3.7 AQUATIC CONSERVATION STRATEGY

3.7.1 Introduction

The Aquatic Conservation Strategy (ACS) was developed to improve and maintain the ecological health of watersheds and aquatic ecosystems contained within them on federal public lands. The four primary components of the ACS are designed to operate together to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems:

1. **Riparian Reserves:** As stated in the 1994 ROD, "Riparian Reserves are lands along streams, wetlands, and lakes, and unstable and potentially unstable areas where special Standards and Guidelines direct land use." Riparian Reserves were mapped in the Project Area and described in Section 3.3 – Watershed Resources.

2. **Key Watersheds:** As stated in the 1994 ROD, "Key Watersheds are a system of large refugia comprising watersheds that are crucial to at-risk fish species and stocks and provide high quality water. A Tier 1 Key Watershed contributes directly to conservation of at-risk anadromous salmonids, bull trout, and resident fish species, and they have a high restoration potential. A Tier 2 Key Watershed may not contain at-risk fish stocks, but are important sources of high quality water." The Clear Fork Cowlitz watershed has been identified as a Tier 2 Key Watershed.

3. **Watershed Analysis:** As stated in the 1994 ROD, "The Northwest Forest Plan Standards and Guidelines contain procedures for conducting watershed analysis that evaluates geomorphic and ecologic processes operating in specific watersheds." The *Clear Fork Watershed Analysis* (USDA 1998a) and the *Upper Tieton Watershed Analysis* (USDA 1998b) were used as information resources during the preparation of the White Pass Expansion Proposal EIS.

4. **Watershed Restoration:** As stated in the 1994 ROD, "A comprehensive, long-term program of watershed restoration to restore watershed health and aquatic ecosystems, including the habitats supporting fish and other aquatic and riparian-dependent organisms."

The four components of the ACS employ several tactics to approach the goal of maintaining the natural disturbance regime. Land use activities should be limited or excluded in those parts of the watershed prone to instability. The distribution of land use activities, such as timber harvest or roads, must minimize increases in peak streamflows. Headwater riparian areas need to be protected, so that when debris slides and flows occur they contain LWD and boulders necessary for creating habitat farther downstream. Riparian areas along larger channels need protection to limit bank erosion, ensure an adequate and continuous supply of LWD to channels, and provide shade and microclimate protection. As specified in the 1994 ROD:

> "To protect the remaining high quality habitats, no new roads will be constructed in inventoried roadless areas in Key Watersheds. Watershed analysis must be conducted in all non-Key Watersheds that contain roadless areas before any management activities can occur within those roadless areas. Existing system and non-system road mileage should be reduced outside roadless areas in Key Watersheds, and if funding is insufficient to implement reductions, there should be no net increase in the amount of roads in Key Watersheds" (1994 ROD at B-19).

Any species-specific strategy aimed at defining explicit standards for habitat-elements would be insufficient for protecting even the targeted species. Therefore, the ACS must strive to maintain and improve ecosystem health at watershed and landscape scales to protect habitat for fish and other riparian-dependent species and resources and restore currently degraded habitats. This approach seeks to prevent further degradation and restore habitat over broad landscapes as opposed to individual projects or small watersheds. Because it is based on natural disturbance processes, it may take decades, possibly more than a century, to accomplish all of its objectives. Some improvements in aquatic ecosystems, however, can be expected in 10 to 20 years.

3.7.2 Aquatic Conservation Strategy Objectives

As stated in the Northwest Forest Plan Standards and Guidelines (B-11), Forest Service and BLM-administered lands within the range of the northern spotted owl will be managed to:

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.

2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, addition, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.

7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

The 1994 ROD describes that standards and guidelines are designed to focus the review of proposed and certain existing projects to determine the compatibility with the ACSOs. The standards and guidelines focus on "meeting" and "not preventing attainment" of the ACSOs. In order to evaluate the compatibility of the alternatives with the ACSOs, Tables 3.7-FEIS1 and 3.7-FEIS2 present an evaluation of each ASCO within the context of five related resource areas: Geology and Soils, Water and Watershed Resources, Vegetation, Wildlife, and Fisheries. In order to determine whether each alternative will "meet" or "not prevent attainment" of the ASCOs, the evaluation includes a summary of the existing conditions for each resource area, based on watershed analysis and site-specific evaluations, and then refers the reader to the appropriate section of the EIS for more detailed discussion. The analysis then summarizes the effects of the alternatives at two scales: Site (location varies by resource) and 5th field (Upper Clear Fork Cowlitz, a Tier 2 key watershed, and Upper Tieton) to support a determination of the effect of the proposed development and cumulative effects. Finally, the evaluation presents a comparison of the severity of impacts by alternative in descending degree of impact in order to display the similarities or differences between the alternatives.

In addition to the analysis of compatibility with the ACSOs, the analysis of the existing watershed conditions in the two watersheds is presented in Table 3.7-1 (Upper Clear Fork Cowlitz watershed) and Table 3.7-2 (Upper Tieton watershed), where the existing conditions is compared to the potential effects of the alternatives. A summary of the existing watershed condition is included, along with the effects of the alternatives on those conditions, and a listing of design constraints that have been built into the alternatives in an effort not to retard the attainment of the Riparian Reserve Standards and Guidelines.

Also provided is an evaluation of the alternatives relative to appropriate and relevant Standards and Guidelines for Riparian Reserves (1994 ROD, pages C31-C38 – refer to Table 3.7-3).[32]

[32] The Northwest Forest Plan includes Standards and Guidelines for Riparian Reserves that do not apply to the types of activities proposed in the White Pass Expansion (i.e., Watershed Restoration, Grazing Management, Minerals Management, Lands, and Research). These Standards and Guidelines are not evaluated in the White Pass Expansion EIS.

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Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 1	***Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted***

Geology and Soils	**Watershed Resources**
Existing Conditions	
• Previous developments (timber harvest, ski area, road construction) have altered physical landscape features through the loss of soil productivity. • Current risks to Riparian Reserves include some timber harvests, the construction of any new roads, dispersed/developed recreation, potential mass wasting, windthrow, and catastrophic fire (USDA 1998a).	• Current risks to Riparian Reserves include some timber harvest, the construction of any new roads, dispersed/developed recreation, potential mass wasting, windthrow, and catastrophic fire (USDA 1998a). • The road density of the Upper Clear Fork Cowlitz watershed that White Pass lies within is approximately 1.7 miles/mile^2 and the road density in Riparian Reserves is 1.5 miles/mile^2 (USDA 1998a). • The Riparian Reserves in the majority of the watershed are functioning properly because very little management activity has occurred in the riparian areas (USDA 1998a). • 80 percent of the Clear Fork watershed is within Mount Rainier National Park or Wildernesses (USDA 1998a). Note that for the purposes of this EIS, this watershed has been modified to exclude the Mount Rainier National Park, and has been renamed the Upper Clear Fork Cowlitz watershed.
Site Scale	
Analysis area: 1,120 acres	
Implementation of the Action Alternatives would increase the loss of soil productivity within the site scale. The effect at the landscape scale would not result in measurable changes to the distribution, diversity, and complexity of the watershed features. • Alternative 2, Modified Alternative 4 and Alternative 9 include no new roads, thereby maintaining the existing road density of 1.5 miles/mile^2 in the White Pass Study Area. Alternative 6 includes the development of approximately 0.25 mile of new road in a Tier 2 Key Watershed/IRA, which would increase the road density to approximately 1.7 miles/mile^2 in the White Pass Study Area (refer to Table 3.3-10). Alternative 6 would require the decommissioning and obliteration of approximately 0.6 mile of road in the watershed to avoid a net increase in road mileage in the watershed. Construction of the road would require a site-specific modification of the	Clearing and grading associated with the Action Alternatives would not measurably affect landscape-scale features at the site scale. • The clearing and grading in Riparian Reserves range from approximately 4.1 acres in Alternative 9 to approximately 22.2 acres in Modified Alternative 4 (refer to Table 3.3-15). • Alternative 2, Modified Alternative 4 and Alternative 9 include no new roads, thereby maintaining the existing road density of 1.5 miles/mile^2 in the White Pass Study Area. Alternative 6 includes the development of approximately 0.25 mile of new road in a Tier 2 Key Watershed/IRA, which would increase the road density to approximately 1.7 miles/mile^2 in the White Pass Study Area (refer to Table 3.3-10). Alternative 6 would require the decommissioning and obliteration of approximately 0.6 mile of road in the watershed to avoid a net increase in road

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 1	***Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted***

Vegetation	Wildlife	Fisheries
Existing Conditions		
• At the landscape scale, vegetation communities are largely intact. The low road density, properly functioning Riparian Reserves, and low levels of disturbance discussed in Watershed Resources are indicative of near-natural conditions. • 80 percent of the Clear Fork watershed is within Mount Rainier National Park or Wildernesses (USDA 1998a). Note that for the purposes of this EIS, this watershed has been modified to exclude the Mount Rainier National Park, and has been renamed the Upper Clear Fork Cowlitz watershed.	• While the distribution, diversity, and complexity of watershed and landscape scale features are important components of wildlife habitat, the physical properties on which impacts to wildlife would be measured are primarily associated with the properties described for vegetation.	• Previous developments (timber harvest, ski area, road construction) have altered physical landscape features through road construction and the removal of vegetation. These alterations are generally localized to small areas within the larger watershed (refer to Section 3.4 – Fisheries). As described in Watershed Resources, Riparian Reserves are largely intact and functioning properly.
Site Scale		
Analysis area: 1,120 acres		
The removal of vegetation communities associated with the Action Alternatives would not have a measurable effects on the landscape-scale features (refer to Section 3.5). • The Action Alternatives would result in approximately 1.0 to 5.6 percent reduction in canopy cover within Riparian Reserves, with canopy cover remaining approximately 40.9 to 45.5 percent (refer to Table 3.3-15). • The hydrologic maturity within the White Pass Study Area may be reduced by removal of vegetation under the Action Alternatives, however, the	Wildlife impacts at the site scale would be as described under Vegetation.	Fish impacts at the site scale would be as described under Watershed Resources, Vegetation and Geology and Soils.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 1	***Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted***

Geology and Soils	**Watershed Resources**
Standards and Guidelines, which would require a coordinated review by the Regional Interagency Executive Committee and Regional Ecosystem Office. If this road were to be selected in the ROD for this FEIS, the Decision could not be rendered until the Regional Interagency Executive Committee concurs that such a modification to the Standards and Guidelines is consistent with the objective of the Standards and Guidelines. Such coordination has not taken place as of the publication of this FEIS. In addition, a decision for road construction within an IRA is reserved to the Chief of the Forest Service, unless he should choose to grant an exception otherwise (FSM 1920, i.d. 1920-2004-1, section 1925.03). • Under the Action Alternatives, there would be no change to the road density at the watershed scale. • Under all Action Alternatives, the total detrimental soil conditions would not exceed 20 percent within the site scale (refer to Table 3.2-3). • Total soil impacts as a result of clearing and grading at the site scale ranges from approximately 27.57 acres under Alternative 9 to 49.14 acres under Modified Alternative 4 (refer to Table 3.2-6).	mileage in the watershed. Under the Action Alternatives, there would be no change to the road density at the watershed scale.
Finding: Meets ACSO 1	**Finding: Meets ACSO 1**
5th Field Scale	
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)	
The effects of the Action Alternatives coupled with the cumulative actions range from approximately 340.01 acres (Alternative 9) to 361.58 acres (Modified Alternative 4), which equates to approximately 0.48 percent to 0.51 percent of the 5th field scale, respectively (refer to Section 3.2.4). Section 3.2 describes that the effects to Geology and Soils would not measurably affect the complexity and distribution of landscape-scale geology and soil features at the 5th field scale.	The effects of the Action Alternatives coupled with the cumulative actions range from approximately 304.86 acres (Alternative 9) to 322.98 acres (Modified Alternative 4), which equates to approximately 1.14 percent to 1.21 percent of the 5th field scale Riparian Reserves, respectively (refer to Section 3.3.4). As discussed in Section 3.3, the effects to Watershed Resources would not measurably affect the complexity and distribution of watershed and landscape-scale features at the 5th field scale.
Finding: Meets ACSO 1	**Finding: Meets ACSO 1**
Degree of impacts by alternative: 4=9>2>6>1	**Degree of impacts by alternative: 4=9>2>6>1**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 1	***Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted***	
Vegetation	**Wildlife**	**Fisheries**
majority of canopy removal would take place outside of Riparian Reserves and in subalpine parkland, resulting in an average canopy cover of 40.9 to 45.5 percent (refer to Table 3.3-15). • Removal of vegetation within the Hogback Basin in Alternatives 2, 6 and Modified Alternative 4 would not alter the sub-alpine parkland community at the site scale.		
Finding: Does Not Prevent Attainment of ACSO 1	**Finding: Does Not Prevent Attainment of ACSO 1**	**Finding: Meets ACSO 1**
5th Field Scale		
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)		
The effects to vegetation from the Action Alternatives and cumulative actions ranges from 0.33 percent of the CEAA in Alternatives 2 and 6 to 0.35 percent of the CEAA in Modified Alternative 4 (refer to Section 3.5.4). Therefore, no measurable impacts to the distribution and complexity of landscape-scale vegetation features at the 5th field scale are expected.	Wildlife impacts at the 5th field scale would be as described under Vegetation.	Fish impacts at the 5th field scale would be as described under Watershed Resources.
Finding: Meets ACSO 1	**Finding: Meets ACSO 1**	**Finding: Meets ACSO 1**
Degree of impacts by alternative: 4=9>2>6>1	**Degree of impacts by alternative: 4=9>2>6>1**	**Degree of impacts by alternative: 4=9>2>6>1**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 2	***Maintain and restore spatial and temporal connectivity within and between watersheds. These linkages must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.***
Geology and Soils	**Watershed Resources**
Existing Conditions	
Existing geology and soils conditions are as described under Vegetation.	• Current risks to spatial connectivity include some timber harvest, the construction of any new roads, dispersed/developed recreation, and catastrophic fire (USDA 1998a). • The Riparian Reserves in the majority of the watershed are functioning properly because very little management activity has occurred in the riparian areas (USDA 1998a). • The Lower Clear Fork Cowlitz subwatershed has 79 road crossings and 1.25 road crossings per stream mile (USDA 1998a).
Site Scale	
Analysis area: 1,120 acres	
Effects on geology and soils are as described under Vegetation.	Clearing in Riparian Reserves for construction and ski trail clearing would reduce forest connectivity, fragmenting riparian habitat. Such clearing could create localized barriers to fish and wildlife movement along riparian corridors (Refer to Wildlife). The Action Alternatives would not measurably affect spatial and temporal connectivity within the site scale. • The clearing and grading in Riparian Reserves range from approximately 4.1 acres in Alternative 9 to approximately 22.2 acres in Modified Alternative 4 (refer to Table 3.3-15). • The Action Alternatives would result in approximately 1.0 to 5.6 percent reduction in canopy cover within Riparian Reserves, with canopy cover remaining approximately 40.9 to 45.5 percent (refer to Table 3.3-15). • Streams may directly be impacted through the construction of culverts and bridges. However, these stream crossings would be located primarily on first order, ephemeral and intermittent streams within the Upper Clear Fork Cowlitz watershed portion of the White Pass Study Area. • All Action Alternatives minimize clearing and grading in Riparian Reserves by locating the proposed design outside Riparian Reserves to the extent possible. Ski trail design is intended to parallel Riparian Reserves while minimizing disturbance in riparian areas.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 2	***Maintain and restore spatial and temporal connectivity within and between watersheds. These linkages must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.***	
Vegetation	**Wildlife**	**Fisheries**
Existing Conditions		
• Development within the watershed has removed native vegetation and fragmented contiguous forested areas. • The Riparian Reserves in the majority of the watershed are functioning properly because very little management activity has occurred in the riparian areas (USDA 1998a).	Existing wildlife conditions are as described under Vegetation.	Existing fish and aquatic habitat conditions are as described for Watershed Resources.
Site Scale		
Analysis area: 1,120 acres		
Under the Action Alternatives, vegetation removed for the development of additional ski area facilities would not measurably affect the connectivity between watersheds at the site scale. As described in Section 3.5 – Vegetation, clearing and grading within the mountain hemlock parkland community would not measurably change the community structure at the site scale. • Removal of vegetation associated with construction activities would increase the amount of non-forested conditions within Riparian Reserves. Vegetation removal in Riparian Reserves ranges from 4.1 acres under Alternative 9 to 22.2 acres in Modified Alternative 4 (refer to Table 3.3-15). • The Action Alternatives would result in approximately 1.0 to 5.6 percent reduction in canopy cover within Riparian Reserves, with canopy cover	As described in Section 3.6 – Wildlife, the Action Alternatives would have the greatest effect on connectivity for low mobility species. The removal of vegetation would reduce available connective habitat at the site scale. These effects are described under Vegetation.	As described in Section 3.4 – Fisheries, streams within the site scale contain no suitable fish habitat due to steep gradients. The installation of culverts on stream segments under all Action Alternatives would have no effect on connective aquatic habitat.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 2	***Maintain and restore spatial and temporal connectivity within and between watersheds. These linkages must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.***
Geology and Soils	**Watershed Resources**
	• All Action Alternatives would avoid direct impacts to streams and wetlands where possible through the implementation of the Mitigation Measures and Management Requirements listed in Tables 2.4-2 and 2.4-3, the use of BMPs, and field fitting individual construction projects.
Finding: Does Not Prevent Attainment of ACSO 2	**Finding: Does Not Prevent Attainment of ACSO 2**
5th Field Scale	
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)	
Effects to geology and soils at the 5th field scale are as described for Vegetation.	The watershed resources effects of the Action Alternatives coupled with the cumulative actions ranges from approximately 304.86 acres (Alternative 9) to 322.98 acres (Modified Alternative 4), which equates to approximately 1.14 percent to 1.21 percent of the 5th field scale Riparian Reserves, respectively (refer to Section 3.3.4). As discussed in Section 3.3, the effects to Watershed Resources would not measurably affect connective riparian habitat at the 5th field scale.
Finding: Meets ACSO 2	**Finding: Meets ACSO 2**
Degree of impacts by alternative: 4>9>2>6>1	**Degree of impacts by alternative: 4>9>2>6>1**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 2	***Maintain and restore spatial and temporal connectivity within and between watersheds. These linkages must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.***	
Vegetation	**Wildlife**	**Fisheries**
remaining approximately 40.9 to 45.5 percent (refer to Table 3.3-15). • Vegetation would be maintained at a height of 3 feet above ground to prevent ground disturbance and to maintain shading and wildlife habitat.		
Finding: Does not Prevent Attainment of ACSO 2	**Finding: Does Not Prevent Attainment of ACSO 2**	**Finding: Meets ACSO 2**
5th Field Scale		
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)		
The effects to vegetation from the Action Alternatives and cumulative actions ranges from 0.33 percent of the CEAA in Alternatives 2 and 6 to 0.35 percent of the CEAA in Modified Alternative 4 (refer to Section 3.5.4). Therefore, vegetation effects would not result in any measurable impacts to connective riparian habitat at the 5th field scale.	Wildlife impacts at the 5th field scale would be as described under Vegetation.	The effects of the Action Alternatives coupled with the cumulative actions range from approximately 304.86 acres (Alternative 9) to 322.98 acres (Modified Alternative 4), which equates to approximately 1.14 percent to 1.21 percent of the 5th field scale Riparian Reserves, respectively (refer to Section 3.4.4). Cumulative actions would result in isolated tree removal within the 5th field Riparian Reserves. Therefore, as discussed in Section 3.4 – Fisheries, fisheries effects would not result in any measurable effects to connective aquatic habitat at the 5th field scale.
Finding: Meets ACSO 2	**Finding: Meets ACSO 2**	**Finding: Meets ACSO 2**
Degree of impacts by alternative: 4>9>2>6>1	**Degree of impacts by alternative: 4>9>2>6>1**	**Degree of impacts by alternative: 4>9>2>6>1**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 3	***Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.***
Geology and Soils	**Watershed Resources**
Existing Conditions	
• At the site scale, approximately 98 percent of the riparian area along streams occurs on medium to high erosion potential soils (refer to Table 3.3-6). • Stream channels within the subwatershed are expected to become more stable as upslope vegetative recovery proceeds. Such changes will be associated with riparian stand structure improvements and reduction of sediment routing to stream channels (USDA 1998a).	• Salvage logging activities have been reported to reduce the number of standing large trees and number of in-stream logs, thereby reducing the LWD recruitment potential (USDA 1998a). • LWD is very abundant within the Lower Clear Fork Cowlitz subwatershed, which has more than 80 pieces per mile (USDA 1998a). • The Lower Clear Fork Cowlitz subwatershed has 63.2 miles of streams (USDA 1998a). • The Lower Clear Fork Cowlitz subwatershed displays evidence of historic channel widening that is attributed to past timber management and road construction projects (USDA 1998a). • Stream channels within the subwatershed are expected to become more stable as upslope vegetative recovery proceeds. Such changes will be associated with riparian stand structure improvements and reduction of sediment routing to stream channels (USDA 1998a).
Site Scale	
Analysis area: 1,120 acres	
The Action Alternatives would impact the physical integrity of the aquatic system through clearing and grading within Riparian Reserves. These geology and soils impacts are not expected to affect aquatic systems measurably at the site scale. • Clearing and grading on medium and high erosion potential soils within riparian areas ranges from 1.3 acres in Alternative 6 to 5.6 acres in Modified Alternative 4 (refer to 3.3-17). • Millridge Creek is a perennial stream, the WEPP analysis (refer to Section 3.3 – Watershed Resources and Appendix L) details approximate soil detachment as a result of each Action Alternative within the Upper Clear Fork Cowlitz Watershed. As described, short-term (year of construction) sediment detachment generated within the White Pass Study Area for project activities would increase within a range from approximately 9 percent under Alternative 6 to 68 percent under Modified Alternative 4 for the Upper Clear Fork Cowlitz Watershed. Within the	The Action Alternatives would impact the physical integrity of the aquatic system through clearing and grading within Riparian Reserves. These impacts are not expected to be measurable at the site scale. • The Action Alternatives would cause a slight reduction in the amount of LWD within Riparian Reserves due to the removal of trees for ski facility construction. Alternatives 2, Modified Alternative 4, and 6 would include development of lifts and trails in Hogback and/or Pigtail Basins, which are dominated by subalpine parkland vegetation. This vegetation type is comprised of comparatively smaller size classes than other plant communities at the site scale, and is therefore less capable of providing LWD. Alternative 9 would remove approximately 4 acres of forest capable of providing LWD (refer to Table 3.3-15). • Streams may directly be impacted through the construction of culverts and bridges. However, these stream crossings would be located primarily on first order, ephemeral and intermittent streams.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 3	***Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.***	
Vegetation	**Wildlife**	**Fisheries**
Existing Conditions		
• Salvage logging activities have been reported to reduce the number of standing large trees and number of in-stream logs, thereby reducing the LWD recruitment potential (USDA 1998a). • LWD is very abundant within the Lower Clear Fork Cowlitz subwatershed, which has more than 80 pieces per mile (USDA 1998a). • Stream channels within the subwatershed are expected to become more stable as upslope vegetative recovery proceeds. Such changes will be associated with riparian stand structure improvements and reduction of sediment routing to stream channels (USDA 1998a).	While shorelines, banks, and bottom configurations are important components of wildlife habitat, the physical properties on which the effects to wildlife would be measured are primarily detailed under Watershed Resources.	• Prior development, timber harvest, and road construction have reduced the physical integrity of the aquatic system through the placement of culverts and hardened stream banks throughout the watershed. • While shorelines, banks, and bottom configurations are important components of fish habitat, the physical properties on which the effects to fish would be measured are primarily detailed under Watershed Resources.
Site Scale		
Analysis area: 1,120 acres		
The effects on the physical integrity of the aquatic system for vegetation are as described for Watershed Resources.	While shorelines, banks, and bottom configurations are important components of wildlife habitat, the physical properties on which the effects to wildlife would be measured are primarily detailed under Watershed Resources.	The construction of culverts under all Action Alternatives would impact the physical integrity of the aquatic system at the site scale. However, these culverts would be placed in first order streams that do not contain suitable fish habitat. Impacts to the physical integrity of the aquatic system would be as described for Watershed Resources.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 3	***Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.***
Geology and Soils	**Watershed Resources**
Upper Clear Fork Cowlitz Watershed, long-term (two to five years following construction), sediment detachment is expected to increase from approximately 3 percent under Alternative 9 to 10 percent under Modified Alternative 4 (Additional information on the results of the WEPP model can be found in Appendix L – WEPP Technical Report). • Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils).	• Implementation of the Action Alternatives would not alter stream functionality at the site scale (refer to Section 3.3 – Watershed Resources). • Millridge Creek is a perennial stream. According to the WEPP model (refer to Appendix L), short-term (year of construction) sediment detachment generated at the site scale for project activities would increase within a range of 9 percent under Alternative 6 to 68 percent under Modified Alternative 4. Long-term (two to five years following construction), sediment detachment is expected to increase from approximately 3 percent under Alternative 9 to 10 percent under Modified Alternative 4. • Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils). • All Action Alternatives minimize clearing and grading in Riparian Reserves by locating the proposed design outside Riparian Reserves to the extent possible. Ski trail design is intended to parallel Riparian Reserves while minimizing disturbance in riparian areas.
Finding: Meets ACSO 3	**Finding: Does Not Prevent Attainment of ACSO 3**
5th Field Scale	
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)	
Effects to geology and soils in the 5th field scale are as described for Vegetation.	The effects of the Action Alternatives coupled with the cumulative actions range from approximately 304.86 acres (Alternative 9) to 322.98 acres (Modified Alternative 4), which equates to approximately 1.14 percent to 1.21 percent of the 5th field scale Riparian Reserves, respectively (refer to Section 3.3.4). As discussed in Section 3.3, the effects to Watershed Resources would not measurably affect the physical integrity of aquatic systems at the 5th field scale. As described in Section 3.3 – Watershed Resources, these actions are localized to small areas scattered throughout the entire 5th field watershed.
Finding: Meets ACSO 3	**Finding: Meets ACSO 3**
Degree of impacts by alternative: 4=9>6>2>1	**Degree of impacts by alternative: 4=9>6>2>1**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 3	***Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.***	
Vegetation	**Wildlife**	**Fisheries**
Finding: Does Not Prevent Attainment of ACSO 3	**Finding: Does Not Prevent Attainment of ACSO 3**	**Finding: Does Not Prevent Attainment of ACSO 3**
5th Field Scale		
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)		
The effects to vegetation from the Action Alternatives and cumulative actions ranges from 0.33 percent of the CEAA in Alternatives 2 and 6 to 0.35 percent of the CEAA in Modified Alternative 4 (refer to Section 3.5.4). As discussed in Section 3.3, the effects to watershed resources would not measurably affect the physical integrity of aquatic systems at the 5th field scale, as these actions are localized to small areas scattered throughout the entire 5th field watershed.	Wildlife impacts at the 5th field scale would be related to the effects described in Vegetation.	As described in Watershed Resources, no measurable impacts to the physical integrity of aquatic systems at the 5th field scale are expected.
Finding: Meets ACSO 3	**Finding: Meets ACSO 3**	**Finding: Meets ACSO 3**
Degree of impacts by alternative: 4=9>6>2>1	**Degree of impacts by alternative: 4=9>6>2>1**	**Degree of impacts by alternative: 4=9>6>2>1**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 4	***Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain in the range that maintains the biological, physical, and chemical integrity of the ecosystem, benefiting survival, growth, reproduction, and migration of individuals composing its aquatic and riparian communities.***

