Executive Summary

Draft Environmental Impact Statement and Section 4(f) Evaluation

I-90 Snoqualmie Pass East

I-90 Snoqualmie Pass East Project

Hyak to Easton

Project Purpose

- Reduce risks of avalanche
- Reduce risks of falling rocks on roadway
- Replace damaged pavement
- Provide for growth-related increases in traffic volume
- Connect fish and wildlife habitat across the freeway

Executive Summary

Where is the I-90 Snoqualmie Pass East Project located?

The Snoqualmie Pass East Project corridor is located in Kittitas County, Washington, along a 15-mile stretch of Interstate 90 (I-90) that passes through the Wenatchee National Forest. The corridor begins on the eastern side of Snoqualmie Pass at milepost 55.10 in Hyak and ends at MP 70.3 near Easton.

Why is the I-90 Snoqualmie Pass East Project important?

I-90 is vital to the state's economy because it is the main east-west transportation corridor across Washington State. I-90 connects Puget Sound's deep-water ports, larger population centers, and retail and service businesses with the farmlands, industries, and extensive outdoor recreational areas of Eastern Washington. The uninterrupted movement of cars, trucks, freight, and recreational vehicles across the Cascade Mountains and Snoqualmie Pass is essential to our quality of life and the economic vitality of our state.

This 15-mile section of I-90 is part of the 100-mile designated scenic byway called the Mountains to Sound Greenway. The Greenway is one of three designated scenic byways in Washington State, and it was the first interstate highway in the country to be designated as a National Scenic Byway. The Greenway begins at the Seattle waterfront and continues through forests and rugged mountains to the edge of desert grasslands in Central Washington.

In addition to being a scenic byway, the project area is located within the Wenatchee National Forest. With over 5 million visitors a year, the Wenatchee National Forest is one of the nation's top six most visited national forests. The Wenatchee National Forest offers a wide variety of recreational opportunities including hiking, camping, picnicking, fishing, and wintertime activities at several sno-parks.

What is the purpose of the project and why is it needed?

The purpose of this project is to meet projected traffic demands, improve public safety, and meet identified project needs along this 15-mile stretch of I-90.

The project is needed to:

- reduce the risks of avalanche to the traveling public and eliminate road closures required for avalanche control work.
- reduce the risk of rock and debris falling onto the roadway from unstable slopes.
- fix structural deficiencies by replacing damaged pavement.
- provide for the growth-related increases in traffic volume.
- connect habitat across I-90 for fish and wildlife.

Avalanche Control

Low Clearance Bridges

Avalanches and Closures

I-90 was closed for an average of 120 hours per year between 1992 and 2004 due to avalanche control work, poor weather and roadway conditions, and accidents. Avalanche control work alone causes I-90 to be closed for 65 hours each year. It is conservatively estimated that the closures for avalanche control work cost business and private travelers $17.5 million each year.

Unstable Slopes

Several unstable slopes have been identified throughout the project, which deposit debris on the roadway. In the past, debris from these unstable slopes has closed traffic lanes and caused serious accidents. The debris ranges in size from small rocks to large landslides. Although landslides are not a regular occurrence, their potential threat to public safety is significant and warrants solutions.

Deteriorating pavement

The pavement on this 15-mile stretch of roadway is between 30 and 50 years old. It has exceeded its lifespan and is rapidly deteriorating. Between 1993 and 1996, portions of the roadway were reinforced to help extend the pavement life to approximately 2010. In 1998, extensively damaged areas were overlaid with asphalt pavement. The asphalt pavement rapidly deteriorated due to extreme weather conditions and heavy use, and it was replaced 3 years later at a cost of $1.5 million. As more pavement fails, repeated overlay projects will be required, which will increase maintenance costs and cause additional traffic delays.

Traffic volumes

Each year 35 million tons of freight and 10 million vehicles travel over Snoqualmie Pass. Daily traffic volumes have climbed to as high as 58,000 vehicles per day, which exceeds the amount of traffic I-90 was designed to carry in this area. Traffic frequently backs up on weekends (particularly holiday weekends), and backups stretching for up to 30 miles have been observed. Average traffic volumes on I-90 are increasing by 3.5 percent each year. These annual increases will add approximately 20,000 vehicles per day to I-90 over the next 20 years. Additional traffic lanes are needed to accommodate predicted increases in travel volumes to ensure that this section of I-90 continues to function as a safe and efficient roadway.

Safety

This 15-mile section of I-90 has an accident rate that is twice that of other similar rural interstate highway sections. There are many sharp curves, which limit sight distance throughout the corridor. Unstable rock slopes often deposit debris on the highway, creating hazards that may not be seen in time for drivers to avoid. Winter storm events amplify the hazards caused by limited sight distance and alignment problems through this section of the corridor.

To Seattle

INTERSTATE 90

Hyak

Gold Creek

Rocky Run Creek

Wolfe Creek

Resort Creek

Townsend Creek

Price/Noble Creek

Bonnie Creek

Swamp Creek

KEECHELUS LAKE

SWAMP LAKE

KITTITAS COUNTY

KACHESS LAKE

Toll Creek

Cedar Creek

Telephone Creek

Hudson Creek

Yakima River

Kachess River

LAKE EASTON

Easton

To Ellensburg

N

W

E

S

I-90 Snoqualmie Pass East Project

Hyak to Easton

Project Area Physical Characteristics

Habitat connections for fish and wildlife

Snoqualmie Pass is recognized as a critical link for the north-south movement of fish and wildlife living in the Cascade Range. The project area is adjacent to several important wilderness areas that provide a variety of habitats due to variations in topography and precipitation. Over the past several years, land conservation efforts have added approximately 112 square miles to the National Forest system in the project area. The goals of these efforts are to protect old-growth forest, provide larger contiguous blocks of forest habitat, and facilitate habitat and hydraulic connections across I-90. Adequate connections between habitats on either side of I-90 are necessary for the continued health of the project area's diverse ecosystems.

Who is leading the project?

The Federal Highway Administration (FHWA) and the Washington State Department of Transportation (WSDOT) are joint lead agencies for this project. FHWA provides roadway design guidance and environmental oversight, and WSDOT is leading the roadway design effort and the environmental impact statement (EIS) process.

Who else participated in developing this Draft EIS?

Several other agencies have participated in developing this Draft EIS. The United States Forest Service (USFS) and United States Bureau of Reclamation (USBR) are cooperating agencies for this project. These cooperating agencies have helped identify alternatives, environmental impacts, mitigation measures, and required permits.

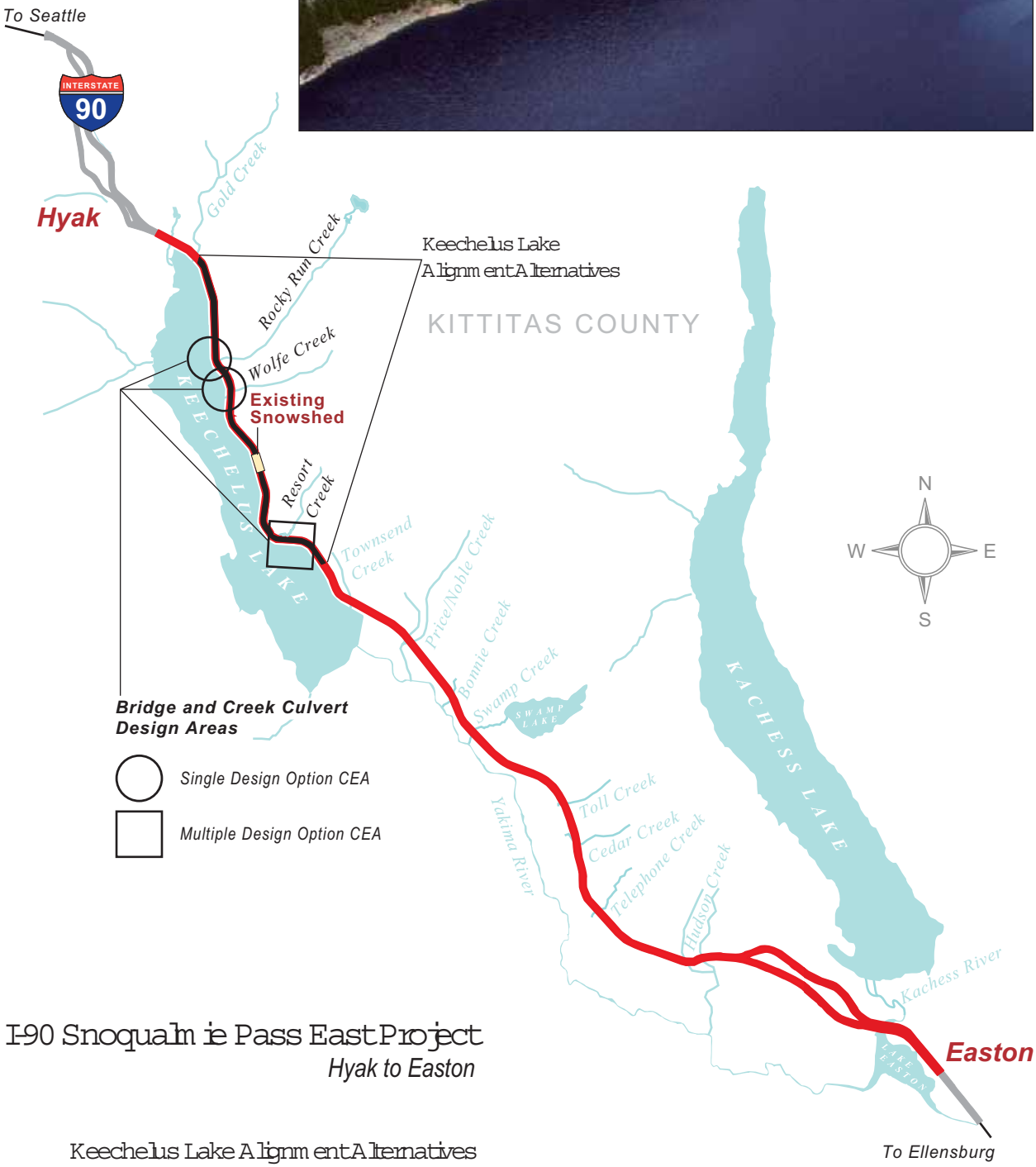
In addition, WSDOT/FHWA created an **Interdisciplinary Team (IDT)** to provide guidance and direction on project-related issues. The Project's IDT includes WSDOT, FHWA, USFS, United States Fish and Wildlife Service (USFWS), and the Washington Department of Fish and Wildlife (WDFW).

