

Columbia River Crossing Feasibility Study

Tier 1 Report



Prepared For



ATC



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Tier I Report

EXECUTIVE SUMMARY

Report Purpose

The SR-35 Columbia River Crossing Feasibility Study is being conducted in response to local business and resident concerns about the safety and viability of the existing Hood River Bridge. The project began in 1999, with the design of a feasibility study to determine if there was a need to replace the bridge and whether there was community support. The community supported a replacement of the bridge, and the feasibility study began in 2000.

The study is organized into three sequential tiers. Tier I of the Study identified the project's issues, purpose and need statement, and a range of crossing corridors and facility alternatives. It determined and initiated the environmental review process, and narrowed the corridors and facility alternatives to those that are most promising and practical. Tier II is intended to select a crossing corridor, focus on the most promising long-term alternatives, select a short-term improvement option, and undertake a financial feasibility study to determine if there are sufficient financial resources available to fund a long-term improvement project. Tier III will conclude the study by selecting a preferred alternative, developing an implementation plan, and completing the Draft Environmental Impact Statement (DEIS).

The lead agencies for this study are the Southwest Washington Regional Transportation Council (project sponsor), the Oregon Department of Transportation, and the Washington State Department of Transportation. Parsons Brinckerhoff was retained by the agencies to lead the technical analysis of the project, supported by Entranco (environmental) and Cogan Owens Cogan (public and agency involvement).

This report is a summary of Tier I. It includes a summary of the baseline conditions (existing and 20-year no-build), a review of the project's environmental compliance process, and a corridor screening and evaluation that recommends three corridors (plus the no-action alternative) for further analysis in Tier II. Tier I is scheduled to be completed in the summer of 2001. Tier II is scheduled to be completed by early 2002. Tier III is scheduled to be completed by early 2003.

Overview

Congressional representatives of Washington communities surrounding the Hood River Bridge obtained funding for the Study through the federal transportation funding act known as the "Transportation Equity Act for the 21st Century (TEA-21) legislation in 1997. In 1999, a project project planning phase was undertaken and a public meeting was held. Major concerns regarding the existing bridge include hazards presented by the narrowness of the travel lanes and lack of bicycle and pedestrian facilities, long-term

adequacy of the bridge structure, and impacts to the local economy, especially for commercial vehicles using the bridge. The project planning phase identified three “tiers” that would be undertaken in the SR-35 Columbia River Crossing Feasibility Study: Tier I, a “feasibility” study to determine if a new crossing was feasible, Tier II, which would identify a practical range of short-term and long-term alternatives, and Tier III, which would select preferred short-term and long-term alternatives. Later RTC, ODOT, and WSDOT decided to add the Draft Environmental Impact Statement to the Tier III process in order to be consistent with the National Environmental Policy Act (NEPA).

In October 2000, the feasibility study phase of this project was initiated with a round of public meetings to provide an understanding of the Study and to receive input regarding issues to be studied within the defined crossing areas (“corridors”) and facilities (“alternatives”). Three committees have been formed to advise the project team: a Resource/Regulatory Committee (RRC) comprised of representatives of state and federal agencies who will review environmental analyses, documents, and permit applications pertinent to agency regulations; a Local Advisory Committee (LAC) comprised of area residents and business owners; and a Steering Committee (SC) that includes local elected and appointed officials and agency staff. A project Management Team (MT) comprised of lead staff from the Southwest Washington Regional Transportation Council (RTC), Oregon Department of Transportation (ODOT), Washington State Department of Transportation (WSDOT), and consultant firms meet regularly to oversee the study process.

To date, over 100 people have attended three open houses held on this project, over 70 public and agency comments were received during the scoping period, and over 300 people have returned questionnaires that were distributed early in the study.

There are several significant milestones and decision points during the course of this Study. These include: concurrence on the project’s Purpose and Need Statement and a range of practical alternatives (Tier I); detailed analysis of the practical alternatives and a financial feasibility study (Tier II); and a Draft Environmental Impact Statement and implementation plan (Tier III). The outcome of the SR-35 Columbia River Crossing Study will be the recommendation of a preferred alternative which may consist of improving the existing structure or building a new crossing, and circulation of the DEIS. The Study process is being conducted under requirements of the National Environmental Policy Act (NEPA).

The NEPA scoping process, whereby public and agency comments are received regarding issues to be studied, corridors for possible crossings are identified, and a range of alternatives to be considered began in February 2001 with a Notice of Intent (to conduct an EIS) that was published in the Federal Register. The scoping process closed on March 30, 2001.

Analysis

A Baseline Conditions Report was completed in November 2000 and updated in January 2001. This report contained information on existing conditions in several

categories, including transportation, economy, recreation, the environment, bridge condition, navigation, and river hydraulics.

The range of comments received during the NEPA scoping period includes: consideration of impacts on windsurfing; motorist, bicycle, and pedestrian safety crossing the Hood River Bridge and at the intersections of the approach road to the bridge; traffic congestion at the tollbooth and along the bridge access road; impacts on the local economy; impacts on the environment, including tribal fishing sites within the study area; and impacts of tolls on the local economy and financing of a new crossing. Other concerns cited were impacts of the alternative crossing corridors on the natural environment, park land, threatened or endangered species, land use (especially the Port of Hood River, downtown Bingen, and the Port of Klickitat), the Columbia River Gorge National Scenic Area, and specific local businesses and recreation areas.

A project Purpose and Need Statement was drafted prior to the scoping period to explain why the project is being undertaken by the Federal Highway Administration (FHWA) which is the lead federal agency. After the scoping period, the Purpose and Need Statement was refined to reflect comments from the public and resource agencies. The Purpose and Need Statement is based on the project team's investigation of current and long-term conditions of the Hood River Bridge, the transportation needs for a new or improved crossing, and public and agency comments.

Bi-State Environmental Review Process

The existing bridge and any new crossing affects both Oregon and Washington. Both states' environmental regulations and permitting requirements must be met to comply with federal and state environmental and transportation regulations that apply to the construction of a new or improved crossing. Each state has an environmental review process and must comply with agreements between the federal and state agencies charged with regulatory reviews. Therefore, the SR-35 study has begun creating a Bi-State Review Agreement, which would provide a process for one, consistent review and concurrence process between the two states. At this time, each state is updating its individual regulatory review process, and the project team is working with key agency staff to draft an SR-35 Bi-State Review Agreement that would be consistent with the new processes in each state.

Corridor Evaluation and Recommendations

The project team conducted an initial corridor screening in May 2001. Screening criteria were developed in accordance with technical expertise, the Purpose and Need Statement and public and agency comments. Baseline information available on a corridor level was used as the basis for this screening, and corridors were screened for their potential to have high, moderate, or low impacts associated with each criterion. The results are presented in the Recommendations chapter of the Tier I report.

The result of the evaluation and public process is to recommend that the following corridors be carried forward:

-
- City Center
 - Existing Low
 - East A
 - No Action

Additionally, the following facility types are recommended for analysis in Tier II:

- Short Term Improvements to the Existing Bridge
- Tunnel (various types) at the City Center Corridor
- Floating or movable bridge
- Fixed span bridge.

Next Steps

TIER II

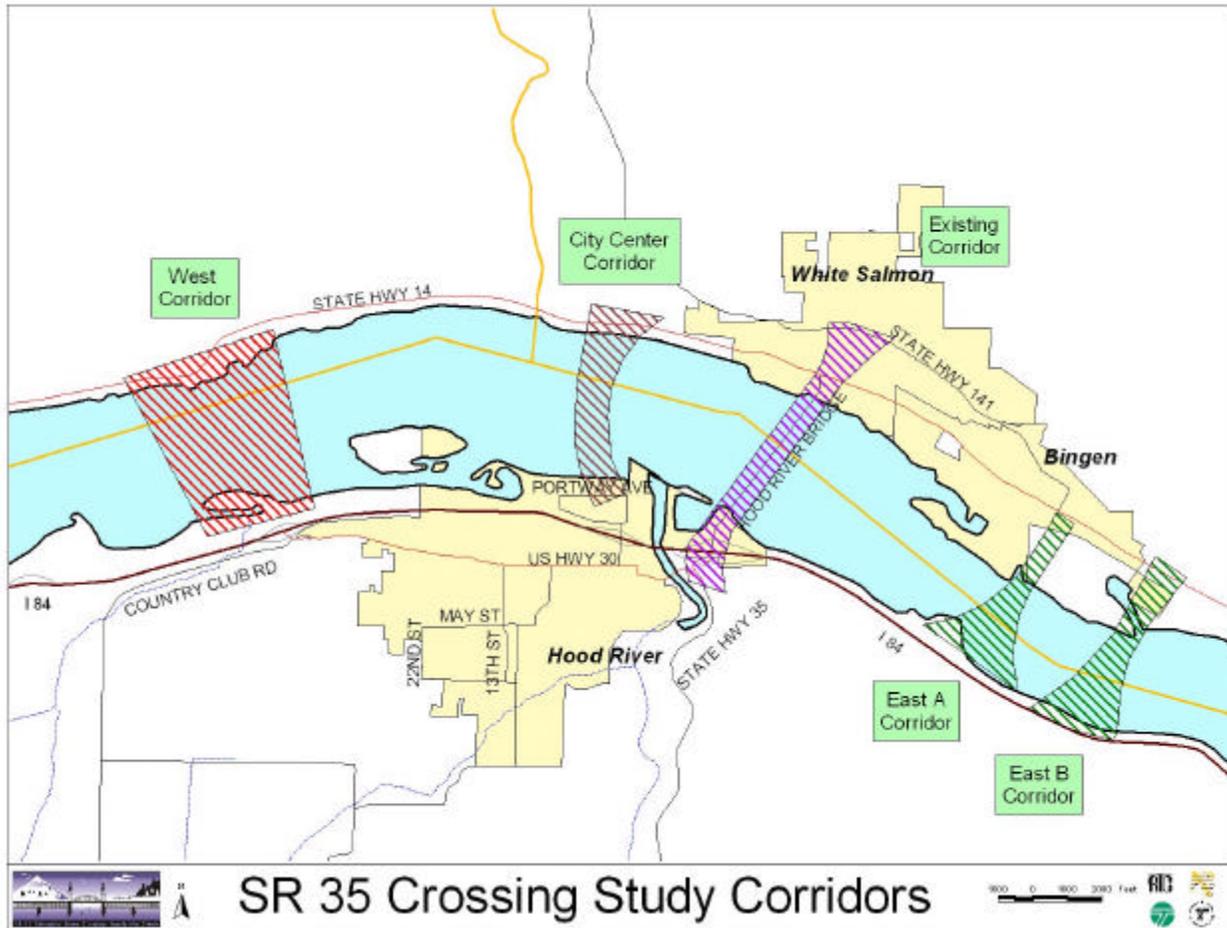
Tier II would begin in the summer of 2001. It would involve selecting a crossing corridor, refining information to assist in the evaluation of alternatives, beginning the selection and preliminary evaluation of alternatives, and narrowing the choices to only the most promising and feasible long-term alternatives. Also included would be a financial feasibility study to estimate costs associated with implementing alternatives and to determine if sufficient funding resources are available to support a long-term improvement.

Additionally, short-term solutions would be analyzed and a preferred short-term solution selected.

TIER III

Tier III, if conducted, would begin in the spring of 2002 and would include selection of a preferred long-term alternative, completion of the Draft Environmental Impact Statement, and preparation of a financial and implementation plan.

Figure 1. Map of Crossing Study Corridors



INTRODUCTION

The Columbia River Bridge, referred to locally as the Hood River Bridge, was built in 1924. It spans the Columbia River, connecting the cities of Bingen and White Salmon in Washington to Hood River in Oregon, within the Columbia River Gorge National Scenic Area. This bridge is the second oldest Columbia River crossing and one of only three crossings in the Columbia River Gorge National Scenic Area. It provides a vital economic link between Washington and Oregon communities and commerce. The existing structure is 4,418 feet long with two 9.5-foot wide travel lanes and no pedestrian or bicycle facilities. It has open-grid steel decking, which is known to adversely affect vehicle tracking. The current span over the navigation channel is 246 feet wide, less than the recommended 300 feet.

The lack of multi-modal facilities, combined with the unpredictability of vehicle tracking on the bridge, raises safety concerns for the increasing number of pedestrians, motorcyclists, and bicyclists who desire to use the bridge. Washington State congressional members, responding to local concerns about the functionality of the existing bridge, retained federal funding as part of the TEA-21 federal highway financing bill. The funding is to be used to study the feasibility of a new Columbia River crossing, to better serve the area's transportation needs. It will also address the lack of bike and pedestrian facilities (bicycles and pedestrians are currently not allowed to cross the bridge), and the unpredictability of vehicle tracking on the bridge which raises safety concerns. The Regional Transportation Council (RTC), Washington State Department of Transportation (WSDOT), and Oregon Department of Transportation (ODOT), in coordination with local governments in both Washington and Oregon, make up the core public agency stakeholders in this study.

