

# **Natural Resource Technical Report**

## **I-5 Trade Corridor Study**

*Prepared for:*

**Oregon Department of Transportation  
Region 1  
123 NW Flanders  
Portland, OR 97209**

*and*

**Washington Department of Transportation  
P.O. Box 1709  
Vancouver, WA 98668-1709**

*Prepared by:*

**David Evans and Associates, Inc.  
2828 SW Corbett Avenue  
Portland, Oregon 97201**

**October 2001**

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### EXISTING CONDITIONS AND IMPACTS ASSESSMENT

- A. Salomon Creek**
- B. Tenny Creek**
- C. Cougar Creek**
- D. Cold Canyon Creek**
- E. Burnt Bridge Creek (I-5)**
- F. Burnt Bridge Creek (SR-500)**
- G. Andresen-Thurston Wetland/Drainage Complex**
- H. Columbia River and North Portland Harbor**
- I. Hayden Island**
- J. Smith Lake**
- K. Columbia Slough**
- L. Burlington Northern-Santa Fe (BNSF) Railway Corridor**
- M. Willamette River and Doane Lake**

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# 1 NATURAL RESOURCE

## 1.1 Project Background

The Oregon Department of Transportation (ODOT), in partnership with the Washington State Department of Transportation (WSDOT), conducted the Portland/Vancouver I-5 Transportation and Trade Partnership Study to identify and evaluate options for managing travel demand on I-5 between I-84 in Portland and I-205 in Clark County.

Phase I of the I-5 Trade Corridor Study was completed in March 2000. It identified the major current and projected future deficiencies in the corridor and developed criteria for evaluating and comparing a broad range of scenarios for addressing those deficiencies. The project has progressed to Phase II, which includes conceptual design and evaluation of a set of options developed following extensive public input and in consideration of the results of the Phase I analysis.

This technical report outlines the methodology used for the natural resource impact analysis and summaries of the potential impacts from each option. The natural resources impact analysis address impacts to fish habitat (with particular attention to salmonid habitat), wildlife habitat, wetlands, and plant communities. Impacts to those fish, wildlife, and plant taxa that are listed under the Federal Endangered Species Act are also addressed.

## 1.2 Methods

### 1.2.1 Study Area

The study area encompasses all areas of impact that can be identified based on the preliminary designs completed to date. Impacts resulting from some Park & Ride facilities and water treatment facilities have not been addressed because they have not yet been designed.

### 1.2.2 Data Sources

Metro's Regional Land Information System (RLIS) and Clark County's geographic information system (GIS) system were the primary data sources used for mapping and evaluating the potential impacts to natural resources. The computerized database systems contain information on identified natural resources (critical habitat, wetlands, etc.), land use, and infrastructure (roads, water, sewer, etc.).

The Washington Departments of Fish and Wildlife (WDFW) database was queried for information on sensitive species and habitat locations. Data sets relevant to this project included the priority habitats and species database, wildlife heritage database, StreamNet database, and the National Wetlands Inventory (NWI) database.

Lists of sensitive species that may occur within the study area were secured from the US Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), and the Oregon and

Washington Natural Heritage Databases (ONHP, WNHP). Experts at the Oregon Department of Fish and Wildlife (ODFW), WDFW, Clark County, the NMFS and others were contacted to provide insight as to the value of the resources along the project corridor.

### **1.2.3 Field Methods**

Impacts resulting from the various option packages to natural resources (fish and wildlife habitats, wetlands, and plant communities) that are expected to occur as a direct result of a particular option were determined by a combination of mapping and field investigations. Impact areas were initially identified by overlaying the conceptual designs onto the GIS system and aerial photographs. An examination of the baseline options revealed that the base mapping for the conceptual drawings did not match the GIS system as expected. This may make it appear that there would be impacts to nearby natural resources, when actually there may not be any effects from the proposed option. The discrepancy is more noticeable in Washington than in Oregon. The incompatibility between the base mapping for the conceptual design and GIS information means that a more general impact assessment has been completed.

