United States Department of the Interior

FISH AND WILDLIFE SERVICE

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December 17, 1996
Carl J. Christianson, Chief
Environmental Resources Branch
Walla Walla District, Corps of Engineers
201 North Third Avenue
Walla Walla, WA 99362-1876
Attn: CENPW-PL-ER

Dear Mr. Christianson:

Enclosed is the supplemental Planning Aid Report (PAR) prepared by the U.S. Fish and Wildlife Service (Service) for the Walla Walla District Corps of Engineers' (COE) to assist with planning for the Walla Walla River Basin Reconnaissance Study (Study). The COE's Study is addressing environmental restoration opportunities, flooding problems, water resource needs and conservation opportunities within the Walla Walla River Basin.

The Service provided a PAR for the Study in April, 1999. The objectives of that PAR were to (I describe existing fish and wildlife resources in the Basin; (9) assess potential impacts of the proposed actions on fish and wildlife; (3) identify opportunities to restore fish and wildlife populations through development and protection of water resources in the Basin; and (4) identify study and mitigation needs which might be required. This supplemental PAR (I) updates fish and wildlife resource information contained in the 1992 PAR; (2) identifies opportunities to restore fish and wildlife populations through the development, conservation and protection of water resources in the Basin; and (3) identifies study and mitigation needs which implementation of the alternatives might require within the Basin. This supplemental PAR includes only a limited amount of information from the previous (April, 1999) PAR. This PAR was prepared under the authority of and in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended, 16 U.S.C. 661 et se(l.). It was prepared as per the 1996 Scope-of-work between the COE and the Service.

As of today, we have not received updated information we need for the threatened and endangered species, candidate species and other species of concern for the Oregon

portion of the Basin. We do not anticipate that there will be many additions, if any, to the list we have provided in this PAR. We will transmit any additional species names and associated information to you for inclusion with the PAR soon after we receive it.

If you have any questions or comments regarding the attached report, please contact Don Haley of my staff at the letterhead address or phone number.

Sincerely,

Kurt R. Campbell
Assistant Field Supervisor

Enclosure
c: USFWS, Spokane

WALLA WALLA RIVER BASIN RECONNAISSANCE STUDY

SUPPLEMENTAL PLANNING AID REPORT

Prepared for
Walla Walla District
Corps of Engineers
Walla Walla Washington

Prepared by
Donald Haley Fish and Wildlife Biologist
Upper Columbia River Basin Office
U S Fish and Wildlife Service
Moses Lake, Washington

December 1996

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INTRODUCTION

This supplemental Planning Aid Report (PAR) is provided to the U.S. Army Corps of Engineers, Walla Walla District (COE), to assist with the planning for the Walla Walla River Basin Reconnaissance Study (Study). It has been prepared under the authority of and in accordance with provisions of the Fish and Wildlife Coordination Act (Act) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and is not intended to fulfill Section 2 (b) of the Act.

The COE's Study is addressing environmental restoration opportunities, flooding problems, water resource needs and conservation opportunities within the Walla Walla River Basin (Basin). Their objective is to identify potential solutions to those problems that the COE may be able to address under various authorities. The COE's 1992 Reconnaissance Report identified eight alternatives focused primarily on flood control (Corps of Engineers 1992). Consideration was also given to municipal and industrial water supply, irrigation and restoration of anadromous fish (spring chinook and steelhead trout) runs. One of those alternatives, Mill Creek Watershed Dam and Reservoir, has been dropped from consideration. The COE is now considering some additional issues such as exchange of irrigation water (that is, the potential to use water from alternative reservoirs to replace instream withdrawals) and potential for improving use efficiency of irrigation water withdrawn from surface water sources. Furthermore, they conducted several public meetings in the Basin to solicit information and recommendations from the public for needs and opportunities related to water resources.

The U.S. Fish and Wildlife Service (Service) provided the COE a PAR for the Study in April, 1992. The objectives of that PAR were to (1) describe existing fish and wildlife resources in the Basin; (2) assess potential impacts of the proposed actions on fish and wildlife; (3) identify opportunities to restore fish and wildlife populations through development and protection of water resources in the Basin, and (4) identify study and mitigation needs which might be required. This supplemental PAR (1) updates fish and wildlife resource information contained in the 1992 PAR; (2) identifies opportunities to restore fish and wildlife populations through the development, conservation and protection of water resources in the Basin, and (3) identifies study and mitigation needs which implementation of the alternatives might require within the Basin. This supplemental PAR includes only a limited amount of information from the previous (April, 1992) PAR and the reader is often directed to that earlier PAR. The previous PAR included general information about the Basin, surface water resources, water quality, a description of the alternatives and fish and wildlife resources. This supplemental PAR does not duplicate that information but expands on wildlife resource information in the Basin, including threatened and endangered species, candidate species, other species of concern and neotropical migratory birds.

In early February, 1996, above normal snowpacks conditions combined with warm temperatures and heavy rainfall in the Basin. This resulted in widespread flooding

along most streams and rivers in the Basin. Landslides and other erosion sent lots of rocks and soil into the streams and rivers. Several landowners have been working: in and near the streams with bulldozers and other heavy equipment, in attempts to protect property, stabilize banks and restore stream channels to their pre-flood conditions. In addition, some private landowners and other entities have been replacing destroyed or damaged bridges with small bridges (presumably, to keep costs down), which can constrict flow and alter stream dynamics (Bailey, Oregon Dept. of Fish and Wildlife (ODFW), personal communication). Unfortunately, all these activities can often end up destroying any remaining fish habitat and removing any recent additions to the stream habitat (for example, large woody debris and deep scour holes). It is suspected that the February flooding and the human follow-up activities may have had adverse affects on bull trout in the Basin as they destroyed some redds, eggs and recently hatched fry. Furthermore, high flows in April destroyed additional steelhead spawning habitat because of the destruction of redds and channel instability from the earlier flooding and related-activities (Schuck, Washington Department of Fish and Wildlife (WDFW), personal communication).

