SECTION 3

Summary of Mitigation and Conservation Measures

This section summarizes proposed mitigation and conservation measures for each subject area analyzed in the EA.

Geology

Site-specific geotechnical investigations will be performed before final design. These investigations will detect problem areas. Designs will be developed to mitigate adverse long-term effects on the geologic environment. Analyses of seismic response and liquefaction potential will be part of the design process.

Short-term (construction) slope stability measures will be included in the design. A construction sequence and schedule will be developed to minimize slope stability impacts.

The project will include a comprehensive erosion and sediment control plan.

Water Resources

Construction

Erosion and Sediment Control Plan

This project is covered by the National Pollutant Discharge Elimination System (NPDES) 1200-CA permit for the discharge of stormwater from construction sites, held by ODOT Region 1 for all of its projects. Permit conditions include the development and implementation of an erosion and sediment control plan, and periodic inspections to ensure that the erosion and sediment controls are in place and functioning properly. The goal of the erosion and sediment control is to ensure that water quality standards for turbidity are not exceeded in the receiving waters: no more than a 10 percent increase above background conditions. Temporary exceedances may be authorized, usually for no more than 2 hours in 24, for specifically permitted activities such as in-water work, where all reasonable controls have been implemented.

Multiple techniques are available for limiting erosion and controlling sediment. Typical techniques include diverting water away from the tops of cut slopes, placing sediment fences at the base of cut slopes, using settling ponds to trap sediments before discharge, installing temporary ground cover when there is a temporary break in construction activity, and building silt barriers or cofferdams for in-water work.

Pollution Control Plan

ODOT will develop and implement a pollution control plan for the construction phase to prevent accidental spills of construction chemicals and materials from entering surface water and groundwater. Fuel and chemical storage areas must be at least 150 feet from open water, and there must be an impermeable layer to prevent spills from seeping into the ground. Refueling must also be done at sites 150 feet away from open water and with an impermeable layer. The only exceptions are for equipment that cannot be easily moved. In that case, refueling must occur no later than 1:00 p.m. All equipment used for in-water or over-water work must be checked for fuel, oil, and lubricant leaks, and equipment actually performing in-water work must be cleaned beforehand to remove grease and dirt. The pollution prevention plan will include a spill response plan. Adequate containment and cleanup supplies must be kept onsite, and staff trained in their use.

Operation

For water quality mitigation, ODOT will follow National Marine Fisheries Service (NMFS) or City of Portland stormwater mitigation requirements that produce the most stormwater treatment for each segment. ODOT will construct Proposed Changes to the I-5 Freeway common to all Build alternatives following NMFS guidelines for stormwater mitigation (140 percent of the new impervious surface area). The proposed changes to the Columbia Boulevard Interchange Area will follow City of Portland requirements for stormwater mitigation (stormwater treatment for all new and reconstructed pavement).

ODOT will design water quality facilities to capture 70 percent of the pollutant load, which would treat stormwater to the equivalent of 140 percent of the new impervious surface area. The design storm is "6-month, 24-hour storm," roughly equivalent to two-thirds of the 2-year 24-hour storm, or 1.66 inches of rain. This captures about 99.5 percent of storms in a year and provides treatment for 99.3 percent of the total annual runoff, and no net increase in pollutant load.

ODOT will construct engineered water quality swales (bioswales) wherever site conditions allow. Where bioswales are not practical, other options ODOT may use include dry or wet detention ponds, depending on seasonal high groundwater conditions.

If a segment of the project cannot receive full treatment because of site conditions, treatment will be provided for an equivalent amount of stormwater from another segment of project highway. The system as designed will maintain or decrease the pollutant load entering the Columbia Slough system, compared to existing conditions.

Biological Resources

Wetlands

ODOT has included and will include the following sequentially performed actions in developing this project:

- Avoid the impact altogether through design modification or by not taking a certain action or parts of an action.

- Minimize impacts through design modification or by limiting the degree or magnitude of the action and its implementation.
- Rectify the temporary impact by repairing, rehabilitating, or restoring the affected environment.
- Compensate for the permanent impact by restoring, creating, or enhancing wetlands.

ODOT will reapply these actions during final design and the development of an engineered, site-specific wetland mitigation plan.

Conceptual Wetlands Mitigation Plan

This section provides conceptual mitigation for unavoidable impacts to wetlands and riparian areas. Table 3-1 summarizes impacts by phase. Actions described in the plan will comply with federal, state, and local regulatory requirements.

