

Environmental Assessment For The Dragonfly Bend Habitat Enhancement Project

Environmental Assessment No. 20857 OREGON

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**United States Department of the Interior
Bureau of Land Management
Eugene District Office
Dragonfly Bend Habitat Enhancement Project
Environmental Assessment No. 20857 Oregon**

1. Purpose of and Need for Action

1.1. Background

The West Eugene Wetlands (WEW) Program is a cooperative venture by the Bureau of Land Management (BLM), Eugene District, to protect and restore wetland ecosystems in the southern Willamette Valley of Oregon. This unique program involves a partnership of federal, state, and local agencies and organizations to manage lands and resources in an urban area for multiple public benefits. The eight partners in the WEW Program are the BLM, City of Eugene, The Nature Conservancy, Oregon Youth Conservation Corps, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, McKenzie River Trust, and Willamette Resources and Educational Network. The BLM became an active partner in 1993 when it adopted the WEW Plan (WEWP) (City of Eugene 1992, 2000). The BLM has been involved with its partners in land acquisition, restoration, enhancement, and maintenance of approximately 2,800 acres in the West Eugene area.

A variety of management activities for the WEW project area are recommended in the WEWP. In 1994, the BLM began limited management actions on various properties that included planning, research on special status species, prescribed burning, environmental education, trash removal, and noxious weed control. Public use of federal land within the WEW Project is currently allowed under the Code of Federal Regulations (43 CFR 8365.1-6). There is a need to coordinate these management actions and other planned activities within specific area boundaries.

This Environmental Assessment is prepared to analyze the consequences of this decision: *should the BLM provide federal money to help the City of Eugene implement the Dragonfly Bend Habitat Enhancement Project?* The BLM could decide to provide matching funds to assist the City of Eugene under the Department of Interior's Cooperative Conservation Initiative (CCI) grants program.

1.2. Description of the Project Area

The project area lies along Amazon Creek, in the southeastern portion of Long Tom River Watershed, in Township 17 South, Range 4 West, Section 20 (see Appendix A, Map 1). The project area is situated immediately north of the 400-acre Meadowlark Prairie site, which is owned and managed by City of Eugene and BLM as a protected wetlands and riparian area.

The Dragonfly Bend Habitat Enhancement Project area is approximately 22 acres in size, and is located on a portion of the larger Dragonfly Bend site owned by City of Eugene. Dragonfly Bend is a 70-acre block of land situated between the Amazon Creek Diversion Channel (hereafter, Diversion Channel) and the Amazon Creek A-1 Channel (hereafter, A-1 Channel).

Specifically, the project is located along the eastern edge of the Dragonfly Bend site and includes approximately 3,600 linear feet of the A-1 Channel bed, banks and levees (15.25 acres), plus approximately 6.75 acres of adjacent cultivated fields just west of the channel. The A-1 Channel within the project area is edged with upland levees, developed by the U.S. Army Corps of Engineers during major flood control activities in the mid-1960's. With the construction of the Diversion Channel in the 1960's, and the construction of the flood control weir south of Royal Avenue in 1999, the majority of the water in Amazon Creek now flows to Fern Ridge Reservoir via the Diversion Channel. The banks of the A-1 Channel are relatively steep and extensively vegetated with non-native plants (primarily Armenian blackberry and agricultural grass species), with small patches of native grasses, forbs, and roses. The channel bed is

choked with reed canarygrass, a nonnative, highly invasive, noxious plant species.

1.3. Conformance with the Land Use Plan

The Bureau of Land Management, Eugene District, officially adopted the West Eugene Wetlands Plan as the land management plan for those BLM lands within the West Eugene Wetlands Project on March 23, 1993. This plan was revised, and formal adoption of the revised West Eugene Wetlands Plan occurred on September 17, 2001 (City of Eugene 2000). The proposed action is consistent with the adopted plan.

1.4. Relationship to Statutes, Regulations, or Other Plans

The proposed action complies with the Bureau of Land Management, Eugene District, Record of Decision and Resource Management Plan (United States Bureau of Land Management 1995). Management of the project area is not within the scope of the Record of Decision and the Standards and Guidelines of the Northwest Forest Plan (U.S. Department of Agriculture and U.S. Department of the Interior 1994).

1.5. Purpose of and Need for Action

The purpose of this proposal is to enhance the stream, riparian, wetland, and upland habitat values of the A-1 Channel of Amazon Creek. The focal species of these habitat improvements are the Fender's blue butterfly and western pond turtle. The City would achieve habitat improvements of the A-1 Channel by several activities. First, the City would broaden the bed of the A-1 Channel to develop additional stream braiding, backwater areas, and complexity. Second, the City would create gentler bank slopes in some areas for establishment of native plants and for improved shading from an expanded riparian area. Third, the City would utilize appropriate types and amounts of spoils from the construction to develop upland prairie along the western edge of the project, specifically emphasizing habitat enhancements to favor western pond turtles (listed sensitive at state level), Kincaids' lupine (listed threatened at state and federal levels), and Fender's blue butterfly (listed endangered at federal level). Finally, the City would re-vegetate the entire project site with appropriate native species for the riparian, wetland, and upland habitats within the project site.

The need for this project is established in The West Eugene Wetlands Plan (City of Eugene 2000), which directs the adopting agencies (including City of Eugene and BLM) to: (a) protect and expand populations and habitats of rare plants and animals that currently exist in west Eugene, (b) establish, maintain, and protect physical and hydrologic linkages between protected wetland and adjacent transitional and upland wildlife habitat and natural areas, and (c) protect and enhance the quality, functions, and values of natural and human-made waterways that are interconnected with wetlands.

1.6. Issues Selected for Analysis

The scoping process identified the following issues. These issues serve to focus the analysis and the comparison of alternatives.

