

DRAFT ENVIRONMENTAL ASSESSMENT

***LARSON CREEK PIPELINE AND FISH PASSAGE
PROJECT***

***U.S. BUREAU OF RECLAMATION
LOWER COLUMBIA AREA OFFICE
PORTLAND, OREGON***

AUGUST 2004

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ACRONYMS

BLM	U.S. Department of Interior, Bureau of Land Management
cfs	cubic feet per second
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
DEQ	Oregon Department of Environmental Quality
DO	Dissolved oxygen
DSL	Oregon Department of State Lands
EA	Environmental Assessment
EFH	Essential fish habitat
EO	Presidential Executive Order
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FLWC	Fish Lake Water Company
FONSI	Finding of No Significant Impact
ITA	Indian Trust Asset
mg/L	milligrams per liter
MID	Medford Irrigation District
MSA	Magnuson Stevens Fishery Conservation and Management Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service, now called NOAA Fisheries

NOAA	U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Fisheries; also known as NMFS
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
ONHP	Oregon Natural Heritage Program
PA	Preferred Alternative
RBFAT	Rogue Basin Fish Passage Team
Reclamation	U.S. Department of Interior, Bureau of Reclamation
RRVCC	Rogue River Valley Canal Company
RRVID	Rogue River Valley Irrigation District
RVCOG	Rogue Valley Council of Governments
SHPO	Oregon State Historic Preservation Office
SONC	Southern Oregon/Northern California Coasts
TID	Talent Irrigation District
TMDL	Total Maximum Daily Load
USDA	U.S. Department of Agriculture
USFS	U.S. Department of Agriculture, Forest Service
USFWS	U.S. Department of Interior, Fish and Wildlife Service
Water 2025	Water 2025: Preventing Crises and Conflict in the West
WCFS	Water Conservation Field Services

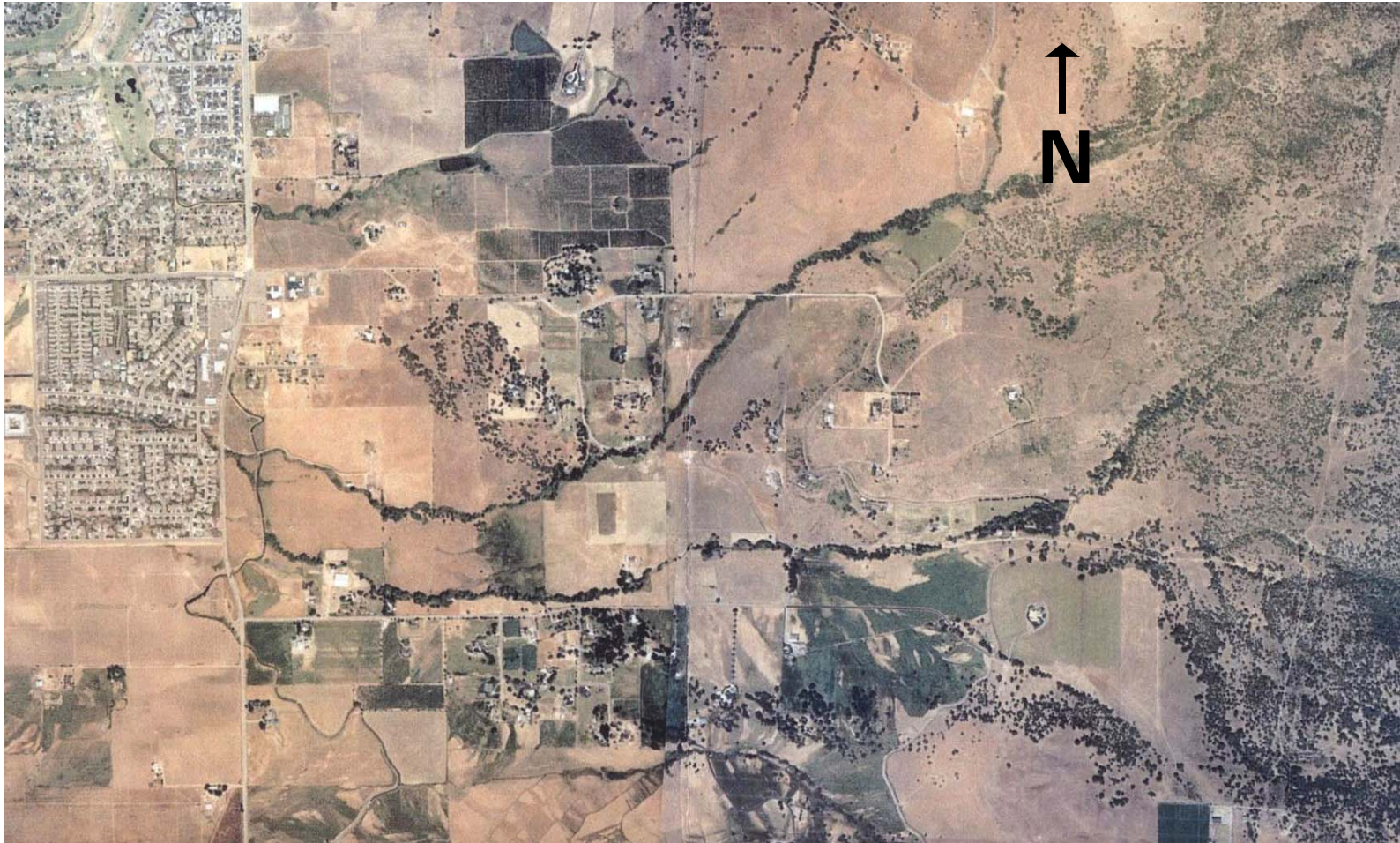


Figure 1. Aerial view of the project area.

CHAPTER 1

PURPOSE AND NEED

1.0 INTRODUCTION

The Bureau of Reclamation (Reclamation) through its Water Conservation Field Services Program (WCFSP) and its Water 2025: Preventing Crisis and Conflict in the West program is proposing to contribute funding for the construction of 2 irrigation district pipelines in southeast Medford, Oregon. Larson Creek is a tributary of Bear Creek which is located in the Rogue River basin. Installation of the pipelines would isolate the irrigation delivery system from the Larson Creek drainage, remove 3 fish passage barriers, and improve aquatic habitat and hydrologic conditions in Larson Creek by returning flows in the Middle Fork Larson Creek to more natural conditions. The streams in the project area have historically supported steelhead. Southern Oregon/Northern California Coast (SONCC) coho salmon, a threatened species under the Endangered Species Act (ESA), currently utilize the lower reaches of Larson Creek.

This Environmental Assessment (EA) has been prepared to evaluate the potential environmental and social impacts of the proposed project and to inform the public, regulatory agencies, and other interested parties. The EA findings and public comments will form the basis for a decision regarding the proposed action. Reclamation has analyzed the alternatives and mitigation measures to minimize adverse environmental impacts. This document has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the regulations of the Council on Environmental Quality (40 CFR Part 1500).

1.1 PURPOSE AND NEED FOR THIS ACTION

The Larson Creek Pipeline and Fish Passage Project has three primary purposes:

- To conserve water,
- To remove fish passage barriers and restore fish habitat,
- To discontinue the use of Larson Creek as an irrigation canal.

Reclamation has awarded grants to Talent Irrigation District (TID) and Medford Irrigation District (MID) through the WCFSP and Water 2025. These programs are cost-share grants which provide up to fifty percent funding for water conservation projects. The irrigation districts must meet Federal guidelines and match Federal funding with non-Federal funds to receive these grants.

This EA will address funds awarded to Talent Irrigation District and Medford Irrigation District to install 10,200 feet of pipeline in the project area. The proposed pipelines would increase the efficiency of the irrigation district's respective water delivery systems by conserving 94 acre feet of water annually. Also, the project will open 3 miles of stream habitat to anadromous fish by removing 3 in-stream barriers and isolate the

irrigation delivery systems from the Larson Creek drainage. Separating the irrigation systems from the creek would stop the unnatural stream flow fluctuations that occur during the irrigation season and stop the flow of warm canal water from flowing into the in the Middle Fork of Larson Creek. Consequently, water which is heated as it is conveyed through approximately 27 miles of low gradient open canal would not enter Middle Fork Larson Creek and dramatic daily fluctuations in summer stream flows would no longer occur.

1.2 BACKGROUND

Pacific Trend Building is planning construction of a 78 lot residential development in the project area. The imminent housing development has prompted the irrigation districts to apply for Reclamation grants to leverage funding and services being contributed by the developer, an Oregon Watershed Enhancement Board (OWEB) grant, as well as their own contributions to implement this project in summer and fall of 2004 through 2005. Reclamation has become involved in this project because the irrigation districts have applied for and been approved for funds from the WCFSP and Water 2025 cost sharing grant programs.

