water)</b>	poured concrete	1838.5	1809	<b>Usable</b>	Corps of Engineers	Linda Phelps	654-7411
<b>Douglas Creek (low water)</b>	poured concrete, planks	1831	1801	<b>Usable</b>	Corps of Engineers	Linda Phelps	654-7411
<b>Fort Stevenson State Park (low water)</b>	poured concrete	1821.8	1790	<b>Usable</b>	ND Parks & Rec	Dick Messerly	337-5576
<b>Four Bears Park (south low water)</b>	concrete planks	1820.7	1803	<b>Usable</b>	Three Affiliated Tribes	Alan Chase	627-4018
<b>Garrison Creek Cabin Site</b>	poured concrete	1857	1802	<b>Usable</b>	Garrison Cabin Assc.	Percy Radke	337-2247
<b>Government Bay (low water)</b>	slide-in metal sections	1815	1803	<b>Usable</b>	Corps of Engineers	Linda Phelps	654-7411
<b>Government Bay (main ramp)</b>	poured concrete	1857	1810	<b>Usable</b>	Corps of Engineers	Linda Phelps	654-7411
<b>Hazen Bay (2nd low water)</b>	poured concrete	1830.6	1808	<b>Usable</b>	Hazen Park Board	Jeff Gustafson`	748-6948
<b>Indian Hills (2nd low water)</b>	concrete planks	1817.6	1807	<b>Usable</b>	Parks & Rec/Tribes	Kelly Sorge	743-4122
<b>Indian Hills (1st low water)</b>	concrete planks	1826.4	1811.8	<b>Usable</b>	Parks & Rec/Tribes	Kelly Sorge	743-4122
<b>McKenzie Bay (east ramp)</b>	poured concrete	1850.9	1796	<b>Usable</b>	McKenzie Marine Club	Rhonda Logan	579-3366

<b>Location</b>	<b>Type</b>	<b>Top Elevation</b>	<b>Bottom Elevation</b>	<b>Comments</b>	<b>Managing Agency</b>	<b>Contact Person</b>	<b>Phone</b>
<b>Parshall Bay (2nd low-water)</b>	poured concrete	1817.8	1808.5	<b>Usable</b>	Mountrail County Park Board	Clarence Weltz	627-3377
<b>Pouch Point (3rd low-water)</b>	slide-in metal sections	1819	1809	<b>Unusable</b>	Three Affiliated Tribes	Paul Danks	627-3627
<b>Pouch Point (2nd low-water)</b>	poured concrete	1834.8	1813	<b>Unusable</b>	Three Affiliated Tribes	Paul Danks	627-3627
<b>Reunion Bay (2nd low water)</b>	concrete planks	1826.6	1808	<b>Usable</b>	Corps of Engineers	Linda Phelps	654-7411
<b>Sakakawea State Park (main)</b>	poured concrete	1850	1800	<b>Usable</b>	ND Parks & Rec	John Tunge	487-3315
<b>Sanish Bay (Aftem) (low water)</b>	poured concrete	1830.8	1807.4	<b>Unusable</b>	Aftem Lake Development	Gerald Aftem	852-2779
<b>Skunk Creek Recreation Area (main)</b>	poured concrete	1840	1806.5	<b>Usable</b>	Three Affiliated Tribes	Ken Danks	290-2841
<b>Sportsmen's Centennial Park</b>	poured concrete	1831.6	1808.5	<b>Usable</b>	McLean County	Les Korgel	462-8541
<b>Steinke Bay</b>	poured concrete	1833.1	1813.4	<b>Unusable</b>	North Dakota Game & Fish	Bob Frohlich	328-6346
<b>Van Hook (Gull Island north low-water)</b>	metal bridge deck sections	1817.8	1805	<b>Usable</b>	Mountrail County Park Board	Clarence Weltz	627-3377
<b>Van Hook (west low water ramps)</b>	poured concrete	1821.2	1808	<b>Usable</b>	Mountrail County Park Board	Clarence Weltz	627-3377
<b>White Earth Bay (main)</b>	poured concrete	1850.9	1801	<b>Usable</b>	Mountrail County Park Board	Greg Gunderson	755-3277
<b>Wolf Creek Recreation Area (1st low water)</b>	poured concrete	1833.8	1802.5	<b>Usable</b>	Corps of Engineers	Linda Phelps	654-7411



### **Noxious Weeds Overview**

1. Funding for Noxious Weed Control included in FY 06 O&M budget. Project personnel will continue efforts beginning in the Spring of 2006.