Issue 1: How would excavating, re-contouring, and re-vegetating with native species affect western pond turtle? This issue will be assessed by the following measurement indicators: (a) acres of upland nesting habitat created, and (b) number of in-stream basking structures and microhabitats suitable for western pond turtle use.

Issue 2: How would excavating, re-contouring, and re-vegetating with native species affect Fender's blue butterfly? This issue will be assessed by the following measurement indicators: (a) acres of habitat vegetated with suitable Fender's blue butterfly larval and nectar plants, and (b) connectivity, measured as the distance between populations of Fender's blue butterfly host plant.

Issue 3: How would excavating, re-contouring, and re-vegetating with native species affect native plant populations? This issue will be assessed by the following measurement indicators: (a) acres of riparian/wetland habitat containing a native-dominated plant community, (b) acres of upland habitat with a native-dominated plant community, and (c) linear feet of stream channel with invasive, non-native plants removed.

Issue 4: How would excavating, re-contouring, and re-vegetating with native species affect soil resources? This issue will be assessed by the following measurement indicators: (a) amount of soil disturbed, (b) percent of topsoil retained on site, (c) percent of all other soil layers retained on site, (d) bank stability, (e) channel bed erosion potential, (f) soil compaction, and (g) sedimentation.

Issue 5: How would excavating, re-contouring, and re-vegetating with native species affect flood storage capacity? This issue will be assessed by the following measurement indicators: (a) floodplain size, and (b) channel capacity.

Issue 6: How would excavating, re-contouring, and re-vegetating with native species affect water temperature? This issue will be assessed by the following measurement indicator: linear feet of shaded stream channel.

Issue 7: How would excavating and re-contouring affect jurisdictional wetlands? This issue will be assessed by the following measurement indicators: (a) acres of jurisdictional wetland, and (b) acres of jurisdictional wetland dominated by a native plant community.

1.7. Federal, State, and Local Permits Necessary to Implement the Project

- Joint Fill-Removal Permit from the U.S. Army Corps of Engineers and the Oregon Division of State Lands.
- Wetland Enhancement General Authorization Permit from the Oregon Division of State Lands.
- City of Eugene Erosion Control Permit.
- City of Eugene Site Review approval, through the Planning and Development Department.
- Letter from the U.S. Natural Resources and Conservation Service to the Lane County Land Management Division approving the work.
- Approval from the Bonneville Power Administration (BPA) to work within the BPA easement.
- U.S. Fish and Wildlife Service Section 7 consultation needed prior to planting Kincaid's lupine.
- Oregon Department of Agriculture permission needed prior to planting Kincaid's lupine.

2. Alternatives

This chapter describes the two alternatives for this project, as well as an alternative that was identified but eliminated from detailed study. The chapter concludes with a comparative summary of the environmental consequences of the two analyzed alternatives.

2.1. Alternative 1 (Proposed Action)

Under Alternative 1, the BLM would provide funds from the Cooperative Conservation Initiative (CCI) grants program to help City of Eugene implement the Dragonfly Bend Habitat Enhancement Project. The City of Eugene would implement modifications to approximately 3,600 feet of the A-1 Channel from Royal Avenue to Greenhill Road (see Appendix A, Map 2). The footprint of the project actions would be approximately 22 acres.

The main elements and outcomes of this work are discussed below.

2.1.1. Remove the Existing, Predominantly Non-Native Vegetation

The majority of the vegetation on the site is comprised of aggressive, non-native, invasive species such as reed canarygrass and Armenian blackberry. Therefore, all vegetation would be removed using heavy equipment and other mechanical methods (e.g., chainsaws and weed eaters).

2.1.2. Excavate and Re-Contour the Channel and Channel Banks to Create In-Stream and Riparian Complexity

The existing A-1 Channel would be excavated and re-contoured to increase in-stream and riparian complexity. This work would have the following outcomes:

- **Increased channel width.** The width of the channel would be increased in two locations. This would provide room for the creek to move within the channel banks.
- **Multiple channels and islands.** The creek would have room to create multiple channels, particularly during high water events. A multi-channeled creek with islands between the channels would provide more resources for western pond turtles, including refuge from fast-flowing high-water events, sanctuary from predators, and improved foraging zones.
- **Pockets of deep water.** The re-contouring, combined with strategic placement of rock weirs, would allow pockets of deep water to form in several locations. These deep water areas would be used by western pond turtles and improve water quality. The weirs would create a three to six inch drop in water surface along the channel alignment that would back water up in minimal rain events and create additional storage for habitat preferred by western pond turtles. The weir structures would be built of boulders or smaller rocks, and other aggregate materials. This design would enable low flows to pass through these structures and maintain low water corridors typical of this stream. The flow of water through the drop structure would increase oxygenation of the water and thereby enhance the water quality of the stream. These structures would also aid in sedimentation transport, allowing particles to settle and be later mobilized during higher flows.
- **Increase in large wood within channel.** Because there would be areas of slower-moving water, it would be possible to place and secure large wood in the channel. This would have multiple benefits, including serving as basking structures for western pond turtles.
- **Channel banks with a shallower slope.** The channel banks would be re-contoured to have a gentler slope. These channel banks would be more suitable for movement of western pond turtles and Fender's blue butterfly between the stream and adjacent upland habitats. In addition, the shallower bank slopes would provide a much better substrate for establishing native vegetation and maintaining native vegetation over the long-term.

2.1.3. Use excavated material to create upland prairie habitat adjacent to channel banks

Some of the material excavated from the channel would be used to create 10.85 acres of upland prairie habitat immediately adjacent to the top-of-bank on the west side of the channel. Of this acreage, 6.75 acres would be in a single, large patch of habitat. The remaining 4.10 acres would be a linear patch of upland prairie on the top of the channel bank. This upland prairie habitat would be planted with native upland prairie species to provide nesting habitat for western pond turtle and habitat for all stages of the Fender's blue butterfly lifecycle.