Geology and Soils	**Watershed Resources**
Existing Conditions	
• Sediment introduced into streams within the watershed from management related events are slightly above background levels but well within range of natural variability (USDA 1998a). • Millridge Creek is a sensitive stream to additional disturbances as a result of several slides originating from US 12 that have delivered large quantities of sediment. Additional sediment inputs will likely further affect Millridge Creek (USDA 1998a). • Stream channels within the subwatershed are expected to become more stable as upslope vegetative recovery proceeds. Such changes will be associated with riparian stand structure improvements and reduction of sediment routing to stream channels (USDA 1998a).	• As described in Geology and Soils, background sediment inputs to Millridge Creek affect turbidity. Additional sediment inputs will likely further affect Millridge Creek (USDA 1998a). • Sediment introduced into streams within the watershed from management related events are slightly above background levels but well within range of natural variability (USDA 1998a). • 55 percent of Millridge Creek has a Pfankuch stability rating of Fair and 45 percent has a rating of Poor (USDA 1998a). • Stream channels within the subwatershed are expected to become more stable as upslope vegetative recovery proceeds. Such changes will be associated with riparian stand structure improvements and reduction of sediment routing to stream channels (USDA 1998a). • Currently all streams are maintaining Washington State temperature standards for Class AA waters (USDA 1998a). • None of the streams within the Clear Fork Cowlitz Watershed are on the Washington Department of Ecology 303(d) list (USDA 1998a).
Site Scale	
Analysis area: 1,120 acres	
The Action Alternatives would result in increased sediment detachment at the site scale. Increased sediment detachment would have the potential to impact water quality within streams at the site scale (refer to Section 3.3 – Watershed Resources). The use of BMPs and Mitigation Measures described in Tables 2.4-2 to 2.4-4 would reduce the potential sediment yield to streams at the site scale. • Millridge Creek is a perennial stream, the WEPP analysis (refer to Section 3.3 – Watershed Resources and Appendix L) details approximate soil detachment as a result of each Action Alternative within the Upper Clear Fork Cowlitz Watershed. As described, short-term (year of	The Action Alternatives would result in potential impacts to water quality from increased sediment yield, pollutant runoff and increased water temperatures (refer to Section 3.3 – Watershed Resources). The use of BMPs and Mitigation Measures described in Tables 2.4-2 to 2.4-4 would reduce the likelihood of pollutant runoff from construction equipment to streams at the site scale. Overall, impacts to water quality are not expected to be measurable at the site scale. • As described in Geology and Soils, the Action Alternatives would result in an increase in sediment detachment. This could lead to an increase in sediment yield and turbidity at the site scale.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 4	***Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain in the range that maintains the biological, physical, and chemical integrity of the ecosystem, benefiting survival, growth, reproduction, and migration of individuals composing its aquatic and riparian communities.***

Vegetation	Wildlife	Fisheries
Existing Conditions		
• Herbaceous vegetation can provide sediment filtering functions that reduce sediment yield to streams. These impacts are described in Geology and Soils and Watershed Resources. The loss of canopy cover may affect local stream temperatures where forested vegetation that provides shade to streams has been removed. • Existing canopy cover in Riparian Reserves is approximately 46.5 percent (refer to Table 3.3-15). • Stream channels within the subwatershed are expected to become more stable as upslope vegetative recovery proceeds. Such changes will be associated with riparian stand structure improvements and reduction of sediment routing to stream channels (USDA 1998a).	While water quality is an important component of wildlife habitat, the physical properties on which effects to wildlife would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.	While water quality is an important component of fish habitat, the physical properties on which effects to fish would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.
Site Scale		
Analysis area: 1,120 acres		
The removal of overstory riparian canopy along streams associated with the Action Alternatives could result in an increase in indirect thermal impacts to streams (refer to Section 3.3 – Watershed Resources). Overall, the reduction in riparian canopy is not expected to have a measurable impact on stream temperature at the site scale. • Reduction in canopy cover within Riparian Reserves ranges from 1.0 percent in Alternative 9 to 5.6 percent in	While water quality is an important component of wildlife habitat, the physical properties on which effects to wildlife would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.	While water quality is an important component of fish habitat, the physical properties on which effects to fish would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 4	***Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain in the range that maintains the biological, physical, and chemical integrity of the ecosystem, benefiting survival, growth, reproduction, and migration of individuals composing its aquatic and riparian communities.***

Geology and Soils	**Watershed Resources**
construction) sediment detachment generated within the site scale for project activities would increase within a range from approximately 9 percent under Alternative 6 to 68 percent under Modified Alternative 4. Long-term (two to five years following construction), sediment detachment is expected to increase from approximately 3 percent under Alternative 9 to 10 percent under Modified Alternative 4 (Additional information on the results of the WEPP model can be found in Appendix L – WEPP Technical Report). • Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils). • Understory vegetation would be maintained at a minimum height of 3 feet in areas that include clearing prescriptions with no grading (refer to Table 2.4-1) to minimize sediment delivery. • No access corridors, staging areas, spoils piles, or other construction related materials would be placed in Riparian Reserves. Whenever feasible, potential impacts to Riparian Reserves would be minimized by bringing construction equipment and materials to the project site over snow (refer to Table 2.4-2).	• Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils). • Implementation of the Action Alternatives is not expected to contribute to the listing of any stream on the Department of Ecology's 303(d) list since there would be no new point sources of pollution and water quality impacts are projected to be nominal (refer to Section 3.3 – Watershed Resources). • Impacts to stream temperature would occur from the removal of riparian canopy as described in Vegetation. • Understory vegetation would be maintained at a minimum height of 3 feet in areas that include clearing prescriptions with no grading (refer to Table 2.4-1) to minimize sediment delivery and to help keep stream temperatures cool. • All Action Alternatives minimize clearing and grading in Riparian Reserves by locating the proposed design outside Riparian Reserves to the extent possible. Ski trail design is intended to parallel Riparian Reserves while minimizing disturbance in riparian areas. • Through implementation of a Stormwater Pollution Prevention Plan and the use of BMPs, no long-term changes in the pH, turbidity, and dissolved oxygen of streams at the site scale are expected (refer to Table 2.4-2).
Finding: Does Not Prevent Attainment of ACSO 4	**Finding: Does Not Prevent Attainment of ACSO 4**
5th Field Scale	
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)	
The effects of the Action Alternatives, coupled with the cumulative actions would not result in a measurable increase of sediment detachment at the fifth field scale. These actions occur within small, localized areas that are scattered throughout the entire watershed. Furthermore, a majority of the actions occur outside of Riparian Reserves and therefore are less likely to result in sediment yield to streams within the fifth field scale.	The effects of the Action Alternatives coupled with the cumulative actions range from approximately 304.86 acres (Alternative 9) to 322.98 acres (Modified Alternative 4), which equates to approximately 1.14 percent to 1.21 percent of the 5th field scale Riparian Reserves, respectively (refer to Section 3.3.4). As described in Section 3.3 – Watershed Resources, these actions are localized to small areas scattered

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 4	***Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain in the range that maintains the biological, physical, and chemical integrity of the ecosystem, benefiting survival, growth, reproduction, and migration of individuals composing its aquatic and riparian communities.***		
Vegetation		**Wildlife**	**Fisheries**
Modified Alternative 4, with canopy cover remaining at approximately 45.5 to 40.9 percent, respectively (refer to Table 3.3-15). • Understory vegetation would be maintained at a minimum height of 3 feet in areas that include clearing prescriptions with no grading (refer to Table 2.4-1) to help keep stream temperatures cool.			
Finding: Does Not Prevent Attainment of ACSO 4		**Finding: Does Not Prevent Attainment of ACSO 4**	**Finding: Does Not Prevent Attainment of ACSO 4**
5th Field Scale			
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)			
The effects to vegetation from the Action Alternatives and cumulative actions ranges from 0.33 percent of the CEAA in Alternatives 2 and 6 to 0.35 percent of the CEAA in Modified Alternative 4 (refer to Section 3.5.4). As described in Section 3.3 – Watershed Resources,		While water quality is an important component of wildlife habitat, the physical properties on which effects to wildlife would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.	While water quality is an important component of fish habitat, the physical properties on which effects to fish would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 4	***Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain in the range that maintains the biological, physical, and chemical integrity of the ecosystem, benefiting survival, growth, reproduction, and migration of individuals composing its aquatic and riparian communities.***	
Geology and Soils		**Watershed Resources**
Therefore impacts to geology and soils are not expected to result in any measurable effects to water quality at the 5th field.		throughout the entire 5th field. Sediment detachment would be as described under Geology and Soils. As discussed in Section 3.3 – Watershed Resources, the effects to Watershed Resources would not measurably affect water quality at the 5th field scale.
Finding: Meets ACSO 4		**Finding: Meets ACSO 4**
Degree of impacts by alternative: 4>6>2>9>1		**Degree of impacts by alternative: 4>9>2>6>1**
ACSO 5	***Maintain and restore the sediment regime in which the aquatic system evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.***	
Existing Conditions		
• Millridge Creek is a sensitive stream to additional disturbances as a result of several slides originating from US 12 that have delivered large quantities of sediment. Additional sediment inputs will potentially further affect Millridge Creek (USDA 1998a). • Stream channels within the subwatershed are expected to become more stable as upslope vegetative recovery proceeds. Such changes will be associated with riparian stand structure improvements and reduction of sediment routing to stream channels (USDA 1998a). • The Lower Clear Fork Cowlitz subwatershed has been identified as having high impacts to stream channels from bedload movement; most of this bedload is sediment associated with the Wilderness areas and to a much lesser degree, past management activities such as road construction and timber harvest. Because of the heavy sediment movement, enough sediment deposition has occurred to cause problems with stream channel migration (USDA 1998a). • Sediment introduced into streams within the watershed from management related events are slightly above background levels but well within range of natural variability (USDA 1998a).		• Millridge Creek is a sensitive stream to additional disturbances as a result of several slides originating from US 12 that have delivered large quantities of sediment. Additional sediment inputs will potentially further affect Millridge Creek. 55 percent of Millridge Creek has a Pfankuch stability rating of Fair and 45 percent has a rating of Poor (USDA 1998a). • Stream channels within the subwatershed are expected to become more stable as upslope vegetative recovery proceeds. Such changes will be associated with riparian stand structure improvements and reduction of sediment routing to stream channels (USDA 1998a). • The Lower Clear Fork Cowlitz subwatershed has been identified as having high impacts to stream channels from bedload movement; most of this bedload is sediment associated with the Wilderness areas and to a much lesser degree, past management activities such as road construction and timber harvest. Because of the heavy sediment movement, enough sediment deposition has occurred to cause problems with stream channel migration (USDA 1998a). • Sediment introduced into streams within the watershed from management related events are slightly above background levels but well within range of natural variability (USDA 1998a).

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 4	***Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain in the range that maintains the biological, physical, and chemical integrity of the ecosystem, benefiting survival, growth, reproduction, and migration of individuals composing its aquatic and riparian communities.***		
Vegetation		**Wildlife**	**Fisheries**
these actions are localized to small areas scattered throughout the entire 5th field. The impacts to vegetation would not measurably affect water quality at the 5th field scale			
Finding: Meets ACSO 4		**Finding: Meets ACSO 4**	**Finding: Meets ACSO 4**
Degree of impacts by alternative: 4>2>6>9>1		**Degree of impacts by alternative: 4>2>6>9>1**	**Degree of impacts by alternative: 4>9>2>6>1**
ACSO 5	***Maintain and restore the sediment regime in which the aquatic system evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.***		
Existing Conditions			
• Stream channels within the subwatershed are expected to become more stable as upslope vegetative recovery proceeds. Such changes will be associated with riparian stand structure improvements and reduction of sediment routing to stream channels (USDA 1998a). • Existing canopy cover in Riparian Reserves is approximately 46.5 percent (refer to Table 3.3-15).		While changes in sediment regimes can influence the quality of wildlife habitat, the physical properties on which effects to wildlife would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.	Changes in the sediment regime can influence the quality of fish habitat through covering suitable spawning gravel and increasing turbidity.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 5	***Maintain and restore the sediment regime in which the aquatic system evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.***
Geology and Soils	**Watershed Resources**
Site Scale	
Analysis area: 1,120 acres	
The Action Alternatives would result in increased sediment detachment at the site scale, which has the potential to impact the sediment regime within streams at the site scale (refer to Section 3.3 – Watershed Resources). The use of BMPs and Mitigation Measures described in Tables 2.4-2 to 2.4-4 would reduce the likely sediment yield to streams and are not expected to be measurable at the site scale. • Millridge Creek is a perennial stream, the WEPP analysis (refer to Section 3.3 – Watershed Resources and Appendix L) details approximate soil detachment as a result of each Action Alternative within the Upper Clear Fork Cowlitz Watershed. As described, short-term (year of construction) sediment detachment generated within the White Pass Study Area for project activities would increase within a range from approximately 9 percent under Alternative 6 to 68 percent under Modified Alternative 4 for the Upper Clear Fork Cowlitz Watershed. Within the Upper Clear Fork Cowlitz Watershed, long-term (two to five years following construction), sediment detachment is expected to increase from approximately 3 percent under Alternative 9 to 10 percent under Modified Alternative 4 (Additional information on the results of the WEPP model can be found in Appendix L – WEPP Technical Report). • Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils). • Sediment impacts to streams and wetlands would be minimized through the implementation of the Mitigation Measures in Table 2.4-2 and the use of BMPs during construction activities.	As described in Geology and Soils, the WEPP model indicates that short and long-term sediment detachment would increase under the Action Alternatives. Increased sediment detachment has the potential to impact the sediment regime through increased yield to streams. However, the use of BMPs and Mitigation Measures would reduce actual sediment yield and the potential impacts to sediment regime are not expected to be measurable at the site scale. • Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils). • Sediment impacts to streams and wetlands would be minimized through the implementation of the Mitigation Measures in Table 2.4-2 and the use of BMPs during construction activities.
Finding: Does Not Prevent Attainment of ACSO 5	**Finding: Does Not Prevent Attainment of ACSO 5**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 5	***Maintain and restore the sediment regime in which the aquatic system evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.***	
Vegetation	**Wildlife**	**Fisheries**
Site Scale		
Analysis area: 1,120 acres		
The Action Alternatives would reduce the sediment filtering function of vegetation through clearing and grading in Riparian Reserves. • Reduction in canopy cover within Riparian Reserves ranges from 1.0 percent under Alternative 9 to 5.6 percent under Modified Alternative 4, with canopy cover remaining at approximately 45.5 to 40.9 percent, respectively (refer to Table 3.3-15). • Understory vegetation would be maintained at a minimum height of 3 feet to maintain sediment filtering and minimize sediment yield in areas that include clearing prescriptions with no grading (refer to Table 2.4-1).	While changes in sediment regimes can influence the quality of wildlife habitat at the site scale, the physical properties on which effects to wildlife would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.	As described in Geology and Soils and Watershed Resources, changes to the sediment regime are not expected to be measurable at the site scale. Therefore, no measurable effects to the quality of fish habitat are expected at the site scale.
Finding: Does Not Prevent Attainment of ACSO 5	**Finding: Does Not Prevent Attainment of ACSO 5**	**Finding: Does Not Prevent Attainment of ACSO 5**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 5	***Maintain and restore the sediment regime in which the aquatic system evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.***

Geology and Soils	**Watershed Resources**
5th Field Scale	
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)	
The effects of the Action Alternatives, coupled with the cumulative actions would not result in a measurable increase of sediment detachment at the fifth field scale. These actions occur within small, localized areas that are scattered throughout the entire watershed. Furthermore, a majority of the actions occur outside of Riparian Reserves and therefore are less likely to result in sediment yield to streams within the fifth field scale. Therefore the impact to geology and soils would not result in any measurable effects to sediment regime at the 5th field scale.	The effects of the Action Alternatives coupled with the cumulative actions range from approximately 304.86 acres (Alternative 9) to 322.98 acres (Modified Alternative 4), which equates to approximately 1.14 percent to 1.21 percent of the 5th field scale Riparian Reserves, respectively (refer to Section 3.3.4). As described in Section 3.3 – Watershed Resources, these actions are localized to small areas scattered throughout the entire 5th field. The effects to watershed resources would not measurably affect sediment regime at the 5th field scale.
Finding: Meets ACSO 5	**Finding: Meets ACSO 5**
Degree of impacts by alternative: 4>6>2>9>1	**Degree of impacts by alternative: 4>6>2>9>1**

ACSO 6	***Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected***

Existing Conditions	
Decreased soil permeability and increases in impervious areas (e.g., facilities, parking lots, road network, timber harvest) have contributed to increased runoff within the watershed.	• Increased runoff has the potential to change the timing, magnitude and duration of peak, high and low flows. • Peak flow alterations within the main tributary streams from Mount Rainier National Park and Wildernesses are not expected to change over time except in areas where past human disturbance has affected the area (USDA 1998a). • The frequency of flooding and peak flows is expected to remain relatively constant throughout the Clear Fork watershed because 80 percent of the watershed is within Mount Rainier National Park or Wildernesses (USDA 1998a). • As described in Appendix I – Fisheries Technical Report and Biological Evaluation, peak/base flows are rated functioning adequately as Aggregate Recovery Percentage exceed 95 percent. • Pavement and developed facilities result in increased surface flow (Wright et al., 1990).