WSDOT and FHWA also created a subcommittee of the IDT called the **Mitigation Development Team (MDT)**. The MDT consists of biologists and hydrologists. The MDT focused on identifying ways to connect and improve fish and wildlife corridors located within the project area.

What alternatives are evaluated in this Draft EIS?

Two alternatives are evaluated in this Draft EIS: the No-Build Alternative and the Common Route Alternative. The No-Build Alternative establishes the baseline conditions to compare project effects of the Common Route Alternative. For this project, the No-Build Alternative assumes that the existing four-lane roadway would be maintained and rehabilitated as needed.

The Common Route Alternative would reconstruct and expand I-90 to six lanes between Hyak and Easton. For the most part, roadway improvements would be built along the existing roadway alignment. Along the Common Route



I-90 Snoqualmie Pass East Project

Hyak to Easton

Keechelus Lake Alignment Alternatives

Alternative, four different roadway alignments are proposed at Keechelus Lake. In addition, several options are proposed to improve habitat and hydraulic connections at key locations, called Connectivity Enhancement Areas (CEAs). All but one of the CEAs are located along stream corridors that cross I-90.

What would happen if this project didn't get built?

If this project is not built, the section of I-90 between Hyak and Easton would not be improved and critical needs would not be met. The existing four-lane roadway would require frequent resurfacing and only minor safety improvements would be made as part of ongoing maintenance activities. Roadway safety would not be improved. The risk of avalanches and rock and debris slides from unstable slopes would remain the same. Over time, this section of roadway would become more congested as traffic volumes increase. Habitat connections would not be substantially improved over existing conditions.

How does the Common Route Alternative meet the project needs?

The Common Route Alternative would meet the needs in the project area by:

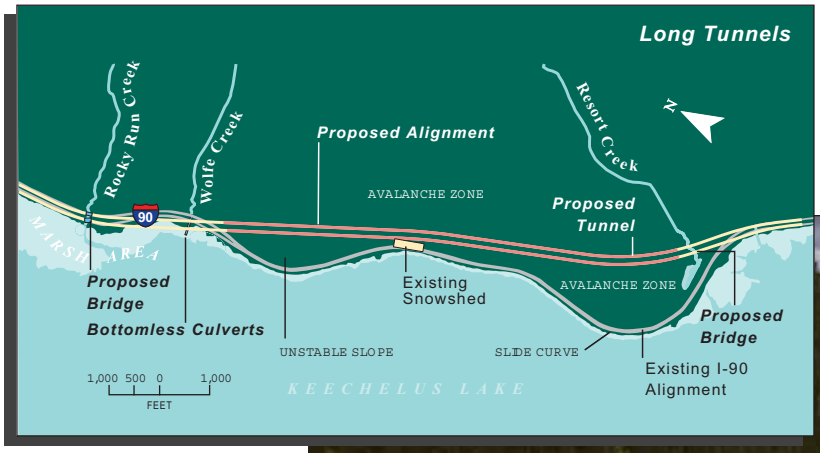
- constructing improvements along Keechelus Lake that will remove or reduce the need for avalanche control work.
- stabilizing slopes to reduce the risk of falling rock and debris.
- replacing damaged pavement.
- expanding I-90 from four lanes to six lanes to accommodate increases in traffic volume.
- improving habitat connections for fish and wildlife.

In addition, the Common Route Alternative would improve curves in specific areas of the corridor, which would improve roadway safety. Low clearance bridges would be removed and replaced with bridges that accommodate large trucks.

Within the Common Route Alternative, there are four alignment alternatives proposed at Keechelus Lake, and proposed connectivity enhancements that all meet the identified needs for the project to varying degrees. For example, the proposed alignment alternatives at Keechelus Lake all would substantially reduce avalanche control work in the project area, but Alternative 1 would eliminate avalanche control work. The same is true for connectivity enhancement options—all of them would improve habitat conditions throughout the corridor, but their expected benefits and costs vary.

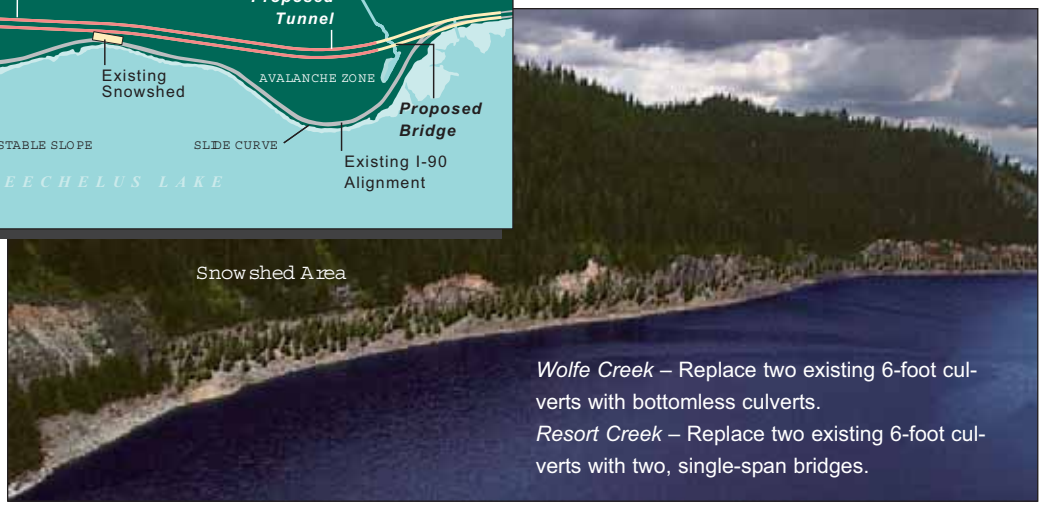
Keechelus Lake Alignment Alternatives

Visual Simulations at Snowshed Area



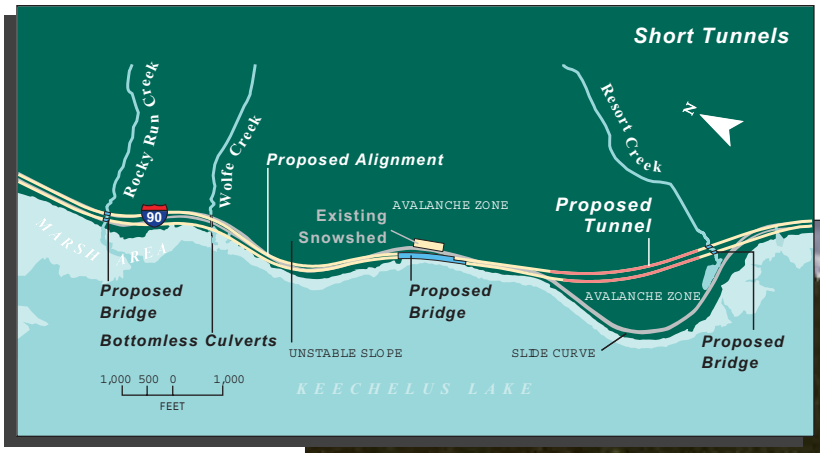
Alternative 1 – Two 1.9-mile-long tunnels with three lanes in each direction would be built along Keechelus Lake.

Rocky Run Creek – Replace two existing 6-foot culverts and a single-span bridge with two single-span bridges.



Wolfe Creek – Replace two existing 6-foot culverts with bottomless culverts.

Resort Creek – Replace two existing 6-foot culverts with two, single-span bridges.