2.1.4. Re-vegetate the entire site with native plants

All areas receiving mechanical or other vegetation management treatments would be seeded or planted with native species. This would result in approximately 7.21 acres of riparian/wetland habitat and 10.85 acres of upland prairie habitat vegetated with native species. All areas would be planted in the autumn following the excavation and re-contouring work, with the exception of the large, 6.75 acre patch of upland area immediately to the west of the top-of-bank. This upland area would be planted one year following the

excavation and re-contouring work, to allow for adequate soil preparation, seed collection, and grow-out of appropriate upland plants, including Kincaid's lupine (the host plant for Fender's blue butterfly) and preferred nectar plants for Fender's blue butterfly.

2.1.5. Mitigating Measures and Monitoring

The mitigating measures for Alternative 1 are discussed in Appendix B, and the proposed monitoring goals and methodologies are discussed in Appendix C.

2.2. Alternative 2 (No Action)

Under this alternative, the Bureau of Land Management would not provide Cooperative Conservation Initiative funds to the City of Eugene to implement the Dragonfly Bend Habitat Enhancement Project. Therefore, no enhancement or restoration work would occur. The habitat functions of the A-1 Channel would remain as they currently exist. There would be no habitat creation for Fender's blue butterfly, there would be little or no ability of western pond turtles to nest on the site, there would be no improvement in the in-stream complexity, and the A-1 Channel would be dominated by non-native plant species.

2.3. Alternative Considered but not Analyzed in Detail

An alternative to increase the channel width but not create any adjacent upland prairie habitat was considered. This alternative would have created some of the in-stream improvements that would be created under Alternative 1. However, this alternative would not have created nesting habitat for western pond turtle, and it would not have addressed any of the life cycle needs of Fender's blue butterfly. In addition, this alternative would have required removing much of the excavated material to an off-site location. Therefore, this alternative was dropped from further analysis.

2.4. Comparison of Alternatives

The following table summarizes the environmental consequences of the two alternatives. A more detailed discussion of these environmental consequences can be found in Chapter 4.

1. Western Pond Turtle (Issue 1)		
a. Acres of upland nesting habitat	6.75 – 10.85	0
b. # of instream basking structures (large logs, rock weirs)	6 - 8	0
2. Fender's Blue Butterfly (Issue 2)		
a. Acres of habitat vegetated with suitable Fender's blue butterfly larval and nectar plants.	6.75 – 10.85	0
b. Connectivity (miles between existing populations of host plant).	~ 0.5	~ 2.0
3. Native Plant Populations (Issue 3)		
a. Acres of riparian/wetland habitat with predominantly native cover	7.21	0
b. Acres of upland prairie with predominantly native cover	10.85	0
c. Linear feet of non-native, invasive, weeds-removed from creek	3600	
4. Soil Resources (Issue 4)		
a. Amount of soil disturbed (cubic yards)	up to 60,000	0
b. Percent of topsoil retained on site	100	100
c. Percent of non-topsoil retained on site	80	100
d. Channel stability	short-term decrease over	baseline, very stable

	baseline, stable	
e. Channel bed erosion potential	low	low
f. Soil compaction	< 5%	0
g. Sedimentation	5% over baseline for one year.	baseline
5. Flood Storage Capacity (Issue 5)		
a. Floodplain size (acres)	50	0
b. Channel capacity	increase of 50,000 cubic yards over baseline	baseline, likely able to contain 100 year flood events
6. Water Temperature (Issue 6)		
a. Linear feet of shaded stream channel	2500	0
7. Jurisdictional Wetlands (Issue 7)		
a. Acres of jurisdictional wetlands	5.00 - 7.21	8.45
b. Acres of jurisdictional wetlands with predominantly native plant community	5.00 - 7.21	0

3. Affected Environment

This chapter describes the environmental components (resources) of the project area that would be affected by the alternatives. In other words, this chapter describes the baseline conditions for those environmental components deemed to be affected by this project. The resources addressed in this chapter will be discussed in the same order as they are discussed in Chapter 1.6 (Issues Selected for Analysis) and Chapter 4 (Environmental Consequences).

3.1. Western Pond Turtle

The western pond turtle (*Clemmys marmorata*) is one of two native turtle species in Oregon. It is declining in abundance due to loss of nesting habitat, loss of hatchling habitat, and predation of hatchlings. Spread of non-native, invasive plants such as reed canarygrass and Armenian blackberry have reduced the quantity and quality of pond turtle habitat. Western pond turtle has been petitioned to be listed as threatened under the federal Endangered Species Act and is on the Sensitive Species List for the BLM and State of Oregon.

Western pond turtle needs the following habitat features to be successful: (a) permanent water bodies with slow moving water for foraging; (b) shallow, near-shore water with aquatic vegetation for hatchlings to hide from predators; (c) nearby, accessible, undisturbed upland sites with sparse vegetation and south-facing slopes for nests; (d) aquatic basking sites for temperature regulation; and (e) corridors such as streams, rivers, and riparian areas that allow movement between populations.

A remnant population of western pond turtles exists approximately 0.25 miles south of the proposed project area, in Meadowlark Prairie. It is likely, but not currently documented, that western pond turtles migrate along the A-1 channel in the Dragonfly Bend area. The current habitat conditions at Dragonfly Bend, however, are quite poor for most life stages of western pond turtle. The banks of the A-1 Channel are relatively steep and extensively vegetated with non-native plants (primarily Armenian blackberry and agricultural grass species), with small patches of native grasses, forbs and roses. The channel bed is choked with reed canarygrass, a non-native, highly invasive plant species. There are no basking sites, no suitable nesting sites, and no sites for hatchlings to hide from predators. These factors all limit the value of this portion of Amazon Creek for western pond turtle.