THREATENED AND ENDANGERED SPECIES

We have included a list of threatened and endangered species, candidate species and species of concern that may be present in the Basin. The list fulfills the requirements of the Service under Section 7(c) of the Endangered Species Act of 1973, as amended (Act). We are enclosing a copy of the requirements for COE compliance under the Act for your information (Appendix A).

Should the COE's biological assessment for proposed project activities determine that a listed species is likely to be affected (adversely or beneficially) by the project, the COE should request Section 7 consultation through this office If the biological assessment determines that the proposed action is "not likely to adversely affect" a listed species, the COE should request Service concurrence with that determination through the informal consultation process. If the biological assessment determines the project to have "no effect", we would appreciate receiving a copy for our information.

Candidate species and species of concern are included simply as advance notice to federal agencies of species that may be proposed and listed in the future. However, protection provided to these species now may preclude possible listing in the future. If early evaluation of your project indicates that it is likely to adversely impact one of these species, the COE may wish to request technical assistance from this office Appendix B contains a partial bibliography for most of the candidate species and other species of concern as included in our Scope-of-Work with the COE.

There are other federally listed species that may occur in the vicinity of your project which are under the jurisdiction of the National Marine Fisheries Service (NMFS). The COE should contact the NMFS Portland office to request a species list.

Listed threatened and endangered species

> Peregrine falcon (*Falco peregrinus*) - Preferred habitat of peregrine falcons is open country with rocky cliffs for nesting, nearby rivers and lakes, and a significant prey base. Nest sites are usually fairly small ledges on cliff faces. Cliffs and bluffs used for nesting range upwards from 75 feet and average about 150 feet tall. Waterfowl usually make up the bulk of the prey, but peregrines take virtually all bird species of smaller size. Peregrines nesting in eastern Washington appear to winter near their nest sites or move to lower areas with a more abundant winter prey base. Peregrines are expanding their range to use high buildings in some urban areas, with rock doves as the prey base.

> Bald eagle (*Haliaeetus leucocephalus*) - Suitable habitat includes those areas that are close to water and provide a substantial food base such as along rivers with anadromous fish, good populations of resident fish, abundant waterfowl and good mammal populations. In the Basin, bald eagles are found along rivers and streams. Bald eagles would be found in the Basin during migration and winter (November 1 through March, 1). There are no known nest sites or nesting territories in the Basin. However, bald eagle numbers are increasing in Washington and they are being found nesting in areas where they were previously absent. In 1975 there were 113 nesting territories with a productivity rate of 0.75 young per nest and in 1993 there were 469 occupied territories with a 1.01 young per nest. Therefore, the possibility exists that bald eagles may begin nesting within the Basin in the future.

Bald eagle winter habitat is mostly associated with areas of open, ice-free water where fish are available and/or waterfowl congregate (Stalmaster 1987). Additionally, eagles may be scattered through upland areas feeding on ungulate carrion, game birds and rabbits (Swenson et al. 1981). A majority of the bald eagles wintering in central and eastern Washington are winter migrants (Fielder 1992). Some move relatively short distances to lower elevations or inland for food sources. Most eagles that breed in the Pacific recovery area winter in the vicinity of their nests.

Candidate species - (see Appendix B for selected bibliography on candidate species and other species of concern)

> Bull trout (*Salvelinus confluentus*) is a wide ranging, non-anadromous species that formerly inhabited most of the cold lakes, rivers and streams throughout the western states and British Columbia. Within the Basin, bull trout are found in the upper portion of the North and South Forks of the Walla Walla River, Upper Touchet River, Mill Creek and some of their tributaries. It exhibits two life forms, resident and migratory. The resident forms inhabit streams and grows to about six to 12 inches. The migratory forms commonly exceed 12 inches in length and spawn in streams where the juveniles live for some time before migrating to rivers and lakes. Bull trout are piscivorous and require an abundant supply of forage fish for vigorous populations.

Bull trout require cold water, with 7-8°C appearing optimal and 15°C maximum. Spawning occurs in cooling water below 9°C. Optimal incubating temperature seems to be 2-4°C. Spawning occurs from August through November and eggs hatch in late winter or early spring. Emergence occurs in early April through May, commonly following spring peak flows. Because of extended time in the substrate, bull trout are susceptible to mortality in unstable conditions. Successful reproduction requires channel and substrate stability and adequate winter water flow to prevent the substrate from freezing. Bull trout require complex forms of instream cover. Adults use pools, large woody debris, large boulders and undercut banks for resting and foraging. Juveniles also use side channels and smaller wood in the water. Channels for moving between safe wintering areas and summer foraging areas are also necessary

Other species of concern

Bat species:
> Fringed myotis (*Myotis thysanodes*) - primarily uses open areas
> Long-eared myotis(*Myotis evotis*) - primarily uses forests and roosts in trees or buildings
> Long-legged myotis (*Myotis volans*) - primarily uses forests and roosts in trees or buildings
> Pale Townsend's (= western) big-eared bat (*Plecotus townsendii pallescens*)
> Small-footed myotis (*Myotis ciliolabrum*) - found in open, arid areas
> Yuma myotis (*Myotis yumanensis*) - associated with forest, forest edge and open areas

These bat species tend to forage over water, especially the Yuma myotis. They need to have roost (especially in winter) and maternity sites near foraging areas, to minimize energy expenditure. They roost in caves, buildings, under bridges, rock crevices and under tree bark Surrounding trees appear to be important for thermal protection. Most are very sensitive to disturbance.