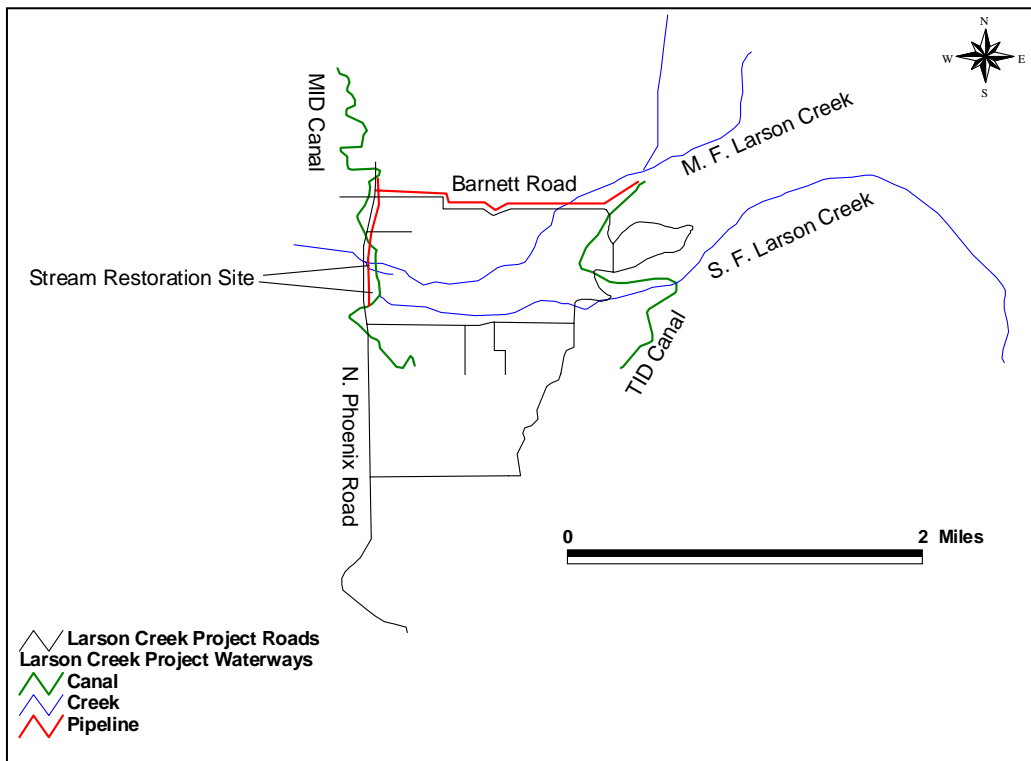


Figure 2. Project Area. The pipelines in the figure show existing as well as the proposed pipelines.

The Stonegate Estates, the new residential subdivision, is planned in the area southeast of the intersection of Barnett Road and North Phoenix Road (Figure 2). Within the area to

be developed there are natural creeks and irrigation canals with associated stream diversions. The project would replace 2,500 feet of antiquated dirt canal with a 66-inch diameter concrete pipe and add 8,000 feet of pipeline to keep irrigation water out of Larson Creek. The irrigation districts lose water to seepage and evaporation in their open dirt canals. As a result of the pipelines, 94 acre feet of water would be conserved each year. Pacific Trend Building is contributing funding to convert the open irrigation canals into buried pipeline and for canal-to-stream channel conversion and restoration in a section of MID canal. Pacific Trend Building is also deeding the land within 50 feet on either side of Middle Fork Larson Creek, South Fork Larson Creek, and Larson Creek to the City of Medford throughout the subdivision for city “greenways.” The development of a housing subdivision in the project near Larson Creek has provided the irrigation districts with an opportunity to make their systems more efficient and to remove them from natural waterways by contributing to the costs of the pipeline construction and stream channel restoration.

1.2.1 CURRENT OPERATION OF THE IRRIGATION DELIVERY CANALS IN THE PROJECT AREA

The following description of the current operation practices of the irrigation delivery system in the project area is intended to clarify the proposed project by highlighting the current operation of canals in the Larson Creek drainage.



Figure 3. View of Middle Fork Larson Creek from Barnett Road facing north. TID canal and access road heads northeast from this location.

During the irrigation season, April through October, the canals and Middle Fork Larson Creek are utilized to transport irrigation water. Water from Emigrant Lake is released into TID’s East Canal and flows approximately 27 miles in a northeasterly direction before reaching the Middle Fork Larson Creek (Figure 3 and Figure 4). TID discharges water into Middle Fork Larson Creek for two reasons. In order for TID to maintain the canal and to make water deliveries to its water users near the end of the canal it must transport an additional amount of water through to the end of the canal. This water, which is not utilized for irrigation, is termed operational spillage or tail water. Up to 9 cfs of operational spillage is released into the Middle Fork of Larson Creek and is eventually diverted downstream into the MID Canal at the point where the MID canal

crosses Middle Fork Larson Creek. The amount of operational spillage fluctuates depending on the time of day. Over the course of a day discharge is high in the morning and generally decreases to as little as less than 1 cfs in the afternoon and then increases again. This cycle reflects the water users' practice of applying more water during the warmest part of the day. During the afternoon when more water is being used for irrigation, less water is spilled into Middle Fork Larson Creek.



Figure 4. View of the TID canal approximately 0.25 miles from where it discharges into Middle Fork Larson Creek.

The second reason TID discharges water into Middle Fork Larson Creek is to supply water to its customers on the TID Cherry Lane pipeline. This pipeline begins at a stream diversion (fish passage barrier) located just north of the junction of Middle Fork Larson Creek Barnett Road. TID discharges an additional 2-3 cfs into Middle Fork Larson Creek for irrigation deliveries along this pipeline.

MID's system operates by diverting water from the North and South Forks of Little Butte Creek into a joint MID and Rogue River Valley Irrigation District (RRVID) canal. From the Joint System Canal, MID's water is diverted into the MID Canal and flows generally south, crossing the Middle and South Forks of Larson Creek to the east of the TID East canal and eventually crossing Bear Creek in the town of Phoenix, Oregon. The two MID diversions on Larson Creek are concrete and wood stop log diversion structures that divert all the flow in both forks of Larson Creek into the MID canal (figures 5 through 8). MID diverts all of the 1-3 cfs natural flow from Larson Creek (Vinsonhaler 2002) and TID's operational spillage during the irrigation season.



Figure 5. The MID diversion at Middle Fork Larson Creek and the MID canal.



Figure 6. The MID diversion at Middle Fork Larson Creek. Riparian vegetation adjacent to South Fork Larson Creek is visible in the background. Flashboards are not in place.



Figure 7. The junction of Middle Fork Larson Creek and the MID canal from the diversion structure looking downward during non-irrigation season.



Figure 8. The MID diversion structure at South Fork Larson Creek during non-irrigation season.



Figure 9. View of MID canal from the canal near the South Fork Larson diversion structure. This is the portion of the canal that would function as restored stream channel as described in the Preferred Alternative.

A portion of the natural stream channel of Larson Creek downstream of the MID canal has been filled in and residences were built over it. The existing connection between the forks of Larson Creek is the MID canal (figure 9). When MID is not operating their canal, water from South Fork Larson Creek reaches the MID canal and flows in the canal approximately 500 feet before reaching the Middle Fork Larson Creek. When the canals are being operated, flow between Middle Fork and South Fork Larson Creeks is in the opposite direction of natural creek flow. In other words, in the span of canal between the two forks of Larson Creek the water is flowing upstream (in a southerly direction) following the direction of flow in MID's canal. Outside of the irrigation season when the diversion boards are removed the creek flow returns to its natural flow direction.

1.2.2 WATER CONSERVATION FIELD SERVICES PROGRAM

In 1997, the Bureau of Reclamation established the Water Conservation Field Services Program (WCFSP) to encourage water conservation and efficient use of water supplies associated with Federal water projects throughout the western United States. The program provides technical and financial assistance to western water districts and other conservation partners in four key areas: 1) water management planning; 2) water education and training; 3) demonstration of new technologies; and 4) implementation of improved water management on a regional, statewide, and watershed basis throughout the western United States through numerous partnerships designed to complement and support other Federal, State and local conservation programs.

The WCFSP also supports watershed partnerships to improve fish and wildlife habitat associated with water systems or water supplies affected by Reclamation projects, and contribute to the recovery of endangered or threatened species whose habitat or survival may be influenced by conservation activities on Reclamation projects and associated watersheds.

1.2.3 WATER 2025: PREVENTING CRISIS AND CONFLICT IN THE WEST

Water 2025 is intended to focus attention on the reality that explosive population growth in western urban areas, the emerging need for water for environmental uses, and the national importance of the domestic production of food and fiber from western farms and ranches is driving major conflicts between these competing uses of water. This program recognizes that states, tribes, and local governments should have a leading role in meeting these challenges, and that the Department of Interior should focus its attention and resources on areas where scarce federal dollars can provide the greatest benefits to the west and the rest of the nation. Water 2025 provides the basis for a public discussion in advance of water crises and sets forth a framework to focus on meeting water supply challenges in the future.

1.2.4 RECLAMATION'S ROGUE RIVER BASIN PROJECT

The Rogue River Basin Project's Talent Division collects, stores, conveys, and distributes water from high elevation reservoirs to three water districts in the Rogue River basin: TID, MID, and Rogue River Valley Irrigation District. The project is authorized to provide irrigation, flood control, hydroelectric power, and other beneficial purposes such as recreation and fish and wildlife.

The Talent Irrigation District consists of approximately 15,500 irrigable acres. Medford Irrigation District has a water supply for 11,500 acres, and Rogue River Valley Irrigation District has a water supply for 8,300 acres. Additionally, the Talent Division provides electric power from the 16,000-kilowatt hydroelectric Green Springs Powerplant. Principal features of the Rogue River Basin Project include Hyatt and Howard Prairie

Dams and Reservoirs, Howard Prairie Delivery Canal, Keene Creek Dam, Green Springs Powerplant, Emigrant Dam and Lake, and Agate Dam and Reservoir.