Discussions with the Oregon Department of Fish and Wildlife (ODFW) indicate its desire to improve habitat at Dragonfly Bend for the western pond turtle population. This project and site are believed to provide an important opportunity to improve the habitat conditions for all turtle life stages, and thereby to potentially improve conditions for the existing population in Meadowlark Prairie.

3.2. Fender's Blue Butterfly

Fender's blue butterfly (*Icaricia icarioides fenderi*) is listed as endangered under the federal Endangered Species Act. It is endemic to the Willamette Valley of Oregon, where it is restricted to native prairie habitats containing its larval food plants, primarily Kincaid's lupine (*Lupinus sulphureus* spp. *kincaidii*), but also spur lupine (*L. arbustus*) and occasionally sickle-keeled lupine

(*L. albicaulis*). Today there are 16 known surviving populations on native prairie remnants that total approximately 457 acres in size. Of these sites, 50% are less than 5 acres in size (Schultz et al. 2003). Recent research suggests that Fender's blue butterfly habitat patches more than 0.62 miles from other patches need to be 12 acres in size to support a new Fender's blue population. However, if a habitat patch is within 0.62 miles of another site, then a habitat patch as small as 2.5 acres can contribute to the persistence of the population.

Two key components of habitat quality influence the Fender's blue population size: larval food plants and adult nectar plants. Within the West Eugene Wetlands area, Kincaid's lupine is the exclusive larval food plant. Adult Fender's blue butterflies use a variety of flowers as nectar sources, but they exhibit strong preference for a limited number of native nectar plants, such as rose checkermallow (*Sidalcea virgata*), narrow-leaf wild onion (*Allium amplexans*), and cat's ear (*Calochortus tolmiei*) (Schultz et al. 2003). Threats to the butterfly include habitat destruction, invasions of trees and shrubs into prairie habitats, aggressive weeds, and extremely small populations.

The Fender's blue butterfly has several populations within the West Eugene Wetlands Area. The two largest populations are 3.0 miles to the south of Dragonfly Bend and 3.6 miles to the northwest of Dragonfly Bend. However, smaller populations exist on BLM-owned lands within 1.2 miles of Dragonfly Bend.

Two other restoration projects are proposed within 0.5 miles of Dragonfly Bend (one on private land, one on City of Eugene land) that would restore up to 12 acres of Fender's blue butterfly habitat within the next three years. A small population of Kincaid's lupine, the larval host plant, exists 0.5 miles to the west of Dragonfly Bend on several privately-owned parcels.

Neither Fender's blue butterflies nor Kincaid's lupine currently exist at Dragonfly Bend. However, discussions with the primary scientist who has studied Fender's blue butterfly indicate that Dragonfly Bend is an ideal area to restore to increase the probability of long-term persistence of Fender's blue butterfly in the area. It would provide a key stepping stone to improve connectivity between the existing populations to the west and south of Dragonfly Bend.

3.3. Native Plant Populations

The entire project site is currently dominated by non-native plants.

The upper terraces adjacent to the A-1 Channel are dominated by non-native annual ryegrass (*Lolium multiflorum*), tall fescue (*Festuca arundinacea*), and perennial ryegrass (*Lolium perenne*). Other species on the terraces include meadow foxtail (*Alopecurus pratensis*), Queen Anne's lace (*Daucus carota*), teasel (*Dipsacus fullonum*), and Canada thistle (*Cirsium arvense*). The native wet-tolerant grasses and herbs witnessed in these areas are cluster tarweed (*Madia glomerata*) and Watson's willow-herb (*Epilobium Watsonii*).

The slopes of the A-1 Channel contain a mixture of native and non-native grasses and herbs. The non-native plant tall fescue (*Festuca arundinacea*) dominates the upper and lower terraces of the slopes with other non-natives such as sweet vernal grass (*Anthoxanthum odoratum*), velvet grass (*Holcus lanatus*), meadow foxtail (*Alopecurus pratensis*), reed canarygrass (*Phalaris arundinacea*), hedgehog dogtail (*Cynosurus echinatus*), Canada thistle (*Cirsium arvense*), and teasel (*Dipsacus fullonum*). Large thickets of Armenian blackberry (*Rubus armeniacus*) and small-fruited clustered rose (*Rosa pisocarpa*) comprise the shrub layer. Wet-tolerant native grasses and herbs such as tufted hairgrass (*Deschampsia cespitosa*), meadow barley (*Hordeum brachyantherum*), cluster tarweed (*Madia glomerata*), slender rush (*Juncus*

tenuis), dense sedge (*Carex densa*), rose checkermallow (*Sidalcea virgata*), as well as native shrubs such as Nootka rose (*Rosa nutkana*) are rooted on the lower slopes of the channel bank. A few black hawthorne (*Crataegus douglasii*) and Oregon ash (*Fraxinus latifolia*) are found there as well. The creek channel itself is choked with reed canarygrass (*Phalaris arundinacea*).

No individuals or populations of listed rare, threatened, or endangered plant species (including Kincaid's lupine) are present at the project site. This was confirmed by completion of sequential vegetation surveys in 2003 for all rare plants historically present and typically surveyed for in the southern Willamette Valley (Coyote Creek Environmental Services 2003).

3.4. Soil Resources

The upper three units (four to five feet deep) of the soil profile on the Dragonfly Bend project site are similar to the upper three units of most profiles over the West Eugene Wetlands. These soils are classified as either Natroy silty clay loam (map unit 85) or Dayton silt loam (map unit 38) by the U.S. Natural Resources and Conservation Service maps. The three units of the soil profile are (from top to bottom):

- Unit 1: Silt with clay. 8 to 12" thick, with an average thickness of 11".
- Unit 2: Dark grey clay. 17 to 28" thick, with an average thickness of 25".
- Unit 3: Clay with silt. 12 to 23" thick, with an average thickness of 20".