TABLE 3-1
Phases I and II Total Riparian and Wetland Impacts and Mitigation

Phase I				
Impacts	**Riparian (acres)**	**Wetland / Waters of the State/U.S. (acres)**	**Mitigation**	
			Riparian[1]	**Wetland / Waters (acres)[2]**
Temporary	1.34	2.54	1.34	Restoration = 3.4
Permanent	0.38	3.63	0.38	Enhancement = 10.5
Phase I Total =	1.72	6.17	1.72	13.9
Phase II				
Temporary	0.04	0.23	0.21	Restoration = 1.6
Permanent	0.00	0.03	0.01	Enhancement = 1.5
Phase II Total =	0.04	0.26	0.22	3.1
Phases I and II Total =	1.76	6.43	1.94 1	17.0

Notes:
[1] Mitigation for impacts to mature trees will conform to requirements provided by the City of Portland Development Services. No "acreage" requirements are prescribed for riparian mitigation.
[2] Wetland mitigation ratios are based on Oregon Division of State Lands criteria (1:1 restoration and 3:1 enhancement).

The conceptual plans are based on preliminary analysis and coordination with regulatory agencies. This plan includes a list of potential mitigation options from which a final mitigation plan can be developed during project permitting.

Field investigation of mitigation sites for this project was limited to areas close to the footprint of the project and included specific sites recommended in the *Columbia Slough Watershed Action Plan* (CSWC, 2003) and *Portland Watershed Management Plan* (City of Portland BES, 2005). Characterization of wetland and riparian areas for each of the proposed

mitigation sites was based on a wetland determination rather than wetland delineation. This level of investigation does not allow accurate estimations of the percent of a given site that is wetland and the percent that is riparian. Therefore, Table 3-1 shows the aggregate of wetland and riparian acreage needed to mitigate for both wetland and riparian impacts. Similarly, the first column of Table 3-1 shows the permanent impacts as an aggregate of wetland and riparian impacts.

Based on the acreage of permanent wetland and riparian impacts, and the total wetland and riparian mitigation acreage available, the Revised Alternative 2 impact of 3.66 acres of wetland and 0.38 acre of riparian area would be effectively mitigated at a 1.5 to 1 replacement ratio within the combined wetland and riparian acreage available at the three mitigation sites. However, wetland delineations will need to be performed, and an accurate assessment made of the percentage of these sites that are riparian rather than wetland. Once this field work is completed, an accurate assessment can be made of the ability of these sites to meet both wetland replacement ratios and riparian replacement requirements.

Temporarily disturbed resources will be mitigated by restoration in place. Permanent impacts will be mitigated by restoration or enhancement of existing resources in the project area.

Compensation for unavoidable impacts will be consistent with U.S. Army Corps of Engineers (COE) and Oregon Department of State Lands (DSL) rules for wetland mitigation. Mitigation involving wetland enhancement will be constructed at a 3 to 1 ratio. Mitigation involving wetland restoration will be constructed at a 1 to 1 ratio. Mitigation involving wetland creation will be constructed at a 1.5 to 1 ratio.

Mitigation for impacts on riparian areas will conform to requirements of the City of Portland Development Code. These rules define the number and types of planted trees and shrubs required to mitigate impacts to these areas according to prescribed ratios.

Site Selection

A number of potential mitigation sites were evaluated during preparation of this document. The evaluation attempted to locate sites that met the following criteria:

- Located in the immediate vicinity of the project
- Possesses sufficient potential to replace lost functions and values
- Large enough to meet required acreage requirements
- Mitigation use is consistent with local planning goals
- Available with minimal constraints

Overall Mitigation Goals

Overall mitigation goals are as follows:

- Incur no net loss of wetland or riparian area
- Fully replace lost wetland functions and values
- Provide habitat for wildlife
- Support *Columbia Slough Watershed Action Plan* and *Portland Watershed Management Plan* goals

Conceptual Mitigation Sites

Sites considered for conceptual mitigation are described below, summarized in Table 3-2, and identified in Figure 3-1.

TABLE 3-2
Mitigation Site Summary

Conceptual Mitigation Sites	Existing Conditions	Enhancement/Restoration Opportunities	Issues and Concerns
A) G.I. Joe Drainageway (includes 1.66 acres wetland restoration and 2.25 acres riparian enhancement, for a total of 3.91 acres of mitigation)	Narrow swale with steep banks; invasive plant species; culvert connection with another swale	Remove culvert, terrace banks, meander swale, and plant with native species	Property is in private ownership
B) Schmeer Slough (includes 2.5 acres wetland restoration and 2.5 acres of Waters of the State/U.S. habitat for a combined total of 5.0 acres of mitigation)	Disturbed soils; invasive plant species; receives runoff from I-5	Meander swale and plant with native species	Receives stormwater from Hayden Meadows and Delta Park—sediment quality issues
C) Columbia Slough Enhancement (includes 0.5 acre of Waters of the State/U.S. habitat enhancement and 3.65 acres of riparian habitat restoration for a total of 4.15 acres of mitigation)	Steep bank; invasive plant species	Remove non-native plant species and plant with native wetland and upland species	Some property is in private ownership; new plantings located in several areas
D) Kenton Cove (includes 2.85 acres of Waters of the State/U.S. habitat enhancement and 1.0 acre of riparian habitat for a combined total of 3.85 acres of mitigation at this location.)	Backwater area; identified Water Resources Development Act project; 2.0 acres of existing off-channel habitat area revegetated from 1998 to 2003.	Additional opportunities to plant native vegetation. May dredge a central channel and add large wood.	Will be owned by ODOT as part of right-of-way purchase.