1.2.5 AUTHORITY

The Act of August 20, 1954 (Ch. 775, 68 Stat. 752) authorized Reclamation to construct, operate, and maintain the Talent Division of the Rogue River Basin Project according to Reclamation laws. The WCFSP is authorized by Section 210 of the Reclamation Reform Act of 1982. Water 2025 is authorized by Energy and Water Development Appropriations Act, 2004, § 212, Pub. L. No. 108-137, 117 Stat. 1827 (December 1, 2003).

1.4 PUBLIC INVOLVEMENT

On January 28, 2004, Reclamation sent out a letter to 85 individuals, agencies, and organizations requesting comments on the proposed project. A news release was also distributed to the press and posted on Reclamation's website. The Medford Mail Tribune published two stories about the project. The 30-day public comment period ended on February 27, 2004. Three letters were received commenting on the proposed project. Copies of Reclamation's new release, the Mail Tribune article, Reclamation's letter, and the responses are in Appendix A of this EA.

1.5 COORDINATION WITH INDIAN TRIBES

On March 1, 2004 Reclamation sent letters to four Indian tribes who might have an interest in the project: the Cow Creek Band of the Umpqua Tribe of Indians, The Klamath Tribes, The Confederated Tribes of the Siletz Indians, and The Confederated Tribes of the Grand Ronde Community of Oregon (Appendix C). Reclamation requested information on presence of Indian sacred sites, archeological sites, and traditional cultural properties. At this time, no comments have been received from any of the tribes.

1.6 ENDANGERED SPECIES ACT

On February 27, 2004, Reclamation requested a list of threatened and endangered species under the Endangered Species Act (ESA) from both the US Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA) Fisheries (Appendix B). NOAA notified Reclamation that the anadromous fish species SONCC coho salmon is known to be present in the project area. NOAA further advised Reclamation the project is within Magnuson-Stevens Fishery Conservation and Management Act (MSA) essential fish habitat (EFH) for coho and chinook salmon. USFWS informed Reclamation that six ESA threatened or endangered species may be present in the project area: bald eagle, coho salmon, vernal pool fairy shrimp, Gentner mission-bells, large-flowered wooly meadowfoam, and Cook's lomatium. Reclamation is consulting with NOAA Fisheries on the impacts of the project on ESA listed anadromous fish species and EFH.

CHAPTER 2 ALTERNATIVES

2.0 INTRODUCTION

This chapter describes the alternatives being considered and evaluated in this EA. It includes two action alternatives and the no action alternative. NEPA requires Federal agencies to analyze the no action alternative (40 CFR Sec. 1502.14) to clearly contrast and define the consequences of the proposed project to the human environment. The action alternatives must include a range of reasonable alternatives. Due to the nature of the proposed project the range of alternatives is limited. All the alternatives considered are analyzed in detail; no alternatives which meet the purposes of this project were eliminated from consideration. This EA will address Reclamation's Preferred Alternative of contributing funds for pipe materials to both the Barnett Road pipeline and the North Phoenix Road pipeline. In addition to the Preferred Alternative, this EA will analyze the social and environmental impacts of contributing funds to Barnett Road pipeline but not the North Phoenix Road pipeline.

2.1 ALTERNATIVE A – NO ACTION ALTERNATIVE

The No Action alternative is to withhold Reclamation's WCFSP and Water 2025 program federal grant funds. If the No Action Alternative is chosen, Reclamation would not cost-share with TID and MID for the installation of either of the proposed subsurface irrigation pipelines in the upper Larson Creek drainage as described in this EA. However, this does not necessarily mean that the pipelines would not be installed. The irrigation districts may utilize their own funds, acquire State or local government grants, or partner with private interested parties to build the pipelines. The project may be delayed, modified, or cancelled because of a loss of federal funding. Delaying or canceling this pipeline would postpone or eliminate the benefits of the project including improving aquatic habitat in Larson Creek and conserving 94 acre feet of water annually. Without implementation of the project, operation and maintenance of the irrigation canals would continue unchanged in the project area. The federal funds would be used for other undetermined water conservation projects in the western United States.

2.2 ALTERNATIVE B – BARNETT ROAD PIPELINE

The proposed Barnett Road pipeline is an 8,000 foot subsurface irrigation pipeline connecting the end of TID's East Canal with the MID canal at the intersection of North Phoenix Road and Barnett Road. The pipeline would enable TID to deliver water to their Cherry Lane pipeline and to deliver operational spillage from the East Canal to the MID canal for use in the MID system. The Barnett Road pipeline would be within the road alignment. A siphon under Middle Fork Larson Creek would be installed at the junction of the proposed pipeline and the creek. The TID diversion on Middle Fork Larson Creek would be abandoned and removed. Construction of the siphon would occur within the State's in-stream work time period (June 15-September 15) to protect aquatic species.

Permit applications to the Army Corps of Engineers (Corps) and the Oregon Department of State Lands (DSL) would be submitted for construction of the siphon and removal of the diversion as required by section 404 of the Clean Water Act (CWA) and State law. Reclamation would fund one half of the estimated \$126,000 cost to construct this pipeline from the WCFSP. No Water 2025 funds would be contributed to this project. Once installed, Middle Fork Larson Creek would no longer be used to transport irrigation water.

2.3 ALTERNATIVE C/PREFERRED ALTERNATIVE – BARNETT ROAD AND NORTH PHOENIX ROAD PIPELINES

The Preferred Alternative includes Alternative B as described above with the addition of the North Phoenix Road pipeline described below.

2.3.1 NORTH PHOENIX ROAD PIPELINE

The Preferred Alternative includes the construction of a 2,200 foot subsurface pipeline, one siphon under Larson Creek, the removal of 2 stream diversions, and the restoration of approximately 700 feet of stream channel. Reclamation would fund \$300,000 of the estimated \$602,000 project (not including the cost of the Barnett Road pipeline).

The Barnett Road pipeline described in Alternative B would connect to an open section of the Medford Main Canal near Barnett Road, just upstream of an existing subsurface pipeline that extends just south of Harbrooke Road. At the end of this existing pipeline, the new North Phoenix Road pipeline would extend approximately 2,200 feet south from the southeast corner of the intersection of Harbrooke and North Phoenix Roads. The pipeline would be inside the county road alignment along the east side of the North Phoenix Road. A siphon would be used at the point where the pipeline would intersect with Larson Creek. This technique places the pipeline under the creek, keeping the two sources of water separate from each other. Construction of the siphon would require the excavation of a temporary 10 foot wide by 30 foot long trench perpendicular to the creek channel to accommodate the proposed 66 inch pipeline and 36 inch overflow outfall. Installation of the siphon and outfall would take approximately 1 day, and then the trench would be backfilled and smoothed to return the construction area to a viable stream channel. The side slopes would be reseeded and irrigated after construction to promote rapid revegetation and to limit sediment loads within Larson Creek. Finally, disturbed areas would be planted with native trees and shrubs that are removed during construction.

Immediately after construction of the irrigation siphon and removal of flashboard diversion structures, the section of the MID canal that flows directly into Middle Fork Larson Creek would be blocked off to prevent any water or fish from entering the abandoned canal. To accomplish this, earthen embankments would be created within the MID canal at the north and south sides of the Middle Fork Larson/MID canal junction. Similarly, two additional earthen embankments would be created at the South Fork Larson Creek/MID canal junctions to preclude fish from entering the remaining portions of the canal.

This pipeline project includes the removal of MID's diversions on the Middle and South Forks of Larson Creek. With this pipeline in place, MID would abandon the section of antiquated open dirt canal between the start and end points of the pipeline. Any portions of canal that are abandoned would be filled in (with one notable exception, see 2.3.2 below). The implementation of this pipeline project would isolate irrigation water from the natural creek system, improve the efficiency of the irrigation water delivery system, remove 2 stream diversions, and make approximately 3 miles of aquatic habitat available to fish that is currently blocked by the diversion dams. The Corps and DSL have issued permits (200300790 and 31439-FP respectively) for the siphon and channel restoration as required by Section 404 of the CWA (Appendix E).

2.3.2 CONVERTING MID CANAL TO STREAM CHANNEL

About 700 feet of the abandoned canal would be reconstructed into a stream channel on the South Fork Larson Creek including excavation and re-grading the alignment to create a more natural stream segment. This section of the canal represents the only viable connection for the two forks since the historical connection has been eliminated through urban development just west of North Phoenix Road. The channel would be contoured to provide an appropriate slope that minimizes the opportunity for fish entrapment. The channel restoration includes twelve rock weirs to create small pools, reshaping the steep canal banks, Himalayan blackberry removal, and planting native riparian vegetation. This portion of the project is being funded by the Oregon Watershed Enhancement Board (OWEB) and will be managed by the Bear Creek Watershed Council.

2.3.3 STORM WATER

The City of Medford uses MID's open canal for storm water runoff. The new pipeline is designed to handle storm flows. During the non-irrigation season surface water runoff that enters into the MID canal north of the proposed North Phoenix Road pipeline would go through the pipeline and be discharged into Larson Creek near the site of the proposed siphon. Storm water typically flows into the canal during the winter months when irrigation water is not present. Pacific Trend has designed a storm water drainage system which will accommodate the new subdivision and meets Oregon Department of Environmental Quality (ODEQ) requirements. Storm water runoff from the subdivision would be pre-treated before discharging into Larson Creek, with no discharge into the MID canal, as per City of Medford standards. The storm water drainage system has been designed such that all storm water runoff (approximately 17 cfs for a 2 year event) would be routed through a series of catch basins, subsurface conveyance pipes, and a pollution control manhole to a 200 foot long vegetated biofiltration swale situated north of the new irrigation siphon. Most of this water does not currently discharge directly to Larson Creek, so a new point source would be created during construction of the subdivision. This new volume of water would not be detrimental to Larson Creek since the runoff would be pre-treated using the vegetated biofiltration swale and the discharge point would include a rock apron to prevent erosion.

