



I-90 Snoqualmie Pass East

I-90 Snoqualmie Pass East Avalanche Structures Final Supplemental Environmental Impact Statement and Record of Decision





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THIS DOCUMENT INCLUDES

I-90 Snoqualmie Pass East Avalanche Structures Final Supplemental EIS

I-90 Snoqualmie Pass East Avalanche Structures Record of Decision

DOCUMENTS PROVIDED ON CD

2013 I-90 Snoqualmie Pass East Avalanche Structures Record of Decision

2013 I-90 Snoqualmie Pass East Avalanche Structures Final Supplemental EIS and Appendices

2012 I-90 Snoqualmie Pass East Avalanche Structures Draft Supplemental EIS and Appendices

2008 I-90 Snoqualmie Pass East Final EIS and Section 4(f) Evaluation

I-90 Snoqualmie Pass East
Avalanche Structures

Final Supplemental EIS

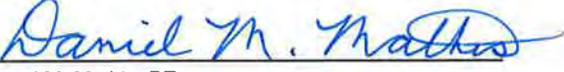
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Interstate 90 Snoqualmie Pass East
Kittitas County, Washington
Avalanche Structures Final Supplemental Environmental Impact Statement
Submitted Pursuant to 42 USC 4332(2)(C) (and where applicable 49 USC 303)
by the
US Department of Transportation
Federal Highway Administration
and
Washington State Department of Transportation
Cooperating Agencies include: United States Forest Service
and
United States Bureau of Reclamation

3/12/13
Date of Approval


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03/12/13
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In accordance with the National Environmental Policy Act and Washington State Environmental Policy Act, the Interstate 90 (I-90) Snoqualmie Pass East, Avalanche Structures Final Supplemental Environmental Impact Statement (EIS) evaluates environmental conditions between milepost 57.9 and 58.4 of I-90 in Kittitas County, Washington. The Washington State Department of Transportation (WSDOT) is evaluating a design modification to construct eastbound and westbound avalanche bridges in place of the expanded snowshed that was originally part of the I-90 Snoqualmie Pass East Project (I-90 project) Selected Alternative. Both options meet the project purpose of improving traffic flow and public safety by increasing highway capacity and addressing unstable slopes, avalanche risks, and structural deficiencies. The two options would cost about the same to construct; however, WSDOT has identified the bridges as the Preferred Option, primarily because they would result in long-term operations and maintenance cost savings for the state.

The Final Supplemental EIS is available on the I-90 project web site:

www.wsdot.wa.gov/Projects/I90/SnoqualmiePassEast. A limited number of hard copies or DVDs may also be obtained free of charge by contacting Jason Smith (see the contact information above).

Fact Sheet

Project Name:

I-90 Snoqualmie Pass East Project

Project Description:

The Federal Highway Administration (FHWA) and the Washington State Department of Transportation (WSDOT) prepared a 2005 Draft Environmental Impact Statement (EIS) and a 2008 Final EIS for proposed improvements to a 15-mile portion of Interstate 90 (I-90) immediately east of Snoqualmie Pass in the Cascade Mountains, from Hyak at milepost (MP) 55.1 to Easton Hill at MP 70.3. Consistent with National Environmental Policy Act (NEPA) regulations, the United States (US) Forest Service and US Bureau of Reclamation were cooperating agencies in preparing these documents. Following the 2008 Record of Decision (ROD) by FHWA and concurrence from the cooperating agencies, WSDOT proceeded with implementation of the Selected Alternative and construction of the I-90 project has continued since 2009.

In fall 2011, the contractor selected to construct Phase 1C (*Snowshed to Keechelus Dam – Replace Snowshed and Add Lanes*) of the I-90 project proposed a design modification to change the type of structure used to replace the Existing Snowshed. Under their proposal, eastbound and westbound avalanche bridges (Proposed Bridges) would be built instead of the expanded snowshed included in the Selected Alternative (Selected Snowshed). Because the Proposed Bridges were not evaluated in the 2008 Final EIS, FHWA and WSDOT decided preparation of a Supplemental EIS was appropriate.

A Draft Supplemental EIS comparing and contrasting the benefits and impacts of constructing, maintaining, and operating the Proposed Bridges instead of the Selected Snowshed was published in October 2012. Comments received from agencies and individuals on the Draft Supplemental EIS during the 45-day public comment period were heavily in favor of the Proposed Bridges. This Final Supplemental EIS contains errata sheets which provide a list of items that were changed to address the minor comments received on the Draft Supplemental EIS.

Concurrent with publication of this Final Supplemental EIS, FHWA is publishing the decision to construct the Proposed Bridges in a ROD. This combined Final EIS/ROD package consists of the following three documents:

- Draft Supplemental EIS
- Final Supplemental EIS (including Draft Supplemental EIS errata and responses to comments)
- ROD

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This Final Supplemental EIS was prepared under the direction of the WSDOT South Central Region Environmental Office. Research and analysis was performed by the individuals listed in Chapter 7 of the Draft Supplemental EIS.

Date Document Issued:

March 22, 2013

Document Cost and Availability:

The Final Supplemental EIS is available on the I-90 project web site: www.wsdot.wa.gov/Projects/I90/SnoqualmiePassEast. A limited number of hard copies or DVDs may also be obtained free of charge by contacting Jason Smith (see the contact information above).

The 2008 Final EIS, 2008 ROD, and 2012 Draft Supplemental EIS are also available on the I-90 project web site.

Permits and Approvals:

Highway improvements are subject to federal, state, and local permit processes. FHWA and WSDOT selected the Proposed Bridges for construction in the attached ROD. Therefore, the approvals and permits listed in the Draft Supplemental EIS Fact Sheet may require modification or amendment prior to construction in spring 2013.

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Acronyms and Abbreviations

	A		U
AMSL	above mean sea level	US	United States
	C	USBR	US Bureau of Reclamation
CWA	Clean Water Act	USFS	US Forest Service
	E		W
EIS	Environmental Impact Statement	WSDOT	Washington State Department of Transportation
ESA	Endangered Species Act		
EPA	Environmental Protection Agency		
	F		
FHWA	Federal Highway Administration		
	I		
I-90	Interstate 90		
	M		
MAP-21	Moving Ahead for Progress in the 21st Century Act		
MP	milepost		
	N		
NEPA	National Environmental Policy Act		
NRHP	National Register of Historic Places		
	R		
ROD	Record of Decision		
	S		
SEPA	State Environmental Policy Act		

Chapter 1 Introduction

The Federal Highway Administration (FHWA) and the Washington State Department of Transportation (WSDOT) are improving a 15-mile portion of Interstate 90 (I-90) in Kittitas County, Washington. The project corridor begins on the eastern side of Snoqualmie Pass near Hyak at milepost (MP) 55.1, and ends near Easton at MP 70.3. FHWA is the federal lead agency under the National Environmental Policy Act (NEPA), and WSDOT is the state lead agency under the State Environmental Policy Act (SEPA). The United States (US) Forest Service (USFS) and US Bureau of Reclamation (USBR) are cooperating agencies for this project.

A Draft Environmental Impact Statement (EIS) for the I-90 project was released in June 2005 (WSDOT 2005) and a Final EIS was released in August 2008 (WSDOT 2008). The 2008 Final EIS evaluated alternatives in support of two decisions: 1) How to rebuild the highway between Hyak and Easton with special consideration given to the 3.3 miles of I-90 on the northeast shore of Keechelus Lake, and 2) How to improve habitat connections throughout the I-90 project corridor. The Preferred Alternative included widening the existing highway from four lanes to six in the same approximate alignment, replacing the Existing Snowshed with a new, expanded snowshed (Selected Snowshed), and implementing a multi-agency-approved subset of the ecological connectivity emphasis area options. In October 2008, FHWA issued the Record of Decision (ROD), which identified the Preferred Alternative from the Final EIS as the Selected Alternative for construction (FHWA 2008). I-90 project construction began in 2009 and has proceeded through several initial contracts.

In fall 2011, the contractor selected to construct Phase 1C (*Snowshed to Keechelus Dam – Replace Snowshed and Add Lanes*) of the I-90 project, Guy F. Atkinson Construction, submitted a Cost Reduction Incentive Proposal to change the type of structure used to replace the Existing Snowshed. Under their proposal, eastbound and westbound avalanche bridges (Proposed Bridges) would be built instead of the Selected Snowshed. Because the Proposed Bridges were not evaluated in the 2008 Final EIS, FHWA and WSDOT decided preparation of a Supplemental EIS was appropriate.

Cost Reduction Incentive Proposals are intended to promote innovative ideas involving improved work methods, and new or alternative products. Once the Cost Reduction Incentive Proposal is approved, WSDOT and the contractor split the construction cost savings.