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 5	***Maintain and restore the sediment regime in which the aquatic system evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.***		
Vegetation		**Wildlife**	**Fisheries**
5th Field Scale			
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)			
The effects to vegetation from the Action Alternatives and cumulative actions ranges from 0.33 percent of the CEAA in Alternatives 2 and 6 to 0.35 percent of the CEAA in Modified Alternative 4 (refer to Section 3.5.4). As described in Section 3.3 – Watershed Resources, these actions are localized to small areas scattered throughout the entire 5th field. The impacts to vegetation would not measurably affect sediment regime at the 5th field scale.		While changes in sediment regimes can influence the quality of wildlife habitat at the 5th field scale, the physical properties on which effects to wildlife would be measured are primarily Geology and Soils, Watershed Resources, and Vegetation.	As described in Geology and Soils and Watershed Resources, changes to the sediment regime are not expected to be measurable at the 5th field scale. Therefore, no measurable effects to the quality of fish habitat are expected at the 5th field scale.
Finding: Meets ACSO 5		**Finding: Meets ACSO 5**	**Finding: Meets ACSO 5**
Degree of impacts by alternative: 4>2>6>9>1		**Degree of impacts by alternative: 4>2>6>9>1**	**Degree of impacts by alternative: 4>9>2>6>1**
ACSO 6	***Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected***		
Existing Conditions			
Vegetation within the watershed is hydrologically mature as the Aggregate Recovery Percentage exceeds 95 percent (refer to Appendix I – Fisheries Technical Report and Biological Evaluation). The effects of vegetation removal on in-stream flows would be as described in Watershed Resources.		While changes in instream flows can influence the quality of wildlife habitat, the physical properties on which effects to wildlife would be measured are primarily described under Watershed Resources.	While changes in instream flows can influence the quality of fish habitat, the physical properties on which effects to fish would be measured are primarily described under Watershed Resources.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 6	***Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected***
Geology and Soils	**Watershed Resources**
Site Scale	
Analysis area: 1,120 acres	
Under the Action Alternatives, additional impervious surfaces and developed areas (buildings, temporary road) would increase runoff within the site scale. The effect of increased runoff on in-stream flows would be as described under Watershed Resources.	Under the Action Alternatives, in-stream flows would be affected at the site scale through the removal of vegetation (which may further reduce hydrologic maturity) and increases in impervious surfaces. • As described in Section 3.3 – Watershed Resources, the increased two-year peak flow ranges from 0.2 percent under Alternatives 6 and 9 to 0.4 percent under Modified Alternative 4. Similarly, the increased seven-day low flow ranges from 0.7 percent under Alternative 9 to 1.6 percent under Modified Alternative 4 (refer to Table 3.3-15). • The changes in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows due to implementation of the Action Alternatives would not be measurable at the mouth of the Flow Model Analysis Area analyzed for this EIS (refer to Section 3.3.3.5 – Flow Regime). • Implementation of the Action Alternatives would not alter stream functionality at the site scale (refer to Section 3.3 – Watershed Resources). • Through the implementation of Lift and Trail Construction Techniques listed in Table 2.4-1 and the use of BMPs, there would be a small reduction of the changes in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows due to the minimization of clearing trees and vegetation at the site scale.
Finding: Does Not Prevent Attainment of ACSO 6	**Finding: Does Not Prevent Attainment of ACSO 6**
5th Field Scale	
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)	
The effects of the Action Alternatives, coupled with the cumulative actions would not result in a measurable increase in runoff at the fifth field scale. The effects of the Action Alternatives coupled with the cumulative actions range from approximately 340.0 acres (Alternative 9) to 361.6 acres (Modified Alternative 4), which equates to approximately 0.48 percent to 0.51 percent of the 5th field scale, respectively (refer to Section 3.2.4). These actions occur within small,	As described in Geology and Soils, the effects of the Action Alternatives, coupled with the cumulative actions, range from approximately 340.0 acres (Alternative 9) to 361.6 acres (Modified Alternative 4), which equates to approximately 0.48 percent to 0.51 percent of the 5th field, respectively (refer to Section 3.2.4). The removal of vegetation and increased impervious surfaces associated with these actions would not result in any measurable changes to runoff at

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 6	***Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected***

Vegetation	**Wildlife**	**Fisheries**
Site Scale		
Analysis area: 1,120 acres		
Effects of the Action Alternatives on vegetation at the site scale would be as described for Watershed Resources.	Effects of the Action Alternatives on wildlife at the site scale would be as described for Watershed Resources.	Effects of the Action Alternatives on fish at the site scale would be as described for Watershed Resources.
Finding: Does Not Prevent Attainment of ACSO 6	**Finding: Does Not Prevent Attainment of ACSO 6**	**Finding: Does Not Prevent Attainment of ACSO 6**
5th Field Scale		
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)		
Effects of the Action Alternatives on vegetation at the 5th field scale would be as described for Watershed Resources.	Effects of the Action Alternatives on wildlife at the 5th field scale would be as described for Watershed Resources.	Effects of the Action Alternatives on fish at the 5th field scale would be as described for Geology and Soils and Watershed Resources.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 6	***Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected***
Geology and Soils	**Watershed Resources**
localized areas that are scattered throughout the entire watershed. Therefore impacts to geology and soils would not result in any measurable effects to in-stream flows at the 5th field scale.	the 5th field scale. As described in Section 3.2 – Geology and Soils, these actions are localized to small areas scattered throughout the entire 5th field. Additionally, the flow model analysis described in Section 3.3 – Watershed Resources details that there would not be a measurable effect on the flow regime at the site scale, and therefore, no measurable effect is expected at the 5th field. Cumulative impacts to watershed resources would not result in any measurable changes to the flow regime at the 5th field scale.
Finding: Meets ACSO 6	**Finding: Meets ACSO 6**
Degree of impacts by alternative: 4>2>6>9>1	**Degree of impacts by alternative: 4>2>6>9>1**
ACSO 7	***Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands***
Existing Conditions	
Decreased soil permeability and increases in impervious areas (e.g., facilities, parking lots, road network, timber harvest) have contributed to increased runoff, potentially resulting in changes to water levels and floodplain inundation within the watershed.	As described in Geology and Soils, increased runoff has the potential to affect water levels and floodplain inundation within the watershed. • Peak flow alterations within the main tributary streams from Mount Rainier National Park and Wildernesses are not expected to change over time except in areas where past human disturbance has affected the area (USDA 1998a). • The frequency of flooding and peak flows is expected to remain relatively constant throughout the Clear Fork Cowlitz watershed because 80 percent of the fifth-field watershed is within Mount Rainier National Park or Wildernesses (USDA 1998a).

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 6	***Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected***		
Vegetation		**Wildlife**	**Fisheries**
Finding: Meets ACSO 6		**Finding: Meets ACSO 6**	**Finding: Meets ACSO 6**
Degree of impacts by alternative: 4>2>6>9>1		**Degree of impacts by alternative: 4>2>6>9>1**	**Degree of impacts by alternative: 4>2>6>9>1**
ACSO 7	***Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands***		
Existing Conditions			
Vegetation within the watershed is hydrologically mature as the Aggregate Recovery Percentage exceeds 95 percent (refer to Appendix I – Fisheries Technical Report and Biological Evaluation). The effects of vegetation removal on water levels in streams and wetlands would be as described in Watershed Resources.		While changes in water levels and floodplain inundation can influence the quality of wildlife habitat, the physical properties on which effects to wildlife would be measured are primarily described under Watershed Resources.	While changes in water levels and floodplain inundation can influence the quality of fish habitat, the physical properties on which effects to fish would be measured are primarily described under Watershed Resources.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 7	***Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands***
Geology and Soils	**Watershed Resources**
Site Scale	
Analysis area: 1,120 acres	
Under the Action Alternatives, additional impervious surfaces and developed areas would increase runoff, but are not expected to result in measurable changes to water levels or floodplain inundation within the site scale. The effects would be as described for Watershed Resources.	Under the Action Alternatives, water levels in streams, wetlands, and floodplains would be affected at the site scale through the removal of vegetation (which may further reduce hydrologic maturity) and increases in impervious surfaces. At the site scale, water levels of streams and wetlands are strongly influenced by groundwater sources (refer to Section 3.3 – Watershed Resources). Streams within the site scale are small, ephemeral snow melt channels that do not exhibit floodplain development. • The changes in the changes in water levels due to flow regime alterations from the implementation of the Action Alternatives would not be measurable at the site scale (refer to Section 3.3.3.5 – Flow Regime). • Implementation of the Action Alternatives would not alter floodplain inundation within the site scale (refer to Section 3.3 – Watershed Resources).
Finding: Meets ACSO 7	**Finding: Meets ACSO 7**
5th Field Scale	
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)	
The geology and soils effects of the Action Alternatives coupled with the cumulative actions range from approximately 340.0 acres (Alternative 9) to 361.6 acres (Modified Alternative 4), which equates to approximately 0.48 percent to 0.51 percent of the 5th field scale, respectively (refer to Section 3.2.4). These actions occur within small, localized areas that are scattered throughout the entire watershed. Therefore, impacts to geology and soils are not expected to measurably affect water levels or floodplain inundation at the 5th field scale.	As described in Geology and Soils, the effects of the Action Alternatives, coupled with the cumulative actions, range from approximately 340.0 acres (Alternative 9) to 361.6 acres (Modified Alternative 4), which equates to approximately 0.48 percent to 0.51 percent of the 5th field, respectively (refer to Section 3.2.4). As described in Section 3.2 – Geology and Soils, these actions are localized to small areas scattered throughout the entire 5th field. Therefore, impacts to watershed resources would not result in any measurable impacts to water levels in streams and wetlands or floodplain inundation at the 5th field scale.
Finding: Meets ACSO 7	**Finding: Meets ACSO 7**
Degree of impacts by alternative: 4>2>6>9>1	**Degree of impacts by alternative: 4>2>6>9>1**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 7	***Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands***	
Vegetation	**Wildlife**	**Fisheries**
Site Scale		
Analysis area: 1,120 acres		
Effects of the Action Alternatives on vegetation would be as described for Watershed Resources.	Effects of the Action Alternatives on wildlife would be as described for Watershed Resources.	Effects of the Action Alternatives on fish would be as described for Watershed Resources.
Finding: Meets ACSO 7	**Finding: Meets ACSO 7**	**Finding: Meets ACSO 7**
5th Field Scale		
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)		
Effects of the Action Alternatives on vegetation at the 5th field scale would be as described for Watershed Resources.	Effects of the Action Alternatives on wildlife at the 5th field scale would be as described for Watershed Resources.	Effects of the Action Alternatives on fish at the 5th field scale would be as described for Geology and Soils and Watershed Resources.
Finding: Meets ACSO 7	**Finding: Meets ACSO 7**	**Finding: Meets ACSO 7**
Degree of impacts by alternative: 4>2>6>9>1	**Degree of impacts by alternative: 4>2>6>9>1**	**Degree of impacts by alternative: 4>2>6>9>1**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 8	***Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of large wood sufficient to sustain physical complexity and stability.***

Geology and Soils	**Watershed Resources**
Existing Conditions	
Existing geology and soils conditions are as described in Vegetation.	• The Riparian Reserves in the majority of the watershed are functioning properly because very little management activity has occurred in the riparian areas (USDA 1998a). • Salvage logging activities have been reported to reduce the number of standing large trees and number of in-stream logs, thereby reducing the LWD recruitment potential (USDA 1998a). • LWD is very abundant within the Lower Clear Fork Cowlitz subwatershed, which has more than 80 pieces per mile (USDA 1998a). • Stream channels within the subwatershed are expected to become more stable as upslope vegetative recovery proceeds. Such changes will be associated with riparian stand structure improvements and reduction of sediment routing to stream channels (USDA 1998a). • Within the 5th field watershed, there are approximately 39.8 miles of road inside the existing riparian corridors (USDA 1998a).
Site Scale	
Analysis area: 1,120 acres	
Effects on geology and soils are as described for Vegetation.	Clearing in Riparian Reserves associated with the Action Alternatives would affect plant community composition, structure and function. • The clearing and grading in Riparian Reserves range from approximately 4.1 acres in Alternative 9 to approximately 22.2 acres in Modified Alternative 4 (refer to Table 3.3-15). • The Action Alternatives would cause a slight reduction in the amount of LWD within Riparian Reserves due to the removal of trees for ski facility construction. Alternatives 2, 6 and Modified

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 8	***Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of large wood sufficient to sustain physical complexity and stability.***

Vegetation	Wildlife	Fisheries
Existing Conditions		
• Development within the watershed has not significantly changed plant community composition, structure or function. • The Riparian Reserves in the majority of the watershed are functioning properly because very little management activity has occurred in the riparian areas (USDA 1998a). • Salvage logging activities have been reported to reduce the number of standing large trees and number of in-stream logs, thereby reducing the LWD recruitment potential (USDA 1998a). • Stream channels within the subwatershed are expected to become more stable as upslope vegetative recovery proceeds. Such changes will be associated with riparian stand structure improvements and reduction of sediment routing to stream channels (USDA 1998a).	Existing wildlife conditions are similar to those described for Vegetation.	Existing fisheries and aquatic habitat conditions are similar to those described for Watershed Resources.
Site Scale		
Analysis area: 1,120 acres		
Under the Action Alternatives, vegetation removed for the development of additional ski area facilities would affect plant community structure and function in Riparian Reserves at the site scale by: • The Action Alternatives would cause a slight reduction in the amount of LWD within Riparian Reserves due to the removal of trees for ski facility	The effects to the composition, structure and function of plant communities utilized by riparian-dependent species are described in Vegetation.	As described in Watershed Resources, riparian community composition, structure and function would be impacted by clearing and grading associated with the Action Alternatives. Construction of the four bridges over perennial streams in Alternative 9 would result in impacts to streambank function.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 8	***Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of large wood sufficient to sustain physical complexity and stability.***
Geology and Soils	**Watershed Resources**
	Alternative 4 would include development of lifts and trails in Hogback and/or Pigtail Basins, which are dominated by subalpine parkland vegetation. This vegetation type is comprised of comparatively smaller size classes than other plant communities in the White Pass Study Area, and is therefore less capable of providing LWD. Alternative 9 would remove approximately 4 acres of forest capable of providing LWD (refer to Table 3.3-15). • The potential direct impacts to wetlands would range from approximately 0.04 acre in Alternative 9, 0.09 acre in Alternative 2, 0.11 acre in Alternative 6, and approximately 0.12 acre in Modified Alternative 4 (refer to Table 3.3-13). These impacts would be avoided through implementation of Mitigation Measures in Table 2.4-2 and the use of BMPs. • All Action Alternatives minimize clearing and grading in Riparian Reserves by locating the proposed design outside Riparian Reserves to the extent possible. Ski trail design is intended to parallel Riparian Reserves while minimizing disturbance in riparian areas. • Construction prescriptions and Mitigation Measures in Table 2.4-2 include lop and scatter, with no removal of woody material from cleared areas. Wood would also be placed in stream channels to enhance channel complexity and reduce channel erosion.
Finding: Does Not Prevent Attainment of ACSO 8	**Finding: Does Not Prevent Attainment of ACSO 8**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 8	***Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of large wood sufficient to sustain physical complexity and***

Vegetation	Wildlife	Fisheries
construction. Alternatives 2, 6 and Modified Alternative 4 would include development of lifts and trails in Hogback and/or Pigtail Basins, which are dominated by subalpine parkland vegetation. This vegetation type is comprised of comparatively smaller size classes than other plant communities at the site scale, and is therefore less capable of providing LWD. Alternative 9 would remove approximately 4 acres of forest capable of providing LWD (refer to Table 3.3-15). • Understory vegetation would be maintained at a minimum height of 3 feet in Riparian Reserves (refer to Table 2.4-1) to prevent ground disturbance, minimize sediment delivery, maintain shading and wildlife habitat, and to help keep stream temperatures cool. • The hydrologic maturity at the site scale may be reduced by removal of vegetation, however, the majority of canopy removal would take place outside of Riparian Reserves and in subalpine parkland, resulting in an average canopy cover of 40.9 to 45.5 percent (refer to Table 3.3-15). • Construction prescriptions and Mitigation Measures in Table 2.4-2 include lop and scatter, with no removal of woody material from cleared areas. Wood would also be placed in stream channels to enhance channel complexity and reduce channel erosion.		
Finding: Does Not Prevent Attainment of ACSO 8	**Finding: Does Not Prevent Attainment of ACSO 8**	**Finding: Does Not Prevent Attainment of ACSO 8**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 8	***Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of large wood sufficient to sustain physical complexity and stability.***	
Geology and Soils		**Watershed Resources**
5th Field Scale		
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)		
Effects to geology and soils in the 5th field scale are as described for Vegetation.		The watershed resources effects of the Action Alternatives coupled with the cumulative actions range from approximately 304.86 acres (Alternative 9) to 322.98 acres (Modified Alternative 4), which equates to approximately 1.14 percent to 1.21 percent of the 5th field scale Riparian Reserves, respectively (refer to Section 3.3.4). As discussed in Section 3.3, the effects to Watershed Resources would not measurably affect riparian plant community composition, structure and function at the 5th field scale.
Finding: Meets ACSO 8		**Finding: Meets ACSO 8**
Degree of impacts by alternative: 4>2>6>9>1		**Degree of impacts by alternative: 4>2>6>9>1**
ACSO 9	***Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.***	
Existing Conditions		
• Previous developments (timber harvest, ski area, road construction) have altered riparian habitat features through the loss of soil productivity. • Current risks to riparian habitat include some timber harvest, the construction of any new roads, dispersed/developed recreation, potential mass wasting, windthrow, and catastrophic fire (USDA 1998a).		• Current risks to riparian habitat include some timber harvest, the construction of any new roads, dispersed/developed recreation, low LWD recruitment potential, potential mass wasting, windthrow, and catastrophic fire (USDA 1998a). • The road density of the watershed at the site scale is approximately 1.7 miles/mile^2. The road density in Riparian Reserves is 1.5 miles/mile^2 (USDA 1998a). • The Riparian Reserves in the majority of the watershed are functioning properly because very little management activity has occurred in the riparian areas (USDA 1998a). • 80 percent of the fifth-field watershed is within Mount Rainier National Park or Wildernesses (USDA 1998a). • Stream channels within the subwatershed are expected to become more stable as upslope vegetative recovery proceeds. Such changes will be associated with riparian stand structure improvements (USDA 1998a).