The first phase of this effort was completed in 1999, resulting in vision and mission statements for the study and these possible crossing locations:

- Stanley Rock (East A Corridor): connecting Koberg State Park to Bingen Point.
- Existing Low Corridor: approximately the same alignment as the current bridge.
- Existing High Corridor: approximately the same alignment as the current bridge but at a much higher elevation, connecting from Button Junction to Jewett Boulevard (SR-141).
- West Hood River Interchange (West Corridor): connecting on I-84 at or near the West Hood River interchange across the Columbia River to SR-14 at a point near the Fish Hatchery west of White Salmon.

The second phase of the study developed an understanding of the potential benefits and drawbacks of a new or improved crossing, short- and long-term recommendations for improvements, an environmental document (potentially a DEIS), and an implementation strategy.

During the second phase of the study, two additional corridors were added for consideration:

-
- City Center Corridor: connecting the Hood River City Center/I-84 interchange with a point in Washington on SR-14 approximately ½ mile west of the existing bridge.
 - East B Corridor: located approximately ½ mile east of the East A Corridor and connecting I-84 east of Koberg Park with a location on the east side of Bingen.

A Steering Committee of elected and appointed officials and senior staff, and a Local Advisory Committee of citizens and business representatives were formed to help guide the study. In addition, throughout the project, residents and business owners on both sides of the Columbia River will have opportunities to be involved through community events, questionnaires, newsletters, a youth project, public displays and other means.

History

The Hood River Bridge was constructed in 1924, and construction of the Bonneville Dam in 1938 created the need to vertically rebuild the bridge. During this reconstruction, a lift span and tollbooth were added to the bridge. The Port of Hood River purchased the bridge in the early 1950's and retains ownership.

Local citizens and officials on the Washington side have safety and traffic operations concerns about the existing bridge, and through their efforts the SR-35 corridor was designated and funding was obtained. In 1997, the Washington State Legislature designated a future SR-35 link across the Columbia River somewhere in the Bingen/White Salmon area. In 1998, WSDOT received TEA-21 funding for the feasibility study. WSDOT and ODOT are providing the matching funds. A Management Team oversees the study, including representatives from ODOT, WSDOT, and the Southwest Washington Regional Transportation Council (RTC).

In 1999, the initial scoping phase for this study was completed. There were two critical questions asked of the local community: "Is the Columbia River Crossing Study needed?" and "What should the study consider and what products should be developed?" The local community answered with a definite "yes" as to whether the study was needed, and the three-tier approach was developed from their comments regarding the study's scope and products. Each tier will take the study to a higher, more detailed level of analysis and narrow the number of options considered. In Tier I, all options will be considered, including short- and long-term solutions. Short-term would involve making improvements to the existing bridge, and long-term would address needs that are 20 or more years in the future. Tier I would result in narrowing to a set of promising crossing corridors and a range of practical alternatives. Tier II will include a detailed evaluation of the alternatives, along with a study of the financial feasibility to construct a long-term solution. Tier III will select a preferred long-term alternative, complete the Draft Environmental Impact Statement, and develop a financing and implementation plan.

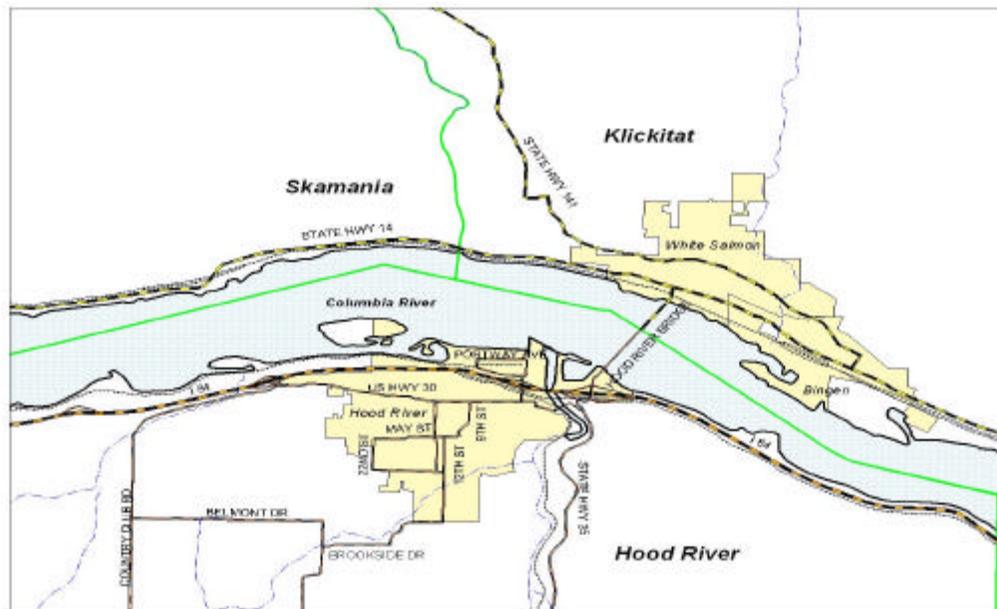
A study website is available at <http://www.rtc.wa.gov/Studies/SR35>.

BASELINE CONDITIONS

Introduction

A Baseline Conditions Report was issued in January 2001, which compiled data from multiple agencies that have jurisdiction or provide services in the study area, and from other studies and inventories that have been completed. This section summarizes that report.

Figure 2. – Study Area



Purpose

The Baseline Conditions Report inventoried the existing physical and operational issues within the study area (Figure 2.) that are associated with the existing river crossing. Elements included in the baseline inventory include the built and natural environment, transportation facilities and conditions, current and future deficiencies in traffic levels of service, identifiable substandard design conditions of the existing bridge, and economic conditions. The report also includes a review of the engineering information associated with the Hood River Bridge, projected 20-year traffic conditions, transportation funding sources, and environmental issues that may constrain crossing improvements. The baseline inventory will be used for evaluating improvement alternatives in the corridor.

Key Findings of Study Issues

Each chapter of the Baseline Conditions Report deals with a specific study issue: engineering, navigation, hydraulic and hydrologic, environmental, geologic and geotechnical, economic and transportation issues. This section gives a brief summary of those chapters.

ENGINEERING AND BRIDGE INSPECTIONS

Most repair and maintenance recommendations for the Hood River Bridge were included in an April 1993 inspection report prepared by HNTB, the consultants for the Port of Hood River both then and now. The largest deficiency they noted was that no aggressive approach had been laid out for prolonging the service life of the structure. Underwater inspection reports in 1993 and 1998 did not mention any immediate issues with the bridge. An HNTB mechanical and electrical inspection report completed in October 1997 outlined a program for maintenance. HNTB staff reports that all indicated measures for repair have since been completed. A load rating inspection done after some repair in 1996 noted no deficient structural members in the bridge. Routine inspections have been undertaken regularly since 1978, but some were completed before state and national inspection requirements were established. The latest inspection, completed in 1993, is the most comprehensive inspection undertaken to date.

A fracture critical inspection done by HNTB in 1993 documented some stringers (load-carrying bridge supports) as having significant fatigue-prone details. They stated that "failure of [these] stringers...would allow the ends...to drop down and carry the roadway with them which would undoubtedly cause a catastrophic hazard to the traveling public". HNTB made a recommendation to install support brackets at these stringers, but as of this date no repair has been carried out. The Port of Hood River has contacted HNTB about work that would include fixing these stringers, and this should begin in 2002.

Five key maintenance projects contained in the Port of Hood River's five-year capital budget plan are a bridge re-decking, a guardrail upgrade, tollhouse and approach lane upgrades, bridge painting and cleaning, and pier repair. The Port is looking at conducting an in-depth fracture critical inspection in 2001.

Compared to the FHWA's recommended inspection schedule, the Hood River Bridge is current in some areas but out of date or out of sequence for other inspections. Completed inspection reports do document and recommend maintenance repairs, but there is a lack of programmed and enacted maintenance repairs. While many bridges that are owned and operated by toll authorities (like the Hood River Bridge) do not fully comply with the federal recommendations and perform the minimum of inspections required to meet insurance or bondholder requirements, there is no federal law requiring them to do more. The last detailed inspection was almost seven years ago, which by federal and state standards is inadequate. The consultant for the Columbia River Crossing Study recommends that a more thorough inspection of the bridge be undertaken to establish a good baseline comparison of short-term alternatives, long-term alternatives, life-cycle longevity, and costs.

There has not been a comprehensive structural study for adding a walkway to the Hood River Bridge. Such a study would need to examine width and which side to locate the walkway, compliance with the Americans with Disabilities Act (ADA), uses and users, and determine whether the existing bridge can be strengthened to support such a modification.

NAVIGATION

Any modification, upgrading or replacement of the bridge must consider existing and potential vessel traffic to ensure that navigation is not impeded and safety is not compromised. The navigation baseline report addresses navigation issues by:

- Describing the existing Hood River Bridge and navigation channel condition.
- Identifying vessel characteristics, traffic, and any problems transiting through the existing bridge.
- Estimating the potential future vessel requirements.

Existing Channel

The Hood River Bridge is 4,418 feet long, with 20 piers that span the Columbia River. The bridge's lift span is located between piers 8 and 9, near the center of the bridge. The horizontal clearance at the lift span is 246 feet, which is narrower than the navigation channel. The bridge has vertical clearances of 148 feet in the fully open position and 67 feet when closed, relative to the normal Bonneville pool elevation of 73.0 feet Mean Sea Level (MSL). The 84.5-mile segment of the channel between Vancouver, Washington and The Dalles Dam at Columbia River Milepoint (RM) 191.4 was first authorized in 1937. Channel dimensions are authorized to provide a 300-foot wide by 27-foot deep channel. The U.S. Army Corps of Engineers currently maintains the channel to a depth of 17 feet.

Vessel Traffic

Commercial traffic between Vancouver and The Dalles includes tugs and barges for commodity movements, and three to four tons of cargo move downstream for each cargo ton moved upstream. The U.S. Army Corps of Engineers state that for 1999, the average tow size through all the locks on the Columbia River was three barges. Cruise and tourist vessel traffic through Hood River includes sternwheelers and cruise ships, and is more seasonal than barge traffic. During the fall and spring, small cruise ships from Alaska work the Columbia-Snake system with daily bridge crossings varying between one and three. In addition, two large sternwheelers, the *Queen of the West* and the *Columbia Queen*, travel the reach on a year-round basis, currently combining for four bridge crossings weekly.

Clearance Requirements

Columbia-Snake system barge widths typically measure 42 feet, with doublewides at 84 feet. Individual barge lengths vary between 150 feet and 300 feet. However, lock sizes limit tow configurations to a total length of 650 feet if the dam is to be transited without breaking the tow. A tow's vertical clearance is usually dictated by the tug size rather than barge size. Current "tower" tugs extend over 55 feet above the waterline, although tug heights can usually be reduced to below 50 feet by lowering the masts. The Hood River Bridge has 67 feet of vertical clearance when closed.

During high water events, larger cruise ships such as the *Queen of the West* and the *Columbia Queen* may require the bridge to open. With the stacks and masts up, the air draft of the *Queen of the West* is 61 feet and the *Columbia Queen* reaches 70 feet. To avoid opening the bridge, both vessels can lay back their stacks and masts when the

water is high, in order to clear the bridge when only 55 feet of vertical clearance is available.

Trip Frequency

Statistics on commercial traffic on U.S. waterways are compiled annually by the U.S. Army Corps of Engineers in conjunction with the Department of Commerce. Historic data are available for the Vancouver-The Dalles reach and are summarized below:

Table 1. Vessel Trips through Vancouver-The Dalles Reach					
	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>1998</u>
Up bound:	7,498	5,754	5,234	2,555	1,920
Down bound:	7,307	5,754	5,174	2,556	1,814
Avg. Daily:	41	32	28	14	10

The above numbers reflect motorized commercial vessels only and do not include barges. However, Department of Commerce statistics and previously referenced sources confirm that tows through the reach average three barges to one tugboat.

Statistics indicate that there has been a decrease in the number of vessel trips through the reach in the 1990s. Cargo tonnage has increased, however, during the same period. Vessel trip decline may be due to changes in reporting methods or opening of the new lock at Bonneville Dam.

Recreational traffic in the vicinity of the Hood River Bridge includes a wide variety of interests such as windsurfers, kite boarders, fishing, sailing, and recreational cruising. Most sailboats have masts extending 40 to 45 feet above the water's surface. However, larger sailboats and racing boats may have masts between 65 feet and 100 feet. These vessels currently require lifting of the bridge to traverse under the Hood River Bridge.

Bridge Openings

Based on discussions with Port of Hood River personnel, the bridge only opens once or twice a month. The general barge traffic and cruise lines do not typically require the bridge to open. Examples of conditions that require opening of the lift span include high water in the Bonneville pool, barges carrying cranes or heavy equipment, and high-masted sailboats. Since the bridge crosses a navigation channel, the U.S. Coast Guard requires the bridge to be raised monthly as a maintenance check. During high water periods, the Port of Hood River raises the bridge for vessels that typically do not require the service. High water events on the Bonneville pool can reach 86.7 MSL, which reduces the bridge's vertical clearance to 54 feet (closed) and 135 feet (fully open). Through discussions with the U.S. Coast Guard, a new fixed bridge across the Columbia River would need to provide a vertical clearance on the order of 80 feet.