1.1 Public Comment Period

FHWA published the Notice of Availability for the *I-90 Snoqualmie Pass East, Avalanche Structures Draft Supplemental EIS* on October 5, 2012 (WSDOT 2012). The 45-day public comment period ended on November 19, 2012. The lead agencies solicited written and oral comments from the public, agencies, and organizations during the comment period. Public hearings held in Bellevue, Hyak, and Ellensburg in October 2012 gave citizens an opportunity to learn about the project and comment on the Draft Supplemental EIS. In addition to written and oral comments received in person at the public hearings, WSDOT accepted comments by mail, email, and through the I-90 project website. This Final Supplemental EIS revises the Draft Supplemental EIS and responds to comments made during the public comment period.

1.2 Abbreviated Format Final EIS

On July 6, 2012, President Obama signed Moving Ahead for Progress in the 21st Century Act (MAP-21) into law effective October 1, 2012. MAP-21 includes several provisions designed to accelerate decision-making in project delivery, such as the use of an abbreviated Final EIS. This provision is allowed if there are no substantial changes to the Draft EIS, and the comments received do not warrant major alterations. This provision is not new. It is currently allowed by guidance from the Council on Environmental Quality (40 CFR 1503.4(c)) and the existing FHWA Technical Advisory T6640.8A, Section VI. However, MAP-21 does include additional guidance on when this provision is appropriate and specifies the content of errata sheets. WSDOT consulted with FHWA about the new MAP-21 provisions and determined that the use of errata sheets attached to the Draft Supplemental EIS was appropriate for the Avalanche Structures Final Supplemental EIS.

MAP-21 is the first long-term highway authorization since 2005. It contains several provisions to streamline the environmental review process, such as the use of Final EIS errata sheets rather than rewriting a Draft EIS, and concurrent issuance of a Final EIS and ROD.

1.3 Combined Final EIS and ROD

Concurrent issuance of a Final EIS and ROD is another provision of MAP-21 designed to accelerate decision-making in project delivery. This combined Final EIS/ROD package consists of three documents: the Draft Supplemental EIS (provided on CD), this Final Supplemental EIS, and the ROD (FHWA 2013).

Chapter 2 Draft Supplemental EIS Errata

The errata provided in **Table 2-1** are corrected and amended to the Draft Supplemental EIS and its appendices. The errata is based in part on the responses to comments on the Draft Supplemental EIS (Appendix A) and additional information obtained since the publication of the Draft Supplemental EIS.

*Table 2-1
Draft Supplemental EIS Errata*

Item No.	Page	Line No./ Location	Errata	Explanation
Summary				
1	S-7	How would the Proposed Bridges affect I-90 project cost?	Replace the last sentence with the following: "The potential cost savings over the 75-year design life of the structures (approximately \$37 million after considering the cost of structural rehabilitation) is one of the primary reasons FHWA and WSDOT are considering the Proposed Bridges.	Update structural rehabilitation cost estimates in response to comment A-04.
2	S-11	What issues remain?	Replace the 2nd bullet with the following: "Implement Endangered Species Act conditions from consultation with US Fish and Wildlife Service." Delete the last sentence of the section.	Update to reflect issuance of the Biological Opinion.
3	S-11	What are the next steps?	Replace the text with the following: "Concurrent with publication of this Final Supplemental EIS, FHWA is publishing the decision to construct the Proposed Bridges in a Record of Decision (ROD). WSDOT will then complete SEPA requirements by adopting this Final Supplemental EIS. The approvals and permits listed in Exhibit S-5 will require modification or amendment for the Proposed Bridges. WSDOT will then complete the final approval process with the contractor and issue a Notice to Proceed. Construction of the Proposed Bridges is expected to begin in spring 2013."	Update to reflect current next steps.
Chapter 1				
4	1-5	1st paragraph	Add the following after the last sentence: "For example, some clearing activities associated with ongoing construction of Phase 1C have already occurred near MP 58.0 to address slope stabilization. These activities are compatible with the design and construction of either option."	Update to address recent construction activity associated with Phase 1C.
5	1-10	1st paragraph, 3rd sentence	Change the spelling of "surounding" to "surrounding."	Spelling correction.
Chapter 2				
6	2-3	Exhibit 2-1	Change caption to "Lake elevation at 2,490 feet above mean sea level (AMSL), which represents the typical	The caption incorrectly referred to the lake elevation at 2,510

Item No.	Page	Line No./ Location	Errata	Explanation
			winter elevation of Keechelus Lake."	feet AMSL.
7	2-5	Exhibit 2-3	Change caption to "Lake elevation at 2,490 feet AMSL, which represents the typical winter elevation of Keechelus Lake."	The caption incorrectly referred to the lake elevation at 2,510 feet AMSL.
8	2-6	Exhibit 2-4	Change milepost marker from "MP 58.15" to "MP 58.08."	Correct milepost marker in response to comment E-25.
9	2-8	Last paragraph	Add the following after the paragraph: "The range of uncertainty associated with climate change is accounted for by using conservative snow pack estimates to establish the height of the bridges that meet the avalanche design criteria and by applying the criteria cumulatively instead of independently."	Additional information in response to comments A-04, C-62, and E-24.
10	2-8	Last paragraph	Add the following to the end of the paragraph: "The results of additional studies confirm that both options would achieve performance levels exceeding the avalanche design criteria (DAC 2012, Wilbur and Mears 2012)."	Update to reflect the completion of additional studies in response to comment A-04.
11	2-9	Exhibit 2-6	Change milepost marker from "MP 58.13" to "MP 58.12."	Correct milepost marker in response to comment E-25.
12	2-11 through 2-13	Section 2.5	Replace the section with the text below.	Additional information in response to comment A-04 and updated cost estimates completed by WSDOT.

2.5 How would the Proposed Bridges affect I-90 project costs?

Guy F. Atkinson Construction, the Phase 1C construction contractor, submitted a bid of approximately \$177 million (2011 dollars) to construct Phase 1C of the I-90 project, which includes approximately \$71 million to construct the Selected Snowshed. Design, environmental analysis, and construction of the Proposed Bridges are anticipated to cost essentially the same amount (Exhibit 2-9).

The cost difference between the Selected Snowshed and Proposed Bridges is associated with operations and maintenance activities that WSDOT must perform to keep the highway open to traffic and in good condition. The estimated annual and 75-year life-cycle cost to operate and maintain each option is shown in Exhibit 2-9.

Exhibit 2-9

Estimated Cost for Construction, Operation, Maintenance, and Structural Rehabilitation of the Selected Snowshed and Proposed Bridges

	Selected Snowshed	Proposed Bridges	Difference ¹
Estimated construction cost	\$71 million	\$71 million	None ²
Estimated 75-year life-cycle operations and maintenance costs	\$56 million	\$8 million	(\$48 million)
Estimated 75-year life-cycle structural rehabilitation costs	\$21 million	\$32 million	\$11 million
Combined total estimated cost	\$148 million	\$111 million	(\$37 million)

¹ The cost difference is calculated by subtracting the Selected Snowshed cost from the Proposed Bridges cost.

² Construction of the Proposed Bridges would be completed under a no-cost change order.

Item No.	Page	Line No./ Location	Errata	Explanation
12 cont'd			Section 2.5 replacement text continued.	
			<p>The Selected Snowshed would require ongoing maintenance of the electrical, lighting, ventilation, and fire and life-safety systems associated with the structure and infrequent clearing of debris from the snow containment trench. Fire and life-safety features were added to the design of the Selected Snowshed after the National Fire Protection Association updated their "<i>Standard for Road Tunnels, Bridges, and Other Limited Access Highways</i>" in 2008. Maintaining these systems would require additional equipment and full-time WSDOT maintenance personnel in addition to standard upkeep costs. Local emergency service providers would also require specific training for a tunnel (snowshed) emergency response. The annual cost to operate and maintain the Selected Snowshed is estimated by WSDOT at approximately \$750,000.</p> <p>Ongoing maintenance of the Proposed Bridges would involve annual inspections, plowing and de-icing of the highway, and infrequent clearing of debris from the avalanche chutes and snow containment trench. For the first 20 years of the life of the bridge structures, existing WSDOT maintenance personnel would manage ongoing maintenance activities. Additional staffing may be required once the bridge structures age. Additional staffing is not included in the annual cost to operate and maintain the Proposed Bridges (but is included in the structural rehabilitation costs), which is estimated by WSDOT at \$100,000 per year. The potential annual savings in operations and maintenance costs (\$650,000) is one of the primary benefits of the Proposed Bridges.</p> <p>WSDOT conducted additional analyses to determine the threshold at which extreme avalanches could damage the structures or impact traffic (DAC 2012, Wilbur and Mears 2012). The analyses resulted in the following findings:</p> <ul style="list-style-type: none"> • Both structures would withstand avalanches with a 100-year return period or greater without resulting in structural damage or destabilization of vehicles. • Powder avalanches with a return period of 50 years or greater could temporarily reduce visibility on the Proposed Bridges, mainly in the westbound lanes. • Snow from powder avalanches could also infiltrate the openings on the lake side of the Selected Snowshed on the order of once every ten years, temporarily generating conditions in the eastbound lanes similar to driving in a snowstorm. <p>To further reduce these identified risks, WSDOT would consider active avalanche control and/or snow removal from underneath the bridges when snow conditions could generate a powder avalanche that approaches a 30-year return period. If the Selected Snowshed is constructed and snow infiltration begins to adversely affect safety, maintenance, or operations, WSDOT would implement appropriate measures to remedy the situation, such as installing wire mesh over the lake-side openings.</p> <p>The usable life of either structure can be extended by implementing structural rehabilitation activities. Structural rehabilitation for the Selected Snowshed may include concrete (roof) overlay; pavement reconstruction; corrosion repairs; replacement of expansion joints and bearings; and replacement of fire-life safety, electrical, mechanical, and ITS system components. Structural rehabilitation for the Proposed Bridges may include concrete overlay, expansion joint and bearing replacement, ITS system maintenance, and bridge column and grade beam repairs. WSDOT estimated the costs associated with these activities for both options and determined that structural rehabilitation of the Proposed Bridges would cost \$11 million more over the 75-year design life. This reduces, but does not negate the long-term savings anticipated with the Proposed Bridges, which remain the less expensive option by \$37 million.</p>	
Chapter 3				
13	3-7	Exhibit 3-4	Change milepost marker from "MP 58.13" to "MP 58.15."	Correct milepost marker in response to comment E-25.
14	3-10	2nd paragraph	Delete the text.	Update to reflect the completion of additional studies in response to comment A-04.