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 8	***Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of large wood sufficient to sustain physical complexity and***		
Vegetation		**Wildlife**	**Fisheries**
5th Field Scale			
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)			
The effects to vegetation from the Action Alternatives and cumulative actions range from 0.33 percent of the CEAA under Alternatives 2 and 6 to 0.35 percent of the CEAA under Modified Alternative 4 (refer to Section 3.5.4). Vegetation impacts would not result in any measurable impacts to riparian plant community composition, structure and function at the 5th field scale.		The effects to the composition, structure and function of plant communities utilized by riparian-dependent species are described in Vegetation.	As described in Watershed Resources, no measurable impacts to the composition, structure and function of riparian plant communities at the 5th field scale are expected.
Finding: Meets ACSO 8		**Finding: Meets ACSO 8**	**Finding: Meets ACSO 8**
Degree of impacts by alternative: 4>2>6>9>1		**Degree of impacts by alternative: 4>2>6>9>1**	**Degree of impacts by alternative: 4>2>6>9>1**
ACSO 9	***Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.***		
Existing Conditions			
• At the landscape scale, vegetation communities are largely intact. The low road density, properly functioning Riparian Reserves, and low levels of disturbance discussed in Watershed Resources are indicative of near-natural conditions. • 80 percent of the fifth-field watershed is within Mount Rainier National Park or Wildernesses (USDA 1998a). • The Riparian Reserves in the majority of the watershed are functioning properly because very little management activity has occurred in the riparian areas (USDA 1998a).		The physical properties on which impacts influencing the distribution of invertebrate and vertebrate riparian dependent species would be measured are primarily described under Watershed Resources and Vegetation.	• Previous developments (timber harvest, ski area) have altered habitat characteristics through road construction and tree removal. Overall complexity of fish habitat features remains relatively stable. • The physical properties on which impacts influencing fish habitat would be measured are primarily watershed resources. Refer to Watershed Resources.

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 9	***Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.***
Geology and Soils	**Watershed Resources**
Site Scale	
Analysis area: 1,120 acres	
Implementation of the Action Alternatives would increase the loss of soil productivity within the site scale. The effect at the site scale would not result in measurable changes to riparian habitat. • Alternative 2, Modified Alternative 4 and Alternative 9 include no new roads, thereby maintaining the existing road density of 1.5 miles/mile^2 in the site scale. Alternative 6 includes the development of approximately 0.25 mile of new road in a Tier 2 Key Watershed/IRA, which would increase the road density to approximately 1.7 miles/mile^2 in the site scale (refer to Table 3.3-10). Alternative 6 would require the decommissioning and obliteration of approximately 0.6 mile of road in the watershed to avoid a net increase in road mileage in the watershed. Under the Action Alternatives, there would be no change to the road density at the watershed scale. • Under all Action Alternatives, the total detrimental soil conditions would not exceed 20 percent within the site scale (refer to Table 3.2-3). • Total soil impacts as a result of clearing and grading at the site scale ranges from approximately 27.57 acres under Alternative 9 to 49.14 acres under Modified Alternative 4 (refer to Table 3.2-6).	Clearing and grading within Riparian Reserves associated with the Action Alternatives would not measurably affect habitat for riparian-dependent species at the site scale. • The clearing and grading in Riparian Reserves range from approximately 4.1 acres in Alternative 9 to approximately 22.2 acres in Modified Alternative 4 (refer to Table 3.3-15). • Alternative 2, Modified Alternative 4 and Alternative 9 include no new roads, thereby maintaining the existing road density of 1.5 miles/mile^2 in the site scale. Alternative 6 includes the development of approximately 0.25 mile of new road in a Tier 2 Key Watershed/IRA, which would increase the road density to approximately 1.7 miles/mile^2 at the site scale (refer to Table 3.3-10). Alternative 6 would require the decommissioning and obliteration of approximately 0.6 mile of road in the watershed to avoid a net increase in road mileage in the watershed. Under the Action Alternatives, there would be no change to the road density at the watershed scale. • All Action Alternatives minimize clearing and grading in Riparian Reserves by locating the proposed design outside Riparian Reserves to the extent possible. Ski trail design is intended to parallel Riparian Reserves while minimizing disturbance in riparian areas. • All Action Alternatives would avoid direct impacts to streams and wetlands where possible through the implementation of Mitigation Measures and Management Requirements listed in Tables 2.4-2 and 2.4-3, the use of BMPs, and field fitting individual construction projects.
Finding: Meets ACSO 9	**Finding: Does Not Prevent Attainment of ACSO 9**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 9	***Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.***	
Vegetation	**Wildlife**	**Fisheries**
Site Scale		
Analysis area: 1,120 acres		
The removal of vegetation communities associated with the Action Alternatives would not have a measurable affects on habitat for riparian-dependent species (refer to Section 3.5). • The Action Alternatives would result in approximately 1.0 to 5.6 percent reduction in canopy cover within Riparian Reserves, with canopy cover remaining approximately 40.9 to 45.5 percent (refer to Table 3.3-15). • The hydrologic maturity within the site scale may be reduced by removal of vegetation under the Action Alternatives, however, the majority of canopy removal would take place outside of Riparian Reserves and in subalpine parkland, resulting in an average canopy cover of 40.9 to 45.5 percent (refer to Table 3.3-15). • Understory vegetation would be maintained at a minimum height of 3 feet in areas that include clearing prescriptions with no grading (refer to Table 2.4-1) to minimize sediment delivery and to help keep stream temperatures cool. • Removal of vegetation within the Hogback Basin in Alternatives 2, 6 and Modified Alternative 4 would not alter the sub-alpine parkland community at the site scale.	Wildlife impacts at the site scale would be as described under Vegetation and Watershed Resources.	Fish impacts at the site scale would be as described under Watershed Resources, Vegetation and Geology and Soils.
Finding: Does Not Prevent Attainment of ACSO 9	**Finding: Does Not Prevent Attainment of ACSO 9**	**Finding: Does Not Prevent Attainment of ACSO 9**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 9	***Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.***
Geology and Soils	**Watershed Resources**
5th Field Scale	
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)	
The effects of the Action Alternatives coupled with the cumulative actions range from approximately 340.01 acres under Alternative 9 to 361.58 acres under Modified Alternative 4, which equates to approximately 0.48 percent to 0.51 percent of the 5th field scale, respectively (refer to Section 3.2.4). Section 3.2 describes that the effects to geology and soils would not measurably affect habitat for riparian-dependent species at the 5th field scale.	The effects of the Action Alternatives coupled with the cumulative actions range from approximately 304.86 acres under Alternative 9 to 322.98 acres under Modified Alternative 4, which equates to approximately 1.14 percent to 1.21 percent of the 5th field scale Riparian Reserves, respectively (refer to Section 3.3.4). As discussed in Section 3.3, the effects to watershed resources would not measurably affect habitat for riparian-dependent species at the 5th field scale.
Finding: Meets ACSO 9	**Finding: Meets ACSO 9**
Degree of impacts by alternative: 4>2>6>9>1	**Degree of impacts by alternative: 4>2>6>9>1**

Table 3.7 FEIS1:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Clear Fork Cowlitz Watershed

ACSO 9	***Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.***	
Vegetation	**Wildlife**	**Fisheries**
5th Field Scale		
Analysis area: Upper Clear Fork Cowlitz River Watershed (70,722 acres)		
The effects to vegetation from the Action Alternatives and cumulative actions ranges from 0.33 percent of the CEAA in Alternatives 2 and 6 to 0.35 percent of the CEAA in Modified Alternative 4 (refer to Section 3.5.4). Therefore, impacts to vegetation are not expected to result in any measurable impacts to habitat for riparian-dependent species at the 5th field scale.	Wildlife impacts at the 5th field scale would be related to the effects described in Vegetation.	Fish impacts at the 5th field scale would be as described in Watershed Resources.
Finding: Meets ACSO 9	**Finding: Meets ACSO 9**	**Finding: Meets ACSO 9**
Degree of impacts by alternative: 4>2>6>9>1	**Degree of impacts by alternative: 4>2>6>9>1**	**Degree of impacts by alternative: 4>2>6>9>1**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 1	***Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted***
Geology and Soils	**Watershed Resources**
Existing Conditions	
• Previous developments (timber harvest, ski area) have altered physical landscape features through road construction and slope recontouring. • Current risks to Riparian Reserves include timber harvest, the construction of new roads, dispersed/developed recreation, low LWD recruitment potential, potential mass wasting, windthrow, and catastrophic fire (USDA 1998b).	• The disturbance regime in this watershed is functioning adequately because much of the watershed is within Wilderness. Timber harvest has been minimal so it has not altered the disturbance regime (USDA 1998b). • Due to the relatively low levels of harvest and roading, hydrologic patterns at the watershed level have not been changed significantly as a result of forest management activities (USDA 1998b). • It is estimated that less than 15 percent Equivalent Clearcut Area has been disturbed in the watershed, and unstable riparian areas are intact, so the watershed is rated to be functioning adequately (USDA 1998b). • Risks to Riparian Reserves include timber harvest, the construction of new roads, dispersed/developed recreation, low LWD recruitment potential, potential mass wasting, windthrow, and catastrophic fire (USDA 1998b). • Only 2 of the 37 sub-drainages analyzed have a road density greater than 3.0 miles/mile^2 (USDA 1998b).
Site Scale	
Analysis area: 450 acres	
Implementation of the Action Alternatives would increase the loss of soil productivity within the site scale. The effect at the landscape scale would not result in measurable changes to the distribution, diversity, and complexity of geology and soils features. • Under the Action Alternatives, the total acreage of detrimental soil conditions within the site scale would range from 2.9 percent under Alternative 2 to 3.6 percent under Alternative 9 (refer to Table 3.2-3), which is below the 20 percent threshold for an activity area (USDA 1990b). • Total soil impacts as a result of clearing and grading at the site scale ranges from approximately 18.40 acres (4.08 percent of the site scale) under Alternative 2 to 47.23 acres (10.5 percent of the site scale) in Alternative 9 (refer to Table 3.2-8).	Clearing and grading in Riparian Reserves, road density and hydrologic maturity associated with the Action Alternatives would not measurably affect landscape-scale watershed features at the site scale. • The clearing and grading in Riparian Reserves range from approximately 0.0 acre in Alternative 2 to 20.3 acres (8.6 percent of total) in Alternative 9 (refer to Table 3.3-15). • Tere would be no new roads proposed in the Upper Tieton watershed portion of the White Pass Study Area, so there would be no change to the road density (refer to Table 3.3-11). • Alternative 9 would result in the greatest effects to the distribution, diversity and function of Riparian Reserves among the Action Alternatives due to the removal of mature forest along perennial streams. Riparian function would be reduced at ski trail and bridge crossings, but would be maintained along these streams at the site scale.

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 1	***Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted***	
Vegetation	**Wildlife**	**Fisheries**
Existing Conditions		
• Land use activities within the Upper Tieton have contributed to the existing land cover, as represented by the mosaic of vegetation communities and developed areas that comprise the existing vegetation conditions. • It is estimated that less than 15 percent Equivalent Clearcut Area has been disturbed in the watershed, and unstable riparian areas are intact, so the watershed is rated to be functioning adequately (USDA 1998b).	While the distribution, diversity, and complexity of watershed and landscape scale features are important components of wildlife habitat, the physical properties on which impacts to wildlife would be measured are primarily associated with the properties described for Vegetation.	Previous developments (timber harvest, ski area) have altered physical landscape features through road construction and slope recontouring. These alterations are generally localized rather than landscape-scale changes (refer to Section 3.4 – Fisheries).
Site Scale		
Analysis area: 450 acres		
The effects to vegetation communities associated with the Action Alternatives would not have a measurable effect on landscape-scale features at the site scale because all plant communities would continue to persist (refer to Section 3.5). • The removal of vegetation communities at the site scale would occur predominately in a mixed conifer community with Medium tree – Multi-story – Closed Canopy forest structure. Removal of mixed conifer communities with old growth characteristics ranges from 0.0 acre under Alternative 2 to 24.2 acres under Alternative 9, approximately 5.4 percent	Wildlife impacts at the site scale would be as described under Vegetation.	Fisheries impacts would be as described under Geology and Soils, Vegetation and Watershed Resources.

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 1	***Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted***

Geology and Soils	**Watershed Resources**
Finding: Does not prevent attainment of ACSO 1	**Finding: Does not prevent attainment of ACSO 1**
5th Field Scale	
Analysis area: Upper Tieton River Watershed (118,204 acres)	
The geology and soils effects of the Action Alternatives, coupled with the cumulative actions, ranges from approximately 332.57 acres (under Alternative 2) to 361.4 acres (under Alternative 9), which equates to approximately 0.28 percent to 0.31 percent of the 5th field scale, respectively (refer to Section 3.2.4). Section 3.2 – Geology and Soils describes that the effects to geology and soils would not measurably affect the distribution and complexity of landscape-scale geology and soil features at the 5th field scale.	The Action Alternatives, coupled with the cumulative actions, would affect approximately 322.01 acres (under Alternative 2) to 342.31 acres (under Alternative 9) of Riparian Reserves, which equates to approximately 1.80 percent to 1.92 percent of the 5th field scale Riparian Reserves, respectively (refer to Section 3.3.4). As discussed in Section 3.3 – Watershed Resources, the effects to Riparian Reserves would not measurably affect the landscape-scale distribution and complexity of watershed and landscape-scale features at the 5th field scale.
Finding: Meets ACSO 1	**Finding: Meets ACSO 1**
Degree of impacts by alternative: 9>4>6>2=1	**Degree of impacts by alternative: 9>4>6>2=1**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 1	***Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted***	
Vegetation	**Wildlife**	**Fisheries**
of the site scale, the most of any alternative (refer to Appendix G). However, plant communities would not be eliminated at the site scale. • Reduced canopy cover within Riparian Reserves under the Action Alternatives ranges from 0.0 percent under Alternative 2 to 8.6 percent under Alternative 9, with canopy cover remaining at approximately 40.9 to 49.5 percent, respectively (refer to Table 3.3-15).		
Finding: Does not prevent attainment of ACSO 1	**Finding: Does not prevent attainment of ACSO 1**	**Finding: Does not prevent attainment of ACSO 1**
5th Field Scale		
Analysis area: Upper Tieton River Watershed (118,204 acres)		
The effects to vegetation from the Action Alternatives and cumulative actions ranges from 0.33 percent of the Cumulative Effects Analysis Area (CEAA; refer to Section 3.5 - Vegetation) in Alternatives 2 and 6 to 0.35 percent of the CEAA in Modified Alternative 4 (refer to Section 3.5.4). A majority of these effects occur outside of Riparian Reserves, and would therefore have no effect on riparian plant communities. Cumulative actions occurring within Riparian Reserves are localized to small areas that are scattered throughout the 5th field. Therefore, no measurable impacts to the distribution and complexity of landscape-scale vegetation features at the 5th field scale are expected.	Wildlife impacts at the 5th field scale would be as described under Vegetation.	Fisheries impacts would be as described under Geology and Soils, Vegetation and Watershed Resources. The fisheries effects of the Action Alternatives coupled with cumulative actions ranges from approximately 322.01 acres (under Alternative 2) to 342.31 acres (under Alternative 9), which equates to approximately 1.80 percent to 1.92 percent of the 5th field, respectively (refer to Section 3.4.4). As discussed in Section 3.4 - Fisheries, the effects to fish or aquatic habitat would not measurably affect the distribution and complexity of landscape-scale features associated with fisheries at the 5th field scale.
Finding: Meets ACSO 1	**Finding: Meets ACSO 1**	**Finding: Meets ACSO 1**
Degree of impacts by alternative: 9>4>6>2=1	**Degree of impacts by alternative: 9>4>6>2=1**	**Degree of impacts by alternative: 9>4>6>2=1**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 2	***Maintain and restore spatial and temporal connectivity within and between watersheds. These linkages must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.***

Geology and Soils	**Watershed Resources**
Existing Conditions	
• Existing geology and soils conditions are as described under Vegetation.	• The Riparian Reserves in the majority of the watershed are properly functioning because very little management activity has occurred in the riparian areas (USDA 1998b). • Due to the relatively low levels of harvest and roading, spatial connectivity at the watershed scale has not been changed significantly as a result of forest management activities (USDA 1998b). • Risks to spatial connectivity include timber harvest, the construction of new roads, dispersed/developed recreation, and catastrophic fire (USDA 1998b).
Site Scale	
Analysis area: 450 acres	
Effects on geology and soils are as described under Vegetation.	Clearing in Riparian Reserves for ski trails and construction would reduce forest continuity, fragmenting riparian habitat. Such clearing may create localized barriers to fish and wildlife movement along riparian corridors (refer to Wildlife). The Action Alternatives would not measurably affect spatial and temporal connectivity within the site scale. • The clearing and grading in Riparian Reserves ranges from approximately 0 acres in Alternative 2 to 20.3 acres in Alternative 9 (refer to Table 3.3-15). • Reduced canopy cover within Riparian Reserves under the Action Alternatives ranges from 0.0 percent under Alternative 2 to 8.6 percent under Alternative 9, with canopy cover remaining at approximately 40.9 to 49.5 percent, respectively (refer to Table 3.3-15). • Streams may be directly impacted through the construction of four bridges (under Alternative 9). • All Action Alternatives minimize clearing and grading in Riparian Reserves by locating the proposed design outside Riparian Reserves to the extent possible. Ski trail design is intended to

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 2	***Maintain and restore spatial and temporal connectivity within and between watersheds. These linkages must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.***	
Vegetation	**Wildlife**	**Fisheries**
Existing Conditions		
• Development within the watershed has removed native vegetation and fragmented contiguous forested areas. • The Riparian Reserves in the majority of the watershed are properly functioning because very little management activity has occurred in the riparian areas (USDA 1998b). • Due to the relatively low levels of harvest and roading, spatial connectivity at the watershed scale has not been changed significantly as a result of forest management activities (USDA 1998b).	Existing wildlife conditions are as described under Vegetation.	Existing fisheries and aquatic habitat conditions are as described under Watershed Resources.
Site Scale		
Analysis area: 450 acres		
Under the Action Alternatives, vegetation removed for the development of additional ski area facilities would affect the connectivity between watersheds at the site scale. • Removal of vegetation associated with construction activities would increase the amount of non-forested area within Riparian Reserves. Vegetation removal in Riparian Reserves ranges from approximately 0 acre in Alternative 2 to 20.3 acres (8.6 percent of total) in Alternative 9 (refer to Table 3.3-15). • Alternative 9 would result in the greatest amount of fragmentation of mature forest of all Action Alternatives. • Reduced canopy cover within Riparian Reserves under the	As described in Section 3.6 – Wildlife, the Action Alternatives would have the greatest affect on connectivity for low mobility species. The removal of vegetation would reduce available connective habitat at the site scale. These effects are described under Vegetation.	Alternative 9 would result in the construction of four bridges over perennial streams. As bridge footings are located upslope of the ordinary high water mark, no measurable impacts to connective aquatic habitat are expected to occur. Impacts to riparian habitat are as described under Watershed Resources.

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 2	***Maintain and restore spatial and temporal connectivity within and between watersheds. These linkages must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.***

Geology and Soils	**Watershed Resources**
	• parallel Riparian Reserves while minimizing disturbance in riparian areas. • All Action Alternatives would avoid direct impacts to streams and wetlands where possible through the implementation of the Mitigation Measures and Management Requirements listed in Tables 2.4-2 and 2.4-3, the use of BMPs, and field fitting the individual construction projects.
Finding: Does Not Prevent Attainment of ACSO 2	**Finding: Does Not Prevent Attainment ACSO 2**
5th Field Scale	
Analysis area: Upper Tieton River Watershed (118,204 acres)	
Geology and soils impacts at the 5th field are as described under Vegetation.	The effects of the Action Alternatives, coupled with the cumulative actions, on Riparian Reserves range from approximately 322.01 acres (Alternative 2) to 342.31 acres (Alternative 9), which equates to approximately 1.80 percent to 1.92 percent of the 5th field Riparian Reserves, respectively (refer to Section 3.3.4). Watershed resource impacts would not result in any measurable changes to the connective riparian habitat at the 5th field. These actions are localized to small areas scattered throughout the entire 5th field.
Finding: Meets ACSO 2	**Finding: Meets ACSO 2**
Degree of impacts by alternative: 9>4>6>2=1	**Degree of impacts by alternative: 9>4>6>2=1**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 2	***Maintain and restore spatial and temporal connectivity within and between watersheds. These linkages must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.***	
Vegetation	**Wildlife**	**Fisheries**
Action Alternatives ranges from 0.0 percent under Alternative 2 to 8.6 percent under Alternative 9, with canopy cover remaining at approximately 40.9 to 49.5 percent, respectively (refer to Table 3.3-15). • Within Riparian Influence Areas, vegetation would be maintained at a minimum height of 3 feet above ground to prevent ground disturbance and to maintain shading and habitat connectivity.		
Finding: Does Not Prevent Attainment ACSO 2	**Finding: Does Not Prevent Attainment ACSO 2**	**Finding: Does Not Prevent Attainment ACSO 2**
5th Field Scale		
Analysis area: Upper Tieton River Watershed (118,204 acres)		
The effects to vegetation from the Action Alternatives and cumulative actions ranges from 0.33 percent of the CEAA in Alternatives 2 and 6 to 0.35 percent of the CEAA in Modified Alternative 4 (refer to Section 3.5.4). A majority of these effects occur outside of Riparian Reserves, and would therefore have no effect on connective riparian habitat. Cumulative actions occurring within Riparian Reserves are localized to small areas that are scattered throughout the 5th field. Therefore, impacts to vegetation would result in no measurable impacts to connective riparian habitat at the 5th field scale.	Impacts to connective riparian habitat are not expected to be measurable at the 5th field scale (refer to Vegetation). Therefore, wildlife impacts would not result in any measurable impacts to riparian-dependent species at the 5th field scale.	The effects of the Action Alternatives, coupled with the cumulative actions, range from approximately 322.01 acres (Alternative 2) to 342.31 acres (Alternative 9), which equates to approximately 1.80 percent to 1.92 percent of the 5th field scale, respectively (refer to Section 3.4.4). Cumulative actions would result in isolated tree removal within the 5th field Riparian Reserves. Therefore, fisheries impacts would not result in any measurable effects to connective aquatic habitat at the 5th field scale (refer to Section 3.4 – Fisheries).
Finding: Meets ACSO 2	**Finding: Meets ACSO 2**	**Finding: Meets ACSO 2**
Degree of impacts by alternative: 9>4>6>2=1	**Degree of impacts by alternative: 9>4>6>2=1**	**Degree of impacts by alternative: 9>4>6>2=1**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 3	***Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.***
Geology and Soils	**Watershed Resources**
Existing Conditions	
At the site scale, approximately 30 percent of the riparian area along streams occurs on medium to high erosion potential soils (refer to Table 3.3-6).	• Most streams are considered to be functioning adequately for the channel type with deep pools within geomorphic constraints (USDA 1998b). • The streambank conditions of the North Fork Tieton River is rated functioning adequately (USDA 1998b). • Approximately 80 percent of the stream length within the site scale have stable banks (refer to Table 3.3-6). • Prior development, timber harvest, and road construction have reduced the physical integrity of the aquatic system through the placement of culverts and hardened stream banks throughout the watershed.
Site Scale	
Analysis area: 450 acres	
• Clearing and grading on medium and high erosion potential soils within riparian areas ranges from 0.0 acre in Alternative 2 to 0.5 acre in Alternative 9 (refer to Table 3.3-17). • Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils).	The Action Alternatives would impact the physical integrity of the aquatic system through clearing and grading within Riparian Reserves. These impacts are not expected to be measurable at the site scale. • The Action Alternatives would cause a slight reduction in the amount of LWD within Riparian Reserves due to the removal of trees for ski facility construction. Alternatives 6 and 9 include development of a 2.5-acre parking lot, which would eliminate riparian function in approximately 1.9 acres of Riparian Reserves (refer to Section 3.3.3.3). Under Modified Alternative 4, a 7-acre parking lot would eliminate riparian function from approximately 2.1 acres of Riparian Reserves (refer to Section 3.3.3.3). • All Action Alternatives minimize clearing and grading in Riparian Reserves by locating the proposed design outside Riparian Reserves to the extent possible. Ski trail design is intended to parallel Riparian Reserves while minimizing disturbance in riparian areas. • Streams may be directly impacted through the construction of four bridges (for Alternative 9). • Implementation of the Action Alternatives would not alter stream functionality within the White Pass Study Area or within the watershed (refer to Section 3.3 – Watershed Resources).