Field visits were conducted to areas potentially impacted by improvement alternatives under consideration. Doane Lake (at the southern end of Option 8) was not visited because access to the lake is blocked by Burlington Northern – Santa Fe Railroad (BNSF) tracks on all sides. Given the conceptual nature of the designs all assessments are of a qualitative nature. Specific measurements of habitat features were not gathered, and precise calculations of the area of impact are not possible.

Fish habitat and channel types were assessed using a modified US Forest Service Region 6 Hankin and Reeves stream survey methodology and evaluations of potential fish passage barriers. Wildlife habitat assessments were based on Metro's Wildlife Habitat Assessment (WHA) protocols. The WHA analyzes wildlife habitat value with regard to essential habitat components such as water, food and cover. Disturbance, connections to other nearby habitats, and unique features also are taken into account.

Wetlands were qualitatively assessed for such features as fish and wildlife habitat, and water quantity and quality functions. Because impact areas are small, wetland areas are always larger than the impact area. The functions and values assessment was not conducted for the entire wetland, but only the area affected by construction. If an alternative would fragment a wetland, then the impact area was expanded to account for diminished values to the remaining area.

Plant communities were qualitatively assessed based on degree of native species dominance, degree of non-native, invasive and noxious weed coverage, and the presence of plant communities with global or state rankings of critically imperiled (G1, S1), imperiled (G2, S2) or very rare or uncommon (G3, S3). These rankings follow ONHP designations. WNHP has not ranked plant communities in the State of Washington.

## 2 OPTION DESCRIPTIONS

Several option packages were designed to address specific corridor improvements within the I-5 corridor. These options are described below by a summary of the proposed improvements. The skipped option numbers refer to options no longer considered feasible based on discussions with designers and the project's advisory committee.

### 2.1.1 Baseline Options

Four 2020 baseline options were evaluated to test variations in potential corridor performance and land use impacts. The baseline options addressed differing transit investment levels and certain key highway-capacity improvements, namely in the Delta Park/Lombard and Rose Quarter areas.

Each baseline option includes projects identified in Metro's adopted 2020 Regional Transportation Plan (RTP) and the Southwest Regional Transportation Council's (RTC) Metropolitan Transportation Plan (MTP). The baseline options build upon the preceding baseline option.

#### *2.1.1.1 Baseline Option 1a: No Build*

Baseline Option 1a includes only projects that are already under or planned for construction. This option is also referred to as the "financially committed" system, and represents the lowest level of I-5 corridor and regional transportation investment. It includes the existing transportation system, projects currently under construction, and projects committed to be built within the next six years. Key highway projects include the following:

- I-5 widening to add third lane each direction (southbound lane for high occupancy vehicle [HOV] use during the morning peak period) from Main Street to 99th Street (under construction today);
- I-5 widening to add third lane each direction (southbound lane for HOV use during the morning peak period) from 99th Street to 134th Street; and
- Restriping southbound I-5 from Main Street to Mill Plain Blvd. to provide a continuous southbound HOV lane from 134th Street to Mill Plain Blvd.

This option does not include any construction projects in Oregon.

#### *2.1.1.2 Baseline Option 1b: Constrained Baseline Without Delta/Lombard & Rose Quarter Improvements*

Except for the improvements described in the Option 1a, no additional I-5 corridor projects are identified under Option 1b. Option 1b includes improvements outside of the I-5 corridor, and are not included in the impact analysis because they fall outside of the study area described in Section 1.2.1., and because they have been evaluated in previous studies by the Port of Portland. Option 1b includes a number of off-corridor transportation improvements:

- Widening of Marine Drive to five lanes from Terminal 6 to Portland Road;
- Providing a new four-lane bridge to Hayden Island from Marine Drive;
- Improving the Columbia/Killingsworth intersection area and its connection to I-205; and
- Providing a North Lombard overcrossing into Rivergate.