### **Cultural Resources Overview**

1. Project personnel continue to monitor the shoreline for the protection of cultural resources.

### **Other Areas of Interest/Concern**

1. Garrison National Fish Hatchery – Three issues exist and are of concern to the State of North Dakota and the U.S. Fish and Wildlife Service.
  - a. Addition of a fifth boiler and necessary power for operation.
  - b. Ability to fill 40 rearing ponds.
  - c. Adequacy of the existing 20-inch water supply line from the penstocks.
2. Fact sheets for the hatchery issues exist. OP-TM is investigating a design for additional power requirements to the hatchery. An MOU may need to be set up to address future operating needs and requirements.
3. Garrison Cold Water Fishery – The modification to the trashracks of intakes 2 and 3, was completed 22 July 2005. The modifications were kept in place throughout the winter period, as the cost to remove and replace was comparable to lost power generation costs. The plates will be inspected in the spring with an underwater camera to ensure structural adequacy.

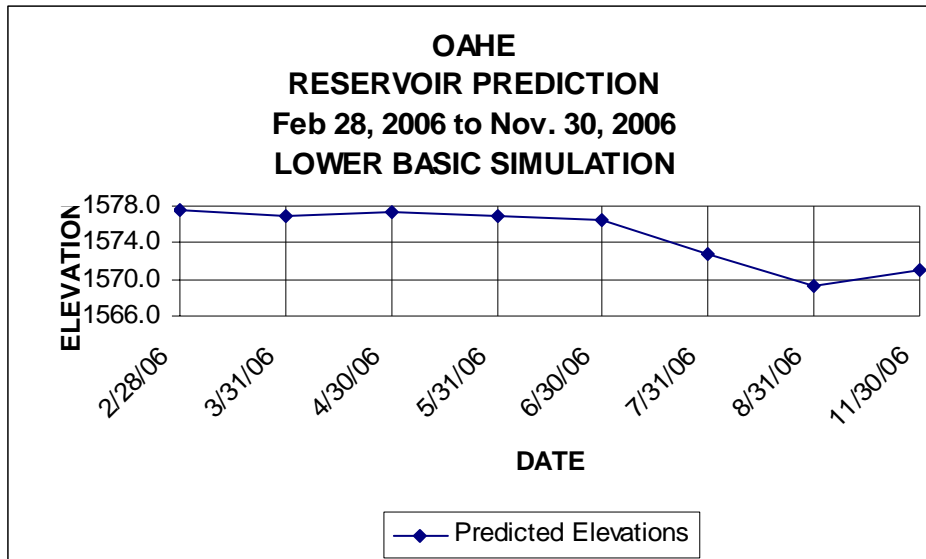
**Oahe, South Dakota**

**Reservoir Elevation Overview**

Lake Elevation 5/31/2005 (ft. msl)	Current Lake Elevation (5/31/2006) (ft. msl)	30-Day Projected Elevation* (6/30/2006) (ft. msl)	180-Day Projected Elevation* (11/30/2006) (ft. msl)
1576.5	1577.0	1576.4	1571.1

**Comments:**

1. Current reservoir elevation is 30.5-feet below the top of conservation pool (elevation 1607.5 ft. msl).
2. \*Projections provided are based upon the Lower Basic Simulation prepared by the Reservoir Control Center.
3. Current reservoir elevation is 0.5 feet higher than 5/31/05 (1576.5).