CHAPTER 3

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.0 INTRODUCTION

This chapter describes the natural and social resources that could be affected by a decision to implement any of the three alternatives. These resources are soils, vegetation, fish and wildlife, threatened and endangered species, water quality, hydrology, wetlands, environmental justice, socioeconomics, historic properties, Indian sacred sites, and Indian trust assets. Reclamation also considered, but eliminated from detailed analysis, the following resources because there are no potential impacts: air quality, noise, geology, and toxic waste.

3.1 SOILS, VEGETATION, AND WETLANDS

3.1.1 AFFECTED ENVIRONMENT

Soils in the project area are predominantly deep, somewhat poorly drained, clay soils formed from alluvial deposits (USDA 1993). Native vegetation in upland areas is dominated by grasses, sedges, and forbs with scattered oaks. The eastern ridge has scattered woodland forest which has been harvested several times in the last century (Horton 2001). Riparian areas support willows, oaks, and other hardwoods. Both the quantity and quality of riparian vegetation are higher in the upper basin east of North Phoenix Road. Local agriculture consists largely of pasture lands which grow well in the slowly permeable soils with additional irrigation during the warm dry summer.

In the project area there are 0.46 acres of wetlands associated with Larson Creek. Pacific Trend Building has obtained Oregon Department of State Lands (DSL) and US Army Corps of Engineers (Corps) permits for disturbance to those wetlands which will result from the residential project development including construction of the North Phoenix Road pipeline siphon (Appendix E). In fall 2004 the irrigation districts will apply to DSL and the Corps for CWA section 404 permits for work in the creek associated with the construction of the Barnett siphon, the removal of 3 diversion structures, and elements of the stream channel restoration not addressed in the existing permits.

3.1.2 ENVIRONMENTAL CONSEQUENCES

ALTERNATIVE A – NO ACTION ALTERNATIVE

The no action alternative which would preclude Reclamation's involvement in this project could result in delaying or abandoning the installation of the pipelines. Should this alternative be chosen and the pipelines are not installed then there would be no changes to the vegetation and no affects to the soils. No wetlands would be impacted by the no action alternative. Disturbance to wetlands caused by the construction the

Stonegate Estates development will still occur as documented in the permit applications submitted to and approved by DSL and the Corps under section 404 of the Clean Water Act.

ALTERNATIVE B – BARNETT ROAD PIPELINE

Operation of the proposed Barnett Road Pipeline would remove some water from Middle Fork Larson Creek during the irrigation season to which the local plant community has adapted. Runoff and groundwater sources would not be affected; therefore vegetation losses are not expected to be significant. Construction of the pipeline is in previously disturbed land adjacent to the road along agricultural lands. Vegetation and soils will be temporarily disturbed during pipeline installation. Where Barnett Road intersects with the Middle Fork Larson Creek a siphon will be constructed to route the pipeline with minimal disturbance to the creek and associated riparian vegetation.

Removal of the TID diversion structure would occur during the ODFW in-stream work period. The removal activity will temporarily disturb soils in the immediate location of the diversion. No trees or native riparian vegetation will be significantly impacted by removal of the structure. The areas adjacent to the diversion are dominated by a dense stand Himalayan blackberry. Disturbed areas will be re-vegetated with native vegetation.

ALTERNATIVE C/PREFERRED ALTERNATIVE – BARNETT ROAD AND NORTH PHOENIX ROAD PIPELINES

This alternative includes impacts discussed above for construction and operation of the Barnett Road Pipeline.

The construction of the North Phoenix Road pipeline, siphon, and removal of the two MID diversion structures would temporarily disturb soils, riparian plants, and roadside vegetation. Impacts would be localized and minimized to the extent possible. No trees would be removed and disturbed areas would be re-vegetated with native plants. All work associated with the siphon would be conducted during the ODFW in-stream work period (June 15 – September 15).

To install the siphon a 10-foot wide by 30-foot long trench would be temporarily excavated perpendicular to the stream channel to accommodate the 66-inch diameter pipeline and 36-inch diameter storm water overflow outfall. Riprap would be placed adjacent to the siphon to stabilize the banks. Construction in the creek should be completed in approximately one day. Several options for construction of the proposed siphon were considered during the planning phases of this project. Directional boring beneath the creek was investigated to eliminate the need for trenching, but hard bedrock in the vicinity of the proposed siphon makes this option impracticable. Installation of a pipeline above Larson Creek was also determined to be infeasible due to the large diameter of the pipe (66 inches) and the inherent risk of failure during flood events. Use of a smaller diameter pipe would not convey a sufficient volume of water and would potentially cause flooding upstream of the pipeline inlet. Similarly, the 36-inch storm

water flow control structure is proposed as per City of Medford standards to prevent flooding due to the limited capacity of the existing irrigation canals and ditches.

Two small wetland swales (total of 0.46 acres) adjacent to the MID canal would be indirectly impacted by this alternative. The occurrence and characteristics of the swales is likely due to seepage from the canal and they would not be present in their current size without the canal seepage water. The impacts have been disclosed to DSL and the Corps through the CWA section 404 permitting process. The permitting agencies did not require mitigation for the possible hydrological impacts to the swales. The hydrological changes associated with preferred alternative may result less in water present in the swales during the irrigation season. The swales may be reduced in size and may undergo a decrease and change in plant species composition over time as a result of the project.

Modification of a portion of the MID canal into stream channel involves removing a thick infestation of Himalayan blackberry, recontouring the steep sides of the canal to provide a more appropriate slope, and replanting the area with native trees, shrubs, and herbs.

3.1.3 CUMULATIVE IMPACTS

The subdivision development planned within the project area would likely have future impacts to the vegetation and soils in the project area. However, riparian vegetation and soils will be protected or replaced through mitigation measure as required by State and Federal laws. The land developer is deeding land within 50 feet on both sides of the creeks to the City of Medford throughout the entire development for “greenspace.” The City plans to maintain the riparian areas as public greenways and may route bicycle and pedestrian trails through them.

3.1.4 MITIGATION

Mitigation measures for the construction of the siphon would include implementing erosion control measures before, during, and after siphon construction. The construction activity would be monitored for turbidity. A maximum of a 10% increase in turbidity 100 feet downstream of the construction will be permitted during construction as required by DSL. To minimize erosion, jute and coir matting would be used within the channel and along the banks to stabilize the topsoil. Also, in-stream sediment curtains or mats would be installed to further reduce sediment transport. A qualified professional would install the matting using wooden and degradable steel “staples” to secure the matting to the ground. A small amount of riprap would line the Larson Creek channel at the siphon bypass structure and subdivision storm water outfall to prevent scouring during high-flow periods. Finally, a native seed mixture would be broadcast on all other slopes adjacent to the erosion control matting and riprap. Native trees and shrubs would be planted following the dormant season. If necessary, a temporary irrigation system would be set up to achieve adequate ground cover prior to autumn rains. On an as needed basis, other erosion control measures and best management practices would be applied elsewhere on the site. This may include silt fencing, hay bales, and erosion control blankets as

prescribed by the City of Medford. Siphon construction and diversion removal will be conducted during the ODFW approved in-stream work period.

3.2 HYDROLOGY

3.2.1 AFFECTED ENVIRONMENT

The Larson Creek subbasin is an 8 square mile drainage extending approximately 6.6 miles east from Bear Creek into the foothills of the Cascade Range. The Larson Creek subbasin includes Lazy Creek which parallels Larson Creek in the lower basin. The upper reaches of Larson Creek are characterized by narrow shallow channels with seasonal ephemeral flows (Horton 2001). Average winter (October through April) flows in Larson Creek are approximately 10 cfs and summer flows average 2-10 cfs (Horton 2001). A significant amount of the summer flow in Middle Fork Larson Creek upstream from the MID canal is irrigation water from the TID canal. Both the Middle and South Forks of Larson Creek in the project area currently are surrounded by agricultural lands; applied irrigation water returns to Larson Creek as subsurface flow.

Approximately 0.5 miles of the lowermost part of South Fork Larson Creek (west of North Phoenix Road) has been filled in and developed for housing. Since the historic hydrological connection is no longer viable, the MID canal represents the best alternative to restoring a naturally functioning drainage. A segment of the MID canal, approximately 700 feet in length, in the project area now functions as stream channel during non-irrigation season when MID is not diverting Larson Creek into its canal. The direction of flow during the irrigation season runs from the north to the south, whereas the natural drainage pattern is from southeast to northwest (south to north in the canal segment).