#### ***2.1.1.3 Baseline Option 1c: Constrained Baseline With Delta/Lombard & Rose Quarter Improvements:***

Option 1c improves the Delta Park/Lombard and Rose Quarter areas. These include:

- Widening to add a third southbound travel lane through the Delta Park/Lombard area for morning peak period HOV use, and improving I-5's northbound shoulders in this area; and
- Improving Rose Quarter ramps to address specific weaving, merging, and diverging issues associated with the existing close ramp spacing along this four-lane segment of I-5.

#### ***2.1.1.4 Baseline Option 1d: Priority Baseline With Planned Regional Improvements***

Option 1d has the highest level of investment of the four baseline options. It includes specific transportation improvements identified in the RTP and MTP priority investment systems, and planned increased regional transit service levels. In addition to the improvement described in the previous options, Option 1d also:

- Adds a third lane on I-5 in each direction for general purpose traffic use through the Rose Quarter area between I-84 and I-405; and
- Implements specific ramp improvements that address specific weaving, merging, and diverging issues associated with the existing interchange ramp spacing.

Option 1d also tests two alternatives, labeled 1d(a) and 1d(c). Alternative 1d(a) provides new access between Columbia Boulevard (Blvd.) and I-5 to/from the north. Traffic from Columbia Blvd. would access northbound I-5 via the Victory Blvd. interchange while southbound I-5 would access Columbia Blvd. at a new at-grade signalized intersection.

If a decision is made not to build a new Columbia River crossing, Alternative 1d(c) offers a potential opportunity to remove the existing I-5/Hayden Island interchange by rerouting traffic through the Marine Drive Interchange. Marine Drive to Hayden Island access under this spot improvement would be provided along a new arterial roadway across North Portland Harbor.

Both alternatives could occur with or without adding a fourth freeway lane throughout the I-5 corridor. Alternative 1d(a) is included in Option 6 as a part of the proposed improvements.

### **2.1.2 Option 2: Express Bus Without Corridor-Wide Capacity Increase**

Option 2 includes the operation of directional peak period express bus transit service between Clark County and the Expo Center/PIR Interstate Max transit center. This option does not include a corridor-wide capacity increase except for the construction of a new four-lane arterial and HOV/express bus bridge over the Columbia River.

Key features of this option package include:

- Converting the inside existing/planned third northbound travel lane from Mill Plain Blvd. to 134<sup>th</sup> Street for afternoon peak period HOV use;
- Establishing a new four-lane joint use arterial and HOV/express bus bridge across the Columbia River -- serving Hayden Island and matching existing/planned HOV lanes in Oregon and Washington;
- Establishing a HOV system from Going Street to 134<sup>th</sup> Street and a southbound HOV system from 134<sup>th</sup> Street to approximately Lombard Street;
- Adding direct express bus ramps to/from Expo/PIR transit center;
- Removing the existing I-5/Hayden Island interchange and providing a new connection with Hayden Island via the new bridge; and
- Providing mid-day truck access between Marine Drive and the new arterial/HOV facility.

### **2.1.3 Option 3b: LRT from Expo Park and Ride to Clark College on LRT Only Bridge**

Option 3b is centered around a regional light rail transit (LRT) system without corridor-wide freeway capacity increases. Two variations have been established for this option package to test the performance/benefits of two separate investment levels in light rail, construction of an arterial parallel to I-5 from Vancouver south to Columbia Blvd., and no investment in I-5 freeway capacity. Key features of this option include:

- Constructing an LRT segment from Expo/PIR to Clark College only;
- Constructing an LRT only bridge over the Columbia River; and
- No additional investment in I-5 freeway or parallel arterial roadways.

In other words, this option represents a pure LRT only option.

### **2.1.4 Option 3c: Clark County LRT Loop With Joint-Use Arterial/HOV Bridge**

Option 3c includes highway and Columbia River crossings that are nearly identical to those described in Option 2. Option 3c expands LRT into Clark County.