Item No.	Page	Line No./ Location	Errata	Explanation
15	3-11	3rd paragraph	Replace the last two sentences with the following: "WSDOT conducted additional analysis to determine the threshold at which extreme avalanches could damage the structures or impact traffic (DAC 2012, Wilbur and Mears 2012). As a result of the analysis, WSDOT would consider active avalanche control and/or snow removal from underneath the bridges when snow conditions could generate a powder avalanche that approaches a 30-year return period. If the Selected Snowshed is constructed and snow infiltration begins to adversely affect safety, maintenance, or operations, WSDOT would implement appropriate measures to remedy the situation, such as installing wire mesh over the lake-side openings.	Update to reflect the completion of additional studies in response to comment A-04.
16	3-15	1st paragraph	Replace the second to last sentence with the following: "The small difference in loading between the Proposed Bridges and the Selected Snowshed is considered negligible (see rows D and E, Exhibit 3-6) and, therefore, either structure would result in no net adverse effect on water quality in Keechelus Lake."	Clarification at the request of the USBR.
17	3-16	3rd paragraph, 2nd sentence	Replace with the following: "To achieve this, approximately 250,000 cubic yards of material were removed from the lake during Phase 1A. This volume, in addition to excavation at Gold Creek and Resort Creek, would more than compensate for any fill placed along the lakeshore."	Correct volume of material removed from Keechelus Lake during Phase 1A.
18	3-23	1st paragraph, last sentence	Change to "This consultation was completed in March 2013."	Update to reflect issuance of the Biological Opinion in response to comment A-04.
19	3-24	4th paragraph	Replace the last two sentences with the following: "In the Biological Opinion for the Proposed Bridges, the USFWS concluded that less than three individual bull trout (one adult and two sub-adults) could be exposed to nearshore blasting in each construction season when blasting occurs (two seasons expected)."	Update to reflect issuance of the Biological Opinion in response to comment A-04.
20	3-25	2nd paragraph, 1st sentence	Change "additional" to "more complex."	Clarification in response to comment A-06.
21	3-26	1st paragraph	Add the following after the last sentence: "Also, avalanche chutes under the Proposed Bridges would provide a natural pathway for delivery of coarse wood and other organic material to this part of the lake shoreline, improving long-term nearshore habitat function."	Additional information in response to comment A-06.
22	3-26	3rd paragraph	Replace the last sentence with the following: "However, several studies have shown that only small concentrations of the constituent elements in de-icer, including magnesium, calcium, sodium and chloride, are likely to be released into adjacent aquatic environments, and that these levels would result in negligible impacts to aquatic species (Yonge and	Additional information in response to comments A-07 and E-26.

Item No.	Page	Line No./ Location	Errata	Explanation
			Marcoe, 2001; Lewis, 1999; Public Sector Consultants, Inc., 1993). Increased use of de-icer is anticipated to reduce simultaneous use of traction sand, which can bind and transport heavy metals into local waterbodies as well as cause sedimentation of spawning and rearing habitat for fish."	
23	3-27	After bullet list	Add the following sentence: "Additional minimization measures related to blasting are stipulated in the Biological Opinion for the Proposed Bridges (USFWS 2013)."	Incorporating results of BO.
24	3-27	2 nd paragraph (Best Management Practices)	Replace the second to last sentence with the following: "Additional commitments that affect aquatic habitats and species that resulted from consultation with USFWS regarding bull trout in Keechelus Lake are described in the Biological Opinion for the Proposed Bridges (USFWS 2013)."	Update to reflect issuance of the Biological Opinion in response to comment A-04.
25	3-29	2 nd paragraph	Replace the last sentence with the following: "Additional rock excavation with the Proposed Bridges may generate additional haul trips to move loose material; however, the noise generated by these additional trips would be very similar to truck noise along the existing highway and material would be stored at existing approved locations. Also, this additional source of noise would be offset by the reduction in noise from crane delivery and setting compared to the Selected Snowshed, which involves placement of more girders by crane than the Proposed Bridges."	Update to reflect the Endangered Species Act (ESA) re-initiation of consultation.
26	3-31	4 th paragraph (Wildlife Movement)	Replace the last sentence of the paragraph with the following: "The Proposed Bridges would improve connectivity between the lake and adjacent uplands for some low mobility species such as small mammals, reptiles, amphibians, and invertebrates compared to the Selected Snowshed."	Additional information in response to comment A-06.
27	3-35	1 st paragraph	Add the following before the last sentence: "The maximum vertical grade and cross-slope on the Proposed Bridges do not occur at the same location. Where there is a 5 percent cross-slope, the maximum westbound vertical grade is 1.9 percent and the maximum eastbound vertical grade is 1.3 percent."	Additional information in response to comment E-10.
28	3-35	Exhibit 3-15	Change milepost marker from "MP 58.13" to "MP 58.15."	Correct milepost marker in response to comment E-25.
29	3-36	1 st paragraph	Add the following: "WSDOT Maintenance would use a variety of tools to monitor conditions on the Proposed Bridges, including a pavement and ITS temperature gauge, visual inspections, and video camera. The camera would be mounted in a position near the center of the westbound bridge, providing a view of conditions on both bridges. These tools would help WSDOT determine when action is needed. A variable message sign would notify drivers of changes in	Additional information in response to comments E-26, H-11, and L-01.

Item No.	Page	Line No./ Location	Errata	Explanation
			conditions or speed limits due to changing conditions on the bridges."	
Chapter 4				
30	4-4	1st paragraph	Change "October 2012" to "November 2012."	Update to reflect actual date of re-initiation of consultation.
31	4-4	1st paragraph	Replace the last sentence with the following: "Consultation concluded in March 2013. The Biological Opinion concluded that the Proposed Bridges are not likely to jeopardize the continued existence of the coterminous population of Columbia River bull trout, and are not likely to destroy or adversely modify designated critical habitat for bull trout at the rangewide scale."	Update to reflect issuance of the Biological Opinion in response to comment A-04.
32	4-6	After bullet list	Add the following: "The USFS will also base their consistency determination on compliance with Section 106 of the National Historic Preservation Act and Section 7 of the ESA. WSDOT summarized information on archaeological sites along the shoreline to facilitate USFS's determination of consistency with Section 106."	Update text at the request of the USFS.
33	4-6	2nd paragraph (Formal Consultation)	Add the following before the 1st sentence: "WSDOT has consulted formally with tribal governments on the I-90 project since 1998, which is more fully described in Section 6.2 of the 2008 Final EIS. Tribes included in this consultation are the Yakama Nation, Snoqualmie Tribe, Tulalip Tribe, Muckleshoot Tribe, Confederated Tribes of the Colville Reservation, and Wanapum Tribe."	Additional information for the summary of tribal consultation.
34	4-6	2nd paragraph (Formal consultation)	Replace the last sentence with the following: "Since WSDOT consulted on the removal of material within the design modification area and removal of the Existing Snowshed prior to the 2008 Final EIS, additional formal consultation with the tribes is not required. However, WSDOT consulted with the tribes as part of the Supplemental EIS process, including presentations to tribal members and presentations at tribal staff and tribal council meetings. These face-to-face meetings occurred with the Yakama Nation, Snoqualmie Tribe, and Wanapum Tribe in October and November 2012. Information was sent to the Tulalip Tribe and Muckleshoot Tribe, who did not respond to a presentation request. The Confederated Tribes of the Colville Reservation declined information and presentation."	Update to reflect tribal consultation activities.
Chapter 5				
35	5-2	WSDOT 2008a	Change "July" to "August".	Correct date of 2008 Final EIS.

References cited in this exhibit are provided in Chapter 5 of this Final Supplemental EIS.

