



Hikers on a wilderness trail at Big Beaver Cedars in Ross Lake NRA.

WELCOME

Y*ou are now in the Alternatives Chapter. Here are the topics you can read about:*

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CHAPTER 4: ALTERNATIVES

The National Environmental Policy Act of 1969 (NEPA) requires that alternative management scenarios be developed for federal actions. This ~~draft~~ final general management plan explores a range of ideas, methods, and concepts for managing Ross Lake NRA. All alternatives should be feasible for implementation. In addition, regulations require that the ~~draft~~ final plan identify a “preferred alternative” before the environmental impact statement is released for public review. The preferred alternative is the alternative the National Park Service believes would best accomplish its goals, based on the analyses completed to date.

Development of these alternatives was based on information about Ross Lake National Recreation Area’s resources, visitor use, and visitor preferences gathered from National Park Service information, the public, government agencies, and stakeholder groups. Each of these alternatives would support Ross Lake NRA’s purpose and significance, address uses of concern, avoid unacceptable resource impacts, and respond to differing wishes or concerns. The concepts and subsequent actions for each alternative comply with NPS park planning requirements and were evaluated to ensure consistency with current laws, regulations, and policies.

This chapter contains several parts:

- description of the five management zones for the action alternatives
- description of Alternatives A, B, C, and D including:
 - ◆ alternative concept
 - ◆ desired conditions
 - ◆ boundary modifications
 - ◆ estimated costs
- user capacity prescriptions
- mitigation measures
- other actions and alternatives considered
- environmentally preferred alternative
- table detailing all components of the alternatives
- summary of impacts chart that is based on the analysis in Chapter 6, “Environmental Consequences”

In many cases, decisions or other discussions contained in this ~~draft~~ final GMP/EIS refer directly to maps and figures; many decisions themselves are “map based.” The reader must rely on the text, maps, and figures taken together to fully understand the range of alternatives described in this ~~draft~~ final GMP/EIS.

Four alternatives are described in this ~~draft~~ final GMP. Each alternative has a different overarching concept, application of management zones on the landscape,

series of actions, and associated costs. The four alternatives are characterized as follows:

Alternative A, the No Action Alternative, assumes that existing management, programming, facilities, staffing, and funding would generally continue at their current levels.

Alternative B, the Preferred Alternative, would focus on managing Ross Lake NRA as a gateway to millions of acres of wilderness, providing enhanced visitor opportunities along the North Cascades Highway and making better use of facilities along that corridor, while ensuring the long-term stewardship of the surrounding North Cascades ecosystem and wilderness.

Alternative C emphasizes the role of Ross Lake NRA in preserving the greater North Cascades ecosystem, which includes two additional National Park System units, two national forests, as well as provincial parks and protected areas across the Canadian border.

Alternative D would focus on improving connections between visitors and the outdoors through a variety of enhanced recreation and learning opportunities.



A view of Ross Lake from Devil's Creek Camp.

FORMULATION OF THE ALTERNATIVES

A comprehensive interdisciplinary planning team composed of NPS staff from North Cascades NPS Complex and the Pacific West Regional Office developed management alternatives for Ross Lake NRA using concerns and ideas generated by the public and NPS staff.

The first opportunity for public comment, or scoping, was in a series of public workshops at the beginning of the general management planning process in the fall of 2006. The National Park Service invited comments from the public, government agencies, non-profit organizations, and tribal governments regarding concerns, issues, and ideas for the future management of Ross Lake NRA. Comments were received from more than 80 individuals or organizations. The scoping comments assisted the planning team in identifying the range of issues to address in the GMP and preliminary ideas for the development of alternatives.

Once the preliminary alternatives were identified by the planning team, the NPS invited comments on the alternatives at the beginning of 2008. Over 100 individuals or organizations provided comments either in public workshops or in writing. These ideas assisted the NPS in refining the alternatives and selecting a preferred alternative.

The draft GMP/EIS, which included the preferred alternative, was available for public review from July 1 to September 30, 2010. The NPS held six public meetings to discuss the draft plan in Washington State. Approximately 1,645 written comments were also received. Public and agency comments and new information helped contribute to changes in the preferred alternative between the draft GMP/EIS and this final GMP/EIS.

Identification of the Preferred Alternative

The preferred alternative is the alternative the NPS believes would best fulfill its mission and responsibilities. The preferred alternative was identified following an initial assessment of the impacts of the alternatives. The public's ideas, preferences, and reasoning greatly assisted the NPS in its selection of the preferred alternative.

A decision-making process known as "choosing by advantages" was used to compare the relative advantages and costs of each alternative. The preferred alter-

native was selected because it: 1) preserves resources and promotes the long-term stewardship of the greater North Cascades, 2) provides a range of quality recreational day-use and overnight experiences and access to recreational opportunities, 3) preserves wilderness character, experience, and values, and 4) provides for efficient and sustainable facilities and operations.

IMPLEMENTATION OF THE GENERAL MANAGEMENT PLAN

Once the general management planning process is completed, the selected alternative would become the new management plan for Ross Lake NRA and would be implemented in phases over the next 15–20 years.

Implementation of the actions and developments proposed within this management plan is dependent upon funding available at the time of need. The approval of this general management plan does not guarantee that the funding and staffing needed to implement the plan would be forthcoming. Instead, the plan establishes a vision of the future that will guide future management of Ross Lake NRA. In addition to funding, the implementation of any preferred alternative also could be affected by other factors. More detailed planning, environmental documentation, and studies could be required before most conditions proposed in the alternatives are achieved. Additionally, all of the alternatives were developed on the assumption that certain mitigating actions would be incorporated into the proposed actions in order to reduce the degree of adverse impacts.

MANAGEMENT ZONES

Management zones define specific desired conditions and management approaches to be achieved and maintained in each area of Ross Lake NRA. Each zone includes the types of activities and facilities that are appropriate in that management zone. For Ross Lake NRA, five management zones have been developed.

These zones include:

- Frontcountry Zone
- Backcountry Zone
- Wilderness Zone
- Skagit River Zone
- Hydroelectric Zone

These zones form the basis of the plan's alternatives and are applied to different areas of Ross Lake NRA in each action alternative (Alternatives B, C, and D). For

Alternative A, the no action alternative, the management zoning is taken from the 1988 *North Cascades NPS Complex General Management Plan*. For alternatives B, C and D, management zone boundaries were assigned according to the overall concept of each alternative. Therefore, the alternatives represent different ways to apply the management zones. For example, an alternative whose overall concept includes emphasizing intensive recreational activities will have more of the Frontcountry Zone applied to Ross Lake NRA than an alternative whose primary focus is wilderness preservation.

The management zones and prescriptions for Ross Lake NRA are presented in Table 4.1. A zone concept,

desired natural and cultural resource conditions, visitor opportunities and use, facilities, access and transportation, and lands, designations, and jurisdiction are described for each management zone. The zones are included in the maps of each alternative.

In addition to the management zones, park managers would continue to use the “Superintendent’s Compendium” to effect limitations or closures as necessary to protect resources and wilderness values. The “Superintendent’s Compendium” is a list of designations, closures, requirements, and other restrictions imposed under the discretionary authority of the superintendent as provided in Title 36 of the *Code of Federal Regulations*.



The Skagit River.

Table 4.1 Management Zones for Ross Lake NRA

	Frontcountry Zone	Backcountry Zone
Summary	<p>The scenic east-west route through the Cascades along North Cascades Highway and developed areas would be located in this zone.</p> <p>This zone would include a 200-foot corridor along the entire length of the North Cascades Highway within Ross Lake NRA. The 200-foot corridor would include the areas within 100 feet of the center line on each side of the highway.</p> <p>This zone would maintain good natural and cultural resource conditions with some modified resources.</p> <p>A wide variety of high quality recreational and educational visitor opportunities and facilities would be available.</p> <p>The geographic configuration of this zone varies per alternative.</p>	<p>This zone would be characterized by areas that are dominated by natural conditions with structured opportunities for visitor recreation.</p> <p>This zone would maintain good natural and cultural resource conditions and emphasize resource preservation and restoration.</p> <p>This zone would be characterized by visitor experiences and limited visitor facilities that provide a sense of remoteness and immersion in nature within a mountainous wilderness setting.</p> <p>The geographic configuration of this zone varies per alternative.</p>
Natural Resource Conditions	<p>Natural resource preservation and restoration would be emphasized, but resources could be altered to provide for recreation and visitor experiences.</p>	<p>Natural resource preservation and restoration would be emphasized, but resources could be altered to provide for recreation and visitor experiences.</p>

Table 4.1 Management Zones for Ross Lake NRA

	Wilderness Zone	Skagit River Zone	Hydroelectric Zone
Summary	<p>Designated wilderness and potential wilderness would be located in this zone.</p> <p>Research Natural Areas, including Big Beaver and Pyramid Creek Research Natural Areas, would be included in this zone. Research Natural Areas would be unmodified landscapes where un-impeded natural ecological systems and processes occur. The focus of the Research Natural Areas would be on baseline ecological research and monitoring.</p> <p>This zone would feature excellent natural and cultural resource conditions and emphasize resource preservation and restoration.</p> <p>This zone would emphasize wilderness experience, limited primitive visitor facilities, and very few encounters with other visitors.</p> <p>The geographic configuration of this zone is common to all action alternatives.</p>	<p>The Skagit River and adjacent riparian corridor below Gorge Powerhouse in Newhalem and up Goodell Creek to the wilderness boundary would be located in this zone.</p> <p>This zone would be approximately ¼ mile on either side of the Skagit River through most areas.</p> <p>Natural and cultural resource preservation of the Skagit River and visitor facilities associated with river recreation would characterize this zone.</p> <p>The geographic configuration of this zone is common to all action alternatives.</p>	<p>Seattle City Light SCL facilities and primary management areas, including the hydroelectric projects at Ross, Diablo, and Gorge Dams would be located in this zone.</p> <p>SCL operations would be paramount to resource conditions and visitor experience in this zone.</p> <p>SCL would provide and maintain most of the visitor services in this zone. Most visitor experiences would be linked to learning about hydroelectricity and frontcountry recreational activities.</p> <p>The geographic configuration of this zone is common to all action alternatives.</p>
Natural Resource Conditions	<p>Natural resource preservation, restoration, and ecosystem management are the primary emphasis.</p>	<p>Ecological integrity of the riparian zone would be maintained and streamflow impacts from hydroelectric projects and the proximity of the North Cascades Highway would be minimized.</p>	<p>Wildlife habitat, vegetation, and ecological processes could be altered to achieve other management objectives. While natural resources are not a primary management emphasis, impacts from alterations would be minimized to protect resources and values.</p>

Table 4.1 Management Zones for Ross Lake NRA

	Frontcountry Zone	Backcountry Zone
<p>Natural Resource Conditions <i>(continued)</i></p>	<p>Recreation and management facilities and activities may be altered or managed to improve the quality of ecological resources and processes.</p> <p>Impacts from infrastructure, concentrated visitor use, and administrative activities would be minimized.</p> <p>All fires would be suppressed.</p> <p>Light and human-caused sounds would be reduced from current levels but may still be a common part of the environment in this zone.</p> <p>Wildlife crossings along the North Cascades Highway would be improved, wherever possible.</p>	<p>Recreation and management facilities and activities may be altered or managed to improve the quality of ecological resources and processes.</p> <p>Signs of modern human impact would be minimal.</p> <p>Ecological processes would remain unimpeded when possible. A full range of fire management strategies could be employed, depending on location, as well as prescribed fire.</p> <p>Natural night sky would be dominant. Human-caused sounds would be a part of the environment in this zone, but would be reduced where possible.</p>
<p>Cultural Resource Conditions</p>	<p>Management of cultural resources would be in concert with management of natural resources.</p> <p>Cultural resources, including non-sensitive archeological sites, ethnographic sites, historic structures, and cultural landscapes would be identified and evaluated, and nominated to the National Register, as appropriate. Significant cultural resources would be preserved.</p> <p>Historic structures would be maintained and functional through established use or adaptive reuse.</p>	<p>Management of cultural resources would be in concert with management of natural resources.</p> <p>Cultural resources, including non-sensitive archeological sites, ethnographic sites, historic structures, and cultural landscapes would be identified and evaluated, and nominated to the National Register, as appropriate. Significant cultural resources would be preserved.</p> <p>Historic structures would be maintained and functional through established use or adaptive reuse.</p>

Table 4.1 Management Zones for Ross Lake NRA

	Wilderness Zone	Skagit River Zone	Hydroelectric Zone
<p>Natural Resource Conditions <i>(continued)</i></p>	<p>Modern human use, interference, and disruption to natural resources and ecological processes would be minimized.</p> <p>When management action is needed, minimum tool requirements would be emphasized and implemented.</p> <p>Ecological processes, including fire, would occur unimpeded as much as possible.</p> <p>Natural sounds and night sky would be dominant.</p>	<p>The flows in the Skagit River would be managed for fishery resources.</p> <p>Riparian quality would be improved by removal of invasive non-native species and restoration of native vegetation in impacted areas.</p> <p>All fires would be suppressed.</p> <p>Light and human-caused sounds would be reduced from current levels but may still be a common part of the environment in this zone.</p>	<p>Natural resource restoration efforts would occur wherever possible.</p> <p>All fires would be suppressed.</p> <p>Light and human-caused sounds would be a common part of the environment in this zone. Work with SCL to reduce light and human-caused sounds where possible.</p>
<p>Cultural Resource Conditions</p>	<p>Management of cultural resources would be in concert with management of natural resources.</p> <p>Cultural resources, including non-sensitive archeological sites, ethnographic sites, historic structures, and cultural landscapes would be identified and evaluated, and nominated to the National Register, as appropriate. Significant cultural resources would be preserved.</p> <p>Non-significant historic resources may be allowed to deteriorate through benign neglect.</p>	<p>Management of cultural resources would be in concert with management of natural resources.</p> <p>Cultural resources, including non-sensitive archeological sites, ethnographic sites, historic structures, and cultural landscapes would be identified and evaluated, and nominated to the National Register, as appropriate. Significant cultural resources would be preserved.</p> <p>Historic structures would be maintained.</p>	<p>To the extent possible, National Register and National Register-eligible sites would be preserved and used in conjunction with the operation of SCL operations.</p> <p>Cultural resources, including non-sensitive archeological sites, ethnographic sites, historic structures, and cultural landscapes would be identified and evaluated, and nominated to the National Register, as appropriate.</p> <p>To the extent possible, hHistoric structures would be maintained and functional through established use or adaptive reuse.</p>

Table 4.1 Management Zones for Ross Lake NRA

	Frontcountry Zone	Backcountry Zone
<p>Cultural Resource Conditions <i>(continued)</i></p>	<p>To the extent possible, cultural resources would be visually accessible and interpreted to the public, recognizing visitor safety.</p>	<p>To the extent possible, cultural resources would be visually accessible and interpreted to the public, recognizing visitor safety.</p>
<p>Visitor Experience and Use</p>	<p>A wide variety of day-use and overnight recreational opportunities would be provided for a range of visitor abilities. Activities would include, but are not limited to, hiking, picnicking, fishing, swimming, self-propelled and motor boating, bicycling, sport climbing, canyoneering, sightseeing, scenic driving, camping, and lodging.</p> <p>Some opportunities to appreciate wilderness and connections with the natural world would be provided.</p> <p>This zone could offer some opportunities for challenge and risk.</p>	<p>Recreational opportunities would focus on the enjoyment and appreciation of nature within a mountainous wilderness setting. Non-mechanized recreation would be the norm.</p> <p>Activities would include, but are not limited to, hiking, picnicking, fishing, swimming, self-propelled and motor boating, sightseeing, wildlife viewing, and camping.</p> <p>Many opportunities to appreciate wilderness and connections with the natural world would be provided.</p> <p>This zone would offer many opportunities to experience solitude, remoteness, challenge and risk.</p>

Table 4.1 Management Zones for Ross Lake NRA

	Wilderness Zone	Skagit River Zone	Hydroelectric Zone
<p>Cultural Resource Conditions <i>(continued)</i></p>	<p>Cultural resources in the Research Natural Areas would be preserved consistent with the Secretary of the Interior’s Standards and NPS policy. Significant cultural resources that might be preserved could be prehistoric and historic archeological sites and ethnographic resources.</p>	<p>To the extent possible, cultural resources would be visually accessible and interpreted to the public, recognizing visitor safety.</p> <p>Cultural resources would be protected from flood damage, where feasible.</p>	<p>To the extent possible, cultural resources would be visually accessible and interpreted to the public, recognizing visitor safety, hydroelectric facility security, and residential privacy.</p> <p>SCL would continue its responsibilities to identify, preserve, rehabilitate, and interpret their cultural resources and nominate them to the National Register, as appropriate.</p>
<p>Visitor Experience and Use</p>	<p>Opportunities for wilderness-based recreational activities and non-mechanized recreation would be the focus in this zone. Activities would include on and off-trail hiking, primitive camping, nature viewing, wildlife watching, fishing, hunting, stock use, and access to mountaineering.</p> <p>This zone would offer the greatest opportunities to appreciate wilderness and explore connections with the natural world.</p> <p>This zone would have the greatest opportunities to experience solitude, remoteness, challenge and risk.</p>	<p>Non-motorized river-based recreation would be the focus in this zone, including boating, fishing, nature viewing, and wildlife watching. Additional visitor opportunities would include picnicking and educational opportunities.</p> <p>Many opportunities to appreciate wilderness and connections with the natural world would be provided.</p> <p>This zone would have limited opportunities for solitude, and connections with the natural world would be primarily on the river.</p>	<p>A variety of educational opportunities to learn about hydroelectricity and associated facilities and operations would be provided through SCL tours, educational programs, and special events.</p>

Table 4.1 Management Zones for Ross Lake NRA

	Frontcountry Zone	Backcountry Zone
Visitor Experience and Use	<p>A wide range of visitor services would be provided, including educational services through activities at the North Cascades Visitor Center, Environmental Learning Center, SCL tours, and through wayside exhibits, interpretive programs, and personal services. Concessions operations would complement and augment NPS visitor services.</p> <p>Seaplanes would only be allowed to land in designated areas.</p> <p>Motorboats would be allowed.</p> <p>A high level of universal accessibility would be provided for visitors to see, experience and learn about heritage (natural and cultural) nature within this zone.</p>	<p>Visitor services, except for emergency response and limited commercially guided activities, would rarely be provided. Group sizes would continue to be limited. Ranger services could focus on permit compliance, resource and visitor protection, and Leave No Trace education.</p> <p>Seaplane landings would not be allowed.</p> <p>Motorboats would be allowed.</p> <p>Reasonable efforts to achieve universal accessibility would be taken to provide visitor opportunities.</p> <p>Reservoirs in this zone would provide scenic, remote, and serene water recreational experiences in largely undeveloped areas. Primitive overnight camping would be dispersed along the lakeshore at designated sites.</p>
Facilities	<p>A range of facilities and infrastructure would accommodate daytime and overnight visitor use as well as park operations. The highest level of development would occur in this zone.</p>	<p>Limited visitor facilities would accommodate backcountry recreation and park operations, and would be minimally obtrusive on the landscape and designed to be compatible with the northwest backcountry.</p>

Table 4.1 Management Zones for Ross Lake NRA

	Wilderness Zone	Skagit River Zone	Hydroelectric Zone
Visitor Experience and Use	<p>Visitor services, except for emergency response and limited commercially guided activities, would rarely be provided. Group sizes would continue to be limited. Ranger services could focus on permit compliance, resource and visitor protection, and Leave No Trace education.</p> <p>Seaplane landings would remain prohibited.</p> <p>Motorboats would not be allowed except for emergency, law enforcement, and operational, research, and monitoring needs supported by a minimum tool analysis.</p> <p>There would be limited opportunities for universal accessibility.</p> <p>In the Research Natural Areas, low levels of human use could occur on trails and climbing routes. The Research Natural Areas would be managed to ensure that existing low levels of human use do not adversely affect their scientific and educational purposes.</p>	<p>Visitor services would include commercially guided activities involving non-motorized river recreation, such as rafting and kayaking.</p> <p>Seaplane landings would remain prohibited.</p> <p>Motorboat restrictions on the Skagit River would vary by alternative, except for emergency, law enforcement, and NPS and SCL operational needs.</p> <p>Reasonable efforts to achieve universal accessibility would be taken to provide visitor opportunities.</p>	<p>SCL would continue to provide for the visitor services stipulated in the Settlement Agreement and FERC license. These include guided tours of the Skagit Project; operation of the Skagit Visitor Information Center; operation of the tug boat/ferry service on Diablo Lake; maintenance of public facilities in Diablo and Newhalem; and maintenance of Ladder Creek Falls trail.</p> <p>Seaplane landings would remain prohibited.</p> <p>Motorboats would be allowed on the reservoirs except for spatial or temporal restrictions that could apply for emergency, law enforcement, and NPS and SCL operational needs.</p> <p>Reasonable efforts to achieve universal accessibility would be taken to provide visitor opportunities.</p>
Facilities	<p>Very limited, primitive facilities are present and meet accepted wilderness standards.</p>	<p>Visitor facilities associated with day-use river recreation are present and accommodated.</p>	<p>A range of facilities and infrastructure accommodate SCL operations and visitor services for both daytime and overnight use.</p>

Table 4.1 Management Zones for Ross Lake NRA

	Frontcountry Zone	Backcountry Zone
<p>Facilities <i>(continued)</i></p>	<p>Visitor and recreation facilities could include:</p> <ul style="list-style-type: none"> ▪ Campgrounds ▪ Boat launches and docks ▪ Picnic and day-use areas ▪ Trails ▪ Restrooms ▪ Public lodging <p>Education facilities could include:</p> <ul style="list-style-type: none"> ▪ Visitor center(s) ▪ Wayside exhibits ▪ Interpretive trails and signage ▪ Environmental Learning Center ▪ Signs <p>Transportation facilities could include:</p> <ul style="list-style-type: none"> ▪ Roads ▪ Parking lots ▪ Pullouts and overlooks ▪ Bicycle paths ▪ Shuttle services <p>Administrative facilities for NPS and SCL could include:</p> <ul style="list-style-type: none"> ▪ Administrative offices ▪ Maintenance and storage sites ▪ Staff housing 	<p>Facilities could include:</p> <ul style="list-style-type: none"> ▪ Trails ▪ Primitive campsites and toilets ▪ Food storage devices in all established campsites ▪ Walk-in and boat-in campsites ▪ Boat docks ▪ Pedestrian bridges ▪ Informational and interpretive signage ▪ Limited roads and parking areas

Table 4.1 Management Zones for Ross Lake NRA

	Wilderness Zone	Skagit River Zone	Hydroelectric Zone
<p>Facilities <i>(continued)</i></p>	<p>Facilities could include:</p> <ul style="list-style-type: none"> ▪ Trails, some with limited to no maintenance ▪ Primitive campsites and toilets ▪ Food storage devices in all established campsites ▪ Fire lookouts <p>In designated and potential wilderness, changes in campsite locations, new designated camps or trail re-routes would be permitted, following minimum requirement analysis standards. In large swaths of trailless wilderness in the NRA and North Cascades National Park, the NPS would strive to preserve opportunities for solitude and the untrammled and undeveloped character of wilderness when considering new trails. Changes in campsite locations or trail re-routes would be permitted, provided there is no net increase in miles of trails.</p> <p>Existing trails and climbing routes could remain in Research Natural Areas, however research would be the predominant use. Research and monitoring devices could be evident.</p>	<p>Facilities could include:</p> <ul style="list-style-type: none"> ▪ Boat launch areas ▪ Day-use areas ▪ Interpretive information and signage ▪ Trails 	<p>Visitor facilities could include:</p> <ul style="list-style-type: none"> ▪ Interpretive trails and signage ▪ Food, supplies, and souvenirs at the Skagit General Store ▪ Public lodging <p>Facilities associated with SCL operations include:</p> <ul style="list-style-type: none"> ▪ Dams ▪ Powerhouses ▪ Administrative/office buildings ▪ Employee housing

Table 4.1 Management Zones for Ross Lake NRA

	Frontcountry Zone	Backcountry Zone
Access and Transportation	<p>Both public access areas and restricted areas for park administrative use would occur. Most open areas would be easily accessed by visitors.</p> <p>Access is from a wide variety of transportation methods, both motorized and non-motorized.</p>	<p>Public access would be available throughout the zone, but access to some areas might be challenging.</p> <p>Access is from both motorized and non-motorized transportation. Access is primarily by foot, boat, some stock animals.</p>
Lands, Designations, and Jurisdiction (regulations, land uses, easements, rights-of-way)	<p>Lands in this zone are owned by the NPS and SCL.</p> <p>SCL rights-of-way and/or easements, such as roads and powerlines, would exist in this zone. Limited areas would be managed primarily for SCL and Washington State Department of Transportation operations. Washington State Department of Transportation right-of-way lies in this zone, passing through both NPS and SCL lands.</p>	<p>Lands in this zone are owned by the NPS.</p> <p>SCL rights-of-way and/or easements, such as roads and powerlines, would exist in this zone: and SCL rights-of-way and/or easements are governed by the Skagit River Treaty, also known as the High Ross Dam Treaty.</p>

Table 4.1 Management Zones for Ross Lake NRA

	Wilderness Zone	Skagit River Zone	Hydroelectric Zone
Access and Transportation	<p>The NPS would work to maintain public access through a network of trails. Some areas would be extremely challenging to access due to the conditions of terrain and the preservation and maintenance of wilderness character. Public access would be available throughout the zone, but access to some areas might be extremely challenging.</p> <p>Access is by foot or some stock animals.</p>	<p>Public access would be available in this zone.</p> <p>Access is from both motorized and non-motorized transportation. Access is primarily by boat, both private and commercial.</p>	<p>Both public access areas and areas restricted for SCL operations would occur.</p> <p>Access is from both motorized and non-motorized transportation.</p>
Lands, Designations, and Jurisdiction (regulations, land uses, easements, rights-of-way)	<p>Lands in this zone are owned by the NPS.</p> <p>These lands are designated or potential wilderness.</p> <p>Research Natural Areas, including Big Beaver and Pyramid Creek Research Natural Areas, would be located in this zone.</p>	<p>Lands in this zone are owned by the NPS and SCL.</p> <p>Limited areas would be managed primarily for SCL operations.</p> <p>SCL rights-of-way and/or easements could exist in this zone.</p>	<p>Lands in this zone are owned by the NPS and SCL.</p> <p>Most areas would be managed primarily for SCL operations.</p> <p>SCL would be authorized to operate the dams, powerhouses, and facilities on NPS land through the FERC license.</p>

RANGE OF ALTERNATIVES

This section presents the four alternatives that are being considered for Ross Lake National Recreation Area. Each alternative is structured around a concept or vision for the future. For each alternative, there are desired conditions for resources and visitor use as a whole and for specific areas within Ross Lake NRA. Each alternative is also supported by management zones with boundaries that vary by alternative. It is important to note that the management zones provide desired conditions for areas within Ross Lake NRA, and the alternatives provide additional guidance both at a NRA-wide scale as well as site specific prescriptions. The complete list of NRA-wide desired conditions and specific actions that would be taken under each alternative is presented in the alternatives comparison Table 4.10 at the end of this chapter.