Key features of this option include:

- A new four-lane arterial roadway west of and parallel to I-5, with access to downtown Vancouver, Hayden Island, Marine Drive, and Columbia Blvd;
- A new joint use arterial/LRT bridge across the Columbia River to supplement the existing I-5 structures, increasing Columbia River crossing capacity to 10 lanes;
- An LRT loop system with the following segments:
  - Expo park-and-ride to Clark College
  - Clark College to 83<sup>rd</sup> park-and-ride lot with service to Vancouver Mall
  - 83<sup>rd</sup> park-and-ride to Parkrose transit center with service to Vancouver Mall
- Removing the existing I-5/Hayden Island interchange – access to Hayden Island would be provided via the new bridge.

### **2.1.5 Option 6: Express Bus With Corridor-Wide Capacity Increase**

Option 6 includes the operation of directional express bus transit service in I-5 HOV lanes between Clark County and downtown Portland. It also includes widening I-5 to add a fourth travel lane in each direction between I-405 and I-205 and would require additional Columbia River Bridge crossing capacity.

Key features of this option include:

- Widening I-5 from 134<sup>th</sup> Street to approximately I-405 to support operation of three general purpose lanes and one HOV lane in each direction, resulting in a directional corridor HOV system from 134<sup>th</sup> Street to approximately I-405;
- Additional Columbia River crossing capacity compatible with 4-lane, 6-lane and 10-lane bridge and Columbia River tunnel concepts; and
- HOV-specific facility treatments such as a directional HOV/express bus connection between I-5 and SR 14 to/from the south.

### **2.1.6 Option 7: LRT with Corridor-Wide Capacity**

Option 7 includes an LRT loop system, as well as a corridor-wide highway capacity increase in the form of a two-lane reversible express lane facility on I-5 between 134<sup>th</sup> Street and I-405.

Key features of this option include:

- Providing five lanes of peak direction roadway capacity, including HOV, resulting in the maximum person-carrying capacity for any of the alternatives under consideration;

- Constructing an LRT loop system with the following segments:
  - Expo Center to Clark College
  - Clark College to NE 83<sup>rd</sup> lot with service to Vancouver Mall
  - NE 83<sup>rd</sup> to Parkrose transit center with service to Vancouver Mall
- Adding limited express lane access at 134<sup>th</sup> Street, SR 500, SR 14, Columbia Blvd., and I-405/I-5.

All of these improvements would be compatible with 4-lane, 6-lane, and 10-lane Columbia River Bridge concepts and with Columbia River tunnel concepts.

No conceptual design was completed for this option, therefore, resource impacts could not be determined.

### 2.1.7 Option 8: New Western Arterial Corridor

Option 8 builds upon the Option Package 1d (Priority Baseline) and involves construction of a new arterial connecting US 30 near the Linnton neighborhood and St. John's Bridge in Portland to Vancouver at Mill Plain Blvd. The new arterial would be four lanes (two in each direction) with bicycle lanes and sidewalks. Access to/from the arterial and adjacent street system would be limited to Mill Plain Blvd., Hayden Island, Marine Drive, Columbia Blvd., Lombard Street, and US 30.

The arterial would follow an alignment from Vancouver near Mill Plain Blvd. across the Columbia River along North Portland Road. Just north of Columbia Blvd., the arterial would transition to a grade-separated structure above the existing BNSF rail lines to a point just north of the Willamette River. From there, the arterial would cross the Willamette River on a new bridge to US 30.

The arterial is intended to draw "local" freight and general-purpose traffic between North Portland and Vancouver from I-5 and major east-west arterials including Columbia Blvd. and Lombard Street.

## 3 IMPACT ANALYSIS

Impacts to identified resources were estimated to be major, moderate, or minor based on the following criteria:

### Fish Habitat

- **Major impact** = Option would result in new bridges with in-stream piers potentially affecting salmonid spawning habitat; or create barriers to upstream migration; or result in substantial removal of high quality riparian habitat; or would "jeopardize" a listed fish species.
- **Moderate impact** = Option would result in new bridges with in-stream piers potentially affecting rearing or migration habitat; or the option would require new culverts in fish bearing streams, or remove riparian vegetation of moderate quality.