Alternative 2 – Two 0.6-mile-long tunnels with three lanes in each direction would be built along Keechelus Lake.

Rocky Run Creek – Same as alternative 1.

Wolfe Creek – Same as alternative 1.

Resort Creek – Same as alternative 1.

How do effects compare between the Keechelus Lake Alternatives?

Alternative 1 – Long Tunnels

Two 1.9-mile-long tunnels with three lanes in each direction would be built along Keechelus Lake. The long tunnels would bypass primary avalanche zones in this area, eliminating avalanche control work and the threat of accidents, injuries, and property loss from avalanches and falling rock. Curves would be improved and realigned to meet design standards for roadways with speeds of 75 miles per hour.

Alternative 2 – Short Tunnels

Two 0.6-mile-long tunnels with three lanes in each direction would be built along Keechelus Lake. The short tunnels would bypass Slide Curve, which is an avalanche and rock slide hazard area. Bridges would be constructed over Keechelus Lake near the existing snowshed to allow avalanches and rock falls to pass under the highway. The combination of bridge improvements and tunnels would substantially reduce avalanche control work and the risk of road closures, accidents, injuries, and property loss due to avalanches. A combination of engineering methods would be employed on steep slopes to reduce accidents and injuries from falling rock. Curves would be improved and realigned to meet design standards for roadways with speeds of 70 miles per hour.

Alternative 3 – Westbound Only Tunnel

One 0.6-mile-long tunnel with three lanes would be built in the westbound direction along Keechelus Lake. Three eastbound lanes would be constructed along the lake. Bridges would be constructed over Keechelus Lake to allow avalanches and rock falls to pass under the highway. The improvements proposed for this alternative would substantially reduce avalanche control work and the risk of road closures, accidents, injuries, and property loss due to avalanches. The westbound tunnel would bypass the Slide Curve area, which is both an avalanche and rock slide hazard area. In the eastbound direction, the roadway would be exposed, but avalanche fencing would be built on the slopes above the roadway to protect eastbound lanes. A combination of engineering methods would be employed on steep slopes to reduce accidents and injuries from falling rock.

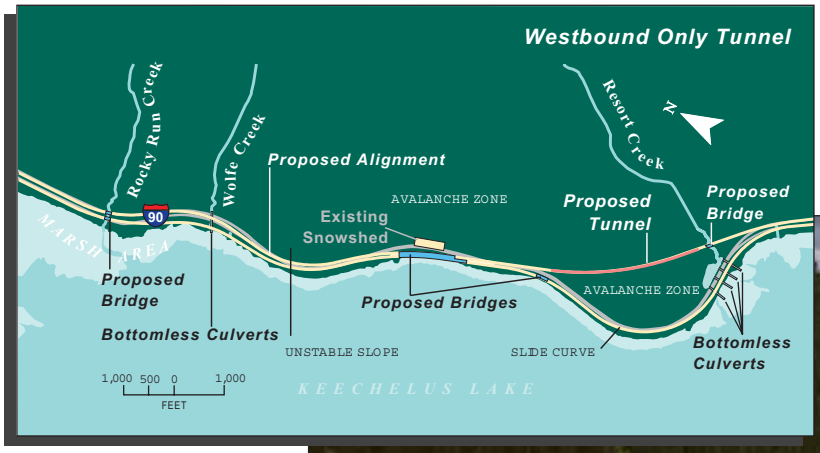
Curves in both directions would be improved and realigned. Most curves would meet design standards for roadways with speeds of 70 miles per hour. In the eastbound direction, the Slide Curve area would be improved to meet design standards for roadways with speeds of 65 miles per hour.

Alternative 4 – Shoreline Alignment, Both Directions of Traffic Along Keechelus Lake Around Slide Curve

Three lanes would be constructed in each direction around the lake. Bridges would be constructed over Keechelus Lake to allow avalanches and rock falls to pass under the highway, substantially reducing avalanche control work and the

Keechelus Lake Alignment Alternatives

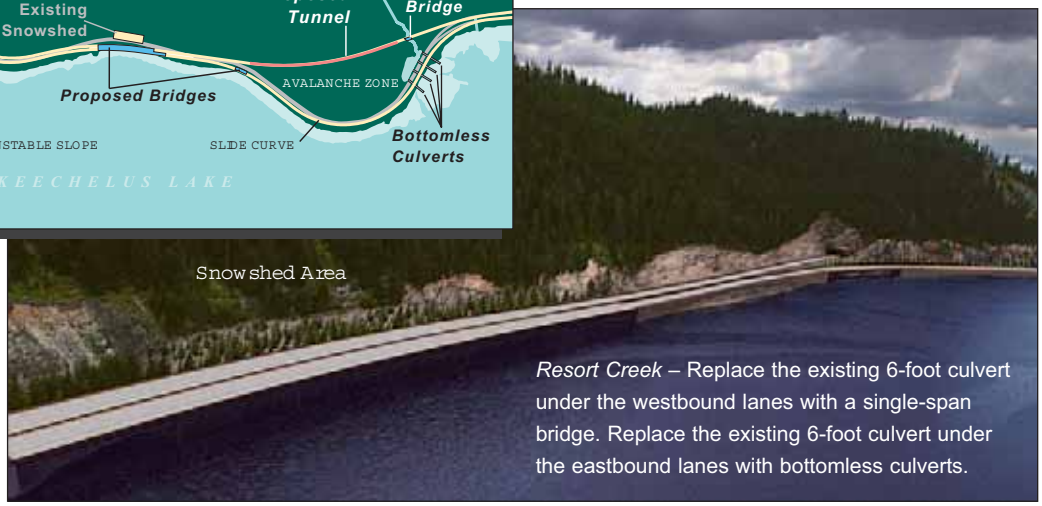
Visual Simulations at Snowshed Area



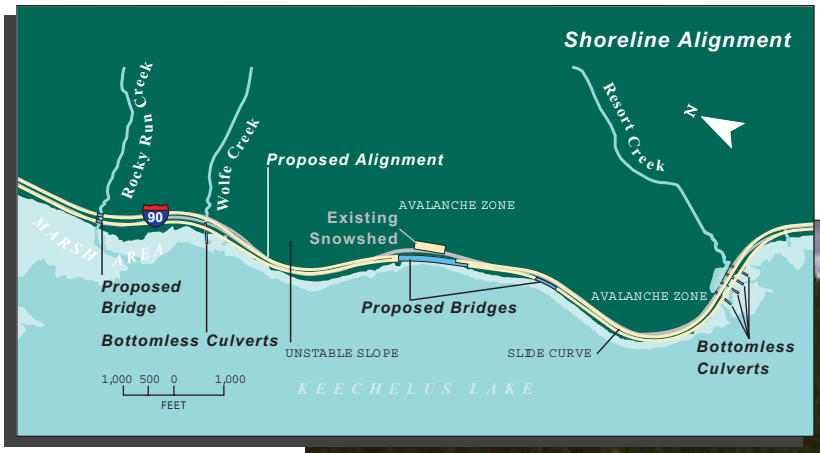
Alternative 3 – One 0.6-mile-long tunnel with three lanes would be built in the westbound direction along Keechelus Lake. Three eastbound lanes would be constructed along the lake.

Rocky Run Creek – Same as alternative 1.

Wolfe Creek – Same as alternative 1.



Resort Creek – Replace the existing 6-foot culvert under the westbound lanes with a single-span bridge. Replace the existing 6-foot culvert under the eastbound lanes with bottomless culverts.

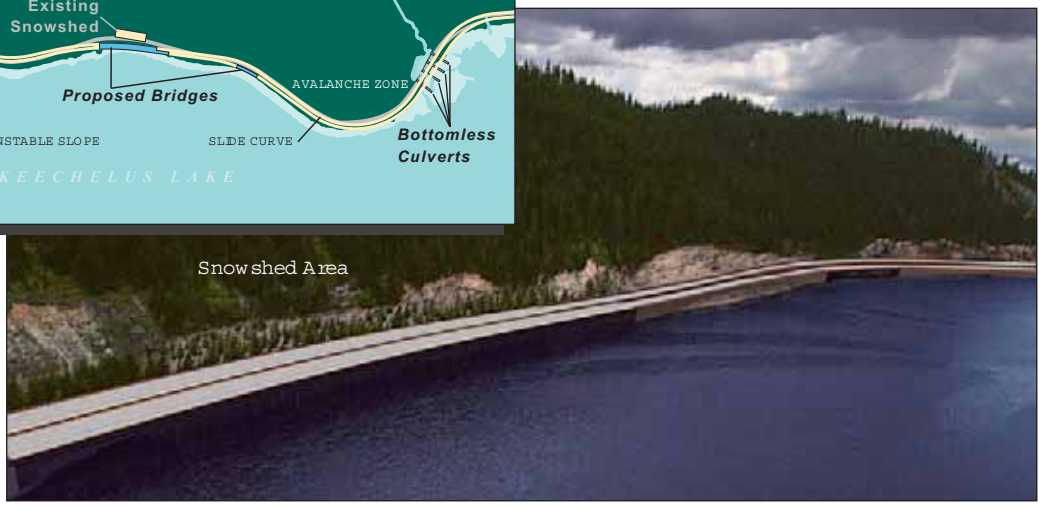


Alternative 4 – Three lanes would be constructed in each direction around the Slide Curve.