Current operation of the irrigation canals in the project area result in an altered hydrologic condition in Middle Fork of Larson Creek. At the end of the TID East Canal, tailwater and water deliveries to the Cherry Lane lateral diversion in Middle Fork Larson Creek flow into the natural channel. The diversion is located on Middle Fork Larson just north of where the creek crosses Barnett Road. The water deliveries are made to the Cherry Lane lateral via the diversion, while the tailwater and any additional water not diverted into the Cherry Lane lateral are conveyed approximately 1.5 miles to the junction of the creek with the MID canal. The tailwater and delivery flows can range from less than 1 to as much as 9 cfs and fluctuate throughout out the day based on irrigation needs. All of the flow from Middle Fork Larson Creek is then diverted into the MID canal.

Demands for irrigation water tend to be highest in the afternoon resulting in lower flows in the creek. MID diverts the all the water from Middle Fork Larson Creek into its system for distribution to MID irrigators, which includes the TID tailwater, surplus delivery water intended for the Cherry Lane lateral and any natural flow. Unless there is a flood event, the creek immediately below the downstream MID diversion (i.e. the mainstem Larson Creek) remains essentially dry during the irrigation season.

3.2.2 ENVIRONMENTAL CONSEQUENCES

ALTERNATIVE A – NO ACTION ALTERNATIVE

Without the implementation of either of the action alternatives presented in this EA, the natural channel of Middle Fork Larson Creek would continue to be used to transfer irrigation water from TID to MID and to make irrigation deliveries. The no action alternative is the least desirable option for improving the hydrologic condition of Larson Creek because the negative effects of irrigation on its hydrology would not be abated. Flows in Middle Larson Creek from April through October would continue to be higher than the natural hydrograph with daily wide flow fluctuations. Middle and South Fork Larson creek would continue to be completely diverted into the MID canal during the irrigation season.

ALTERNATIVE B – BARNETT ROAD PIPELINE

The installation of the Barnett Road pipeline would eliminate the discharge of TID tailwater and delivery water into the Middle Fork Larson Creek. The pipeline would transfer TID tailwater to MID through the underground pipe. The Cherry Lane lateral users would receive their water deliveries directly from the pipeline. The effect of these changes on the hydrology Middle Fork Larson Creek would reduce summer flows by the amount of water that TID discharges into the creek which can be as much as 9 cfs and varies throughout the day. Runoff and subsurface flow from water applied to agricultural lands would continue to flow back to the creek as long as there is irrigated agricultural land in the project area. Installing the Barnett Road Pipeline would affect flows in Middle Fork Larson Creek from the TID canal to the MID canal by reducing flows in that reach. This alternative does not include changes to the MID system; therefore, MID would continue to divert all the creek flow into its canal. Larson Creek flows below the MID canal would not change from the current conditions.

ALTERNATIVE C/PREFERRED ALTERNATIVE – BARNETT ROAD AND NORTH PHOENIX ROAD PIPELINES

This alternative includes impacts discussed above for construction and operation of the Barnett Road Pipeline.

The North Phoenix Road pipeline would not impact hydrologic conditions in South Fork Larson Creek above the MID diversion structures. TID does not discharge into this creek or use it to deliver water to other parts of their system. By installing the North Phoenix Road pipeline MID would no longer divert flows from the Middle and South Forks of Larson Creek. As the system currently operates, MID diverts all the flow during the irrigation season leaving the creek essentially dry immediately below the diversion structures. If the pipelines are constructed, the diversion structures would be removed, and water in the creek would continue unimpeded by irrigation diversion from the headwaters to the confluence with Bear Creek.

The construction of the pipelines would isolate the irrigation infrastructure from the Larson Creek drainage. Downstream from the MID diversion structures there would be more flow in the summer than under the current conditions. Upstream from the MID diversions on Middle Fork Larson Creek there would be as much as 9 cfs less water in the stream during the summer months. The water level would not oscillate on a daily basis. These changes would be a return to a more natural hydrology for this creek.

3.2.3 CUMULATIVE IMPACTS

Future residential development in the project area could have impacts to the hydrology in the Larson Creek drainage. With or without a decision to implement either of the action alternatives a change from predominantly agricultural lands to predominantly residential housing is occurring. This change will impact water drainage patterns in the Larson Creek subbasin. The increase in impervious surfaces, such as roads, roofs, and lawns, will result in more surface runoff. As development in the area progresses there will be less subsurface return flow from irrigated lands.

3.2.4 MITIGATION

No mitigation is required since no significant negative impacts to hydrology are expected to result from implementation of the proposed pipeline project.

3.3 WATER QUALITY

3.3.1 AFFECTED ENVIRONMENT

Currently, Larson Creek is listed by the Oregon Department of Environmental Quality (Oregon DEQ) as a water quality limited stream under Section 303(d) of the Clean Water Act (ODEQ 2004). Potential salmonid spawning and rearing habitat is impaired by high temperatures, pH levels, and low dissolved oxygen (DO) in the 6.6 mile reach of the creek used to convey irrigation water. Larson Creek flows into Bear Creek, a tributary of the Rogue River, which is also a stream listed under Section 303(d) by Oregon DEQ for temperature and fecal coliform bacteria. Contact recreation is impaired by high counts of fecal coliform bacteria in Larson Creek.

Based on water quality data obtained from 2002 Monitoring Program Report of the Talent Irrigation District Canal System (Coffan 2003) and the Bear Creek Watershed Assessment by the Rogue Valley Councils of Government (RVCOG 2001), the water quality degrades as it flows through the irrigation system based on multiple parameters. The parameter of most concern is temperature according to both studies.

There is a large temperature variation between the input water to the TID Canal from Emigrant Lake and the output water to Middle Fork Larson Creek during the months of May through September. The water quality data collection site is indicated in Figure 10. There are no data collection sites upstream of the irrigation system on the Middle Fork

Larson Creek or at any location on the South Fork Larson Creek. The TID Canal ends as the tailwater flows into Middle Fork Larson Creek with temperatures increasing on average nine degrees Celsius from the input (Coffan 2003). The minimum temperature at the collection site was 11.8°C on May 1, 2002. The maximum temperature was 27.8°C collected July 26, 2002. The high temperatures are not suitable for salmonid spawning and rearing.

Oregon’s temperature standards for spawning and rearing salmonid fish species are 12.8°C and 17.8°C, respectively. Oregon’s natural conditions criteria for temperature states that when natural thermal potentials exceed set biologically-based standards, the recorded temperatures will be deemed the applicable temperature criteria for the specific water body. The presence of irrigation water does not allow Larson Creek to be listed as a natural water body.

Temperature data from the reach of the Middle Fork Larson Creek used to convey irrigation water collected between May and September for the 2002 Monitoring Program Report of the Talent Irrigation District Canal System (Coffan 2003) met the Oregon temperature requirements in May for both standards and in June for only the rearing standard. In the remaining months, the temperature exceeded Oregon’s salmonid fish standards. Currently, Larson Creek is not suitable for fishery habitat due to high summer temperatures, marginal aquatic and riparian habitat quality, and limited stream flows (RVCOG 2001).

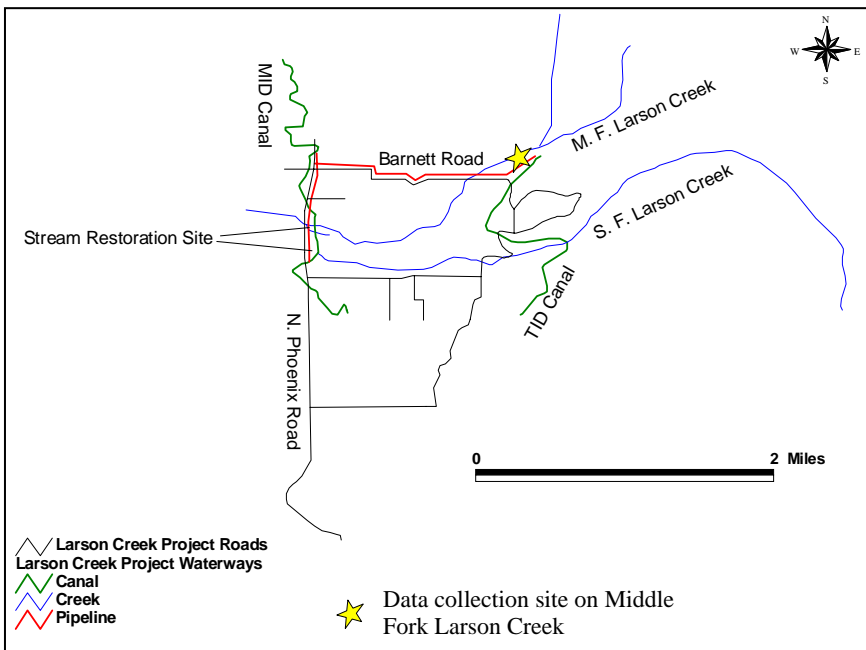


Figure 10. Water quality data collection site in 2002.

Variable stream flows occur daily during irrigation season ranging from 0.5 cubic feet per second (cfs) to 9 cfs. The variability contributes to the increased levels of sediment in the creek. When the flow of Middle Fork Larson Creek was measured at 0.5 cfs, the

sediment content, measured as suspended solids was 8 mg/L. Another sample was taken when the flow was 9 cfs at the same location and the suspended solids value was 60 mg/L indicating stream flows contribute to the increased levels of sediment and turbidity (Coffan 2003).

For the parameters bacteria, pH, and DO, the data was restricted to specific locations. In addition, these parameters were not discussed as areas of primary concern for the Larson Creek Watershed in the reports listed above. However, these parameters are important factors to water quality which affect natural aquatic habitat.