Mitigation for impacts on riparian areas will conform to rules of the City of Portland Development Code. These rules define the number and types of planted trees and shrubs required to mitigate impacts to these areas in the Environmental Zone according to prescribed ratios. Replacement criteria are summarized in the table below.

Table 6-1A. City of Portland Tree Replacement Criteria

Size of Tree to be Removed (inches in diameter)	Option A (Number of trees to be planted)	Option B (Combination of trees and shrubs)
6 to 12	2	Not applicable
13 to 18	3	1 tree 3 shrubs
19 to 24	5	3 trees and 6 shrubs
25 to 30	7	5 trees and 9 shrubs
Over 30	10	7 trees and 12 shrubs

Note: Replacement trees must be at least 1-inch in diameter; shrubs must be in a 2-gallon container or equivalent in ball and burlap; conifers must be replaced with conifers; and shrubs must consist of at least two different species; all plants must be selected from the Portland Plant List.

For areas outside of the Environmental Zone, ODOT will consult with the Urban Forester and comply with Chapter 20.42 Tree Cutting—permitting, removal, and mitigation requirements. Tree replacement is determined according to the diameter at breast height (dbh) of the tree removed. The total dbh of the replanted trees will equal the dbh of the tree to be removed. Tree means any woody plant having at least a 12-inch dbh or any tree planted as a mitigation requirement of PCC 20.42.100.

G.I. Joe Drainageway. The "G.I. Joe Drainageway" was assessed in April 2003 and is a *Palustrine emergent* wetland. The G.I. Joe Drainageway consists of a narrow waterway on the north side of Portland Meadows racetrack and the old Portland Speedway track. A smaller ditch located on the east side of Portland Meadows is connected to the waterway by a culvert. Removal of the culvert will improve hydraulic connectivity and water quality by reducing residence time in this area. The drainageway is dominated by non-native, invasive species including reed canary grass and Himalayan blackberry. The slopes are steep and lack structure and plant diversity. The drainageway is relatively straight and shallow and water flow is sluggish. Goals for this site include restoring hydraulic connectivity between two historical drainageway segments by removing an existing culvert and replacing the culvert with a small swale. Potential exists for approximately 1.66 acres of wetland restoration and 2.25 acres of riparian enhancement for a total of 3.91 acres of mitigation at this location.

Schmeer Slough Wetland Enhancement. Goals for the Schmeer Slough site include constructing emergent wetland benches by dredging the channel and placing material along opposite sides of the waterway. The channel will be dredged in such a way as to create a meander. The purpose will be to improve water quality, create and restore wetlands, and restore *Palustrine emergent* and *Palustrine scrub-shrub* wetland habitat along this remnant of the Columbia Slough. Potential exists for restoring approximately 2.5 acres of wetland and enhancing approximately 2.5 acres of Waters of the State/U.S. habitat, for a combined total of 5.0 acres of wetland mitigation at this location.

Columbia Slough Enhancement. Goals for restoring and enhancing the Columbia Slough area include removing non-native and invasive species along the shoreline and revegetating these areas with a diverse mix of native wetland and upland species; constructing *Palustrine emergent* and *Palustrine scrub-shrub* wetland benches on the south bank of the channel, and anchoring Large Woody Debris (LWD) along the south bank (outside of the hydraulic channel); and creating bat roosting habitat underneath new bridge crossings of the Columbia Slough for partial compensation for riparian impacts. Mitigation for the loss of functional riparian vegetation will be accomplished by removing non-native blackberry and other noxious weeds along the banks and planting trees that will provide future LWD and other riparian functions. Potential exists for enhancing approximately 0.5 acre of Waters of the State/U.S. and restoring approximately 3.65 acres of riparian habitat, for a total of 4.15 acres of mitigation at this location.

Kenton Cove. Kenton Cove is a small backwater area west of the existing Denver Avenue Bridge crossing of the Columbia Slough. Kenton Cove was identified by the City of Portland as a project to include in the Water Resources Development Act (WRDA) Willamette Restoration Projects. The objectives and anticipated benefits of the proposed enhancement action include providing in-stream complexity through dredging a central area in the cove and placing anchored rootwads. The City of Portland and volunteers revegetated approximately 2.0 acres of the existing off-channel habitat area from 1998 to 2003. Additional opportunities to plant native vegetation may occur. By dredging a central channel and adding large wood, this action would increase value of the off-channel habitat for salmonids, native fish, amphibians, birds, and other wildlife. The enhancement will be used to address permanent impacts of the project to the Columbia Slough and compensatory mitigation for permanent wetland impacts. Potential exists for enhancing approximately 2.85 acres of Waters of the State/U.S. habitat and 1.0 acres of riparian habitat for a total of 3.85 acres of mitigation at this location.