Rocky Run Creek – Same as alternative 1.

Wolfe Creek – Same as alternative 1.

Resort Creek – Replace two existing 6-foot culverts with bottomless culverts.



potential risk of road closures, accidents, injuries, and property loss due to avalanches. Avalanche fencing would be constructed on the slopes above the Slide Curve area to protect westbound and eastbound lanes from avalanches. A combination of engineering methods would be employed on steep slopes to reduce accidents and injuries from falling rock. Curves near Rocky Run Creek would be realigned and straightened. Most curves would meet design standards for roadways with speeds of 70 miles per hour. Slide Curve would be improved to meet design standards for roadways with speeds of 60 miles per hour.

The benefits, environmental effects, and costs vary for each of the four Keechelus Lake Alignment Alternatives, as shown in the table below.

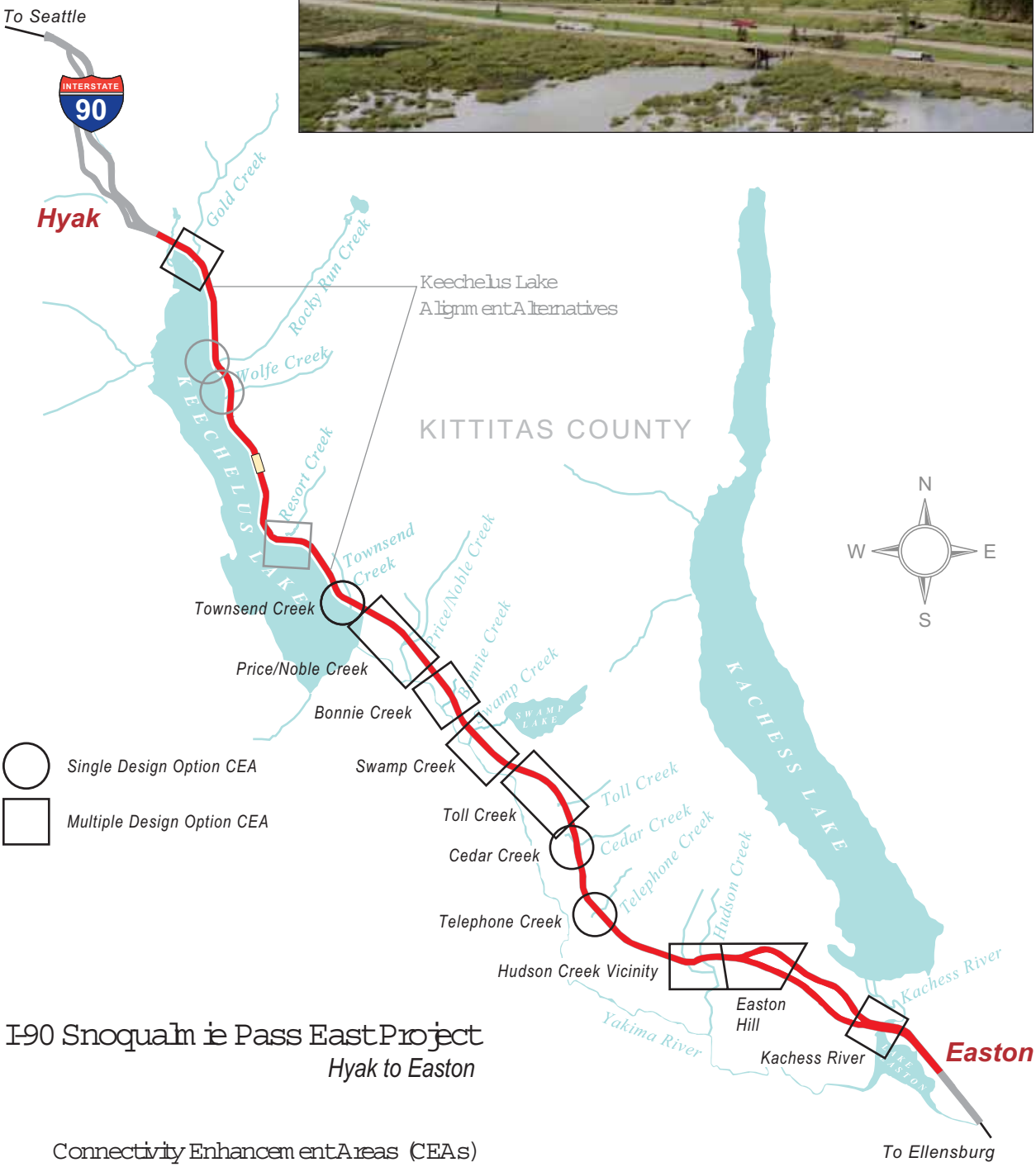
Summary Table 1: Effects Comparison for the Keechelus Lake Alignment Alternatives

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Avalanche Control Work and Stability	Road closures due to avalanche control work are not expected	Avalanche control work would cause infrequent road closures	Avalanche control work would cause infrequent road closures	Avalanche control work would cause infrequent road closures
Roadway Curves	All 75 mph curves	All 70 mph curves	Most curves 70 mph, some 65 mph	Some 70 mph curves, some 60 mph curves
Geology and Soils				
Total disturbed footprint	50 acres	82 acres	99 acres	94 acres
Roadway to be reclaimed	38 acres	21 acres	13 acres	5 acres
New exposed impervious surface	22 acres	40 acres	46 acres	52 acres
Wetland Acres Affected	6 acres	5 acres	8 acres	5 acres
Fish and Aquatic Habitat				
Aquatic & shoreline habitat filled	12 acres	16 acres	21 acres	18 acres
Riparian habitat lost	1.0 acre	1.0 acre	1.0 acre	0.6 acre
Terrestrial Habitat Lost[1]	35 acres	53 acres	61 acres	54 acres
Mature Forest Lost[2]	1 acre	3 acres	3 acres	2 acres
Construction Duration	Up to 7 years	Up to 4 years	Up to 4 years	Up to 3 years
Cost	$467 million	$311 million	$241 million	$140 million

[1] Totals include mature forest lost

[2] Forest areas older than 80 years

In addition to roadway improvements at Keechelus Lake, connectivity enhancements are proposed. Proposed connectivity enhancements include constructing bridges and large culverts over streams to improve hydraulic and habitat connections across I-90. Terrestrial habitat improvements for the Keechelus Lake Alignment Alternatives are limited because of the steep topography adjacent to the lake.



I-90 Snoqualmie Pass East Project

Hyak to Easton

Connectivity Enhancement Areas (CEAs)

How do effects compare in the rest of the project corridor?

In the rest of the project corridor, WSDOT and FHWA are proposing various roadway and connectivity enhancements. Roadway improvements include widening I-90 from 4-lanes to 6-lanes, replacing low clearance bridges, and stabilizing steep slopes. In addition, WSDOT and FHWA are proposing a wide range of improvements in areas called Connectivity Enhancement Areas (CEAs). Connectivity enhancements are proposed to improve hydraulic and habitat connections across I-90.

As part of this project, the Mitigation Development Team (MDT) identified 15 CEAs in the corridor where connectivity enhancements could provide the greatest benefits to fish, wildlife, and aquatic systems. WSDOT and FHWA are proposing connectivity enhancements at 14 of the 15 CEAs identified by the MDT. All but one of the CEAs are located along stream corridors that cross I-90 as shown on the adjacent map.

These stream corridors could serve as conduits for restoring both hydraulic and habitat connections between both sides of the roadway. In addition, many of the CEAs are located within three habitat linkage areas. The habitat linkage areas provide a critical link to species moving north-south within the corridor and they contain their own plant and animal communities (USFS/WSDOT 2003). The three primary habitat linkage areas are shown in the map on the next page (page ES-14).

Proposed connectivity enhancements include building bridges and culverts of various sizes at each of the 14 CEAs. These bridge and culvert structures are expected to provide benefits that may include:

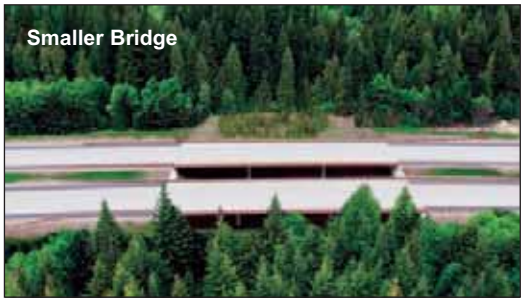
- improved stream channel migration.
- expanded floodplain, wetland, riparian, and groundwater recharge areas.
- enhanced structure and function of wetlands and riparian habitats.
- improved connections across I-90 for a wide variety of species.