### Water Intake Overview

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Ft. Yates	Operational	1577.0	1571.2	1573	1572.2	1575.2	3,400	Y	SRST/BOR

**Comments:**

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. A backup well has been drilled and tested.
3. New well and plumbing is installed at Fort Yates and can be used as a backup water source.
4. Intake is in riverine conditions and flow to the intake may be influenced by releases from Garrison reservoir.

**Future Plans:**

1. The intake at Fort Yates remains in a river condition and may continue to have sedimentation problems as long as Oahe remains below elevation 1580. Sediment levels in the sump are measured weekly and the river channel is monitored.
2. Contingency plans are in place and have been exercised.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Wakpala	Operational	1577.0	1563	1563	1566	1569	>500	N	SRST/BOR

**Comments:**

1. Top of Screen Elevation taken from survey completed by the Corps in 2005, a new low profile screen was installed lowering the top of the screen elevation to 1563.
2. Contingency plans are being drafted to respond to an intake failure. Initial response to an intake failure at Wakpala would be hauling water from the city of Mobridge to the treatment plant to be distributed using the existing transmission lines.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Mni Wasté	Operational	1577.0	1555.7	1580	1561.9	1560.4	14,000	Y(DRAFT)	CRST

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. Construction of a temporary intake approximately 16 miles from the existing intake is underway and is proceeding well. The construction project is a collaborative effort between the Tribe, the State, the Corps and many other entities.
3. Trigger Points for continuation of construction are being closely monitored.

**Access Overview**

1. The State of South Dakota is responsible for maintaining recreational areas and access to the reservoir in South Dakota. The Oahe Project maintains the access in North Dakota.
2. Ramps on Oahe Project in North Dakota:

AREA	Status
Sibley Park	Usable
Little Heart Bottoms	Usable
Kimball (Desert)	Usable
Graner's Bottoms	Usable
Maclean Bottoms	Usable
Hazelton	Usable
Ft. Rice	Usable
North Beaver Bay	Usable
Walker Bottoms	Usable
Jennerville (Rivery)	Usable
Fort Yates	Unusable
Cattail Bay	Unusable
Langeliers Bay	Unusable
Beaver Creek	Unusable
State Line	Unusable

<http://gf.nd.gov/fishing/mo-riv-system-boatramps-status.html>.

**Noxious Weeds Overview**

1. The Oahe Project has a \$250,000 budget for salt cedar and other noxious weed control for FY 06.

**Cultural Resources Overview**

1. Project personnel continue to monitor the shoreline for the protection of cultural resources. As the reservoir elevation falls, more opportunities are uncovered for looters, which collect artifacts and sell them on the open market.

**Other**

1. The Oahe Project Manager met with County Commissioners at Pollack to discuss constructing a firebreak between the reservoir and the park. Project personnel will investigate constructing a firebreak. This will require working with/coordinating with the State of South Dakota, the current landowner of the proposed construction site.

## Mainstem Reservoir Information, Weekly Elevation Comparison

<b>1 May 2006</b>								
<b>Project</b>	<b>Project Information</b>		<b>Reservoir Elevation</b>			<b>Reservoir Storage</b>		
	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (5/1/06)	Previous Elevation (4/24/06)	Change	Current Storage (MAC-FT) (5/1/06)	Previous Storage (MAC-FT) (4/24/06)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 - 2250	2203.6	2203.2	0.4	9.540	9.479	0.061
Garrison, ND	1775 - 1850	1850 - 1854	1812.5	1811.7	0.8	11.460	11.266	0.194
Oahe, SD	1540 - 1617	1617 - 1620	1577.4	1577.4	0.0	11.150	11.110	0.040
Big Bend, SD	1415 - 1422	1422 - 1423	1420.7	1421.1	-0.4	1.661	1.672	-0.011
Ft. Randall, SD	1320 - 1365	1365 - 1375	1357.2	1357.4	-0.2	3.726	3.725	0.001
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1208.1	1207.4	0.7	0.411	0.395	0.016