Mitigation Site Summary

A total of approximately 17 acres in the form of wetland restoration and enhancement will be provided at Schmeer Slough, G.I. Joe Drainageway, Columbia Slough, and Kenton Cove. The majority of impacts are to *Palustrine emergent* and *Palustrine scrub-shrub* wetlands, with less than 0.17 acre of impacts to riverine habitat (Waters of the State/U.S). A total of 1.72 acres of riparian restoration for Phase I and 0.22 acre for Phase II will mitigate for impacts to riparian areas above ordinary high water along the slough.

Because only one of the five wetlands of Waters of the State/U.S. was delineated (Schmeer Slough) before the preparation of the EA and biological assessment (BA), assumptions were made about temporary and permanent impacts to accommodate the resource impacts. During final design, additional project-related wetland and water resources will be delineated to obtain verifiable temporary and permanent impact acreages.

Monitoring

The compensatory mitigation plan will include an annual monitoring plan for a period of 5 years to document the development of wetland conditions and achievement of performance standards. The monitoring plan will include methods to track hydrologic development and plant survival, composition, and density over time. Photographic

monitoring will be conducted to provide a visual record of the mitigation effort. Established photograph points will document plant community development and coverage. Annual reports detailing monitoring results will be submitted to DSL, COE, NMFS, and the City of Portland by December of each year of the required monitoring period. The monitoring report will identify any gains and deficiencies in the progress of the mitigation sites.

Contingency Measures

The compensatory mitigation plan will include contingency measures that address potential corrective actions if performance goals are not being met. Contingency measures may include corrective grading to improve hydrologic conditions or replacement plantings to address low plant survival. Modifications to the planting plan may also be considered if monitoring determines that the hydrologic regime does not adequately support plantings called for in plans and specifications.

Vegetation

Construction

Invasive Species. ODOT will prepare and implement roadway landscaping plans and erosion control measures consistent with federal Executive Order 13112 (*Invasive Species*) to avoid the introduction or spread of invasive species, including noxious weeds and undesirable non-native plants.

Riparian. ODOT will replant impacted riparian vegetation. If trees have been removed, it may be necessary to provide for the replanting of more area than was impacted to take into account the time lag in establishment of shading and other riparian benefits.

Fish

Plantings provide shade, lower water temperatures, and help to improve water quality. ODOT will provide new plantings along the south bank of the Columbia Slough. These will include native trees, shrubs, and herbaceous vegetation selected from the *Portland Plant List* (City of Portland, Bureau of Planning, 1998). Compensation for the removal of mature trees in designated Environmental Zone areas will follow guidance of the City of Portland's Title 33.430.140 Zoning Code (City of Portland, Bureau of Planning, 1991), which defines the number and size of trees (Option A) or combination of trees and shrubs (Option B) that are needed to replace each cut tree.

Conservation Measures

Conservation measures avoid environmental impacts to listed species or critical habitat. Conservation measures for this project will follow practices outlined in ODOT's *Oregon Standard Specifications for Construction* (2002). Standard Specifications will be amended in the Special Provisions for the project to include additional conservation measures.

ODOT has agreed on additional conservation measures, as conditions of the resulting federal Letter of Concurrence or Biological Opinion, dated November 15, 2006. These measures will be incorporated into the contract document and will be treated as noncontractual obligations for ODOT.

General Design Restrictions. ODOT will adhere to the general design restrictions:

1. Do not increase the existing restriction of the waterway at bridge(s).
2. Minimize the use of riprap. All riprap used shall be countersunk below finished grades. Use bioengineering techniques to the extent feasible to provide stabilization. If stabilization is necessary above the ordinary high-water mark, it is expected that bioengineering techniques will be the primary means of achieving such stabilization on the south bank. Route stormwater off of new bridge(s) for treatment before it enters the Permitted Work Area or other Waters of the State. Provide adequate stormwater treatment and analysis showing that the project will not result in a change in the hydraulic conditions or an increase of pollutants to the river system.
3. Do not allow use of timber or other wood materials as permanent members for the replacement bridge(s).
4. Restore areas temporarily disturbed by construction activities to preproject conditions, except that non-native vegetation shall be removed and native vegetation shall be planted in disturbed areas.
5. Ensure that hydraulic design and construction emphasize Federal Emergency Management Agency (FEMA) and environmental requirements.
6. Ensure that stormwater containment and drainage system design and construction emphasize minimal long-term maintenance.
7. Develop and implement erosion and sediment control plans.