In the last 25 years approximately 43 percent of agricultural lands have changed their water application methods from flood to sprinkler or drip irrigation (Reclamation 2001). These changes have lowered the amount of irrigation surface runoff, subsurface return flow, and sediment loading downstream to Bear Creek. Despite the reduction, sediment and turbidity levels in Bear Creek remain a concern to local management entities because of the contribution from the development of the surrounding areas, which includes road building, subdivision construction, and land clearing, along with continued agricultural activities. As the sediment is added, the turbidity levels increase.

3.3.2 Environmental Consequences

Alternative A – No Action Alternative

Middle Fork Larson Creek would continue to receive water from the TID canal during the months of May through September. Water quality in Middle and South Fork Larson Creek would remain poor. Parameters particularly important to aquatic organisms (temperature, pH, and dissolved oxygen levels) would not be improved. Fluctuations in flow associated with storm runoff and irrigation operations would continue to result in channel erosion and high sediment levels in the creek. Bacteria levels would continue to exceed contact recreation standards. Larson Creek would remain listed by Oregon DEQ under Section 303(d) of the CWA. This alternative is not advantageous to the restoration of natural habitats for fish or other aquatic species. Control of sediment inputs from agricultural lands would be dependent on non point source controls exercised by Oregon DEQ.

Alternative B – Barnett Road Pipeline

The implementation of the Barnett Road Pipeline alternative would remove the irrigation water, and its effects on water quality, from Middle Fork Larson Creek. The TID canal would be connected directly to the MID Canal through the proposed pipeline which would eliminate irrigation delivery and tailwater from stream channel. As a result, a more natural flow regime would be reestablished in the Middle Fork Larson Creek. Channel erosion from unnaturally high flows and sedimentation associated with discharged irrigation water would be reduced.

Some of the effects of this action on water quality in Larson Creek are uncertain because water quality data are not available from the creek upstream of the TID Canal to use as comparison data. However, effects associated with the discharge of irrigation water into the natural creek channel will be eliminated. Oregon DEQ has water temperature standards for salmon bearing streams. These standards may not apply to a natural stream if its temperature is higher than the standard under natural conditions. Currently, Larson Creek does not qualify as a natural stream under the temperature rules because it is used to transport irrigation water. Because the temperature of the water in Middle Fork Larson Creek under natural conditions is unknown, removing the warm water input may not significantly reduce the temperature in the creek. At lower flows, water temperature can increase more rapidly.

Establishment of natural habitat conditions is possible for Middle Fork Larson Creek but not likely for South Fork Larson Creek. South Fork Larson Creek would continue to be directly diverted by MID Canal and other irrigators. For this alternative, precautions must be taken during construction to avoid introducing additional sediment in Middle Fork Larson Creek. Larson Creek would likely continue to be listed under Section 303(d) by Oregon DEQ until Total Maximum Daily Load (TMDL) implementation brings Larson Creek into compliance with water quality standards.

Alternative C/Preferred Alternative – Barnett Road and North Phoenix Road Pipelines

This alternative includes impacts discussed above for construction and operation of the Barnett Road Pipeline.

The installation of the North Phoenix Road Pipeline in addition to the Barnett Pipeline would isolate the Larson Creek drainage from the irrigation delivery system and would return the flow regime of the Middle Fork and the South Fork of Larson Creek to more natural conditions reducing the sediment and turbidity levels. Effects on temperature, pH, dissolved oxygen, and bacterial levels are uncertain due to a lack of data on the Larson Creek system upstream of the irrigation system. The increase in trees and shrubs planned for the conversion of the MID canal to functional stream channel may provide some thermal relief.

3.3.3 Cumulative Impacts

Terminating the use of Larson Creek as part of the irrigation delivery system will restore flows to a more natural condition and improve habitat. Setbacks are expected to mitigate for effects of urban development in the area. Project development is expected to reduce sediment and turbidity issues associated with fluctuating irrigation system flows.

3.3.4 Mitigation

No mitigation is required since this project is expected to return flows and habitat to more natural conditions. Oregon's natural conditions criteria for temperature states that when

natural thermal potentials exceed set biologically-based standards, the recorded temperatures will be deemed the applicable temperature criteria for the specific water body. Measures to limit a temporary increase in turbidity during in stream construction are described in the “Soils, Vegetation, and Wetlands” section of this document. Also, measures to prevent petroleum products, chemicals, or other deleterious waste materials will be practiced in accordance with all applicable laws and permits. No waste materials will be allowed to enter the stream, canals, or wetlands. No wood treated with leachable preservatives will be placed in a waterway. Machinery refueling will occur off-site or in a confined designated area to prevent spillage into water bodies.

3.4 THREATENED AND ENDANGERED SPECIES

On February 27, 2004 Reclamation made written requests to USFWS and NOAA Fisheries to provide a list of ESA threatened and endangered species that may occur in or be affected by the proposed project (Appendix B). NOAA Fisheries’ response indicates that threatened Southern Oregon/Northern California (SONC) coho salmon are present in the project area. In addition, the project area is also designated as essential fish habitat (EFH) for coho salmon and Chinook salmon pursuant to the Magnuson Stevens Act (MSA). USFWS notified Reclamation that bald eagle, coho salmon, vernal pool fairy shrimp, and three plant species may occur in the project area (Table 1).

Reclamation is required to determine whether its proposed federal action (i.e. the preferred alternative) has the potential to affect species listed under section 7 of the ESA. Reclamation is consulting with NOAA Fisheries on the effects of the Preferred Alternative on SONCC coho as required by the ESA and SONCC coho and Chinook salmon as required by the MSA. The ongoing consultation must be completed before the selection of an alternative and before any construction activities can occur.

SPECIES	ESA STATUS*	MSA STATUS	AFFECT OF PROPOSED PROJECT
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	T		No Effect
SONC Coho Salmon (<i>Oncorhynchus kisutch</i>)	T	✓	Not Likely to Adversely Affect
Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	NL	✓	Not Likely to Adversely Affect
Vernal Pool Fairy Shrimp (<i>Branchinecta lynchi</i>)	T		No Effect
Cook’s Lomatium (<i>Lomatium cookii</i>)	E		No Effect
Large-Flowered Woolly Meadowfoam	E		No Effect
Gentner Mission Bells (<i>Fritillaria gentneri</i>)	E		No Effect

Table 1. ESA and MSA species. *T – Threatened, E – Endangered, NL – Not Listed

3.4.1 AFFECTED ENVIRONMENT

BALD EAGLE

In 1967, the Secretary of the Interior listed bald eagles south of the 40th parallel as endangered under the Endangered Species Preservation Act of 1966. Following enactment of the Endangered Species Act of 1973, the USFWS listed the species as endangered throughout the lower 48 states, except in Michigan, Minnesota, Oregon, Washington, and Wisconsin. Due to the overall population increase, the bald eagle was reclassified in 1995 from endangered to threatened in all 48 lower states (Federal

Register 60:36000). Most recently, in 1999, the USFWS proposed delisting this species because eagle populations are rebounding significantly and overall goals of the recovery program have been met. At such time when the USFWS removes the bald eagle from the threatened and endangered species list it will remain protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

The breeding season for bald eagles in the Pacific Northwest generally extends from January to mid August. Chicks are usually fledged in July but may remain near the nest for several weeks after fledging. Bald eagles are extremely sensitive to human disturbance during the breeding season. Human activities are known to cause abandonment of nests and failed attempts at reproduction.

VERNAL POOL FAIRY SHRIMP

The vernal pool fairy shrimp was listed by USFWS as a threatened species in September 1994 (Federal Register 59:48136). Critical habitat was designated on August 3, 2003 (Federal Register 68:46684).

Vernal pool fairy shrimp are found in 27 counties across the Central Valley and the coast ranges of California, inland valleys of southern California, and southern Oregon (Federal Register 67:59884). In Oregon, vernal pool fairy shrimp are only known to occur in Jackson County north of Medford.

COOK'S LOMATIUM

Cook's lomatium was listed by USFWS as an endangered species effective December 9, 2002 (Federal Register 67:68004). Critical habitat has not been designated. This plant species is known to occur in vernal pools in the Agate Desert in Jackson County and French Flat in Josephine County.

LARGE-FLOWERED WOOLLY MEADOWFOAM

The large-flowered woolly meadowfoam was listed by USFWS as an endangered species effective December 9, 2002 (Federal Register 67:68004). Critical habitat has not been designated. The current distribution of this species is in vernal pools of the Agate Desert, north of Medford, in Jackson County.

GENTNER MISSION BELLS

Gentner mission bells was federally listed by USFWS as endangered on January 10, 2000, without designated critical habitat (Federal Register 64:69195). A recovery plan was published by the USFWS on August 28, 2003 (Federal Register 68:51793).

Gentner mission bells inhabits the rural foothills of the Rogue and Illinois River valleys at elevations between 1,004 to 5,064 feet. The distribution of this species is localized within a 30 mile radius of the Jacksonville Cemetery in Jacksonville, Oregon. Approximately 73 percent of the known individuals occur within a 7 mile radius of the Jacksonville Cemetery (USFWS 2003). Its habitat is characterized by upland grasslands and open woodland edges dominated by Oregon white oak (*Quercus garyana*), California

black oak (*Quercus keloggii*), madrone (*arbutus menziesii*), Douglas fir (*Pseudotsuga menziesii*), or Ponderosa pine (*Pinus ponderosa*).