Navigation Difficulties

The Hood River Bridge opening is 246 feet wide and is narrower than the navigation channel, which is 300 feet wide. In addition, the navigation channel and bridge opening are not lined up with the westerly winds, forcing the barges to tack through the bridge. According to both the Port of Hood River and the Columbia Tow Operators Association, over the past seven years, two or three barges have scraped through the bridge opening but did not cause significant damage.

Future Vessel Trends

Commercial and recreational vessel traffic is expected to remain stable in terms of vessel size and capacity. Environmental considerations, such as species listings and subsequent protection by the Endangered Species Act, have constrained growth in commercial activity. In addition, commercial traffic and recreational uses, such as sailboarders, windsurfers and kite boarders, often conflict. The prevalence of these activities on the river almost year-round is a potential reason to minimize other navigational conflicts associated with the Hood River Bridge.

Summary

Historic commercial traffic through the Hood River Bridge has not encountered safety hazards resulting in loss of life or severe damage. However, modification or replacement of the bridge will present opportunities to improve conditions affecting navigation, helping to prepare for future growth in commercial and recreational traffic.

There are three primary design elements that should be considered:

- The navigation channel under the bridge should have horizontal clearance equal to or greater than the navigation channel (300 feet).
- Channel alignment should allow tugs and barges to be aligned with the westerly winds that now hit on the diagonal and cause control problems, especially for tows with empty barges.
- Existing vertical clearances benefit from the flexibility of a lift span. A new or modified fixed bridge will have to conform to the vertical clearance requirements of the U.S. Coast Guard.

HYDRAULIC AND HYDROLOGIC CONDITIONS

Introduction

The Columbia River near the existing Hood River Bridge at Columbia River Milepoint 169.6 is heavily regulated by federal dams upstream and downstream. The dams upstream (including the Dalles Dam and the John Day Dam) of the project modify the flow in the river; control is undertaken by either decreasing the natural flow during flood events by holding back water or increasing the natural flow during drought events by releasing additional water. The dam downstream of the project site, Bonneville Dam at Columbia River Milepoint 145.1, modifies the stage of river at the Hood River Bridge by controlling

the volume of water released through the dam and subsequently controlling the elevation of the river upstream of the dam.

Floodplain

A floodway is not designated on the Columbia River near the Hood River Bridge; therefore a "no-rise" certification will not be necessary. The Federal Emergency Management Agency (FEMA) does have an agreement with the FHWA that any new structure within the floodplain must cause less than one foot of rise in the base flood elevation. Based on the consultant's professional judgment, it is not anticipated that a proposed bridge would cause a one-foot rise in the base flood elevation, assuming a similar quantity and size of pilings and footings for a new bridge are comparable to the existing structure. A potential scour analysis will also be necessary to quantify the maximum theoretical scour required to design the bridge piers.

RECREATION

Recreation in the study area is generally centered on the Columbia River. Popular recreation opportunities in the area include trail riding and hiking, windsurfing and kite boarding, camping, wildflower study and gathering, birding, picnicking, boating, fishing, and scenic viewing. Key recreation resources are described below.

Columbia River Gorge National Scenic Area (CRGNSA)

The study area is located within the CRGNSA. The National Scenic Area was designated to protect and enhance the scenic, natural, cultural and recreational resources of the Columbia River Gorge while encouraging economic development. The CRGNSA is home to the Gorge Games Outdoor World Championships (an outdoor sport and lifestyle festival). Competitions include: mountain bike racing, 49er sailing, adventure racing, climbing, kayaking, kite boarding, outrigger canoeing, trail running and windsurfing. The event also includes films, concerts, clinics and exhibitions.

Windsurfing and Kite Boarding

The study area is internationally renowned for windsurfing and contains several important related sites. Air rushing inland from over the Pacific Ocean to the warm interior of Oregon and Washington creates steady gusts between 15-25 miles per hour throughout the summer season. With these dependable winds, many vacationing windsurfers, kite boarders and sailors select this unique region for their summer recreation. Launch sites in the study area include: Spring Creek Hatchery, Swell City, Hood River Event Center, Hood River Marina, Koberg State Park, and Bingen Park.

Fishing and Hiking

Fishing in the Bonneville Pool (20,400 acres on the Columbia River behind the Bonneville Dam in Hood River and Wasco Counties), includes smallmouth bass, largemouth bass, black crappie, white crappie, bluegill, brown bullhead, yellow perch, pumpkinseed, sturgeon, and walleye.

A proposed Chinook Trail will stretch the length of the Gorge. Although the exact location in many areas has not yet been determined, it conceptually runs on the Oregon side along the Columbia River.

Parks

Koberg Beach State Recreation Site is a wayside that provides westbound motorists on I-84 with a rest area. The wayside includes the Stanley Rock land formation. Recreational opportunities include picnicking, windsurfing, rock formations, bird watching, beach access, and fishing.

Wells Island

Located in the western portion of the study area, this island is a preserve and offers naturalists wildlife viewing opportunities. It also provides habitat for great blue herons. The US Forest Service manages the island.

ENVIRONMENTAL CONDITIONS

Fish

According to the National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service, the portion of the Columbia River that is in the vicinity of the Hood River Bridge is used by anadromous salmon, steelhead, and sea-run cutthroat trout. Anadromous fish primarily use the Columbia River as a migratory route between upstream spawning areas and the Pacific Ocean. Approximately twelve federally listed threatened or endangered species of fish are expected to be present in the study area. The Columbia River shoreline, from the normal high water elevation to 300 feet landward, is designated as Critical Habitat for many of these species. These fish species either have Evolutionarily Significant Units that are located within the vicinity of the existing bridge or pass through the vicinity at some point during their life cycle. Other anadromous and resident fish species are also present within the study area.

Wildlife

The project area encompasses various wildlife species and habitats and may include federally listed threatened or endangered species and habitat or federal species of concern. The project area is considered to be on the edge of both the Columbia Gorge and Columbia Plateau ecotypes. As such, it is likely to contain species associated with both types. Habitats identified on Northwest Habitat Institute maps include: Westside lowland conifer-hardwood forest; agriculture, pasture, and mixed environs; urban and mixed environs; Westside oak and dry Douglas-fir forest and wetlands; ponderosa pine and eastside white oak forest; eastside (interior) grasslands; eastside (interior) mixed conifer forest; montane coniferous wetlands; and lakes, rivers and ponds.

Water Quality

The major water systems in this area include the Columbia River, the Hood River in Oregon, and the White Salmon River in Washington. Smaller tributaries to the Columbia River are also present, including Jewett Creek on the Washington side, and Flume Creek and an unnamed stream on the Oregon side. This area is located in the Middle Columbia-Hood River watershed. Overall, this watershed is considered to have few serious water

quality problems and low vulnerability to stressors. Although water quality in the watershed is generally good, water quality in specific streams in this area has been of concern. According to the Oregon Department of Environmental Quality (DEQ) and the Washington Department of Ecology (Ecology), the Columbia River in this area is listed as not meeting water quality standards under Section 303(d) of the Clean Water Act, for qualities such as sediment, turbidity, water flow, low dissolved oxygen, and pesticides, among others. Other streams in this area are not listed as “water quality limited” by any state agency.

Other

Also of concern in the project area are access areas for Native American fisheries, fish hatcheries, wetlands, vegetation, and soils. The Baseline Condition Report details specific issues for each of these areas.

GEOLOGIC AND GEOTECHNIC CONDITIONS

The Columbia River flows 75 miles through a spectacular gorge, known for its rare natural beauty and the unique information it provides on the underlying geologic history of the area. Between The Dalles, Oregon and Washougal, Washington the Columbia River Gorge rises up to 900 feet above the level of the river, and bisects the axis of the Cascade Range. Mount Hood in Oregon and Mount St. Helens and Mount Adams in Washington overshadow the canyon as it passes through the Cascade Range. Over its lifetime, the Columbia River Gorge was repeatedly filled with lava or blocked by landslides, and each time the river eroded a channel through the obstacle to restore its pathway to the Pacific Ocean.

Local Geology—Soils

A few site-specific geotechnical studies have been conducted near the existing Columbia River Bridge. In general, the north side of the river is underlain by relatively fresh, hard basalt rock that is mantled discontinuously by an alluvial cover consisting of very loose to medium density silty, fine- to medium-grained sand with some gravel. Gravel layers were encountered beneath a sand cover and just above the basalt rock at some locations. The south bank of the river is also composed of alluvial and fill materials overlying basalt rock.

Additional information on geologic conditions was found offshore at the White Salmon tribal fishing site where the Corps of Engineers drilled three borings in the river. Two borings penetrated silty fine sand before encountering basalt rock. The sand layer thickened with distance from shore, and was about 5 feet thick at 30 feet from shore and 23 feet thick at 200 feet from shore. The third boring, also at about 200 feet from the shoreline, penetrated 13 feet of silty sand and 13 feet of medium dense gravel. It bottomed at a total depth of 26 feet without encountering rock. The Baseline Conditions Report has further detail on existing soil conditions in this area.

Geologic Hazards

Geologic hazards are geologic processes or geologic conditions that form threats to the activities of man. Geologic hazards fall into two main categories: degradational and tectonic. Degradational hazards are the products of slow but persistent weathering and

the erosion of the land surface. Tectonic hazards are produced by volcanism and earthquakes, and usually occur over very short periods of time. Landslides and weak soils are two examples of geologic hazards that may impact the study area. Other areas of concern detailed in the Baseline Conditions Report include stream flooding, high ground water, volcanic eruptions, and earthquakes.

ECONOMIC CONDITIONS

SR-35 Crossing Economic Report

The Economic Report is a component of the SR-35 Columbia River Crossing Feasibility Study. The Economic Report is intended to provide an understanding of how the current Hood River Bridge factors into the local economy. The full Economic Report is contained in the SR-35 Baseline Conditions Report.

Defining the Economic Study Area

A Columbia River crossing in the Hood River-White Salmon area would potentially affect all businesses and people who would use a crossing at that location. Because there are existing bridge crossings less than 30 miles both west and east of SR-35 (at Cascade Locks between Skamania County, Washington and Multnomah County, Oregon and at The Dalles crossing into Washington within Klickitat County), a relatively compact study area is defined for the Economic study that includes the portions of Klickitat and Hood River Counties adjacent to the existing Hood River Bridge.

Economic Characteristics

Table 2. Economic Characteristics of the SR-35 Study Area

<i>Economic Characteristic</i>	<i>SR-35 Crossing Study Area</i>	<i>Hood River County, OR</i>	<i>Klickitat County, WA</i>
Population			
1990 Population	10,715	16,903	16,616
2000 Population (est.)	12,302	20,280	19,880
Study Area Population Share of County	—	46.4%	14.6%
Employment¹			
Civilian Labor Force	6,500	11,160	9,070
Employment	5,880	10,090	8,240
Unemployment Rate	9.5%	9.6%	9.2%
Personal Income & Earnings²			
Personal Income (millions)	\$248.3 M	\$416.6 M	\$378.2 M
Personal Income per Capita	\$20,750	\$21,300	\$19,720
Wage & Salary Earnings per Employee	\$21,550	\$20,330	\$25,510
Wage & Salary Earnings per Capita	\$10,590	\$10,490	\$10,960

Sources: Parsons Brinckerhoff, US Census Bureau, US Bureau of Economic Analysis, Washington State Employment Security Department, & Oregon Employment Department

¹ 1999 data for Klickitat County, WA & 1998 data for Hood River County, OR

² 1998 data

Table 3. Monthly Average Daily Traffic Volumes on the Hood River Bridge

<i>Time Period</i>	<i>2 Axle Vehicles</i>	<i>3+ Axle Vehicles</i>	<i>Bicycles/ Motorcycles/ Pedestrians</i>	<i>Total Average Daily Crossing Volume</i>
July 1999	9,321	247	15	9,583
August	9,056	238	14	9,308
September	8,407	265	7	8,679
October	7,556	200	18	7,775
November	6,394	153	4	6,550
December	6,264	113	2	6,379
January 2000	5,772	124	0	5,897
February	6,764	84	2	6,849
March	6,844	106	11	6,961
April	7,358	122	22	7,503
May	8,190	167	27	8,384
June	8,916	223	11	9,149
Annual Average	7,575	171	11	7,756

Source: Port of Hood River

TRANSPORTATION SYSTEM

Objectives

The objectives of this section are to: 1) describe the transportation system as it exists today using the most recent data available, and 2) provide a baseline for comparison with the future “no-build” conditions and subsequent strategies, refinement, screening, and evaluation.

Existing Transportation System

The Hood River Bridge is one of nine bridges on the Columbia River along the Oregon/Washington border that provides north/south highway connections between two major east/west highway systems – I-84 and SR-14. In addition, the Bridge is the northern terminus of Oregon State Highway 35 (OR-35), which provides north/south access between the Columbia Gorge and Mt Hood. The Hood River Bridge is one of three bridges located in the Columbia Gorge National Scenic Area (CGNSA), and acts as an important crossing point for recreational travel within the CGNSA.