> Black tern (*Chlidonias niger*) - Black terns are small, highly-social terns which eat primarily insects and can occur statewide, in or near small lakes, wetlands and sloughs. They usually nest in emergent vegetation in marshy wetlands in June.

> California floater (mussel) (*Anodonta californiensis*) (Lea, 1852) - This mussel is found in unpolluted fresh water, except small creeks. They prefer lakes and slow streams with areas less than 6.6 feet deep having sandy bottoms. Adults will also live on mud bottoms. Juveniles are parasitic on gills, fins and barbels of host fish.

> California wolverine (*Gulo gulo luteus*) - The wolverine prefers mountainous areas and has been documented in the Basin.

> Columbia pebblesnail [*Fluminicola (=Lithoglyphus*) *columbianus* (Hemphill in Pilsbry, 1899)] [great Columbia River spire snail] - This snail is found in the main channels and

free-flowing parts of the Columbia River, especially the Hanford Reach. They live on diatom-covered rocks.

> Columbia spotted frog (*Rana luteiventris*) - Columbia spotted frogs are the most abundant and widespread of the spotted frogs in Washington, being found across most of eastern Washington. They are one of the most aquatic frogs in the Basin and are found in warmwater marshes, overflow wetlands and bogs with non-woody wetland vegetation.

> Ferruginous hawk (*Buteo regalis*) - This large hawk prefers open plains and brushy open country and avoids forested areas. They nest in trees along streams, bluffs, rock piles and artificial structures. Ferruginous hawks feed primarily on ground squirrels, rabbits and other small mammals.

> Harlequin duck (*Histrionicus histrionicus*) - In the Blue Mountains, harlequin ducks rely generally on fast, turbulent streams as breeding habitat. They nest on the ground near streams or in holes in trees or rocks.

> Interior redband trout (*Oncorhynchus mykiss gibbsi*) - This subspecies of the rainbow trout is found throughout the Basin. In portions of streams and rivers which dry up or become too warm these fish migrate to upper reaches (Jermond, ODFW, personal communication). Diversion dams can prevent, or at least, inhibit this migration. Genetic diversity of this fish has been impoverished by land and water use practices and the stocking of nonnative rainbow trout (Behnke 1992).

> Loggerhead shrike (*Lanius ludovicianus*) - Loggerhead shrikes are robin-sized birds which feed mainly on insects, especially grasshoppers in summer, with small birds and mammals taken in winter. Preferred habitat includes shrub-steppe and any semi-open area with shrubs, fences, powerlines or small trees for perches.

> Margined sculpin (*Cottus marginatus*) - This sculpin primarily inhabits the Walla Walla, Touchet and Tucannon Rivers in Washington. They are a benthic species whose requirements are poorly known. However, without competition, they seem to prefer cool (55-66°F) water, moderate to rapid current, and rubble or gravel substrate

> Northern goshawk (*Accipiter gentilis*) - This large hawk prefers mature and old-growth forests in the Blue Mountains. Goshawks are aerial hunters, flying between trees and under canopy in search of grouse, smaller birds and other prey. Nest sites are in older trees within a forest stand having 60 to 80 percent canopy closure. Goshawks tend to use gentle northern slopes having sparse understory and is near water. They have a relatively high nest site fidelity, with young dispersing 25 miles or less from the nest and adults staying within 30 miles of the nest site year-round.

> Northern sagebrush lizard (*Sceloporus graciosus graciosus*) - This lizard is primarily a shrub-steppe dweller, but also uses bouldered regions and forested slopes. They are

typically a ground lizard and rarely climbs into shrubs. They prefers fine gravel soils, but are also found on sandy or rocky soil. They need rock crevices, mammal holes and similar cover for refuge.

> Olive-sided flycatcher (*Contopus borealis*) - This bird seems to prefer mixed and broken forests with wooded streams and some wetland. They prefer a low percent canopy cover. Their diet consists entirely of flying insects which they search for from high snags and perches. They nest high in conifer trees.

> Pacific lamprey (*Lampetra tridentata*) - Lampreys are known throughout the Columbia River system; including, the Basin. These fish have spawning habitat requirements similar to those of salmonids, including clean gravel and cold water. They spend about five years as ammocoetes, blind filter feeders that burrow in mud and fine sediments in pools, quiet backwaters and eddies, downstream from spawning riffles. The ammocoetes migrate slowly downstream, with their movement apparently triggered by high water flow. Between four and six years, ammocoetes start metamorphosing into adults and becoming parasitic on soft scaled fishes. The adults migrate to sea, where they remain until they return to spawn and die.

> Tailed frog (*Ascaphus truei*) - This frog occurs in higher elevations in the Blue Mountains. It is the most aquatic frog in the Pacific Northwest and occurs in cold, rocky streams. It clings to rocks or other bottom features during the day and feeds along the stream or adjacent moist woodlands at night. Sedimentation and high water temperatures are likely causes of reductions of this species.