<b>8 May 2006</b>								
<b>Project</b>	<b>Project Information</b>		<b>Reservoir Elevation</b>			<b>Reservoir Storage</b>		
	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (5/8/06)	Previous Elevation (5/1/06)	Change	Current Storage (MAC-FT) (5/8/06)	Previous Storage (MAC-FT) (5/1/06)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 - 2250	2204.4	2203.6	0.8	9.659	9.540	0.119
Garrison, ND	1775 - 1850	1850 - 1854	1812.7	1812.5	0.2	11.529	11.460	0.069
Oahe, SD	1540 - 1617	1617 - 1620	1577.3	1577.4	-0.1	11.136	11.150	-0.014
Big Bend, SD	1415 - 1422	1422 - 1423	1420.8	1420.7	0.1	1.669	1.661	0.008
Ft. Randall, SD	1320 - 1365	1365 - 1375	1357.6	1357.2	0.4	3.764	3.726	0.038
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1207.6	1208.1	-0.5	0.398	0.411	-0.013

<b>15 May 2006</b>								
<b>Project</b>	<b>Project Information</b>		<b>Reservoir Elevation</b>			<b>Reservoir Storage</b>		
	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (5/15/06)	Previous Elevation (5/8/06)	Change	Current Storage (MAC-FT) (5/15/06)	Previous Storage (MAC-FT) (5/8/06)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 - 2250	2204.7	2204.4	0.3	9.718	9.659	0.059
Garrison, ND	1775 - 1850	1850 - 1854	1812.9	1812.7	0.2	11.578	11.529	0.049
Oahe, SD	1540 - 1617	1617 - 1620	1577.7	1577.3	0.4	11.216	11.136	0.080
Big Bend, SD	1415 - 1422	1422 - 1423	1420.6	1420.8	-0.2	1.656	1.669	-0.013
Ft. Randall, SD	1320 - 1365	1365 - 1375	1356.7	1357.6	-0.9	3.683	3.764	-0.081
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1206.7	1207.6	-0.9	0.375	0.398	-0.023

<b>22 May 2006</b>								
<b>Project</b>	<b>Project Information</b>		<b>Reservoir Elevation</b>			<b>Reservoir Storage</b>		
	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (5/22/06)	Previous Elevation (5/15/06)	Change	Current Storage (MAC-FT) (5/22/06)	Previous Storage (MAC-FT) (5/15/06)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 - 2250	2204.9	2204.7	0.2	9.749	9.718	0.031
Garrison, ND	1775 - 1850	1850 - 1854	1813.0	1812.9	0.1	11.615	11.578	0.037
Oahe, SD	1540 - 1617	1617 - 1620	1577.4	1577.7	-0.3	11.198	11.216	-0.018
Big Bend, SD	1415 - 1422	1422 - 1423	1420.8	1420.6	0.2	1.671	1.656	0.015
Ft. Randall, SD	1320 - 1365	1365 - 1375	1355.4	1356.7	-1.3	3.571	3.683	-0.112
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1206.6	1206.7	-0.1	0.372	0.375	-0.003