The alluvial deposits (Units 4-7) under the three units described above vary across the site. In some portions of the site, including the northern area that is proposed for channel widening, only sandy gravel occurs under Unit 3. In other parts of the site, such as the southern area that is proposed for channel widening, there are several alternating layers of clay with silt, silty sand, and clay under Unit 3.

The existing levees of the A-1 Channel are trapezoidal fills, 50 feet wide at the base with nearly flat tops that are 20-25 feet wide. The levee berms lie above the three units described above, are up to four feet thick, and are comprised primarily of clayey sediments of Units 2 and 3, with some gravel on top of the clay in some locations.

The upper 12-15" of soil has adequate organic content to support vegetation. The upper three units of soil have heavy metal concentrations that are different from, and somewhat higher than, "typical" Willamette River sediments or residual soils formed on local sedimentary bedrock. However, these heavy metal concentrations appear to be characteristic of soils throughout Eugene that are influenced by Mazama Ash parent material (James 2003, James and Baitis 2003).

Several soil samples from within Amazon Creek and A-1 Channel bank were taken to evaluate the local sediment transport potential. These samples were graded for particulate size, and the channel itself was evaluated for visual scour. It appeared that most of the channel bottom was hard with a very low potential for erosion (Pacific Water Resources 2003).

3.5. Flood Storage Capacity

Flood storage capacity of the A-1 Channel is likely sufficient to contain a 100-year flood event. The City of Eugene and the U.S. Army Corps of Engineers are currently performing a region-wide floodplain analysis in this area to quantify the exact flood storage capacity of the Amazon Creek system, including the A-1 Channel. The A-1 Channel's capacity has increased since 1999 following construction of the large, concrete, weir south of Royal Avenue and the re-connection of the A-1 Channel with approximately 100 acres of floodplain from the "1135 Project" at Meadowlark Prairie (also south of Royal Avenue). Therefore, since 1999, less water enters the A-1 Channel at Dragonfly Bend at both low-water and high-water periods.

3.6. In-stream Water Temperature

Amazon Creek is listed as a "water-quality" limited stream for temperature by the Oregon Department of

Environmental Quality (DEQ). The DEQ's maximum temperature standard for Amazon Creek is 17.8o C. Seasonal analyses conducted by City of Eugene over several years upstream (Amazon Creek @ 29th Street) of Dragonfly Bend found that water temperature ranged from 4.2o - 21.7o C, with a mean of 12.9o C. Water temperature exceeded the 17.8o C criterion 19% of the time (Thieman 2000). Water temperature and percentage of time exceeding the criterion increases downstream from that sampling station. One contributing factor to high temperatures in Amazon Creek is the lack of stream shading, particularly downstream from Amazon Park in south Eugene. Over the past five years, City of Eugene has changed its management practices to encourage streamside trees, primarily willows, to develop a canopy over the stream. It would take many more years of this management regime for the streamside trees to become tall enough to produce a noticeable increase in stream shading, and thereby reduce water temperatures.

3.7. Jurisdictional Wetlands

Two wetland delineations were completed in 2003 and 2004. The first delineation was for the entire area within A-1 Channel banks, and including all portions of the channel banks. Of the approximately 6 acres studied in this investigation, approximately 1.70 acres were found to be jurisdictional wetland. The second delineation was conducted for the portion of the project area outside the A-1 Channel banks. This delineation found that the entire 6.75 acres outside the channel banks are jurisdictional wetland, and they are classified as "converted wetlands". Therefore, there are a total of 8.45 acres of jurisdictional wetland in the project area.

3.8. Unaffected Resources

The following resources would not be affected by the alternatives:

- Cultural resources would not be affected by the alternatives. This was determined by contacting the Oregon State Historic Preservation Office.
- Economic or social factors would not be affected by the alternatives.
- There are no listed threatened or endangered animal species that currently utilize the Dragonfly Bend project area. Existing databases for T&E species, including the Oregon Natural Heritage Information Center database and the Oregon Bald Eagle Nesting Database (Isaacs 2003), were checked, and no records were found for the project area. The only rare (but unlisted) animal species that utilizes the project area, western pond turtle, is specifically addressed in other sections of this EA. Fender's blue butterflies currently do not exist on site, although a goal of this project is to provide habitat so that in the future, they can exist on the site. Fender's blue butterfly is specifically addressed in other sections of this EA.

4. Environmental Consequences

This chapter is the scientific and analytic basis for the comparison of the alternatives. This chapter describes the probable consequences (i.e., effects) of each alternative on the selected environmental resources. The chapter is arranged by alternatives, with a discussion of issues (in the same order they were presented in Chapter 3) under each alternative.

4.1. Alternative 1 (Proposed Action)

4.1.1. Western Pond Turtle

Alternative 1 would improve habitat conditions for western pond turtle. Two areas along the A-1 Channel, plus a 6.75-acre upland patch next to the channel, would focus on creating habitat conditions that would benefit western pond turtle. This includes broadening the channel bed, creating islands and pockets of deeper water, adding large logs to the channel, laying back the slopes in areas, and creating 6.75 acres of upland immediately adjacent to the channel. The Proposed Action would also include the removal of invasive plant species (e.g., Armenian blackberry and reed canarygrass) along the banks and bed of the

channel. The Proposed Action would provide the following specific benefits for western pond turtle: (a) basking structures, (b) refuge from fast-flowing high-water events, (c) sanctuary from predators, (d) improved foraging,

(e) 6.75 acres of nesting habitat to the west of the channel bank, plus an additional 4.10 acres of potential nesting habitat on the upper portions of the channel bank, and (f) improved ability to move freely when traveling due to the gentler gradients and little vegetation obstruction.