> Western burrowing owl (*Athene cunicularia hypugea*) - This owl is generally bound in open, broken or flat areas with short vegetation In the Basin this includes shrub-steppe, grasslands and agricultural areas. An opportunistic feeder, the western burrowing owl preys primarily on insects and small mammals, but also birds, fishes and amphibians when available. They use ground squirrel or other mammal burrows for shelter and nesting.

> Westslope cutthroat trout [*Oncorhynchus (=Salmo clarki lewisi)*] - This trout requires cold, clean water of streams and lakes that are free from barriers to allow for migration. This fish has vanished from about 90 % of its former range and now only disjunct populations are present throughout Washington with some of these native

NEOTROPICAL MIGRATORY BIRDS

There is widespread concern about the future of neotropical migratory birds (NTMB) (Andelman and Stock 1994). These are species which breed in the United States and Canada and then fly south to Mexico, Central or South America or the Caribbean. Many of these species have experienced large population declines due to habitat destruction on the breeding grounds, wintering areas and along migration routes.

In Washington there are 118 NTMB with all but seven having been recorded in the Basin. Those which may be found in the Basin (in both Washington and Oregon) are listed in Appendix C and are organized by habitat type. For 87 (74 percent) of the NTMB in Washington, information is lacking to determine long-term population trends. However, 15 species (12 percent) are known to have experienced long-term declines within Washington. All of these species have been found in the Basin and include the following:

ferruginous hawk
golden eagle
killdeer
upland sandpiper
band-tailed pigeon
rufous hummingbird
eastern kingbird
barn swallow
golden-crowned kinglet
gray catbird
solitary vireo
orange-crowned warbler
yellow warbler
Wilson's warbler
chipping sparrow

It is both ecologically and economically responsible to protect these species' habitats to halt their downward population trend, before they are in serious trouble. If sufficient conservation actions do not take place to stop their downward population trends, the species may become listed as threatened or endangered. History has shown that some of these species have continued declining into extinction (for example, dusky seaside sparrow), while large amounts of money have been spent on others to try and recover their ailing populations (for example, whooping crane) black- footed ferret and California condor) with limited success.

Eight of the NTMB species with declining trends depend on riparian habitats, which helps illustrate the value of this important habitat type. Furthermore, 57 percent of the NTMB in Washington are associated with riparian habitats. If sufficient data were available on all of the NTMB species, it is likely that additional riparian-dependent and other species should also be demonstrating downward population trends.

There are some NTMB species within the Basin which are listed as threatened and endangered or species of concern to the Service which are not included in the list of species with long-term population declines. These include peregrine falcon, northern goshawk, western burrowing owl, loggerhead shrike and olive-sided flycatcher. The reason long-term declines were not detected for these birds could be that little quantitative monitoring information was available for the species in Washington, survey

sample sizes were too small or the declining trends were not statistically significant for enough of the survey routes.

SOME REMAINING FISH AND WILDLIFE ISSUES IN THE BASIN

Passage issues-

We have included a list of structural passage problems which may be eliminated with modifications, reconstruction or removal of structures. The COE may be able to directly address these needed structural measures under their authorities. Increased stream flows at certain times would also serve to improve passage at most of these structures

There are several diversions which have no fish passage facilities or only utilize temporary fish passage measures. We believe temporary fish passage measures should be replaced with more permanent measures, to help ensure long-term solutions to these passage problems. The previous PAR reported on some of these passage problems, however, we decided to include them again here to ensure they are fully considered:

1. There is currently no screening at the Mill Creek Lake intake. This has been identified as a concern since outmigrating steelhead may be diverted into the lake during high flows in Mill Creek.

2. There may be a problem at the fish ladder at the Mill Creek Lake diversion. Apparently, some adult steelhead are not attracted to the fish ladder and attempt to go up the sluiceway, with their fate unknown (Shampine, COE, personal communication).

3. At the Yellowhawk Diversion on Diversion Creek, personnel at the COE's Mill Creek Project must ensure one gate is partially open during adult steelhead migration to facilitate passage. In addition, there are two gated diversion points whose channels quickly converge into Yellowhawk Creek. However, some steelhead appear to bypass the channel leading to the open gate and end up milling around in the channel which leads to the closed gate, with their fate unknown (Shampine, COE, personal communication).

4. The Mojonnier Dam (Burlingame Diversion Dam), the diversion point for the Gardena Ditch Company on the Walla Walla River, is a concrete dam with wooden flashboards and an ineffective fish ladder. An operator must now leave one section of flashboards open to allow upstream fish passage.

5. The Hoffer Diversion Dam on the lower Touchet River has historically been a big passage problem for adult steelhead. There is now a three-step fish ladder on the face of the dam, however, at lower flows the ladder is not effective (Schuck, WDFW, personal communication).

6. The Maiden Diversion Dam is located further upstream on the Touchet River and is a passage problem for adult steelhead at low flows. Apparently, this structure may be removed in the near future (Grandstaff, WDFW, personal communication).

7. Old Lowden, Lowden # 9 and Garden City are concrete diversion dams located on the lower Walla Walla River, upstream of the confluence of the Touchet River. Apparently there are problems with passage around the bypass structures (Grandstaff; WDFW, personal communication).

8. On Pine Creek, just inside the Oregon border and downstream of a county bridge there is a broad, steep, concrete apron which overhangs a pool with a five to ten foot drop. This prevents adult steelhead migration at most flows.

9. There are opportunities to vastly improve upstream passage and enhance instream habitat within the concrete-lined portion of the Mill Creek channel downstream of the Mill Creek Lake Diversion.