The reader must rely on the text, maps, and figures taken together to fully understand the range of alternatives described in this **draft final** GMP/EIS.

Management guidance, desired conditions, and actions that would apply to all alternatives, including Alternative A (No Action), are described below in the Common to All section followed by descriptions of each of the alternatives: Alternatives A, B, C, and D.

ACTIONS COMMON TO ALL ALTERNATIVES

The following management guidance, desired conditions, and actions would apply to all alternatives. It is important to note that the following descriptions are general and more specific information and guidance is located in Table 4.10 at the end of this alternatives summary.

International and Interagency Collaboration and Cooperation

Existing partnerships and international and interagency cooperation would be maintained for resource protection, recreational opportunities, and operational efficiencies. The NPS would continue to work collaboratively with SCL, the Forest Service, British Columbia Parks, and non-governmental entities including the North Cascades Institute and the Skagit Environmental Endowment Commission, among others.

Management of Specific Areas within Ross Lake NRA

New facilities on the **North Cascades Environmental Learning Center (ELC)** campus would be constructed as outlined in the original plan and environmental assessment. Facilities that have not yet been built would be constructed, including a dormitory, staff housing, and boathouse. Funding for the construction of these facilities would be provided by the North Cascades Institute. The ELC would provide year-round educational and interpretive services through curriculum-based educational programs and continued learning opportunities about the North Cascades ecosystem.

The upper one mile of the **Thornton Lakes Road** would be closed to vehicular access at the wilderness boundary to comply with wilderness regulations. The Wilderness Act of 1964, Section 4(3)(c) states, “Except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act...” The closed portion of the road would be rehabilitated. A parking lot and trailhead would be formalized at the wilderness boundary in an existing disturbed area. The NPS would maintain and upgrade trail access to Thornton Lakes. Future planning would determine whether trail access to Thornton Lakes is a direct trail up and back along the same alignment, a loop trail, or a new alignment. The rationale for a loop trail, which could be of various lengths, would be to gain opportunities for subalpine views.

The **boat launch at Colonial Creek Campground** has experienced siltation and shoaling since its construction. The boat ramp periodically becomes unusable during periods of low water. In some instances, boaters who entered the lake during high water cannot retrieve their boats and have been stranded. These problems are caused primarily by periodic debris flows from Rhode Creek and secondarily by continued expansion of the Thunder Creek Delta. As part of the relicensing of the Skagit River Hydroelectric Project, the NPS requested Seattle City Light to identify remedial measures to address this problem and incorporate those measures into the City’s recreation plan for the Skagit Project. In the future the boat ramp could no longer be useable given the expansion of the Thunder Creek Delta and more importantly, accumulation of sediment and debris from Rhode Creek (Ebasco Environmental, 1990). Should this happen, the NPS would **consider several options.** 1) Relocate the boat launch to the north side of the highway in the vicinity of Diablo Lake boathouse, as recommended via previous as-

assessments (Ebasco Environmental, 1990). This action may also require dredging to maintain this new boat launch. Parking would still remain on the south side. Ancillary facilities in the vicinity of the ramp such as a vault toilet and picnic area could be included. 2) **Maintain the launch in its current location by periodically dredging a channel from the launch to deeper water.** This action would be done in coordination with Seattle City Light so dredging could be done at low water levels to minimize impacts to water quality. 3) If dredging is not feasible due to accelerated sedimentation rates, then the NPS would no longer attempt to maintain a boat launch in the vicinity of Colonial Campground. The NPS would either seek to establish a launch elsewhere on the reservoir or abandon providing a boat launch on Diablo Lake. Boating would still be encouraged, but the loss of a boat launch would limit boating to paddlecraft, such as canoes and kayaks, or small motorboats, such as Jon boats, that could be launched without a ramp.

Tribal Issues

The NPS would continue to work closely with Skagit Tribes to preserve archeological sites and continue their traditional activities within Ross Lake NRA.

Wilderness and Backcountry

Seattle City Light has determined that a hydroelectric project on Thunder Creek is not economically or environmentally feasible. SCL has abandoned hydroelectric development plans for Thunder Creek and thereby has removed the possibility of a nonconforming use or incompatible condition. Conversion of this area to designated wilderness would be completed in accordance with the Washington Parks Wilderness Act of 1988, Title IV(a)(2) which states “any lands designated as potential wilderness additions, upon publication in the *Federal Register* of a notice by the Secretary of the Interior that all uses thereon that are inconsistent with the Wilderness Act have ceased or that non-Federal interests in land have been acquired, shall thereby be designated as wilderness and managed accordingly.” Conversion to designated wilderness would also comply with NPS *Management Policies 2006* (§ 6.2.2.1) which states, “. . . these potential wilderness areas will become designated wilderness upon the Secretary’s determination, published in the *Federal Register*, that they have finally met the qualifications for designation by the cessation or termination of the nonconforming use.”

The Thunder Creek Potential Wilderness Area, totaling 3,559 acres, would be converted through adminis-

trative designation to wilderness and included in the Stephen Mather Wilderness as part of the National Wilderness Preservation System. This action would ensure that the Thunder Creek area’s wilderness character and wilderness resources would be preserved in an unimpaired condition, in accordance with the Wilderness Act. These lands would be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical uses.

In recognition of Seattle City Light’s easements under the Skagit River Treaty, Big Beaver Valley is not proposed for wilderness designation at this time.

Grizzly Bear Core Area Management

Ross Lake National Recreation Area lies within the North Cascades ecosystem grizzly bear recovery zone. The recovery zone has been divided into 42 Bear Management Units (BMUs) for the purposes of habitat evaluation and population monitoring (USFWS 1993, USFS 1990). Each BMU represents an approximation of a female grizzly bear’s home range and is drawn following natural features, encompassing a complete array of seasonal habitat needs for feeding, cover, and denning. Eleven BMUs are within, or overlap, the North Cascades National Park Service Complex.

Desired conditions for each BMU are defined by the contiguity, size, and habitat quality of areas isolated from roads and high-use trails during the springtime (“early season,” den emergence to July 15) and summer/ fall (“late season,” July 16 to denning) foraging periods. In 1994 the Interagency Grizzly Bear Committee (IGBC) identified a task force to develop a consistent analysis process for defining the area within which road and trail density should be measured (IGBC 1994/ 1998). The basis upon which habitat effectiveness for grizzly bears would be determined was the amount and quality of “core areas” within a BMU. Core areas were defined as areas with the following characteristics: (1) No motorized use of roads and trails during the non-denning period. (2) No roads or trails that receive non-motorized, high-intensity use. “High intensity use” was defined by the US Forest Service (1990, under the purview of the IGBC) as trails receiving an average of 20 or more parties per week. (3) A minimum of 0.3 miles (500 meters) from any open road, motorized trail, or high use trail. The 0.3 mile buffer was determined from a review of available research on the relationships among grizzly bears, roads, trails and habitat use (Mattson et al. 1987, McLellan and Shackleton 1988, Aune and Kasworm 1989, Kasworm and Manley 1990, Mace et al. 1996, Mace and Waller 1996).

Ross Lake NRA, as part of the North Cascades ecosystem grizzly bear recovery zone, includes portions of six Bear Management Units (BMUs) within the recovery zone. BMUs represent an approximation of home range of a female grizzly accompanied by young, and are generally drawn following natural features to include drainages that encompass a complete array of elevations and seasonal habitat needs of a grizzly bear family's annual requirements for feeding, cover, and denning. The Interagency Grizzly Bear Committee Taskforce Report on Grizzly Bear Motorized Access Management (IGBC, 1998) contains recommendations for a consistent approach to access management within and between grizzly bear ecosystems. The taskforce identified Core Areas for grizzly bears as being free of motorized traffic and high levels of human use. Core Area within this ecosystem is defined as any area more than 0.3 miles (500 meters) from a road or high use trail. "High use trail" is further defined as any trail or section of trail receiving greater than or equal to 20 parties per week during the early season (from den emergence to July 15) or the late season (July 16 to denning).

In 1997, the North Cascades Ecosystem Interagency Grizzly Bear Management Subcommittee of the IGBC adopted interim guidelines for management of core area throughout the ecosystem. Core Area of these BMUs. These guidelines called for a "no net loss of Core Area" within the U.S. Forest Service National Forests and National Park Service lands within the North Cascades ecosystem with the expectation that when each federal agency undertook their next major public planning process, more formal management direction would be determined for each agency. This general management plan is the mechanism by which the NPS will formalize direction for core area and habitat management within the North Cascades National Park Service Complex. In British Columbia, management of Core Area in the North Cascades seeks to minimize or avoid the net loss of Core Area from 1999 levels (Ministry of Environment 2004).

During 1997 and 1998, the North Cascades Grizzly Bear Management Subcommittee directed its technical team to conduct an assessment of the availability of core areas and the seasonal habitat values in core areas across the ecosystem. The resulting North Cascades Ecosystem Grizzly Bear Habitat Assessment (2001) estimated seasonal habitat availability, recommended long-term core area goals for each Bmu, recommended desired condition for seasonal habitat in core areas, evaluated the availability of habitat components in core area on federal ownerships within each Bmu, provided recommendations to improve habitat suitability for

BMUs not meeting the desired condition, and recommended using consistent definitions and approaches to access management as outlined in the Task Force Report (IGBC 1994/1998).

The two ecosystems where recovery has been most successful, the Yellowstone and Northern Continental Divide Ecosystems, have set standards of approximately greater than or equal to 70 percent core area per Bmu. Current core area values within the North Cascades NPS Complex range from approximately 53-92 percent/Bmu. Three BMUs shared with the Mt. Baker-Snoqualmie National Forest (two within the north unit of the national park, one within the south unit) do not achieve 70 percent core area because of road and high-use trail densities primarily on national forest and private lands. One shared Bmu achieves 71 percent core area, with most development occurring on national forest and private lands.

No new roads are proposed in this general management plan, and the removal of one mile of road is planned in order to comply with the Wilderness Act (1964). Trails proposed in this plan would constitute reductions in core area of less than one percent in each of the Pasayten, Granite Creek, Goodell-Beaver, and Thunder BMUs. These trails would not cause significant loss of core percentage, core area habitat quality, loss of high quality habitat from core area, or fragmentation of large blocks of isolated habitat. A Habitat Assessment will be completed for any proposed development that might affect a Bmu within Ross Lake NRA, North Cascades National Park, or Lake Chelan NRA. This will provide an analysis of impacts to grizzly bear habitat in addition to any changes to the percentage of core habitat. The NPS will strive to minimize, avoid, or mitigate impacts on high quality spring and fall grizzly bear habitat. The NPS will consult with the USFS in any circumstance where the development of potentially high use trails within the national park would affect a shared Bmu that is currently below the 70 percent core area ratio or which could reduce the core area ratio below 70 percent overall for a shared Bmu.

By retaining core area at a higher level than 70 percent, goals are met that would allow for population recovery. BMUs with high core values may also offset or compensate for BMUs where higher standards are not possible because of the distribution of private lands or roads that may not be closed because of jurisdictional or management concerns.

Successful recovery is occurring in two other recovery zones in the United States (the Northern Continental Divide and Greater Yellowstone Ecosystems) where

Core Area is maintained at approximately 70% (Wayne Kasworm, U.S. Fish and Wildlife Service-Grizzly Bear Recovery Office, personal communication; John Waller, Wildlife Biologist, Glacier National Park, personal communication; U.S. Fish and Wildlife Service-2007).

Within Ross Lake NRA, current Core Area for the six BMUs ranges from 82-92%. This means that 82-92% of each BMU is free of motorized traffic and high levels of human use. For Ross Lake NRA, the NPS would maintain a minimum Core Area of 70% within each BMU. This would be done by limiting development, such as new trails, roads, and campsites, in BMUs.

No additional roads are proposed for Ross Lake NRA in this GMP. Trail developments proposed in this GMP, which are largely focused along the North Cascades Highway, would not lower the Core Area for any BMU below 70%.

Wild and Scenic River

Wild and Scenic River Eligibility and Suitability Studies Summary

Rivers and streams within Ross Lake NRA would be preserved in their free-flowing condition, and they and their immediate environments would be protected.

Based on the findings of the draft *Skagit Wild and Scenic River Eligibility and Suitability Studies*, the NPS would recommend Congressional legislation for wild and scenic river designation of the Skagit River from Gorge Powerhouse downstream to the boundary of Ross Lake NRA, Goodell Creek, and Newhalem Creek. This river segment and creeks were found eligible based upon their free-flowing conditions and outstandingly remarkable values and based upon analysis, public comments, and consultation with partners and tribes. A wild and scenic designation would complete the Skagit Wild and Scenic River System from Sedro-Woolley up to the start of the Skagit Hydroelectric Project at the Gorge Powerhouse, providing an opportunity for holistic watershed management.

The 11-mile Skagit River segment, from Gorge Powerhouse to the Ross Lake NRA boundary, contains the following outstandingly remarkable values: fish, wildlife, geology, pre-history, history, scenery, and recreation. The Skagit River would be classified as "Recreational," due to the hydropower dams upstream and presence of the North Cascades Highway paralleling the river for this entire stretch. The Skagit River between Gorge Dam and Gorge Powerhouse would not

be eligible because this largely dewatered reach does not meet the free-flow requirements of the Wild and Scenic Rivers Act.

Goodell Creek, 12.7 miles from its headwaters to its confluence with the Skagit River, possesses the following outstandingly remarkable values: fish, wildlife, geology, and scenery. Goodell Creek would be classified as "Wild" from its headwaters to river mile 0.5 and "Recreational" from river mile 0.5 to its confluence with the Skagit River.

Newhalem Creek, 9 miles from its headwaters to its confluence with the Skagit River, possesses the following outstandingly remarkable values: wildlife, geology, history, pre-history, and scenery. Newhalem Creek would be classified as "Wild" from its headwaters to upstream of the diversion dam at river mile one and "Recreational" from river mile one to its confluence with the Skagit River.

The Skagit River below between Gorge Dam and Gorge Powerhouse was found ineligible because the limited water in this reach does not meet the free-flow requirement of wild and scenic river eligibility.

The complete *Skagit Wild and Scenic River Eligibility and Suitability Studies* are included in Appendix D of this draft final GMP/EIS.

Additional Eligibility and Suitability Analysis

Three other tributaries of the Skagit River above Gorge Dam (Thunder Creek/Fisher Creek, Ruby Creek, and Big Beaver Creek) were also found eligible in previous study efforts.

The NPS would evaluate and/or update eligibility for rivers or river segments in the Skagit River Watershed within the North Cascades NPS Complex. This evaluation would include, but is not limited to: Bacon Creek, Thunder Creek/Fisher Creek, Ruby Creek, Big Beaver Creek, Little Beaver Creek, and Lightning Creek. If eligible, the NPS would also conduct a suitability analysis for these creeks. Evaluations of Bacon Creek, Lightning Creek, and Ruby Creek would be conducted in cooperation with the Okanogan-Wenatchee and Mt. Baker-Snoqualmie National Forests.

Boating – Administrative Use

The NPS would continue to operate several motorized vessels on Ross and Diablo lakes as part of normal operations related to trails and campground maintenance, resource and visitor protection/law enforce-

ment and emergency operations, and research and resource management projects. These operations are integral to maintaining the visitor experience on and around these lakes and for resource protection and management.

As of 2010 the NPS operated roughly 12 vessels, powered by either outboard gasoline engines or in-board diesel engines. NPS boat use on Ross Lake is broadly estimated to be between 700 and 900 hours annually, although that varies in any given year. Given the goal and expectation of maintaining similar facilities, visitor services, patrol operations, and science-related activities on these lakes, the NPS would continue to maintain a similar-sized fleet well into the future. Any diesel engines would be phased out and replaced with cleaner technology.

Efficiencies would be sought when planning operations and when transporting staff. All the current outboard engines have been converted to the cleaner, more efficient four-stroke engines. Replacement of boats and their engines is an ongoing process, and the following considerations would be required for all future boat and engine purchases:

- Clearly identify the need and function of the vessel, and compare it to the vessel/engine it is replacing, with a particular eye to limiting the size of the vessel/engine
- Fuel efficiency of the vessel and engine
- Noise levels associated with engine.

These considerations would be reviewed internally within the park to ensure wise decisions are being made in management of the boat fleet, with a particular emphasis on minimizing vessel noise levels and maximizing fuel efficiency with these vessels on Ross Lake to the greatest extent possible while meeting operational needs.

Access to Ross Lake

No additional road access from the North Cascades Highway to Ross Lake would be developed.

The only vehicular access to Ross Lake would continue to be the 40 mile gravel road from Hope, B.C. to Hozomeen. The NPS would recommend the road be maintained as a gravel road as paving the road could fundamentally alter the character of Hozomeen and Ross Lake itself as a remote outpost for recreationists.

Cost Estimates

Cost estimates for the various alternatives throughout this plan are intended only to provide an estimate of the relative costs of alternatives. NPS and industry cost estimating guidelines were used to develop the costs (in 2010 dollars) to the extent possible, but the estimates should not be used for budgeting purposes. Specific costs would be determined in subsequent, more detailed planning and design exercises and would considering the design of facilities, identification of detailed resource protection needs, and changing visitor expectations. Actual costs to the NPS would vary depending on if, and when, the actions are implemented, and on contributions by partners and volunteers. Note that these costs do not include the costs for any additional plans or studies.

It is assumed that meeting the long-range financial needs of Ross Lake NRA would not just rely upon federal appropriated funds. A variety of other public and private sector funding sources could be sought by the NPS to assist in implementation efforts. Other NPS units have successfully found partners to help with funding major projects, and some of the costs associated with actions in the alternatives may prove to be less expensive when donated materials, labor, and other support are forthcoming.

ALTERNATIVE A: NO ACTION

Alternative A is the No Action Alternative and assumes that existing management, programming, facilities, staffing, and funding would generally continue at their current levels. The No Action Alternative is required by the National Environmental Policy Act and also serves as a baseline for comparison in evaluating the changes and impacts of the other three alternatives. The emphasis of the No Action Alternative would be to protect the values of Ross Lake NRA without substantially increasing staff, programs, funding support, or facilities. Resource preservation and protection would continue to be a high priority for the management of Ross Lake NRA. Staff would continue to work with neighboring agencies for collaborative ecosystem management.

Management of visitor use and facilities would generally continue through existing levels and types of service and regulation. Additional visitor facilities, such as new buildings, structures, roads, parking areas, camping areas, and trails, would not be constructed, except for those associated with the North Cascades Environmental Learning Center. The NPS would react to catastrophic events and the destruction of visitor facilities on a case-by-case basis, which could result in a net loss of visitor facilities.

Management Zones

For Alternative A, the specific boundaries and configuration of the management zones are provided in Figure 4.1.

The No Action Alternative uses the management zones from the 1988 *North Cascades NPS Complex General Management Plan*. Ross Lake NRA is overlaid with three zones: Natural Zone, Park Development Zone, and Special Use Zone. These zones are defined as:

Natural Zone: Lands and waters managed to ensure that natural resources and processes remain largely unaltered by human activity. Developments here are generally absent or limited to dispersed recreational and management facilities. Research natural areas are a special sub-zone within this zone and are strictly protected for their scientific values. Within the national recreation area hunting is allowed within the natural zone, and the National Park Service cooperates with the Washington Department of Wildlife to provide for the management of game species for hunting while ensuring the long-term health of wildlife populations.

Park Development Zone: Lands managed to provide the development needed to support the desired visitor experience and operation of the unit. Development that is non-historic or that significantly alters the natural environment is included in this zone, rather than in the Natural Zone.

Special Use Zone: Lands and waters used by other agencies or interest for the purposes not permitted in the natural or park development zones.

Management of Specific Areas within Ross Lake NRA

The following section presents an overview of the management strategies for highlighted areas of Ross Lake NRA, and some of the anticipated changes that could occur.

North Cascades Highway Corridor

Under Alternative A, the North Cascades Highway corridor would continue to be managed as the primary access point for visitors. Dramatic viewsheds of the Skagit River, jagged mountain peaks, waterfalls, and reservoirs would introduce visitors to the North Cascades along the highway corridor. Visitors could then venture further into the North Cascades on back roads and trails that lead into the wilderness areas of the complex. The NPS would maintain existing day-use opportunities along the North Cascades Highway, such as dayhiking, backpacking, water recreation, and interpretive and educational activities.

Most of the facilities and infrastructure that are threatened by severe weather events, such as flooding, are located within the North Cascades Highway corridor. Under Alternative A, the NPS would continue to respond to **facilities destroyed or damaged by severe weather events**, such as flooding, in a reactive manner and on a case-by-case basis. Response strategies would be evaluated and determined based on an individual analysis of the situation at the time it occurs. A net loss of facilities or sites, such as camp sites, could occur.