The nearest alternative river crossings are 24 miles west of Hood River in Cascade Locks or 22 miles east of Hood River in The Dalles. The Dalles Bridge is the only one of these three bridges that has separate pedestrian and bicycle facilities. Bicycle and pedestrian travel are currently prohibited on the Hood River bridge. The Hood River Bridge is regionally significant because of its connection between these two highway systems and between White Salmon/Bingen, Washington and Hood River, Oregon as well as between

Population Trends

Current population within the defined project study area is estimated at 12,302 people, and has grown by 14.8% since 1990, or an average of about 1.4% per year. Overall, 76.5% of the study area population lives on the Oregon side of the river within the greater Hood River area, and 23.5% reside on the Washington side in Bingen, White Salmon, or surrounding areas.

Growth on the Washington side of the river has been almost non-existent, with the population increasing a mere 0.9% per year within the Bingen/White Salmon area over the past decade. This rate of growth is well below the Klickitat County average annual population growth rate of 1.8%, and is likely indicative of a stagnant economy. Conversely, study area population growth on the Oregon side, at 1.65% per year, is only slightly below the Hood River County average growth rate of 1.8%.

Employment Trends and Other Economic Factors

Within the study area the unemployment rate is 9.5%, which is comparable to other rural areas in Washington and Oregon, but relatively high compared with the two states' urban areas. Also included in the Baseline Conditions Report is employment distribution, large employer information and personal income and earnings. The comparative regional economic advantages and disadvantages described in the Baseline Conditions Report include details on the flow of goods, labor, and customers as well as information on retail trade activity.

Importance of a Bridge Crossing

The SR-35 Bridge crossing between Hood River and Bingen/White Salmon is key to the flow of goods, the flow of labor, and customers in this region. Interstate truck transport dominates rail and river traffic in terms of transporting goods to and from the study area. Similarly, interstate labor flow within the region — and all person movement, for that matter — occurs almost exclusively by motor vehicle via the bridge crossing (as opposed to air, water, or rail).

Table 3 summarizes the monthly average daily traffic volumes on the bridge by vehicle type for fiscal year 2000 (July 1, 1999 through June 30, 2000). The increase in annual traffic volumes over the past 30 years may be partly attributable to the advent of windsurfing in the Columbia River Gorge and the increased draw of the area for recreation and tourism.

The importance of the existing Hood River Bridge is a function of the adequacy (or inadequacy, as the case may be) of available alternatives to serve traffic and the convenience to major trip origins and destinations. For local travel, there are no attractive alternatives, because the nearest Columbia River crossings are at Cascade Locks 24 miles to the west, and at The Dalles 22 miles to the east. If the Hood River bridge crossing did not exist, businesses and commuters traveling or transporting goods between White Salmon or Bingen and Hood River would face at least a one-hour addition to their cross-river travel time.

the Ports of Hood River and Klickitat. Pedestrian and bicycle travel are an increasingly important component of recreational travel in the CGNSA.

Information on transit and other transportation modes (mainly freight) is included in the Baseline Conditions Report. Information is also presented for trucking and heavy rail.

Area Traffic

Traffic patterns in the area around the Hood River Bridge are influenced by three factors: the limited number of roads connecting with the bridge; the location of most jobs in the region on the south side of the Columbia River; and the differences in tax structure between Oregon and Washington. The Washington sales tax provides an added incentive for Washington residents to do their major shopping south of the river where there is no sales tax. While there are a number of substandard local roads and streets in the vicinity of the Hood River Bridge, the congestion level on local roads are relatively low.

1990 Origin Destination Survey

In 1990, the Washington State Legislature authorized the Washington State Transportation Commission to conduct a traffic survey of the Hood River Bridge in conjunction with local governments. The result of this decision was the 1990 Origin Destination Survey, which is the most recent survey of bridge users. Since the survey, there have been several changes in the area including the location of a Wal-Mart in Hood River. These changes suggest the need for an updated Origin Destination Study that would provide a current picture of bridge traffic.

In 1990, a total of 3,408 surveys were returned (39% response rate). The survey showed that trips that end at home are more likely to end on the Washington side of the bridge. Non-home trips are more likely to end on the Oregon side of the bridge. This suggests that local Washington residents are the primary users of the Hood River Bridge. Also, survey results show that the two dominant trip purposes for those crossing the bridge are work and shopping. More than half of the respondents stated that they use the bridge more than five times per week.

PUBLIC AND AGENCY INVOLVEMENT

A variety of means have been used to involve the public in this project, including:

- Advisory committee meetings
- Public meetings
- Stakeholder interviews
- Project newsletters
- Community questionnaire
- Media releases
- Community group presentations

Citizens have been asked to do the following:

- Review, supplement, and prioritize key study issues identified in an earlier phase of the project.
- Comment on the results of preliminary assessments of potential crossing corridors and facility types, including the criteria used to evaluate them.
- Recommend additional methods for involving the public.

A summary of the results of these activities follows:

Advisory Committee Meeting Process

Three committees are helping guide the study. They include:

- **Local Advisory Committee (LAC):** Composed of local citizens representing business, environmental, ethnic, and other civic groups or constituents. This group reviews and discusses technical work from the perspective of community leaders who have a broad understanding of regional needs. This committee provides recommendations to the Steering Committee regarding the nature of SR-35 river crossing needs and a link to the Management Team. To date, this committee has assisted in identifying key study issues, reviewing preliminary corridors and the consultant and management teams' assessment of them, and recommending means for involving the public. Key comments and recommendations from the LAC have included a recommendation to broaden the initial corridor evaluation criteria to include local economic, recreational, environmental and other impacts, and concurrence with resulting recommendations for crossing corridors that should be studied further.
- **Steering Committee:** Composed of elected officials or high-level managers from participating agencies and senior agency staff, including ODOT and WSDOT senior management staff, RTC representatives, Port commissioners or senior staff, County Commissioners, Mayors, and County Engineers. This committee reviews information from the Local Advisory Committee, resolves issues where there is an impasse, provides liaison to their respective constituents, receives recommendations, and

deliberates prior to making final recommendations to the Management Team. The Steering Committee also concurred with consulting team recommendations for crossing corridors that should be evaluated further in subsequent rounds of analysis.

- **Resource Regulatory Committee:** Composed of staff of state and federal resource and regulatory agencies with an interest and role in reviewing the environmental impacts of the project. This group meets periodically to comment and provide recommendations on how best to address technical and regulatory issues. Along with participants in the Oregon Accord and Washington Merger environmental streamlining processes, it also acts as a forum for NEPA-related decision points and issues. Members of this committee have been helpful in identifying specific issues for evaluation, recommending a broader preliminary corridor assessment, and suggesting additional agencies and representatives that should be involved in the process.

Stakeholder interviews

Approximately 25 stakeholder interviews were conducted in September – October 2000 with a variety of community leaders and interest group representatives. Interviewees were asked to identify key issues, potential evaluation criteria, and provide comments about specific preliminary crossing corridors. Summary results included the following:

The most frequently cited general issues identified by interviewees include:

- Safety problems with the existing bridge, related to narrow lanes and possible structural deficiencies.
- Economic impacts on local communities, port districts, and the larger region.
- Freight movement for surrounding businesses.
- Transportation-related impacts on adjacent facilities.
- Historic and aesthetic impacts.
- Tolls should benefit bridge users and should expire when construction costs are paid.
- Social/local community needs are extremely important for people who use the bridge to get to work, shopping, entertainment, and other social activities.

Other issues cited once included impacts to adjacent landowners, the length and cost of the study, provision of transit service, effects on railroad and river traffic, and possible delays caused by construction of a new facility.

Interviewees made a variety of comments about alternative corridors.

- There are differing opinions about whether or not the existing location should be used for a new or improved crossing, with some in favor and some not.
- Potential visual impacts of a high bridge are a significant concern.
- The east alternative could have impacts on Koberg State Park, Stanley Rock, and the adjacent in-lieu fishing site and railroad crossings.

-
- The west alternative could affect historic resources, including the Columbia Gorge Hotel and Historic Highway, and may be the most inconvenient option for Washington residents.

The most frequently cited potential impacts of a new or improved facility include those on road traffic, river navigation, accessibility and mobility for local community residents and workers, and the collection and amount of tolls. Impacts on port districts, tourism revenues, emergency service provision, the Mt. Hood Railroad, land use, agriculture, pedestrian access, views, and adjacent property also were cited. Interviewees think the most important evaluation criteria are:

- Cost of the facility (entire cost, funding and costs per user).
- Effects on local communities.
- Scenic/aesthetic impacts.
- Economic impacts and benefits.
- Other criteria cited include safety, effects on natural resources, convenience, land use impacts, long-term usefulness, commercial vehicle use, alignment, property impacts, and effects on businesses that may need to relocate.

Interviewees recommended several methods of informing and involving citizens in the study, including County newsletters, a web-based mailing list, community displays, contact with specific bridge users, and an open house conducted in Stevenson.

Public Meetings

Two public meetings have been conducted to inform and involve citizens in the project. A summary of comments and issues raised at the meetings are summarized in more detail below.

Approximately 40 people attended a public open house on October 12, 2000. Participants reviewed background information about the project and provided comments on issues related to the study, as well as those related to specific corridors identified for further study. Summary results of this meeting included:

- The majority of participants lives in Washington and work in Oregon.
- Top-priority general study issues identified by participants include:
 - Location of a potential new facility
 - Alternative transportation issues
 - Safety
 - Tolls
 - Current and future capacity
- Most frequently cited comments related to specific crossing alternatives include:
 - Traffic impacts

-
- Tolls/ownership of bridge
 - Location of a potential new facility
 - Safety
 - Environmental impacts such as noise, and effects on the hatchery and wetlands
 - Proximity to adjacent communities
 - Physical constraints

Approximately 60 people attended a public “scoping” meeting/open house on March 8, 2001. This meeting served as the scoping meeting for the NEPA process initiated in February 2001. Participants reviewed a preliminary assessment of corridors and types of facilities identified for further study, as well as the criteria used for the initial evaluation. Summary results of the meeting included:

- The majority of participants live in Washington (about 80%), and about 60% work in that state.
- Most participants agreed with comments expressed during previous public outreach activities, with the following exceptions:
 - Most disagreed with the statement that “the historic value of the existing bridge and impacts on nearby resources such as the Columbia Gorge Hotel and Historic Highway are important”. Comments seem to indicate that some or most of the disagreement was with the historic value of the existing bridge, rather than adjacent historic resources.
 - Over half disagreed with this statement: “potential visual impacts, particularly of a possible high bridge alternative, are important.”
- Almost all participants agreed with initial assessments of different types of facilities, with one exception: about 40% of those who commented did not agree on the priority (high) for further evaluation of “short term improvements to the bridge.”
- There were a wide range of comments about preliminary evaluation of corridors:
 - Just over half of the participants (who noted an opinion) agreed with the “low” rating for the West Corridor.
 - A slight majority agreed with the “high” rating for the City Center corridor.
 - Most agreed that the Existing Low corridor deserves a high rating.
 - Over half disagreed with the low rating for the Existing High corridor.
 - A majority disagreed with the “moderate” rating for the East A corridor.
 - All disagreed with the moderate rating for the East B corridor.

It is unclear whether those who disagree with the moderate ratings for the two East corridors would prefer a low or high rating.

Project Newsletters

Regular newsletters are used to inform the public of project status and developments. The first newsletter was distributed in October 2000 as an insert in local newspapers. It described the background of the project, preliminary corridors identified for study, important issues and possible impacts associated with potential corridor crossings, and planned public involvement techniques and activities. The second newsletter, distributed in February 2001, described the results of a preliminary corridor and facility screening process, including evaluation criteria, results and recommendations, and upcoming public involvement activities. This newsletter was provided directly to approximately 350 people who expressed an interest in the project and made available through a variety of community meeting places, businesses, and public buildings. A third newsletter will describe the results of an expanded initial corridor screening process and resulting Tier I recommendations.

Community Questionnaire

A community questionnaire was developed at the outset of the project to identify important issues and criteria for evaluating crossing corridors and alternatives. Questionnaires were included in the first project newsletter, which was distributed as an insert in local newspapers with a circulation of approximately 9,000. The questionnaire also was made available on the project website and in a variety of community meeting places in Oregon and Washington. Summary results include:

- The majority (71%) of the respondents use the Hood River Bridge at least once a week.
- Respondents ranked safety, connection to adjacent highways, tolls, cost and economic impacts, and financing as the most important factors that should be considered in evaluating crossing alternatives.
- When asked about financing strategies, respondents said they would prefer for the bridge to be paid from existing resources such as grants (87%) and existing gas tax revenues (65%). Approximately 45% considered toll revenue as a potential funding source. Local funding mechanisms received the least support.
- Respondents prefer to be kept informed of the study by direct mailings, media advertising, and public meetings.