- **Minor impact** = Option would result in new bridges without in-stream piers; or minor amount of riparian vegetation would be removed; or new culverts would be placed in non-fish bearing streams.

#### **Wildlife Habitat**

- **Major impact** = Option would result in substantial impacts to designated critical habitat or priority habitats; or would “jeopardize” a listed wildlife species; or result in impacts to high quality habitat; ; or to Designated Areas of Critical Environmental Concern, State Natural Heritage Natural Area, or Washington Priority Habitat.
- **Moderate impact** = Option would result in any impact to designated critical habitat or priority habitats; or potentially impact listed species; or result in impacts to moderate quality habitat.
- **Minor impact** = Option would result in impacts to degraded habitats with only minor impacts to moderate habitat.

#### **Wetlands**

- **Major impact** = Option would result in impacts to wetlands (direct fill placed within wetland) with documented occurrence of, or critical habitat for, any federally listed species; or wetlands that provide high quality habitat or water quality/quantity functions; or to Designated Areas of Critical Environmental Concern, State Natural Heritage Natural Area, or Washington Priority Habitats.
- **Moderate impact** = Option would result in impacts to wetlands with a direct hydrologic connection to streams; or would impact wetlands with marginal fish and wildlife habitat; or water quality/quantity functions.
- **Minor impact** = Option would result in impacts to small isolated wetlands, or wetlands with degraded fish and wildlife functions, or water quality/quantity functions.

#### **Plant Communities**

- **Major impact** = Option would “jeopardize” a federally-listed plant species; or result in impacts to plant communities with global or state rankings of G1-3 or S1-3; or would remove substantial amounts of high quality native plant communities; or substantially increase the risk of noxious weed introduction or spread.
- **Moderate impact** = Option would result in minor removal of high quality native plant communities or moderately increase the risk of noxious weed introduction or spread.
- **Minor impact** = Option would impact degraded plant communities, i.e. dominated by non-native plant species; or would result in minor areal impacts to native dominated plant communities.

### **3.1 Options Summary**

Table 1 summarizes potential impacts to natural resources resulting from implementing the various option packages. At this time, none of the option packages appear to result in environmental impacts of such a magnitude that they should be considered to be “fatally flawed.” Project impacts are determinant on final design and project footprint. Additional environmental evaluations will be completed as the designs are refined. For options that involve

construction of bridges, impacts are necessarily dependent on the bridge type, size, and location. Since the designs are conceptual, it was not possible to determine the precise nature of the impacts and their magnitude. A given pier could potentially impact a sensitive resource or avoid it depending on the structure type ultimately selected. Impacts given here should be used to compare between alternatives rather than be used as a quantifiable measure of project impacts. Each option package creates its own set of environmental impacts. These impacts will require time and money to develop mitigation packages and to negotiate permit conditions.

Impacts to natural resources would require permits from a variety of sources in both Washington and Oregon. Mitigation for impacts would be required and would be developed as part of a multi-agency permit and consultation process. In Washington, impacts to wetlands and other waters of the U.S. are permitted by the U.S. Army Corps of Engineers (USACE) through the administration of Section 404 of the Clean Water Act (CWA). A CWA Section 401 water quality certificate would also be required from the Washington Department of Ecology (DOE). In Oregon, the Oregon Division of State Lands (DSL) administers permits under Oregon's Removal/Fill law for impacts to wetlands and waters of the US. A permit would be required from both USACE and DSL. The Oregon Department of Environmental Quality (DEQ) administers CWA Section 401 certification.