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 3	***Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.***	
Vegetation	**Wildlife**	**Fisheries**
Existing Conditions		
The Riparian Reserves in the majority of the watershed are properly functioning because very little management activity has occurred in the riparian areas (USDA 1998b).	While shorelines, banks, and bottom configurations are important components of wildlife habitat, the physical properties on which the effects to wildlife would be measured are primarily described under Watershed Resources.	• Prior development, timber harvest, and road construction have reduced the physical integrity of the aquatic system through the placement of culverts and hardened stream banks throughout the watershed. • While shorelines, banks, and bottom configurations are important components of fish habitat, the physical properties on which the effects to fish would be measured are
Site Scale		
Analysis area: 450 acres		
The effects on the physical integrity of the aquatic system for vegetation are as described under Watershed Resources.	While shorelines, banks, and bottom configurations are important components of wildlife habitat, the physical properties on which the effects to wildlife would be measured are primarily described under Watershed Resources.	The construction of four bridges under Alternative 9 would impact the stream banks of perennial streams at the site scale. Impacts to the physical integrity of the aquatic system would be as described under Watershed Resources.

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 3	***Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.***
Geology and Soils	**Watershed Resources**
	• Construction of ski trails and bridges under Alternative 9 would reduce the length of streams with stable banks to approximately 72 percent of the total stream length (refer to Table 3.3-12). • Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils).
Finding: Meets ACSO 3	**Finding: Does Not Prevent Attainment of ACSO 3**
5th Field Scale	
Analysis area: Upper Tieton River Watershed (118,204 acres)	
Geology and soils impacts at the 5th field are as described under Vegetation.	The effects of the Action Alternatives, coupled with the cumulative actions, on Riparian Reserves range from approximately 322.01 acres (Alternative 2) to 342.31 acres (Alternative 9), which equates to approximately 1.80 percent to 1.92 percent of the 5th field Riparian Reserves, respectively (refer to Section 3.3.4). Cumulative effects to watershed resources would not result in any measurable changes to the physical integrity of aquatic systems at the 5th field scale. As described in Section 3.3 – Watershed Resources, these actions are localized to small areas scattered throughout the entire 5th field.
Finding: Meets ACSO 3	**Finding: Meets ACSO 3**
Degree of impacts by alternative: 9>4>6=2=1	**Degree of impacts by alternative: 9>4>6>2=1**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 3	***Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.***	
Vegetation	**Wildlife**	**Fisheries**
Finding: Does Not Prevent Attainment of ACSO 3	**Finding: Does Not Prevent Attainment of ACSO 3**	**Finding: Does Not Prevent Attainment of ACSO 3**
5th Field Scale		
Analysis area: Upper Tieton River Watershed (118,204 acres)		
The effects to vegetation from the Action Alternatives and cumulative actions ranges from 0.33 percent of the CEAA in Alternatives 2 and 6 to 0.35 percent of the CEAA in Modified Alternative 4 (refer to Section 3.5.4). A majority of these effects occur outside of Riparian Reserves, and would therefore have no effect on the physical integrity of aquatic systems. Cumulative actions occurring within Riparian Reserves are localized to small areas that are scattered throughout the 5th field. Therefore, impacts to vegetation are not expected to result in any measurable impacts to the physical integrity of aquatic systems at the 5th field scale.	The effects to the physical integrity of aquatic systems utilized by riparian-dependent species are described in Vegetation.	As described in Watershed Resources, no measurable impacts to the physical integrity of aquatic systems at the 5th field scale are expected.
Finding: Meets ACSO 3	**Finding: Meets ACSO 3**	**Finding: Meets ACSO 3**
Degree of impacts by alternative: 9>4>6>2=1	**Degree of impacts by alternative: 9>4>6>2=1**	**Degree of impacts by alternative: 9>4>6>2=1**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 4	***Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain in the range that maintains the biological, physical, and chemical integrity of the ecosystem, benefiting survival, growth, reproduction, and migration of individuals composing its aquatic and riparian communities.***

Geology and Soils	**Watershed Resources**
Existing Conditions	
Sediment sources due to management appear to be limited within the watershed. Since most of the watershed is undisturbed, it is rated functioning adequately relative to sediment (USDA 1998b).	• None of the streams within the watershed have been designated as "water quality limited" by the Washington State Department of Ecology on the 1996 or 1998 303(d) lists (USDA 1998b). • Temperatures in the tributaries of this watershed are believed to be meeting the state water quality standard of 61 degrees Fahrenheit for most of the summer months (USDA 1998b). • Sediment sources due to management appear to be limited within the watershed, and since most of it is undisturbed, this watershed is rated functioning adequately relative to sediment (USDA 1998b).
Site Scale	
Analysis area: 450 acres	
The Action Alternatives would result in increased sediment detachment at the site scale. Increased sediment detachment has the potential to impact water quality within streams at the site scale (refer to Section 3.3 – Watershed Resources). The use of BMPs and Mitigation Measures described in Tables 2.4-2 to 2.4-4, and summarized below, would reduce the potential sediment yield to streams at the site scale. • Long-term sediment detachment increases would range from 0.0 percent under Alternative 2 to 0.8 percent under Alternative 9. Short-term sediment detachment would range from 0.0 percent under Alternative 2 to 12.8 percent under Alternative 9 (refer to Table 3.3-FEIS4). • Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils). • No access corridors, staging areas, spoils piles, or other construction related materials would be placed in Riparian Reserves. Whenever feasible, potential impacts to Riparian Reserves would be minimized by bringing construction materials and equipment to the project site via and at the time of snowpack (refer to Table 2.4-2).	The Action Alternatives would result in potential impacts to water quality from increased sediment yield, pollutant runoff and increased water temperatures (refer to Section 3.3 – Watershed Resources). Impacts resulting from increased sediment would be as described in Geology and Soils. The use of BMPs and Mitigation Measures described in Tables 2.4-2 to 2.4-4 would reduce the likelihood of pollutant runoff from construction equipment to streams at the site scale. Impacts to stream temperature would occur from the removal of riparian canopy as described in Vegetation. Overall, impacts to water quality are not expected to be measurable at the site scale. • Implementation of the Action Alternatives is not expected to contribute to the listing of any stream on the Department of Ecology's 303(d) list since there would be no new point sources of pollution and water quality impacts are projected to be nominal (refer to Section 3.3 – Watershed Resources). • Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils). • All Action Alternatives minimize clearing and grading in Riparian Reserves by locating the

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 4	***Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain in the range that maintains the biological, physical, and chemical integrity of the ecosystem, benefiting survival, growth, reproduction, and migration of individuals composing its aquatic and riparian communities.***

Vegetation	Wildlife	Fisheries
Existing Conditions		
Herbaceous vegetation can provide sediment filtering functions that reduce sediment yield to streams. These impacts are described in Geology and Soils and Watershed Resources. The loss of canopy cover may affect local stream temperatures where forested vegetation that provides shade to streams has been removed.	While water quality is an important component of wildlife habitat, the physical properties on which effects to wildlife would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.	While water quality is an important component of fish habitat, the physical properties on which effects to fish would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.
Site Scale		
Analysis area: 450 acres		
The removal of overstory riparian canopy along streams associated with the Action Alternatives could result in an increase in indirect thermal impacts to streams. Overall, the reduction in riparian canopy is not expected to have a measurable impact on stream temperature at the site scale. • Canopy cover within Riparian Reserves would be reduced by a range of 0 percent under Alternative 2 to 8.6 percent under Alternative 9, with canopy cover remaining at approximately 49.5 to 40.9 percent, respectively (refer to Table 3.3-15). • Understory vegetation would be maintained at a minimum height of 3 feet in areas that include clearing prescriptions with no grading (refer to Table 2.4-1) to minimize sediment delivery and to help keep stream temperatures cool.	While water quality is an important component of wildlife habitat, the physical properties on which effects to wildlife would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.	While water quality is an important component of fish habitat, the physical properties on which effects to fish would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 4	***Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain in the range that maintains the biological, physical, and chemical integrity of the ecosystem, benefiting survival, growth, reproduction, and migration of individuals composing its aquatic and riparian communities.***
Geology and Soils	**Watershed Resources**
	proposed design outside Riparian Reserves to the extent possible. Ski trail design is intended to parallel Riparian Reserves while minimizing disturbance in riparian areas. • Through the implementation of a Stormwater Pollution Prevention Plan and the use of BMPs, no long-term changes in the pH, turbidity, and dissolved oxygen of streams at the site scale are expected.
Finding: Does Not Prevent Attainment of ACSO 4	**Finding: Does Not Prevent Attainment of ACSO 4**
5th Field Scale	
Analysis area: Upper Tieton River Watershed (118,204 acres)\	
The effects of the Action Alternatives, coupled with the cumulative actions would not result in a measurable increase in sediment detachment at the fifth field scale. These actions would occur within small, localized areas that are scattered throughout the entire watershed. Furthermore, a majority of the actions occur outside of Riparian Reserves and therefore are less likely to result in sediment yield to streams within the fifth field scale. Therefore, no effects to geology and soils at the fifth field are expected to measurably impact water quality.	The effects of the Action Alternatives, coupled with the cumulative actions, on Riparian Reserves range from approximately 322.01 acres (Alternative 2) to 342.31 acres (Alternative 9), which equates to approximately 1.80 percent to 1.92 percent of the 5th field Riparian Reserves, respectively (refer to Section 3.3.4). Cumulative effects to watershed resources would not result in any measurable changes to water quality at the 5th field scale. These actions are localized to small areas scattered throughout the entire 5th field. Sediment impacts to water quality would be as described under Geology and Soils.
Finding: Meets ACSO 4	**Finding: Meets ACSO 4**
Degree of impacts by alternative: 9>4>6>2=1	**Degree of impacts by alternative: 9>4>6>2=1**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 4	***Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain in the range that maintains the biological, physical, and chemical integrity of the ecosystem, benefiting survival, growth, reproduction, and migration of individuals composing its aquatic and riparian communities.***		
Vegetation		**Wildlife**	**Fisheries**
Finding: Does Not Prevent Attainment of ACSO 4		**Finding: Does Not Prevent Attainment of ACSO 4**	**Finding: Does Not Prevent Attainment of ACSO 4**
5th Field Scale			
Analysis area: Upper Tieton River Watershed (118,204 acres)			
The effects to vegetation from the Action Alternatives and cumulative actions range from 0.33 percent of the CEAA in Alternatives 2 and 6 to 0.35 percent of the CEAA in Modified Alternative 4 (refer to Section 3.5.4). A majority of these effects occur outside of Riparian Reserves, and would therefore have less of an effect on water quality as they do not occur within close proximity to waterbodies. Cumulative actions occurring within Riparian Reserves are localized to small areas that are scattered throughout the 5th field. Therefore, impacts to vegetation would result in no expected measurable impacts to water quality at the 5th field scale.		While water quality is an important component of wildlife habitat, the physical properties on which effects to wildlife would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.	While water quality is an important component of fish habitat, the physical properties on which effects to fish would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.
Finding: Meets ACSO 4		**Finding: Meets ACSO 4**	**Finding: Meets ACSO 4**
Degree of impacts by alternative: 9>4>6>2=1		**Degree of impacts by alternative: 9>4>6>2=1**	**Degree of impacts by alternative: 9>4>6>2=1**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 5	***Maintain and restore the sediment regime in which the aquatic system evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.***
Geology and Soils	**Watershed Resources**
Existing Conditions	
Sediment sources due to management appear to be limited within the watershed. Since most of the watershed is undisturbed, it is rated functioning adequately relative to sediment (USDA 1998b).	• Sediment sources due to management appear to be limited within the watershed. Since most of the watershed is undisturbed, it is rated functioning adequately relative to sediment (USDA 1998b). • Streams within the headwater portions of the watershed are typically Rosgen Type A and B channels (SE Group 2004 and USDA 1998b). Characteristics of these stream types are primarily sediment transport channels and do not contain high quality fish habitat (USDA 1998b).
Site Scale	
Analysis area: 450 acres	
The Action Alternatives would result in increased sediment detachment at the site scale, resulting in potential impacts to the sediment regime at the site scale (refer to Section 3.3 – Watershed Resources). The use of BMPs and Mitigation Measures described in Tables 2.4-2 to 2.4-4 would reduce the likely sediment yield to streams. Therefore, impacts to sediment regime and are not expected to be measurable at the site scale. • Long-term sediment detachment increase would range from 0.0 percent under Alternative 2 to 0.8 percent under Alternative 9. Short-term sediment detachment would range from 0.0 percent under Alternative 2 to 12.8 percent under Alternative 9 (refer to Table 3.3-FEIS4). • Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils). • No access corridors, staging areas, spoils piles, or other construction related materials would be placed in Riparian Reserves. Whenever feasible, potential impacts to Riparian Reserves would be minimized by bringing construction materials and equipment to the project site via and at the time of snowpack (refer to Table 2.4-2). • Stabilization and revegetation of disturbed soils in accordance with the SWPPP would minimize sediment detachment and yield (refer to Tables 2.4-3 and 2.4-4).	As described in Geology and Soils, the WEPP model indicates that long-term sediment detachment would increase under the Action Alternatives. Increased sediment detachment has the potential to impact the sediment regime through increased yield to streams. However, the use of BMPs and Mitigation Measures would reduce actual sediment yield. Therefore, impacts to sediment regime are not expected to be measurable at the site scale. • Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils). • Sediment impacts to streams and wetlands would be minimized through the implementation of the Mitigation Measures and Management Requirements in Tables 2.4-2 and 2.4-3 as well as the use of BMPs during construction activities. • The Action Alternatives would not impact stream channel types at the site scale. They would continue to function primarily as sediment transport channels.
Finding: Does Not Prevent Attainment of ACSO 5	**Finding: Does Not Prevent Attainment of ACSO 5**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 5	***Maintain and restore the sediment regime in which the aquatic system evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.***	
Vegetation	**Wildlife**	**Fisheries**
Existing Conditions		
Herbaceous vegetation can provide sediment filtering functions that reduce sediment yield to streams. These impacts are described in Geology and Soils and Watershed Resources.	While changes in sediment regimes can influence the quality of wildlife habitat, the physical properties on which effects to wildlife would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.	Changes in the sediment regime can influence the quality of fish habitat through covering suitable spawning gravel and increasing turbidity. Sediment due to management appears to be limited within the watershed. Since most of the watershed is undisturbed, it is rated functioning adequately relative to sediment (USDA 1998b).
Site Scale		
Analysis area: 450 acres		
The Action Alternatives would reduce the sediment filtering function of vegetation through clearing and grading in Riparian Reserves. Vegetation removal in Riparian Reserves ranges from approximately 0.0 acres in Alternative 2 to 20.3 acres in Alternative 9 (refer to Table 3.3-15). • Within Riparian Influence Areas, understory vegetation would be maintained at a minimum height of 3 feet to maintain sediment filtering and minimize sediment yield in areas that include clearing prescriptions with no grading (refer to Table 2.4-1).	While changes in sediment regimes can influence the quality of wildlife habitat at the site scale, the physical properties on which effects to wildlife would be measured are primarily described under Geology and Soils, Watershed Resources, and Vegetation.	As described in Geology and Soils and Watershed Resources, changes to the sediment regime are not expected to be measurable at the site scale. Therefore, no measurable effects to the quality of fish habitat are expected at the site scale.
Finding: Meets ACSO 5	**Finding: Does Not Prevent Attainment of ACSO 5**	**Finding: Does Not Prevent Attainment of ACSO 5**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 5	***Maintain and restore the sediment regime in which the aquatic system evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.***	
Geology and Soils		**Watershed Resources**
5th Field Scale		
Analysis area: Upper Tieton River Watershed (118,204 acres)		
The effects of the Action Alternatives, coupled with the cumulative actions would not result in a measurable increase in sediment detachment at the fifth field scale. These actions occur within small, localized areas that are scattered throughout the entire watershed. Furthermore, a majority of the actions occur outside of Riparian Reserves and therefore are less likely to result in sediment yield to streams within the fifth field scale. Therefore no effects to geology and soils at the fifth field are expected to measurably impact sediment regime.		The Riparian Reserve effects of the Action Alternatives, coupled with the cumulative actions, would range from approximately 322.01 acres (Alternative 2) to 342.31 acres (Alternative 9), which equates to approximately 1.80 percent to 1.92 percent of the 5th field Riparian Reserves, respectively (refer to Section 3.3.4). Projects occurring within Riparian Reserves would not result in any measurable changes to sediment regime at the 5th field scale. As described in Section 3.3 – Watershed Resources, these actions are localized to small areas scattered throughout the entire 5th field. Sediment detachment impacts would be as described under Geology and Soils. Therefore, no effects to watershed resources are expected to measurably impact sediment regime at the fifth field scale.
Finding: Meets ACSO 5		**Finding: Meets ACSO 5**
Degree of impacts by alternative: 9>4>6>2=1		**Degree of impacts by alternative: 9>4>6>2=1**
ACSO 6	***Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected***	
Existing Conditions		
Decreased soil permeability and increases in impervious areas (e.g., facilities, parking lots, road network, timber harvest) have contributed to increased runoff within the watershed.		• Increased runoff has the potential to change the timing, magnitude and duration of peak, high and low flows. • Less than 15 percent Equivalent Clearcut Area has been disturbed in the watershed, and unstable riparian areas are intact, so the watershed is rated to be functioning adequately (USDA 1998b). • Due to the relatively low levels of harvest and roading, hydrologic patterns at the watershed level have not been changed significantly as a result of forest management activities (USDA 1998b). • Pavement and developed facilities result in increased surface flow (Wright et al., 1990).

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 5	***Maintain and restore the sediment regime in which the aquatic system evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.***		
Vegetation		**Wildlife**	**Fisheries**
5th Field Scale			
Analysis area: Upper Tieton River Watershed (118,204 acres)			
The effects to vegetation from the Action Alternatives and cumulative actions ranges from 0.33 percent of the CEAA in Alternatives 2 and 6 to 0.35 percent of the CEAA in Modified Alternative 4 (refer to Section 3.5.4). A majority of these effects occur outside of Riparian Reserves, and would therefore have less of an effect on the sediment regime as they do not occur within a close proximity to waterbodies. Cumulative actions occurring within Riparian Reserves are localized to small areas that are scattered throughout the 5th field. Therefore, no impacts to vegetation are expected to measurably affect sediment regime at the 5th field scale.		While changes in sediment regimes can influence the quality of wildlife habitat at the 5th field scale, the physical properties on which effects to wildlife would be measured are primarily Geology and Soils, Watershed Resources, and Vegetation.	As described in Geology and Soils and Watershed Resources, changes to the sediment regime are not expected to be measurable at the 5th field scale. Therefore, no measurable effects to the quality of fish habitat are expected at the 5th field scale.
Finding: Meets ACSO 5		**Finding: Meets ACSO 5**	**Finding: Meets ACSO 5**
Degree of impacts by alternative: 9>4>6>2=1		**Degree of impacts by alternative: 9>4>6>2=1**	**Degree of impacts by alternative: 9>4>6>2=1**
ACSO 6	***Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected***		
Existing Conditions			
A minor amount of past canopy alteration has occurred at the site scale, but not at a level which could measurably affect streamflows (USDA 1998b).		While changes in instream flows can influence the quality of wildlife habitat, the physical properties on which effects to wildlife would be measured are primarily described under Watershed Resources.	While changes in instream flows can influence the quality of fish habitat, the physical properties on which effects to fish would be measured are primarily described under Watershed Resources.