General Contract (Construction) Requirements. ODOT will adhere to the following Special Provision Specifications for bridge construction:

1. Clearly flag the ordinary high-water elevation onsite and on design plan sheets, under and adjacent to the bridges.
2. Install and remove appropriate Wetted Channel work area isolation measures only during the in-water work period.
3. The Oregon Department of Fish and Wildlife (ODFW) has established an in-water work period for in-water work activities. ODOT will identify these temporal constraints as bridge construction and sequencing schedules are developed.
4. Allow no work in the water or below the ordinary high-water elevation outside of the ODFW in-water work period, unless it is effectively isolated from the potential Wetted Channel.
5. Assume potential year-round fish presence at the project site. Develop design measures to reduce or eliminate effects on fish and habitat (i.e., introduction of sediment into the river). These shall include the use of cofferdams or other appropriate Wetted Channel work area isolation measures. "Appropriate Wetted Channel work area isolation measures" means isolation capable of performing the following functions:
    a. The Enclosure shall prevent fish, including juveniles, from entering the isolated work area.

b. The Enclosure shall be tall enough and sturdy enough to prevent water from the Wetted Channel from overtopping or collapsing the Enclosure during the entire period of Enclosure installation (winter high flow events).

c. The Enclosure shall contain and prevent suspended sediment, petroleum products, and other pollutants from entering the Wetted Channel and Permitted Work Area.

d. Water pumped from the Enclosure shall be treated to prevent pollutants from entering the Wetted Channel and Permitted Work Area. Filtration through upland vegetation may provide adequate treatment for water contaminated with suspended sediment.

e. The Contractor shall provide a Wetted Channel isolation plan detailing the methods and materials proposed to achieve the above requirements.

6. The potential presence of nesting birds may require that pile driving and other high-noise activities be limited to certain seasons or times of day.

7. Prohibit blasting in most cases.

8. Allow no construction of access roads into the Permitted Work Area outside of the in-water work period. Allow no access roads or equipment entry into the Wetted Channel, including side channels of the river and isolated pools.

Mitigation for Temporary Construction Impacts

To ensure that no accidental or indirect impacts occur to wetlands outside the proposed disturbance areas, ODOT will clearly mark wetland boundaries and use sediment fencing or other erosion control methods to protect the wetland.

Mitigation for temporary impacts will include restoring areas disturbed during construction, developing sediment and erosion control and spill containment measures, and restricting activities in the Columbia Slough to recommended in-water construction periods.

Wildlife

The new bridges over the Columbia Slough will be designed to support colonization of bats and swallows. The retaining wall on the south side of the slough will be located to allow for wildlife passage between the slough and the wall.

Land Use

ODOT will achieve access management standards by entering into an intergovernmental agreement (IGA) with the City of Portland for managing access on Whitaker Road and Columbia Boulevard. The IGA may include providing for a raised median on Whitaker Road from the Victory Boulevard ramps to Hayden Meadows Drive, limiting access on Whitaker Road to right-in, right-out turns only, and building new local connections as the Hayden Meadows area redevelops. The IGA also may include provisions for consolidating accesses as redevelopment occurs (i.e., requiring cross-over access easements be recorded to adjacent properties) and developing land use tools consistent with the City of Portland *Comprehensive Plan* (2004) and *Zoning Code* (1991).

ODOT will work with affected property owners to discuss business operational needs and evaluate parcel layouts to see how to best accommodate business operations. If the preferred alternative creates parcels of land that may not meet City of Portland development standards per the city's zoning ordinance, the city has an adjustment review process by which zoning code regulations may be modified if the proposed development continues to meet the intended purpose of those regulations. ODOT would participate with the City of Portland in such a process to assist affected property owners.

ODOT has prepared and submitted to the City of Portland a draft of the Type II Environmental Review because portions of the project footprint lie within a City of Portland Environmental Zone. ODOT will prepare an application for this review after final design of the preferred alternative subsequent to the completion of this REA. The criteria for the environmental review (Title 33, Planning and Zoning, 33.430.250 Approval Criteria) are presented in Appendix G of the EA.

ODOT will submit to PDOT a screening of structures permit application to meet Office requirements. ODOT will prepare this permit application after selection of a preferred alternative during final design and prior to construction.

ODOT will submit final plans for a City of Portland design review of structure and soundwalls before construction.

Social

Residential Displacement

Conversion of existing private property to transportation use will require compensation and relocation assistance to affected property owners in accordance with the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act. Occupants displaced by a highway project would be eligible for relocation benefits and assistance under the provisions of the ODOT Relocation Assistance Program. Additional information about property acquisition and relocation assistance can be found in the ODOT pamphlets *Acquiring Land for Highways and Public Projects* (2004) and *Moving Because of the Highway or Public Projects* (2004), contained in Appendix D of the EA.

Recreational Displacement

- **Columbia Slough Water Trail—**During construction of bridges, the Columbia Slough Trail may be closed to small craft for periods of time. ODOT will inform the Columbia Slough Watershed Council of its project schedule so that the organization can schedule planned activities to avoid or minimize conflicts.