In general, it is expected that larger bridge structures built over aquatic areas will provide the greatest improvement to habitat in the project area. Larger bridge structures provide more area for stream meandering, establishment of wetlands, foliage growth, and fish and wildlife habitat than smaller bridges and culverts. However, larger bridge structures are more expensive to build and maintain than smaller structures.

To better understand the benefits and costs of building structures of different sizes, WSDOT and FHWA evaluated the effects of up to three bridge and culvert designs at each of the 14 CEAs. Effects of the roadway and connectivity enhancements proposed at the three CEAs associated with Keechelus Lake are presented earlier on page ES-11 in Summary Table 1.

PHOTOS OF STRUCTURE TYPES

The photos show the range of different structure types proposed to improve habitat across I-90.



North - South Habitat Linkage Areas

To Seattle

INTERSTATE 90

Hyak

Gold Creek

Rocky Run Creek

KITTITAS COUNTY

Wolfe Creek

Resort Creek

KEECHELUS LAKE

Townsend Creek

Price/Noble Creek

Bonnie Creek

Swamp Creek

SWAMP LAKE

Yakima River

Toll Creek

Cedar Creek

Telephone Creek

Hudson Creek

KACHESS LAKE

Kachess River

LAKE EASTON

Easton

To Ellensburg

N

W

E

S

I-90 Snoqualmie Pass East Project

Hyak to Easton

Habitat Linkage Areas

At the remaining 11 CEAs, there are three (Townsend Creek, Cedar Creek, and Telephone Creek) where a single habitat improvement is proposed. At these three CEAs, WSDOT and FHWA propose to build bottomless culverts, which will improve habitat and hydraulic connections compared with existing conditions.

At the remaining eight CEAs, WSDOT and FHWA evaluated up to three different bridge and culvert design options that can be mixed-and-matched to create numerous improvement packages. These options are called options A, B, and C. In general, option A is expected to provide the greatest improvements to habitat and hydraulic linkages at the highest cost. Option B offers a midrange of benefits and costs, and option C is the lowest cost option offering fewer benefits.

To evaluate the broadest range of environmental effects in areas of the corridor not associated with Keechelus Lake, WSDOT and FHWA created three different improvement packages. Of the three packages evaluated:

- **Package A** describes the environmental effects, benefits, and costs of choosing Option A at the eight CEAs where connectivity enhancements are proposed. This means that Package A contains the greatest number of large bridge structures, which are expected to provide the greatest improvements to habitat at the highest cost. Package A also includes the environmental effects, benefits, and costs of connectivity enhancements proposed at the three CEAs (Townsend Creek, Cedar Creek, and Telephone Creek) where a single habitat improvement design is proposed. Finally, Package A evaluates the environmental effects of roadway improvements proposed in areas not designated as CEAs or identified within the area where alternative alignments are proposed around Lake Keechelus.
- **Package B** describes the environmental effects, benefits, and costs of choosing Option B at the eight CEAs where connectivity enhancements are proposed. Package B includes the same improvements as Package A at Townsend Creek, Cedar Creek, and Telephone Creek and at remaining roadway locations. Package B offers a combination of large bridges, smaller bridges, and bottomless culvert structures. This package is expected to provide a midrange of benefits at a reduced price compared to Package A.
- **Package C** describes the environmental effects, benefits, and costs of choosing Option C at the eight CEAs where connectivity enhancements are proposed. Package C includes proposed the same improvements as Package A at Townsend Creek, Cedar Creek, and Telephone Creek and at remaining roadway locations. Package C provides a combination of bridge structures and bottomless culverts expected to provide fewer benefits at lower costs than Packages A and B, while still providing an improvement over current conditions.

Summary Table 2: Effects Comparison for the Improvement Packages

	Package A	Package B	Package C
Geology and Soils			
Total disturbed footprint	377 acres	405 acres	405 acres
Roadway to be reclaimed	29 acres	16 acres	7 acres
New exposed impervious surface	170 acres	170 acres	170 acres
Wetland Acres Affected	9 acres	7 acres	7 acres
Fish and Aquatic Habitat			
Aquatic & shoreline habitat filled at Keechelus Lk.	6 acres	5 acres	4 acres
Habitat filled at Lake Easton	1 acre	Same as Package A	Same as Package A
Riparian habitat lost	2 acres	1 acre	2 acres
Terrestrial Habitat Lost[1]	214 acres	210 acres	212 acres
Mature Forest Lost[2]	24 acres	22 acres	24 acres
Recreational Resources	Price Creek Sno-Park removed and replaced	Same as Package A	Sno-Park not affected
Cost	$261 million	$217 million	$171 million

[1] Totals include mature forest lost

[2] Forest areas older than 80 years

The environmental effects of Packages A, B, and C are similar, but the costs vary. With only this information, it is difficult to determine which package offers the best combination of habitat improvements at the eight CEAs where several options have been evaluated.

Since there are many ways to mix-and-match design options at the CEAs to create the best plan for the corridor, additional information about the costs and benefits are provided in comparison tables in the next several pages of this summary. The tables include information about proposed structures, environmental effects, and the potential benefits and costs of the habitat improvement options. In addition, maps and graphics on the next several pages show detailed photos and conceptual drawings of proposed improvements at one CEA: Gold Creek. The Gold Creek example is provided to give readers an idea of how the proposed habitat improvement options vary throughout the corridor.

Gold Creek CEA

Within the project area, the Gold Creek watershed drains the second largest area (8,937 acres); only the Kachess River watershed is larger. Gold Creek enters Lake Keechelus through a delta that historically formed a braided channel. The delta is artificially confined by bridges for I-90 and Forest Service Road 4832 (FS Road 4832), which limits channel migration and development of the floodplain and wetland areas.

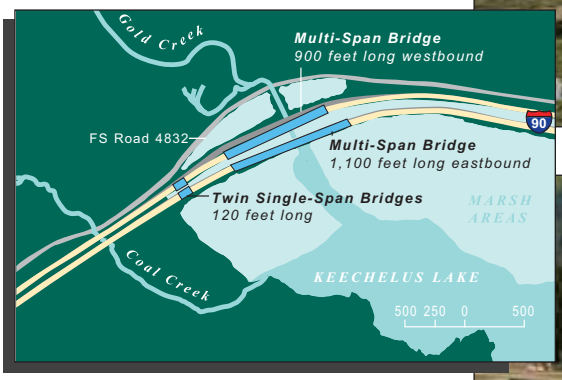
Gold Creek is the only documented bull trout spawning stream in the Keechelus Lake sub-basin. Bull trout are listed as threatened under the Endangered Species Act. The Gold Creek area also offers the only opportunity in the corridor to link species associated with alpine habitats. Species that may benefit from enhancements at Gold Creek include wolves, bears, small mammals, several fish species, mollusks, and a wide variety of plants and fungi.

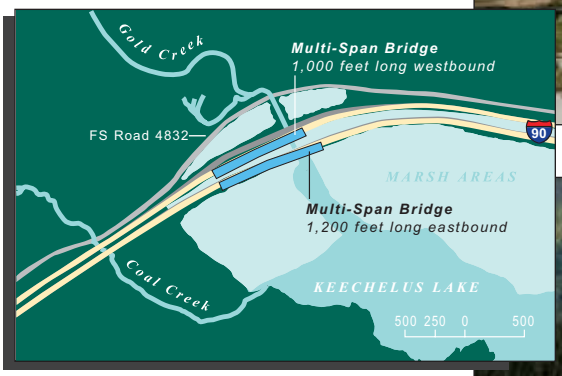
Summary Table 3: Effects Comparison for the Gold Creek CEA

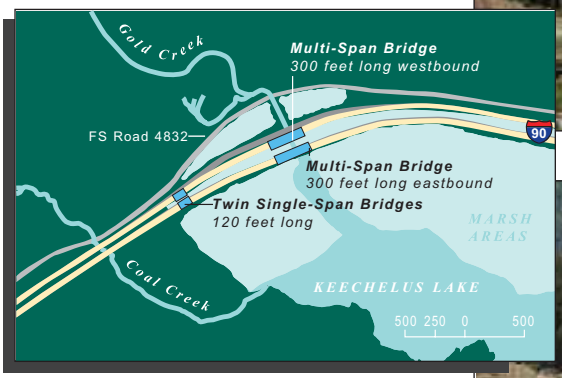
	Option A	Option B	Option C
Proposed Structures			
Gold Creek West	Two single-span bridges, approximately 120 feet long	No changes proposed	Same as option A
Gold Creek	Two multi-span bridges, approximately 900 feet long westbound and 1,100 feet long eastbound	Two multi-span bridges, approximately 1,000 feet long westbound and 1,200 feet long eastbound	Two multi-span bridges, approximately 300 feet long
Wetland Acres Affected	2.3 acres	1.7 acres	1.0 acre
Lost Riparian Habitat	No change	Same as option A	Same as option A
Water Resources			
Stream channel function	Existing roadbed would be removed within the channel migration zone, which would greatly improve channel migration	Same as option A, only improvements are not proposed to Gold Creek West	Existing road embankment would be removed from the most active channel migration zone; stream channel migration would improve but be limited compared with options A and B
Wetlands and floodplains	High potential for wetlands and floodplains to expand in areas with new bridges	Similar to option A, only potential expansion area would be slightly smaller	Wetland and floodplain would expand, but to a lesser degree than with options A and B
Groundwater flow and recharge improvements	High	High	Low
Fish and Aquatic Habitat	Bridges would create open space, which would encourage species migration and substantially improve fish passage and habitat	Same as option A	Conditions would improve for species migration and fish passage, but to a lesser degree than options A and B
Wildlife	High potential for connecting populations of highly mobile species	Same as option A	Fewer improvements for wildlife than options A and B.
Cost	$17.9 million	$17.8 million	$7.8 million