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 6	***Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected***

Geology and Soils	**Watershed Resources**
Site Scale	
Analysis area: 450 acres	
Under the Action Alternatives, additional impervious surfaces and developed areas would increase runoff within the site scale. The effects would be as described for Watershed Resources. The proposed parking lot under Alternatives 6, 9 and Modified Alternative 4 would include stormwater management to offset increased runoff volume, and to capture sediment, oil and grease associated with the surface runoff. The effect of increased runoff on in-stream flows would be as described under Watershed Resources.	Under the Action Alternatives, in-stream flows would be affected at the site scale through the removal of vegetation (which may further reduce hydrologic maturity) and increases in impervious surfaces. As described in Section 3.3 – Watershed Resources, the increase in two-year peak flow ranges from 0.0 percent under Alternative 2 to 1.1 percent under Alternative 9. Similarly, the increase in seven-day low flow ranges from 0.0 percent under Alternative 2 to 4.6 percent under Alternative 9. • The changes in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows due to implementation of the Action Alternatives would not be measurable at the mouth of the Flow Model Analysis Area analyzed for this EIS (refer to Section 3.3.3.5 – Flow Regime). • Implementation of the Action Alternatives would not alter stream functionality or the hydrologic regime within the site scale (refer to Section 3.3 – Watershed Resources). • Through the implementation of Lift and Trail Construction Techniques listed in Table 2.4-1 and the use of BMPs, there would be a small reduction of the changes in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows due to the minimization of clearing trees and vegetation at the site scale. Alternative 9 includes the highest impact to forest conditions with the removal of trees within mature forest (refer to Section 3.3 – Watershed Resources and Section 3.5 – Vegetation)
Finding: Does Not Prevent Attainment of ACSO 6	**Finding: Does Not Prevent Attainment of ACSO 6**
5th Field Scale	
Analysis area: Upper Tieton River Watershed (118,204 acres)	
The geology and soils effects of the Action Alternatives, coupled with the cumulative actions would not result in a measurable increase in runoff at the fifth field scale. The effects of the Action Alternatives coupled with the cumulative actions range	As described in Geology and Soils, the effects of the Action Alternatives, coupled with the cumulative actions, range from approximately 332.57 acres (Alternative 2) to 361.4 acres (Alternative 9), which equates to approximately 0.28 percent to 0.31 percent

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 6	***Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected***		
Vegetation		**Wildlife**	**Fisheries**
Site Scale			
Analysis area: 450 acres			
Effects of the Action Alternatives on vegetation at the site scale would be as described for Watershed Resources.		Effects of the Action Alternatives on wildlife at the site scale would be as described for Watershed Resources.	Effects of the Action Alternatives on fish at the site scale would be as described for Watershed Resources.
Finding: Does Not Prevent Attainment of ACSO 6		**Finding: Does Not Prevent Attainment of ACSO 6**	**Finding: Does Not Prevent Attainment of ACSO 6**
5th Field Scale			
Analysis area: Upper Tieton River Watershed (118,204 acres)			
Effects of the Action Alternatives on vegetation at the 5th field scale would be as described for Watershed Resources.		Effects of the Action Alternatives on wildlife at the 5th field scale would be as described for Watershed Resources.	Effects of the Action Alternatives on fish at the 5th field scale would be as described for Geology and Soils and Watershed Resources.

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 6	***Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected***
Geology and Soils	**Watershed Resources**
from approximately 332.57 acres (Alternative 2) to 361.4 acres (Alternative 9), which equates to approximately 0.28 percent to 0.31 percent of the 5th field scale, respectively (refer to Section 3.2.4). These actions occur within small, localized areas that are scattered throughout the entire watershed. Therefore no impacts to geology and soils would result in measurable effects to in-stream flows at the 5th field scale.	of the 5th field, respectively (refer to Section 3.2.4). The removal of vegetation and increased impervious surfaces associated with these actions would not result in any measurable changes to runoff at the 5th field scale. As described in Section 3.2 – Geology and Soils, these actions are localized to small areas scattered throughout the entire 5th field. Impacts to watershed resources would not result in measurable affects to in-stream flows at the 5th field scale.
Finding: Meets ACSO 6	**Finding: Meets ACSO 6**
Degree of impacts by alternative: 9>4>6>2=1	**Degree of impacts by alternative: 9>4>6>2=1**
ACSO 7	***Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands***
Existing Conditions	
Decreased soil permeability and increases in impervious areas (e.g., facilities, parking lots, road network, timber harvest) have contributed to increased runoff, potentially resulting in changes to water levels and floodplain inundation within the watershed.	• It is estimated that less than 15 percent Equivalent Clearcut Area has been disturbed in the watershed, and unstable riparian areas are intact, so the watershed is rated to be functioning adequately (USDA 1998b). • Due to the relatively low levels of harvest and roading, hydrologic patterns at the watershed level have not been changed significantly as a result of forest management activities (USDA 1998b). • The majority of the watershed is rated as functioning adequately in regard to floodplain connectivity (USDA 1998b).
Site Scale	
Analysis area: 450 acres	
Under the Action Alternatives, additional impervious surfaces and developed areas would increase runoff, but are not expected to result in measurable changes to water levels or floodplain inundation at the site scale. The effects would be as described for Watershed Resources.	Under the Action Alternatives, water levels in streams, wetlands, and floodplains would be affected at the site scale through the removal of vegetation (which may further reduce hydrologic maturity) and increases in impervious surfaces. • At the site scale, water levels of streams and wetlands are strongly influenced by groundwater sources (refer to Section 3.3 – Watershed Resources). The groundwater influence acts to moderate water levels. As described in Section 3.3 – Watershed Resources, streams within the site

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 6	***Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected***	
Vegetation	**Wildlife**	**Fisheries**
Finding: Meets ACSO 6	**Finding: Meets ACSO 6**	**Finding: Meets ACSO 6**
Degree of impacts by alternative: 9>4>6>2=1	**Degree of impacts by alternative: 9>4>6>2=1**	**Degree of impacts by alternative: 9>4>6>2=1**
ACSO 7	***Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands***	
Existing Conditions		
A minor amount of canopy alteration has occurred at the site scale, but not at a level which could measurably affect floodplain inundation (USDA 1998b).	While changes in water levels and floodplain inundation can influence the quality of wildlife habitat, the physical properties on which effects to wildlife would be measured are primarily described under Watershed Resources.	While changes in water levels and floodplain inundation can influence the quality of fish habitat, the physical properties on which effects to fish would be measured are primarily described under Watershed Resources.
Site Scale		
Analysis area: 450 acres		
Effects of the Action Alternatives on vegetation at the site scale would be as described for Watershed Resources.	Effects of the Action Alternatives on wildlife at the site scale would be as described for Watershed Resources.	Effects of the Action Alternatives on fish at the site scale would be as described for Watershed Resources.

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 7	***Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands***
Geology and Soils	**Watershed Resources**
	scale are narrow, deeply incised channels and therefore have very limited floodplain development. • The changes in water levels due to flow regime alterations from the implementation of the Action Alternatives would not be measurable at the site scale (refer to Section 3.3.3.5 – Flow Regime). • Implementation of the Action Alternatives would not alter floodplain inundation at the site scale (refer to Section 3.3 – Watershed Resources). • Alternative 9 includes the highest impact to forest conditions at the site scale. Through the implementation of Lift and Trail Construction Techniques listed in Table 2.4-1 and the use of BMPs, there would be a reduction of the changes to floodplain inundation due to the minimization of clearing trees and vegetation at the site scale (refer to Section 3.3 – Watershed and 3.5 – Vegetation).
Finding: Meets ACSO 7	**Finding: Meets ACSO 7**
5th Field Scale	
Analysis area: Upper Tieton River Watershed (118,204 acres)	
The geology and soils effects of the Action Alternatives, coupled with the cumulative actions, would not result in measurable changes to water levels or floodplain inundation at the fifth field scale. The geology and soils effects of the Action Alternatives coupled with the cumulative actions range from approximately 332.57 acres (Alternative 2) to 361.4 acres (Alternative 9), which equates to approximately 0.28 percent to 0.31 percent of the 5th field scale, respectively (refer to Section 3.2.4). These actions occur within small, localized areas that are scattered throughout the entire watershed. Therefore no effects to geology and soils are expected to result in measurable effects to water levels or floodplains at the 5th field scale.	As described in Geology and Soils, the effects of the Action Alternatives, coupled with the cumulative actions, range from approximately 332.57 acres (Alternative 2) to 361.4 acres (Alternative 9), which equates to approximately 0.28 percent to 0.31 percent of the 5th field, respectively (refer to Section 3.2.4). The removal of vegetation and increased impervious surfaces associated with these actions would not result in any measurable changes to water levels or floodplain inundation at the 5th field scale. As described in Section 3.2 – Geology and Soils, these actions are localized to small areas scattered throughout the entire 5th field.
Finding: Meets ACSO 7	**Finding: Meets ACSO 7**
Degree of impacts by alternative: 9>4>6>2=1	**Degree of impacts by alternative: 9>4>6>2=1**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 7	***Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands***

Vegetation	**Wildlife**	**Fisheries**
Finding: Meets ACSO 7	**Finding: Meets ACSO 7**	**Finding: Meets ACSO 7**
5th Field Scale		
Analysis area: Upper Tieton River Watershed (118,204 acres)		
Effects of the Action Alternatives on vegetation at the 5th field scale would be as described for Watershed Resources.	Effects of the Action Alternatives on wildlife at the 5th field scale would be as described for Watershed Resources.	Effects of the Action Alternatives on fish at the 5th field scale would be as described for Geology and Soils and Watershed Resources.
Finding: Meets ACSO 7	**Finding: Meet s ACSO 7**	**Finding: Meets ACSO 7**
Degree of impacts by alternative: 9>4>6>2=1	**Degree of impacts by alternative: 9>4>6>2=1**	**Degree of impacts by alternative: 9>4>6>2=1**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 8	***Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of large wood sufficient to sustain physical complexity and stability.***

Geology and Soils	**Watershed Resources**
Existing Conditions	
Existing geology and soils conditions are as described under Vegetation.	• The Riparian Reserves in the majority of the watershed are properly functioning because very little management activity has occurred in the riparian areas (USDA 1998b). • Due to the relatively low levels of harvest and roading, plant community composition at the watershed scale has not been changed significantly as a result of forest management activities (USDA 1998b). • Risks to plant community composition, structure and function include timber harvest, the construction of new roads, dispersed/developed recreation, and catastrophic fire (USDA 1998b). • The North Fork Tieton River has had little riparian timber harvest or other management and is rated functioning adequately relative to LWD (USDA 1998b).
Site Scale	
Analysis area: 450 acres	
Effects on geology and soils are as described under Vegetation.	Clearing in Riparian Reserves associated with the Action Alternatives would affect plant community composition, structure and function. • The clearing and grading in Riparian Reserves range from approximately 0.0 acres in Alternative 2 to 20.3 acres in Alternative 9 (refer to Table 3.3-15). These impacts would affect riparian community composition, structure and function. • Reduction in canopy cover within Riparian Reserves under the Action Alternatives ranges from 0.0 percent under Alternative 2 to 8.6 percent under Alternative 9, with canopy cover remaining at approximately 49.5 to 40.9 percent, respectively (refer to Table 3.3-15).

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 8	***Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of large wood sufficient to sustain physical complexity and stability.***

Vegetation	**Wildlife**	**Fisheries**
Existing Conditions		
• Development within the watershed has not significantly changed plant community composition, structure or function. • The Riparian Reserves in the majority of the watershed are properly functioning because very little management activity has occurred in the riparian areas (USDA 1998b). • Due to the relatively low levels of harvest and roading, spatial connectivity at the watershed scale have not been changed significantly as a result of forest management activities (USDA 1998b). • The North Fork Tieton River has had little riparian timber harvest or other management and is rated functioning adequately relative to LWD (USDA 1998b).	Existing wildlife conditions are as described under Vegetation.	Existing fisheries and aquatic habitat conditions are as described under Watershed Resources.
Site Scale		
Analysis area: 450 acres		
Under the Action Alternatives, vegetation removed for the development of additional ski area facilities would affect plant community structure and function in Riparian Reserves at the site scale. • Removal of vegetation associated with construction activities would increase the amount of non-forested conditions within Riparian Reserves. Vegetation removal in Riparian Reserves ranges from approximately 0 acres in	The effects to the composition, structure and function of plant communities utilized by riparian-dependent species are as described under Vegetation.	As described in Watershed Resources, riparian community composition, structure and function would be impacted by clearing and grading associated with the Action Alternatives. Construction of the four bridges over perennial streams in Alternative 9 would result in impacts to streambank function. BMPs and Mitigation Measures listed in Tables 2.4-2 through 2.4-4 would minimize the impacts to streambank function and riparian communities as described under Watershed Resources.

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 8	***Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of large wood sufficient to sustain physical complexity and stability.***

Geology and Soils	**Watershed Resources**
	• All Action Alternatives minimize clearing and grading in Riparian Reserves by locating the proposed design outside Riparian Reserves to the extent possible. Ski trail design is intended to parallel Riparian Reserves while minimizing disturbance in riparian areas. • The Action Alternatives would cause a slight reduction in the amount of LWD within Riparian Reserves due to the removal of trees for ski facility construction. Alternatives 6 and 9 would include development of a 2.5-acre parking lot in the Upper Tieton River watershed, which would eliminate riparian function in approximately 1.9 acres of Riparian Reserves (refer to Section 3.3.3.3). Under Modified Alternative 4, the 7-acre parking lot would eliminate riparian function from approximately 2.1 acres of Riparian Reserves (refer to Section 3.3.3.3). • Construction prescriptions and Mitigation Measures in Table 2.4-2 include lop and scatter requirements, with no removal of woody material from cleared areas. Wood would also be placed in stream channels to enhance channel complexity and reduce channel erosion. • The potential direct impacts to wetlands would range from approximately 0.0 acres in Alternative 2, Modified Alternative 4, and Alternative 6, and 0.03 acre in Alternative 9 (refer to Table 3.3-13). These impacts would be avoided through implementation of Mitigation Measures in Table 2.4-2 and the use of BMPs as well as field fitting the individual construction projects. • The hydrologic maturity within the White Pass Study Area may be reduced by removal of vegetation under the Action Alternatives. However, the majority of canopy removal would take place outside of Riparian Reserves. The hydrologic maturity of the watershed would not be measurably affected at the 5th field scale.
Finding: Does Not Prevent Attainment of ACSO 8	**Finding: Does Not Prevent Attainment of ACSO 8**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 8	***Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of large wood sufficient to sustain physical complexity and stability.***

Vegetation	Wildlife	Fisheries
Alternative 2 to 20.3 acres in Alternative 9 (refer to Table 3.3-15). • Alternative 9 would result in the greatest amount of fragmentation of dense forests of all Action Alternatives. • Reduction in canopy cover within Riparian Reserves under the Action Alternatives ranges from 0.0 percent under Alternative 2 to 8.6 percent under Alternative 9, with canopy cover remaining at approximately 49.5 to 40.9 percent, respectively (refer to Table 3.3-15). • The Action Alternatives would cause a slight reduction in the amount of LWD within Riparian Reserves due to the removal of trees for ski facility construction. Alternatives 6 and 9 would include development of a 2.5-acre parking lot, which would eliminate riparian function in approximately 1.9 acres of Riparian Reserves (refer to Table 3.3-15). Under Modified Alternative 4, the 7-acre parking lot would eliminate riparian function from approximately 2.1 acres of Riparian Reserves (refer to Table 3.3-15). • Vegetation would be maintained at a minimum height of 3 feet above ground to prevent ground disturbance, minimize sediment delivery, and to maintain shading and wildlife habitat.		
Finding: Does Not Prevent Attainment of ACSO 8	**Finding: Does Not Prevent Attainment of ACSO 8**	**Finding: Does Not Prevent Attainment of ACSO 8**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 8	***Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of large wood sufficient to sustain physical complexity and stability.***	
Geology and Soils		**Watershed Resources**
5th Field Scale		
Analysis area: Upper Tieton River Watershed (118,204 acres)		
Geology and soils impacts at the 5th field are as described under Vegetation.		The effects of the Action Alternatives, coupled with the cumulative actions, on Riparian Reserves range from approximately 322.01 acres (Alternative 2) to 342.31 acres (Alternative 9), which equates to approximately 1.80 percent to 1.92 percent of the 5th field Riparian Reserves, respectively (refer to Section 3.3.4). As described in Section 3.3 – Watershed Resources, these actions are localized to small areas scattered throughout the entire 5th field. Effects to watershed resources would not result in any measurable changes to the composition, structure and function of riparian plant communities at the 5th field scale.
Finding: Meets ACSO 8		**Finding: Meets ACSO 8**
Degree of impacts by alternative: 9>4>6>2=1		**Degree of impacts by alternative: 9>4>6>2=1**
ACSO 9	***Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.***	
Existing Conditions		
• Previous developments (timber harvest, ski area) have altered habitat characteristics through road construction and tree removal. • Risks to Riparian Reserves include timber harvest, the construction of new roads, dispersed/developed recreation, low LWD recruitment potential, potential mass wasting, windthrow, and catastrophic fire (USDA 1998b).		• The disturbance regime in this watershed is functioning adequately because much of the watershed is within Wilderness. Timber harvest has been minimal so it has not altered the disturbance regime (USDA 1998b). • Due to the relatively low levels of harvest and roading, hydrologic patterns at the watershed level have not been changed significantly as a result of forest management activities (USDA 1998b). • It is estimated that less than 15 percent Equivalent Clearcut Area has been disturbed in the watershed, and unstable riparian areas are intact, so the watershed is rated to be functioning adequately (USDA 1998b).

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 8	***Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of large wood sufficient to sustain physical complexity and stability.***		
Vegetation		**Wildlife**	**Fisheries**
5th Field Scale			
Analysis area: Upper Tieton River Watershed (118,204 acres)			
The vegetation effects of the Action Alternatives and cumulative actions ranges from 0.33 percent of the CEAA in Alternatives 2 and 6 to 0.35 percent of the CEAA in Modified Alternative 4 (refer to Section 3.5.4). A majority of these effects occur outside of Riparian Reserves, and would therefore have no effect on riparian plant communities. Cumulative actions occurring within Riparian Reserves are localized to small areas that are scattered throughout the 5th field. Therefore, no impacts to vegetation would result in measurable impacts to the composition, structure and function of riparian plant communities at the 5th field scale.		The wildlife effects to the composition, structure and function of plant communities utilized by riparian-dependent species are as described under Vegetation.	As described in Watershed Resources, no measurable impacts to the composition, structure and function of riparian plant communities at the 5th field scale are expected.
Finding: Meets ACSO 8		**Finding: Meets ACSO 8**	**Finding: Meets ACSO 8**
Degree of impacts by alternative: 9>4>6>2=1		**Degree of impacts by alternative: 9>4>6>2=1**	**Degree of impacts by alternative: 9>4>6>2=1**
ACSO 9	***Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.***		
Existing Conditions			
• Land use activities within the Upper Tieton Watershed have contributed to the existing land cover, as represented by the mosaic of vegetation communities and developed areas that comprise the existing vegetation conditions. • It is estimated that less than 15 percent Equivalent Clearcut Area has been disturbed in the watershed, and unstable riparian areas are intact, so the		• The physical properties on which impacts influencing the distribution of invertebrate and vertebrate riparian dependent species would be measured are primarily watershed resources and vegetation. Refer to Watershed Resources and Vegetation.	• Previous developments (timber harvest, ski area) have altered habitat characteristics through road construction and tree removal. • The physical properties on which impacts influencing fish habitat would be measured are primarily watershed resources. Refer to Watershed Resources.

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 9	***Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.***
Geology and Soils	**Watershed Resources**
	• Risks to Riparian Reserves include timber harvest, the construction of new roads, dispersed/developed recreation, low LWD recruitment potential, potential mass wasting, windthrow, and catastrophic fire (USDA 1998b). • Most streams are considered to be functioning adequately for the channel type with deep pools within geomorphic constraints (USDA 1998b). • The streambank conditions of the North Fork Tieton River is rated functioning adequately (USDA 1998b). • Only 2 of the 37 sub-drainages analyzed have a road density greater than 3.0 miles/mile^2 (USDA 1998b).
Site Scale	
Analysis area: 450 acres	
Implementation of the Action Alternatives would increase the loss of soil productivity within the site scale. The geology and soils impacts would not result in measurable changes to riparian habitat at the site scale. • Under all Action Alternatives, the total acreage of detrimental soil conditions would not exceed 20 percent within the site scale (refer to Table 3.2-3). • Total soil impacts as a result of clearing and grading at the site scale ranges from approximately 18.40 acres under Alternative 2 to 47.23 acres in Alternative 9 (refer to Table 3.2-8). • Under all Action Alternatives, there would be no new roads proposed in the watershed at the site scale, so there would be no change to the road density (refer to Table 3.3-11).	Clearing and grading in Riparian Reserves, road density and stream crossings associated with the Action Alternatives would affect the site scale. Impacts to watershed resources are not expected to have a measurable impact on riparian habitat at the site scale. • The clearing and grading in Riparian Reserves range from approximately 0 acres in Alternative 2 to 20.3 acres in Alternative 9 (refer to Table 3.3-15). • Under all Action Alternatives, there would be no new roads proposed in the watershed at the site scale, so there would be no change to the road density (refer to Table 3.3-11). • Under Alternative 9, impacts to aquatic habitat would result from four new permanent bridge crossings on perennial streams within the Upper Tieton watershed as a result of ski trail construction (refer to Table 2.3.1-2, Table 3.3-11 and Figure 3-17). • Under all Action Alternatives, there would be no direct impacts to stream channels or aquatic habitat. For all Action Alternatives there could be a slight change to the timing, duration, or magnitude of low flow and peak flow conditions due to land cover alterations from implementation of the Action Alternatives.