Construction Impacts

- ODOT and the construction contractor will host a preconstruction community meeting to inform residents of the construction timeline, relevant staging plans, ramp and road closures, and detour plans.
- The contractor will install temporary signage to inform drivers of potential traffic delays because of construction and heavy equipment entering or leaving the highway.

- ODOT will communicate construction plans with the Columbian Cemetery Association, to enable the group to develop a recommended reroute plan for any funeral processions that could occur during the construction phase.
- ODOT will work with the Columbian Cemetery Association to develop a plan to suspend the use of high-level noise generating equipment, such as pile drivers, adjacent to the Columbian Cemetery during burial services in the cemetery.
- ODOT will maintain space along Denver Avenue, where feasible, for bicycles and pedestrians during construction, and prepare a detour plan for cyclists and pedestrians for those periods when Denver Avenue will be closed because of bridge structure improvements. ODOT will prepare a Construction Management Plan including (but not limited to) a Circulation Management Plan, public information, and an outreach plan to community residents.
- ODOT will coordinate with TriMet on construction activities along Denver Avenue to ensure that impacts to the elevated light rail transit structure east of Denver Avenue are avoided.
- Alternative 2 requires construction activity in the vicinity of Argyle Way and Denver Avenue, near Kenton Park. ODOT will prepare a Construction Management Plan that minimizes noise, dust, traffic delays, and vehicle/pedestrian conflicts with residents and visitors to the park.
- ODOT will coordinate with the Columbia Slough Watershed Council to minimize conflicts with scheduled water activities, such as the annual regatta, the Corps of Rediscovery, guided tours, and Eyes on the Slough activities.

Economic

Displaced businesses will be offered just compensation for the land and improvements as may be eligible for assistance with costs related to searching for a new site, moving, and reestablishing the business at a replacement site. Additional information about property acquisition and relocation assistance can be found in the ODOT pamphlets *Acquiring Land for Highways and Public Projects* (2004) and *Moving Because of the Highway or Public Projects* (2004) contained in Appendix D of the EA.

To the extent that construction occurs in front of business access points, construction will be planned to keep these access points open as much as possible and will provide signage to identify the location of these access points and the businesses served.

ODOT will take the following measures to promote workforce diversity and the use of small and minority businesses:

- Use the workforce diversity goals established in the ODOT Workforce Development Plan. This plan calls for goals of 14 percent participation by women and 20 percent participation by minorities.

- Create a state-of-the-art process, modeled to the greatest extent possible, after the TriMet Interstate MAX process that responds to community interest construction jobs and small and minority business opportunities on the project.
- Require the contractor to identify an experienced Disadvantaged Business Enterprise or Workforce Coordinator to assist them with recruitment and workforce issues.
- Establish a plan to keep the community regularly updated on the project progress.
- Closely monitor workforce participation percentages on the project.

Cultural Resources

Archaeology

To prevent construction impacts to currently undetected cultural deposits, ODOT will monitor the deep subsurface geological tests in the footprint of the preferred alternative before construction begins. Because the depth of fill may be too deep for conventional hand-excavated shovel probes or augers to detect, mechanical truck-mounted drilling will be conducted. Archaeologists will monitor the deep subsurface drilling sites and report on the results of the drilling.

In the unlikely event of human remains discovery during project construction, the proper protocol for such discovery will be implemented. Work in the area of the discovery will immediately stop and the area will be secured. The Multnomah County Sheriff's Office and Medical Examiner, the State Historic Preservation Office (SHPO), the Commission on Indian Services, the ODOT project manager, and the ODOT archaeologist will be contacted. If the discovery is determined not to be Euro-American, the tribal representatives of the Confederated Tribes of the Siletz Indians, the Confederated Tribes of Warm Springs, and the Confederated Tribes of the Grand Ronde Indians will be notified, along with the Oregon State Museum of Anthropology. The Tribes, SHPO, and ODOT will confer on an appropriate course of action if the remains are determined to be Native American.

Historic Resources—Columbian Cemetery

Fencing. The existing chain-link fencing along the front of the cemetery contains two brick pillars (at the entrance) and a modern metal pipe gate identifying the name and date of the cemetery. This fencing will be replaced with an iron-style fence designed to replicate the appearance of the historic fence. Fragments of the historic fence are available to use as a template. However, for security reasons, the new fence may be taller than the historic fence, which was approximately 3 feet high. A driveway gate that is in keeping with the historic fence design and incorporates the name and date of the cemetery will be installed at the entrance.

On the west side of the cemetery, there is chain-link fencing along the ODOT right-of-way line. Chain-link fencing also is located on the north and east sides, where the cemetery property does not abut concrete walls. The chain-link fencing on these three elevations will be replaced with a sturdier fence, simple in design and tall enough to be effective for security purposes. The new fencing on the north or east elevations could incorporate a gate

to allow heavy equipment access for burials if adjacent property owners grant permission to the cemetery to do so. No gate will be installed on the west-side fencing. ODOT will maintain any fencing along the ODOT right-of-way.