Chapter 3 Preferred Option (Alternative)

3.1 Reasons for Identifying the Proposed Bridges as the Preferred Option

FHWA and WSDOT considered two options for replacing the Existing Snowshed in the Draft Supplemental EIS (WSDOT 2012). Both options meet the I-90 project purpose of improving traffic flow and public safety by increasing highway capacity and addressing unstable slopes, avalanche risks, and structural deficiencies. The two options would cost about the same to construct; however, the Proposed Bridges are the Preferred Option because they would result in several benefits to the I-90 project:

- Long-term operation and maintenance of the bridges would be considerably less expensive.
- The bridges are the environmentally preferable option, as discussed in Section 2.2 of the attached ROD.
- The bridges utilize industry-standard design and construction methods.
- Structural design and construction risk is transferred from WSDOT to Atkinson Construction.
- The bridges would improve traffic flow during construction by increasing the distance between the construction area and the traveling public.
- The bridges would improve views for drivers on a National Scenic Byway.

The 2008 Final EIS evaluated a range of **alternatives** for the entire 15-mile I-90 project corridor. This Supplemental EIS is limited to an evaluation of design **options** for replacing the Existing Snowshed.

3.2 Section 4(f)

The Preferred Option would require demolition of the Existing Snowshed, which meets the criteria for a Section 4(f) resource because it was listed on the National Register of Historic Places (NRHP) in 1995. FHWA determined the *Programmatic Section 4(f) Evaluation* presented in the 2008 Final EIS is applicable to the Preferred Option. No additional action is required to comply with Section 4(f).

3.3 Wetland Findings

A Clean Water Act (CWA) Section 404 permit was obtained prior to the start of Phase 1C construction to address the wetland impacts of the Selected Snowshed within the design modification area. These impacts have already occurred under this permit. No additional wetland impacts would occur with the Preferred Option.

The CWA Section 404 permit also addressed impacts to jurisdictional waters of the US from the Selected Snowshed. The Preferred Option would reduce permanent impacts to jurisdictional waters by 0.35 acre. A modification to the CWA Section 404 permit will be issued by the US Army Corps of Engineers prior to construction of the Preferred Option.

The **design modification area** is located between MP 57.9 and MP 58.4 and includes the potential temporary and permanent impact areas of both options.

3.4 Floodplain Findings

Construction of the Preferred Option would occur along the shoreline of Keechelus Lake. The high-water elevation of the lake is mapped as a regulated floodplain on the Department of Homeland Security – Federal Emergency Management Agency Flood Insurance Rate Map. Construction would require minor modifications to the lake’s edge. However, these changes would not impact the lake high-water elevation because the water levels in the lake are governed by reservoir operations.

3.5 Mitigation Commitments

WSDOT’s strategy on the I-90 project is to identify critical resources and modify the project design to avoid and minimize potential impacts where practicable. This “mitigation-by-design” approach was carried forward in the design of the Preferred Option (see Section 5 of the attached ROD) and will continue through permitting and construction.

Compensatory mitigation includes the actions WSDOT will take to replace or substitute for unavoidable environmental impacts. FHWA and WSDOT committed to a comprehensive list of mitigation in the 2008 Final EIS. The Preferred Option would not result in any additional impacts that require compensatory mitigation. The mitigation commitments from the 2008 Final EIS and ROD relevant to the Preferred Option are summarized in Section 6 of the attached ROD.

Chapter 4 Responses to Comments on the Draft Supplemental EIS

4.1 Public Hearings

The 45-day public comment period for the Draft Supplemental EIS began on October 6, 2012, and ended on November 19, 2012. WSDOT hosted three public hearings during the comment period to solicit comments on the Draft Supplemental EIS:

- October 23, 2012 – Lewis Creek Visitors Center, Bellevue, Washington from 4-7 p.m.
- October 24, 2012 – Summit Inn, Snoqualmie Pass, Washington from 4-7 p.m.
- October 25, 2012 – Hal Holmes Community Center, Ellensburg, Washington from 4-7 p.m.

Approximately 65 people attended these hearings.

4.2 Summary of Comments Received

One hundred twelve comments from agencies, organizations, and individuals were submitted on the Draft Supplemental EIS (WSDOT 2012) during the public comment period. Fifteen submitted their comments at the public hearings and the remaining 97 wrote comment cards, letters, and emails. Four federal agencies and three state agencies submitted comments. **Table 4-1** at the end of the chapter provides an alphabetical index of the commenters. Appendix A contains the complete text of all comments and responses.

4.2.1 Agencies

Of the six agencies that commented during the public comment period:

- The Environmental Protection Agency (EPA) and Washington Department of Fish and Wildlife had substantive comments.
- The US Department of the Interior and the US Fish and Wildlife Service had no comment.
- The Washington State Department of Ecology and the Recreation and Conservation Office provided additional information.

The first of two substantive comments from the EPA (A-04) requested that the Final Supplemental EIS include additional information regarding avalanche control, climate change, operations and maintenance costs, effects to ESA-listed species, and mature forest. The second comment from the EPA (A-07), received a few days later, requested additional information regarding the increased use of de-icer on the bridges and the potential effect on bull trout and water quality. Additional information is provided in the errata to address these issues (see **Table 2-1**, Items 1, 9, 10, 12, 14, 15, 18, 19, 22, 24, and 31).

The comment from the Washington State Department of Fish and Wildlife (A-06) identified several reasons why the Preferred Option is more favorable for ecological connectivity and fish and wildlife protection. Additional information to address this substantive comment is provided in the errata (see **Table 2-1**, Items 20, 21, and 26).

4.2.2 Individuals

Individuals that submitted comments were heavily in favor of the Preferred Option. The majority of comments received cited lower long-term operations and maintenance costs, improved visual quality, and benefits to wildlife as the primary reasons for supporting the Preferred Option.

Many individuals were concerned with whether the bridge design would provide adequate clearance to accommodate falling rocks and avalanches; the structural integrity of the bridge piers to withstand the impact forces of avalanches; and the overall safety of the traveling public, emergency responders, and WSDOT maintenance crews. Responses to these comments direct individuals to the appropriate sections of the Draft Supplemental EIS where these concerns are addressed (Appendix A).

Several individuals raised concerns with safety on the bridges, including icing, fog, and bicycle traffic. Additional information is provided in the errata to address icing concerns, including a description of the tools that WSDOT would use to monitor conditions on the bridges and determine when maintenance action is required (see **Table 2-1**, Item 29). The use of heated bridge decks was suggested as a potential solution to address icing. Heated bridges are not considered an industry-standard practice due to cost and technological difficulties (FHWA 1999). There are currently no heated bridges in the state of Washington and the relatively flat grades on the decks of the Proposed Bridges do not warrant heating. Fog could affect drivers on the

Proposed Bridges and in the Selected Snowshed in a manner similar to other sections of I-90 that parallel Keechelus Lake. There is no difference between the two options in terms of safety for bicycle traffic. Both structures are designed to meet WSDOT and American Association of State Highway and Transportation Officials standards, including standard shoulder widths that could be utilized by bicyclists.

Several individuals also inquired about the frequency for which active avalanche control would be required for either option during extreme winter conditions. As identified in the errata (see **Table 2-1**, Item 15), WSDOT would consider active avalanche control and/or snow removal from underneath the bridges when snow conditions could generate a powder avalanche that approaches a 30-year return period. If the Selected Snowshed is constructed and snow infiltration begins to adversely affect safety, maintenance, or operations, WSDOT would implement appropriate measures to remedy the situation, such as installing wire mesh over the lake-side openings.

*Table 4-1
Comment Index*

Comment No.	Name	Affiliation	Comment Date	Preferred Option	Where Addressed in Final Supplemental EIS
AGENCY COMMENTS					
A-03	Clear, Gwen	Washington State Department of Ecology	11/16/2012	None	n/a
A-08	Driscoll, Diane	National Marine Fisheries Service	11/26/12	None	n/a
A-02	Halupka, Karl	US Fish and Wildlife Service	11/9/2012	None	n/a
A-05	O'Brien, Allison	US Department of the Interior	11/19/2012	None	n/a
A-04	Reichgott, Christine	US Environmental Protection Agency	11/19/2012	None	Table 2-1, Items 1, 9, 10, 12, 14, 15, 18, 19, 24, and 31
A-06	Renfrow, Brent	Washington Department of Fish and Wildlife	11/26/2012	Proposed Bridges	Table 2-1, Items 20, 21, and 26
A-01	Ryan-Connelly, Leslie	Washington State Recreation and Conservation Office	11/9/2012	None	n/a
A-07	Somers, Elaine	US Environmental Protection Agency	11/21/2012	None	Table 2-1, Item 22
COMMENT CARDS					
C-46	Aguilar, Bonnie	Individual	10/15/2012	Proposed Bridges	n/a