Hozomeen

Hozomeen would continue to offer a unique camping experience as the only campground on Ross Lake that can be accessed by road. Primary access to Hozomeen would continue to be via the gravel road from Hope, British Columbia or by boat, foot, or stock from the U.S.

Management Zones, 1988 General Management Plan Ross Lake National Recreation Area GMP/EIS

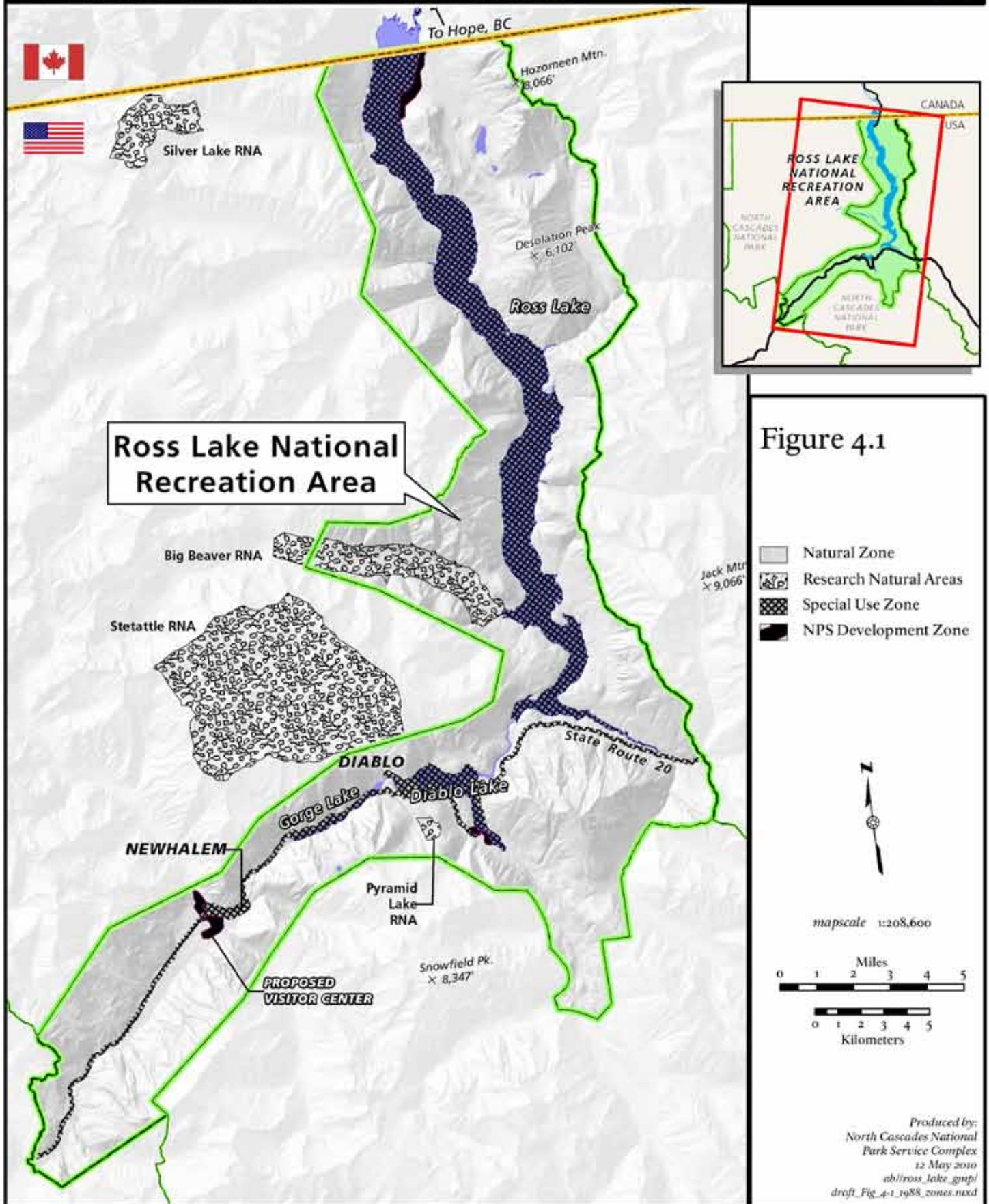


Figure 4.1

The campground at Hozomeen would be rehabilitated to provide a more organized and traditional camping experience.

Marblemount Ranger Station

The Marblemount Ranger Station would continue to provide buildings and space for visitor services, NPS maintenance, resource management, administration, emergency response, and staff housing functions. In addition, the Wilderness Information Center located at the Marblemount Ranger Station would continue to house a visitor contact station, wilderness ranger offices, communications center, and public restrooms. The facility was renovated and expanded in 2009 to allow for adequate space for all existing functions.

All Marblemount Ranger Station activities would be compatible with the significance of the National Register listed Marblemount Ranger Station Historic District and its associated structures, landscapes, and features.

Natural Resources

Under Alternative A, resource preservation and protection would continue to be a high priority for management of Ross Lake NRA.

Natural resources, including wildlife, vegetation, geology, glaciology, fisheries, lightscapes, soundscapes, water resources, and air resources would be ensured long-term stewardship and preservation. Ecosystem processes, such as a natural fire regime, would be managed for the benefit of resources to the greatest extent possible. Current inventory and monitoring programs would continue in their existing capacity and would be the focus of the natural resource management program. In rare cases, impacted resources and extirpated species could be restored for ecosystem health and diversity.

Cultural Resources

Cultural resources, including archeology, historic structures, cultural landscapes, ethnohistory and museum collections, would be ensured long-term stewardship and preservation. The NPS would continue documentation and research programs geared toward protecting significant cultural sites, objects, and stories and learning more about human history in the North Cascades. The NPS would continue to work closely with Skagit Tribes to preserve archeological sites and continue their traditional activities within Ross Lake NRA.

Wilderness and Backcountry

In designated wilderness, potential wilderness, and backcountry areas, the NPS would continue to emphasize the preservation of wilderness character. Non-wilderness portions of Ross Lake NRA would also continue to be managed for some wilderness values. Visitors would be provided with opportunities for solitude and connections with the natural world. The backcountry permit system would continue to monitor and control numbers of visitors in these remote areas in order to minimize visitor impacts to resources and other visitors.

Recreation

Under Alternative A, recreational opportunities would continue to offer visitors a variety of ways to experience, learn about, and enjoy resources in Ross Lake NRA. A wilderness experience would continue to be available to those who prefer solitude and tranquility in more remote areas of Ross Lake NRA.

Boating on Ross, Diablo, and Gorge lakes and on the Skagit River would continue to be managed primarily by maintaining the limits set by existing infrastructure, such as boat launches and existing access points. The NPS would not actively implement additional rules or regulations to manage or restrict motor boat use in the near future, such as establishing limits on motorboat speed, horsepower, boat size, and types of motorboat engines. Activities that involve towing people behind boats, such as water skiing, would continue unregulated within Ross Lake NRA.

Hunting and fishing would continue in existing permitted areas within Ross Lake NRA. Hunting and fishing regulations would continue to be coordinated with the Washington State Department of Fish and Wildlife.

Sport climbing within the North Cascades Highway corridor would continue in four documented areas within Ross Lake NRA. Routes and access would be maintained and monitored through an Adopt-A-Crag program. Some routes or areas could be closed for resource protection. New routes that require placement of fixed anchors, and replacements, would be allowed within the four areas.

Seaplanes would continue to be allowed on Diablo and Ross lakes except within 1,000 feet of Diablo Dam and Ross Dam, according to 36 CFR 7.69 and 36 CFR 2.17. Pilots involved in **commercial scenic air touring** must comply with FAA Bulletin AC91-36D to maintain

a 2,000 foot above ground level limit when flying over NPS lands.

The **backcountry permit system** would continue to require that visitors obtain permits for backcountry campsites in person at designated locations within 24 hours of the start of the trip. The **campsite reservation system** would also continue to allow visitors to make reservations for some frontcountry campsites by phone and via the web; most frontcountry campgrounds and sites would continue to be held for walk-ins. The backcountry reservation system for commercial users would be maintained.

Interpretation and Education

The NPS would continue to organize the interpretation and education programs into outreach, curriculum-based programs, and traditional interpretation. On-site non-personal services, such as waysides and nature trails, would continue to provide opportunities for resource immersion within Ross Lake NRA. Personal services and formal interpretive programs, including interpretive walks, talks, and roving interpreters, would provide opportunities for visitors to engage with NPS staff and rangers. Educational programs would continue to be offered at existing facilities, within Ross Lake NRA, and in the local communities. Other non-personal services, such as websites and publications, would continue to provide information and educational messages that can be accessed remotely and inside Ross Lake NRA.

Partnerships would continue to help the interpretive messages reach a broader audience through programs, additional interpretive displays, and distribution of interpretive material and media, including retail. Partnerships would also help expand stewardship by engaging volunteers in projects and programs. Existing partnerships with the North Cascades Institute, British Columbia Parks, SCL, and concessioners would continue to engage a diversity of audiences focused on the North Cascades ecosystem.

NPS staff would participate in outreach to provide programming for organized groups and events outside Ross Lake NRA boundaries. Outreach programs that focus on building relevancy between the park and Latino and Hispanic members of surrounding communities would continue. The NPS would also continue to collaborate with its partners to develop pathways for youth from education and stewardship programs to employment opportunities.

Access and Transportation

Under Alternative A, mechanized and non-mechanized access and transportation to and within Ross Lake NRA would largely be maintained. Roads, parking, pullouts, and waysides would continue to provide visitors with vehicular and bicycle access to the frontcountry and some backcountry areas of Ross Lake NRA. Boat launches on the lakes and Skagit River would continue to allow access by both motorboats and paddle boats to Ross Lake NRA's waterways.

Management of the North Cascades Highway

The NPS would coordinate with the Washington State Department of Transportation. Operations, use, and existing facilities would continue to be maintained in their existing conditions. Some continued operations, including the use of explosives for avalanche control, could result in resource impacts. Additionally, existing vehicular uses would continue to produce intermittent excessive noise. Some facilities would continue to impact natural processes and systems and could be destroyed by severe weather events, such as the narrow bridge over Goodell Creek and other North Cascades Highway crossings at Rhode, Thornton, and Damnation Creeks. Existing parking areas (including the Ross Dam Trailhead parking lot), pullouts, and waysides would continue to be maintained in their current condition along the North Cascades Highway.

During winter, the North Cascades Highway would continue to be closed to throughway vehicular access from the Ross Dam Trailhead parking lot to milepost 170, 14 miles west of Mazama, due to safety threats posed by avalanches and the high cost of plowing and wintertime road maintenance. Recreational activities, such as skiing and snowmobiling, would continue on this closed portion of the road. Overlooks and trailheads on the open portion of the highway within Ross Lake NRA would remain unplowed during the winter months.

Climate Change

The NPS would continue to interpret and monitor the effects of human-forced climate change in the North Cascades and work toward increasing fuel and energy efficiency. **The NPS would coordinate with SCL to implement conservation measures on NPS facilities in the NRA, and impacts on facilities would be addressed on a case-by-case basis as needed.** Monitoring of natural resources would continue to detect and document impacts associated with climate change. Purchasing "green power," using photovoltaic systems at select

facilities, increasing use of biodiesel fuel, maintaining hybrid vehicles, and prioritizing green facility design would all be actions pursued to reduce greenhouse gas emissions.

Operations

Staffing

Alternative A assumes current staffing levels would be maintained at 133 full time positions with the addition of two permanent resource staff (one full time equivalent (FTE) is one person working 40 hours per week for one year, or the equivalent). It is important to note that these staffing figures are for the North Cascades NPS Complex as a whole, as staff work on all three units of the complex. The total number of FTEs is the number of staff required to maintain the assets of Ross Lake NRA at a good level, provide acceptable visitor services, protect resources, and generally support Ross Lake NRA’s operations. The FTE number indicates base-funded, term, and seasonal staff only, not volunteer positions or positions funded by partners. FTE salaries and benefits are included in the annual operating costs.

Boundary Modification

There would be no boundary modifications under Alternative A, and the NPS would continue management and operations under existing agreements with the Forest Service, Seattle City Light, and the Washington State Department of Transportation.

Table 4.2 Alternative A: Staffing

Management and Administration	18
Maintenance	44
Interpretation/Education	13
Resource Management	43 + 2 new
Visitor Protection	15
Total Staff	135

Estimated Costs

The cost figures shown here and throughout the plan are intended only to provide an estimate of the relative costs of alternatives. See the “Cost Estimates,” section earlier in this chapter for more detail. Cost estimates for Alternative A are identified below.

**Table 4.3 Alternative A:
Estimated Costs**

Annual Operating Costs	\$7,091,000
Staffing (FTE)	135
Total One-Time Costs	\$6,626,000
▪ Facility Costs	\$60,000
▪ Non-Facility Costs	

ALTERNATIVE B: PREFERRED ALTERNATIVE

Alternative B is the NPS Preferred Alternative. Alternative B would focus on managing Ross Lake NRA as a gateway to millions of acres of wilderness, providing enhanced visitor opportunities along the North Cascades Highway, and making better use of facilities along that corridor while ensuring the long-term stewardship of the surrounding North Cascades ecosystem and wilderness. The North Cascades Highway corridor would be managed to provide a variety of day-use and overnight recreational opportunities for visitors with a range of abilities and interests. Management of wilderness and backcountry areas would focus on ecosystem preservation and compatible recreational activities. Interpretation and education would be a key component of this alternative, emphasizing hands-on experiential learning and stewardship programs delivered by the NPS and its partners.

Recreation in Ross Lake NRA would be enhanced along the North Cascades Highway corridor through the addition of limited new facilities, including dayhiking trails, reconfigured parking areas, an upgraded Wilderness Information Center, and the modest expansion of overnight facilities and concessions. Recreation in the wilderness and backcountry areas of Ross Lake NRA, including Ross Lake, would focus on providing visitors with opportunities for solitude, tranquility, and connections with the natural world. Self-propelled and non-mechanized recreation would be encouraged throughout Ross Lake NRA. Regulations for motorized water recreation would work to maintain the ambient character and experience on the lakes and the Skagit River, while also moving towards cleaner technologies. An online permit reservation system for permits would allow visitors the opportunity for advance trip planning. In the event of a catastrophic event and the destruction of visitor facilities, the NPS would strive to offer similar visitor facilities in the vicinity while limiting net loss of visitor opportunities.

The NPS would recommend a name change for Ross Lake National Recreation Area to North Cascades National Recreation Area. Congressional legislation would be required to authorize this name change. No changes to authorities in Ross Lake NRA's existing legislation are recommended. Hydropower generation, hunting, and dogs on trails within the NRA would continue.

This alternative contains Frontcountry zoned areas along the North Cascades Highway, Diablo Lake, Ho-

zomeen, and near Ross Dam. Undeveloped areas beyond the North Cascades Highway road prism would be zoned Backcountry. Designated or potential wilderness lands are zoned Wilderness.

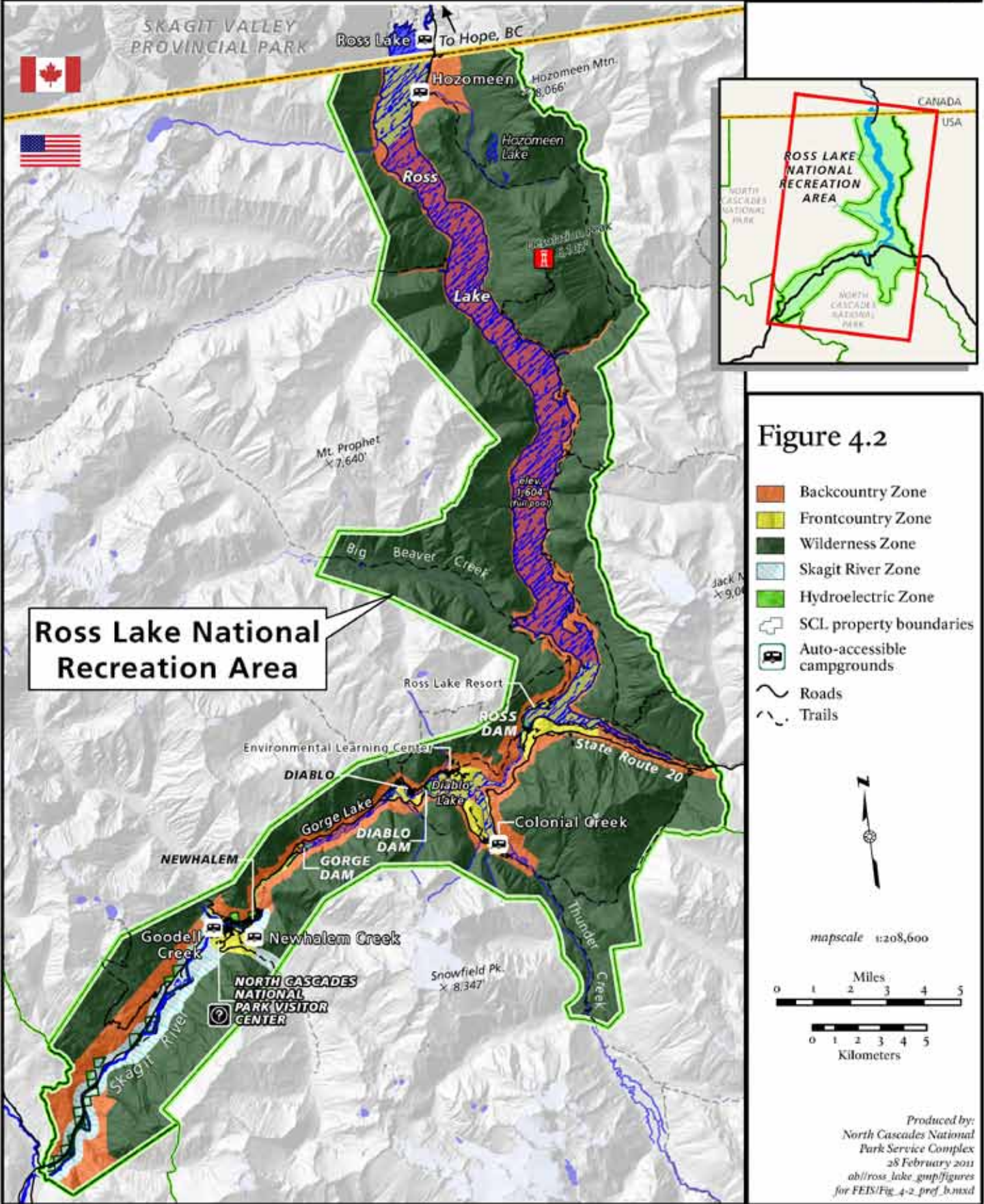
Management Zones

The management zones for the Preferred Alternative are applied to the landscape to identify an area's predominant use and desired future conditions. Specific boundaries of the management zones are provided in Figures 4.2-4.6. The following description identifies the locations and details for the application of management zones in Alternative B.

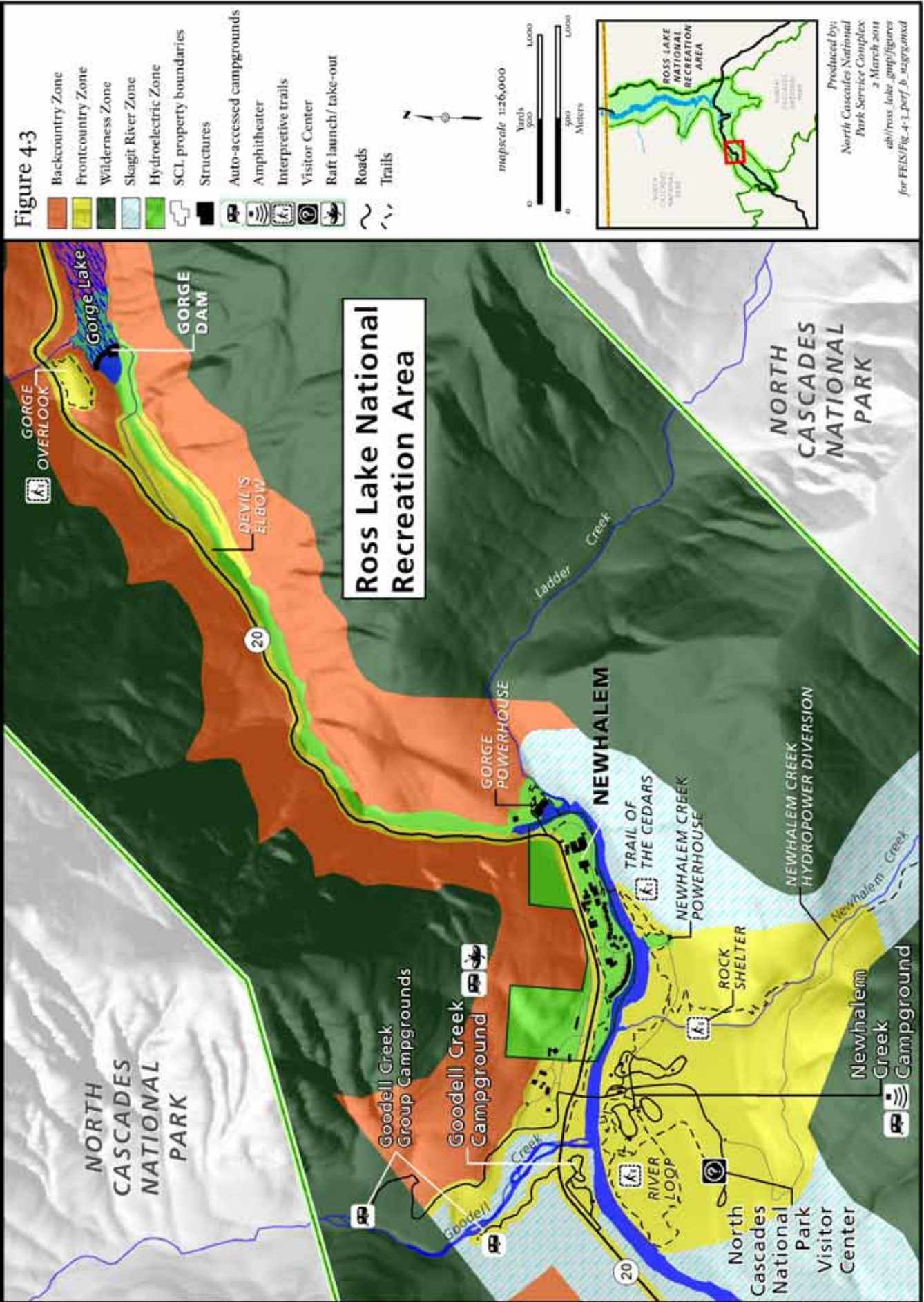
Frontcountry Zone: The Frontcountry Zone would extend along the entire length of the North Cascades Highway and encompass developed recreational sites and nearby areas. The Frontcountry Zone would encompass the North Cascades Visitor Center and campground areas, Goodell campsites, Diablo Lake, the Environmental Learning Center area, Colonial Creek Campground area, Thunder Knob, the southern portion of the Ross Lake area to Cougar Island and Hidden Hand on Ruby Arm, Hozomeen area, and the northern portion of Ross Lake from the international border to Silver Creek. Along the North Cascades Highway, the Frontcountry Zone would include 100 feet on either side of the highway center line. Lands within this 200 foot corridor that are owned or managed through easements by either the Washington State Department of Transportation (WSDOT) or Seattle City Light (SCL) would be zoned Frontcountry. This 200 foot corridor would allow for limited and necessary modifications to the North Cascades Highway, while ensuring that areas outside of this corridor are protected from more intensive development and use.