While these are the major structural fish passage problems in the Basin, smaller ones may also exist. In addition, temporary diversions are sometimes constructed (for example, berms constructed with bulldozers using stream bottom substrates) as well as temporary extensions on permanent structures to facilitate irrigation water withdrawal.

Flow issues-

As mentioned in the previous PAR and recognized by many, improving flows at certain times of the year is very important for improving anadromous fish populations in the Basin. Since the majority of the flow problems in the Basin relate to diversion of instream water for irrigation, municipal and domestic use, perhaps alternative water sources for these uses are available.

1. The construction of storage reservoirs on the South Fork of the Touchet River and the North Fork of the Walla Walla River could potentially benefit anadromous fish and may warrant further investigation. However, there would be significant losses of wildlife, resident fish and anadromous fish spawning habitat, that would have to be outweighed by the anadromous fish benefits.

2. Off-channel storage in the Basin would be a more preferable storage option than the two previous reservoir options. With off-channel storage, potential impacts to resident fish and anadromous fish spawning habitat would be very low or nonexistent, as would impacts to riparian and wetland areas. Depending on the off-channel reservoir, other terrestrial habitats may be adversely impacted.

3. Storage options that mainly provide additional flows in the Walla Walla River during critical passage periods for downstream migrating steelhead smolts and upstream migrating spring chinook salmon (March through June) were not examined by

the COE (1992). Also, these options were not covered in the Ebasco (1992) study, although low flow problems for the Walla Walla River in the spring were identified in the previous PAR. These storage options would generally not provide for flows during some critically low flow periods and less habitat would be provided for rearing steelhead and salmon as compared to the COE proposal (Corps of Engineers 1992). Although total anadromous fish benefits would likely not be as high as storage options, which can provide higher flows during the low flow periods, costs would likely be much lower and adverse impacts may be less.

4. Water conservation measures can be another method for decreasing instream diversions. These measures may range from such things as on-farm practices (for example, irrigation scheduling, farm basins, automated controls) to improving gauging and monitoring at diversions and decrease seepage losses from canals. A combination of purchasing or leasing of some water rights, encouraging (for example, cost-sharing) water conservation, and water storage may successfully provide much improved flows when needed. Some efforts are being made to determine what the effects of various water use efficiency measures for irrigated agriculture would have on hydrology and on-farm economics (James et al. 1991).

5. An additional measure for improving instream flows would be through the use of an alternative water source for irrigation water. In the Umatilla River Basin in Oregon, two phases of a water exchange program have begun. Essentially, water from the Columbia River is used to help irrigate some areas in the Umatilla River Basin with a corresponding reduction in instream water withdrawals from the Umatilla River. Perhaps water could be pumped from the Columbia or Snake Rivers up into the Basin and then be used creatively to reduce instream water withdrawals. The Bureau of Reclamation evaluated pumping water from the Columbia River near the mouth of the Walla Walla River to near Milton-Freewater for irrigation purposes over 25 years ago (Bureau of Reclamation 1971). This study could provide a foundation for future additional studies on water exchange possibilities.

Although enhanced flows and additional storage in the Basin has long been recognized as a necessity to restore and enhance anadromous fish habitat and passage, the Service does not believe that flow enhancement in and of itself can be the sole solution. Any flow enhancement measures need to be implemented in concert with other measures to address irrigation diversions, fish passage and habitat problems in the Basin.

Coordination issues-

1. A coordinated information/education program, developed by all interested Federal, State, local, tribal and private entities in the Basin who have an interest in environmental restoration, could be very beneficial. This effort would go far in helping those who can impact the Basin's water resources (both positively and negatively, directly and indirectly) better understand and appreciate the importance of the resources and the affects of their actions on those resources. It may help promote sound bank stabilization efforts, improved land use practices, improved water conservation, riparian restoration efforts and additional measures needed to improve anadromous fish populations within the Basin. While some information/education efforts regarding Basin resources have already occurred, a larger, more coordinated effort would be much more successful.

2. There are a variety of environmental restoration efforts going on in the Basin, including, constructing the new fish hatchery on South Fork of the Walla Walla, removing Marie Dorian Dam bank stabilization and riparian restoration screening of diversions and intakes, etc. A more coordinated effort would more accurately determine the most significant problems in the Basin and help ensure resources are used as efficiently as possible with the most benefits gained as possible. It would not be prudent to improve passage and flow conditions in the lower Basin, only to find that the upper spawning habitat has continued to be degraded and possibly will not support more fish anyway.

3. As mentioned in the previous PAR, riparian restoration is an important part of the equation to improve the Basin's anadromous fish resources. Efforts have begun in various areas in the Oregon portion of the Basin by ODFW, Soil and Water Conservation Districts, Confederated Tribes of the Umatilla Indian Reservation and Bonneville Power Administration (BPA). Within Washington, riparian restoration efforts have begun along the Walla Walla and Little Walla Walla Rivers, Mill Creek and Yellowhawk Creek. These efforts are being done by the Natural Resources Conservation Service (NRCS), Service, COE, WDFW and BPA. Efforts are also taking place to stabilize streambanks along the Touchet River and tributaries in and near Dayton and Waitsburg. Most of that work is being accomplished by the COE and the Federal Emergency Management Agency (FEMA). While these efforts are helping stabilize streambanks, the methods appear to mainly involve heavy riprapping with little sustainable riparian habitat benefits. It would be very beneficial if all the above agencies (as well as other interested entities) could agree to work together to address streambank protection and riparian restoration. They could develop Basin-wide priorities and strategies; share equipment, experiences and expertise; and, pool resources to maximize actual "on-the-ground" work.