Media Releases

Media notices to local newspapers and radio stations have been used to inform the public about the status of the project and invite them to attend public and advisory committee meetings.

Community Group Presentations

Several presentations have been made to local interest groups and stakeholders. Additional presentations are planned for Tier II.

Additional Scoping Comments

The public via e-mail, mail and telephone provided a variety of comments during the scoping phase of the project. Scoping comments are summarized in the next chapter, “Environmental Review Process”.

ENVIRONMENTAL REVIEW PROCESS

The primary environmental activities completed in Tier I included inventorying preliminary baseline environmental conditions and identifying the requirements of applicable environmental processes and regulations. Then, a strategy to meet these requirements that was commensurate with the project's schedule for alternative development and public involvement activities was developed and implemented. Coordination with environmental review processes focused on two regulatory authorities: the National Environmental Policy Act (NEPA) and a federal environmental streamlining policy for transportation projects. These authorities are "umbrella" processes that encompass multi-disciplinary resource considerations as well as other federal, state and local laws and regulations.

Specific actions taken and products completed during Tier I include:

- Inventorying preliminary baseline environmental considerations
- Preliminary Environmental Study Plan
- Draft project agreement for the environmental streamlining process
- Draft Purpose and Need Statement
- Presentation to the Washington Signatory Advisory Committee (SAC)
- Presentation to the Oregon Collaborative Environmental and Transportation Agreement to Streamline (CETAS) agency committee
- Scoping Report

NEPA Compliance

A Preliminary Environmental Study Plan was drafted to document the planning process and to ensure that the project development complies with applicable environmental laws and regulations. The Study Plan outlines the project's environmental review process by identifying the purpose of and need for the project, environmental scope of work, roles and responsibilities, the NEPA process and schedule, and the DEIS components.

In general, the NEPA process for this project will follow the standard EIS development stages:

- Project coordination and study planning
- Generation of preliminary alternatives
- Public scoping
- Alternative development
- Preparation and circulation of the DEIS
- Response to comments
- Preparation and circulation of the final environmental impact statement (FEIS)

- Record of Decision

During Tier I, the first three stages were accomplished. The study corridors and preliminary alternatives were presented at scoping and advisory committee meetings.

Public scoping began with the publication of a Notice of Intent to prepare an EIS in the Federal Register on February 27, 2001. The scoping period closed March 30, 2001 and included two public meetings held on March 8, 2001 (one for agencies and one for the public).

The range of comments received during the scoping period included: consideration of impacts on windsurfing; motorist, bicycle, and pedestrian safety crossing the existing Hood River Bridge and at the intersections of the approach road to the bridge; traffic congestion at the tollbooth and along the bridge access road; impacts on the local economy; impacts on the environment, including tribal fishing sites within the study area; and impacts of tolls on the local economy and financing of a new crossing. Other concerns cited were impacts of crossing corridors on the natural environment, parkland, threatened or endangered species, land use (especially the Port of Hood River, downtown Bingen, and the Port of Klickitat), the Columbia River Gorge National Scenic Area, and specific local businesses or recreation areas. The Scoping Report that was prepared provides a more detailed summary of the comments received.

Tier II will focus on developing alternatives that consist of specific locations and facilities. Preparation and circulation of the DEIS as well as responding to comments and developing a scope of work for the FEIS will be completed in Tier III. Actual preparation and circulation of the FEIS will follow Tier III.

Environmental Streamlining Process Compliance

PRINCIPLES AND PARTICIPANTS

In a May 1, 1992 agreement, the U.S. Department of Transportation, the U.S. Department of Army (Civil Works), and the U.S. Environmental Protection Agency (EPA) adopted the following as agency policy: (1) improved interagency coordination, and (2) integration of NEPA and the Clean Water Act Section 404 procedures. In 1996, states of Washington and Oregon independently executed intrastate agreements to implement this federal policy. The states' agreements are known as the Washington NEPA / SEPA / 404 Merger and the Oregon Accord (now called the Collaborative Environmental and Transportation Agreement to Streamline [CETAS]). Signatory agencies for the Washington Merger include: FHWA, EPA, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Marine Fisheries Service, WSDOT, Washington Department of Ecology, and Washington Department of Fish and Wildlife. The same federal agencies are signatories on the Oregon CETAS in addition to the following state agencies: ODOT, Department of Environmental Quality, Department of Fish and Wildlife, Department of Land Conservation and Development, and Division of State Lands.

IMPLEMENTATION

Since this project is a bi-state transportation project, it invokes both the Washington Merger and the Oregon CETAS. Upon preliminary Management Team consultation with FHWA, it was determined that a project agreement could be drafted and signed by all agencies on the Washington Merger and Oregon CETAS committees in order to further streamline the environmental review.

A project agreement was drafted in February 2001. It was based on the language and concurrence process of both states' current agreements and involved all agencies in the original agreements. The U.S. Coast Guard and U.S. Forest Service, which are not signatories on the original state agreements, were also asked to participate in the project agreement due to site-specific resource or jurisdictional considerations. RTC would also be a signatory agency due to its integral role as project sponsor.

Due to revisions being undertaken on the Oregon CETAS agreement and recent initiatives to revise the Washington Merger in Spring 2001, the Management Team agreed to temporarily suspend developing the project agreement. This decision was based on the lack of available knowledge about the revisions to the states' agreements and how these revisions may affect the project agreement. After evaluating different options on how to proceed, it was decided that the most practical course of action was to pursue both state's processes separately but on a parallel course. This will allow the project to continue in its development while also complying with the environmental streamlining policy. The option to pursue a project agreement will be revisited once both states complete their revisions.

CONCURRENCE PROCESS

The fundamental elements of the environmental streamlining process are concurrence points. The intent of the concurrence process with concurrence points is to encourage early substantive participation by the regulatory and resource agencies and to preclude the routine revisiting of decisions that have been agreed to early in the process.

Once concurrence on a point is gained, this stage in project development is not revisited unless substantial new information emerges or the project undergoes significant change. The project will not proceed to the next stage until concurrence is gained from the resource and regulatory signatory agencies.

The concurrence points for this project are those for a standard project EIS:

- Purpose and need
- Role of all agencies
- Criteria for alternatives selection
- Alternatives to be considered in the DEIS
- Preliminary preferred alternative (if selected)
- Detailed mitigation plan

-
- FEIS preferred alternative

Figure 4 below illustrates which steps in the NEPA EIS project development require concurrence from resource and regulatory agencies.

At the end of Tier I, a draft Purpose and Need Statement was presented to the Washington Merger committee in May 2001 for comment. A similar presentation was made to the Oregon CETAS committee in June 2001. Comments received from these committees and other public involvement activities were incorporated into a revised Purpose and Need Statement. This statement was submitted to both states' committees for concurrence. The Role of All Agencies was also submitted to the Washington Merger committee for concurrence at the same time; it is not a formal concurrence point for the Oregon CETAS committee.

The next two concurrence points, criteria for alternative selection and selected alternatives to be considered in the DEIS, will be undertaken in Tier II and submitted for concurrence at that time. If a preliminary preferred alternative is selected, concurrence will be sought in Tier III. Concurrence on the last two points, the detailed mitigation plan and FEIS preferred alternative, will be follow Tier III.

CHALLENGING ISSUES FOR THE ENVIRONMENTAL REVIEW PROCESS

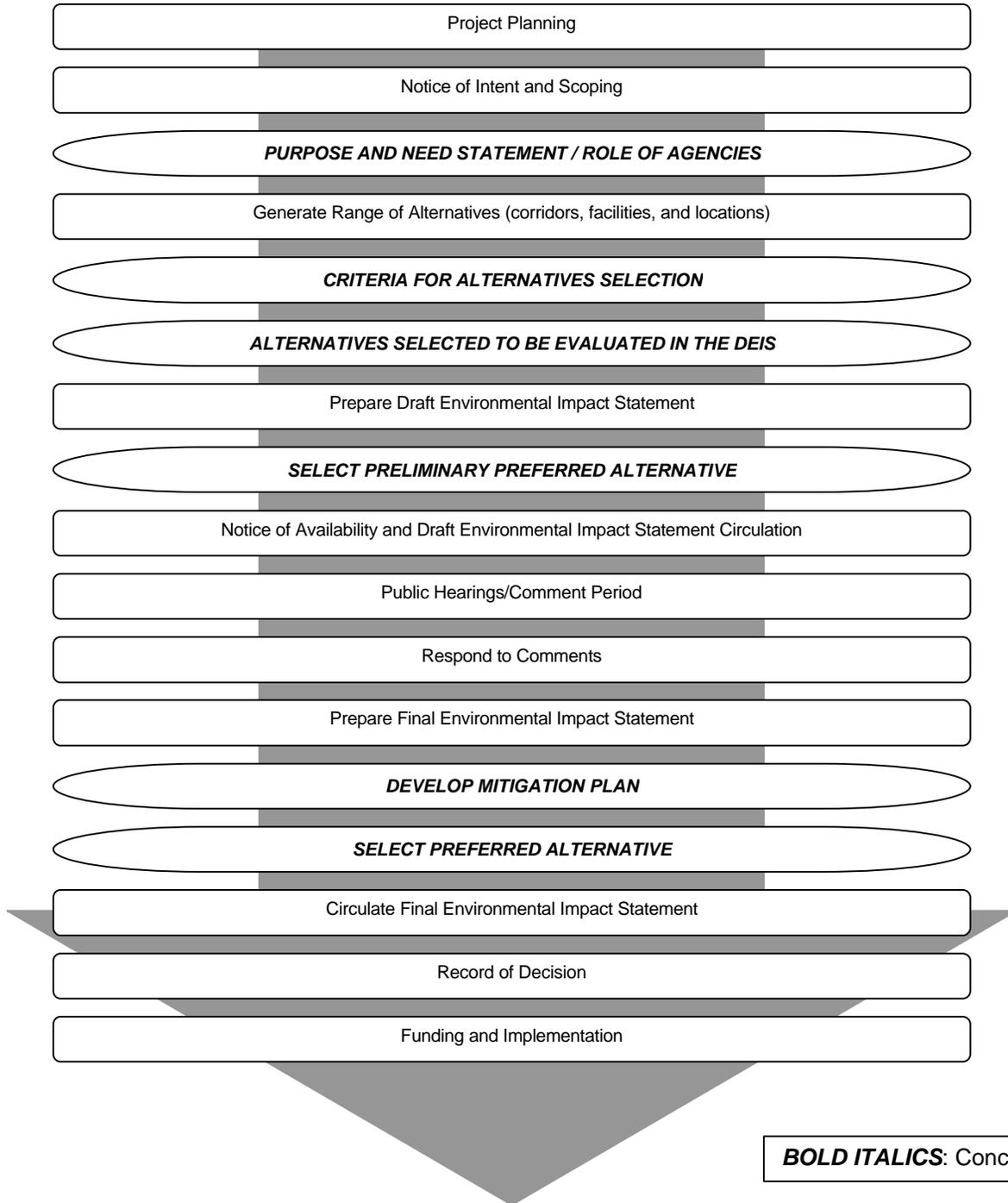
The environmental review process for this project will be challenging. Environmental review issues that are likely to recur throughout project development include developing avoidance, minimization and compensation strategies for critical environmental resources.

The project area supports unique windsurfing opportunities and is highly used for this and other recreation. In locating and designing a potential new facility, impacts to these recreational uses will need to be addressed. The Columbia River also provides critical habitat for several federally listed threatened or endangered fish species, and provides habitat to other migratory and resident fish species. Impacts to fish and their habitat during construction and over the lifetime of the facility will need to be addressed. Moreover, the project is located within the Columbia River Gorge National Scenic Area; thus, visual impacts associated with a potential new crossing will likely be an important issue.

Until both of the Washington and Oregon environmental streamlining processes are revised, duplicative federal agency review will occur. This may be timely and hinder concurrence. A project agreement that substitutes for both states' agreements will attempt to resolve this duplicity and improve overall environmental review efficiency.

The concurrence process may be difficult and timely to navigate. This is due in part to current revisions of the states' agreements. Also, the signatory agencies have different mandates and regulatory authorities that do not necessarily lead to consensus. For both states, the concurrence process is relatively young, and implementation approaches are still being developed.

**Figure 4. Combined Steps in the NEPA Project Development and Environmental Streamlining Concurrence Processes
SR-35 COLUMBIA RIVER CROSSING**



CORRIDOR SCREENING

A corridor is defined as an area, up to 1000 feet wide, that connects I-84 or a proximate point in Oregon to SR-14 or a proximate point in Washington. There are six crossing corridors that are being studied. These corridors include the corridor where the Hood River Bridge is located and five new crossing options identified from the public and agency public involvement process. The corridors are listed below and are also shown on Figure 5.

- West Corridor
- City Center Corridor
- Existing Low Corridor
- Existing High Corridor
- East A Corridor
- East B Corridor

Preliminary baseline conditions were inventoried for these corridors in order to begin the process of identifying reasonable and practical alternatives that satisfy transportation needs of the Study and meet other project objectives, such as accommodating river navigation and minimizing impacts to the environment. In Tier I of the Study, corridors were screened based on a broad range of criteria, including transportation, economic, environmental (built and natural), recreation, and cultural/historical impacts. The following sections define the criteria used, the results of the screening, and recommendations for carrying specific corridors forward in the Study for further consideration.