Backcountry Zone: The Backcountry Zone would include areas that are dominated by natural conditions where recreational opportunities would focus on providing a sense of remoteness and immersion in nature within a mountainous wilderness setting. The Backcountry Zone would also conceptually function as a transition area between the Frontcountry and Wilderness Zones. In the Skagit River area, the Backcountry Zone would be located between the Skagit River Zone and the Wilderness Zone, including the Thornton Lakes access area and upper Nehalem Creek. The Backcountry Zone would

Management Zones Alternative B: Preferred Alternative



Management Zones - Newhalem to Gorge Dam Alternative B: Preferred Alternative



Management Zones - Gorge Dam to Diablo Gorge Alternative B: Preferred Alternative

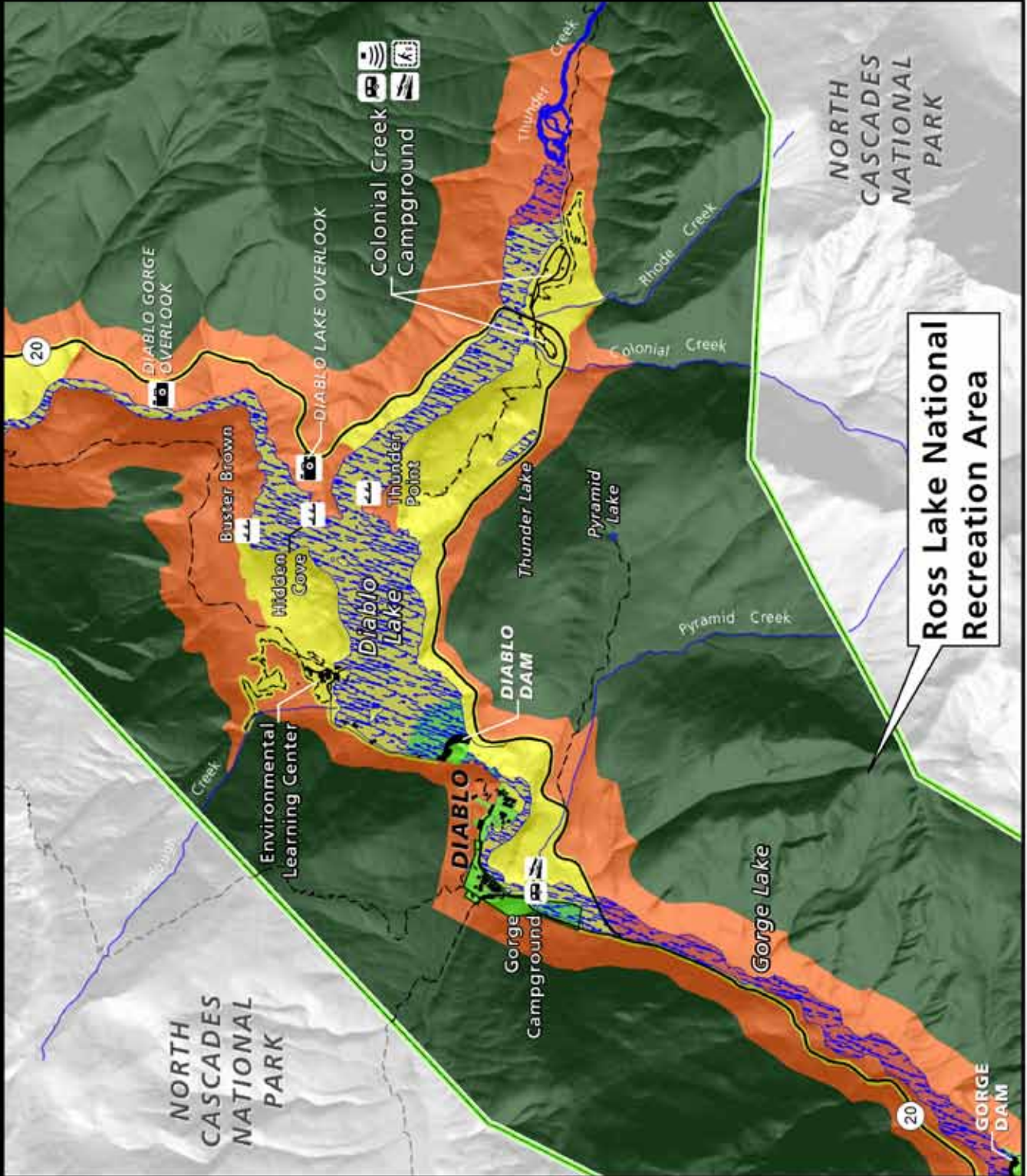
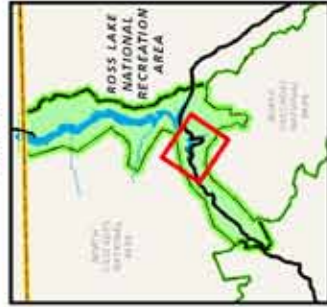
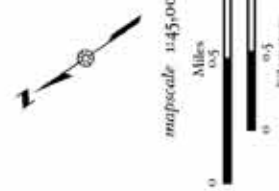


Figure 4-4

- Backcountry Zone
- Frontcountry Zone
- Wilderness Zone
- Hydroelectric Zone
- SCL property boundaries
- Structures
- Boat-in camps
- Auto-accessed campgrounds
- Amphitheater
- Interpretive trails
- Motor boat launch
- Roads
- Trails



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**Ross Lake National
 Recreation Area**

Management Zones - Lower Ross Lake Alternative B: Preferred Alternative

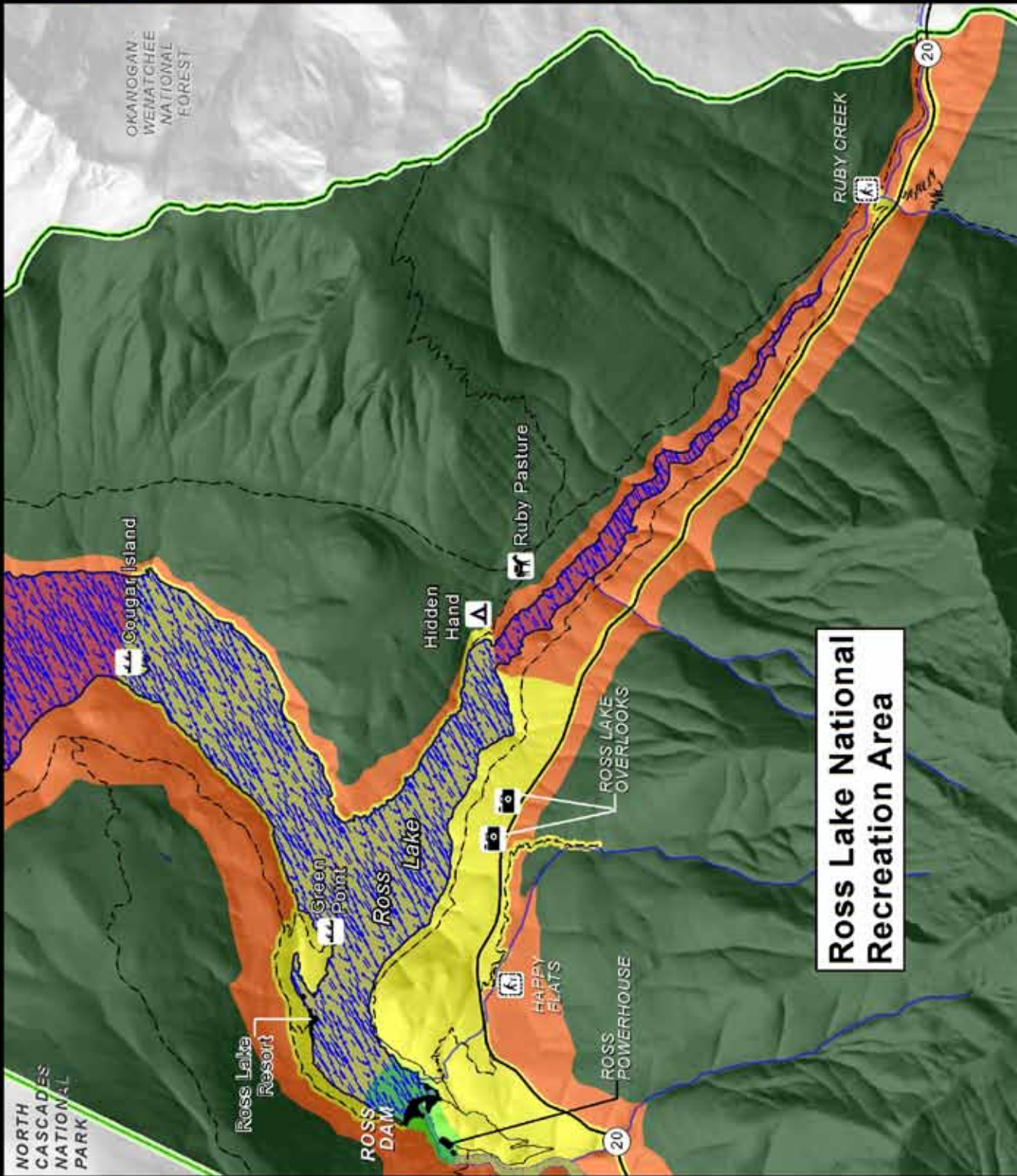
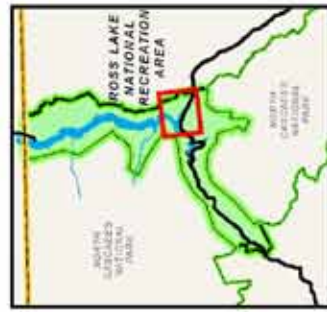
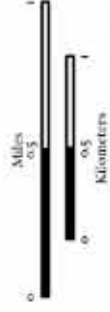


Figure 4-5

- Backcountry Zone
- Frontcountry Zone
- Wilderness Zone
- Hydroelectric Zone
- Structures
- Boat-in camps
- Hiker camps
- Stock camps
- Interpretive trails
- Roads
- Trails



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**Ross Lake National
Recreation Area**

Management Zones - Hozomeen Alternative B: Preferred Alternative

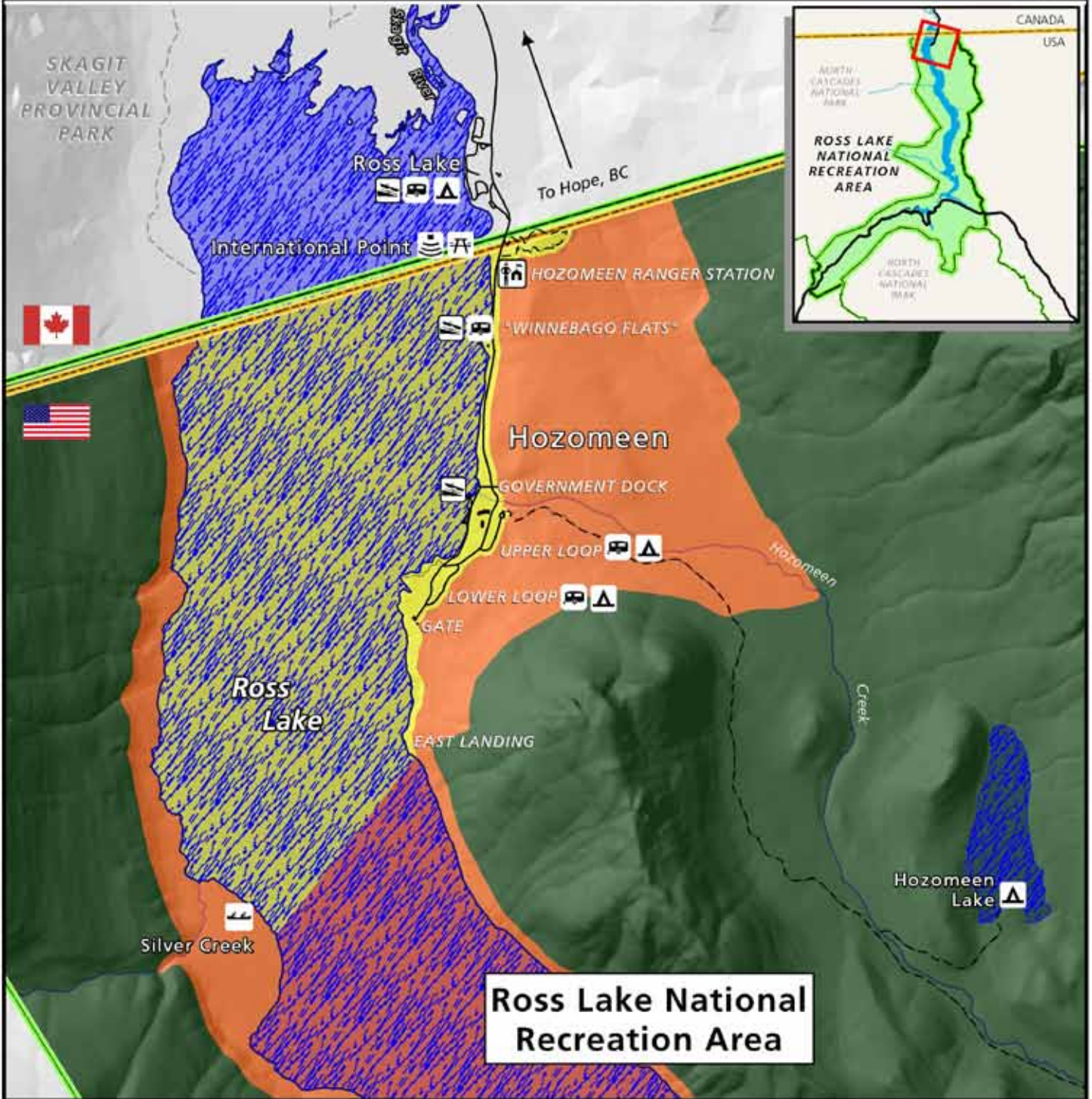
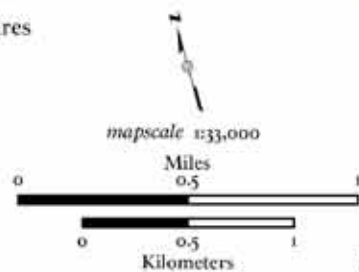


Figure 4.6

- Backcountry Zone
- Frontcountry Zone
- Wilderness Zone
- Roads
- Trails

- Hiker camps
- Boat-in camps
- Auto-accessible campgrounds
- Amphitheater
- Picnic area
- Motor boat launch
- Structures



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include most of Gorge Lake, upper Thunder Arm, and large expanses of land surrounding Diablo Lake and lower Ross Lake. The Backcountry Zone would also cover the entire surface of Ross Lake and its shoreline from Cougar Island to Silver Creek on Ross Lake.

Wilderness Zone: The Wilderness Zone would include all designated and potential wilderness areas in Ross Lake NRA.

Skagit River Zone: The Skagit River Zone would include the Skagit River and adjacent riparian corridor below Gorge Powerhouse in Newhalem and up Goodell Creek to the wilderness boundary. In conformance with the Wild and Scenic River Management Guidelines, this zone would be ¼ mile on either side of the Skagit River through most areas.

Hydroelectric Zone: The Hydroelectric Zone would include SCL facilities and primary management areas, including the hydroelectric projects at Ross, Diablo, and Gorge Dams.

The greatest proportion of Ross Lake NRA (about 73 percent) would be managed in the Wilderness Zone. The Backcountry Zone would cover 18.5 percent and the Frontcountry Zone would cover about 5 percent. The Skagit River Zone would cover about 3 percent, and about 0.5 percent of Ross Lake NRA would be managed in the Hydroelectric Zone (See Table 4.10 for a comparison of the balance of management zones).

Management of Specific Areas

The following section presents an overview of the management strategies for specific areas of Ross Lake NRA and some of the anticipated changes that would occur.

North Cascades Highway Corridor

In the Preferred Alternative, the North Cascades Highway corridor would function as a “window on wilderness” where visitors would be provided with meaningful opportunities to see, experience, and learn about the North Cascades. The NPS would create a distinct sense of arrival to help visitors understand they have entered a unit of the National Park System. The NPS would work with WSDOT and SCL to improve signage with the goal of informing people about services and recreational opportunities in the North Cascades NPS Complex. Redesigned and constructed entrances would serve as portals into the North Cascades. Dra-

matic viewsheds of the Skagit River, jagged mountain peaks, waterfalls, and reservoirs would introduce visitors to the North Cascades along the highway corridor. The NPS would work to provide activities to entice people out of their vehicles via enhanced overlooks, the existing visitor center, and visitor facilities in partnership with SCL and the NCI. Once out of their vehicles, the NPS and partners would provide opportunities for enjoyment and learning, such as ranger-led tours, Diablo Lake tours, and numerous hiking trails. Visitors would be encouraged to venture further into the North Cascades on dayhikes, ranging from short accessible trails to more strenuous hikes that leave the highway corridor and venture into the wilderness. Gorge and Diablo lakes within the North Cascades Highway corridor would continue to provide boating, fishing, camping, and sightseeing opportunities.

The NPS would provide improved day-use opportunities along the North Cascades Highway, such as day-hiking, water recreation, and increased interpretive, educational, and hands-on stewardship experiences for visitors with a range of abilities and interests who desire a variety of recreational activities. Changes to the existing conditions of the highway corridor are listed below.

Existing **campgrounds and campsites** within the corridor would be maintained for visitor enjoyment of the frontcountry areas of Ross Lake NRA. New camping facilities could be considered and constructed at Newhalem Creek Campground, and Upper and Lower Goodell group sites, and in consultation and cooperation with SCL at the aggregate ponds near the lower portions of the Skagit River. Other sites may be identified in cooperation with Seattle City Light. These sites would also be considered as replacement locations in the event of a loss of sites from storm impacts or other hazards at other campgrounds, such as Colonial Creek Campground. Additional services could also be provided at campgrounds, such as showers and electrical hookups, pending the results of a feasibility study.

Trails within the North Cascades Highway corridor would provide excellent dayhiking opportunities from accessible trails to launching points for more extensive hikes into remote areas of the North Cascades NPS Complex. New trails could include the Goodell Landslide Trail, Newhalem Boardwalk Trail, Newhalem Falls Loop Trail, Skagit River Portage Trail at the S curves, Happy Creek Falls Trail, and Newhalem Spawning Channel Trail, and the rehabilitation of the Stetattle Creek Trail ending at Stetattle Falls. The NPS would consider a modest expansion of trails to scenic

vistas along the North Cascades Highway corridor in addition to the specific trails listed above.

Along the highway, **parking and pullouts** would be enhanced to improve visitor access and safety. The Ross Dam Trailhead parking lot would be redesigned and constructed for visitor safety, see schematic design in Figure 4.7. The footprint would be enlarged to accommodate a turn lane, single point of ingress and egress, pull-through spaces for 6 oversized vehicles, and capacity for approximately 43 passenger vehicles. New pullouts and waysides would be considered for several specific areas along the North Cascades Highway at Newhalem, Devil's Elbow, Gorge Lake, **Panther Creek**, and Ross Lake.

The NPS would continue to respond to **facilities damaged or destroyed by severe weather events**. Many of the facilities along the North Cascades Highway corridor are located in areas prone to flooding and disturbance by natural events, such as landslides. The destruction of facilities from catastrophic and natural events appears to be occurring with greater frequency in the North Cascades due to severe storms and unpredictable climactic conditions. In 2003, severe weather and torrential rains resulted in landslides and creek channel migrations, impacting Colonial Creek Campground, the North Cascades Highway at Pyramid Creek, and other visitor facilities in Ross Lake NRA. The NPS would respond adaptively to facilities damaged or destroyed by severe weather events.

Under the Preferred Alternative, if facilities are impacted or destroyed, the NPS would first attempt to construct in the general vicinity in order to preserve the experiences and facilities that visitors value. Otherwise, the NPS would construct facilities at another feasible location to limit loss of facilities and visitor opportunities.

Goodell Creek Campground is located at the confluence of Goodell Creek and the Skagit River along the North Cascades Highway. The Campground is a popular location for its easy access, campsites adjacent to the creek and river, and raft launch area. The access road to Lower Goodell Group camp is threatened by flooding from Goodell Creek. An alternative access road would be provided to the west of the existing road, partially along a section of an old roadbed. Future channel changes could cause further flooding in portions of the main Goodell Creek Campground and campsites could be closed and rehabilitated to natural conditions. Alternative campsites would be provided to the west of the existing Lower Goodell Group Camp.

Newhalem

Newhalem contains the **North Cascades Visitor Center**, one of the primary drive-in campgrounds, and an extensive trail network. In addition to NPS facilities, Newhalem also contains the visitor facilities operated by SCL, including the **SCL visitor contact station Skagit Information Center**, which serves as the starting point for tours of the Skagit power facilities, trails, and the Skagit General Store. There is ample parking, areas to picnic, and utility systems that could support additional use. In addition, several sites and structures in Newhalem are listed on the National Register and owned and managed by SCL.

Newhalem would serve as a destination and hub of activity and would provide the starting point to a network of ranger-led and self-directed resource immersion activities. Partners would also be encouraged to use the visitor center as a point of origin for their programs and activities.

The long-term vision for Newhalem is to make it a primary destination and starting point for visitors who are travelling into the North Cascades wilderness. The NPS would seek to use the existing facilities and infrastructure in Newhalem more effectively to provide a more comprehensive experience for visitors. During the summer season, Newhalem would primarily serve general visitors. During the spring and fall seasons, Newhalem could serve as an outdoor classroom that is used by educators in concert with the NPS and partner educational programs. During the winter season, visitor facilities would be minimally maintained in response to seasonally low visitation.

The NPS would operate visitor facilities in **partnership with SCL** and others to provide visitors with a complete picture of recreation and learning opportunities in the Newhalem area and the North Cascades. The NPS and SCL partnership would be enhanced through new collaborative efforts, such as having NPS rangers working side-by-side at the SCL visitor contact station and providing interpretation on the SCL operated Diablo Lake tours. The NPS would encourage SCL to enhance services at the Skagit General Store and food services to better align with the needs and expectations of visitors to the North Cascades.