RECOMMENDATIONS -

1. As stated in the previous PAR, eliminating the potential for outmigrant steelhead entering the Mill Creek Lake intake at high flows would probably involve screening the intake. Also, a screen or some other modification may be needed to enhance use of the fish ladder at the Mill Creek Diversion and discourage fish from entering the sluiceway.

2. At the Yellowhawk Diversion, a permanent fish passage structure should be installed, eliminating reliance on an operator to leave a gate partially open. Also, modifications should be made to discourage adult steelhead from using the channel which leads to the closed gate. This may involve screening this channel during fish migration, the channel or constructing a fish passage structure which essentially precludes fish from entering this channel. Because of development along Yellowhawk Creek), we recommend a survey be conducted to determine how to improve and maintain instream and riparian habitat.

3. The Mojonnier and Hoffer Diversion Dams should be fitted with more effective fish ladders or other structures to facilitate upstream fish passage. Addressing the Pine Creek passage problem may be costly because of the proximity of the county bridge and the amount of drop in the stream at this point. We understand the COE is already looking into the type of structure needed here to ensure adequate upstream passage of fish.

4. If the current proposal to remove Maiden Dam does not materialize, future attempts should continue to try and help get this structure removed. Otherwise this structure should be either fitted with a ladder or some other fish passage modification should be made.

5. Modifications should be incorporated at the Old Lowden, Lowden #2 and Garden City diversion sites on the Walla Walla River to improve anadromous fish passage.

6. The Pine Creek passage problem downstream of the county bridge should be evaluated, alternative solutions proposed and it should be prioritized against the other passage problems in the Basin.

7. As stated above, considerable work would be needed to improve instream habitat in Mill Creek downstream of the Mill Creek Lake Diversion. This stretch of Mill Creek has a wide channel lined with concrete and few instream features Also, the 10 miles of Mill Creek downstream of the Yellowhawk Diversion are nearly dry during the summer because of diversions. If additional flows can be provided for this stretch of Mill Creek, we suggest that major improvements to the wide, shallow concrete-line channel take place. Otherwise, we recommend that this remain a lower priority, since fish are already able to migrate through Yellowhawk Creek, it would take a significant amount of resources to restore this area and there would likely be resistance by some to make

major changes in this section of the channel due to its importance for flood protection for the city of Walla Walla.

8. A strategy for addressing problems with the numerous temporary diversions and extensions should be developed.

9. We recommend that off-stream storage alternatives also be pursued and evaluated. While the potential for storage capacity may be less than the storage alternatives already being considered, adverse impacts could also be much less

10. Storage options that mainly provide additional flows in the Walla Walla River during critical passage periods for downstream migrating steelhead smolts and upstream migrating spring chinook salmon (March through June) should be evaluated.

11. A Basin-wide coordinated effort should be undertaken to evaluate water conservation measures. This should include identifying, past studies and results, potential conservation measures, implementation strategies and possible cost-sharing opportunities.

12. The Service recommends that the COE study the possible options for a water exchange program for the Basin, similar to the one being used in the Umatilla River Basin. There may be a creative option available which has few adverse impacts on resources in the Basin and in the Columbia or Snake Rivers below the point of diversion. Even if a water exchange was practicable, there should be measures in place to ensure additional water is not then withdrawn. For example, minimum instream flows, seasonal or year-round cancellation of future appropriations, water conservation measures, etc., could all be used to help ensure adequate future flows.

13. The Service recommends a coordinated effort needs to be initiated with all interested entities to address environmental restoration of the Basin. Problems need to be identified, strategies and priorities made and partnerships developed for funding. This coordinated effort should include an aggressive information/education program. We suggest that the COE has begun somewhat of a coordinated effort with this Study which is a good basis for a more comprehensive and coordinated program.

14. Aside from restoring degraded riparian areas, protection of existing, good quality riparian habitat should also be a priority. We also recommend that riparian restoration efforts h the Basin concentrate on naturally revegetating degraded areas, where possible. Furthermore, bank stabilization efforts should be bioengineered, with only limited riprap and other hard components only when absolutely necessary.

15. Improving neotropical migratory bird habitat should be considered when conducting riparian restoration, wherever possible. Aside from the value to these important resources, extra benefits may be accrued to the project, helping improve cost:benefit ratios.

16. The Service recommends that the cost-benefit analysis for the various alternatives considered in the reconnaissance report (Corps of Engineers 1992) be reevaluated in light of the recent flooding. We believe that the flood protection benefits used in that report were probably low considering the damage recorded in the Basin recently.

The following recommendations were included in the previous PAR and are still pertinent:

17. Any action undertaken should be consistent with the goals and objectives of the Walla Walla River subbasin plan and should seek to maximize fisheries benefits. Allocation of water for other uses should be secondary to fisheries, since other uses such as irrigation and municipal water presently use the entire flow.

18. Any alternative selected for feasibility planning should be in compliance with Executive Order 11988, Flood Plain Management, signed May 24, 1977, and the COE's policy implementing this Order (Federal Register, Volume 43, Number 101 - May 24, 1978). This directs Federal agencies to formulate projects that, to the extent possible, avoid inducing development in the base flood plain unless there is no practicable alternative to the development.