Based on the recommendations of the corridor screening, a range of alternatives will be developed (Tier II activity). Each alternative will include a specific crossing location within the corridor and a facility (a subsequent section in this report describes preliminary facility options that are being considered). A No Action alternative will be included in the range of alternatives and will contain currently funded and programmed projects in the study area, including maintenance work on the existing Hood River Bridge.

Criteria and Scoring

Each corridor was screened based on criteria that reflected the project purpose, needs and objectives. The No Action alternative is also included in the screening. Based on corridor-level information, each corridor was scored for the level of potential conflict with each criterion as follows:

- High conflict: A high level of adverse impacts is likely and mitigation to offset the impacts would be infeasible or impractical.
- Moderate conflict: A moderate level of adverse impacts is likely and mitigation is feasible or practical, but may be expensive to provide.

- Low conflict: There is a low potential for adverse impacts and little or no mitigation may be necessary.

The following sections define each criterion and its respective scoring for each corridor. Table 4 shows the results of this detailed corridor screening.

Figure 5. SR-35 Crossing Study Corridors Map

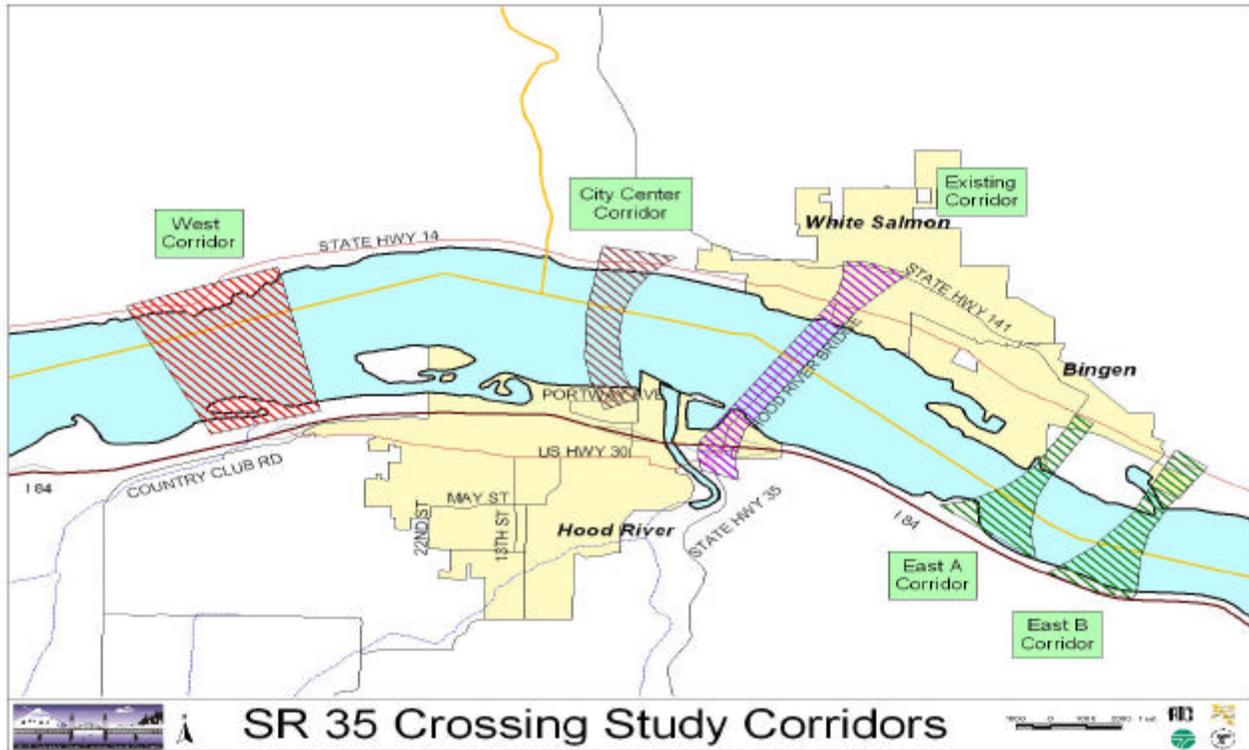


Table 4. Detailed Corridor Screening

Criteria: Potential to conflict with the following purposes for the project	Corridors						
	West	City Center	Existing Low	Existing High	East A	East B	No Action
Improve cross-river transportation of people and goods while accommodating standard-width river navigation	●	◐*	○*	●	◐	●	●
Vehicle miles traveled	●	◐	○	◐	◐	●	○
Bicycle and pedestrian mobility	●	◐	○	●	◐	●	●
Commercial goods mobility	●	◐	○	●	◐	●	◐
Accommodate river navigation	◐	◐*	◐*	◐	◐	◐	●
Minimize impacts to the natural, built, and aesthetic environment	●	◐*	◐*	●	●	●	NA
Federally listed threatened and endangered fish species and habitat	●	●*	●*	●	●	●	NA
Federally listed threatened and endangered wildlife and plant species and habitat	○	○	○	○	●	●	NA
Other fish, wildlife and plant species and habitat	◐	◐	◐	◐	●	◐	NA
Visual resources	●	◐*	◐*	●	●	●	◐
Land use consistency	●	◐	○	●	◐	●	○
Minimize impacts to recreation activities	●	●*	○*	○	●	●	○
Water-based recreation	●	●*	◐*	○	◐	●	◐
Land-based recreation	◐	◐*	○	○	●	●	○
Minimize impacts to cultural and historical resources	●	◐	◐**	◐	○	○	○
Be financially acceptable and support local economic development	●	●	◐	●	◐	●	◐
Cost of project	NA	NA	NA	NA	NA	NA	NA
Impacts to local business	●	●	◐	●	◐	●	◐
Maintain the integrity of the interstate highway system	○	○	○	○	●	●	○
Should the corridor be considered further in the project development?	No	Yes	Yes	No	Yes	No	Yes

● = High conflict; ◐ = Moderate conflict; ○ = Low conflict; NA = Not applicable

*Conflicts would be less for a tunnel facility option

**Conflicts would be higher for a tunnel facility option

TRANSPORTATION OF PEOPLE AND GOODS

Transportation considerations at the corridor-level screening can be assessed with several measures: vehicle miles traveled, bicycle and pedestrian mobility, commercial goods mobility, and meeting navigation standards.

Vehicle Miles Traveled (VMT)

Using the 1991 Hood River Bridge Origin-Destination (O-D) Study (Intergovernmental Resource Center, 1991), trip tables for cross-river trips were developed for the year 2020. Origins and destinations were generally city limits or subareas identified in the O-D Study and were considered as traffic zones for this analysis. Cross-river trips were assigned to the roadway network based on the corridor location and the origin and destination traffic zone. Vehicle miles traveled were calculated by multiplying each trip's length by the number of trips between traffic zones.

- High Conflict is a Year 2020 VMT that is 30 percent or higher than the VMT for the current bridge crossing.
- Moderate Conflict is a Year 2020 VMT between 11 and 30 percent higher than the VMT for the current bridge crossing.
- Low Conflict is a Year 2020 VMT within 10 percent of the VMT for the current bridge crossing.

The Year 2020 VMT table (daily trips) and resultant conflict levels for each corridor is shown in Table 5.

Table 5. Vehicle Miles Traveled Summary

Corridor	Year 2020 VMT	Change from Existing (Low)	Conflict Level
Existing Low	59,000	N/A	Low
West	98,000	+66%	High
City Center	70,000	+19%	Moderate
Existing High	67,000	+14%	Moderate
East A	73,000	+24%	Moderate
East B	90,000	+53%	High

Bicycle and Pedestrian Mobility

This was a composite measure using the VMT table shown above (assuming it would also apply to cross-river bicycle and pedestrian trips), relative grades at the crossing endpoints (to get onto and off of the crossing), and proximity to bicycle and pedestrian origins and destinations (such as residential neighborhoods, commercial/retail centers, employment centers, and parks). Also, bicycle and pedestrian mobility is based on the existence or practical addition of those facilities in the corridor.

- High Conflict occurs if bicycle and pedestrian Year 2020 VMT is 30 percent or higher than the VMT for the current bridge crossing; if grades at crossing endpoints are steep; or if bicycle and pedestrian facilities would be impractical to build.

-
- Moderate Conflict occurs if bicycle and pedestrian Year 2020 VMT is between 11 and 30 percent higher than the VMT for the current bridge crossing or if grades at crossing endpoints are moderate.
 - Low Conflict occurs if bicycle and pedestrian Year 2020 VMT is within 10 percent of the VMT for the current bridge crossing and grades are relatively easy to travel.

The West Corridor and East B Corridor received high conflict scores primarily based on the VMT measures as well as the increased distance from major commercial and employment centers that would generate pedestrian and/or bicycle trips. The Existing High Corridor was scored high due to the steep grades to access both ends of the corridor from residential, commercial and recreational use areas. City Center was scored moderate for its moderate VMT and having potentially steep grades on the Washington end of the corridor. East A was also scored moderate primarily for the VMT associated with the distance between the Oregon corridor end and Hood River residential, commercial, and employment centers. Existing Low was scored low due to its low VMT measure and lack of steep grades. However, the No Action alternative using the existing bridge received a high conflict due to the lack of facilities that enable bicycle and pedestrian travel.

Commercial Goods Mobility

This is a composite measure using the VMT table shown above (assuming it would also apply to cross-river freight and goods trips), relative grades at the crossing endpoints (to get onto and off of the crossing), and proximity to commercial/freight origins and destinations (such as commercial/retail centers, employment centers, and port facilities). Also, commercial goods mobility is based on the lane widths of facilities supporting large loads.

- High Conflict occurs if commercial Year 2020 VMT is 30 percent or higher than the VMT for the current bridge crossing; if grades at crossing endpoints are steep; or if facilities cannot support large loads.
- Moderate Conflict occurs if commercial Year 2020 VMT is between 11 and 30 percent higher than the VMT for the current bridge crossing; if grades at crossing endpoints are moderate; or if facilities have substandard conditions for large load transport.
- Low Conflict occurs if commercial Year 2020 VMT is within 10 percent of the VMT for the current bridge crossing; grades are relatively easy to travel; or facilities readily accommodate large load transport.

Similar to the previous transportation criteria, commercial goods mobility received high conflict scores for the West, Existing High and East B corridors due to high VMT and/or steep grades to access the corridor. City Center and East B were scored moderate for moderate VMT and steep grades with one end of the corridor. Existing Low received low conflict scores due to its low VMT between commercial centers and ports. The No Action alternative received a moderate conflict score due to the substandard height and width clearances that make large load transport difficult but passable on the existing bridge.

Meeting Navigation Standards

At the corridor-level screening, current navigation standards can be met as long as any horizontal clearances are no less than the 300-foot wide navigation channel. Vertical clearance requirements can be met with a high-level bridge or a bridge with a lift span. Any tunnel facilities would also meet navigation standards assuming the tunnel was located under the channel bottom. As alternatives (specific locations and facilities) are subsequently developed, this criterion can be applied at a more detailed level of assessment.

All corridors, except the No Action alternative, received moderate conflict scores due to the high likelihood of meeting navigation standards through improvements to the existing bridge or with a new crossing. The No Action alternative does not meet current navigation standards; thus, it received a high conflict score.

NATURAL, BUILT, AND AESTHETIC ENVIRONMENT

Environmental considerations at the corridor-level screening were assessed by looking at potential impacts to different resources, including threatened and endangered fish species and habitat; threatened and endangered wildlife and plant species and habitat; other fish, wildlife and plant species and habitat; visual and aesthetic resources; and land use consistency. As alternatives (specific locations and facilities) are subsequently developed, environmental criteria can be applied at a more detailed level of assessment.

Threatened and Endangered Fish Species and Habitat

A new crossing, utilizing facilities such as a bridge or tunnel, would directly affect habitat used by Columbia River fisheries resources. As many as eleven fish species or runs subject to management under the Endangered Species Act (ESA) occur within the river crossing corridors under consideration. The Columbia River shoreline to 300 feet beyond the Ordinary High Water Mark (OHWM) is designated critical habitat by NMFS.

Crossings in any of the corridors would have similar impacts. No differentially important habitat locations between corridors have been specifically identified to-date, although shoreline areas with intact vegetation (especially native vegetation) would have a higher value to fisheries resources than highly disturbed or altered shoreline areas. Therefore, the potential impacts or risks to fisheries resources, including species subject to the ESA, would be related to such interrelated project features as the number of piers in the river, crossing length, the length of the construction period, and the potential for vegetation clearing, erosion, and slope instabilities at landing areas.

All corridors, except the No Action alternative, were scored as high conflict to federally listed fish species. This scoring is based on direct effects to designated critical habitat to these species associated with making improvements to the existing bridge or constructing a new crossing across the Columbia River.