The **North Cascades Visitor Center** would continue to be the primary information and interpretive center for the complex. The exhibits, multi-media programs, and activities would be updated to provide visitors with more active and interactive opportunities that effectively use technology to provide engaging, fun,



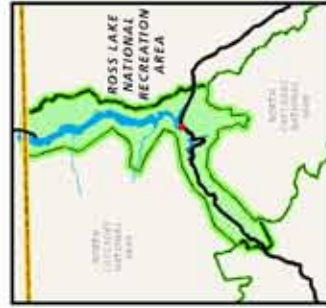
Ross Dam Trailhead Parking Lot: Schematic Design Alternative B

Figure 4.7

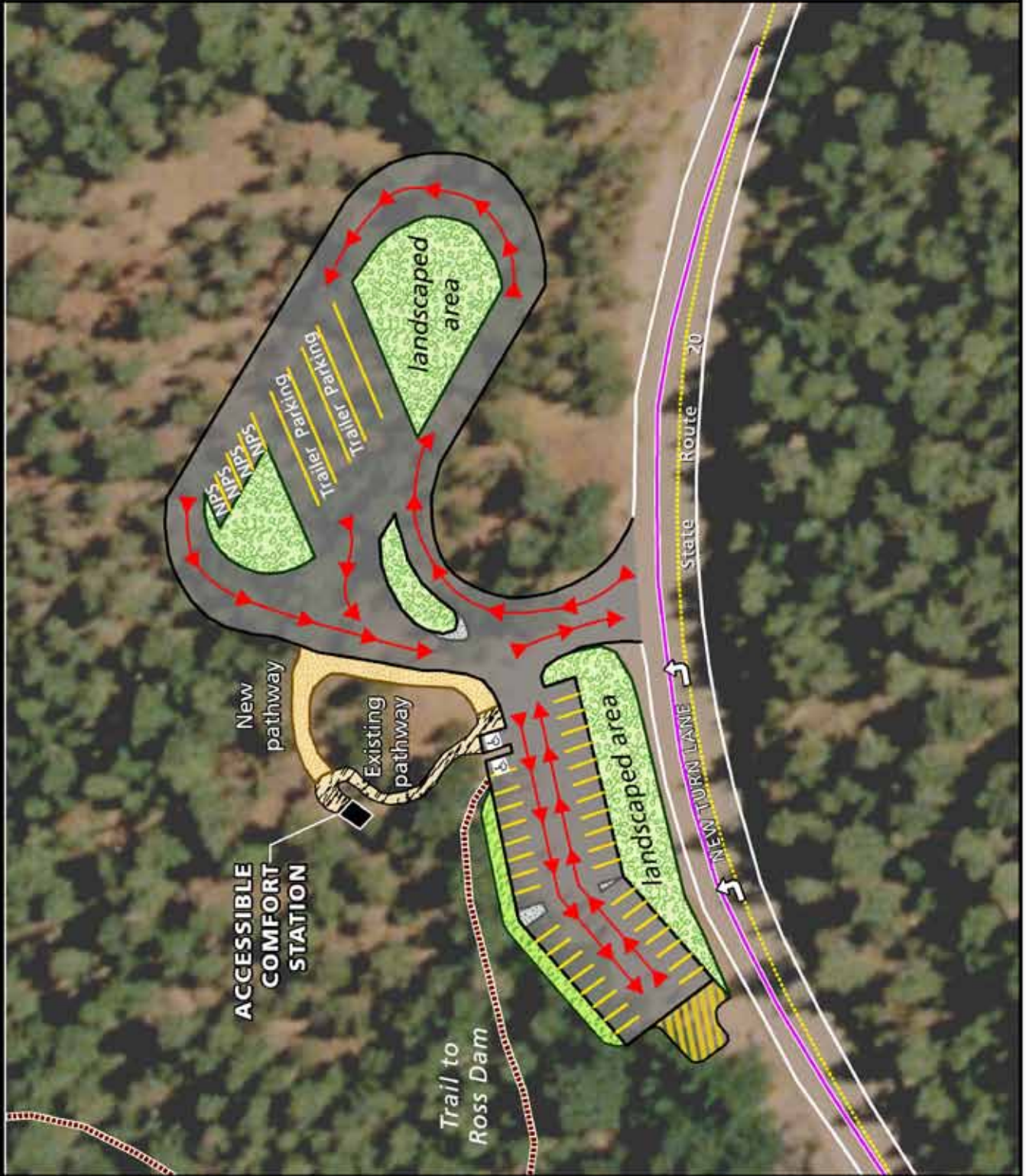
- Vehicle turn-around
- Vegetated filter strip
- Landscaped area



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and educational activities that communicate the full spectrum of interpretive and educational messages and cultivate stewards of the North Cascades ecosystem. The visitor center would serve as a hub of activity and provide the starting point to a network of ranger-led and self-directed resource immersion activities. Partners would also be encouraged to use the visitor center as a point of origin for their programs and activities.

The NPS would maintain the existing bridge across the Skagit River in Newhalem until such a time when the bridge needs replacement. In the future, there will continue to be a need for a bridge across the Skagit River in Newhalem to access the Newhalem Creek Campground, trails, natural features, and Seattle City Light hydropower operations. Better pedestrian and bicycle access and a two lane option would be considered in the design for a replacement bridge. The single lane access bridge across the Skagit River to the North Cascades Visitor Center and campground would be replaced and expanded to accommodate two-way vehicular traffic and bicycle and pedestrian access. The new bridge would remove the traffic light at each end of the bridge and improve traffic safety.

Dayhiking and accessible trails would be maintained and expanded constructed in Newhalem in partnership with SCL to provide access to additional features in the Newhalem area. These trails include the Newhalem Boardwalk Trail, Newhalem Falls Loop Trail, and Newhalem Spawning Channel Trail. The NPS would work with SCL to maintain and rehabilitate trails and sidewalks in Newhalem.

Diablo Lake

Diablo Lake is a reservoir created by Diablo Dam on the Skagit River. It is known for its beautiful turquoise/green color that is the result of suspended rock particles which have been ground by glaciers which can be seen from the popular Diablo Lake Overlook along the North Cascades Highway. Along the shores of Diablo Lake, visitor facilities include the Environmental Learning Center, Colonial Creek Campground offering drive-in campsites, one of the only public boat launches from the North Cascades Highway, and several dayhiking trails. SCL provides Diablo Lake tours and the shuttle boat to Ross Lake Resort. Diablo Lake is the most accessible lake and would continue to provide a variety of recreational and learning opportunities for visitors with a range of interests and abilities.

New facilities on the **North Cascades Environmental Learning Center** campus would be constructed as outlined in the original plan and environmental assess-

ment. The ELC would continue to function as a center for outdoor learning and a campus for curriculum-based environmental education for youth and families. Facilities that were part of the original plan, but have not yet been built, would be constructed, including a dormitory, staff housing, boathouse, and additional outdoor learning shelters. A new camping area at Buster Brown would be considered for seasonal use for education programs and the public. Funding for the construction of these facilities would be provided by the North Cascades Institute. The North Cascades Institute would continue to work in cooperation with the NPS and Seattle City Light on plans for the ELC and management of the area.

Colonial Creek Campground is located on a narrow unstable debris cone area where Thunder, Rhode, and Colonial creeks drain into Diablo Lake. During the summer season, Colonial Creek Campground is occasionally at capacity due to its easy access to the North Cascades Highway, many wooded lakefront campsites, proximity to dayhikes, and primary boat launch area along the highway corridor. Rhode Creek regularly floods, spewing rock and debris across the North Cascades Highway and occasionally flowing through the south side of the campground. In 2003, the Colonial Creek stream channel migrated over campsites and trails on the north side of the campground, significantly altering the landscape. To maintain camping opportunities at Colonial Creek Campground, the NPS would take proactive management actions at Rhode Creek to prevent campsites from being impacted by flooding, debris flow, and erosion. If campsites are affected in the future, the NPS would attempt reconstruction in the same area. If reconstruction at Colonial Creek is not feasible, the sites lost would be replaced elsewhere in Ross Lake NRA, preferably at another previously developed location such as Newhalem Creek Campground, to limit net loss of campsites in Ross Lake NRA.

Diablo Townsite

Diablo Townsite is located near the upper reaches of Gorge Lake near Stetattle Creek and close to the base of Diablo Dam. A significant feature about Diablo Townsite area is that it is one of the few relatively flat, geologically stable, previously disturbed and developed, and buildable locations in the North Cascades NPS Complex. It is composed of two distinct areas: “Hollywood,” an approximately 44 acre parcel owned by Seattle City Light; and “Reflector Bar,” a 25 acre area owned by the National Park Service as depicted in Figure 4.8.

Boundary Modifications

Alternative B: Preferred Alternative, Alternative C, and Alternative D

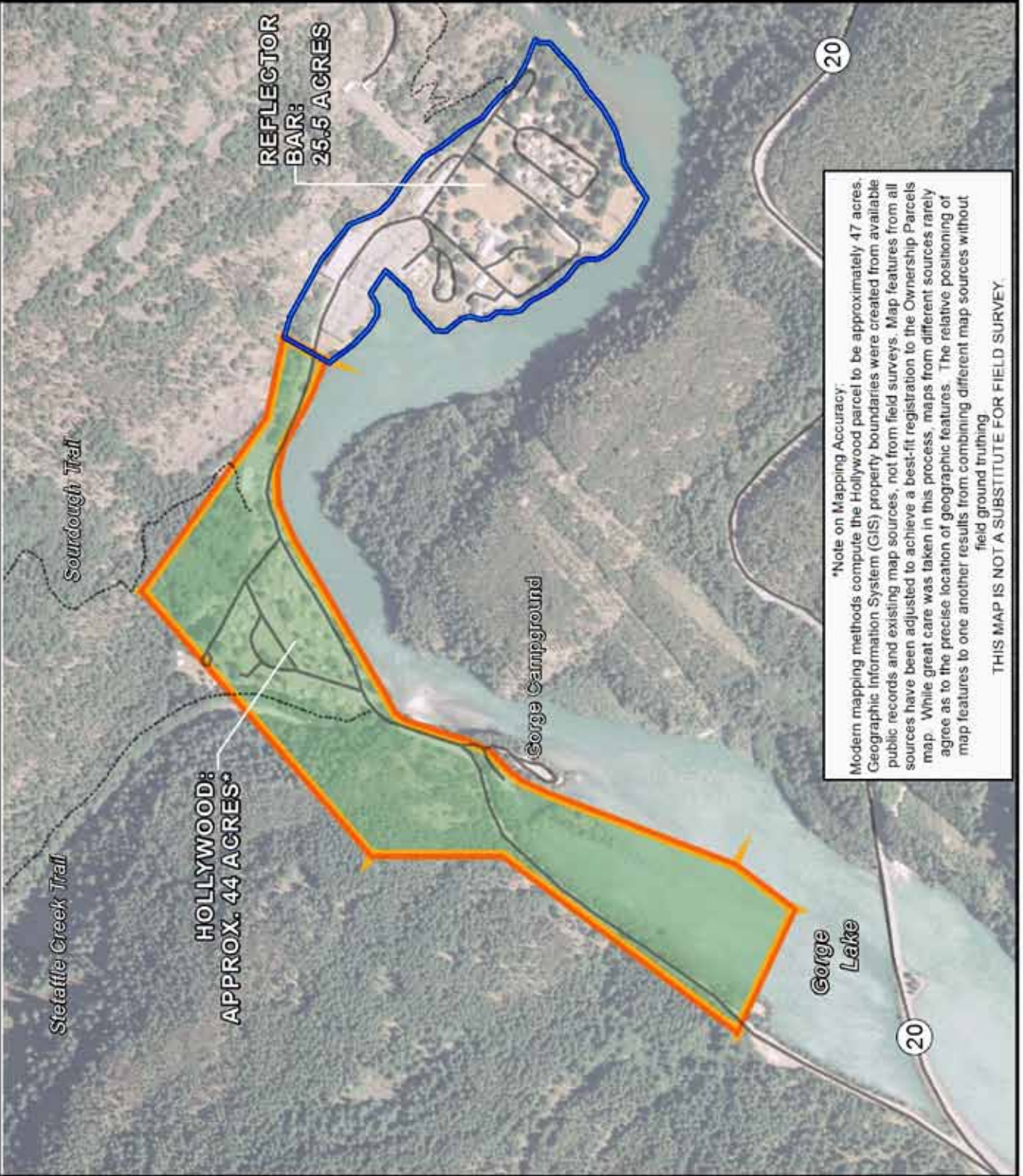
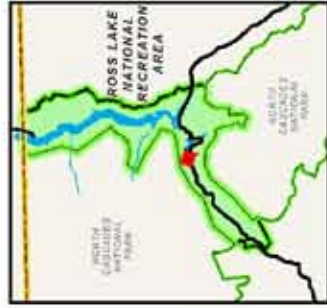


Figure 4.8

- NPS-owned
- Seattle City Light-owned



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Hollywood contains over 25 houses and was once the primary residential area for Seattle City Light staff working at Diablo Powerhouse and vicinity. The Reflector Bar area includes Diablo Powerhouse itself, a school building (now used as a cookhouse, museum, and administrative office), maintenance facilities, sewer treatment plant, an incline lift and associated waiting station (previously used for tours of the hydroelectric project), and several houses.

At one time, Diablo Townsite was a thriving community of Seattle City Light employees and their families who worked and lived in this isolated setting. As technology advanced, control of the day-to-day operations of the facilities was moved to Seattle and fewer staff were needed on-site to operate the dams and powerhouses. Today, several houses in Diablo Townsite are empty or used as temporary lodging for staff or contractors from out of the area. The opportunity exists to develop new visions and future uses of Diablo Townsite.

In 1989 and 1996, several buildings and structures in Diablo Townsite were listed as contributing resources on the National Register of Historic Places. In 1989, six buildings and structures in Diablo Townsite were listed on the National Register of Historic Places. Five of these structures are on Reflector Bar and are part of the Skagit River and Newhalem Creek Hydroelectric Project Historic District that was designated in 1996. To comply with the Federal Energy Regulatory Commission (FERC) license agreement, in 2010, Seattle City Light had the National Register nomination updated to evaluate the historical significance and eligibility of the remaining buildings, structures, sites, and landscape elements associated with the Skagit River Hydroelectric Project in Diablo Townsite to determine their historical significance and eligibility for nomination to the National Register. The nomination includes 47 contributing resources in Diablo Townsite. This analysis will help inform future use of the facilities.

The operational and administrative uses of Reflector Bar by Seattle City Light require management of the area exclusively for the purposes of power production. This is a longstanding and customary use that dates back to the inception of the Skagit River Hydroelectric Project. Seattle City Light, the Federal Energy Regulatory Commission, and the Department of Homeland Security are presently concerned about protection of the facilities that support power production. To reduce security concerns, these agencies are moving to reduce public access to Reflector Bar. The National Park Service is also concerned about ensuring protection of

these facilities, as well as ensuring basic public safety by limiting visitor access to keeping visitors away from the hydroelectric industrial zone.

Under Alternative B, Hollywood would continue to be used for housing employees necessary to operate the Diablo facilities of the Skagit River Hydroelectric Project. The NPS would partner with Seattle City Light to adaptively use houses in Hollywood for NPS and partners, such as the North Cascades Institute.

The NPS would also work with Seattle City Light to improve the Stetattle Creek and Sourdough Mountain Trailheads in Hollywood which are presently confusing to find and lack support facilities. Improvements would include redesigning the trailheads with parking, signage, visitor information, and a restroom.

Reflector Bar would continue to be used primarily in support of hydropower development, with respect for its setting in Ross Lake NRA and its visibility from the North Cascades Highway. Any future infrastructure changes in support of hydropower operations in Reflector Bar should be compatible with the mountainous scenery and its location in a unit of the national park system. Although vehicular access to Reflector Bar would be restricted due to security concerns, the NPS would coordinate with Seattle City Light to provide pedestrian access to trails and resources in Reflector Bar within safety and security constraints.

If Seattle City Light determines that Hollywood is no longer necessary for hydropower operations in the future, the NPS would work to acquire that land. The NPS interest in Hollywood is to ensure the long-term protection of resources within the legislated boundary of Ross Lake NRA, prohibit inappropriate or incompatible development within Ross Lake NRA, and provide future opportunities for adaptive reuse of the site including future administrative and potential public use. If the land is acquired, a site plan with additional analysis would be developed to determine its future use.

Under Alternative B, the NPS would recommend Congressional legislation to authorize the NPS to relinquish, sell, or exchange Reflector Bar or grant an interest or give greater control therein to Seattle City Light, and acquire Hollywood through an exchange (including making an equalization payment) or a direct purchase. Generally, the NPS cannot divest itself of land or an interest therein, except in limited, narrow circumstances. The enabling legislation allows the NPS to acquire land only by donation from the State of Washington or any political subdivision. Seattle

City Light is a municipal corporation of the State of Washington, so the NPS presently only has authority to acquire land from Seattle City Light by donation. Under the Washington State Accountancy Act, Seattle City Light cannot donate land, so legislation authorizing a land exchange, equalization payment, or other purchase payment would be needed for the NPS to acquire Hollywood.

In concept, a land exchange or acquisition would reflect the missions of the two entities: Seattle City Light to operate the hydroelectric facilities and the NPS to support visitors and preserve resources. The end result would be that Seattle City Light would own, have an easement in, or otherwise have greater control of land east of Diablo Powerhouse, where Seattle City Light maintenance and administrative facilities are still in use.

The NPS would acquire land to the west of Diablo Powerhouse that includes the Stetattle Creek and Sourdough Mountain Trailheads and the houses in Hollywood. The NPS would manage or cooperatively manage Hollywood for visitor use, and would collaborate with Seattle City Light to continue the maintenance and operation of utilities in Hollywood. A site plan would be completed as part of an implementation plan in order to successfully execute a land acquisition or exchange of Hollywood with Seattle City Light.

The National Register eligibility determination would guide the future vision for Hollywood. In the event Hollywood is determined eligible for the National Register, the NPS would evaluate preservation of contributing elements for a variety of future uses depending on the needs of the NPS and its partners. If Hollywood district is found to be ineligible, some buildings and structures could be replaced with new construction, or removed. Future uses of the Hollywood area could include research and educational functions and public overnight opportunities, such as camping and concession operated facilities. Additional planning and analysis would be needed to determine these future uses, management structure, financial feasibility, and site development.

At present, the NPS is concerned with life cycle costs associated with the houses and utility system serving Hollywood. Ownership, management, and operations of Hollywood would need to be addressed through additional collaborative planning with Seattle City Light.

The Sourdough Mountain and Stetattle Creek trailheads, which are part of the Hollywood area, are pres-

ently confusing to find and lack support facilities. They would also be obtained through this land exchange and improved with a parking area, a kiosk, and possibly restrooms and a picnic area. The shoreline of the Skagit River and Diablo Lake adjacent to Hollywood could also be rehabilitated to improve the aesthetic qualities and ecology of the riparian zone.

Diablo Townsite is located in the Hydroelectric Zone. If the Hollywood area were to be managed or owned by the NPS, the Hollywood area of Diablo Townsite would be included in the Frontcountry Zone.

Ross Lake

Ross Lake stretches from Ross Dam along the historic alignment of the Skagit River approximately 22 miles northward to the Canadian border at Hozomeen and serves as a portal to the Stephen Mather Wilderness and Pasayten Wilderness. Ross Lake is a reservoir created to serve as a primary power supply for SCL and the city of Seattle. Along the shores of Ross Lake are numerous walk-in and boat-in campsites, trails leading into the backcountry and wilderness, and the East Bank Trail which runs from the North Cascades Highway to Hozomeen. Water recreation on Ross Lake would focus on fishing, canoeing, kayaking, and limited motorboating. Ross Lake is characterized by open waters surrounded by a scenic mountain wilderness in an undeveloped setting.

Visitor experience on and near Ross Lake would be maintained largely as it is today. During this planning process, public comments have expressed a strong desire to preserve the unique character of Ross Lake by controlling access and use and limiting development. Water recreation, camping, and hiking would continue to be the primary forms of recreation on and near Ross Lake. Motorboat and seaplane regulations would work to improve natural soundscapes, water quality, and the visual character of Ross Lake. The number of lakefront campsites on Ross Lake would be maintained at current levels. Should crowding become an issue on Ross Lake, the management goal would be to disperse people over the existing campsites, or manage use through reservations, as opposed to or before expanding the capacity or number of sites on the lakefront.

Ross Lake Resort would be minimally expanded within the capacity of the existing sewage system. The water storage system would need to be increased. New and replacement facilities would follow design guidelines provided by the NPS. Expansion of lodging facilities would not exceed 10 percent of existing total number of guest and staff bed spaces. It would be up

to the concessioner to determine how these bed spaces would be allocated between guests and staff. A second water taxi service would be included in the operations of Ross Lake Resort to provide access to campsites and trailheads on Ross Lake. Additional visitor services could be incorporated into the concession contract and operating plan including providing a second water taxi service to provide access to campsites and trailheads on Ross Lake.

Hozomeen

Hozomeen would continue to offer a unique camping experience as the only campground on Ross Lake that can be accessed by road. Primary access to Hozomeen would continue to be via the gravel road from Hope, British Columbia or by boat, foot, or stock from the U.S.

The campground at Hozomeen would be rehabilitated to provide a more organized and traditional campground experience.

The existing ranger station would be replaced with a small new ranger station/orientation center that would provide visitor services, including backcountry permits and interpretive information, and a small office for law enforcement and interpretive rangers. The current facility is in poor condition. The new facility would allow for improved visitor services, adequate space, and improved operational efficiencies. The facility would be jointly used in partnership with B.C. Parks.

The NPS would work cooperatively with Canadian agencies to explore the feasibility of constructing a connection trail between Centennial/Skyline II Trail Junction near Whitworth Meadow horse camp to the East Bank Trailhead at Hozomeen. This trail would provide improved pedestrian access to Hozomeen and a link to other existing trails in the area.

The NPS would encourage Canadian officials to maintain the existing gravel road rather than paving the road from Hope to Hozomeen. Paving this road could fundamentally alter the character of Hozomeen as a remote outpost for recreationists.

Marblemount Ranger Station

In the Preferred Alternative, the Marblemount Ranger Station would continue to serve as a primary base of operations and support center by providing buildings and space for NPS maintenance, resource management, administration, emergency response, and staff housing functions as well as some limited visitor ser-

VICES, including the Wilderness Information Center. The existing wilderness center was upgraded and expanded in 2009 to accommodate its existing functions as a visitor contact station with restrooms, wilderness ranger offices, and the communications center; however, additional upgrades are needed to improve visitor services and operational efficiencies. This alternative would not preclude moving public functions of the wilderness center to another location if found suitable and feasible in the future.

Employee housing at Marblemount would be improved through the addition of temporary seasonal housing for employees or volunteers which could be in the form of tent cabins or equivalent types of facilities with supporting infrastructure. This addition would fulfill a critical summer season need for employee housing in the area of Ross Lake NRA where it is operationally needed. Tent cabins or an equivalent type of facility would meet the seasonal housing need without creating infrastructure that requires year-round maintenance. Seasonal need in Ross Lake NRA is for a very short duration, approximately three months, making it difficult for staff to find private housing in the community, where leases tend to run for a six-month or one-year minimum.

All Marblemount Ranger Station activities would be compatible with the significance of the National Register listed Marblemount Ranger Station Historic District and its associated structures, landscapes, and features.

Facility Design Standards

The NPS would develop design standards to create a visual and architectural identity for the North Cascades NPS Complex. The design standards would be based upon existing examples of design in the complex, including such facilities as the North Cascades Visitor Center and Newhalem and Colonial Creek Campground entrance stations. New construction, renovation, and upgrading of facilities in Ross Lake NRA would conform to these new design standards.

Natural Resources

In the Preferred Alternative, natural resources, including ecosystem functions and processes, air quality, soundscapes, water resources, vegetation and wildlife, would be ensured long-term stewardship and preservation in the context of a functioning ecosystem. In cases where resources have been impacted, the NPS would seek appropriate restoration to maintain the integrity of the North Cascades ecosystem. The NPS

would continue the long-term ecological monitoring and would prioritize existing programs before initiating new programs. The NPS would work to develop collaborative inventory and monitoring programs with neighboring national forests, B.C. Parks, and the Canadian Ministry of the Environment to better understand and manage the entire North Cascades ecosystem. The NPS would seek to enhance this work based on clear priorities, such as responses to climate change, and using scientifically valid methods. Priority would also be given to performing this work through long-term sustainable partnerships.

Specific guidance for natural resource management includes new programs, plans, and approaches to management. The following list provides some of these recommended actions. A complete list is included in the alternatives comparison Table 4.10.

Ecosystem Functions and Processes

Ecosystem functions and processes include fire, floods, and mass wasting in the forms of avalanches and landslides, among others. The NPS would work toward allowing natural ecosystem functions and processes to occur where possible and through collaborative efforts with neighboring and partner agencies to improve management and maintenance practices. The NPS would strive to minimize conflicts between ecosystem functions and processes and developments by siting and/or relocating new facilities out of potential geohazard areas. Ecosystem processes, such as fire, would be managed for the benefit of resources to the greatest extent possible. Where possible, these functions and processes would be interpreted for the public as an important component of ecosystem health and conditions in the North Cascades.

The NPS would also encourage WSDOT to construct a longer bridge across Goodell Creek on the North Cascades Highway to minimize the potential for channel avulsion.

Air Quality

The NPS would continue to monitor air quality for visibility and acid deposition. NPS would also pursue research and monitoring to determine levels of atmospheric contaminants (such as mercury, persistent organic pollutants, etc.) in Ross Lake NRA.