19. Flow studies - Ebasco (1992) has performed a preliminary evaluation of the anadromous fish benefits which increased storage could provide. These results did not document significant increases in anadromous fish runs, except on the South Fork of the Touchet River. This evaluation was based on limited existing data, however, and could be subject to some error. As part of the feasibility studies, an IFIM study may be necessary to reliably estimate minimum flows which would be required to maximize steelhead, spring chinook and resident trout production.

20. Temperature studies- Habitat suitability for anadromous fish is dependent on temperature as well as flow. Therefore, modeling of temperatures downstream of the reservoir is needed. Providing optimal temperatures should also be a primary consideration in outlet design.

21. HEP study- A HEP study will be needed to evaluate terrestrial habitat losses and mitigation needs for appropriate species. Evaluating the loss of deer/elk range and providing appropriate mitigation will be particularly critical at proposed storage sites. A HEP study could, if needed, also provide a means to compare the wildlife habitat values of the sites.

22. Spawning surveys- If current data is not available, surveys of resident fish populations and steelhead redd counts should be conducted on any reach of river which would be altered. Redd counts should also be conducted h1 all appropriate habitat upstream of storage projects.

23. Downstream fish habitat enhancement- Flow enhancement, in and of itself, would not provide significant fisheries benefits if other habitat requirements are not met. Fisheries habitat in the Walla Walla basin has been significantly degraded and an evaluation of habitat condition and a habitat restoration program will be needed to optimize fisheries benefits from enhanced flows. The particular focus of this program would probably be restoration of pools and riparian vegetation. This is particularly critical if spring chinook are to be reintroduced in the Walla Walla River, because spring chinook; migrate and hold in the river during low water periods.

A variety of techniques have been used in northeastern Oregon and southeastern Washington for stream habitat improvement. These include boulder placement, floating logs, log weirs and cabled rock jetties. Appropriate techniques could be selected as part of feasibility planning.

24. Establish minimum flows- The appropriate legal and administrative mechanism to protect minimum instream flows would have to be identified during feasibility.

25. Storage capabilities- Appropriate analyses should be undertaken to determine the adequacy and frequency of reservoir filling and probability of providing minimum flows.

26. Seepage evaluation- As seepage losses appear to be a significant problem in the Walla Walla River and Mill Creek, an evaluation of the magnitude of seepage and how it would affect enhanced flows should be conducted.

27. Downstream development- An evaluation of downstream development that may occur as a result of construction of a storage reservoir, and impacts to fish and wildlife habitat, will be needed. Mitigation for these losses will be needed.

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APPENDIX A - FEDERAL AGENCIES' RESPONSIBILITIES UNDER SECTIONS 7(a) AND 7(c) OF THE ENDANGERED SPECIES ACT OF 1973, AS AMENDED

SECTION 7(a) - Consultation/Conference

Requires:

1. Federal agencies to utilize their authorities to carry out programs to conserve endangered and threatened species;

2. Consultation with FWS when a federal action may affect a listed endangered or threatened species to ensure that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The process is habitat by the federal agency after it has determined if its action may affect (adversely or beneficially) a listed species, and

3. Conference with FWS when a federal action is likely to jeopardize the continued existence of a proposed species or result in destruction or an adverse modification of proposed critical habitat.

SECTION 7(c) - Biological Assessment for Construction Projects'

Requires federal agencies or their designees to prepare a Biological Assessment (BA) for construction projects only. The purpose of the BA is to identify any proposed and/or listed species which is/are likely to be affected by a construction project. The process is initiated by a federal agency in requesting a list of proposed and listed threatened and endangered species (list attached). The BA should be completed within 180 days after its initiation (or within such a time period as is mutually agreeable). If the BA is not initiated within 90 days of receipt of the species list, please verify the accuracy of the list with our Service. No irreversible commitment of resources is to be made during the BA process which would result in violation of the requirements under Section 7(a) of the Act. Planning, design, and administrative actions may be taken; however, no construction may begin.

To complete the BA, your agency or its designee should: (1) conduct an onsite inspection of the area to be affected by the proposal, which may include a detailed survey of the area to determine if the species is present and whether suitable habitat exists for either expanding the existing population or potential reintroduction of the species; (2) review literature and scientific data to determine species distribution, habitat needs, and other biological requirements; (3) interview experts including those within the FWS, National Marine Fisheries Service, state conservation department, universities, and others who may have data not yet published in scientific literature; (4) review and analyze the effects of the proposal on the species in terms of individuals and populations, including consideration of cumulative effects of the proposal on the

species and its habitat; (5) analyze alternative actions that may provide conservation measures, and (6) prepare a report documenting the results, including a discussion of study methods used, any problems encountered, and other relevant information. On completion, the report should be forwarded to our Moses Lake Office, P.O. Box 1157, Moses Lake, WA 98837.

APPENDIX B- Selected Bibliography for Candidate Species and other Species of Concern-

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APPENDIX C- Neotropical Migratory Birds Found Within the Walla Walla River Basin Grouped by Habitat Association[1]

freshwater marshes
lakes and ponds

osprey
northern harrier
killdeer
short-eared owl
marsh wren
belted kingfisher
eastern kingbird
barn swallow
tree swallow
violet-green swallow
northern rough-winged swallow
bank swallow
cliff swallow
common yellowthroat
red-winged blackbird
yellow-headed blackbird

wet meadows
(excluding hay fields)

northern harrier
red-tailed hawk
American kestrel
long-eared owl
short-eared owl
calliope hummingbird
rufous hummingbird
horned lark
tree swallow
cliff swallow
American robin
American pipit
common yellowthroat
savannah sparrow
Lincoln's sparrow
Brewer's blackbird
western meadowlark

mudflats

osprey
northern harrier
merlin
peregrine falcon
killdeer
short-eared owl
belted kingfisher

cliffs

turkey vulture
red-tailed hawk
ferruginous hawk
golden eagle
American kestrel
peregrine falcon
prairie falcon
white-throated swift
cliff swallow
rock wren

[1] based on Altman (1995), Andelman and Stock (1994), Denny (1995) and (M. Denny, personal communication.)