Threatened and Endangered Wildlife and Plant Species and Habitat

Several locations near the study area have been identified that are used by listed wildlife species, including a bald eagle nest. The bald eagle is threatened under the ESA,

although it is proposed for de-listing. Corridors received a conflict score based on its proximate location to the bald eagle nest.

The East A and East B Corridors are within a couple miles of the bald eagle nest; thus, both received high conflict scores. All other corridors were not expected to potentially affect this species; thus, each received low conflict scores.

Other Wildlife and Plant Species and Habitat

Several specific locations have been identified that are used by plant or animal species of special interest, including state listed species and those that are considered by agencies as species of concern, priority, or sensitive species. The specific locations include a heron rookery on the west end of Wells Island and peregrine falcon nesting habitat (on nearby cliffs). The peregrine falcon is no longer on the federal list, but remains on Oregon's list. Great blue herons are not listed by federal or state agencies, but a rookery is an important location for successful reproduction by the herons. White meconella (*Meconella oregana*) is a USFWS species of concern and a candidate for listing in Oregon. Alternative corridors would be rated based on their proximity to identified species habitats.

Other identified habitats that are particularly important for fish and wildlife support include wetlands, cliffs, and native oak forest. These are considered to be priority habitats by the Washington Department of Fish and Wildlife. Locations, such as Bingen Lake, provide substantial support to waterfowl, shorebirds, and predatory birds, including peregrine falcons.

- High conflict would occur if special interest species or habitat occur within a corridor and potential impacts would be difficult to avoid.
- Moderate conflict would occur if special interest species or habitat occur within a corridor and potential impacts would likely be minimized.
- Low conflict would occur if special interest species or habitat did not occur within a corridor, or if these species did occur within a corridor but impacts would likely be avoided.

The West Corridor received a moderate conflict score due the proximity of the heron rookery on Wells Island. The City Center, Existing High and Existing Low Corridors received a moderate conflict scores due primarily to intact vegetation and forests along the Washington side of the corridors. The East A Corridor received a high conflict score due to the reported presence of white meconella on Stanley Rock and waterfowl habitat at Bingen Pond on the Washington side of the corridor. The East B Corridor was scored as moderate conflict for the vegetation located on the Washington side of the corridor.

Visual Resources

At the corridor-level screening, impacts to visual quality of the Columbia River Gorge was assessed as follows:

- High conflict would occur if the crossing is the dominant feature of the view; if the crossing is outside Urban Areas and within Critical or High Landscape Sensitivity

areas (as defined by the CRGNSA Management Plan); disturbance to natural vegetation at corridor ends would be a dominant change to the current view.

- Moderate conflict would occur if the crossing is clearly visible but not a dominant feature of the view; if the crossing is outside Urban Areas and within Moderate, Low or Minimal Landscape Sensitivity areas (as defined by the CRGNSA Management Plan); disturbance to natural vegetation at corridor ends would be clearly visible but not a dominant change to the current view.
- Low conflict would occur if the crossing is partially visible but not a dominant feature of the view; if the crossing is within Urban Areas (as defined by the CRGNSA Management Plan); disturbance to natural vegetation at corridor ends would be partially visible but not a dominant change to the current view.

The West Corridor was scored as high conflict to visual resources due to the Washington side of the corridor being location outside designated Urban Areas and the associated disturbance to natural vegetation on the Washington end of the corridor. The City Center Corridor is located in a designated Urban Area both on the Oregon and Washington sides, but the endpoint on the Washington side may result in a visible change of the surrounding landscape and the bridge itself would be visible over the Columbia River; thus it was scored as moderate conflict. However, a tunnel facility may be feasible at this location; therefore, visual conflicts would be greatly reduced with this type of facility.

The Existing Low Corridor received a moderate conflict score due to the location being clearly visible. It is not necessarily a dominant feature since other development associated with Hood River and White Salmon designated Urban Areas are also visibly obtrusive to this view. A tunnel facility may also be feasible in this location; therefore, visual conflicts would be greatly reduced with this type of facility.

The Existing High Corridor lies within designated Urban Areas on both sides of the river. This corridor, however, but would likely incur clearly visible changes to natural vegetation associated with access roads to the corridor and would also be a predominant feature over the Columbia River, since a fixed span bridge would be 250 to 350 feet above the river surface. The Existing High Corridor received a high conflict score.

East A on the Oregon side is outside designated Urban Areas and would similarly incur clearly visible changes to natural vegetation on the Oregon side. East B is outside designated Urban Areas on the Oregon side of the corridor. Both of these corridors received moderate conflict scores.

Land Use Consistency

Evaluation of the corridor alternatives for land use impacts considered the extent to which a crossing would support or detract from existing land uses and policies outlined in adopted comprehensive plans. It was assumed that a new crossing would likely spur some new or future development near the bridgeheads. Direct impacts to existing land uses were not considered as part of this criterion but were included in the Local Economic Development criterion.

-
- High conflict would occur if new development was expected on the fringe or outside urban growth boundaries; or if new development uses would be inconsistent with uses currently occurring in the area.
 - Moderate conflict would occur new development would occur within urban growth boundaries and if new development uses would be consistent with planned use but not necessarily existing uses.
 - Low conflict would occur if new development was within urban growth boundaries and if new development uses would be consistent with uses currently occurring in the area.

The West Corridor and East B Corridor were evaluated as having high land use impacts largely because they were on the fringe of or outside the defined urban growth areas, where development (especially of the commercial type) is discouraged.

The Existing High Corridor was also considered to cause high land use impacts, especially on the Washington side. The high-level connection to White Salmon in particular was viewed as inconsistent with existing uses and as a development that had not been contemplated in the city's planning processes.

The City Center Corridor and the East A Corridor were viewed as having moderate land use impacts. Though new crossings, they would connect areas that have existing commercial and mixed-use development on at least one end of the corridor. Furthermore, the East A Corridor, though away from the center of Hood River, would support planned development at the Port of Bingen.

The Existing Low Corridor was evaluated as having low land use impacts, as a bridge here would not be expected to significantly alter the current land use and development that exists adjacent to the existing bridge.

RECREATION ACTIVITIES

Potential impacts to water-based and land-based recreation activities were screened separately due to location of parks and site-specific windsurfing conditions present in particular corridors.

Water-based Recreation

Shoreline access points and wind conditions on river areas are two important factors affecting windsurfing and kite boarding recreation. Boating and fishing recreation also utilize boat ramps to launch this sport.

- High conflict would occur if facilities located within a corridor would modify access to the river or river conditions in such a way that one or more of its uses is eliminated or severely altered.
- Moderate conflict would occur if facilities located within a corridor would modify access to the river or river conditions in such a way that one or more of its uses is moderately altered or diminished.

-
- Low conflict would occur if facilities located within a corridor would modify access to the river or river conditions in such a way that one or more of its uses is altered but not diminished.

The West and City Center Corridors were scored with high conflicts due to prime windsurfing conditions being located within the corridor. The Washington side of the West Corridor and the Oregon side of the City Center Corridor also provide access to the river for water-based activities. If a tunnel facility would be considered for the City Center Corridor, impacts to windsurfing conditions would be reduced.

The Existing Low Corridor received a moderate conflict due to it being located away from popular windsurfing sites but bridge piers still present obstacles for windsurfing navigation through the bridge crossing area. If a tunnel facility would be considered for this corridor, impacts to windsurfing conditions would be reduced.

The Existing High Corridor was scored as a low conflict due to low interference with winds that contribute to desirable windsurfing conditions. In addition, fewer bridge piers would interfere with windsurfing, kite boarding, boating or other river-users' maneuverability and safety.

The East A Corridor received a moderate conflict score for its proximity to Bingen Point launch area and a windsurfing area used for practice and training. Although not impacting the preferred expert windsurfing locations, it still would moderately impact windsurfing conditions in the corridor. The East B Corridor received a high conflict score due to its potential direct impacts to the Bingen Point windsurfing area.

Land-based Recreation

Land-based recreation activities include park use, camping, hiking, picnicking, outdoor concerts, and birding, to name a few.

- High conflict would occur if a park or other land-based recreation area is modified in such a way that one or more of its uses or if one or more of its aesthetic properties is eliminated.
- Moderate conflict would occur if a park or other land-based recreation area is modified in such a way that one or more of its uses or if one or more of its aesthetic properties is diminished but not eliminated.
- Low conflict would occur if a park or other land-based recreation area is modified in such a way that one or more of its uses or if one or more of its aesthetic properties is altered but not diminished.

The West Corridor received a moderate rating due to the potential of modifying the use and access to Spring Creek Hatchery State Park on the Washington side of the corridor and potential impacts to a blue heron rookery nearby. The City Center Corridor also received a moderate rating for potentially modifying the use of the Expo Center and boat launch on the Oregon side of the corridor.

Existing Low and Existing Low corridors received low conflict scores since few or no land-based recreational activities would be expected to occur. East A was scored a high conflict due to possible changes in uses and aesthetic properties of Bingen Pond on the Washington end of the corridor as well as possible changes in aesthetic properties near Stanley Rock and the Koberg State Wayside on the Oregon end of the corridor. The East B Corridor received a high conflict rating for the impacts to Bingen Pond as well as impacts to a popular picnic, outdoor concert, and birding area on the Washington side.

CULTURAL AND HISTORIC RESOURCES

The number and type of sites were considered in determining the conflict that a corridor or facility development would have on cultural, historic, prehistoric, and treaty access resources.

- High conflict would occur if known cultural or historic resources occurred throughout the corridor such that specific locations of facilities would not be able to avoid disturbance to the resources, such as any potential changes to the Columbia River Historic Highway (US-30); or, if treaty access fishing sites would be affected in any manner.
- Moderate conflict would occur if known cultural or historic resources occurred throughout the corridor but specific locations of facilities would be able to avoid disturbing many of the resources; if a moderate number of known sites occurred and could be avoided to a moderate extent; or if a treaty access fishing site is proximate but would not be affected.
- Low conflict would occur if few or a moderate number of known cultural or historic resources occurred throughout the corridor and specific locations of facilities would be able to avoid disturbing most of the resources.

The West Corridor received a high conflict score due to the proximity and potential effect to the Columbia Gorge Hotel, a site listed on the National Register of Historic Places, and potential changes to US-30/Columbia River Historic Highway at the West Hood River interchange.

The City Center Corridor received a moderate conflict due to its proximity to Highway 30 and potential effects to this historic highway in terms of potential intersection modifications needed in downtown Hood River to support the new crossing. The Existing Low Corridor was scored as having a moderate conflict due to a treaty access site being adjacent to the Washington side of the corridor. The Existing High Corridor would connect to Highway 30 on the Oregon side, and may affect this historic highway; thus it had a moderate score.

The East A and East B Corridors had few known cultural or historic resources present in the corridors; thus both received low conflict scores.

FINANCIAL ACCEPTABILITY AND LOCAL ECONOMIC DEVELOPMENT

Financial acceptability was defined as the ability to afford the cost of the improvement using corridor-level considerations. Detailed cost estimates or a financial study will be

developed in subsequent project stages, thus, the criterion for project cost was not considered at this time.

Impacts to local businesses were considered in the corridor screening and included two somewhat distinct potential adverse effects on businesses: (1) factors that impact business accessibility, including adding local area congestion, diverting traffic away from or bypassing businesses, and forcing business relocation (right-of-way taking); and (2) factors that may change the nature of the study area (e.g., decreased recreational draw) which would directly or indirectly impact local businesses. The degree (high, moderate or low) to which local business would be impacted by each corridor is described below.

The West Corridor was scored as a high impact to local businesses for several reasons. This location would bypass, and thus reduce economic activity to the businesses near the existing crossing's south bridge head and/or adjacent to the Hood River Marina. In addition, a West Corridor crossing was expected to adversely affect an area of the Columbia River that is considered by the windsurfing community as the premier windsurfing and wind-powered watercraft recreation site in the Columbia River Gorge. Access to this river area is via the Spring Creek Hatchery State Park, which is also located within the West Corridor. Compromising this particular site may cause windsurfers to shift to other parts of the Gorge, negatively impacting tourism and local merchants in the study area.

The City Center Corridor was scored as a high impact to local businesses for similar reasons as the West Corridor. It was felt that a crossing in this corridor could reduce access to, displace, or bypass local businesses on the south side in the Hood River Marina area, and possibly divert traffic away from businesses directly served by the existing crossing. Similarly, the proximity of a bridge crossing to the recently developed windsurfing event site west of the marina could create wind shadow problems and otherwise lessen the appeal of the location for organized wind powered craft sporting events and water sport activities in general. Reducing the appeal of this area for organized events, instruction, and training may ultimately decrease tourism and related business activity in the study area.

The Existing Low Corridor was evaluated as a low impact on local businesses. A new low crossing in this corridor would not likely significantly change the current alignment or have a substantial impact on local business related to accessibility or diversion. There may be some moderate level of business displacement, especially if a new bridge is built alongside the existing structure. Similarly, it would not be expected to reduce the recreational draw of the area in such as way as to alter the local economy adversely. Though it may create some construction impacts, this crossing would likely be linked with access improvements to reduce congestion, and would improve traffic flow and add non-motorized travel, all of which may improve business activity in the immediate area.