Lighting. Security lighting will be installed at selected points along the perimeter of the cemetery on ODOT's right-of-way. The power for lighting placed on ODOT's right-of-way will be the responsibility of ODOT.

Headstones. At the cemetery prior to pile driving, ODOT will identify the area of potential impact (API) subject to vibratory effects. ODOT will survey the physical condition of the cemetery headstones within the area of potential impact. This will include identification of materials at standing monuments (for example, concrete, basalt, marble). ODOT will provide a photo record of any monuments in the API that are deemed potentially threatened by vibratory effects. If ODOT determines that any monument has been inadvertently damaged by vibration, ODOT will offer to repair the marker by the appropriate means as fit the need and expectation. ODOT will not be responsible for markers damaged by vandalism.

Access and Use. During construction, ODOT will implement a system to facilitate communication between the cemetery and the contractor to ensure that the contractor receives timely notification of burials. The contractor will cease pile driving and other high-impact noise activities during burial services and for a specified time before and after such services. ODOT will ensure that access is available to the cemetery as much as possible. Any temporary access closures will require prior notification to the cemetery owners to ensure that those closures do not conflict with scheduled burials or other scheduled activities.

Landscaping. To accommodate selected project improvements, some trees and vegetation will be removed from the ODOT right-of-way. A landscaping and revegetation plan will be implemented to replace these trees. The new fill area west of the cemetery will be landscaped with grass and trees. All landscaping in the ODOT right-of-way will be maintained by ODOT.

Tree Protection Plan. ODOT will begin an assessment of the health of trees in the Columbian Cemetery. From this assessment, a tree protection plan will be developed and implemented to ensure, to the greatest extent practicable, that the health of trees in the cemetery is protected. The plan will include measures to protect the critical root zone for cemetery trees. For trees on ODOT's right-of-way, a tree removal plan will likewise be developed to ensure that tree roots extending into the cemetery do not disturb graves. A certified arborist will work with ODOT to develop the above plans and would be on-site during construction activities within any designated tree protection zone.

Visual Resources

The following mitigation measures will be used, as appropriate:

- During final design, ODOT will consider reducing form, texture, or color contrasts in cut or fill slopes with the following actions:

  - Stockpile topsoil from the cut or fills for reapplication on modified slopes to reduce color contrast and encourage revegetation.
  - When rock is required to anchor slope surfaces from erosion, use local rock of natural colors that blend with the primary visual surfaces of the slope (such as grasses, soil, or coniferous trees native to the area).
  - Warp the slopes to vary their pitch.
  - Round slopes, create serrations, or provide planting pockets to help revegetation and produce variegated slopes.
  - Revegetate slopes with appropriate (native whenever practical) grasses, shrubs, or trees to soften visual discontinuities, taking into consideration the soil type and depth, suitability for prevailing weather conditions, degree of slope, and safety concerns.
  - Texture slopes or cuts by regularly serrating them with adequate soils (which also enhances revegetation) and random-appearing scarification that introduces (where appropriate) surface variation, to improve moisture retention and revegetation potential.
- During final design, ODOT will consider lessening visual impacts of bridge structures, soundwalls, and retaining walls with the following actions:
  - Use crib-type binwalls that permit plants to grow on them, thereby softening the contrasting smooth surfaces.
  - Use treated (painted, stained, pigmented or chemical-pressured) materials with low color contrast.
  - Investigate the use of surface texture on walls.
- ODOT will consider limiting the removal, and will replace or plant vegetation to buffer or screen sensitive viewers from introduced landscape lines or slope scarification.
- ODOT will consider planting riparian vegetation shrub and tree species near bridges and retaining walls (considering safe view distances as appropriate) to buffer the view of the structure and cut slopes from the waterway and banks.
- ODOT will minimize clearing for construction and preserve existing stands of mature trees and other attractive natural vegetation to the greatest extent possible.
- ODOT will consider locating construction materials and equipment storage in areas that are not prominent or screen storage areas from view.
- If construction occurs during non-daylight hours, ODOT will shield construction lighting so that light sources are not directly visible from residences and motels.