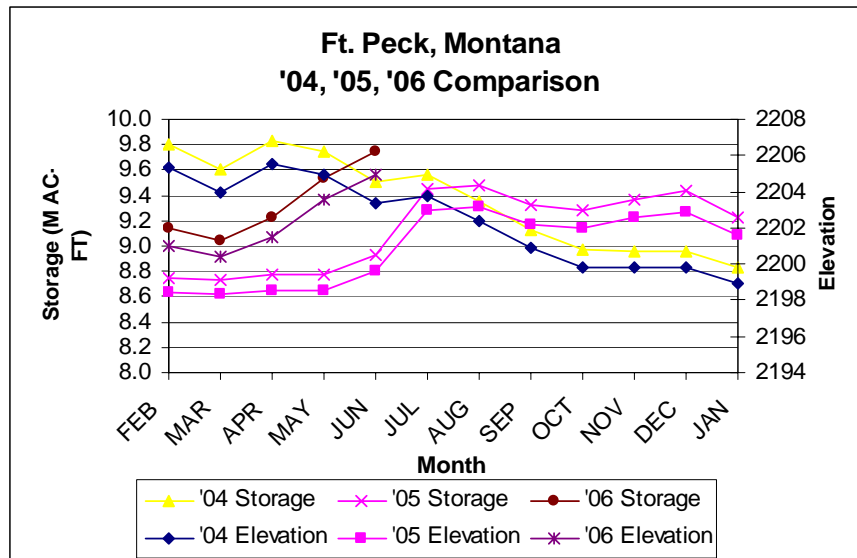
29 May 2006

Project	Project Information		Reservoir Elevation			Reservoir Storage		
	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (5/29/06)	Previous Elevation (5/22/06)	Change	Current Storage (MAC-FT) (5/29/06)	Previous Storage (MAC-FT) (5/22/06)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2205.4	2204.9	0.5	9.819	9.749	0.070
Garrison, ND	1775 – 1850	1850 – 1854	1814.2	1813.0	1.2	11.882	11.615	0.267
Oahe, SD	1540 - 1617	1617 – 1620	1577.1	1577.4	-0.3	11.119	11.198	-0.079
Big Bend, SD	1415 – 1422	1422 – 1423	1420.5	1420.8	-0.3	1.658	1.671	-0.013
Ft. Randall, SD	1320 – 1365	1365 – 1375	1355.8	1355.4	0.4	3.609	3.571	0.038
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1206.1	1206.6	-0.5	0.361	0.372	-0.011

## Mainstem Reservoir Storage Comparison – Water Years 2004, 2005, 2006

### Fort Peck, Montana

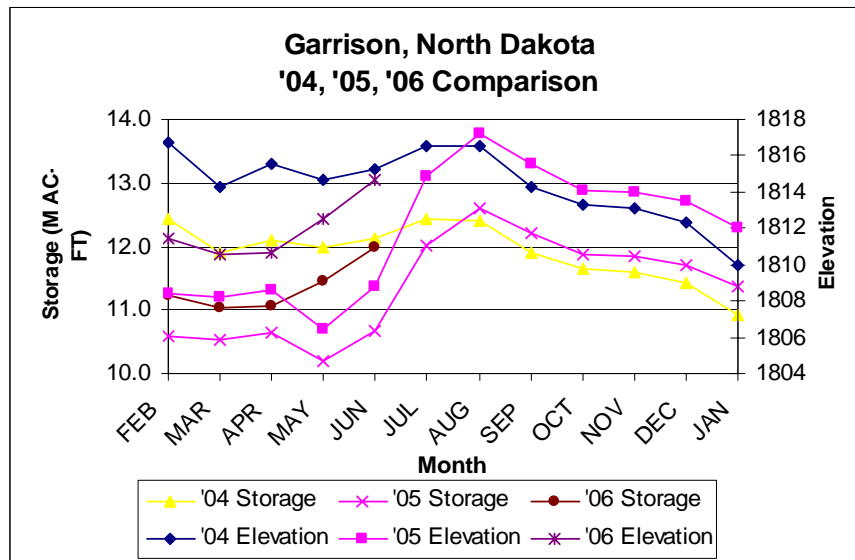
Water Year 2004 (FEB 2004 – JAN 2005)			Water Year 2005 (FEB 2005 – JAN 2006)			Water Year 2006 (FEB 2006 – JAN 2007)		
Date	Elevation	Storage (MAC-Ft.)	Date	Elevation	Storage (MAC-Ft.)	Date	Elevation	Storage (MAC-Ft.)
2/1/2004	2205.3	9.806	2/1/2005	2198.4	8.749	2/1/2006	2201.0	9.134
3/1/2004	2204	9.603	3/1/2005	2198.3	8.732	3/1/2006	2200.4	9.048
4/1/2004	2205.5	9.837	4/1/2005	2198.5	8.773	4/1/2006	2201.5	9.222
5/1/2004	2204.9	9.740	5/1/2005	2198.5	8.773	5/1/2006	2203.6	9.540
6/1/2004	2203.4	9.507	6/1/2005	2199.6	8.935	6/1/2006	2204.9	9.741
7/1/2004	2203.8	9.565	7/1/2005	2203.0	9.448	7/1/2006		
8/1/2004	2202.4	9.357	8/1/2005	2203.2	9.472	8/1/2006		
9/1/2004	2200.9	9.121	9/1/2005	2202.2	9.325	9/1/2006		
10/1/2004	2199.8	8.969	10/1/2005	2202.0	9.286	10/1/2006		
11/1/2004	2199.8	8.963	11/1/2005	2202.6	9.371	11/1/2006		
12/1/2004	2199.8	8.961	12/1/2005	2202.9	9.432	12/1/2006		
1/1/2005	2198.9	8.829	1/1/2006	2201.5	9.222	1/1/2007		