Alternative 1 could cause short-term effects to the western pond turtle during the actual excavation and re – contouring phase. The effects of the proposed action could disrupt turtles traveling overland during nesting (June/July). However, given the lack of suitable foraging or nesting habitat currently present at the site, other short-term effects are not likely.

4.1.2. Fender's Blue Butterfly

Alternative 1 would improve three key elements of Fender's blue butterfly habitat: (a) quantity of larval host plant, (b) quantity of preferred nectar sources, and (c) connectivity. The Proposed Action would create a minimum of 6.75 acres of upland prairie habitat that would be planted with Kincaid's lupine and the butterfly's preferred nectar sources. An additional 4.10 acres of upland at the top of the channel bank could serve as habitat. This new upland prairie habitat would reduce the distance between existing populations of Kincaid's lupine from two miles to one-half mile. The potential outcome of this work is that connectivity among existing Fender's blue butterfly populations would increase, thereby increasing the long-term probability of persistence for this endangered species.

Finally, the Proposed Action would create shallower channel slopes next to the upland habitat. The channel slopes in this area would be planted with low, native, herbaceous vegetation. These conditions would allow easy butterfly movement between the upland habitat and the water in the channel. Easy access to water is a beneficial habitat element for most butterfly species.

4.1.3. Native Plant Populations

Alternative 1 would increase the size of native riparian, wetland, and upland plant communities and populations and reduce the threat from invasive, non-native plants. The Proposed Action would increase the acreage of riparian and wetland habitats with predominantly native plant communities from 0 acres to 7.21 acres. The acreage of upland prairie with predominantly native cover would increase from 0 acres to 10.85 acres. In addition, 3600 feet of creek bed and the associated channel banks would have the predominantly non-native, invasive plants removed.

Short-term effects from Alternative 1 would include the loss of populations of native plants that currently exist in a matrix of non-native, invasive plants. This would occur during the vegetation-removal, excavation, and re-contouring process at the start of the project. There are no rare plants on the project site, so there would be no negative impacts to rare species. At the end of the re-contouring process, the entire project site would be planted with a diverse suite of native, Willamette Valley plant materials.

4.1.4. Soil Resources

Alternative 1 would excavate and re-contour the A-1 Channel and channel banks to create in-stream and riparian complexity, plus a 6.75 acre upland area adjacent to the channel. The excavation and re-contouring would disturb up to 60,000 cubic yards of soil. All the topsoil would be retained on site and used as topsoil on the re-contoured surface. Eighty percent or more of the non-topsoil would be retained on site and used to create the 6.75 acre upland area on the west side of the channel. Up to twenty percent of the non-topsoil would be removed from the project site and used to increase the height of the flood control berms on the west side of the adjacent Dragonfly Bend site.

Alternative 1 would have almost no affect on channel bed erosion potential, since most of the channel bed is hard, weathered bedrock material (Pacific Water Resources 2003) and flow through the A-1 Channel at Dragonfly Bend is low due to the weir south of Royal Avenue and the effects of the Amazon Diversion Channel. Also, the channel would remain stable under this alternative.

An unavoidable, short-term effect of the excavation and re-contouring is a small degree of compaction that would occur with heavy machinery on site. Through the use of best management practices and mitigating measures, soil compaction is expected to be < 5% over the current condition. A second, unavoidable, short-term effect would be approximately 5% sedimentation over the baseline condition. Both the compaction and sedimentation would become negligible over time as new vegetation is established on site.

4.1.5. Flood Storage Capacity

This project is expected to increase the flood-storage capacity of the A-1 Channel over its current configuration. The excavating and re-contouring would result in a wider channel, and in some places, multiple channels, and backwater pools. The resulting channel would hold approximately 50,000 cubic yards of additional water relative to the current condition. In the case of a very large flow event, water may flow over the western bank of the A-1 channel onto the adjacent, 50-acre, Dragonfly Bend floodplain owned by City of Eugene.

4.1.6. In-stream Water Temperature

Alternative 1 would lead to an increase in stream shading over 2500 of the 3600 linear feet of stream channel. This would be accomplished by planting a variety of trees and shrubs, including willow, along the re-contoured channel. In addition, small stands of Ponderosa Pine would be planted on the upper slopes of the channel in a manner that maximizes shade on the water. These plantings would occur over most of the length of the channel, with the notable exception of the two areas that would be widened. These two areas would be planted with low herbaceous vegetation instead, to allow easy movement of western pond turtle and Fender's blue butterfly from the channel to the 6.75 acre upland prairie.

4.1.7. Jurisdictional Wetlands

Alternative 1 would decrease the total acreage of jurisdictional wetlands by 1.24 – 3.45 acres relative to current conditions. The acreage of jurisdictional wetlands inside the channel banks would increase by 3.30 – 5.51 acres relative to current conditions. However, there would be a decrease of 6.75 acres of jurisdictional wetlands, classified as “converted croplands”, in the area where the upland prairie habitat would be created for western pond turtle and Fender's blue butterfly habitat. Under Alternative 1, all the resulting acres (5.00 – 7.21) of jurisdictional wetland would be vegetated with primarily native vegetation. In contrast, none of the existing 8.45 acres of wetland are vegetated with primarily native vegetation.

4.2. Alternative 2 (No Action)

4.2.1. Western Pond Turtle

Conditions for western pond turtle would remain the same as current conditions. There would be no suitable nesting habitat, no suitable basking structures, poor foraging habitat, and little or no suitable habitat for hatchlings in the project area.

4.2.2. Fender's Blue Butterfly

Conditions for Fender's blue butterfly would remain the same as current conditions. There would be no habitat for any life-stage of the butterfly at the project site. Furthermore, this alternative would not improve connectivity among existing populations of Kincaid's lupine or Fender's blue butterfly. The distance between the nearest Kincaid's lupine patches in the area would be 2 miles.