Comment No.	Name	Affiliation	Comment Date	Preferred Option	Where Addressed in Final Supplemental EIS
C-20	Alden, N. Sue	Individual	10/13/2012	None	Table 2-1, Item 12
C-63	Baker, Irwin	Individual	11/16/2012	None	n/a
C-43	Bannister, Diane	Individual	10/17/2012	Proposed Bridges	n/a
C-05	Barke, Walter B.	Individual	10/9/2012	Selected Snowshed	n/a
C-36	Blair, Jeff	Individual	10/15/2012	Proposed Bridges	n/a
C-59	Bridges, Byron C.	Individual	11/5/2012	Proposed Bridges	n/a
C-12	Briggs, Howard	Individual	10/9/2012	Proposed Bridges	n/a
C-01	Chapman, James L.	Individual	10/10/2012	Proposed Bridges	n/a
C-22	Christiansen, Marit & Tage	Individual	10/13/2012	Proposed Bridges	n/a
C-16	Clarke, Marcia	Individual	10/9/2012	Proposed Bridges	n/a
C-32	Collins, J.J.	Individual	10/15/2012	Proposed Bridges	n/a
C-08	Cook, Mark & Christy	Individual	10/9/2012	Proposed Bridges	n/a
C-42	Easley, Jim & Lydia	Individual	10/17/2012	Proposed Bridges	n/a
C-50	Glass, Marty	Individual	10/25/2012	None	n/a
C-56	Gordon, Marianne	Individual	11/1/2012	Proposed Bridges	n/a
C-10	Granger, Thomas	Individual	10/9/2012	Proposed Bridges	n/a
C-25	Greenlenf, Ed	Individual	10/12/2012	Proposed Bridges	n/a
C-57	Haver, Ginny & MacCanny, Gerry	Individuals	11/3/2012	Proposed Bridges	n/a
C-47	Hendrickson, Terrill	Individual	10/18/2012	Proposed Bridges	n/a
C-02	Hoisington, Douglas	Individual	10/5/2012	Proposed Bridges	n/a
C-52	Jeffery, D. F.	Individual	10/25/2012	Proposed Bridges	n/a
C-51	Kanemori, Charlotte	Individual	10/24/2012	Proposed Bridges	n/a
C-14	Kent, Jerry	Individual	10/9/2012	Proposed Bridges	n/a
C-11	Kimball, Janet	Individual	10/9/2012	Proposed Bridges	Section 4.2.2
C-15	Landen, Dick	Individual	10/9/2012	Proposed Bridges	n/a
C-62	Little, Robin	Individual	11/26/2012	Proposed Bridges	Table 2-1, Item 9
C-17	Logan, Rachael	Individual	10/9/2012	Proposed Bridges	n/a
C-19	Manion, Donna	Individual	10/9/2012	Proposed Bridges	n/a
C-58	Masters, Kerry	Individual	11/2/2012	None	n/a
C-44	Meredith, Judy	Individual	10/19/2012	Proposed Bridges	n/a
C-55	Micheletti, Tami	Individual	10/29/2012	Proposed Bridges	n/a
C-61	Morency, Margaret	Individual	11/5/2012	Proposed Bridges	n/a
C-49	Munro, Chet	Individual	10/22/2012	Proposed Bridges	n/a

Comment No.	Name	Affiliation	Comment Date	Preferred Option	Where Addressed in Final Supplemental EIS
C-27	Nelson, Darrell	Individual	10/10/2012	Proposed Bridges	n/a
C-06	No name	n/a	10/9/2012	Proposed Bridges	n/a
C-09	No name	n/a	10/9/2012	Proposed Bridges	n/a
C-18	No name	n/a	10/9/2012	Proposed Bridges	n/a
C-30	No name	n/a	10/11/2012	Proposed Bridges	n/a
C-37	No name	n/a	10/15/2012	Proposed Bridges	n/a
C-40	Peterson, Kristina	Individual	10/16/2012	Proposed Bridges	n/a
C-28	Petett, Scott	Individual	10/11/2012	Proposed Bridges	n/a
C-48	Pratt, Richard	Individual	10/15/2012	Proposed Bridges	n/a
C-38	Price, Sam B.	Individual	10/16/2012	Proposed Bridges	n/a
C-39	Rasch, Ingrid	Individual	10/16/2012	None	n/a
C-29	Rasmussen, W.C.	Individual	10/11/2012	Proposed Bridges	n/a
C-07	Reiter, C.A. & Dena	Individual	10/7/2012	Selected Snowshed	n/a
C-33	Reitor, Lori	Individual	10/15/2012	Proposed Bridges	n/a
C-34	Sannens, Jerry	Individual	10/15/2012	Proposed Bridges	n/a
C-31	Scarber, Bob & Janelle	Individual	10/12/2012	Proposed Bridges	n/a
C-03	Siebert, J.R.	Individual	10/10/2012	Proposed Bridges	n/a
C-60	Simonson, Ingrid	Individual	11/5/2012	Proposed Bridges	n/a
C-26	Sittauer, Teri & Steve	Kittitas County Fire District #8	10/12/2012	Proposed Bridges	n/a
C-41	Taylor, Andrew	Individual	10/15/2012	Selected Snowshed	Table 2-1, Item 12
C-45	Thompson, Marie	Individual	10/20/2012	Proposed Bridges	n/a
C-23	Thompson, Sigmund	Individual	10/12/2012	Proposed Bridges	n/a
C-54	Van Zant, Peter	Individual		Selected Snowshed	n/a
C-13	Welch, Gene & Karen	Individual	10/9/2012	Proposed Bridges	n/a
C-21	Willing, L.	Individual	10/13/2012	Proposed Bridges	n/a
C-53	Wyberg, Bryan	Individual	/2012	Proposed Bridges	n/a
C-35	Yakesh, Don	Individual	10/15/2012	Proposed Bridges	n/a
C-04	Yellman, Ted	Individual	10/10/2012	Proposed Bridges	n/a
C-24	Zwinger, Susan	Individual	10/11/2012	Proposed Bridges	n/a
EMAIL AND WEBSITE COMMENTS					
E-06	Bent, Julie	Individual	10/10/2012	Proposed Bridges	n/a
E-14	Blitzer, Mark	Individual	10/22/2012	Proposed Bridges	n/a

Comment No.	Name	Affiliation	Comment Date	Preferred Option	Where Addressed in Final Supplemental EIS
E-10	Brunson, Barry	Individual	10/18/2012	None	Table 2-1, Item 27
E-09	Christopherson, Lyle	Individual	10/13/2012	None	n/a
E-26	Cryer, Randy	Consultant, Snow Hydrology/Meteorology	10/14/2012	Selected Snowshed	Table 2-1, Items 12, 22 and 29
E-03	Eberle, Stephanie	Individual	10/3/2012	Proposed Bridges	n/a
E-19	Fain, Deborah	Individual	11/5/2012	Proposed Bridges	n/a
E-15	Graham, Molly	Individual	10/26/2012	Proposed Bridges	n/a
E-11	Haedt, John	Individual	10/21/2012	Selected Snowshed	n/a
E-22	Holbron, Greg	Individual	11/11/2012	Proposed Bridges	n/a
E-17	Holman, Scott	Individual	10/29/2012	Proposed Bridges	n/a
E-07	Hunt, Gayle	Individual	10/9/2012	Proposed Bridges	n/a
E-24	Jorgensen, Edris	Individual	11/19/2012	Proposed Bridges	Table 2-1, Item 9
E-12	Kennedy, Rhonda	Individual	10/23/2012	Proposed Bridges	n/a
E-05	Knight, Jim	Individual	10/10/2012	Proposed Bridges	n/a
E-02	Laughlin, Gene	Individual	10/4/2012	None	n/a
E-16	Luxem, Dave	Individual	10/8/2012	Proposed Bridges	n/a
E-08	May, Glenn	Individual	10/14/2012	None	n/a
E-13	Owley, Mindy	Individual	10/23/2012	Proposed Bridges	n/a
E-01	Ritter, Launi	Individual	10/3/2012	None	n/a
E-25	Sigsworth, Sterling	Individual	11/19/2012	None	Table 2-1, Items 8, 11, 13, and 28
E-04	Southern, Larry	Individual	10/6/2012	Proposed Bridges	n/a
E-20	Stark, Sue	Individual	11/8/2012	Proposed Bridges	n/a
E-18	Walker, Steve	Individual	10/30/2012	Proposed Bridges	n/a
E-21	Watts, Jerry	Kachess Ridge Maintenance Association	11/9/2012	Proposed Bridges	n/a
E-22	Watts, Jerry	Kittitas County Fire District #8	11/11/2012	Proposed Bridges	n/a
HEARING COMMENTS					
H-15	Anonymous – hearing transcript	n/a	10/23/2012	Proposed Bridges	n/a
H-08	Carlson, John	Individual	10/24/2012	Proposed Bridges	n/a
H-09	Carlson, Sharon	Individual	10/24/2012	Proposed Bridges	n/a
H-10	Drenberg, Rob	Individual	10/24/2012	Proposed Bridges	n/a
H-06	Dryden, Tom	Individual	10/24/2012	Proposed Bridges	Section 4.2.2
H-12	Jackson, Jeremiah	Individual	10/25/2012	Proposed Bridges	n/a