The Existing High Corridor was evaluated as a high impact on local businesses. By potentially connecting White Salmon directly with Hood River south of I-84, a crossing here was deemed as likely to reduce business activity in the Bingen area as well as at the south end of the existing crossing in the marina area. Several businesses in these areas

would be bypassed or suffer reduced traffic passage, and some businesses located in the way of the new structure would be displaced.

The East A Corridor was deemed to have a moderate impact on local businesses. Like some of the other alternatives, it would cause fewer vehicles to pass by the businesses in the Hood River Marina. However, this corridor location may provide equal or better access to businesses in Bingen, and would support planned business development at the Port of Bingen by the Klickitat County Port District #1. Depending on the nature of business development in the Bingen area, the overall impact on economic activity may eventually be considered low for this corridor.

The East B Corridor was deemed to have a high impact on local businesses due to its distance from downtown Hood River and the fact that it would bypass several businesses, particularly those near the existing crossing's south bridge head and/or adjacent to the Hood River Marina. Similarly, it would adversely affect the Bingen Marina Park Area, and compromising this site may ultimately send recreational users to other places outside of the study area, thus reducing tourist and related business activity.

MAINTAINING THE INTEGRITY OF THE INTERSTATE HIGHWAY SYSTEM

This was measured by examining current and future access needs on I-84. Impacts are considered high if new interstate access would be needed to support the corridor crossing, and low if it would use an existing interchange.

The West, City Center, Existing Low and Existing High Corridors would utilize existing interstate access points, thus, each was scored a low conflict. East A and East B would require a new interstate access point, and were scored high conflict as a result.

Recommendations

Table 6 summarizes the results of the corridor screening. Based on these results, the following recommendations are offered to focus study and resources on the corridors with the most promising ability to meet the Study's purpose, needs and objectives.

Table 6. Summary of Corridor Screening

Criteria: Potential to conflict with the following purposes for the project	Corridors						
	West	City Center	Existing Low	Existing High	East A	East B	No Action
Improve cross-river transportation of people and goods while accommodating standard-width river navigation	●	◐*	○*	●	◐	●	●
Minimize impacts to the natural, built, and aesthetic environment	●	◐*	◐*	●	●	●	NA
Minimize impacts to recreation activities	●	●*	○*	○	●	●	○
Minimize impacts to cultural and historical resources	●	◐	◐**	◐	○	○	○
Be financially acceptable and support local economic development	●	●	◐	●	◐	●	◐
Maintain the integrity of the interstate highway system	○	○	○	○	●	●	○
Should the corridor be considered further in the project development?	No	Yes	Yes	No	Yes	No	Yes

● = High conflict; ◐ = Moderate conflict; ○ = Low conflict; NA = Not applicable

*Conflicts would be less for a tunnel facility option

**Conflicts would be higher for a tunnel facility option

West Corridor: Recommended to be eliminated from further consideration due to high impacts associated with most criteria, including potential impacts associated with the environment.

City Center Corridor: Recommended to be carried forward for further consideration. It is noted that potential impacts to recreation, especially to water-based activities, may be high and potential impacts to the environment may be moderate.

Existing Low Corridor: Recommended to be carried forward for further consideration due to this corridor having fewer potential impacts relative to the other corridors.

Existing High Corridor: Recommended to be eliminated from further consideration due to potential high impacts to the environment combined with a high/moderate conflict with the transportation purpose for the project.

East A Corridor: Recommended to be carried forward for further consideration. It is noted that potential impacts to recreation (especially to land-based activities) may be high, potential impacts to the environment may be moderate, and connection to the interstate system may require a new access point.

East B Corridor: Recommended to be eliminated from further consideration due to high impacts associated with most criteria, including potential impacts associated with the environment.

No Action Alternative: Recommended to be carried forward throughout project development as required by NEPA.

In summary, the following corridors are recommended for further analysis in Tier II:

- City Center
- Existing Low
- East A
- No Action

FACILITIES

A variety of facility types were also studied. These ranged from ferries to person-based modes (tramway, for example) as well as vehicular (tunnel and bridge). Listed below is the summary of the facility type evaluation. Those facility types recommended for further analysis in Tier II include:

- Short-term Improvements to the Existing Bridge
- Tunnel (various types) at the City Center Corridor
- Floating or movable bridges
- Fixed span bridges

PRELIMINARY FACILITY EVALUATION

Also developed during Tier I were a range of facility types for a new or improved crossing. These were evaluated based on the project's Purpose and Need statement: if they did not provide for adequate cross-river transportation of people and goods, they were recommended to be eliminated from further consideration.

The following table summarizes the facility types studied and recommendations for Tier I, as well as the rationale for the recommendation.

Table 7. Tier I Analysis

<i>Facility</i>	<i>Recommended for Further Study?</i>	<i>Reasons for Recommendations</i>
<input type="checkbox"/> Aviation transport	No	<input type="checkbox"/> Would not adequately accommodate trucks, automobiles <input type="checkbox"/> Not feasible for most residents
<input type="checkbox"/> Bicycle/pedestrian only facility	No	<input type="checkbox"/> Would not adequately accommodate trucks, automobiles
<input type="checkbox"/> Ferry system	No	<input type="checkbox"/> Significant impacts on navigation, recreation
<input type="checkbox"/> Short-term improvements to the existing bridge and adjacent roads (e.g., one-way toll, reversible lanes, traffic lights)	Yes	<input type="checkbox"/> Low capital cost investments, which have short term positive effect
<input type="checkbox"/> Single, multi-modal draw or fixed span bridge or tunnel that accommodates automobiles, trucks, bicycles and pedestrians	Yes	<input type="checkbox"/> Would accommodate all identified modes of travel, utilizing current highway standards
<input type="checkbox"/> Tramway	No	<input type="checkbox"/> Would not adequately accommodate trucks, automobiles <input type="checkbox"/> Not visually subordinate
<input type="checkbox"/> Transit only facility	No	<input type="checkbox"/> Would not adequately accommodate trucks, automobiles

<i>Facility</i>	<i>Recommended for Further Study?</i>	<i>Reasons for Recommendations</i>
<input type="checkbox"/> Truck/bicycle/pedestrian bridge or tunnel, in conjunction with existing bridge for passenger vehicles	Yes	<input type="checkbox"/> Would accommodate all identified modes of travel, utilizing current highway standards shared between a new (tunnel or bridge and the existing bridge)
<input type="checkbox"/> Vehicle-only bridge or tunnel, in conjunction with the existing bridge set aside for bicycles and pedestrians	Yes	<input type="checkbox"/> Would accommodate all identified modes of travel, utilizing current highway standards shared between a new (tunnel or bridge and the existing bridge)

FACILITIES FOR FURTHER CONSIDERATION

For Tier II, the project team will develop a range of alternatives within the promising corridors. A number of options and/or variations of build alternatives will be considered which will look at ways to re-use, work in conjunction with, and/or replace the existing bridge using tunnels and/or bridges. Various widths of these facilities will be evaluated based upon the uses and impacts associated with the environment, cost, operations, etc. A general description of the principle facilities under consideration follows:

Tunnels

The three basic types of tunnel configurations that can be considered appropriate for this project include:

- Cut-and-Cover Tunnels
- Bored Tunnels
- Immersed Tube Tunnels

Cut-and-Cover Tunnels

Cut-and-cover tunnel sections are generally used where the depth of the roadway is relatively shallow (i.e. less than 50 to 60 feet) and only over dry land. These sections would most likely be utilized for the approaches to the main crossing on the Oregon side. The cross-section can be single or multiple cell, and is typically constructed of concrete and then backfilled over the top to re-establish the original ground.

Bored Tunnels

Bored tunnels are highly dependent on the width of the roadway proposed for use. Generally, bored sections vary from 10 feet to 45 feet in diameter. For the roadway configuration anticipated for this crossing, twin bored sections with a diameter of 25 to 30 feet would be assumed. This will split the north bound (N/B) and southbound (S/B) traffic between the bores and allow for shoulders and pedestrian access. The bored tunnel sections would be the longest of the tunnel options, because they need to stay some distance below the deepest part of the river to avoid water infiltration. This extra depth, combined with roadway grades (preferred around 3 to 4% max) would cause the tunnel length to increase.

Immersed Tube Tunnels

Immersed tube tunnels come in either a steel shell tube or reinforced concrete box tubes. The steel shell immersed tube is a binocular style tube, and the reinforced concrete box tubes could be single or multiple cell depending on the roadway width. The immersed tube tunnel is constructed by dredging a trough across the river. Tube sections are then floated out and sunk into position within the trough. The tube sections are connected together to form the overall tunnel.

Summary

Tunnel advantages:

- Creates no visual impact
- Vehicle traffic not affected by bridge lifts
- Vehicle traffic not affected by weather
- Navigation traffic not affected
- Seismic vulnerability minimized

Tunnel disadvantages:

- Higher cost
- More surface disruption for cut-and-cover and immersed tube sections
- Fire/safety issues add to cost

Bridges

The four basic bridge configurations that can be considered appropriate for this project include:

- Re-use of the Existing Bridge
- Floating Bridge
- Low-Level Movable Bridge
- High Fixed (Jump) Span Bridge

Existing Bridge

The existing bridge would be used with stand-alone improvements, such as signals, one-way time-dependent traffic flow, widening for pedestrians and vehicles, and modified for documented navigation requirements. The existing bridge could also be utilized for a number of options in conjunction with other proposals. This could include building a new facility parallel to the existing bridge, reusing the bridge for pedestrian use, one-way traffic, etc.

Floating Bridge

Floating bridges utilize a series of pontoon-type sections, which are linked together and tied down to the river bottom to prevent excessive movements. This bridge type would have the flattest grade as it would be at the river surface, but would restrict all river traffic except at the location of its moveable span. Local examples of this type of construction are the Lake Washington Bridge in Seattle. This type is typically used when the depth of the river is too great to use conventional in-water piers, and/or ground disruptions within the river are too great.

Low-Level Movable

A low-level movable bridges would be very similar to the existing bridge in Hood River. These bridge types are typically on a flatter grade, travel low across the river, and accommodate river traffic to any height. These bridge types do require more maintenance, crews to operate the moveable span, and will stop traffic when a bridge lift is needed for river traffic. The materials and/or bridge type have a wide range of possibilities. The bridge materials could match the existing bridge or be constructed of concrete. Bridge types could be girder, arch, truss, etc.

High Fixed (Jump) Span Bridge

A high fixed (jump) span bridge would be developed to accommodate river traffic's vertical and horizontal requirements. Grades would generally be steeper than other options discussed, but long-term maintenance would be less. The bridge would be higher, and could be perceived as a visual obstruction. A wide range of bridge types and materials could be used, from steel to concrete for materials, and from truss to girder to cable-supported for bridge types.

Summary

Bridge advantages:

- A low-level movable bridge would be more visually similar to the existing bridge
- Flat grades can easily be obtained for floating and low-level bridges
- Navigation traffic can be accommodated with any option
- Bridge touchdown points are close to shore, making bridge options much shorter in length than tunnels

Bridge disadvantages:

- Long term maintenance with moveable bridge types
- Possible visual impacts depending on height above the river and type of bridge
- Vehicle noise

For the three promising corridors, City Center, Existing Low, and East A, a simplified scan of existing physical constraints has determined:

- Tunnels are not feasible at East A given the depth of the River at that location.

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- Floating Bridges would be too high of an impact to water traffic for all corridors.
 - Retrofitting the existing bridge for a larger horizontal navigation channel is not economical.
 - Tunnels at the Existing Low corridor would cause excessive surface disruption on the Oregon side (existing structures and businesses) which could cause tunnels to be dropped for the corridor.

NEXT STEPS

Tier II would begin in the summer of 2001. It is intended to select a crossing corridor, develop the most promising long-term alternatives, select a short-term improvement option, and undertake a financial feasibility study to determine if there are sufficient financial resources available to fund a long-term improvement project. Tier III will conclude the study by selecting a preferred alternative, developing an implementation plan, and completing the DEIS.

The first phase of Tier II will include conducting a second evaluation, which will result in selection of one crossing corridor and narrow the range of long-term improvement alternatives to no more than eight long-term options for further analysis during this tier. Included will be order-of-magnitude improvement alternative costs to support the evaluation of the promising long-term alternative, as well as more detailed environmental and economic information.

The second phase of Tier II will include conducting a financial feasibility study. This study will identify current and potential future funding resources, and will determine whether it is feasible to fund long-term improvements. Included will be refined cost estimates and engineering work to support the financial feasibility study.

Tier II will conclude with selection of a short-term improvement strategy, narrowing options to two or three long-term improvement alternatives, and making a decision as to whether to continue with this study (and thus enter the next Tier III, which will be the DEIS).

If the study enters Tier III, this tier would consist of the selection of a preferred alternative through the DEIS process, and completion of a financing and implementation plan for the preferred long-term alternative.