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 9	***Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.***	
Vegetation	**Wildlife**	**Fisheries**
watershed is rated to be functioning adequately (USDA 1998b).		
Site Scale		
Analysis area: 450 acres		
• The removal of vegetation communities associated with the Action Alternatives would not be measurable at the site scale (refer to Section 3.5). The reduction in canopy cover within Riparian Reserves associated with the Action Alternatives would not measurably impact the aquatic habitat at the site scale. The following details these effects at the site scale: • The removal of vegetation communities at the site scale would occur predominately in a mixed conifer community with Medium tree – Multi-story – Closed Canopy forest structure. Removal of mixed conifer communities with old growth characteristics range from 0 acres under Alternative 2 to 24.2 acres under Alternative 9 (refer to Appendix G). Under Alternative 9, removal of the mixed conifer community with Medium tree – Multi-story – Closed Canopy forest structure equates to approximately 5.4%	Wildlife impacts at the site scale would be related to the effects described in Watershed Resources and Vegetation. Populations of riparian dependent wildlife would be temporarily displaced during construction activities (refer to Section 3.6 – Wildlife).	Fisheries impacts would be related to the effects described in Geology and Soils, Vegetation and Watershed Resources. • Construction of a parking lot in Alternatives 6, 9, and Modified Alternative 4 would impact Riparian Reserves, potentially increasing flow to riparian habitat due to decreased soil permeability. • Construction of four bridge crossings on perennial streams in Alternative 9 would impact aquatic habitat. • Under all Action Alternatives, there would be no direct impacts to stream channels or riparian habitat. For all Action Alternatives there could be a slight change to the timing, duration, or magnitude of low flow and peak flow conditions due to land cover alterations from implementation of the Action Alternatives. • BMPs and Mitigation Measures listed in Tables 2.4-2 through 2.4-4 would minimize the impacts to riparian habitat.

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 9	***Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.***
Geology and Soils	**Watershed Resources**
Finding: Does not prevent attainment of ACSO 9	**Finding: Does not prevent attainment of ACSO 9**
5th Field Scale	
Analysis area: Upper Tieton River Watershed (118,204 acres)	
The effects of the Action Alternatives, coupled with the cumulative actions, range from approximately 332.57 acres under Alternative 2 to 361.4 acres under Alternative 9, which equates to approximately 0.28 percent to 0.31 percent of the 5th field scale, respectively (refer to Section 3.2.4). Section 3.2 describes that the effects to Geology and Soils would not measurably affect riparian habitat at the 5th Field scale.	The effects of the Action Alternatives, coupled with the cumulative actions, range from approximately 322.01 acres under Alternative 2 to 342.31 acres under Alternative 9, which equates to approximately 1.80 percent to 1.92 percent of the 5th field scale, respectively (refer to Section 3.3.4). Cumulative actions would not result in any measurable changes in the timing, duration, or magnitude of low flow and peak flow events at the fifth field scale for the Upper Tieton River watershed (refer to Section 3.3.3.5 – Flow Regime). Therefore, no measurable effects to riparian habitat are expected (refer to Section 3.3 – Watershed Resources).
Finding: Meets ACSO 9	**Finding: Meets ACSO 9**
Degree of impacts by alternative: 9>4>6>2=1	**Degree of impacts by alternative: 9>4>6>2=1**

Table 3.7 FEIS2:
Compatibility Analysis of the Aquatic Conservation Strategy Objectives (ACSOs) at Two Scales within the Upper Tieton River Watershed

ACSO 9	***Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.***	
Vegetation	**Wildlife**	**Fisheries**
of the White Pass Study Area within the Upper Tieton River Watershed, the most of any alternative (refer to Appendix G). However, plant communities would not be eliminated at the site scale. • Reduction in canopy cover within Riparian Reserves under the Action Alternatives ranges from 0.0 percent under Alternative 2 to 8.6 percent under Alternative 9, with canopy cover remaining at approximately 49.5 to 40.9 percent, respectively (refer to Table 3.3-15).		
Finding: Does not prevent attainment of ACSO 9	**Finding: Does not prevent attainment of ACSO 9**	**Finding: Does not prevent attainment of ACSO 9**
5th Field Scale		
Analysis area: Upper Tieton River Watershed (118,204 acres)		
The mixed conifer vegetation communities with Medium tree – Multi-story – Closed Canopy forest structure removed under Alternative 9 equates to approximately 0.02% of the entire Upper Tieton River Watershed, the most of any alternative (refer to Appendix G). As discussed in Section 3.3 and 3.5, the vegetation impacts would not measurably affect riparian habitat at the 5th field scale.	Wildlife impacts at the 5th field scale would be related to the effects described in Vegetation. As described in Section 3.6, impacts to riparian-dependent species would occur from short-term noise disruptions, increased human activity, and the loss of habitat resulting from the effects of the Action Alternatives and cumulative actions. These effects are localized to small areas scattered throughout the entire 5th field. Therefore, wildlife impacts would not result in any measurable effects to riparian-dependent species at the 5th field.	The effects of the Action Alternatives, coupled with the cumulative actions, range from approximately 322.01 acres under Alternative 2 to 342.31 acres under Alternative 9, which equates to approximately 1.80 percent to 1.92 percent of the 5th field scale, respectively (refer to Section 3.4.4). Cumulative actions would not result in any measurable changes in the timing, duration, or magnitude of low flow and peak flow events at the fifth field scale for the Upper Tieton River watershed (refer to Section 3.3.3.5 – Flow Regime). Therefore, fisheries impacts are not expected to measurably effect riparian habitat at the 5th field scale (refer to Section 3.3 – Watershed Resources).
Finding: Meets ACSO 9	**Finding: Meets ACSO 9**	**Finding: Meets ACSO 9**
Degree of impacts by alternative: 9>4>6>2=1	**Degree of impacts by alternative: 9>4>6>2=1**	**Degree of impacts by alternative: 9>4>6>2=1**

Table 3.7-1:
Evaluation of Watershed Condition and Project Effects – Upper Clear Fork Cowlitz Watershed

Existing Condition	Effect of Proposed Action	Design and Assessment Considerations
Watershed Issues:		
Clearing and Grading in Riparian Reserves/ Riparian Reserve Functionality • Current risks to Riparian Reserves include some timber harvest, the construction of any new roads, dispersed/developed recreation, potential mass wasting, windthrow, and catastrophic fire (USDA 1998a). • The Riparian Reserves in the majority of the watershed are functioning properly because very little management activity has occurred in the riparian areas (USDA 1998a). • Salvage logging activities have been reported to reduce the number of standing large trees and number of in-stream logs, thereby reducing the LWD recruitment potential (USDA 1998a). • LWD is very abundant within the Lower Clear Fork Cowlitz subwatershed, which has more than 80 pieces per mile (USDA 1998a).	• There are approximately 395.3 acres of Riparian Reserves in the Upper Clear Fork Cowlitz watershed portion of the White Pass Study Area (refer to Table 3.3-5). The clearing and grading in Riparian Reserves range from approximately 4.1 acres in Alternative 9 to approximately 22.2 acres in Modified Alternative 4 (refer to Table 3.3-15). • The Action Alternatives would result in approximately 1.0 to 5.6 percent reduction in canopy cover within Riparian Reserves, with canopy cover remaining approximately 40.9 to 45.5 percent (refer to Table 3.3-15). • Populations of riparian dependent wildlife would be temporarily displaced during construction (refer to Section 3.6 – Wildlife). • The Action Alternatives would cause a slight reduction in the amount of LWD within Riparian Reserves due to the removal of trees for ski facility construction. Alternatives 2, 6 and Modified Alternative 4 would include development of lifts and trails in Hogback and/or Pigtail Basins, which are dominated by subalpine parkland vegetation. This vegetation type is comprised of comparatively smaller size classes than other plant communities in the White Pass Study Area, and is therefore less capable of providing LWD. Alternative 9 would remove approximately 4 acres of forest capable of providing LWD (refer to Table 3.3-15).	• All Action Alternatives minimize clearing and grading in Riparian Reserves by locating the proposed design outside Riparian Reserves to the extent possible. Ski trail design is intended to parallel Riparian Reserves while minimizing disturbance in riparian areas. • Construction prescriptions and Mitigation Measures in Table 2.4-2 include lop and scatter, with no removal of woody material from cleared areas. Wood would also be placed in stream channels to enhance channel complexity and reduce channel erosion. • No access corridors, staging areas, spoils piles, or other construction related materials would be placed in Riparian Reserves. Whenever feasible, potential impacts to Riparian Reserves would be minimized by bringing construction equipment and materials to the project site over snow (refer to Table 2.4-2).

Table 3.7-1:
Evaluation of Watershed Condition and Project Effects – Upper Clear Fork Cowlitz Watershed

Existing Condition	Effect of Proposed Action	Design and Assessment Considerations
Impacts to Riparian Habitat of Streams and Wetlands • The Lower Clear Fork Cowlitz subwatershed has 63.2 miles of streams (USDA 1998a). • The Lower Clear Fork Cowlitz subwatershed displays evidence of historic channel widening that is attributed to past timber management and road construction projects (USDA 1998a). • Millridge Creek is a sensitive stream to additional disturbances as a result of several slides originating from US 12 that have delivered large quantities of sediment. Additional sediment inputs will likely further affect Millridge Creek. Fifty-five percent of Millridge Creek has a Pfankuch stability rating of Fair and 45 percent has a rating of Poor (USDA 1998a). • Stream channels within the subwatershed are expected to become more stable as upslope vegetative recovery proceeds. Such changes will be associated with riparian stand structure improvements and reduction of sediment routing to stream channels (USDA 1998a).	• The potential direct impacts to wetlands would range from approximately 0.04 acre in Alternative 9, 0.09 acre in Alternative 2, 0.11 acre in Alternative 6, and approximately 0.12 acre in Modified Alternative 4 (refer to Table 3.3-13). These impacts would be avoided through implementation of Mitigation Measures in Table 2.4-2 and the use of BMPs. • Streams may directly be impacted through the construction of culverts and bridges. However, these stream crossings would be located primarily on first order, ephemeral and intermittent streams within the Upper Clear Fork Cowlitz watershed portion of the White Pass Study Area. • Implementation of the Action Alternatives would not alter stream functionality within the White Pass Study Area (refer to Section 3.3 – Watershed Resources). • There would be no change to the floodplain connectivity within the watershed as a result of the Action Alternatives (refer to Section 3.3 – Watershed Resources). • Millridge Creek is a perennial stream, the WEPP analysis (refer to Section 3.3 – Watershed Resources and Appendix L) details approximate soil detachment as a result of each Action Alternative within the Upper Clear Fork Cowlitz Watershed. As described, short-term (year of construction) sediment detachment generated within the White Pass Study Area for project activities would increase within a range from approximately 9 percent under Alternative 6 to 68 percent under Modified Alternative 4 for the Upper Clear Fork Cowlitz Watershed. Within the	• All Action Alternatives would avoid direct impacts to streams and wetlands where possible through the implementation of the Mitigation Measures and Management Requirements listed in Tables 2.4-2 and 2.4-3, the use of BMPs, and field fitting individual construction projects. • Utilities would cross streams by using aerial crossings (at ground elevation, refer to Chapter 2), and wetland impacts from utility trenching would be avoided altogether. • Vegetation would be maintained at a height of 3 feet above ground to prevent ground disturbance and to maintain shading and wildlife habitat. • Wetland impacts would be avoided by maintaining the existing contours and drainage patterns in wetlands that intersect proposed ski trails. • Vegetation removal in wetlands would be conducted by hand/chainsaw. No heavy equipment would operate in wetlands. • The tree removal prescription for each chairlift and its corresponding ski trails is outlined in Table 2.4-1. All construction techniques involve design components that are intended to avoid/minimize ground disturbance. These include over-the-snow access and construction and the use of helicopters. • Sediment impacts to streams and wetlands would be minimized through the implementation of the Mitigation Measures in Table 2.4-2 and the use of BMPs during construction activities.

Table 3.7-1:
Evaluation of Watershed Condition and Project Effects – Upper Clear Fork Cowlitz Watershed

Existing Condition	Effect of Proposed Action	Design and Assessment Considerations
	Upper Clear Fork Cowlitz Watershed, long-term (two to five years following construction), sediment detachment is expected to increase from approximately 3 percent under Alternative 9 to 10 percent under Modified Alternative 4 (Additional information on the results of the WEPP model can be found in Appendix L – WEPP Technical Report).	
Water Quality and Sediment Transport • Within the 5th field watershed, there are approximately 39.8 miles of road inside the existing riparian corridors (USDA 1998a). • The road density of the Lower Clear Fork Cowlitz subwatershed that White Pass lies within is approximately 1.7 miles/mile^2 and the road density in Riparian Reserves is 1.5 miles/mile^2 (USDA 1998a). • The Lower Clear Fork Cowlitz subwatershed has 79 road crossings and 1.25 road crossings per stream mile (USDA 1998a). • The Lower Clear Fork Cowlitz subwatershed has been identified as having high impacts to stream channels from bedload movement; most of this bedload is sediment associated with the Wilderness areas and to a much lesser degree, past management activities such as road construction and timber harvest. Because of the heavy sediment movement, enough sediment deposition has occurred to cause problems with stream channel migration (USDA 1998a). • Sediment introduced into streams within the watershed from management related events are slightly above background levels but well within range of natural variability (USDA 1998a).	• Alternative 2, Modified Alternative 4 and Alternative 9 include no new roads, thereby maintaining the existing road density of 1.5 miles/mile^2 in the White Pass Study Area. Alternative 6 includes the development of approximately 0.25 mile of new road in a Tier 2 Key Watershed/IRA, which would increase the road density to approximately 1.7 miles/mile^2 in the White Pass Study Area (refer to Table 3.3-10). Alternative 6 would require the decommissioning and obliteration of approximately 0.6 mile of road in the watershed to avoid a net increase in road mileage in the watershed. Under the Action Alternatives, there would be no change to the road density at the watershed scale. • Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils). • Implementation of the Action Alternatives is not expected to contribute to the listing of any stream on the Department of Ecology's 303(d) list since there would be no new point sources of pollution and water quality impacts are projected to be nominal (refer to Section 3.3 – Watershed Resources).	• Sediment impacts to streams and wetlands would be minimized through the implementation of the Mitigation Measures in Table 2.4-2 and the use of BMPs during construction activities. • Through implementation of a Stormwater Pollution Prevention Plan and the use of BMPs, no long-term changes in the pH, turbidity, and dissolved oxygen of streams within the White Pass Study Area and the watershed due to the Proposed Action are expected. • The tree removal prescription for each chairlift and its corresponding ski trails is outlined in Table 2.4-1. All construction techniques involve design components that are intended to avoid/minimize ground disturbance. These include over-the-snow access and construction and the use of helicopters.

Table 3.7-1:
Evaluation of Watershed Condition and Project Effects – Upper Clear Fork Cowlitz Watershed

Existing Condition	Effect of Proposed Action	Design and Assessment Considerations
• Currently all streams are maintaining Washington State temperature standards for Class AA waters (USDA 1998a). • None of the streams within the Clear Fork Cowlitz Watershed are on the Washington Department of Ecology 303(d) list (USDA 1998a). • Refer to Section 3.3 – Watershed for additional information regarding surface water quality standards and water quality within the White Pass Study Area.	• Understory vegetation would be maintained at a minimum height of 3 feet in areas that include clearing prescriptions with no grading (refer to Table 2.4-1) to minimize sediment delivery and to help keep stream temperatures cool. • Refer to the WEPP model discussion above. Additional information on the results of the WEPP model can be found in Section 3.3 and Appendix L – WEPP.	
Impacts to Flow Regime and Water Yield • Peak flow alterations within the main tributary streams from Mount Rainier National Park and Wildernesses are not expected to change over time except in areas where past human disturbance has affected the area (USDA 1998a). • The frequency of flooding and peak flows is expected to remain relatively constant throughout the Clear Fork Cowlitz watershed because 80 percent of the Clear Fork Cowlitz watershed is within Mount Rainier National Park or Wildernesses (USDA 1998a). Note that for the purposes of this EIS, this watershed has been modified to exclude the Mount Rainier National Park, and has been renamed the Upper Clear Fork Cowlitz watershed.	• The changes in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows due to implementation of the Proposed Action would not be measurable at the mouth of the Flow Model Analysis Area analyzed for this EIS (refer to Section 3.3.3.6 – Flow Regime). • The hydrologic maturity within the White Pass Study Area may be reduced by removal of vegetation under the Proposed Action, however, the majority of canopy removal would take place outside of Riparian Reserves and in subalpine parkland, resulting in an average canopy cover of 40.9 to 45.5 percent (refer to Table 3.3-15).	• Implementation of the Lift and Trail Construction Techniques listed in Table 2.4-1, and the use of BMPs, would reduce the potential for changes in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows due to the minimization of clearing trees and vegetation within the White Pass Study Area. • Alternatives 2, 6 and 9 minimize grading in Riparian Reserves during the development of ski area facilities. Impacts from grading to Riparian Reserves within the Upper Clear Fork Cowlitz River watershed range from 2.7 acres under Alternative 6 to 4.2 acres under Alternative 2 (refer to Table 3.3-15). Modified Alternative 4 would include 8.3 acres of grading in Riparian Reserves within the Upper Clear Fork Cowlitz River watershed, more than the other Action Alternatives due to the construction of trails 4-16, 4-17 and 4-18 (refer to Table 3.3-15). • Vegetation would be maintained at a minimum height of 3 feet above ground to prevent ground disturbance and to maintain shading and wildlife habitat.

Table 3.7-2:
Evaluation of Watershed Condition and Project Effects - Upper Tieton Watershed

Existing Condition	Effect of Proposed Action	Design and Assessment Considerations
Watershed Issues:		
Clearing and Grading in Riparian Reserves/ Riparian Reserve Functionality • Risks to Riparian Reserves include timber harvest, the construction of new roads, dispersed/developed recreation, low LWD recruitment potential, potential mass wasting, windthrow, and catastrophic fire (USDA 1998b). • The North Fork Tieton River has had little riparian timber harvest or other management and is rated functioning adequately relative to LWD (USDA 1998b). • It is estimated that less than 15 percent Equivalent Clearcut Area has been disturbed in the watershed, and unstable riparian areas are intact, so the watershed is rated to be functioning adequately (USDA 1998b). • The Riparian Reserves in the majority of the watershed are properly functioning because very little management activity has occurred in the riparian areas (USDA 1998b). • The disturbance regime in this watershed is functioning adequately because much of the watershed is within Wilderness. Timber harvest has been minimal so it has not altered the disturbance regime (USDA 1998b). • The amount of LWD in streams within the watershed is typically at natural levels (USDA 1998b).	• There are currently 237 acres of Riparian Reserves in the Upper Tieton watershed portion of the White Pass Study Area (refer to Table 3.3-5). The clearing and grading in Riparian Reserves range from approximately 0 acres in Alternative 2 to 20.3 acres in Alternative 9 (refer to Table 3.3-15). • The Action Alternatives would result in a 0 to 8.6 percent reduction in canopy cover within Riparian Reserves, with canopy cover remaining at approximately 40.9 to 49.5 percent (refer to Table 3.3-15). • Populations of riparian dependent wildlife would be temporarily displaced during construction (refer to Section 3.6 – Wildlife). • The Action Alternatives would cause a slight reduction in the amount of LWD within Riparian Reserves due to the removal of trees for ski facility construction. Alternatives 6 and 9 would include development of a 2.5-acre parking lot in the Upper Tieton River watershed, which would eliminate riparian function in approximately 1.9 acres of Riparian Reserves (refer to Table 3.3-15). Under Modified Alternative 4, the 7-acre parking lot would eliminate riparian function from approximately 2.1 acres of Riparian Reserves (refer to Table 3.3-15).	• All Action Alternatives minimize clearing and grading in Riparian Reserves by locating the proposed design outside Riparian Reserves to the extent possible. Ski trail design is intended to parallel Riparian Reserves while minimizing disturbance in riparian areas. • Construction prescriptions and Mitigation Measures in Table 2.4-2 include lop and scatter, with no removal of woody material from cleared areas. Wood would also be placed in stream channels to enhance channel complexity and reduce channel erosion. • No access corridors, staging areas, spoils piles, or other construction related materials would be placed in Riparian Reserves. Whenever feasible, potential impacts to Riparian Reserves would be minimized by bringing construction materials and equipment to the project site during the snowpack (refer to Table 2.4-2).