Comment No.	Name	Affiliation	Comment Date	Preferred Option	Where Addressed in Final Supplemental EIS
H-05	Kilroy, Tom	Ski Tur Valley Homeowner Association	10/24/2012	None	n/a
H-04	McDonald, Mike	Individual	10/24/2012	Proposed Bridges	n/a
H-01	No name	n/a	10/23/2012	Proposed Bridges	n/a
H-02	No name	n/a	10/23/2012	Proposed Bridges	n/a
H-03	No name	n/a	10/23/2012	Proposed Bridges	n/a
H-11	O'Connor, Patrick	Individual	10/24/2012	Proposed Bridges	Table 2-1, Item 29
H-13	Sackett, Roger	Individual	11/15/2012	Proposed Bridges	n/a
H-07	Stachowrit, Steve	Individual	10/24/2012	Proposed Bridges	n/a
H-14	White, Philip	Individual	11/19/2012	Proposed Bridges	n/a
LETTER COMMENTS					
L-01	Halstead, Clyde	Kachess Lodge	11/16/2012	Selected Snowshed	Table 2-1, Item 29

Chapter 5 References

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- Lewis, W.M. 1999. Studies of Environmental Effects of Magnesium Chloride Deicer in Colorado. Colorado Department of Transportation Research Report No. CDOT-DTD-R-99-10, November, 1999.
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- . 2008. *I-90 Snoqualmie Pass East Final Environmental Impact Statement and Section 4(f) Evaluation*. July.
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- Wilbur and Mears. 2012. *Y-11116 AB (LOE2) Quantitative Risk Assessment for Snowshed, I-90 Snoqualmie Pass East Project*. September 26.

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I-90 Snoqualmie Pass East
Avalanche Structures

Record of Decision

**Interstate 90
Snoqualmie Pass East
FHWA-WA-EIS-05-01-FS
Record of Decision
March 2013**

Kittitas County, Washington

Decision

The Federal Highway Administration (FHWA) concurs with the Washington State Department of Transportation in the choice to construct the Preferred Option. The Preferred Option consists of eastbound and westbound avalanche bridges (Selected Bridges) in Phase 1C (*Snowshed to Keechelus Dam – Replace Snowshed and Add Lanes*) of the I-90 Snoqualmie Pass East Project, as identified in the attached Final Supplemental Environmental Impact Statement.

The Selected Bridges meet the project purpose of improving traffic flow and public safety by increasing highway capacity and addressing unstable slopes, avalanche risks, and structural deficiencies. FHWA and WSDOT also identified the Selected Bridges as the environmentally preferable option because they will result in fewer permanent impacts to Keechelus Lake, create new aquatic habitat for bull trout and other fish, and improve ecological connectivity between the lake and adjacent uplands for some low-mobility species. The two options would cost about the same to construct; however, the Selected Bridges will cost considerably less to operate and maintain. For these reasons, FHWA chose the Selected Bridges for construction.

This decision is based on an evaluation of information presented in the Supplemental Environmental Impact Statement; the project's purpose and need; and input from the I-90 project team, agencies and tribes, and the public. Additional basis for this decision is contained in the remainder of this Record of Decision and the attached Final Supplemental Environmental Impact Statement.

03/12/13

Date of Approval

Daniel M. Mathis

Daniel M. Mathis, PE
Division Administrator
Federal Highway Administration



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1. Introduction

1.1 Background

The Federal Highway Administration (FHWA) and the Washington State Department of Transportation (WSDOT) are improving a 15-mile portion of Interstate 90 (I-90) in Kittitas County, Washington. The project corridor begins on the eastern side of Snoqualmie Pass near Hyak at milepost (MP) 55.1, and ends near Easton at MP 70.3. FHWA is the federal lead agency under the National Environmental Policy Act (NEPA), and WSDOT is the state lead agency under the State Environmental Policy Act (SEPA). The US Forest Service (USFS) and the US Bureau of Reclamation (USBR) are cooperating agencies for this project.

A Draft Environmental Impact Statement (EIS) for the I-90 project was released in June 2005 (WSDOT 2005) and a Final EIS was released in August 2008 (WSDOT 2008a). The 2008 Final EIS evaluated alternatives in support of two decisions: 1) how to rebuild the highway between Hyak and Easton with special consideration given to the 3.3 miles of I-90 on the northeast shore of Keechelus Lake, and 2) how to improve habitat connections throughout the I-90 project corridor. The Preferred Alternative included widening the existing highway from four lanes to six in the same approximate alignment, replacing the Existing Snowshed with a new, expanded snowshed (previously Selected Snowshed), and implementing a multi-agency-approved subset of the connectivity emphasis area options. In October 2008, FHWA issued the Record of Decision (ROD), which identified the Preferred Alternative from the Final EIS as the Selected Alternative for construction (FHWA 2008). I-90 project construction began in 2009 and has proceeded through several initial contracts.

In fall 2011, the contractor selected to construct Phase 1C (*Snowshed to Keechelus Dam – Replace Snowshed and Add Lanes*) of the I-90 project, Guy F. Atkinson Construction, submitted a Cost Reduction Incentive Proposal to change the type of structure used to replace the Existing Snowshed. Under their proposal, eastbound and westbound avalanche bridges (Selected Bridges) would be built instead of the previously Selected Snowshed. Because the Selected Bridges were not fully evaluated in the 2008 Final EIS, FHWA and WSDOT decided preparation of a Supplemental EIS was appropriate. A Draft Supplemental EIS comparing and contrasting the effects of the previously Selected Snowshed and the Selected Bridges was released in October 2012 for public comment (WSDOT 2012).

1.2 Combined Final Supplemental EIS and ROD

On July 6, 2012, President Obama signed the Moving Ahead for Progress in the 21st Century Act (MAP-21) into law effective October 1, 2012. MAP-21 includes several provisions designed to accelerate decision-making in project delivery, such as encouraging concurrent issuance of a Final EIS and ROD. Under this provision, the typical 30-day review period between the Notice of Availability for the Final EIS and the issuance of the ROD is not applicable. The new law also reduces the statute of limitations to file a legal challenge from 180 days to 150 days after the ROD is signed.

WSDOT consulted with FHWA about the new MAP-21 provisions and determined that a combined Final Supplemental EIS and ROD was appropriate. The *I-90 Snoqualmie Pass East Avalanche Structures Final Supplemental EIS* is attached (WSDOT 2013). FHWA plans to file a Notice of Limitation on Claims for Judicial Review for this Supplemental EIS in the Federal Register. The date that the notice appears in the Federal Register will begin the 150-day statute of limitations.

2. Options Considered (Alternatives)

The Supplemental EIS considered two options for replacing the Existing Snowshed on I-90 within the design modification area, between MP 57.9 and MP 58.4. Both options meet the I-90 project purpose and need, which has not changed since preparation of the 2008 Final EIS.

2.1 Previously Selected Snowshed

The previously Selected Snowshed option would demolish the 500-foot-long Existing Snowshed at MP 58.1 and replace it with a new 1,100-foot-long concrete snowshed structure. The previously Selected Snowshed would be constructed along the shoreline of Keechelus Lake, in the same general location as the Existing Snowshed. This option would reduce highway closures and risks to the traveling public associated with avalanches, rock fall, and landslides in this location by covering all six lanes of traffic with a protective structure designed to withstand these events. FHWA and WSDOT evaluated this option in the 2008 Final EIS and it was part of the Selected Alternative in the 2008 ROD.

Following issuance of the 2008 ROD, WSDOT collaborated with local authorities to incorporate fire and life-safety systems into the design of the previously Selected Snowshed in response to the National Fire Protection Association's updated "*Standard for Road Tunnels, Bridges, and Other Limited Access Highways*" (NFPA 2008). Operation and maintenance of the previously Selected Snowshed, including these systems, is estimated to cost \$750,000 per year, totaling \$56 million over the 75-year design life of the structure. High operations and maintenance costs associated with the fire and life-safety systems are one of the primary reasons FHWA did not select the previously Selected Snowshed in this ROD.

2.2 Selected Bridges (Environmentally Preferable Option)

The Selected Bridges option will replace the Existing Snowshed with eastbound and westbound avalanche bridges. Each of the 1,200-foot-long bridges will accommodate three lanes of traffic and shoulders along the shoreline of Keechelus Lake, in the same general location as the Existing Snowshed. This option will reduce highway closures and risks to the traveling public associated with avalanches, rock fall, and landslides in this location by removing and stabilizing loose materials located upslope from the highway and by physically separating the highway from the hillside. The Selected Bridges were identified as the Preferred Option in the Final Supplemental EIS because they will result in several benefits to the I-90 project:

- Long-term operation and maintenance of the bridges will be considerably less expensive.
- The bridges utilize industry-standard design and construction methods.
- Structural design and construction risk is transferred from WSDOT to Atkinson.
- The bridges will improve traffic flow during construction by increasing the distance between the construction area and the traveling public.
- The bridges provide improved views for drivers on a National Scenic Byway.