Gold Creek Example

Gold Creek Connectivity Enhancement Area





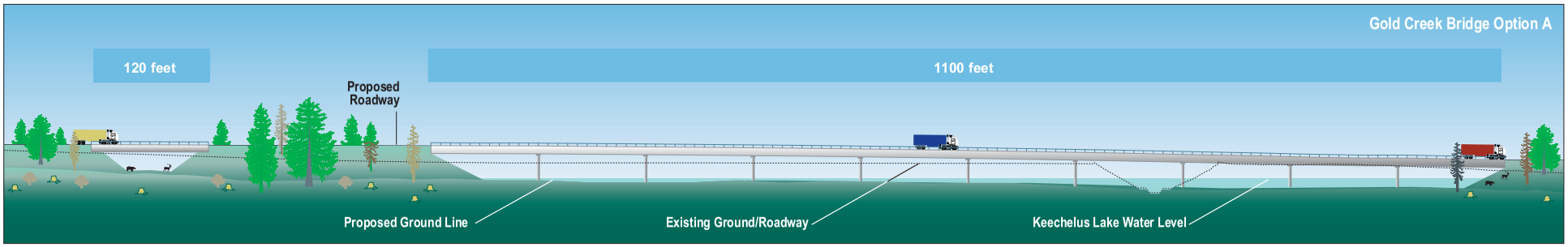


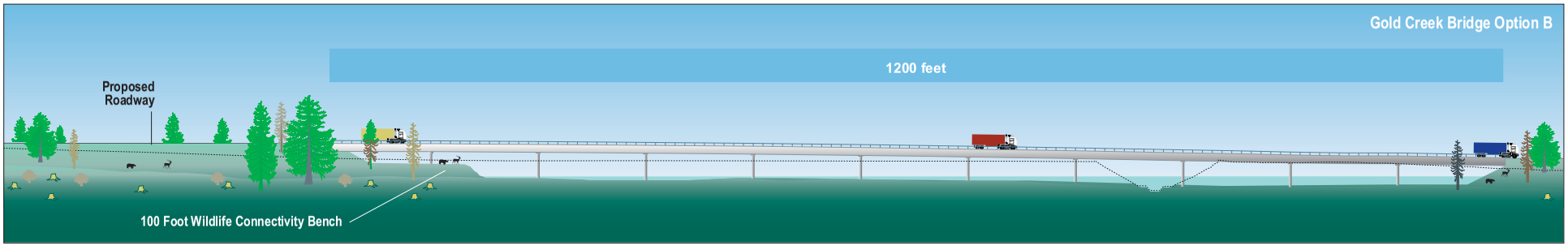
Price/Noble Creek CEA

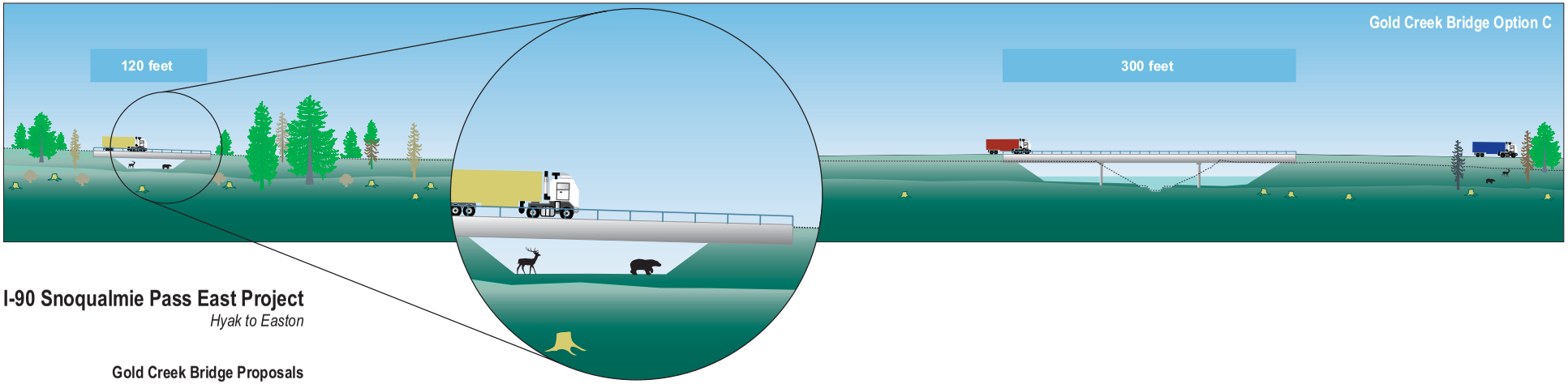
The Price/Noble Creek area contains important wetland areas and streams. It also contains soils often associated with rare species of fungi. Price Creek drains approximately 377 acres and flows under I-90 through a culvert that is a partial barrier to fish passage. Further upstream, Price Creek flows through a culvert located under Forest Service Road 4832 that is a complete barrier to fish passage. Noble Creek drains about 311 acres. Culverts conveying Noble Creek under I-90 at Forest Service Road 4832 are complete barriers to fish passage.

Summary Table 4: Comparison for the Price/Noble Creek CEA

	Option A	Option B	Option C
Proposed Structures			
Price/Noble Creek West	Two single-span bridges, approximately 120 feet long	Same as option A	Same as option A
Price/Noble Creeks	Two multi-span bridges, approximately 800 feet long, extending over both creeks	Similar to option A	Two sets of single-span bridges, 120 feet long, over Price and Noble Creeks
Price/Noble Creek East	Two multi-span bridges, approximately 800 feet long	Methods to improve the surface and groundwater connections will be finalized later	Methods to improve the surface and groundwater connections will be finalized later
Wetland Acres Affected	0.7 acre	Same as option A	Same as option A
Lost Riparian Habitat	0.3 acre	Same as option A	0.2 acre
Recreational Resources	Price Creek Sno-Park would be removed and replaced to improve wildlife connections	Price Creek Sno-Park would be removed and replaced to improve wildlife connections	Price Creek Sno-Park would remain in existing location
Water Resources			
Stream channel function	High potential to improve stream migration.	Improved, but slightly less than with option A	Improved, but less than with options A and B
Wetlands and floodplains	High potential to substantially increase wetland and floodplain areas	Similar to option A, only potential expansion areas would be slightly smaller	Fewer expansions to wetland and floodplain areas would be expected compared with options A and B
Groundwater flow and recharge improvements	High	Same as option A; in Price/ Noble Creek East, potential improvements would be slightly less than with option A	Improved, but less than with options A and B
Fish and Aquatic Habitat	Passage for fish and aquatic organisms would be restored	Similar to option A, except fish passage would not be provided east of Noble Creek	Habitat improved over existing conditions, but less than with options A and B
Wildlife	High potential for providing connections for species with high and low mobility	Moderate to high potential to provide connections for high- and low-mobility species	Improved, but to a lesser degree than with options A and B
Cost	$25.2 million	$12.1 million	$5.3 million







I-90 Snoqualmie Pass East Project

Hyak to Easton

Gold Creek Bridge Proposals

Bonnie Creek CEA

The Bonnie Creek watershed drains an 800-acre area. The Bonnie Creek channel is currently confined by a culvert under I-90 that is a partial barrier to fish passage. Upstream of I-90, this intermittent stream is unconfined and in some places it goes underground. Bonnie Creek supports a resident population of cutthroat trout although the stream has limited fish habitat. Habitat improvements in the Bonnie Creek CEA would provide an opportunity to restore wetland functions adjacent to I-90. The area also offers the best opportunity to link high quality old growth habitat.