3.4.2 ENVIRONMENTAL CONSEQUENCES

ALTERNATIVE A – NO ACTION ALTERNATIVE

A decision to implement Alternative A would have no effect on bald eagles, vernal pool fairy shrimp, and listed plant species in the project area. No changes would occur to the current operation and maintenance of irrigation canals in the Larson Creek subbasin and fish passage barriers would remain in place. The negative impacts of fish passage barriers and altered hydrological conditions would continue to impede recovery of SONCC coho salmon. The habitat conditions for Chinook salmon and Coho salmon would neither improve nor degrade from the current conditions.

ALTERNATIVE B – BARNETT ROAD PIPELINE

The installation of the Barnett Road Pipeline would have no effect on bald eagles, vernal pool fairy shrimp, and listed plant species in the project area. The unnaturally high flows in Middle Fork Larson Creek would be eliminated, but this would not benefit aquatic species because the two MID diversions would remain installed thereby blocking fish passage into Middle Fork Larson Creek. With the diversions in place, no water above the MID canal will enter Larson Creek below the MID canal when the flash boards are in place, as is currently the case. Hydrologic conditions in Middle Fork Larson Creek would be normalized, but there would be no benefit to SONCC coho salmon and Chinook salmon individuals or their accessible habitat.

ALTERNATIVE C/PREFERRED ALTERNATIVE – BARNETT ROAD AND NORTH PHOENIX ROAD PIPELINES

SONC COHO AND CHINOOK SALMON

The preferred alternative will impact the Larson Creek subbasin by vastly improving the functional attributes of the creek. The construction of the pipelines and removal of instream fish passage barriers combined with the resulting natural change in hydrology in Larson Creek will have a beneficial effect on coho salmon, coho salmon EFH, and chinook salmon EFH. Therefore, the preferred alternative may affect, but is not likely to adversely affect these species.

BALD EAGLE

There are 15 bald eagle breeding territories in Jackson County generally at or near large lakes and reservoirs or near the Rogue River where aquatic prey is the most readily available. No nests are located within several miles of the project area. The proposed project will have no effect on bald eagles, their habitat, or prey.

VERNAL POOL FAIRY SHRIMP

The project area does not have the hard pan soil layer needed for the formation of vernal pool wetlands. An ONHP database search did not identify any known occurrences of this species in the project area. The closest record of a known fairy shrimp population is approximately 8 miles north of the project area. Therefore, the proposed project will have no effect on vernal pool fairy shrimp.

COOK'S LOMATIUM

Cook's lomatium is adapted vernal to pool habitats which are absent from the project area. Within Jackson County this species is found north of Medford with one known exception. A population of *Lomatium cookii* occurs at the Medford Airport approximately 6 miles from the project area. The proposed project will have no effect on Cook's lomatium.

LARGE-FLOWERED WOOLLY MEADOWFOAM

The proposed project area is south of the Agate Desert and does not have the vernal pool wetland habitat necessary for this species' survival. Therefore, the proposed project will have no effect on large-flowered woolly meadowfoam.

GENTNER MISSION BELLS

The proposed project area is within Recovery Unit 1 of the USFWS's recovery plan for *Fritillaria gentneri*, but east of any known occurrences of this species in the recovery unit. Based on the presence of grassland and scattered oaks upslope from the TID East Canal, suitable habitat may exist in those upper drainage areas. The proposed project would not cause any changes to vegetation or hydrology above the TID canal. Therefore, potential habitat, if it exists, would not be affected by the proposed project. Areas of pipeline construction are all within previously disturbed road alignments. Hydrological changes that will result from the installation of the pipelines would have no effect on Gentner mission bells habitat. Impacts from grazing and agriculture in the project area have altered the upland plant community to non-native grasses and forbs and agricultural species. The proposed project will have no effect on *Fritillaria gentneri*.

3.4.3 CUMULATIVE IMPACTS

In addition to past, ongoing, and future improvements to habitat for ESA species planned by Reclamation, other organizations are working to aggressively improve habitat and promote recovery of threatened and endangered species in the Rogue River basin. In the Larson Creek drainage several culverts downstream of the project area are partial (low-flow) fish passage barriers. Reclamation anticipates that the City of Medford will replace these culverts to further promote use of Larson Creek by aquatic species.

3.4.4 Mitigation

No project mitigation is being proposed because negative impacts are expected to be negligible and insignificant. All construction related activities will use best management

practices to attenuate any localized temporary impacts. Also, Reclamation will comply with mitigation requirements, if any, that result from consultation with NOAA Fisheries.

3.5 FISH AND WILDLIFE

3.5.1 AFFECTED ENVIRONMENT

Due to the degraded water quality of Larson Creek, the stream passage barriers, and busy streets and human disturbance located nearby, the potential for a diverse native wildlife community is limited. Riparian trees and shrubs provide cover, resting, and some nesting habitat for neotropical migrant bird species and other passerine birds. Amphibians and turtles are unlikely to be present because poor water quality, limited underwater cover, and limited basking sites. There is no evidence of beavers or other mammals; although, small rodents, moles, and shrews may be present.

ALTERNATIVE A – THE NO ACTION ALTERNATIVE

No change in habitat for aquatic or terrestrial wildlife species would occur.

ALTERNATIVE B – BARNETT ROAD PIPELINE

No change would occur to habitat for terrestrial species. Aquatic and semi-aquatic species would benefit if water quality improves. They will also benefit from the stabilization of summer flows in Middle Fork Larson Creek and the removal of the TID diversion structure near Barnett Road.

ALTERNATIVE C/PREFERRED ALTERNATIVE – BARNETT ROAD AND NORTH PHOENIX ROAD PIPELINES

This alternative includes impacts and benefits discussed above for construction and operation of the Barnett Road Pipeline.

This alternative offers the greatest improvement for habitat conditions in the project area. The removal of the stream diversions and the channel improvements to the existing canal which will include planting of woody and non-woody vegetation and creating gently sloping banks will improve habitat for fish and wildlife species.

3.5.2 CUMULATIVE IMPACTS

Steady population growth in Medford and the surrounding area is creating a demand for more housing. Over time, subdivisions are likely to be constructed in much of the nearby remaining agricultural lands. Residential neighborhoods, as with agricultural lands, do not tend to support diverse populations of native wildlife species.

3.5.3 MITIGATION

No negative impacts to fish and wildlife have been identified, therefore no mitigation is proposed.

3.6 ENVIRONMENTAL JUSTICE AND SOCIOECONOMICS

The February 11, 1994 Presidential Executive Order 12898 (EO) defines environmental justice as “disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.” The EO is intended to protect minority and low-income communities from discriminatory projects or practices which can result in a more hazardous or degraded human environment caused by a Federal action. Federal agencies are directed to analyze the effects of Federal actions on minority and low-income communities and to avoid those impacts to the extent that is practicable.

3.6.1 AFFECTED ENVIRONMENT

Medford is located in Jackson County, Oregon. Population growth in the county has increased by 23.8 percent from 1990 through 2000; a slightly higher growth rate than was seen statewide in the same period (table 2). There are 68,080 people living in Medford, Oregon. Over ninety percent of the population is white (<http://www.ci.medford.or.us>, accessed April 2004). Larson Creek is located on the east side of Medford where average home sales are approximately 1.56 times greater than in West Medford. The proposed pipelines are located beyond the eastern edge of current residential development in predominantly agricultural land. However, future residential development is planned in the area.

U.S. Census Bureau 2000 Statistic	Jackson County	Oregon
Total population	181, 269	34,211,399
Population % change 1990 to 2000	23.8	20.0
% White	91.6	86.6
% Hispanic or Latino	6.7	8.0
% American Indian or Alaska Native	1.1	1.3
% Asian	0.9	3.0
% Black or African American	0.4	1.6
% Native Hawaiian or Pacific Islander	0.2	0.2
% Persons reporting some other race	2.9	4.2
% Persons below poverty	13.8	11.6
% Children below poverty	20.3	16.3

Table 2. 2000 Jackson County, Oregon census statistics. The table includes statewide statistics for comparison.

3.6.2 ENVIRONMENTAL CONSEQUENCES

None of the alternatives presented in this EA will cause disproportionately adverse social, economic, or human health impacts to local minority or low-income populations. The WCFSP and Water 2025 receives project proposals from irrigation districts that operate facilities in Federal reclamation projects or other project proponents whose projects will conserve water. The recipients must match those funds with their own non-federal resources. Allocation of limited water conservation funds is determined by selecting projects that will have the greatest beneficial impact on water conservation. The North Phoenix Road and Barnett Road pipelines provide such an opportunity. The proposed action will also enable the districts to isolate the irrigation distribution system from the natural drainage and promote fish habitat restoration in the project area.

3.6.3 CUMULATIVE IMPACTS

The proposed project will not impact, significantly or incrementally, the economic, social or human health conditions of non-white or low-income populations.

3.6.4 MITIGATION

No mitigation for environmental justice or socioeconomics is being proposed since adverse impacts to low-income or minority communities have not been identified.

3.7 HISTORIC PROPERTIES

3.7.1 EXISTING CONDITION AND CUMULATIVE IMPACTS

ARCHEOLOGICAL RESOURCES

Native peoples claiming the lands around Medford, Oregon, are the Penutian-speaking Takelma, and the Hokan-speaking Shasta Indians (Jenkins and O'Neill 2001). Both groups traditionally resisted intrusions by others into their territory. Consequently, they were unable to peacefully stem the tide of euro-american settlement and their numbers dwindled rapidly throughout the 19th century. In the mid- 1850's the Shasta and Talkema were removed with other nearby tribal peoples northward to the Grande Ronde Reservation. By the early 20th century any evidence of a Takelma tribal entity had disappeared (Ruby and Brown 1992: 189, 238).