Air Quality

The Oregon Department of Environmental Quality (DEQ) enforces air quality regulations, including those for controlling fugitive dust in the state of Oregon (Oregon Administrative Rule [OAR] 340-208-0210). Contractors must take all reasonable precautions to prevent particulate matter from becoming airborne when constructing or altering a road. The following construction precautions will be taken:

- Use, where possible, water or other suitable materials for control of dust.
- Apply asphalt, oil, water, or other suitable materials on unpaved roads, material stockpiles, and other surfaces that can create airborne dusts.
- Enclose material stockpiles completely or partially in cases where application of oil, water, or chemicals is not sufficient to prevent particulate matter from becoming airborne.
- Install and use hoods, fans, and fabric filters to enclose and vent dusty materials.
- Cover, at all times when in motion, open-bodied trucks transporting materials likely to become airborne.
- Promptly remove earth or other material that may become airborne from paved streets.
- Reduce emissions from construction equipment by substituting clean-burning fuels such as ultra-low sulfur diesel fuel, biodiesel, or fuel additives verified by the U.S. Environmental Protection Agency (EPA) Voluntary Diesel Retrofit Program Verification Process, when possible and available. Use highway grade diesel fuel in all pieces of equipment where clean-burning fuels cannot be used.
- Reduce emissions from construction equipment by using equipment that meets or exceeds applicable EPA emissions standards for on-road (for example, 2004 model year) and nonroad (for example, Tier 2) equipment, when possible and available. Equipment should also be fitted with the best available pollution controls for particulate matter, when possible and available.
- Use environmentally friendly lubricants, solvents, and chemicals to the greatest extent practicable.

Noise

Two portions of the existing soundwall west of I-5 will be moved and replaced as part of this project, primarily north of Terry Street. The precise locations will be determined during final design. The minimum height of these walls is anticipated to be 14 feet.

To mitigate possible noise impacts to the Columbian Cemetery, ODOT, with 2 days advance notification from the Columbian Cemetery Association, will direct the contractor to cease the use of high-level noise generating equipment, such as pile drivers, adjacent to the cemetery during burial services in the cemetery. The duration of equipment shutdown is expected to be 2 to 3 hours.

The project will comply with the following construction noise abatement measures:

1. No construction shall be performed within 984 feet (300 meters) of an occupied dwelling unit on Sundays, legal holidays, and between the hours of 10:00 p.m. and 6:00 a.m. on other days without the approval of the Engineer.
2. All equipment used shall have sound control devices no less effective than those provided on the original equipment. No equipment shall have unmuffled exhaust.
3. All equipment shall comply with pertinent equipment noise standards of the U.S. Environmental Protection Agency.
4. No pile driving or blasting operations shall be performed within 2,953 feet (900 meters) of an occupied dwelling unit on Sundays, legal holidays, and between the hours of 8:00 p.m. and 8:00 a.m. on other days, without the approval of the Engineer.
5. The noise from rock crushing or screening operations performed within 2,953 feet (900 meters) of any occupied dwelling shall be mitigated by strategic placement of material stockpiles between the operation and the affected dwelling or by other means approved by the Engineer.

Should a specific noise impact complaint occur during the construction of the project, one or more of the following noise mitigations may be required at the Contractor's expense, as directed by the Engineer:

- Locate stationary construction equipment as far from nearby noise-sensitive properties as possible.
- Shut off idling equipment.
- Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.
- Notify nearby residences whenever extremely noisy work will be occurring.
- Install temporary or portable acoustic barriers around stationary construction noise sources.
- Operate electric-powered equipment using line voltage power.

Construction activities shall be conducted in a manner that complies with all applicable local noise ordinances, including Title 18, the City of Portland's Noise Control code, which includes the following restrictions (unless a variance is granted).

> 18.10.060 Construction Activities and Equipment.
>
> (Amended by Ord. No. 159276 effective Jan. 24, 1987.)
>
> A. Maximum sound levels: No person shall operate any equipment or appurtenances thereto in commercial construction activities which exceeds 85 dBA, when measured at 50 feet (15.2 meters) from the source. This standard shall not apply to trucks (see

Section 18.10.020), pile drivers, pavement breakers, scrapers, concrete saws and rock drills.

B. Night, weekend, and legal holidays limitation: From 6:00 p.m. to 7:00 a.m. the following morning, and 6:00 p.m. Saturday to 7:00 a.m. the following Monday, and on legal holidays, the permissible sound levels of Section 18.10.010 shall apply to all construction activities except by variance or for reasons of emergency. The exempted equipment of Section 18.10.060 A is not exempted during these hours. For purposes of this Subsection, construction activities on a public road within a zone shall be considered as taking place on private property within that zone.

C. The adjustments to permissible sound levels established in Section 18.10.010 B apply to Subsections A and B above.

D. All equipment used in commercial activities shall have sound control devices no less effective than those provided on the original equipment, and no equipment shall have an unmuffled exhaust.

E. All equipment used in commercial construction activities shall comply with pertinent standards of the U.S. Environmental Protection Agency.

Hazardous Materials

Any hazmat sites acquired for the project will be evaluated and cleanups completed according to DEQ regulations. Site cleanups would likely be completed before or during project construction.

Environmental Justice

There are no mitigation or conservation measures specific to environmental justice.

Legend

Conceptual Mitigation
Open Water
Wetland and Upland Complex
Major Roads
Rivers and Streams

N

0 500 1,000 Feet

FIGURE 3-1
Conceptual
Mitigation Areas
I-5: Delta Park
(Victory Boulevard to Lombard Section)
Multnomah County, Oregon

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