Summary Table 5: Effects Comparison for the Bonnie Creek CEA

	Option A	Option B	Option C
Proposed Structures			
Bonnie Creek West Fork	Two multi-span bridges, approximately 600 feet long, over east and west forks	Methods to improve the surface and groundwater connections will be finalized later	Methods to improve the surface and groundwater connections will be finalized later
Bonnie Creek East Fork		Two multi-span bridges, approximately 250 feet long	Bottomless culverts constructed under roadway
Wetland Acres Affected	0.2 acre	0.1 acre	0.5 acre
Lost Riparian Habitat	0.2 acre	0.1 acre	0.2 acre
Water Resources			
Stream channel function	High potential to improve stream migration	Improved, but less than with option A, particularly in west fork	Improved, but less than with options A and B
Wetlands and floodplains	High increase in floodplain area and function	Moderate increase in floodplain area and function	No change
Groundwater flow and recharge improvements	High	Moderate	Low
Fish and Aquatic Habitat	Allows restoration of channel habitat and restores natural passage for fish and aquatic organisms	Similar to option A, but amphibian passage would not be provided east of Noble Creek	Improves passage for fish, but does not improve passage for amphibians
Wildlife	High potential for providing connections for species with high and low mobility	High potential for providing connections for high- and low-mobility species associated with wetlands	No change compared with existing conditions
Cost	$9.9 million	$8.0 million	$0.5 million

Swamp Creek CEA

Swamp Creek drains a 2,570-acre area. It flows into a complicated network of forest wetlands that contain a large number of rare plant and fungi species. Riparian areas at Swamp Creek's headwaters have been significantly altered by timber harvesting. Fish can pass through downstream culverts, including one under I-90; however, culverts upstream of I-90 completely block fish passage.

Summary Table 6: Effects Comparison for the Swamp Creek CEA

	Option A	Option B	Option C
Proposed Structures			
Mile Post 62.5	NA	Two single-span bridges	NA
Swamp Creek	Two multi-span bridges, approximately 250 feet long	Two single-span bridges, approximately 120 feet long	Same as option B
Swamp Creek East	Two single-span bridges, approximately 120 feet long; two additional single-span bridges	Two single-span bridges, approximately 120 feet long; the existing undercrossing would be replaced	A bottomless culvert would be constructed and the existing undercrossing would be replaced
Wetland Acres Affected	0.9 acre	0.5 acre	0.3 acre
Lost Riparian Habitat	0.3 acre	0.2 acre	0.3 acre
Water Resources			
Stream channel function	High restoration of channel function but limited natural migration; no improvement at MP 62.5	Similar to option A, but moderate restoration of channel function, and high restoration at MP 62.5	Similar to option B, but less improvement east of creek and no improvement at MP 62.5
Wetlands and floodplains	High increase in floodplain area and function; no improvement at MP 62.5	Moderate increase in floodplain area and function at Swamp Creek and Swamp Creek East; high at MP 62.5	Improved, but less than with options A and B
Groundwater flow and recharge improvements	High at Swamp Creek and Swamp Creek East; no change at MP 62.5	Moderate at Swamp Creek and Swamp Creek East; high at MP 62.5	Moderate at Swamp Creek and minimal at Swamp Creek East; no change at MP 62.5
Fish and Aquatic Habitat	Improves habitat and hydrologic connectivity for amphibians; improved fish passage in Swamp Creek	Similar improvements as option A, but slightly less because of shorter bridge at Swamp Creek	Improves fish and amphibian passage over existing conditions but less so than options A and B
Wildlife	Improvements at Swamp Creek have a low to moderate potential to improve species connections; Swamp Creek East improvements have a high potential to connect species associated with rare soil types	Similar to option A	Provides connections for some high-mobility species; fewer improvements are expected for other species compared with options A and B
Cost	$10.5 million	$3.1 million	$1.5 million

Toll Creek CEA

Toll Creek drains an area of about 419 acres. Its stream channel is confined. A culvert under I-90 is a complete fish barrier; however, this intermittent stream does not support fish. The Toll Creek area is an important forest habitat for large carnivores and low-mobility species. Improvements in this area could improve groundwater recharge and wetland connections across I-90.

Summary Table 7: Effects Comparison for the Toll Creek CEA

	Option A	Option B	Option C
Proposed Structures			
Toll Creek West	Twin bridges with two-spans, approximately 125 feet long	Same as option A	Large-span bottomless culverts
Toll Creek	Culvert	Culvert	Culvert
Wetland Acres Affected	0.3 acre	Same as option A	Same as option A
Lost Riparian Habitat	0.2 acre	Same as option A	Same as option A
Water Resources			
Stream channel function	High potential to improve stream migration at Toll Creek West	Same as option A	Improved, but less than with options A and B
Wetlands and floodplains	High increase in floodplain area and function at Toll Creek West	Same as option A	Improved, but less than with options A and B
Groundwater flow and recharge improvements	High at Toll Creek West	Same as option A	Minimal at Toll Creek West
Fish and Aquatic Habitat	Improved connections would benefit amphibians	Same as option A	Minimal improvement for amphibians
Wildlife	High potential for providing connections for species with high and low mobility	Same as option A	Low to moderate potential for improving connections for high- and low-mobility species
Cost	$2.5 million	$2.5 million	$1.0 million

Hudson Creek Vicinity CEA

Approximately 900 acres drains to Hudson Creek. This intermittent stream is confined by a culvert under I-90 that is a complete barrier to fish passage. Downstream of I-90, Hudson Creek provides habitat for several fish species. The Hudson Creek CEA offers the opportunity to connect species associated with nearby talus habitat. Talus is a specific habitat associated with unique salamander and mollusk species.

Summary Table 8: Effects Comparison for the Hudson Creek CEA

	Option A	Option B	Option C
Proposed Structures			
Hudson Creek East	Two multi-span bridges, approximately 230 feet long	Two single-span bridges, approximately 120 feet long	A culvert would be constructed under the roadway
Wetland Acres Affected	2.6 acres	2.5 acres	2.7 acres
Lost Riparian Habitat	0.7 acre	0.5 acre	0.8 acre
Water Resources			
Stream channel function	High potential to improve stream migration in middle fork; no change in west fork	Moderate potential to improve stream migration in middle fork; no change in west fork	No change
Wetlands and floodplains	High increase in floodplain area and function for middle fork	Moderate increase in floodplain area and function for middle fork	No change
Groundwater flow and recharge improvements	High	Moderate	Low
Fish and Aquatic Habitat	Hydrologic connection restoration would benefit fish and amphibian passage below I-90	Improved, but fewer connections would be restored, resulting in fewer benefits to fish and amphibian passage compared to option A	Fish passage would be provided, but improvements for other species would be limited compared to options A and B
Wildlife	Moderate to high potential to provide connections for highly mobile species; high potential to provide connections for low-mobility species	Same as option A	No change
Cost	$2.5 million	$1.4 million	$0.1 million

Easton Hill CEA

The Easton Hill CEA is the only CEA not associated with a stream; however, it contains medium quality wetlands. Proposed improvements offer the opportunity to expand groundwater recharge and wetland connections on both sides of I-90. This CEA provides an opportunity to link habitats for large species moving through the project area.

Summary Table 9: Effects Comparison for the Easton Hill CEA

	Option A	Option B	Option C
Proposed Structures			
Easton Hill Westbound – MP 67 to 68	Two single-span bridges, approximately 120 feet long	Animal overcrossing structure constructed over highway near MP 67.5	Animal overcrossing structure constructed over westbound lanes near MP 68
Easton Hill Eastbound – MP 67 to 68	Eastbound lanes would be moved 100 feet south; a single-span bridge, approximately 120 feet long, would be built	Animal overcrossing structure constructed over highway at MP 67.5	Same as option A
Wetland Acres Affected	0.5 acre	0.3 acre	Same as option A
Lost Riparian Habitat	No change	Same as option A	Same as option A
Water Resources			
Stream channel function	NA	NA	NA
Wetlands and floodplains	May improve wetland connections	Same as option A	Same as option A
Groundwater flow and recharge improvements	No change	Same as option A	Same as option A
Fish and Aquatic Habitat	No change	Same as option A	Same as option A
Wildlife	Moderate potential to provide connections for high- and low-mobility species	High potential for providing upland connections for high- and low-mobility species	Improves connections for large species with high mobility; low to moderate potential for providing connections for low-mobility species
Cost	$1.8 million	$1.4 million	$1.8 million

Kachess River CEA

Over 40,000 acres drain to the Kachess River watershed. Little information exists for Kachess River downstream of Lake Kachess. Improvements proposed in this area are intended to improve habitat alongside a county road that currently serves as a wildlife crossing below I-90. For this CEA, two structure options were explored, and they are expected to provide similar environmental effects and benefits for about the same cost.

Summary Table 10: Effects Comparison for the Kachess River CEA

	Option A	Option B	Option C
Proposed Structures			
Lake Kachess County Road	Two single-span bridges, approximately 120 feet long	Widen or replace existing single-span bridges that are approximately 28 feet long	Same as option B
Kachess River	Widen existing bridges	Same as option A	Same as option A
Wetland Acres Affected	0.3 acre	Same as option A	Same as option A
Lost Riparian Habitat	No change	Same as option A	Same as option A
Water Resources			
Stream channel function	No change	Same as option A	Same as option A
Wetlands and floodplains	No change	Same as option A	Same as option A
Groundwater flow and recharge improvements	No change	Same as option A	Same as option A
Fish and Aquatic Habitat	No change	Same as option A	Same as option A
Wildlife	Minimal improvements to connections for high- and low-mobility species	Similar to option A	Similar to option A
Cost	$2.0 million	$0.5 million	Same as option B

What other environmental effects were evaluated in this Draft EIS?