A small number of sites in the vicinity of Medford have been investigated archeologically, and they suggest that people have occupied the region for the 12,000-year span typical for the North American continent. The typical North American pattern of greater numbers of occupations dating to the mid to late Holocene (circa 900-1500+) undoubtedly holds in the Medford vicinity (cf. Jenkins and O'Neill 2001). Limited archeological investigations in the Rogue River valley, for example, suggests numerous village sites dating to the late prehistoric periods, many with semi-subterranean houses, lying on terraces, or promontories, of both the major and tributary streams (Fagan *et al*

1994). The presence of ceramics, a diversity of site types reflecting specialized resource procurement across the landscape, food storage, and evidence for trade networks demonstrate successful adaptations to the land through time. Because climates, cultures and landscapes change through time it is difficult to generalize about where sites can be predicted to occur based on modern-day conditions, and there is always the potential that evidence of earlier occupations will surface during project implementation.

A review of the literature housed at the Oregon State Historic Preservation Office (SHPO) in Salem yielded no historic properties recorded, as well as no previous archeological investigations or surveys on or adjacent to the project area. There have been a number of large and small-scale surveys performed throughout Jackson County over the past couple of decades, although professional investigations in the area have occurred since at least the early 1930's. The trend of archeological research in the broader geographical context is that of intense scrutiny within the major drainages, such as the Rogue, Umpqua, and Applegate rivers, and Bear Creek, while the lesser drainages occupying largely the more mountainous and upland locales are investigated less intensively. Larson Creek, a tributary of the Rogue River through Bear Creek, has not elicited research interest to date.

The right-of-way for the pipeline along Barnett and North Phoenix roads, as well as the siphon placement under Middle Fork Larson Creek was examined visually for material evidence of archeological sites. None were found, and a report of findings to document compliance with Section 106 of the National Historic Preservation Act will be filed with the Oregon SHPO.

CANAL SYSTEMS

Appendix D provides an overview of the historic development of irrigation in Bear Valley and creation of the MID and the TID irrigation systems. Briefly, in 1909 the Rogue River Valley Canal Company (RRVCC) made plans to construct a high-line canal that would extend from Bradshaw Drop, around the east side of the Bear Creek Valley south to Phoenix, cross Bear Creek, and then swing northward. The section of this canal east of Bear Creek is now known as the Medford Canal (or sometimes the East Main Canal or MID Canal). However, the canal was not actually constructed until the 1920's, after MID contracted with the RRVCC for completion of the canal and improved storage facilities. In 1929, ownership of the RRVCC facilities and water rights were assumed by MID and the Rogue River Valley Irrigation District (RRVID), with MID taking ownership of the Medford Canal. The RRVID and MID irrigation distribution systems extant today are substantially the systems established by 1929, although, since the 1950's, both of the irrigation districts have been incrementally replacing or modifying elements of their distribution systems as they aged. However, the MID facilities involved in the Preferred Alternative (the section of the MID Canal and the MID's diversions on the Middle and South Forks of Larson Creek) remain unmodified since their original construction in the 1920's.

The TID, organized in 1916, and by 1930 they had constructed two storage reservoirs and a system of canals that included the East Canal. In 1954, Reclamation obtained

authorization to construct the Talent Division of the Rogue River Basin Reclamation Project (Project). The focus of that Project was to construct new and enlarge existing reservoirs to expand the water supply for the area, and to enlarge and extend the TID delivery system. Among other actions, the East Canal was widened, a new headworks constructed, and all internal structures replaced. The diversion at Larson Creek to be removed under Alternatives B and C was constructed in 1958, and the segment of the East Canal below the diversion was widened at that time. At some later time, the segment of the East Canal was converted from open ditch to concrete pipe.

It is Reclamation's determination that the Project should be considered eligible to be a National Register Linear or Discontinuous Historic District (historic district). The three irrigation systems encompassed by the Project were integral in the historic development of Bear Valley, and their history illustrates a common theme of irrigation development elsewhere in Oregon and throughout the West.

Reclamation has determined that the Medford Canal is a contributing element of the historic district, and that the segment of the Medford Canal and the two diversion structures affected under the Preferred Alternative contribute to the canal's historic significance.

Reclamation has determined that, due to alterations in the 1950's, the TID East Canal lacks sufficient physical integrity to be representative of the early phase of irrigation development of the Bear Valley. It does represent the 1950's Federal phase of irrigation development in Bear Valley, but facilities of that time period do not yet meet the 50 minimum age criteria for the National Register. Also, the segment that will be abandoned under the Preferred Alternative lacks sufficient physical integrity to be representative of the 1950's Federal phase of irrigation development. Therefore, East Canal features that would be affected under the Alternatives B and C do not contribute to the historic character of the larger East Canal. In July, 2004, Reclamation initiated consultations with the SHPO concerning designation of the historic district, and whether the MID Canal or affected elements of the TID East Canal are contributing features to the historic district.

TRADITIONAL CULTURAL PROPERTIES

On March 1, 2004 Reclamation sent letters to four tribes who might have an interest in the undertaking. These are The Cow Creek Band of the Umpqua Tribe of Indians, The Klamath Tribes, The Confederated Tribes of the Siletz Indians, and The Confederated Tribes of the Grand Ronde Community of Oregon. Reclamation requested information on presence of Indian sacred sites, archeological sites, and traditional cultural properties. As of this time, no response has been received from the tribes. Therefore, Reclamation is aware of no traditional cultural properties or other resources of cultural importance to tribes in or near the areas of potential effect.

3.7.2 EFFECTS (ENVIRONMENTAL CONSEQUENCES)

ALTERNATIVE A – NO ACTION ALTERNATIVE

If project proponents were to implement actions without Reclamation's involvement, then there is the potential to adversely affect historic properties because they would alter the MID Canal. However, this would not be an undertaking on Reclamation's part.

ALTERNATIVE B – BARNETT ROAD PIPELINE

The Barnett Road Alternative would have no effect upon National Register eligible historic properties. No archeological sites are present in the pipeline alignment, and the extent of past disturbance from road construction along the pipeline route makes it unlikely that undetected and intact sites would be impacted. The only changes to the Project irrigation system is to either abandon or remove a TID diversion structure that does not yet meet the minimum age for consideration as an historic property, and potential abandonment of a short segment of the TID East Canal that has no physical integrity for either the original or late the 1950's era's of irrigation development. As there would be no adverse effect upon eligible properties, no mitigation is proposed.

ALTERNATIVE C/PREFERRED ALTERNATIVE – BARNETT ROAD AND NORTH PHOENIX ROAD PIPELINES

The effect of the Barnett Road element is as discussed above for Alternative B. For the North Phoenix Road Pipeline, there would be no effect upon archeological sites as none were found during survey of potential impact areas for either pipe placement or canal modifications. Both of those areas have been extensively altered in the past by road or canal construction, and so there is little potential for undetected intact cultural deposits. However, the proposed action will have an adverse effect upon the historic integrity of the Medford Canal due to removal of the two diversion structures and alteration of a segment of the canal.

3.7.3 CUMULATIVE EFFECTS

Loss of this segment of the Medford Canal and removal of two small diversions, although an adverse effect, are in and of themselves not of sufficient magnitude to meaningfully diminish the historic integrity of the larger canal and overall Project facilities. However, similar water conservation and barrier removal actions are ongoing, and are likely to continue in the future over much of the MID and larger Project irrigation canals. Over time, the cumulative effect could be sufficient to so degrade the historic integrity of the canals that they no longer can be considered to be contributing elements to the historic district

3.7.4 MITIGATION

Proposed mitigation is to collect large-format black-and-white photographs of the affected MID diversion structures and canal. The photographs will be collected, processed, and packaged in accordance with Historic American Engineering Record standards. Although the TID diversion dam is not yet 50 years in age, and so is not

historically significant, Reclamation will also photograph that diversion. In July, 2004, Reclamation initiated consultation with the Oregon SHPO on the effect of the Preferred Alternative (or Alternative B) upon historic properties and treatment of any adverse effects.

3.8 INDIAN TRUST ASSETS

Indian trust assets are legal interests in property held in trust by the United States for Indian tribes or individuals. Examples of things that may be trust assets are lands, mineral, hunting and fishing rights, and water rights. The United States has an Indian trust responsibility to protect and maintain rights reserved by or granted to Indian tribes or Indian individuals by treaties, statues, and Executive orders, which are sometimes further interpreted through court decisions and regulations. This trust responsibility requires Reclamation to take all actions reasonable necessary to protect trust assets.

3.8.1 AFFECTED ENVIRONMENT

No Indian owned lands, federally recognized Indian reservation, or ceded lands have been identified within the work area where traditional use rights are retained by a federally recognized Indian tribe.

3.9 INDIAN SACRED SITES

3.9.1 AFFECTED ENVIRONMENT

Executive Order 13007 defines Indian sacred sites as “any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion.” The provisions of Executive Order 13007 apply only on Federal lands. Traditional practitioners have no access to private land. Therefore, there can be no federally protected Indian sacred sites in the project are of potential effect.

CHAPTER 4

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CHAPTER 5

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