The NPS would pursue redesignation of the Class II Airshed within Ross Lake NRA to a Class I Airshed, which would provide consistency with the surrounding park lands and the national forest lands east of the

NRA. Areas redesignated as Class I Airsheds receive more stringent protection from some forms of pollution sources. The process to redesignate to a Class I Airshed would involve the State of Washington and EPA.

Soundscapes

The NPS would expand the natural sounds program to create a complete inventory of natural sounds and implement an ongoing monitoring program to assess changes in the soundscape. The NPS would identify unacceptable sources of human-caused noise and sound levels and look for ways (such as enforcement of existing noise standards and increased education along the North Cascades Highway) to protect natural soundscapes when feasible.

Lightscares

The NPS would complete an inventory of night sky conditions and would work with partners and adjacent land managers to protect night sky by reducing light pollution within Ross Lake NRA and on adjacent lands.

Water Resources

A new water quality monitoring program would be established.

Glaciology

The NPS would continue to operate a monitoring program on glaciers and associated processes to assess impacts of climate change, and educate the public about these resources and their implications.

Soils/Erosion Control

Erosion and soil impacts would be inventoried and monitored in backcountry areas and reservoirs, and a resource restoration plan would be developed for impacted areas. Erosion control would continue in priority areas.

Vegetation

A vegetation management plan would be developed to guide the vegetation management program. The NPS would implement an integrated pest management program that includes the following practices: prevention and early detection, inventory and monitoring, prioritization and control, restoration, and outreach and education.

Wildlife

The wildlife monitoring programs would be expanded to provide additional data on wildlife and take additional actions to protect wildlife from disease or human disturbance. The NPS would continue to participate in restoring extirpated species where feasible, monitor habitat conditions, and work to reduce the risk of bear-human conflicts. As part of the interagency grizzly bear recovery effort the NPS would minimize the possibility of wildlife obtaining human food by providing and maintaining food storage facilities, such as bear boxes or portable bear resistant containers, for overnight camping. The NPS would also work collaboratively on other interagency recovery efforts. The NPS would actively manage to reduce habitat fragmentation, such as consolidating development, and limiting construction of new facilities in undeveloped areas.

Fisheries

The NPS would develop a fisheries management plan which would include a monitoring component. Priorities for the fisheries program would be to work with partners to maintain native fish stocks in the reservoirs and tributaries and to protect spawning habitat on the Skagit River and its tributaries.

Science Communication and Volunteer Programs

The NPS would develop a formalized program and process to communicate the results of research and monitoring efforts to a variety of audiences. The NPS would actively work to engage volunteers in scientific research and monitoring projects and programs.

Cultural Resources

In the Preferred Alternative, cultural resources, including archeology, historic structures, cultural landscapes, ethnohistory, and museum collections, would be ensured long-term stewardship and preservation through a variety of measures. The NPS would continue identification, documentation, and research programs to learn more about human history in the North Cascades in all program areas, including archeology, collections, historic structures, cultural landscapes, and ethnohistory. The NPS would seek to expand opportunities for sharing information about cultural resources through interpretive and educational media and programs.

Specific guidance for cultural resource management includes new programs and approaches to management. The following list provides some of these rec-

ommended actions. A complete list is included in the alternatives comparison Table 4.10.

Archeology

The NPS would develop a program for paleoecological research in partnership with others to expand understanding of past ecological processes and climate conditions. Qualified researchers and volunteers would be encouraged to participate in archeological projects, and the NPS would develop interpretive materials based on research results.

Historic Structures

The NPS would investigate the potential for adaptive re-use of historic structures, where feasible.

Cultural Landscapes

The NPS would prioritize preservation treatments for cultural landscapes that provide for interpretation of human uses in the North Cascades.

Ethnohistory

The NPS would continue to encourage conducting oral histories and research investigations documenting human use of the North Cascades. The NPS would develop interpretive opportunities communicating human use of the North Cascades.

Museum Collections

Storage capacity for museum collections and archives would be increased to protect paleoecological items and emerging collections and archives. The NPS would provide appropriate public access to collections items both ~~online~~on-line and on-site.

Wilderness and Backcountry

As described in the Common to All Alternatives section, the Thunder Creek Potential Wilderness Area, totaling 3,559 acres, would be converted through administrative designation to wilderness and included in the Stephen Mather Wilderness as part of the National Wilderness Preservation System.

Management of designated wilderness, potential wilderness, and some backcountry areas would focus on wilderness character, ecosystem preservation, and compatible recreational activities. The NPS would prioritize the protection of resources, natural ecosystem functions and processes, and significant cultural

resources. Visitors would be provided with opportunities for solitude, tranquility, and connections with the natural world. The backcountry permit system would continue to monitor and control numbers of visitors in these remote areas in order to minimize visitor impacts to resources.

In designated and potential wilderness, changes in campsite locations, new designated camps, or trail re-routes would be permitted or trail re-routes would be permitted, provided there is no net increase in miles of trails. All such changes would meet the park's minimum requirement analysis standards.

Construction of new trails would be minimal and limited to along the North Cascades Highway corridor. In large swaths of trailless wilderness in the NRA and North Cascades National Park, the NPS would strive to preserve opportunities for solitude and the untrammeled and undeveloped character of wilderness when considering new trails.

Recreation

Recreational activities at Ross Lake NRA would continue much as they do today. Visitor experiences would include a mix of recreational activities and resource-focused activities while minimizing impacts through education and the use of defined high use areas. A wilderness experience would continue to be available to those who prefer solitude and tranquility in more remote areas of Ross Lake NRA. Interactions with uniformed staff would be widely available, particularly in frontcountry areas of Ross Lake NRA. The NPS would communicate the variety of recreational opportunities available in Ross Lake NRA and the park complex through improved information sharing and cooperative efforts with Seattle City Light, the Washington State Department of Transportation, North Cascades Institute, and others.

Boating

Boating on Ross, Diablo, and Gorge lakes and the Skagit River would continue to be primary forms of water recreation on, and visitor experience of, Ross Lake NRA's water resources. Self-propelled and non-mechanized recreation would be encouraged throughout Ross Lake NRA. Motor boating would be managed to maintain or improve the current visitor experience, visitor safety, soundscapes, and water quality, and visitor experience on all water bodies in Ross Lake NRA.

The NPS would manage the number of boats on the lakes by maintaining current access to the lakes as well

as the existing capacity of boating infrastructure, such as boat-in campsites, boat launches and moorage sites.

The Ross Lake Resort would also be permitted to run two water taxis on Ross Lake. This increased service would enhance opportunities for visitors to efficiently move around Ross Lake, accessing campsites and trailheads, while still maintaining the quality of the experience on Ross Lake.

Beginning in 2015, the National Park Service would implement a Clean Engine Requirement, and boats that do not meet the Environmental Protection Agency Rules for gasoline spark - ignition marine engines would be prohibited on all lakes within Ross Lake NRA. The National Park Service would require the exclusive use of four-stroke engines, direct-injection two-stroke engines, or equivalent technology. The Clean Engine Requirement would apply to NPS and concessions vessels in addition to personal or private vessels operating on all lakes within Ross Lake NRA. Any NPS-operated diesel engines, as they reach the end of their life, would be replaced with cleaner technology.

No wake zones would be established to maintain or enhance visitor experience, safety, and soundscapes on the reservoirs. The intent of no wake zones would be to preserve and enhance the experience for non-motorized and small motorized boaters and could be established near developed campsites, docks, dams, and log booms. Wake limits would also be established for proximity to other boaters.

Boating recreation that involves towing people behind boats at high speed, such as water skiing or tubing, would be prohibited on all reservoirs.

The NPS would establish horsepower, boat size, and/or speed limits on all lakes in Ross Lake NRA for concessions, commercial, and private boats should congestion become an issue, tranquility and noise remain a concern, or other assumptions about current constraints to motorboat activity change. Specific limits would be set through the NPS operational and rule-making procedures under 36 CFR 1.5 which allows the superintendent to implement closures or set public use limits. The NPS would actively engage the public and provide opportunities for public involvement when specific limits are developed. Provisions for emergency, law enforcement, NPS and SCL operations, and the water taxi would be made. Provisions for emergency, law enforcement, NPS and SCL operations, and the water taxi would be made. Exclusive use of four-stroke engines or new direct injection two-stroke engines

(or equivalent) would be required for all motorized vessels, including NPS, SCL, and concessions vessels, on all lakes within Ross Lake NRA by 2015. No wake zones would be established to maintain or enhance visitor experience, safety, and soundscapes, and prevent shoreline erosion on the reservoirs. The intent of no wake zones would be to preserve and enhance the experience for non-motorized and small motorized boaters, and could be established near developed sites, docks, dams, and log booms. Wake limits would also be established for proximity to other boaters. Boating recreation that involves towing people behind boats, such as water skiing, would be prohibited on all reservoirs. On Ross Lake, the NPS would allow a second-concession operated water taxi that would ferry visitors to boat-in campsites and locations on the lake. This second water taxi would provide increased access to remote campsites and trailheads for visitors who do not have their own boats.

On the Skagit River, regulations for river rafting would be established for resource protection and improving visitor experience. Regulations could include group size limits and limits on the number of concession operated boats. Motor boats would be excluded on the Skagit River, except for emergency, law enforcement, NPS and SCL operational, research, and monitoring needs. Boating on the Skagit River is characterized predominantly by independent paddle boaters and concession operated river rafting trips. As of this writing, very few recreational motor boats travel the Skagit River within Ross Lake NRA. Thus, restricting motor boats within this reach of the river would not significantly change visitor use on the Skagit River overall, rather it would serve to enhance the visitor experience for the majority of NRA visitors who experience the river by self-propelled boat.

Many of these boat management strategies and regulations were proposed by members of the public during scoping for this GMP and then supported by the public during the draft alternatives and draft GMP/EIS public review process. These actions respond to public concerns about preserving and improving water recreation while ensuring that these activities are safe and minimize impacts to resources.

Hunting and Fishing

Hunting would continue in Ross Lake NRA, and there would be a focus on maximizing visitor safety during hunting season. In response to public concerns about hunting safety and recent hunting accidents in the region, the NPS would seek to expand safety zones in the vicinity of trails and developed areas and improve

visitor awareness about hunting activities in Ross Lake NRA. Hunting regulations would continue to be coordinated with the Washington State Department of Fish and Wildlife to reduce conflicts between general recreationists and hunters during hunting seasons. Lead-based ammunition would be prohibited, and some limits to types of firearms could be established.

The Washington State Department of Fish and Wildlife would continue to regulate fishing in Ross Lake NRA, and the NPS would work with the Department of Fish and Wildlife to prohibit use of lead tackle in Ross Lake NRA.

Sport Climbing

Sport climbing within the Ross Lake NRA in the Skagit Gorge from Newhalem to Diablo would continue to be managed separately from other forms of recreation because sport climbing is a unique activity that requires manipulation of the climbing environment including installation of bolted anchors. Due to the manipulative actions required to establish sport climbing routes, new sport climbing areas would be evaluated on a case by case basis and would only be authorized by the NPS following appropriate site-specific surveys and assessments. These areas, referred to as Climbing Management Areas (CMAs), would be authorized and managed on a case by case basis subject to funding and personnel availability. A map and description of authorized CMAs would be identified in the superintendent's compendium and maintained on the park website along with other climbing-related information.

The process for establishing new Climbing Management Areas would be initiated upon written request by the CMA proponent in advance of route development. The NPS would survey a proposed CMA to determine if the area would be appropriate for sport climbing development and use. The NPS would evaluate various factors such as presence of natural and cultural resources, access, and other site-specific concerns. If surveys and assessments indicate sport climbing would be appropriate within a proposed CMA, then the area would be formally designated as a CMA via the superintendent's compendium and managed according to site-specific conditions.

The NPS would also strongly support programs that encourage climbers to take an active role in stewardship of Climbing Management Areas.

Sport climbing within the North Cascades Highway corridor would be allowed in formalized and clearly defined "Climbing Management Areas." These

“Climbing Management Areas” would be located in areas that do not contain sensitive resources or other concerns to minimize impacts to resources.

The process involved for establishing “Climbing Management Areas” would include dialogue with stakeholders and the general public for a shared understanding of appropriate areas for sport climbing. The NPS would survey potential climbing areas to determine if the areas contain sensitive resources or could be appropriate for sport climbing activities. The NPS would ensure that access and routes are maintained and monitored over time. New routes that require placement of fixed anchors and replacements would be allowed within the “Climbing Management Areas.” The NPS would post this information and make it readily available to climbers and the public.

Seaplanes

Seaplanes would be allowed to land and take off on Diablo and Ross lakes except within 1,000 feet of Diablo Dam and Ross Dam, according to 36 CFR 7.69 and 36 CFR 2.17. Seaplanes could continue to use 9 of the 19 campsites on Ross Lake that are suitable for seaplane docking. Seaplane users who overnight at lakefront campsites would continue to need a backcountry permit similar to all users of these sites.

The NPS would work collaboratively with the seaplane pilots community to gather data on seaplane use, create noise abatement procedures and educate pilots about these procedures and general seaplane use in Ross Lake NRA. Noise abatement procedures (such as reducing propeller speed as much as possible for take-off, avoiding prolonged flight at low altitudes, and maintaining distance from campsites and vessels on the lake) would be instituted through the superintendent’s compendium or through voluntary compliance. These noise abatement procedures would seek to minimize noise during take-off and while flying in or near Ross Lake NRA. The NPS would also establish a long term acoustic monitoring program and encourage research to better understand soundscape impacts, particularly on wildlife.

It is recognized that seaplane use in Ross Lake NRA occurs infrequently because of several limiting factors, such as weather, the steep terrain and physical geography of Ross and Diablo lakes, reservoir levels, border security, Federal Aviation Administration regulations and licensing, and costs. Additionally, existing data shows that seaplane use is not anticipated to increase in the near or long term future.

Safety is vital for all recreational activities in Ross Lake NRA, including seaplane use. Strong winds from the south and limited available water surface make landings and take-offs aeronautically challenging on Ross Lake. North facing docks are best suited for seaplanes because they provide shelter from the southerly swells. Together with dock requirements, these limiting factors narrow the options for safe access and use on Ross Lake to a handful of lakefront campsites that are located sporadically along the full length of Ross Lake.

Seaplane use is recognized as a mode of transportation, similar to other motor vehicles, to access Ross and Diablo lakes and campsites along the reservoirs.

Seaplanes would be allowed to land and take off on Diablo and Ross lakes in the Frontcountry Zone. On Diablo Lake, seaplanes would be allowed in areas where landing and taking off is aeronautically feasible and would be prohibited within 1,000 feet of Diablo Dam or on those areas posted as closed for fish spawning, per 36 CFR 7.69. On Ross Lake, seaplanes would be allowed from the international border with Canada at Hozomeen to Silver Creek and from Cougar Island and Hidden Hand on Ruby Arm to within 1,000 feet of Ross Dam or the log boom closest to the dam. A permit system would also be developed to establish use levels in order to protect desired soundscape and visitor experience. These actions require an update and modification to 36 CFR 7.69 in order to clarify these changes.

Seaplane use is most compatible where higher levels of use already exist. Seaplanes are visually and audibly noticeable and attract attention away from the backcountry character of Ross Lake. Seaplane noise is most intense during a plane’s take-off, impacting the natural ambient soundscape. For these reasons, seaplane use would be allowed at the northern and southern ends of the lake which serve as the primary access points to the lake where vehicular, boat, and overnight activity is the greatest. Seaplane users could overnight at several backcountry boat-in campsites in these areas. Alternately, the middle section of Ross Lake provides one of the few expansive water bodies in the Cascades that serves as a getaway for those seeking a remote backcountry experience. While it is recognized that seaplane users could fly over these areas, landing and take-off would be prohibited in order to maintain the ambient character.

Updated management guidance for seaplane use on Ross Lake is in response to public comments about maintaining the backcountry and wilderness character of the Ross Lake area and emphasizing non-motorized recreation and natural soundscapes. The NPS consid-

ered the totality of public comments on the character of Ross Lake, soundscapes, and seaplane use as well as the relatively small numbers of seaplane users compared to non-seaplane users. This guidance reflects the intent of this alternative to maintain natural resource conditions while continuing limited recreational use.

Commercial Scenic Air Tours

Commercial scenic air touring would be managed to protect soundscapes and the recreational experiences of visitors on the ground. The NPS would coordinate with the Federal Aviation Administration to develop an air tour management plan that could establish use levels for commercial scenic air tours and designate appropriate air tour locations. Concern about overflights, and specifically air tours, was expressed by the public during the planning process. Commenters wanted to ensure that the remote and wilderness character of Ross Lake NRA is not diminished by the presence of air tours.

Backcountry Permit System

The purpose and objectives of the permit system would be maintained, but the process for obtaining a permit would be changed. The NPS would develop an online permit system option that could allow for advance trip planning and permitting and a streamlined permit process. This would allow visitors to guarantee a permit for a specific camp in advance. The objective of the permit system is to disperse visitor use, reduce crowding and conflicts, and provide information and education about safe and low-impact wilderness and backcountry use, thereby providing a quality wilderness experience that protects natural resources. Permits would still be picked up at one of the 8 permit stations en route to the backcountry trip location (Marblemount, Hozomeen, Winthrop, Sedro Woolley, Newhalem, Glacier, Stehekin and Chelan) and a percentage of permits would be set aside for walk-up permits. Staff would be on hand to assist with wilderness trip planning and ensure that visitors understand the current conditions and risks, as well as the legal requirements for protecting the resources and experience of other visitors. This would still be done in person to provide current information and to track last minute changes in trip plans, but the process would be streamlined and more efficient for those who choose to pre-plan and obtain an advance permit.

The backcountry permit system would be changed. Currently, backcountry permits are obtained in-person at the Wilderness Information Center and at other NPS and partner locations. NPS rangers assist with

wilderness trip planning and ensure that visitors understand the requirements and risks of backcountry travel. Public comments have expressed frustration at having to obtain a permit in-person and with no guarantee that permits for specific campsites would be available. The permit system would be changed and could provide an option for advance trip planning as a fee for service, as well as monitoring campsite use throughout Ross Lake NRA. The backcountry permit system would continue to prioritize visitor safety, wilderness experience, and protection of resources through preventing overcrowding and ensuring appropriate visitor use in wilderness.

Interpretation and Education

Ross Lake NRA would be a platform and classroom for education about the North Cascades ecosystem. There would be opportunities for both structured and unstructured activities, including self-guided exploration, discovery, and fun. Activities would be focused in the Frontcountry Zone but could expand into the Backcountry Zone. Activities in the Wilderness Zone would be limited. The NPS would develop, conduct, and evaluate interpretive and educational programs and work with partners to conduct and deliver these programs. The focus of NPS and partner programs would be to develop stewards of the greater North Cascades ecosystem.

Educational and interpretive programs would respond to seasonal changes in visitation and visitor needs. During the spring and fall seasons, programs and associated facilities would be geared to curriculum-based education and school programs. These programs would focus on immersion, hands-on experiential learning, and environmental stewardship. During the summer season, programs would be geared to general visitors and families through on-site and outreach programs.

Interpretation

Interpretive programs and materials offer visitors opportunities to learn about and find meaning in Ross Lake NRA. Information would be provided through both formal and informal ranger-led programs and activities, exhibits, and diverse media (such as video, publications, website, social media, etc.).

Interpretive programs and materials would use current and dynamic methods to generate curiosity, passion, enthusiasm, and respect for park resources to build a sense of stewardship. The NPS would provide a balance of traditional facility-based interpretive programs

and opportunities for people to talk with rangers and be immersed in the park. The NPS would improve traditional interpretive programming within existing facilities, possible new facilities, and select areas of Ross Lake NRA. The NPS would work with partners, including NCI and SCL, to develop, deliver, and evaluate the programs so that they convey a broad range of interpretive themes.

Visitor Orientation and Informal Education

A visit to Ross Lake NRA would be much as it is today, and Ross Lake NRA would continue to serve as a portal to the North Cascades wilderness. Efforts would go to creating a sense of arrival at destinations within Ross Lake NRA, such as Newhalem, Diablo Lake, and the Environmental Learning Center, by using existing developed areas more effectively. Visitor orientation and informal education would be enhanced through improved signage, multi-media, and exhibits at existing waysides, contact stations, and along interpretive trails. Improved signage would provide visitors a sense of approach and arrival as well as better orientation to the services and resources within Ross Lake NRA. Visitors would experience consistent messages from all contact stations and partners as well as from pre-trip planning through the completion of their visit. The NPS would make efforts to provide additional training and materials to all NPS staff and volunteers so that the quality of information and informal education being provided is consistent throughout all visitor contact points.

Curriculum-based Programs

Curriculum-based programs help students, teachers, and parents use the park as a classroom in part to educate themselves about the North Cascades ecosystem and history of the area. Similar to interpretation, programs are intended to generate curiosity, passion, and respect for the park among students and build a sense of stewardship. Curriculum-based programs would emphasize low-impact recreation, hands-on activities, and increase relevance to students' lives, using a broad range of educational and interpretive methods.

Outreach

The NPS would expand participation in outreach programs as one of many mechanisms to build local and regional stewardship of the North Cascades ecosystem. Outreach programs designed to build relevancy between the park and Latino and Hispanic members of surrounding communities would be expanded. The park would also expand collaboration with its partners to develop an increased number of pathways for youth

from education and stewardship programs to employment opportunities.

Partnerships for Interpretation and Education

Partnerships help the interpretive messages reach a broader audience through programs, additional interpretive displays, and distribution of interpretive material and media, including retail. Partnerships also help expand stewardship by engaging volunteers in NPS projects and programs.

The NPS would enhance partnerships with Seattle City Light (SCL), British Columbia Parks, the Forest Service, North Cascades Institute, concessioners, and others to attract a broader more diverse audience of visitors and connect people to the outdoors and the North Cascades. The NPS would work with partners to develop and evaluate the interpretive and educational programs and messages and set a standard of excellence. The NPS would emphasize training and collaboration with partners to enhance NPS and partner capacity to develop, distribute, and deliver relevant interpretive and educational services. The NPS would also seek to provide interpretive rangers co-located at partner visitor contact stations and at eastside entry points.

The partnership with SCL would be enhanced through working side-by-side to introduce in introducing the North Cascades to visitors and the variety of available activities in the area. This could include such partner activities as having NPS rangers provide interpretation on SCL's Diablo Lake boat tours and assist SCL employees at the SCL visitor contact station in Newhalem. SCL could also enhance the Skagit General Store operations to not only meet the needs of SCL employees and residents, but to also provide food and merchandise to visitors to the North Cascades NPS Complex. Other partnership endeavors could include adaptively reusing facilities in Newhalem for visitor services and NPS and partner organizations, such as food service, staff housing, and visitor lodging.

To continue and enhance the distinctive partnership with North Cascades Institute (NCI) in the areas of education and interpretation, the NPS would devote staffing, funding, and NPS resources to Environmental Learning Center (ELC) programs and operations. The NPS would develop and evaluate the interpretive and educational messages with NCI, setting a standard of excellence, and increasingly collaborate with NCI staff based from the ELC to distribute and deliver relevant interpretive and educational messages.

Access and Transportation

Mechanized and non-mechanized access and transportation would largely be maintained to and within Ross Lake NRA with some additions. Improved parking, pullouts, and waysides would provide visitors with vehicular and bicycle access to the frontcountry and some backcountry areas of Ross Lake NRA. Boat launches on the lakes and Skagit River would continue to allow access by both motorboats and paddle boats to Ross Lake NRA's waterways.

Management of the North Cascades Highway

The North Cascades Highway is a designated National Forest Byway and Washington State Scenic Byway. The NPS would recommend nomination and designation of the North Cascades Highway as a National Scenic Byway to be reflective of its nationally significant resources.