This Draft EIS provides information on several subject areas (such as changes to air quality) that are not presented in the summary tables for the Lake Keechelus Alignment Alternatives and the connectivity enhancements. The results of the project team's evaluation for these subject areas are summarized below. In general, effects or changes in these subject areas are expected to be minimal, and they will be similar for the Lake Keechelus Alignment Alternatives and the CEAs.

Transportation – Traffic volumes are expected to be the same for the four Keechelus Lake Alignment Alternatives and the CEAs. Alternative 1, the Long Tunnels alignment alternative along Keechelus Lake, would require more

maintenance than the other alignment alternatives. In addition, improvement Package A would require more long-term bridge maintenance than Packages B and C.

Water quality and stormwater – Stormwater runoff from this 15-mile section of I-90 currently receives limited treatment before it is discharged to adjacent streams and lakes. As part of this project, stormwater treatment will be provided for all roadway runoff in this 15-mile corridor. This will reduce the volume of stormwater pollutants discharged to streams and lakes located in the project area. The tables below show how stormwater treatment is expected to reduce pollutant loads for all of the Keechelus Lake Alignment Alternatives and the improvement packages.

Summary Table 11: Annual Stormwater Pollutant Loading for the Keechelus Lake Alignment Alternatives

	No-Build Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Roadway treated	0.0 acres	47.3 acres	48.3 acres	49.8 acres	51.5 acres
Roadway untreated	30.6 acres	0.0 acres	0.0 acres	0.0 acres	0.0 acres
Annual total suspended solids load	26,867 lbs/year	1,939 lbs/year	1,980 lbs/year	2,042 lbs/year	2,112 lbs/year
Annual phosphorus load	39.8 lbs/year	14.2 lbs/year	14.5 lbs/year	14.9 lbs/year	15.5 lbs/year
Annual copper load	6.1 lbs/year	2.4 lbs/year	2.4 lbs/year	2.5 lbs/year	2.6 lbs/year
Annual zinc load	33.7 lbs/year	12.3 lbs/year	12.6 lbs/year	12.9 lbs/year	13.4 lbs/year

Note: Calculations were based on mean pollutant loads from high average daily traffic highways (90,000 to 160,000 vehicles per day) in Western Washington (WSDOT 2004 NPDES Annual Report). Includes impervious surface within tunnels.

Summary Table 12: Annual Stormwater Pollutant Loading for Improvement Packages

	No-Build Alternative	Package A	Package B	Package C
Roadway treated	0.0 acres	169.6 acres	169.6 acres	169.9 acres
Roadway untreated	135.1 acres	0.0 acres	0.0 acres	0.0 acres
Annual total suspended solids load	118,618 lbs/year	6,954 lbs/year	6,954 lbs/year	6,966 lbs/year
Annual phosphorus load	175.6 lbs/year	50.9 lbs/year	50.9 lbs/year	51.0 lbs/year
Annual copper load	27.0 lbs/year	8.5 lbs/year	8.5 lbs/year	8.5 lbs/year
Annual zinc load	148.6 lbs/year	44.1 lbs/year	44.1 lbs/year	44.2 lbs/year

Note: Calculations were based on mean pollutant loads from high average daily traffic highways (90,000 to 160,000 vehicles per day) in Western Washington (WSDOT 2004 NPDES Annual Report).

Visual quality – Overall visual quality in the corridor is expected to improve compared to existing conditions. Alternative 1, the Long Tunnels alignment alternative proposed at Keechelus Lake, would slightly degrade views of the lake for people traveling along I-90.

Social and economic resources – The project would not adversely affect social resources (such as neighborhoods) or the economy. Once the project is built, Washington State's economy would benefit from fewer road closures on I-90.

Air quality – Air quality in the project corridor would meet established requirements.

Noise – Effects to surrounding areas from traffic noise were estimated to be similar to the No-Build Alternative.

Archaeological resources – A few potential archaeological resource areas were identified along the project corridor. Potential project effects can be minimized by monitoring construction activities in sensitive areas.

Land use – Land uses would not be adversely affected by the project.

Hazardous materials – Effects from hazardous materials are not expected.

Energy – Energy resources would not be negatively affected by the project.

Cumulative and secondary effects – The project is not expected to cause negative cumulative or secondary effects.

How will the traffic and the environment be affected during project construction?

Throughout construction, I-90 would remain open and traffic would be routed through various detours. Eastbound and westbound sections of the project would be constructed separately to allow space for traffic detours. Two lanes of traffic would generally be maintained in each direction during construction. Traffic would need to be reduced to a single lane to perform some work, but lane closures would be relatively short, and they would occur between Monday and Thursday when daily traffic volumes are reduced. Tunnel construction at Keechelus Lake could cause detours for up to 7 years for Alternative 1, and up to 4 years for Alternatives 2 and 3.

In addition to traffic detours, environmental effects from construction could include emissions from construction vehicles, dust from grading activities, and increased sedimentation in stormwater runoff. Best Management Practices (BMPs) would be used to minimize project effects. A BMP is an action or structure that is put in place to reduce or minimize environmental effects. Construction BMPs will be used to control erosion and protect water quality, and contain rock falls and avalanches.

What mitigation is proposed for the project?

The project design team has worked hard to avoid environmental effects throughout the corridor. The text below describes the project's effects and proposed mitigation measures.

- **Wetlands** – Widening the roadway would require wetlands to be filled or modified. In areas where wetlands are affected, WSDOT will create, restore, or enhance wetlands so there is no net loss of wetlands as a result of the project.
- **Fish and aquatic habitat** – Bridge construction at Keechelus Lake would require in-water construction. WSDOT will work with natural resource agencies to identify measures to minimize potential effects of in-water construction to fish. These measures may include using bubble curtains or silt curtains to contain sediments and minimize noise effects from pile driving. In addition, explosives would be needed for tunnel construction for some alternatives. WSDOT will minimize effects to fish by limiting the size of explosive charges used near the Keechelus Lake shoreline.
- **Historic, cultural, and archaeological resources** – The Lake Keechelus Snowshed Bridge is listed on the National Register of Historic Places. The Lake Keechelus Alignment Alternatives use tunnels or bridges to bypass the Snowshed Bridge, which would be abandoned in place. Since abandoning the Snowshed Bridge in place will not substantially diminish its historic integrity, there will be no Section 4(f) use of the Snowshed Bridge. In addition, there may be areas in the project corridor that have a high likelihood of containing archaeological resources. In these areas, WSDOT will have archaeologists monitor construction activities as appropriate.
- **Recreational resources** – The Price Creek Sno-Park would need to be relocated if connectivity enhancement option A or B were constructed at the Price/Noble Creek CEA. If one of these options is selected, the Price Creek Sno-Park will be closed and replaced by expanding an existing sno-park or by building a new sno-park at one of several locations currently being evaluated.
- **Effects from roadway construction** – During construction, BMPs will be used to control erosion and protect water quality, limit emissions from construction vehicles, and contain rock falls and avalanches.

What decisions need to be made?

Two decisions need to be made to develop the best comprehensive plan for this 15-mile section of the I-90 corridor:

1. Which alternative will be constructed at Keechelus Lake?

2. Which combination of connectivity enhancement options will be constructed at CEAs where several design options are proposed?

These two decisions are independent, and the decision made for each will form the preferred alternative for the project.

What issues are controversial?

The primary controversial issue is: what option should be built at each of the CEAs? This is a controversial issue because there is limited knowledge available about what is necessary to successfully connect habitat areas across a major interstate highway. Additionally, the project area is located within one of the six most visited National Forests in the United States. Competing land uses in the area (highways, recreation, and habitat) may limit the degree to which connectivity enhancements may be successful. How should human needs and desires (in this case transportation, safety, and cost) be balanced with the need to improve habitat and hydraulic connections?

Who will select the preferred alternative and how can I be involved in this decision?

WSDOT and FHWA will select the preferred alternative. As part of their decision-making process, they will consider comments received during the Draft EIS comment period. **You can submit your comments on the Draft EIS beginning on June 10 and closing on August 5.** Please send your written comments to:

Larry Mattson
WSDOT I-90 Project Office
PO Box 12560
Yakima, WA 98909
Email: I90Snoq@wsdot.wa.gov

If you want to learn more about the project and provide comments at a public meeting, please join us at the following locations:

June 29, 2005 from 4:00-8:00 PM
Ellensburg Inn
1700 Canyon Rd
Ellensburg, WA 98926

June 30, 2005 from 4:00-8:00 PM
Summit Inn
603 State Route 906
Snoqualmie Pass, WA 98068

July 7, 2005 from 4:00-8:00 PM
South Lake Union Naval Reserve Building
860 Terry Avenue N
Seattle, WA 98109

After public comments are received, WSDOT and FHWA will compile them, prepare responses, and identify a preferred alternative. WSDOT and FHWA plan to announce the preferred alternative by the end of 2005.

Sometime after the preferred alternative is announced, WSDOT and FHWA will issue the Final EIS. The Final EIS will identify the preferred alternative, evaluate its effects, and contain responses to comments received on the Draft EIS.