Riparian

osprey
sharp-shinned hawk
Cooper's hawk
Swainson's hawk
red-tailed hawk
American kestrel
merlin
mourning dove
long-eared owl
common nighthawk
belted kingfisher
Vaux's swift
black-chinned hummingbird
calliope hummingbird
rufous hummingbird
northern flicker
Lewis's woodpecker
red-naped sapsucker
red-breasted sapsucker
western kingbird
eastern kingbird
western wood-pewee
willow flycatcher
Hammond's flycatcher
dusky flycatcher
Pacific-slope flycatcher
tree swallow
violet-green swallow
northern rough-winged swallow

Riparian

bank swallow
cliff swallow
barn swallow
house wren
veery
Swainson's thrush
American robin
gray catbird
cedar waxwing
solitary vireo
warbling vireo
red-eyed vireo
orange-crowned warbler
Nashville warbler
yellow warbler
American redstart
MacGillivray's warbler
common yellowthroat
Wilson's warbler
yellow-breasted chat
brown-headed cowbird
western tanager
black-headed grosbeak
lazuli bunting
rufous-sided towhee
Lincoln's sparrow
white-crowned sparrow
fox sparrow
Brewer's blackbird
red-winged blackbird
northern oriole
American goldfinch

old growth/mature coniferous forest	young coniferous forest
sharp-shinned hawk	sharp-shinned hawks
Cooper's hawk	Cooper's hawk
northern goshawk	red-tailed hawk
red-tailed hawk	American kestrel
golden eagle	mourning dove
American kestrel	long-eared owl
mourning dove	common nighthawk
flammulated owl	common poorwill
long-eared owl	calliope hummingbird
common nighthawk	red-naped sapsucker
common poorwill	northern flicker
Vaux's swift	olive-sided flycatcher
calliope hummingbird	western wood-pewee
Lewis's woodpecker	Hammond's flycatcher
red-naped sapsucker	dusky flycatcher
Williamson's sapsucker	cordilleran flycatcher
northern flicker	violet-green swallow
olive-sided flycatcher	house wren
western wood-pewee	golden-kinglet
Hammond's flycatcher	ruby-crowned kinglet
dusky flycatcher	western bluebird
cordilleran flycatcher	Townsend's solitaire
violet-green swallow	hermit thrush
house wren	American robin
golden-crowned kinglet	solitary vireo
ruby-crowned kinglet	yellow-rumped warbler
western bluebird	Townsend's warbler
mountain bluebird	western tanager
Townsend's solitaire	chipping sparrow
hermit thrush	dark-eyed junco
American robin	Cassin's finch
solitary vireo	
yellow-rumped warbler	
Townsend's warbler	
western tanager	
chipping sparrow	
dark-eyed junco	
Cassin's finch	

clearcut/seedling/shrub coniferous forest

turkey vulture
red-tailed hawk
golden eagle
American kestrel
mourning dove
common nighthawk
common poorwill
black-chinned hummingbird
calliope hummingbird
northern flicker
olive-sided flycatcher
dusky flycatcher
gray flycatcher
house wren
western bluebird
mountain bluebird
Townsend's solitaire
hermit thrush
American robin
Nashville warbler
MacGillivray's warbler
chipping sparrow
dark-eyed junco
brown-headed cowbird

shrub-steppe

turkey vulture
northern harrier
Swainson's hawk
red-tailed hawk
ferruginous hawk
golden eagle
American kestrel
prairie falcon
mourning dove
burrowing owl
common nighthawk
common poorwill
white-throated swift
gray flycatcher
Say's phoebe
western kingbird
horned lark
rock wren
sage thrasher
loggerhead shrike
Brewer's sparrow
vesper sparrow
lark sparrow
black-throated sparrow
sage sparrow
grasshopper sparrow
western meadowlark
Brewer's blackbird
long-billed curlew

Urban

killdeer
mourning dove
rufous hummingbird
northern flicker
violet-green swallow
cliff swallow
barn swallow
house wren
American robin
rufous-sided towhee
chipping sparrow
white-crowned sparrow

Urban (continued)

dark-eyed junco
American goldfish
red-winged blackbird
Brewer's blackbird
brown-headed cowbird

agricultural/pastureland

turkey vulture
northern harrier
Swainson's hawk
red-tailed hawk
golden eagle
American kestrel
killdeer
mourning dove
short-eared owl
Say's phoebe
eastern kingbird
western kingbird
horned lark
violet-green swallow
cliff swallow
barn swallow
house wren
western bluebird
American robin
rufous-sided towhee
chipping sparrow
savannah sparrow
white-crowned sparrow
Brewer's blackbird
brown-headed cowbird
American goldfinch

dry grassland

turkey vulture
northern harrier
Swainson's hawk
red-tailed hawk
ferruginous hawk
golden eagle
American kestrel
prairie falcon
long-billed curlew
mourning dove
burrowing owl
short-eared owl
common nighthawk
common poorwill
white-throated swift
western kingbird
horned lark
mountain bluebird
vesper sparrow
lark sparrow
savannah sparrow
grasshopper sparrow
western meadowlark