The NPS would coordinate with WSDOT for management and maintenance of the North Cascades Highway. The NPS would coordinate with WSDOT, SCL, and NCI to determine appropriate conditions for when avalanche control would be necessary on the North Cascades Highway within the boundaries of Ross Lake NRA, as well as techniques for avalanche control, in order to prevent the use of explosives to minimize disturbance to wildlife and wilderness values. The NPS would consider solutions proactively in cooperation with WSDOT to avoid catastrophic channel avulsion, road closure, and to minimize impacts to fish populations and other resources. The NPS would identify and agree upon appropriate mitigation sites for potential future actions.

The NPS would work with its partners to reduce excessive noise resulting from motor vehicle use on the North Cascades Highway through education and enforcement of Chapter 173-60 WAC, Maximum Environmental Noise Levels and Chapter 173-62 WAC, Motor Vehicle Noise Performance Standards.

During winter, the North Cascades Highway would continue to be closed to throughway vehicular access from the Ross Dam Trailhead parking lot to milepost 170, 14 miles west of Mazama, due to safety threats posed by avalanches and the high cost of plowing and wintertime road maintenance. Recreational activities, such as skiing and snowmobiling, would continue on this closed portion of the road. Overlooks and trailheads on the open portion of the highway within Ross Lake NRA would be plowed during the winter months to provide access for winter recreational activities.

Climate Change

Climate change impacts and Ross Lake NRA's carbon footprint would be addressed through a variety of strategies and actions including the reduction of emissions, use of green energy, adaptive management, and support for scientific research and educational programs. The NPS would be a leader in interpreting climate change and its effects on glaciers, watersheds, resources, and people.

The NPS would implement specific actions for reducing emissions and improving sustainability and efficiency. The NPS would phase out two-stroke motorboat engines throughout Ross Lake NRA. Existing vehicles, machinery, and equipment would be upgraded with appropriate technologies such as hybrid transmissions and the use of green energy, such as photovoltaic systems, biodegradable fuels and oils, or other emerging products and technologies. Non-motorized recreational activities, such as hiking, bicycling, and paddle boating, would also be encouraged in Ross Lake NRA.

The NPS would work with other agencies, non-governmental organizations, and the public to develop ecosystem adaptation strategies to address anticipated changes to natural and cultural resources and the park infrastructure. Such adaptation planning is in a very early stage of development within the global community, but in general the body of knowledge is currently coalescing around several key aspects of adaptation planning. These steps would include: 1) establish a measurable natural and cultural resource baseline, 2) develop key partnerships among land management agencies, non-governmental organizations, and individuals which would be affected by any actions taken, 3) identify and develop adaptation strategies, including identifying opportunities and projects that would increase ecosystem resiliency, 4) implement adaptation strategies, and 5) revisit and revise these strategies based on experience and updated science.

The NPS would support, encourage, and conduct scientific programs and research related to climate change. Programs and research would include understanding the effects of climate change on resources, natural processes, recreation, operations, facilities, and hydropower.

The NPS would prioritize green facility design for any new construction, retrofitting, and upgrading of facilities to the greatest extent possible. The NPS would also prioritize contractors and concessioners that use sustainable practices and local products when select-

ing contractors for construction, operations, and concessions activities.

North Cascades National Recreation Area

A consistent theme in the public comments received has been the expressed desire for a better connection to North Cascades National Park. The North Cascades are recognized as an iconic landscape where scenery is supreme. Communities on both sides of the North Cascades market themselves as “gateways” to the North Cascades, and State Route 20 is called the North Cascades Highway. Visitor and education facilities within the Ross Lake NRA are called the North Cascades Visitor Center, and the North Cascades Institute runs the North Cascades Environmental Learning Center. People’s affiliation with the area is with the North Cascades, and visitors come seeking a national park experience in the mountains known as the North Cascades. For most visitors, the “North Cascades” and “national park” names are important in defining what type of visitor experience is envisioned and expected.

Most visitors never actually enter North Cascades National Park; rather they enter and travel through Ross Lake NRA, causing confusion for many visitors who seek a “North Cascades” or “national park” experience. Visitors arriving from the west side enter Ross Lake NRA and drive 22 miles along the Skagit River and past Gorge and Diablo Lake before catching a glimpse of Ross Lake and then travel south for 6 miles to the eastern boundary of the Complex. The experience of Ross Lake for highway visitors is momentary, whereas the experience of the North Cascades is continuous along the North Cascades Highway corridor.

To address the public desire for an improved connection to the “North Cascades,” while understanding the implications and benefits of maintaining the national recreation area designation, the NPS would propose a name change from Ross Lake National Recreation Area to North Cascades National Recreation Area. The name North Cascades National Recreation Area would be consistent with the North Cascades National Park units to the north and south, the names of the visitor facilities currently located within the NRA, and with the concept of naming the recreation area after the mountain range in which it resides.

No other change to the enabling legislation, regulations, or policy would occur, and activities traditionally allowed within Ross Lake NRA (such as hunting and hiking with dogs on trails) would be allowed to continue in the North Cascades NRA.

Congressional legislation would be required to authorize this name change.

Operations

Staffing

Alternative B would be implemented with the current staffing level (133) plus 22 full-time equivalent staff (FTEs). (One FTE is one person working 40 hours per week for one year, or the equivalent). It is important to note that these staffing figures are for the North Cascades NPS Complex as a whole, as staff work on all three units of the complex. The total number of FTEs is the number of staff required to maintain the assets of Ross Lake NRA at a good level, provide acceptable visitor services, protect resources, and generally support Ross Lake NRA’s operations. The FTE number indicates base-funded, term, and seasonal staff only, not volunteer positions or positions funded by partners. FTE salaries and benefits are included in the annual operating costs.

New positions would include maintenance workers, education and outreach specialists, ecologists, natural and cultural resource specialists, rangers, and administrative technicians to implement the preferred alternative.

Table 4.4 Alternative B: Staffing

Management and Administration	18 + 3 new
Maintenance	44 + 5 new
Interpretation/Education	13 + 3 new
Resource Management	43 + 8 new
Visitor Protection	15 + 3 new
Total Staff	155

Estimated Costs

The cost figures shown here and throughout the plan are intended only to provide an estimate of the relative costs of alternatives. See the “Cost Estimates,” section earlier in this chapter for more detail. Cost estimates for Alternative B are identified below.

**Table 4.5 Alternative B:
Estimated Costs**

Annual Operating Costs	\$8,542,000
Staffing (FTE)	155
Total One-Time Costs	\$13,616,000 \$19,761,000
▪ Facility Costs	\$11,206,000 \$17,306,000
▪ Non-Facility Costs	\$2,410,000

City Light to operate the hydroelectric facilities and the NPS to support visitors and preserve resources. The NPS would manage or cooperatively manage Hollywood to for visitor use. A more detailed explanation of Hollywood and Reflector Bar is located in “Management of Specific Areas” section for “Diablo Townsite” (See Figure 4.8).

Additional information about boundary modifications and considerations can be found in Appendix B: Analysis of Boundary Adjustment and Land Protection.

Development Costs

One time facility costs to implement the Preferred Alternative would be \$11,206,000/17,306,000 over the next 15-20 years. One-time facility costs include those for the design, construction, rehabilitation and adaptive reuse of facilities, such as visitor facilities, roads, parking, and park operations and maintenance facilities. The one-time costs for Alternative B include such items as \$6,100,000 for a replacement bridge over the Skagit River to the North Cascades Visitor Center in Newhalem; \$1,745,000 for the Ross Dam Trailhead parking lot and improvements along the North Cascades Highway, \$860,000 for the Thornton Lakes Road removal and trail, and \$1,080,000 for new trails. The cost estimates also include the replacement of the Hozomeen ranger station, improvements to Ross Lake Resort, and changes to existing camping facilities.

These costs are based upon general “class C” estimates for site development and construction. Prior to submitting funding requests for the design and construction phases, “class B” estimates are required, based upon detailed site and facility designs.

These costs do not reflect the cost of acquiring Hollywood, any facility changes at Hollywood, or increased operating cost of maintaining facilities at Hollywood.

Boundary Modification

Hollywood and Reflector Bar

Under Alternative B, the NPS could would relinquish, sell, or exchange Reflector Bar (approximately 25 acres) or grant an interest or give greater control therein to Seattle City Light, and would seek to acquire Hollywood (approximately 44 acres) through exchange or purchase. This recommendation would be contingent on Seattle City Light’s interest and agreement on acquisition. This land exchange or purchase would be reflective of the missions of the two entities: Seattle

ALTERNATIVE C

Alternative C emphasizes the role of Ross Lake NRA in preserving the greater North Cascades ecosystem, which includes two additional National Park System units, two national forests, as well as provincial parks and protected areas across the Canadian border. Park management and education efforts would focus on broader ecosystem preservation and enhancement through coordinated regional and international environmental stewardship. The focus of visitor experiences would be linked to solitude, tranquility, natural soundscapes, and scenery through traditional outdoor activities. The NPS would actively manage to reduce habitat fragmentation throughout Ross Lake NRA by consolidating development, eliminating certain trails, and limiting construction of new facilities in undeveloped areas. Educational and interpretive opportunities would be primarily structured, and the NPS would increasingly rely on partners to deliver educational and interpretive programs both on-site and off-site.

Alternative C would provide visitors with recreational opportunities along the North Cascades Highway. However, there would be no net increase in miles of trail in Ross Lake NRA. In the backcountry and wilderness, Alternative C would focus on resource preservation and enhancement while limiting and/or restricting some recreational uses. Seaplanes would not be allowed to land on the reservoirs, and the NPS would recommend restricting commercial scenic air tours within Ross Lake NRA in order to protect and enhance soundscapes and wilderness character, experience, and values. In the event of a catastrophic weather event and the destruction of visitor facilities, natural geomorphological processes would be allowed to occur unimpeded wherever possible and affected facilities, including Colonial Creek and Goodell Creek campgrounds, would be closed and restored to natural conditions.

This alternative contains the most Backcountry zoned areas, including Diablo Lake. Only high use areas are zoned Frontcountry.

Management Zones

The management zones for Alternative C are geographically located to identify an area's predominant use and desired future conditions. Specific boundaries and configuration of the management zones is provided in Figures 4.9-4.13. The following description identifies the locations and details for the application of management zones in Alternative C.

Frontcountry Zone: The Frontcountry Zone would extend along the entire length of the North Cascades Highway and encompass developed recreational sites and nearby areas. The Frontcountry Zone would encompass the North Cascades Visitor Center and Newhalem Campground areas, Goodell Creek Campground, the Environmental Learning Center area, Colonial Creek Campground area, the Ferry Road corridor around Ross Dam, the southern portion of the Ross Lake to the log boom north of Ross Lake Resort, and the Hozomeen area. Along the North Cascades Highway, the Frontcountry Zone would include 100 feet on either side of the highway center line. Lands within this 200 foot corridor that are owned or managed through easements by either the WSDOT or SCL would also be zoned Frontcountry. This 200 foot corridor would allow for limited and necessary modifications to the North Cascades Highway, while ensuring that areas outside of this corridor are protected from more intensive development and use.

The Backcountry Zone: The Backcountry Zone would include areas that are dominated by natural conditions where recreational opportunities would focus on providing a sense of remoteness and immersion in nature within a mountainous wilderness setting. The Backcountry Zone would also conceptually function as a transition area between the Frontcountry and Wilderness Zones. In the Skagit River area, the Backcountry Zone would be located between the Skagit River Zone and the Wilderness Zone, including the Thornton Lakes access area, the Newhalem Creek roadway, Gorge Lake, most of Diablo Lake, upper Thunder Arm, and the entirety of Ross Lake from the second log boom near Ross Dam to the Hozomeen area.

The configuration of the Wilderness, Hydroelectric, and Skagit River zones would be the same as Alternative B and D.

The greatest proportion of Ross Lake NRA (about 73 percent) would be managed in the Wilderness Zone. The Frontcountry Zone would cover about 1.5 percent, and the Backcountry Zone would cover 22 percent. The Skagit River would cover about 3 percent, and about .05 percent of Ross Lake NRA would be managed in the Hydroelectric Zone. (See Table 4.10 for a comparison of the balance of management zones).

Management Zones Alternative C

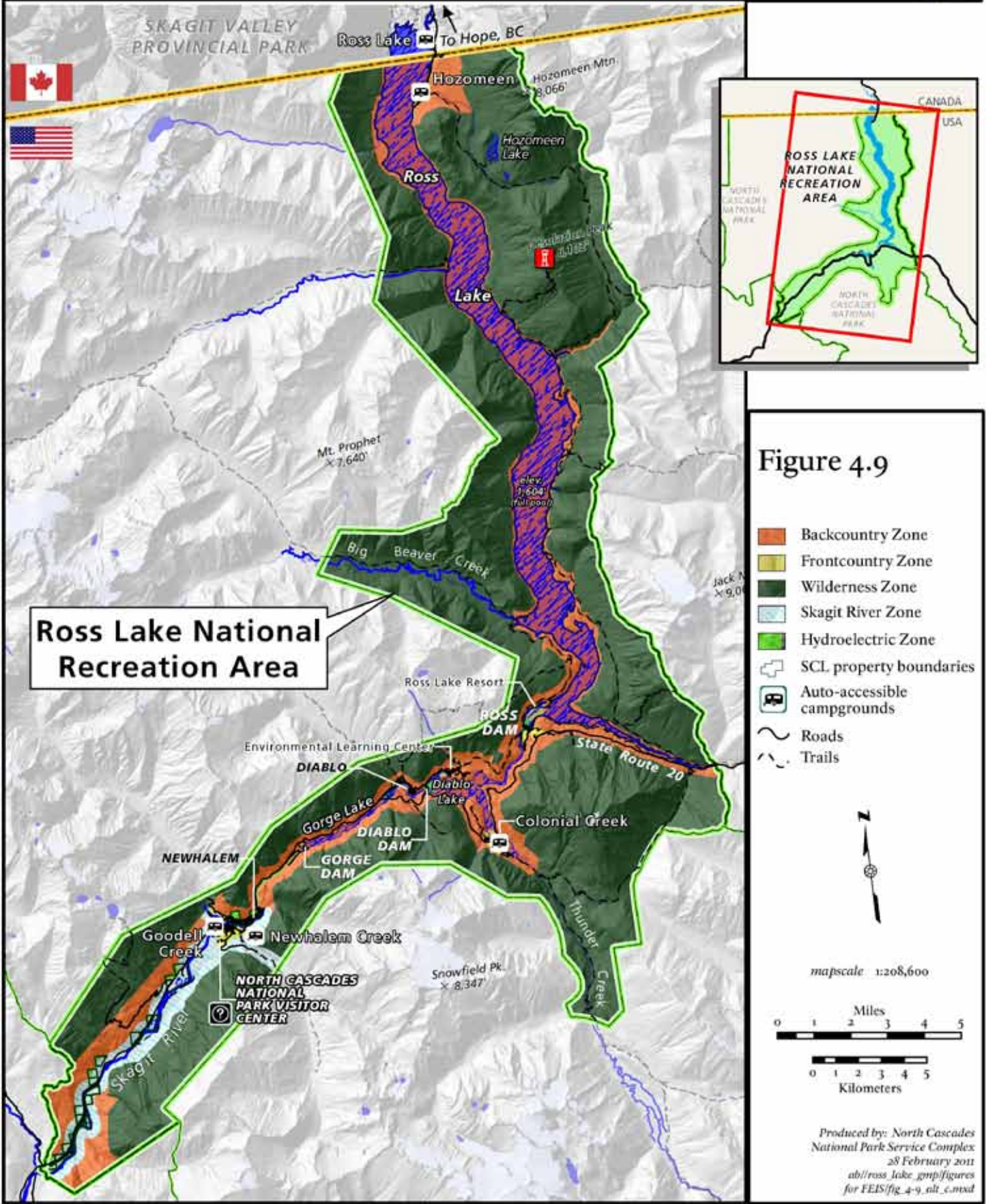


Figure 4.9

- Backcountry Zone
- Frontcountry Zone
- Wilderness Zone
- Skagit River Zone
- Hydroelectric Zone
- SCL property boundaries
- Auto-accessible campgrounds
- Roads
- Trails

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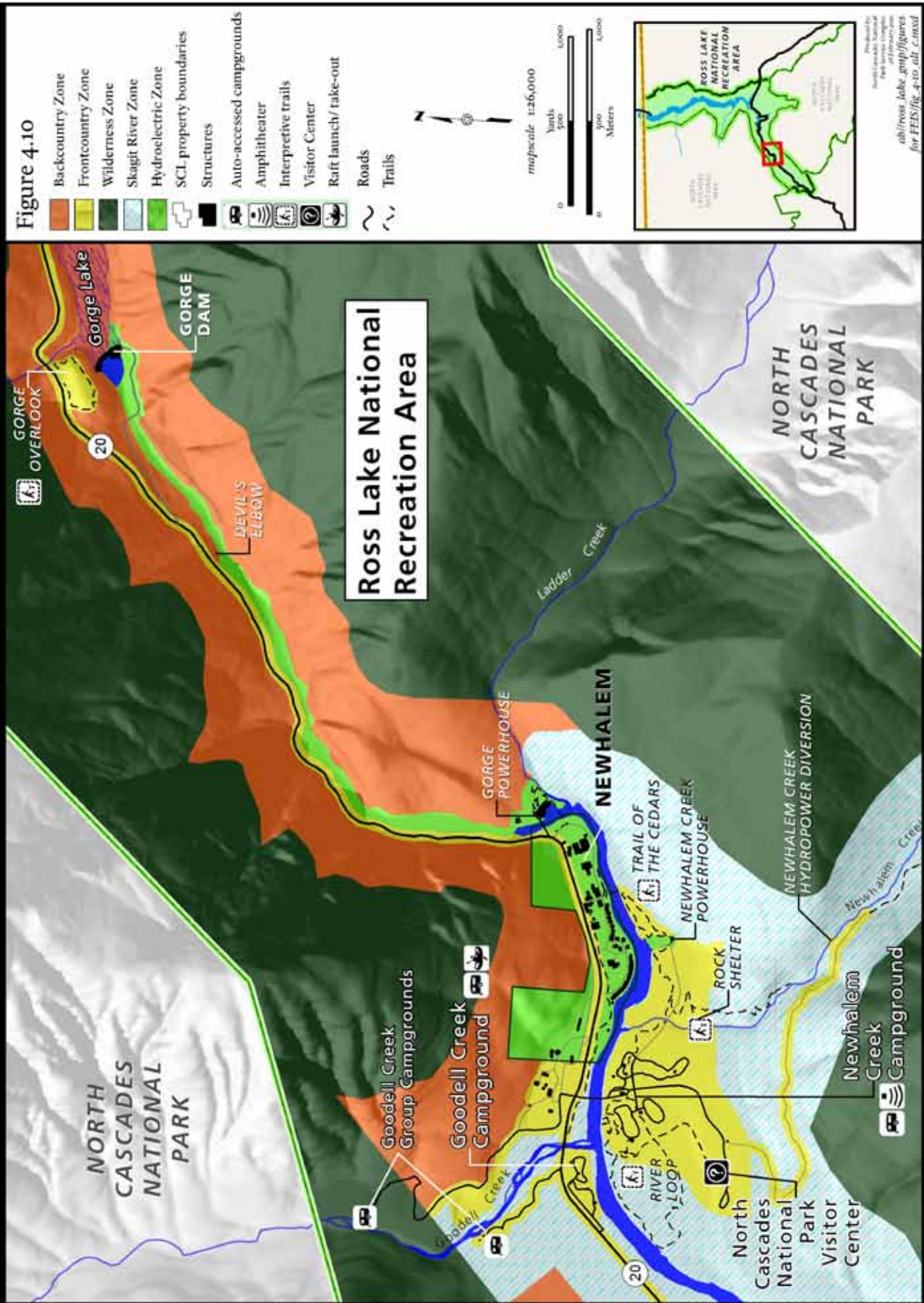
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Miles
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Kilometers
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National Park Service Complex
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Management Zones - Newhalem to Gorge Dam Alternative C



Management Zones - Gorge Dam to Diablo Gorge Alternative C

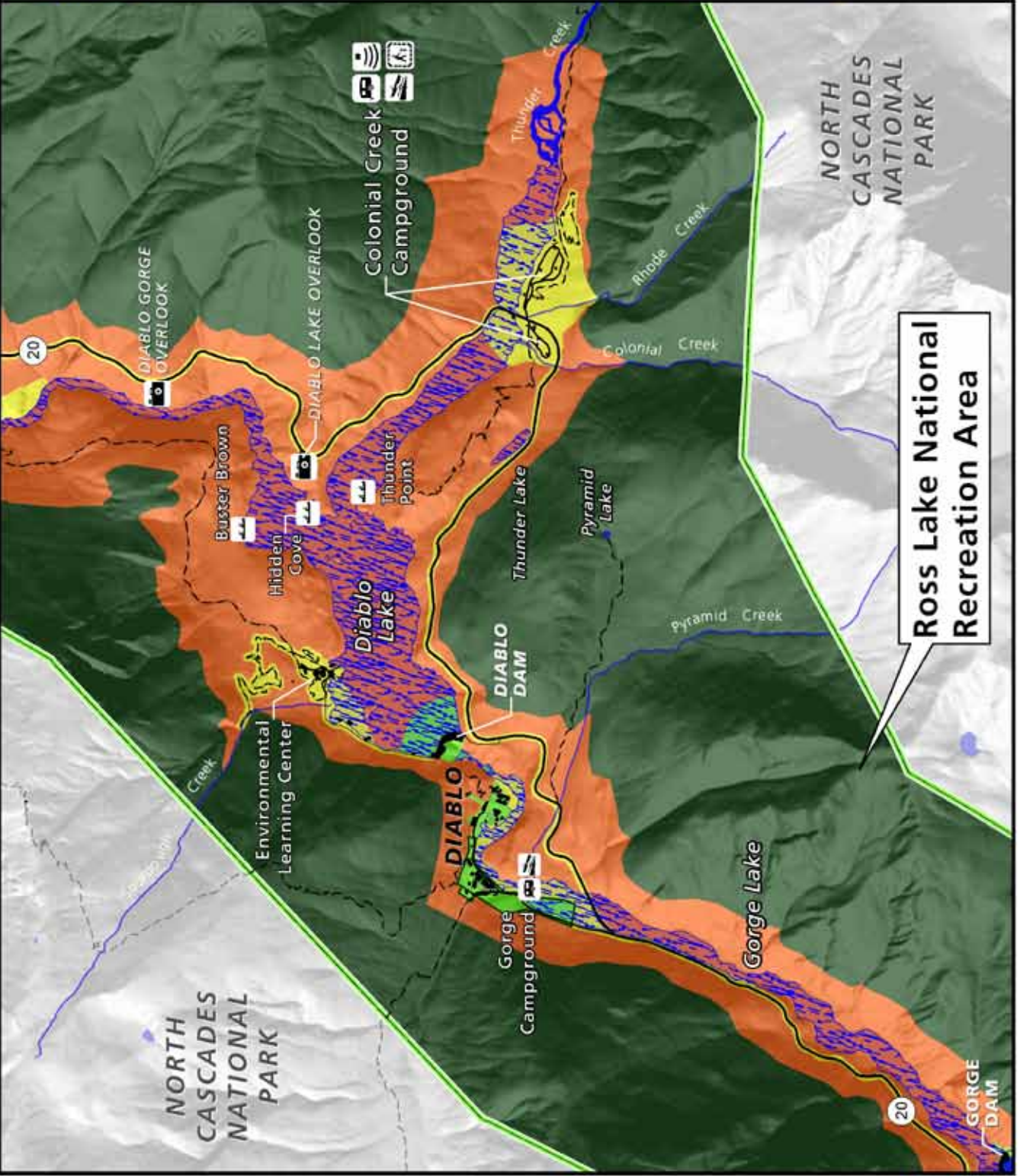
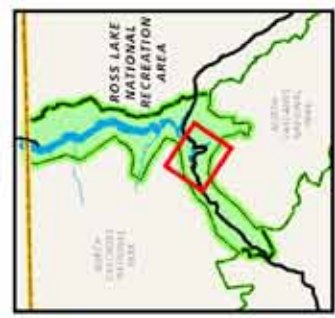