During early planning, FHWA and WSDOT raised initial concerns with the Selected Bridges over avalanche safety, stormwater treatment, and potential impacts to bull trout. However, all of these concerns were either addressed in the design or analyzed and determined to be resolved prior to publication of the Draft Supplemental EIS in October 2012. Comments received from agencies and the public during the 45-day public comment period for the Draft Supplemental EIS were heavily in favor of the Selected Bridges. Several members of the I-90 project interdisciplinary team (IDT) also expressed support for this option during IDT meetings, in written correspondence, and during the public comment period.

FHWA and WSDOT identified the Selected Bridges as the environmentally preferable option (alternative). Although the previously Selected Snowshed and the Selected Bridges occupy roughly the same footprint and are anticipated to result in similar impacts to natural resources, an evaluation of the minor differences between the two options resulted in the conclusion that the Bridges would “result in the least damage to the biological and physical environment” (40 CFR 1505.2(b)). FHWA and WSDOT made this determination by considering the context and intensity of effects associated with each option, such as the type, quality, and sensitivity of the resources involved; the duration of the effect (temporary or permanent); and the setting of the design modification area and the I-90 project corridor.

The Selected Bridges are more favorable than the previously Selected Snowshed for the following resources:

- *Water Resources* – the Selected Bridges allow WSDOT to maintain its commitment for the I-90 project of zero net loss of storage in Keechelus Lake.
- *Wetlands and Other Jurisdictional Waters* – the Selected Bridges will reduce impacts to Keechelus Lake, a jurisdictional water regulated under the Clean Water Act, by 0.35 acre.
- *Fish, Aquatic Species and Habitats* – the Selected Bridges create 2.22 acres of permanent aquatic habitat along the shoreline of Keechelus Lake, providing increased shoreline habitat complexity and increased connection to the shoreline. This beneficial effect represents one of the few opportunities to provide new aquatic habitat for all fish species, including bull trout, adjacent to the steep rocky shoreline of Keechelus Lake.

Resources for which the Selected Bridges are somewhat less favorable include:

- *Terrestrial Species* – the Selected Bridges will permanently impact 3.26 acres more terrestrial habitat, including mature forest located upslope of the Existing Snowshed. However, the terrestrial habitat within the design modification area has reduced value for wildlife due to its steep, rocky

terrain and proximity to a heavily used transportation corridor. Additionally, the type of habitat impacted is abundant within the surrounding Snoqualmie Pass Adaptive Management Area, which is actively managed by the USFS for the long-term protection of late-successional forest habitat. Some terrestrial habitat impacts are offset by improved connectivity between the lake and adjacent uplands for some low-mobility species compared to the previously Selected Snowshed.

Based upon the context and intensity of effects summarized above, the Selected Bridges are the environmentally preferable option.

3. Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), as amended, is intended to protect threatened and endangered species and the ecosystems on which they depend. When the federal government takes an action subject to the ESA, it must comply with Section 7 of the ESA [found at 16 USC 1536(a)(2)]. Section 7 (a)(2) states:

Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an “agency action”) is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section. In fulfilling the requirements of this paragraph each agency shall use the best scientific and commercial data available.

FHWA submitted a Biological Assessment (BA) in November 2012, reinitiating formal consultation with the US Fish and Wildlife Service (USFWS) on potential effects of the Selected Bridges on listed species. In response, USFWS issued a Biological Opinion (BO) (USFWS 2013), included as Appendix B of the attached Final Supplemental EIS. The BO concludes the Selected Bridges are not likely to jeopardize the continued existence of the coterminous population of Columbia River bull trout, and not likely to destroy or adversely modify designated critical habitat for bull trout at the rangewide scale. Construction of the Selected Bridges has the potential to result in temporary, adverse impacts to a threatened population of bull trout in Keechelus Lake due to site preparation, construction activities, and ongoing operations and maintenance activities. The USFWS expects impact minimization and avoidance measures included in the construction plan and stipulated in the BO will effectively minimize adverse blasting impacts to bull trout. Adverse impacts associated with ongoing operation and maintenance of the Selected Bridges will likely include infrequent pulses of untreated plow spray and stormwater entering Keechelus Lake, especially during winter when icing may reduce or negate the effectiveness of stormwater treatment facilities. However, stormwater treatment included in the design of the Selected Bridges will result in improvements to water quality relative to existing conditions. The Selected Bridges would also improve opportunities for bull trout foraging and rearing in shallow water habitat in Keechelus Lake, resulting from replacement of a shoreline retaining wall with a relatively naturalistic shoreline. The project will incorporate measures to minimize harm to listed species as outlined in the BA and BO.

4. Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 USC 303 and 23 USC 138, declares that:

It is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.

Section 4(f) specifies that:

The Secretary [of Transportation] may approve a transportation program or project...requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if:

1. *There is no prudent and feasible alternative to using that land; and*
2. *The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.*

Construction of the previously Selected Snowshed would require demolition of the Existing Snowshed, which meets the criteria for a Section 4(f) resource because it was listed on the National Register of Historic Places (NRHP) in 1995. Planned demolition of the Existing Snowshed resulted in a finding of adverse effect to the snowshed. However, the *Programmatic Section 4(f) Evaluation* presented in the 2008 Final EIS determined that there are no feasible and prudent alternatives to the use (demolition) of the Existing Snowshed. FHWA, WSDOT, and the Department of Archaeology and Historic Preservation developed a Memorandum of Agreement that documents mitigation measures for removal of the Existing Snowshed. These measures were completed in September 2009. FHWA determined the *Programmatic Section 4(f) Evaluation* is applicable to the Selected Bridges, which also require demolition of the Existing Snowshed. No additional action is required to comply with Section 4(f) prior to construction of the Selected Bridges.

5. Measures to Minimize Harm

WSDOT's strategy on the I-90 project is to identify critical resources and modify the project design to avoid and minimize potential impacts where practicable. This "mitigation-by-design" approach was carried forward in the design of the Selected Bridges and will continue through permitting and construction. For the design of the Selected Bridges, these efforts included:

- Making small adjustments to the footprint of the bridges wherever possible to minimize additional land acquisitions and terrestrial habitat impacts;
- Designing the bridges to treat stormwater for the equivalent of all new and impervious surfaces;
- Modifying the design based upon the results of ongoing geotechnical investigations and avalanche and rock fall modeling;

- Designing the bridges to meet national safety standards (road geometrics) and WSDOT factors of safety (rock fall and slope stability);
- Meeting avalanche design criteria that represent a conservative level of protection for the traveling public.

FHWA and WSDOT committed to a comprehensive list of best management practices (BMPs) in the 2008 Final EIS to meet applicable performance standards, permit conditions, and mitigate for the impacts of construction of the I-90 project. The commitment to these BMPs will not change with construction of the Selected Bridges. These BMPs are summarized in Appendix F of the Draft Supplemental EIS and are not repeated within this ROD. WSDOT will work with regulatory agencies to modify existing permits in order to proceed with construction of the Selected Bridges. WSDOT will adhere to any additional stipulated conditions in the modified permits to further avoid and minimize impacts. All practicable measures to minimize environmental harm have been incorporated into this decision.

6. Commitments

Compensatory mitigation includes the actions WSDOT will take to replace or substitute for unavoidable environmental impacts. FHWA and WSDOT committed to a comprehensive list of mitigation in the 2008 Final EIS. The Selected Bridges will not result in any additional impacts that require compensatory mitigation. The mitigation commitments from the 2008 Final EIS and ROD relevant to the Selected Bridges are summarized below.

6.1 Elements of the Environment with No Permanent Adverse Impacts

As documented in the Draft Supplemental EIS, several elements of the environment evaluated in the 2008 Final EIS will not be affected by the decision to construct the Selected Bridges. These resources include air quality; noise; historic, cultural, and archaeological resources; recreation resources; hazardous materials and waste; energy; and social and economic resources (utilities and environmental justice).

The Selected Bridges will not result in permanent adverse impacts to geology and soils, avalanche, and rock fall; fish, aquatic species, and habitat; transportation; land use; and social and economic resources (employment, reliability, and public services), and no compensatory mitigation is required for these elements of the environment. Potential impacts to Columbia River bull trout will be minimized through compliance with the measures outlined in the BA and the BO.

There is no change in the commitments to these resources made in the 2008 Final EIS and ROD.

6.2 Elements of the Environment with Permanent Adverse Impacts

A subset of compensatory mitigation commitments from the 2008 Final EIS is provided in Appendix F of the Draft Supplemental EIS. These commitments are not repeated within this ROD. However, the commitments that are applicable to the Selected Bridges are summarized briefly below.

6.2.1 Water Resources

WSDOT committed to treating stormwater runoff for the equivalent of all new and existing impervious surfaces in the 2008 Final EIS and ROD. WSDOT also committed to providing on-site treatment systems and off-site mitigation when on-site treatment is not possible because of physical constraints. Portions of I-90 within the design modification area are untreatable due to site constraints. Previously negotiated compensatory mitigation will be provided by treating equivalently-sized areas at other sites within the I-90 corridor. This approach is consistent with the 2011 *Highway Runoff Manual* (WSDOT 2011a).

WSDOT also committed to a policy of zero net loss to Keechelus Lake's storage capacity because of the I-90 project. The design of the Selected Bridges meets this commitment.