4.2.3. Native Plant Populations

Conditions for native plant populations would remain the same as current conditions. The project area would remain dominated by non-native agricultural grasses and invasive, non-native plants such as reed canarygrass. There would be no native upland habitat created, and no wetland or riparian habitat with primarily native vegetation in the project area. There would be no establishment of a Kincaid's lupine population.

4.2.4. Soil Resources

Conditions for soil resources would remain the same as current conditions. All of the top soil and other soil

strata would remain in its current location and condition. There would be no soil compaction from project activities, and sedimentation would continue at its current rate.

4.2.5. Flood Storage Capacity

Flood storage capacity would remain the same as current conditions. The A-1 Channel would continue to have capacity for very large flood events (~ 100-year flood events). The stream would be contained within simple, linear channel.

4.2.6. In-stream Water Temperature

Conditions for in-stream water temperature would remain the same as current conditions. There would be almost no shading of the creek channel from riparian vegetation.

4.2.7. Jurisdictional Wetlands

The amount and quality of jurisdictional wetlands would remain the same as the current condition. There would be 8.45 acres of jurisdictional wetlands on the site, mostly vegetated with non-native vegetation, particularly agricultural grasses and invasive plants such as reed canarygrass.

4.3. Summary of Effects

1. Western Pond Turtle (Issue 1)		
a. Acres of upland nesting habitat	6.75 – 10.85	0
b. # of instream basking structures (large logs, rock weirs)	6 - 8	0
2. Fender's Blue Butterfly (Issue 2)		
a. Acres of habitat vegetated with suitable Fender's blue butterfly larval and nectar plants.	6.75 – 10.85	0
b. Connectivity (miles between existing populations of host plant).	~ 0.5	~ 2.0
3. Native Plant Populations (Issue 3)		
a. Acres of riparian/wetland habitat with predominantly native cover	7.21	0
b. Acres of upland prairie with predominantly native cover	10.85	0
c. Linear feet of non-native, invasive, weeds-removed from creek	3600	
4. Soil Resources (Issue 4)		
a. Amount of soil disturbed (cubic yards)	up to 60,000	0
b. Percent of topsoil retained on site	100	100
c. Percent of non-topsoil retained on site	80	100
d. Channel stability	short-term decrease over baseline, stable	baseline, very stable
e. Channel bed erosion potential	low	low
f. Soil compaction	< 5%	0
g. Sedimentation	5% over baseline for one year.	baseline
5. Flood Storage Capacity (Issue 5)		
a. Floodplain size (acres)	50	0
b. Channel capacity	increase of 50,000 cubic yards over baseline	baseline, likely able to contain 100 year flood events

6. Water Temperature (Issue 6)		
a. Linear feet of shaded stream channel	2500	0
7. Jurisdictional Wetlands (Issue 7)		
a. Acres of jurisdictional wetlands	5.00 - 7.21	8.45
b. Acres of jurisdictional wetlands with predominantly native plant community	5.00 - 7.21	0

5. List of Preparers

Name	Organization	Contributions	Degrees/Licenses/Certifications
Eric Wold	City of Eugene	Ecology, Planning and Environmental Coordination, Team Leader, Lead Writer	• B.S. Biology • M.S. Biology (Ecology and Evolutionary Biology) • Certified <i>Ecologist</i>
Sally Villegas	BLM – Eugene District	Wildlife Habitat, Lead Reviewer	• B.S. Natural Resources • B.S. Fisheries and Wildlife
Jean Jancaitis	The Nature Conservancy	Botanical Resources, Revegetation Plan, Monitoring	• B.S. Biology • M.S. Environmental Studies
Trevor Taylor	City of Eugene	Wildlife Habitat, Revegetation Plan	• B.S. Conservation of Resource Studies • M.S. Environmental Studies • M.S. Ecology and Evolution
Michael Shippey	Coyote Creek Environmental Services, Inc.	Wetlands Resources Botanical Resources	• B.A. Landscape Arch. • M.A. Landscape Arch.
Michael James	James Geoenvironmental Services	Soils analysis	• B.A. Geology • M.S. Independent Studies (Geology/Soils/Forest Ecology) • Oregon <i>Registered Professional Geologist</i>
Ken Elbert	Pacific Water Resources	Hydrology, Geomorphology, Floodplain Analysis	• B.S. Civil Engineering • M.S. Civil Engineering • Licensed <i>Professional Engineer</i>
Habib Matin	Pacific Water Resources	Hydrology, Geomorphology, Floodplain Analysis	• B.S. Irrigation and Drainage Engineering • M.S. Hydraulic Engineering • Ph. D. Water Resources Engineering • Licensed <i>Professional Engineer</i>
Philip Pommier	Pacific Water Resources	Hydrology, Geomorphology, Floodplain Analysis	• B.A. History • M.A. Architecture • Licensed <i>Professional Engineer</i>
Terry Colvin	City of Eugene	Engineering plans	

6. Consultation and Coordination

6.1. Specialists Contacted for Coordination, Input, or EA Review

Name	Title	Organization
Karin Baitis	Soil Scientist, Hydrologist	BLM – Eugene District
Steven Calish	Field Manager, Siuslaw Resource Area	BLM – Eugene District
Dharmika Henshel	Botanist	BLM – Eugene District
Cheryl Schultz, Ph. D.	Assistant Professor of Biology	Washington State University at Vancouver
Tom Kaye, Ph. D.	Plant Ecologist	Institute for Applied Ecology
Dal Ollek	Mitigation Bank Coordinator	City of Eugene
Bill Castillo	District Wildlife Biologist	Oregon Department of Fish and Wildlife – South Willamette District

6.2. Public Agencies Notified and Comments Requested

- Oregon Department of Fish and Wildlife
- Oregon State Historic Preservation Office
- Oregon Natural Heritage Information Center
- Oregon Division of State Lands
- U.S. Army Corps of Engineers

Appendix B: Mitigating Measures for Alternative 1 (Proposed Action)

The following mitigating measures would be incorporated into Alternative 1 (Proposed Action).