Federal funding and federal permitting for developing an option would provide the federal nexus that triggers the requirement to comply with the Federal Endangered Species Act (ESA). The National Marine Fisheries Service (NMFS) and the US Fish and Wildlife Service (FWS) are the two federal agencies that will determine compliance with the ESA. NMFS has jurisdiction over federally-listed anadromous salmonids and the FWS has jurisdiction over federally-listed non-anadromous fish species, cutthroat trout, and terrestrial plant and wildlife species. Compliance with ESA requirements would be reached through ESA Section 7 consultation. Formal consultations (when project impacts are likely to adversely affect listed species) require a 135-day period resulting in a Biological Opinion (BO) and Incidental Take Statement (ITS). There is no prescribed time period for informal consultations (when project impacts are not likely to adversely affect listed species).

The general NPDES stormwater permit would be necessary if a given project disturbs five or more acres of land (threshold reduces to one acre of impacts after December 2003). The permit would require construction and best management practices that reduce or eliminate stormwater pollution and other impacts to surface waters from construction sites.

**Table 1: Natural Resource Impacts by Option Package**

	<b>Fish Habitat</b>	<b>Wildlife Habitat</b>	<b>Wetlands</b>	<b>Vegetation</b>
Option 2	Moderate	Minor	Minor	Minor
Option 3b	Moderate	Minor	Minor	Minor
Option 3c	Moderate	Moderate	Moderate	Moderate
Option 6	Moderate	Minor	Minor	Minor
Option 7	Not assessed	Not assessed	Not assessed	Not assessed
Option 8	Moderate	Moderate	Major	Major

### **3.1.1 Options 2 and 3b**

Options 2 and 3b result in moderate fish impacts due to the construction of new bridges over North Portland Harbor and the Columbia River which could affect water quality and fish habitat. Residual water quality and habitat impacts would likely be minimal. Bridge pilings and foundations would have to be built within the river. Increased impervious surface area with a resultant increase in run-off, peakflows, and erosion potential would require mitigation. There would be an increased risk to water quality and fish habitat from increased sedimentation during construction. Due to the highly urbanized nature of the area, wildlife habitat, wetlands and native plant communities have already been compromised. Impacts to these resources would be minor.

### **3.1.2 Option 3c**

Option 3c results in moderate fish impacts due to the construction of new bridges over North Portland Harbor and the Columbia River which could affect water quality and fish habitat. The construction of a Light Rail loop across SR-500 and I-205 results in moderate impacts to wildlife habitat, wetlands, and plant communities. Major areas of concern for impacts to these resources include Burnt Bridge Creek at SR-500, the wetland ponds at Andresen Road, and the wetland/drainage complex that borders the northern edge of SR-500 between Andresen Road and Thurston Way.

### **3.1.3 Option 6**

Option 6 also results in moderate impacts to fish habitat due to construction of new bridges over North Portland Harbor and the Columbia River and widening of I-5 over the Columbia Slough. Due to the highly urbanized nature of the area requiring new construction, impacts to wildlife habitat, wetlands and native plant communities would be minor. Since the expanded foot print of I-5 through Vancouver (constructed under Baseline Option 1a) will be wide enough to accommodate a fourth travel lane, only minor amounts of new construction will be required. Impacts to resources in Vancouver would be minor.

### **3.1.4 Option 7**

Option 7 has not been designed. Impacts can not be assessed at this time.

### **3.1.5 Option 8**

Option 8 results in moderate impacts to fish habitat due to construction of new bridges over North Portland Harbor, the Columbia River, the Columbia Slough, and the Willamette River. Impacts to wildlife habitat are also considered to be moderate, but this option presents the greatest potential for wildlife habitat impacts of any option package under consideration, with the greatest impact occurring on Hayden Island. Over 100 bird, mammal, insect and other invertebrate species spend all or part of their life cycles on the island. Bald eagles have been observed roosting on cottonwood trees along the north shoreline of Hayden Island and foraging

over the Columbia River adjacent to the island. High quality forested wetland would also be impacted as well as a globally rare plant community.

### **3.2 Resource Summary**

The following pages provide summaries by resource area (e.g. Salmon Creek, Hayden Island) of existing conditions and an assessment of potential impacts by option. Results of the database queries and field visits are presented. The impacts assessment is based on the level of design detail available to date and is subject to change as conceptual designs evolve over time.