No additional compensatory mitigation is required for the Selected Bridges.

6.2.2 Wetland and Other Jurisdictional Waters

WSDOT committed to restoration, habitat preservation, wetland mitigation, and highway reclamation in the 2008 Final EIS and ROD to address the impacts of the I-90 project. These commitments included preparation of a *Final Wetland and Aquatic Resources Mitigation Plan* (WSDOT 2011b). The Selected Bridges reduce permanent impacts to jurisdictional waters compared to the previously Selected Snowshed. Therefore, no additional compensatory mitigation is required for the Selected Bridges.

6.2.3 Terrestrial Species

As discussed in the 2008 Final EIS and ROD, FHWA, WSDOT, and their partner agencies developed a landscape-scale, watershed-based strategy to mitigate for project impacts. Applying this strategy will result in beneficial effects to terrestrial species, including improved ecological connectivity, an increase in riparian habitat, and a decrease in wildlife mortality. The Selected Bridges are consistent with this strategy and no additional compensatory mitigation is required.

6.2.4 Visual Quality

WSDOT committed to meeting the terms of the project *Architectural Design Guidelines* (WSDOT 2008b) and the project roadside master plan in the 2008 Final EIS and ROD. The Selected Bridges use the Cascadian style design theme from these guidelines, which uses native stone textures on walls, barriers, piers, and tunnel portals when visible and appropriate. No additional compensatory mitigation is required for the Selected Bridges.

7. Monitoring and Enforcement

The FHWA Division Administrator and the WSDOT Director of Environmental Services are ultimately responsible for monitoring and enforcing mitigation measures. WSDOT’s South Central Region Engineering and Environmental programs, as well as Atkinson Construction, are responsible for compliance assurance of all related commitments and regulatory permit conditions made or obtained for Phase 1C of the I-90 project. The approvals and permits shown in **Table 1** may require modification or amendment prior to construction of the Selected Bridges.

Table 1
Permits and Approvals for the Selected Bridges

Agency	Statute	Permit/Approval
FEDERAL		
US Fish and Wildlife Service/National Oceanic and Atmospheric Administration Fisheries	Endangered Species Act Section 7 consultation and concurrence (impact to listed species) Migratory Bird Treaty Act	Consultation and Biological Opinion (re-initiation of consultation based on new design information; a Biological Opinion was completed in March 2013)
US Army Corps of Engineers	Clean Water Act	Section 404 Individual Permit (regulatory update and/or reissuance)
US Forest Service	Acquisition of Rights-of-Way – Interstate System [Title 23 U.S.C. 107(d)]	Consistency determination with the US Forest Service Forest Plan(s) (<i>review and update</i>)
US Forest Service	Organic Act of 1897, National Forest Management Act of 1976	Access Permit(s) and Special Use Permit(s) (<i>review and update</i>)
US Bureau of Reclamation	Use of Bureau of Reclamation Land, Facilities, and Waterbodies (Title 43 CFR Part 429) Reclamation Act of 1902 (Public Law 57-161: 32 Stat.388, 43 U.S.C. 371, et seq.) Reclamation Reform Act of 1982 (Title II of Public Law 97-293) Public Conduct on Bureau of Reclamation Facilities, Lands, and Waterbodies (Title 43 CFR Part 423)	Use Authorization (<i>review and update</i>) US Forest Service Permit(s) (<i>review and concu</i>)
STATE		
Washington State Department of Ecology	Clean Water Act Section 401	Water Quality Certification (<i>modification</i>)
Washington State Department of Ecology	Shoreline Management Act (RCW 90.58)	Consider administrative appeals
Washington Department of Fish and Wildlife	Construction Projects in State Waters (RCW 77.55)	Hydraulic Project Approval (<i>modification</i>)
LOCAL		
Kittitas County	County Code (Title 17 and 18) and Shoreline Management Act (RCW 90.58)	Substantial Development Permit(s) and/or exemption, Critical Areas Ordinance review, and limited zoning review (<i>review and update</i>)

CFR – Code of Federal Regulations
RCW – Revised Code of Washington
U.S.C. – United States Code

8. Conclusion

The environmental record for this decision includes the following documents:

- I-90 Snoqualmie Pass East Draft Environmental Impact Statement and Section 4(f) Evaluation (WSDOT 2005)
- I-90 Snoqualmie Pass East Final Environmental Impact Statement and Section 4(f) Evaluation (WSDOT 2008a)
- I-90 Snoqualmie Pass East FHWA-WA-EIS-05-01-F Record of Decision (FHWA 2008)
- I-90 Snoqualmie Pass East Avalanche Structures Draft Supplemental Environmental Impact Statement (WSDOT 2012)
- I-90 Snoqualmie Pass East Avalanche Structures Final Supplemental Environmental Impact Statement (WSDOT 2013)

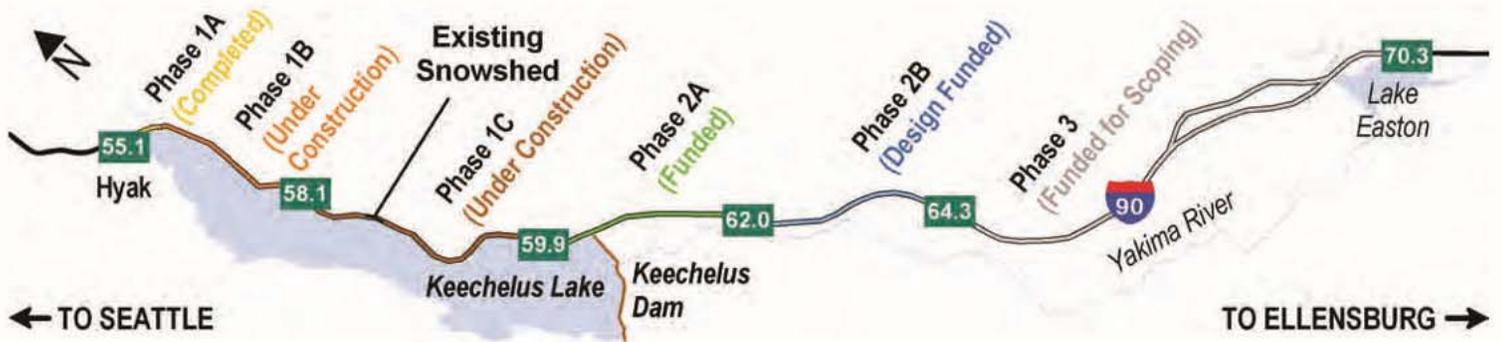
These documents, incorporated here by reference, constitute the statements required by NEPA and Title 23 of the United States Code on:

- The environmental impacts of the project,
- The adverse environmental effects that cannot be avoided should the project be implemented,
- Alternatives to the proposed project,
- Irreversible and irretrievable impacts on the environment that may be involved with the project should it be implemented.

Having carefully considered the environmental record noted above, the mitigation measures as required herein, the written and oral comments offered by other agencies and the public on this record, and the written responses to the comments, FHWA has determined that the Preferred Option is also the environmentally preferable option. The Preferred Option is the Selected Bridges, which represents the best option for construction of avalanche structures on Phase 1C of the I-90 Snoqualmie Pass East Project (*Snowshed to Keechelus Dam – Replace Snowshed and Add Lanes*). FHWA finds that all practicable measures to minimize environmental harm have been incorporated into the design of the Selected Bridges. FHWA will ensure that the commitments outlined herein will be implemented as part of final design, construction contract, and post-construction monitoring.

9. References

- Federal Highway Administration (FHWA). 2008. *I-90 Snoqualmie Pass East FHWA-WA-EIS-05-01-F Record of Decision*. October.
- National Fire Protection Association (NFPA). 2008. *Standard for Road Tunnels, Bridges, and Other Limited Access Highways*.
- US Fish and Wildlife Service (USFWS). 2013. *Biological Opinion for the I-90 Snoqualmie Pass East Project Reinitiation of Formal Consultation on Phase 1C, Keechelus Lake Avalanche Bridges*. March.
- Washington State Department of Transportation (WSDOT). 2005. *I-90 Snoqualmie Pass East Draft Environmental Impact Statement and Section 4(f) Evaluation*. June.
- . 2008a. *I-90 Snoqualmie Pass East Final Environmental Impact Statement and Section 4(f) Evaluation*. July.
- . 2008b. *Architectural Design Guidelines, I-90 Snoqualmie Pass East*. February.
- . 2011a. *Highway Runoff Manual*.
- . 2011b. *Final Wetland and Aquatic Resources Mitigation Plan*.
- . 2012. *I-90 Snoqualmie Pass East Avalanche Structures Draft Supplemental Environmental Impact Statement*. October.
- . 2013. *I-90 Snoqualmie Pass East Avalanche Structures Final Supplemental EIS*. March.



Project Purpose:

To meet projected traffic demands, improve public safety, and meet the identified project needs in the 15-mile stretch of I-90 between the communities of Hyak and Easton in Kittitas County, Washington.

Project Needs:



Avalanches

Traffic Volume

Habitat Connections

Slope Instability

Structural Deficiencies