1. To prevent erosion, all terms and conditions of the City of Eugene Erosion Control Permit would be followed. This permit would contain requirements that meet the erosion control standards set forth by City of Eugene's erosion control ordinance, plus the requirements of the regulatory agencies such as Oregon Division of State Lands and the U.S. Army Corps of Engineers. Primary efforts to control erosion and sedimentation would include a de-watering plan, implementation of erosion fabric, mulch layering, and native plant establishment. Bioengineering techniques of proven success shall be incorporated into the project design to prevent post-construction erosion and sedimentation.
2. All terms and conditions of the U.S. Army Corps of Engineers and Oregon Division of State Lands Joint Fill-Removal Permit would be followed. All terms and conditions of the Oregon Division of State Lands Wetland Enhancement General Authorization Permit would be followed. Both of these permits would include an allowable in-water work period from July 1 – September 30.
3. To minimize soil compaction, all excavation work would occur during the mid-summer dry season. This timing is consistent with the seasonal restrictions referred to in #2, above. Also, use of low ground pressure equipment would be used where feasible to minimize compaction.
4. To maximize on-site soil conservation, the entire soil excavation and contouring process would be continuously evaluated to determine which soil to retain for use on the newly re-contoured slopes, as well as for the base and surface of the 6.75-acre upland area. An Oregon Licensed Professional Geologist would assist with this process. As materials deemed re-usable for the project are exposed, they would be selected for stockpiling on the project site. An example might be as follows: during excavation a soil type is exposed that is ideal for western pond turtle nesting habitat (e.g., sandy soils). This soil type can be transported to the location identified by the enhancement proposal as a turtle nesting site and graded to appropriate landform. Likewise, if we expose soil types with little or no value to the project scope, we can use these materials for the base of the upland area, or to increase the height of the earthen berm to the east of the drainage ditch along Greenhill Road. It is anticipated that there would be a small excess of material generated from this project that would be transported off site. It is the intent to retain the majority of soils excavated during this project on site for use in this project.
5. To prevent impacts from chemical leakage or spills, spill containment kits would be available in the event of a spill. Removal, transport, and disposal would be done in accordance with the U.S. Environmental Protection Agency and Oregon Department of Environmental Quality laws and regulations. Equipment used in waterway would operate with non-toxic lubricants.
6. To prevent erosion and meet project objectives, native plants would be seeded or planted following re-contouring. All seeds and plants would be from genetic stock native to the southern Willamette Valley.
7. To prevent the spread of invasive weeds and non-native plants, all heavy equipment would be cleaned to remove mud, debris, and vegetation material prior to arriving at the project site.
8. Prior to any excavation or re-contouring, surveys for western pond turtles and their nests would occur within and adjacent to the proposed project area. Any nest sites found would be protected during this project (either by fenced enclosures, or by removing eggs for hatching in captivity and release back to the site).
9. Dust control would be included in construction specification requirements, as per City of Eugene standards.

Appendix C: Monitoring under Alternative 1 (Proposed Action)

If Alternative 1 is implemented, a monitoring program would be implemented by the West Eugene Wetlands Partnership to provide information on several different aspects of the project. The major goals of monitoring program are listed below. All monitoring would follow scientifically established protocols currently in use by the West Eugene Wetlands Partnership, protocols used by other state and federal agencies, or protocols required by local, state, or federal regulatory agencies.

Western Pond Turtle

Goals:

- .(a) Detect the presence of western pond turtles in the A-1 Channel.
- .(b) Detect the presence of nesting western pond turtles on the upland prairie habitat.

Fender's Blue Butterfly

Goals:

- .(a) Document the size of the Kincaid's lupine population.
- .(b) Document the population size of the key butterfly nectar species.
- .(c) Detect the presence and abundance of adult butterflies.

Vegetation

Goals:

- .(a) Verify the establishment of the native plants that are seeded and planted on site.
- .(b) Document the species diversity for each habitat type (riparian, wet prairie, upland prairie).
- .(c) Document that stream shading is occurring in the areas where this was a desired outcome.
- .(d) Detect the initial establishment of any undesired, non-native vegetation (particularly reed canarygrass), so that effective control measures can be implemented while the problem is small and manageable.
- .(e) Provide the qualitative and quantitative data needed to meet the performance standards established in the Wetland Enhancement General Authorization Permit to be issued by the U.S. Army Corps of Engineers.

Soil Resources

Goals:

- (a) Ensure that the conditions of the soil erosion permit are being met.

Channel Complexity and Flow of Water

Goals:

- .(a) Map the formation of side channels, islands, and deep water pools.
- .(b) Document the seasonal fluctuations in water volume flowing through the A-1 Channel.

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**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
EUGENE DISTRICT OFFICE**

Preliminary Finding of No Significant Impact for the Dragonfly Bend Habitat Enhancement Project
Environmental Assessment No. 20857 OREGON

Determination:

On the basis of the information contained in the Environmental Assessment, and all other information available to me, it is my determination that implementation of the proposed action or alternative will not have significant environmental impacts beyond those already addressed in the *Eugene District Record of Decision and Resource Management Plan* (June 1995) with which this EA is in conformance, and does not, in and of itself, constitute a major federal action having a significant effect on the human environment. Therefore, an environmental impact statement or a supplement to the existing environmental impact statement is not necessary and will not be prepared.

Steven Calish Date
Field Manager, Siuslaw Resource Area