## Garrison, ND

Water Year 2004 (FEB 2004 – JAN 2005)			Water Year 2005 (FEB 2005 – JAN 2006)			Water Year 2006 (FEB 2006 – JAN 2007)		
Date	Elevation	Storage (MAC-Ft.)	Date	Elevation	Storage (MAC-Ft.)	Date	Elevation	Storage (MAC-Ft.)
2/1/2004	1816.7	12.446	2/1/2005	1808.4	10.574	2/1/2006	1811.4	11.230
3/1/2004	1814.3	11.891	3/1/2005	1808.2	10.537	3/1/2006	1810.6	11.040
4/1/2004	1815.6	12.110	4/1/2005	1808.65	10.632	4/1/2006	1810.7	11.076
5/1/2004	1814.7	11.989	5/1/2005	1806.47	10.189	5/1/2006	1812.5	11.460
6/1/2004	1815.3	12.121	6/1/2005	1808.8	10.665	6/1/2006	1814.7	11.992
7/1/2004	1816.5	12.426	7/1/2005	1814.9	12.026	7/1/2006		
8/1/2004	1816.5	12.401	8/1/2005	1817.17	12.591	8/1/2006		
9/1/2004	1814.3	11.914	9/1/2005	1815.56	12.216	9/1/2006		
10/1/2004	1813.3	11.645	10/1/2005	1814.11	11.861	10/1/2006		
11/1/2004	1813.1	11.589	11/1/2005	1814.00	11.837	11/1/2006		
12/1/2004	1812.3	11.422	12/1/2005	1813.50	11.707	12/1/2006		
1/1/2005	1810	10.936	1/1/2006	1812.0	11.371	1/1/2007		



## Oahe, SD

Water Year 2004 (FEB 2004 – JAN 2005)			Water Year 2005 (FEB 2005 – JAN 2006)			Water Year 2006 (FEB 2006 – JAN 2007)		
Date	Elevation	Storage (MAC-Ft.)	Date	Elevation	Storage (MAC-Ft.)	Date	Elevation	Storage (MAC-Ft.)
2/1/2004	1577.6	11.204	2/1/2005	1575.2	10.715	2/1/2006	1576.8	11.037
3/1/2004	1579.2	11.504	3/1/2005	1576.2	10.924	3/1/2006	1577.6	11.209
4/1/2004	1582.1	12.110	4/1/2005	1574.29	10.568	4/1/2006	1576.7	11.024
5/1/2004	1581.6	12.056	5/1/2005	1574.82	10.608	5/1/2006	1577.4	11.150
6/1/2004	1578.4	11.338	6/1/2005	1576.47	10.980	6/1/2006	1577.0	11.088
7/1/2004	1576.8	11.045	7/1/2005	1577.6	11.214	7/1/2006		
8/1/2004	1574.3	10.540	8/1/2005	1576.38	10.958	8/1/2006		
9/1/2004	1572.1	10.112	9/1/2005	1572.64	10.363	9/1/2006		
10/1/2004	1573.2	10.316	10/1/2005	1572.63	10.267	10/1/2006		
11/1/2004	1574.8	10.608	11/1/2005	1573.90	10.501	11/1/2006		
12/1/2004	1576	10.866	12/1/2005	1575.6	10.814	12/1/2006		
1/1/2005	1575.8	10.824	1/1/2006	1575.6	10.778	1/1/2007		