Table 3.7-2:
Evaluation of Watershed Condition and Project Effects - Upper Tieton Watershed

Existing Condition	Effect of Proposed Action	Design and Assessment Considerations
Impacts to Riparian Habitat of Streams and Wetlands • Most streams are considered to be functioning adequately for the channel type with deep pools within geomorphic constraints (USDA 1998b). • The majority of the watershed is rated as functioning adequately in regard to floodplain connectivity (USDA 1998b). • The streambank conditions of the North Fork Tieton River is rated functioning adequately (USDA 1998b).	• The potential direct impacts to wetlands would range from approximately 0.0 acres in Alternative 2, Modified Alternative 4, and Alternative 6, and 0.03 acre in Alternative 9 (refer to Table 3.3-13). These impacts would be avoided through implementation of Mitigation Measures in Table 2.4-2 and the use of BMPs as well as field fitting the individual construction projects. • Streams may be directly impacted through the construction of four bridges (Alternative 9). • The tree removal prescription for each chairlift and its corresponding ski trails is outlined in Table 2.4-1. • Implementation of the Action Alternatives would not alter stream functionality within the White Pass Study Area or within the watershed (refer to Section 3.3 – Watershed Resources). • There would be no change to the floodplain connectivity within the watershed as a result of the Action Alternatives (refer to Section 3.3 – Watershed Resources).	• All Action Alternatives would avoid direct impacts to streams and wetlands where possible through the implementation of the Mitigation Measures and Management Requirements listed in Tables 2.4-2 and 2.4-3, the use of BMPs, and field fitting the individual construction projects. • Utilities would cross streams by using aerial crossings, and wetland impacts from utility trenching would be avoided altogether. • Vegetation would be maintained at a minimum height of 3 feet above ground to prevent ground disturbance and to maintain shading and wildlife habitat. • Wetland impacts would be avoided by maintaining the existing contours and drainage patterns in wetlands that intersect proposed ski trails. • Vegetation removal in wetlands would be conducted by hand/chainsaw. No heavy equipment would operate in wetlands. • The tree removal prescription for each chairlift and its corresponding ski trails is outlined in Table 2.4-1. All construction techniques involve design components that are intended to avoid/minimize ground disturbance. These include over-the-snow access and construction and the use of helicopters.

Table 3.7-2:
Evaluation of Watershed Condition and Project Effects - Upper Tieton Watershed

Existing Condition	Effect of Proposed Action	Design and Assessment Considerations
Water Quality and Sediment Transport • None of the streams within the Upper Tieton watershed have been designated as "water quality limited" by the Washington State Department of Ecology on the 1996 or 1998 303(d) lists (USDA 1998b). • Temperatures in the tributaries are believed to be meeting the state water quality standard of 61ºF degrees for most of the summer months (USDA 1998b). • Sediment sources due to management appear to be limited within the watershed, and since most of it is undisturbed, this watershed is rated functioning adequately relative to sediment (USDA 1998b). • Only 2 of the 37 sub-drainages analyzed have a road density greater than 3.0 miles/mile^2 (USDA 1998b). • Refer to Section 3.3 – Watershed Resources for information regarding surface water quality standards and water quality within the White Pass Study Area.	• Under all Action Alternatives, there would be no new roads proposed in the Upper Tieton watershed portion of the White Pass Study Area, so there would be no change to the road density (refer to Table 3.3-11). • Ground disturbance would be minimized during project construction so that sediment delivery to streams and wetlands would be nominal (refer to Section 3.2 – Geology and Soils). • Implementation of the Action Alternatives is not expected to contribute to the listing of any stream on the Department of Ecology's 303(d) list since there would be no new point sources of pollution and water quality impacts are projected to be nominal (refer to Section 3.3 – Watershed Resources). • Understory vegetation would be maintained at a minimum height of 3 feet in areas that include clearing prescriptions with no grading (refer to Table 2.4-1) to minimize sediment delivery and to help keep stream temperatures cool.	• Sediment impacts to streams and wetlands would be minimized through the implementation of the Mitigation Measures and Management Requirements in Tables 2.4-2 and 2.4-3 as well as the use of BMPs during construction activities. • Through the implementation of a Stormwater Pollution Prevention Plan and the use of BMPs, no long-term changes in the pH, turbidity, and dissolved oxygen of streams within the White Pass Study Area and the watershed due to the Proposed Action are expected. • The tree removal prescription for each chairlift and its corresponding ski trails is outlined in Table 2.4-1. All construction techniques involve design components that are intended to avoid/minimize ground disturbance. These include over-the-snow access and construction and the use of helicopters. Under Alternative 9, over the snow construction would be less feasible due to the lower elevation of the development.

Table 3.7-2:
Evaluation of Watershed Condition and Project Effects - Upper Tieton Watershed

Existing Condition	Effect of Proposed Action	Design and Assessment Considerations
Impacts to Flow Regime and Water Yield • A minor amount of canopy alteration has occurred at White Pass Ski Area but not at a level which could measurably affect streamflows (USDA 1998b). • Due to the relatively low levels of harvest and roading, hydrologic patterns at the watershed level have not been changed significantly as a result of forest management activities (USDA 1998b). • There are several minor domestic uses from spring developments and groundwater wells for summer home system water supply and for the White Pass Ski Area (USDA 1998b).	• The changes in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows due to implementation of the Action Alternatives would not be measurable at the mouth of the Flow Model Analysis Area analyzed for this EIS (refer to Section 3.3.3.5 – Flow Regime). • The hydrologic maturity within the White Pass Study Area may be reduced by removal of vegetation under the Action Alternatives. However, the majority of canopy removal would take place outside of Riparian Reserves. The hydrologic maturity of the watershed would not be measurably affected at the 5th field scale.	• Through the implementation of Lift and Trail Construction Techniques listed in Table 2.4-1 and the use of BMPs, there would be a small reduction of the changes in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows due to the minimization of clearing trees and vegetation within the White Pass Study Area. Alternative 9 includes the highest impact to forest conditions with the removal of large trees in the existing SUP area (refer to Section 3.3 – Watershed Resources and Section 3.5 – Vegetation)

Table 3.7-3:
Evaluation of Riparian Reserves Standards and Guidelines for the White Pass Expansion Proposal Alternatives

1994 ROD Standard and Guideline	Alternative 1	Alternative 2	Modified Alternative 4	Alternative 6	Alternative 9
Roads Management:					
RF-2 – For each existing or planned road, meet ACS objectives by: a) minimizing road and landing locations in Riparian Reserves, b) completing watershed analyses prior to construction of new roads or landings in Riparian Reserves, c) preparing road design criteria, elements, and standards that govern construction and reconstruction, d) preparing operation and maintenance criteria that govern road operation, maintenance, and management, e) minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow, f) restricting side casting as necessary to prevent the introduction of sediment to streams, and g) avoiding wetlands entirely	No new roads or landing areas would be developed under Alternative 1. Road operation and maintenance would be carried out based on current approvals and the annual operating plan, which would not include road obliteration or restoration.	No new roads or landing areas would be developed under Alternative 2. Road operation and maintenance would be carried out based on current approvals and the annual operating plan, which would not include road obliteration or restoration.	No new roads or landing areas would be developed under Modified Alternative 4. Road operation and maintenance would be carried out based on current approvals and the annual operating plan, which would not include road obliteration or restoration.	A 0.25-mile road would be developed within a Tier 2 Key watershed in the White Pass IRA under Alternative 6, directly impacting approximately 0.1 acre of Riparian Reserves and indirectly affecting an additional 0.5 acre during construction. The road would be designed to cross the Riparian Reserve as close to perpendicular as possible, in an effort to minimize road impacts to Riparian Reserves. Watershed analyses for the Clear Fork Cowlitz (USDA 1998a) and the Upper Tieton (USDA 1998b) have been conducted. The new road would be managed under the current annual operating plan. New culverts would be sized to pass the 100-year flow and debris. (refer to Table 2.4-2, MM6). All road construction would be	No new roads or landing areas would be developed under Alternative 9. Road operation and maintenance would be carried out based on current approvals and the annual operating plan, which would not include road obliteration or restoration.

Table 3.7-3:
Evaluation of Riparian Reserves Standards and Guidelines for the White Pass Expansion Proposal Alternatives

1994 ROD Standard and Guideline	Alternative 1	Alternative 2	Modified Alternative 4	Alternative 6	Alternative 9
when constructing new roads.				conducted within the approved construction limits, and proper placement of BMPs would be conducted according to Management Requirement MR1 to insure that sediment introduction is minimized (refer to Table 2.4-3). Tree removal techniques include lop and scatter, with no landing sites required. Under Alternative 6, the proposed road would not be constructed in wetlands. Road operation and maintenance would be carried out based on current approvals and the annual operating plan, which would not include road obliteration or restoration.	

Table 3.7-3:
Evaluation of Riparian Reserves Standards and Guidelines for the White Pass Expansion Proposal Alternatives

1994 ROD Standard and Guideline	Alternative 1	Alternative 2	Modified Alternative 4	Alternative 6	Alternative 9
RF-3 – Determine the influence of each road on the ACS objectives through watershed analysis. Meet ACS objectives by: a) reconstructing roads and associated drainage features that pose a substantial risk, b) prioritizing reconstruction based on current and potential impact to riparian resources and the ecological value of the riparian resources affected, and c) closing and stabilizing, or obliterating and stabilizing roads based on the ongoing and potential effects to the ACS objectives and considering short-term and long-term transportation needs.	Watershed analyses for the Clear Fork Cowlitz (USDA 1998a) and the Upper Tieton (USDA 1998b) have been conducted. Under Alternative 1, no existing roads would be obliterated or reconstructed within the SUP area. Road management would be carried out based on current approvals and the annual operating plan. No existing road conditions requiring correction are known.	Watershed analyses for the Clear Fork Cowlitz (USDA 1998a) and the Upper Tieton (USDA 1998b) have been conducted. Under Alternative 2, no existing or proposed roads would be obliterated or reconstructed within the existing or proposed SUP area. Road management would be carried out based on current approvals and the annual operating plan. No existing road conditions requiring correction are known.	Watershed analyses for the Clear Fork Cowlitz (USDA 1998a) and the Upper Tieton (USDA 1998b) have been conducted. Under Modified Alternative 4, no existing or proposed roads would be obliterated or reconstructed within the existing or proposed SUP area. Road management would be carried out based on current approvals and the annual operating plan. No existing road conditions requiring correction are known.	Under Alternative 6, 0.25 mile of new road would be constructed in an IRA in a Tier 2 Key Watershed. In order to remain consistent with the Standards and Guidelines for Key Watersheds, 0.6 mile of existing road would be decommissioned and obliterated in order not to increase the mileage of road in the IRA and Key Watershed.	Watershed analyses for the Clear Fork Cowlitz (USDA 1998a) and the Upper Tieton (USDA 1998b) have been conducted. Under Alternative 9, no existing or proposed roads would be obliterated or reconstructed within the existing or proposed SUP area. Road management would be carried out based on current approvals and the annual operating plan. No existing road conditions requiring correction are known.

Table 3.7-3:
Evaluation of Riparian Reserves Standards and Guidelines for the White Pass Expansion Proposal Alternatives

1994 ROD Standard and Guideline	Alternative 1	Alternative 2	Modified Alternative 4	Alternative 6	Alternative 9
RF-4 – New culverts, bridges and other stream crossings shall be constructed, and existing culverts, bridges and other stream crossings determined to pose a substantial risk to riparian conditions will be improved, to accommodate at least the 100-year flood, including associated bedload and debris. Priority for upgrading will be based on the potential impact and the ecological value of the riparian resource affected. Crossings will be constructed and maintained to prevent diversion of streamflow out of the channel and down the road in the event of a crossing failure.	Under Alternative 1, no new culverts or bridges would be constructed (refer to Section 3.3 – Watershed).	Under Alternative 2, 1 new culvert would be constructed. This new culvert would be sized to pass the 100-year flow and debris (refer to Table 2.4-2, MM6 and Section 3.3 - Watershed).	Under Modified Alternative 4, 1 new bridge and 11 new culverts would be constructed. The new bridge and culverts would be sized to pass the 100-year flow and debris (refer to Table 2.4-2, MM6 and Section 3.3 - Watershed).	Under Alternative 6, four new culverts would be constructed. All new culverts would be sized to pass the 100-year flow and debris (refer to Table 2.4-2, MM6 and Section 3.3 - Watershed).	Under Alternative 9, 4 new bridges and 11 new culverts would be constructed. All new bridges would be sized to pass the 100-year flow and (refer to Table 2.4-2, MM6 and Section 3.3 - Watershed).

Table 3.7-3:
Evaluation of Riparian Reserves Standards and Guidelines for the White Pass Expansion Proposal Alternatives

1994 ROD Standard and Guideline	Alternative 1	Alternative 2	Modified Alternative 4	Alternative 6	Alternative 9
RF-5 – minimize sediment delivery to streams from roads. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping in unfeasible or unsafe. Route road drainage away from potentially unstable channels, fills, and hillslopes.	Under Alternatives 1 and 2, and Modified Alternative 4, no new roads would be constructed. Road management and maintenance would continue based on existing approvals and the current annual operating plan.			Under Alternative 6, the new road would be sloped to drain away from potentially unstable channels, fills, and hillslopes so that sediment from roads would not be transported to these areas. For all construction activities under Alternative 6, a SWPPP would be prepared to direct the use of BMPs, which would minimize sediment impacts during road construction. Under Alternative 6, no new watershed related management plans would be implemented.	Under Alternative 9, no new roads would be constructed. Road management and maintenance would continue based on existing approvals and the current annual operating plan.

Table 3.7-3:
Evaluation of Riparian Reserves Standards and Guidelines for the White Pass Expansion Proposal Alternatives

1994 ROD Standard and Guideline	Alternative 1	Alternative 2	Modified Alternative 4	Alternative 6	Alternative 9
Recreation Management:					
RM-1 – New Recreational Facilities within Riparian Reserves, including trails and dispersed sites, should be designed to not prevent meeting ACS objectives. For existing recreation facilities within Riparian Reserves, evaluate and mitigate impact to ensure that these do not prevent, and to the extent practicable, contribute to attainment of ACS objectives.	No new development would take place within Riparian Reserves and no restoration projects would be implemented in Riparian Reserves. Existing conditions would not prevent attainment of ACS objectives at the 5th field scale.	Under Alternative 2, Riparian Reserves would receive 17.7 acres of clearing and grading treatments (approximately 2.8 percent of the total Riparian Reserves in the White Pass Study Area). The Action Alternatives include Mitigation Measures, Management Requirements, and BMPs that are designed to maintain ground vegetation and shading, minimize impacts to LWD recruitment potential, and minimize erosion and sedimentation impacts (refer to Tables 2.4-2 and 2.4-3). Alternative 2 would not prevent attainment of ACS objectives at the 5th field scale.	Under Modified Alternative 4, Riparian Reserves would receive approximately 25.8 acres of clearing and grading treatments (approximately 4.1 percent of the total Riparian Reserves in the White Pass Study Area). The Action Alternatives include Mitigation Measures, Management Requirements, and BMPs that are designed to maintain ground vegetation and shading, minimize impacts to LWD recruitment potential, and minimize erosion and sedimentation impacts (refer to Tables 2.4-2 and 2.4-3). Modified Alternative 4 would not prevent attainment of ACS objectives at the 5th field scale.	Under Alternative 6, Riparian Reserves would receive approximately 12.6 acres of clearing and grading treatments (approximately 2.0 percent of the total Riparian Reserves in the White Pass Study Area). The Action Alternatives include Mitigation Measures, Management Requirements, and BMPs that are designed to maintain ground vegetation and shading, minimize impacts to LWD recruitment potential, and minimize erosion and sedimentation impacts (refer to Tables 2.4-2 and 2.4-3). Alternative 6 would not prevent attainment of ACS objectives at the 5th field scale.	Under Alternative 9, Riparian Reserves would receive approximately 24.4 acres of clearing and grading treatments (approximately 3.8 percent of the total Riparian Reserves in the White Pass Study Area). The Action Alternatives include Mitigation Measures, Management Requirements, and BMPs that are designed to maintain ground vegetation and shading, minimize impacts to LWD recruitment potential, and minimize erosion and sedimentation impacts (refer to Tables 2.4-2 and 2.4-3). Alternative 9 would not prevent attainment of ACS objectives at the 5th field scale.

Table 3.7-3:
Evaluation of Riparian Reserves Standards and Guidelines for the White Pass Expansion Proposal Alternatives

1994 ROD Standard and Guideline	Alternative 1	Alternative 2	Modified Alternative 4	Alternative 6	Alternative 9
RM-2 – Adjust dispersed and developed recreation practices that retard or prevent attainment of ACS objectives. Where adjustment measures, such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective, eliminate the practice or occupancy.	No new developed recreation facilities would be constructed within Riparian Reserves. Existing detrimental conditions within Riparian Reserves in the SUP area would continue to exist due to the high density use in the existing SUP area. No specific ski area facilities have been identified as contributing to the non-attainment of ACS objectives.	Under the Action Alternatives, White Pass would provide additional ski facilities and terrain. All developed facilities would be designed and constructed to minimize impacts to Riparian Reserves. Impacts to Riparian Reserves would include clearing and grading, as described for RM-1. The Action Alternatives include Mitigation Measures, Management Requirements, and BMPs that are designed to maintain ground vegetation and shading, minimize impacts to LWD recruitment potential, and minimize erosion and sedimentation impacts (refer to Tables 2.4-2 and 2.4-3). As a result, the Action Alternatives would not retard or prevent the attainment of the ACS objectives at the 5th field watershed scale.			

Table 3.7-3:
Evaluation of Riparian Reserves Standards and Guidelines for the White Pass Expansion Proposal Alternatives

1994 ROD Standard and Guideline	Alternative 1	Alternative 2	Modified Alternative 4	Alternative 6	Alternative 9
Fire/Fuels Management:					
FM-1 - Design fuel treatment and fire suppression strategies, practices, and activities to meet ACS objectives, and to minimize disturbance or riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuels management activities could be damaging to long-term ecosystem function	Under Alternative 1, no timber removal and slash burning would take place. The ACS objectives would continue to be met at the 5th field scale in both the Upper Tieton and Upper Clear Fork Cowlitz watersheds.	Under the Action Alternatives, all tree removal would be by manual methods outlined in Table 2.4-1. Felled trees would be lopped and scattered, or placed in streams. No other fuels treatment would take place. All understory vegetation less than 3 feet tall would be retained. The ACS objectives would continue to be met at the 5th field scale in both the Upper Tieton and Upper Clear Fork Cowlitz watersheds.			
General Riparian Area Management:					
RA-1 – Identify and attempt to secure in-stream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.	Under Alternative 1, no change to in-stream flows would take place. In-stream flows would remain at existing conditions at the 5th field scale in both the Upper Tieton and Upper Clear Fork Cowlitz watersheds.	Under all Action Alternatives, there would be no direct impacts to stream channels or aquatic habitat. For all Action Alternatives there could be a slight change to the timing, duration, or magnitude of low flow and peak flow conditions due to land cover alterations from implementation of the Action Alternatives. However, any changes in the timing, duration, or magnitude of low flow and peak flow conditions would not be measurable in the existing in-stream flows at the fifth field scale for both the Upper Tieton River watershed and the Upper Clear Fork Cowlitz River watershed (refer to Section 3.3.3.5 – Watershed Resources –Flow Regime).			

Table 3.7-3:
Evaluation of Riparian Reserves Standards and Guidelines for the White Pass Expansion Proposal Alternatives

1994 ROD Standard and Guideline	Alternative 1	Alternative 2	Modified Alternative 4	Alternative 6	Alternative 9
RA-2 – Fell trees in Riparian Reserves when they pose a safety risk. Keep felled trees on-site when needed to meet coarse woody debris objectives.	Under Alternative 1, no trees would be felled near Riparian Reserves.	With oversight from Forest Service personnel, trees would be felled in Riparian Reserves to maintain coarse woody debris or when they pose a safety risk. All felled trees would be lopped and scattered along ski trail edges and in Riparian Reserves.			
WR-3 – Do not use mitigation or planned restoration as a substitute for preventing habitat degradation.	Under Alternative 1, there would be no new impacts to Riparian Reserves.	Under the Action Alternatives, impacts to Riparian Reserves have been minimized to the extent practicable. Mitigation Measures and Management Requirements listed in Tables 2.4-2 and 2.4-3 were created in conjunction with avoidance and minimization of Riparian Reserve impacts in order to help maintain or improve watershed conditions at the 5th field scale.			
FW-4 – Cooperate with federal, tribal, and state fish management agencies to identify and eliminate impacts associated with habitat manipulation, fish-stocking, harvest and poaching that threaten the continued existence and distribution of native fish stocks occurring on federal lands.	Under Alternative 1, no new watershed management or restoration plans would be implemented.	Table 1.3-1 lists the federal, state, local, and tribal agencies that permits need to be obtained from during the implementation of the White Pass Expansion. The Mitigation Measures and Management Requirements listed in Tables 2.4-2 and 2.4-3 were created in conjunction with input from cooperating federal agencies to maintain the long-term ecological integrity of the 5th field Upper Tieton and Upper Clear Fork Cowlitz watersheds.			