Figure 4.11

- Backcountry Zone
- Frontcountry Zone
- Wilderness Zone
- Hydroelectric Zone
- SCL property boundaries
- Structures
- Boat-in camps
- Auto-accessed campgrounds
- Amphitheater
- Interpretive trails
- Motor boat launch
- Roads
- Trails



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Ross Lake National
 Recreation Area

NORTH
 CASCADES
 NATIONAL
 PARK

NORTH
 CASCADES
 NATIONAL
 PARK

Management Zones - Lower Ross Lake Alternative C

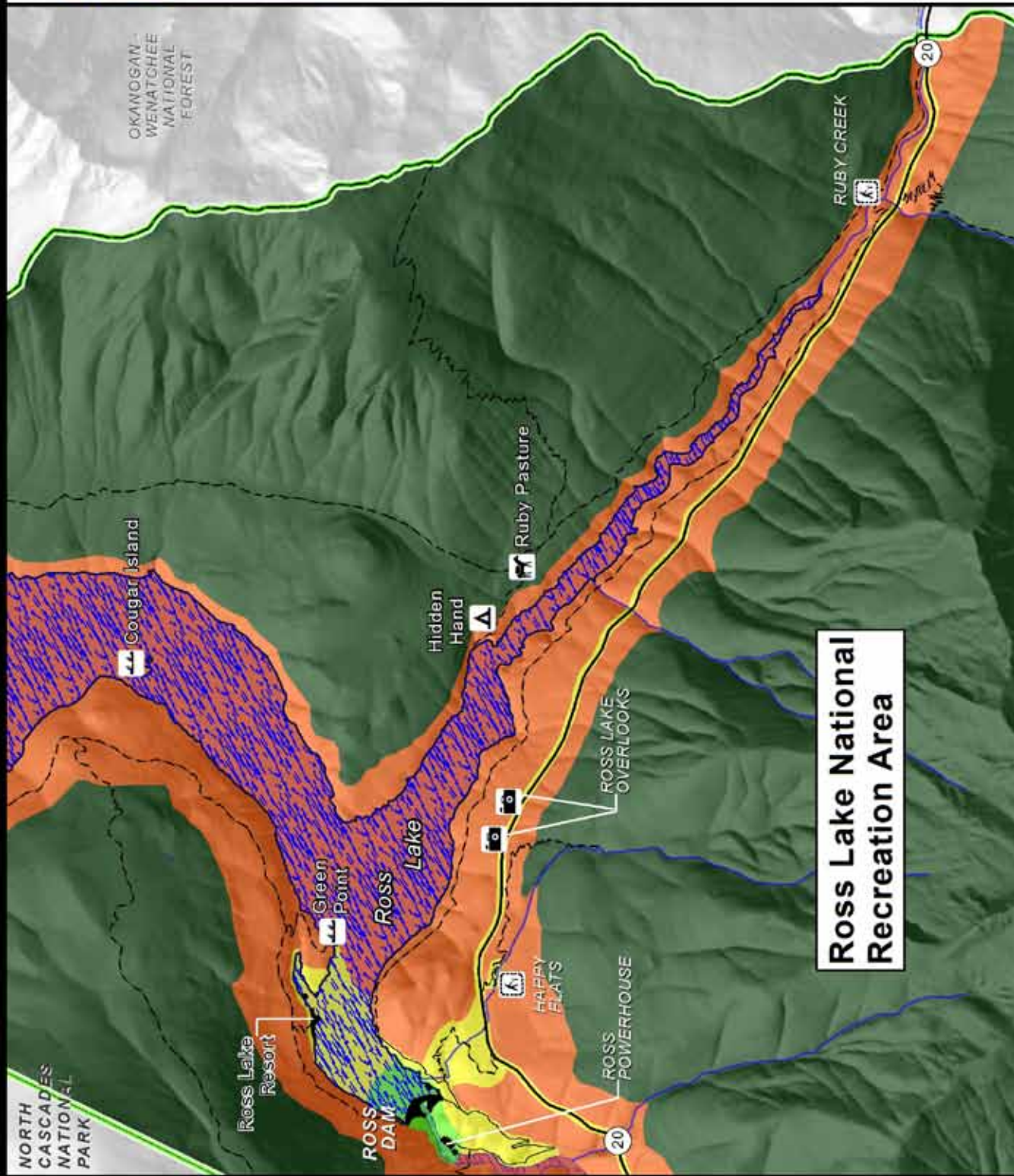
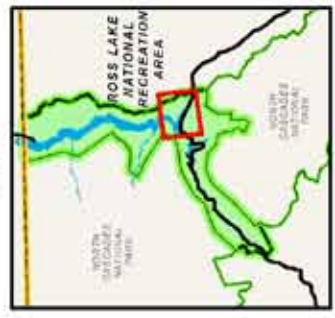


Figure 4.12

- Backcountry Zone
- Frontcountry Zone
- Wilderness Zone
- Hydroelectric Zone
- Structures
- Boat-in camps
- Hiker camps
- Stock camps
- Interpretive trails
- Roads
- Trails

map scale 1:38,000
Miles 0 0.5 1
Kilometers 0 0.5 1



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North Cascades National
Park Service Complex
28 February 2011
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**Ross Lake National
Recreation Area**

Management Zones - Hozomeen Alternative C

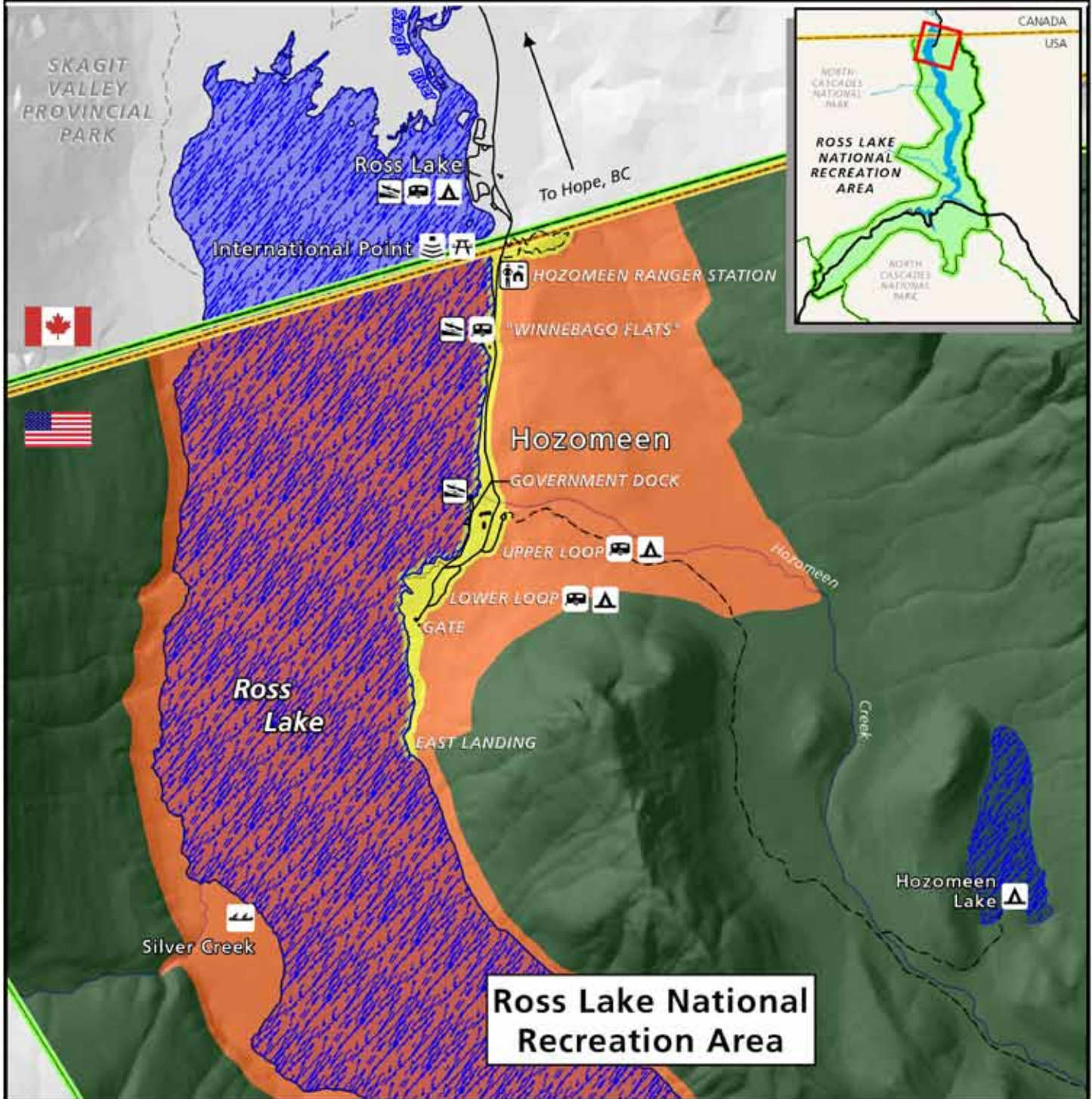
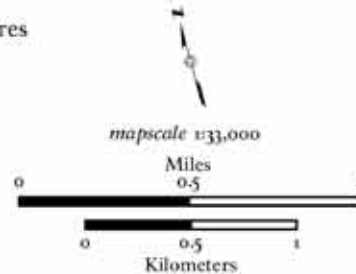


Figure 4.13

- Backcountry Zone
- Frontcountry Zone
- Wilderness Zone
- Roads
- Trails

- Hiker camps
- Boat-in camps
- Auto-accessible campgrounds
- Amphitheater
- Picnic area
- Motor boat launch
- Structures



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North Cascades National
Park Service Complex
1 March 2011
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Management of Specific Areas

North Cascades Highway Corridor

Under Alternative C, the North Cascades Highway corridor would continue to be managed as the primary access point for visitors. Redesigned and constructed entrance signs would afford a distinct sense of arrival and portals into the North Cascades. Dramatic viewsheds of the Skagit River, jagged mountain peaks, waterfalls, and reservoirs would introduce visitors to the North Cascades along the highway corridor. Visitors could then venture further into the North Cascades on back roads and trails that lead into the wilderness areas of the complex. The NPS would maintain existing day-use opportunities along the North Cascades Highway, such as dayhiking, backpacking, water recreation, and interpretive and educational activities. Gorge and Diablo lakes within the North Cascades Highway corridor would continue to provide boating, fishing, camping, and sightseeing opportunities.

Existing **campgrounds and campsites** within the corridor would be maintained for visitor enjoyment of the frontcountry areas of Ross Lake NRA, but new camping areas would not be considered for construction.

Trails within the North Cascades Highway corridor would be maintained to provide dayhiking opportunities as well as launching points for more extensive hikes into remote areas of the North Cascades NPS Complex. There would be no net increase in the miles of trails. Removal of trails within Ross Lake NRA could occur based on future needs and condition of natural resources, particularly wildlife. In the event that trails, such as the Newhalem Creek Trail, are removed from the trails inventory as part of subsequent planning efforts for the park units, such as an updated North Cascades NPS Complex wilderness management plan, the remaining portion of trails within Ross Lake NRA would also be removed and the areas would be rehabilitated and restored where appropriate.

Along the highway, **parking and pullouts** would be maintained in their current condition. The Ross Dam Trailhead parking lot would be redesigned and constructed for visitor safety but would not be enlarged, see schematic design in Figure 4.14. Within the existing footprint, a turn lane and single point of ingress and egress would be constructed. Capacity of the parking lot would decrease to approximately 39 passenger vehicles. Stock vehicles and RVs would not be allowed.

Under Alternative C, if there are **facilities destroyed or damaged** by severe weather events, those facilities

would be closed and abandoned and the landscape would be rehabilitated. Visitors would be directed to other existing facilities. Some net loss of facilities and visitor opportunities could occur. In the event that Goodell Creek Campground is impacted by flooding, debris flow, and/or erosion, affected portions of the campgrounds would be closed as necessary. Visitors would be directed to other existing camping locations.

Facilities and visitor opportunities in Newhalem would be similar to Alternative A. ~~The only difference would be the replacement and expansion of the single lane access bridge to accommodate two way vehicular traffic and bicycle and pedestrian access. The new bridge would enable removal of the red light stop at each end of the bridge and improve safety for vehicular, bicycle, and pedestrian traffic.~~

Diablo Lake

Facilities and visitor opportunities in Diablo Lake area would be similar to Alternative A.

New facilities on the North Cascades Environmental Learning Center campus would be constructed as outlined in the original plan and environmental assessment. Facilities that have not yet been built would be constructed, including a dormitory, staff housing, and boathouse. Funding for the construction of these facilities would be provided by the North Cascades Institute.

In the event that Colonial Creek Campground is impacted by flooding, debris flow, and/or erosion, affected portions of the campgrounds would be closed as necessary. Visitors would be directed to other existing camping locations.

Diablo Townsite

(Same as Alternative B and D)

Similar to Alternative B, the NPS would recommend Congressional legislation to authorize the NPS to relinquish, sell or exchange Reflector Bar to SCL, and the NPS would seek to acquire Hollywood through exchange or purchase. This land exchange would be reflective of the missions of the two entities: SCL to operate the hydroelectric facilities and the NPS to support visitors and preserve resources. ~~The NPS would manage or cooperatively manage Hollywood for visitor use. Diablo Townsite is located in the Hydroelectric Zone. If the Hollywood area were to be managed or~~

Ross Dam Trailhead Parking Lot: Schematic Design Alternative C

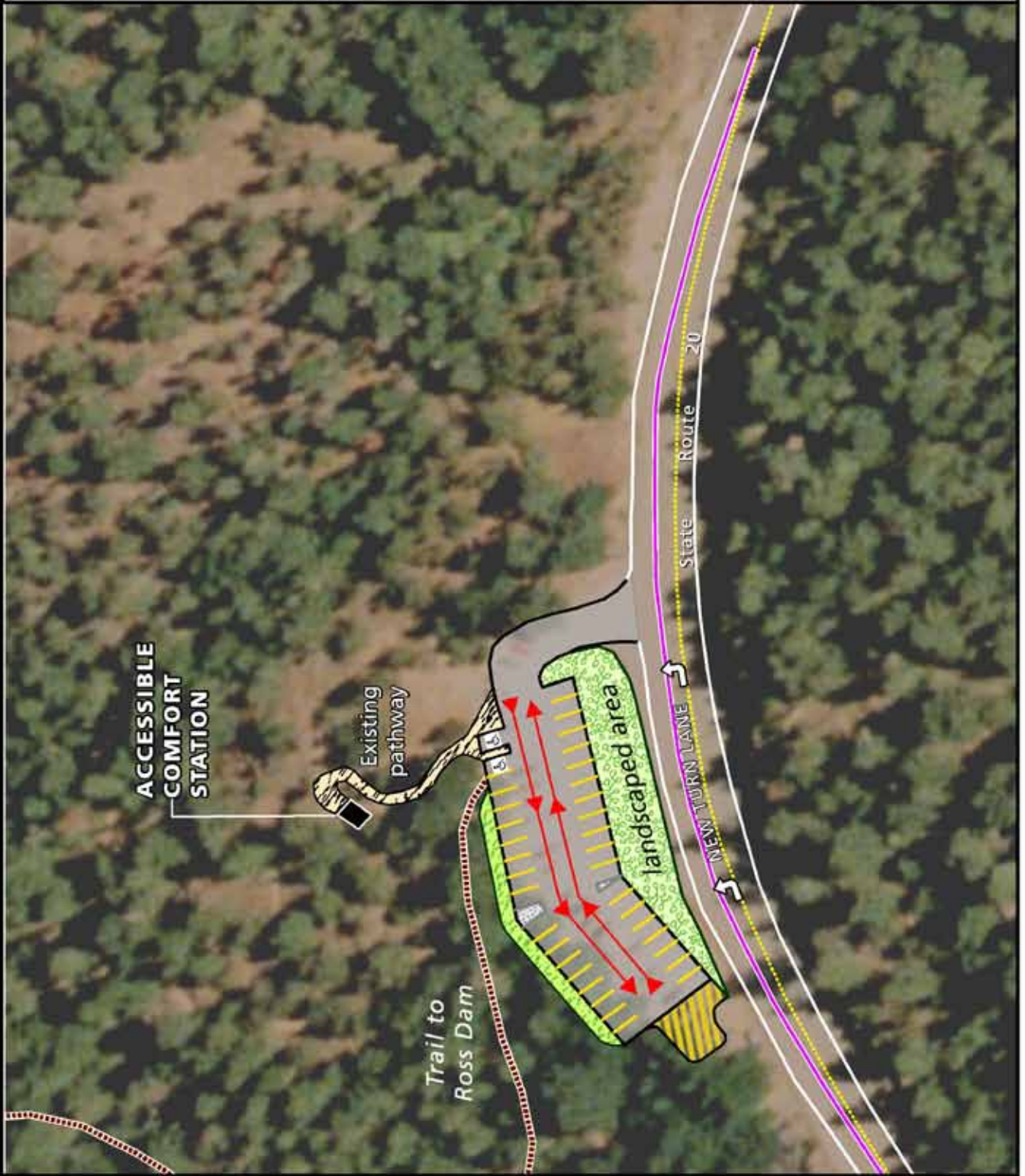
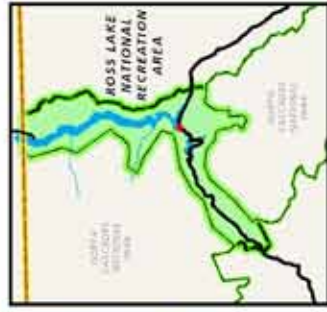
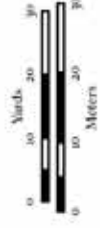


Figure 4.14

-  Vehicle turn-around
-  Vegetated filter strip
-  Landscaped area



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Park Service Complex
1 March 2011
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owned by the NPS, the Hollywood area of Diablo Townsite would be included in the Frontcountry Zone.

Following the resource preservation focus of this Alternative C, Hollywood would be preserved. Buildings, structures, and landscape would be stabilized, rehabilitated and adaptively used to preserve the historic character of the area. Hollywood district would be geared to providing a mix of NPS staff and partner housing and/or partner or concession operated rental houses for a variety of NPS, partner, and public opportunities. Public access for overnight accommodations would be within the context of being part of an existing program operated by partners, concessions or the NPS. Additional planning and analysis would be needed to determine these future uses, management structure, and site treatments. A site plan would be completed as an implementation plan as part of the successful execution of a land exchange of Hollywood with SCL.

Ross Lake

Visitor experience on and near Ross Lake would be maintained largely as it is today with limited vehicular access. During this planning process, public comments have expressed the desire to preserve the unique character of Ross Lake by controlling access and use and limiting development.

Water recreation, camping, and hiking would continue to be the primary forms of recreation on and near Ross Lake. Motorboat and seaplane regulations would improve natural soundscapes, water quality, and the visual character of Ross Lake. Seaplane use and towing of people would be regulated (See the Recreation section of Alternative C). New lakefront campsites would not be constructed which would result in maintaining the existing capacity of campsites on Ross Lake.

Ross Lake Resort would be maintained at its existing capacity. Any replacement facilities would follow design guidelines provided by the NPS and appropriate for the concession.

Hozomeen

Hozomeen would be managed similar to Alternative B with the following differences. The new Hozomeen Ranger/Orientation Station would be constructed at a smaller scale and would not offer interpretive services. The NPS would not pursue the construction of a Centennial/Skyline II Trail in collaboration with B.C. Parks; existing trails would be maintained.

Marblemount Ranger Station

The Marblemount Ranger Station would continue to provide buildings and space for NPS maintenance, resource management, administration, emergency response, and staff housing functions, as well as limited visitor services including the Wilderness Information Center. The Wilderness Information Center located at the Marblemount Ranger Station would continue to house the wilderness visitor contact station, wilderness ranger offices, communications center, and public restrooms. The facility was renovated and expanded in 2009 to allow for adequate space for all existing functions.

All Marblemount Ranger Station activities would be compatible with the significance of the National Register listed Marblemount Ranger Station Historic District and its associated structures, landscapes, and features.

Facility Design Standards

(Same as Alternative B and D)

Natural Resources

Natural resource management would largely be the same as Alternative B. The primary difference from Alternative B would be that in Alternative C, the NPS would play a greater leadership role in the region for resource preservation and enhancement, allocating more of Ross Lake NRA's resources to engage in resource protection efforts that expand beyond Ross Lake NRA boundaries.

Specific guidance for natural resource management includes new programs, plans, and approaches to management. The following list provides some of these recommended actions. A complete list is included in the alternatives comparison Table 4.10.

Ecosystem Functions and Processes

Same as Alternative B except that channelization of rivers and streams would be avoided wherever possible. The NPS would also encourage WSDOT to construct a longer bridge across Goodell Creek on the North Cascades Highway to minimize the potential for channel avulsion.

Air Quality

(Same as Alternative B and D)

Soundscapes

(Same as Alternative B and D)

Lightscaapes

(Same as Alternative B)

Water Resources

(Same as Alternative B and D)

Glaciology

The NPS would expand research and monitoring on glaciers and glacial process that affect Ross Lake NRA and seek additional partners in that effort.

Soils/Erosion Control

(Same as Alternative B and D)

Vegetation

Same as Alternative B plus the NPS would lead efforts with adjacent landowners and jurisdictions on cooperative weed management, such as working with WS-DOT to replace invasive non-native species with native species.

Wildlife

The wildlife monitoring programs would be expanded to provide additional data on wildlife and take additional actions to protect wildlife from disease or human disturbance. The NPS would actively pursue restoring extirpated species in collaboration with partner agencies where feasible and monitor habitat conditions. The NPS would provide food storage facilities, such as bear boxes or portable bear resistant containers, for overnight camping to minimize the possibility of wildlife obtaining human food. The NPS would actively manage to reduce habitat fragmentation, such as consolidating development, eliminating certain trails, and limiting construction of new facilities in undeveloped areas.

Fisheries

The NPS would develop a park-wide fisheries management plan which would include a monitoring component. The NPS would lead efforts with its partners to maintain native fish stocks in the reservoirs and tributaries and to protect spawning habitat on the Skagit River and its tributaries.

Science Communication and Volunteer Programs

The NPS would develop a formalized program and process to communicate the results of research and monitoring efforts to a variety of audiences.

Cultural Resources

Cultural resources, including archeology, historic structures, cultural landscapes, ethnohistory, and museum collections, would be managed through long-term stewardship and preservation. The NPS would expand identification, documentation, and research programs to learn more about human history in the North Cascades in all program areas, including archeology, museum collections, historic structures, cultural landscapes, and ethnohistory.

Specific guidance for cultural resource management includes new programs and approaches to management. The following list provides some of these recommended actions. A complete list is included in the alternatives comparison Table 4.10.

Archeology

Management of the archeology program would be largely the same as in Alternative B, except that there would be less emphasis on interpreting the results and involving visitors in archeological projects.

Historic Structures

The NPS would continue to identify, document, and treat historic structures according to preservation policies.

Cultural Landscapes

The NPS would continue to identify, document, and treat cultural landscapes according to preservation policies.

Ethnohistory

The NPS would continue to conduct oral histories and research investigations documenting human use of the North Cascades.

Museum Collections

Storage capacity for collections and archives would be increased to protect paleoecological items and increasing collections and archives. Exhibits would be devel-

oped to interpret paleoecological findings and emerging collections.

Wilderness and Backcountry

Management of designated wilderness, potential wilderness, and all backcountry areas would focus on wilderness character, ecosystem preservation, and compatible recreational activities. The NPS would prioritize the protection of resources, natural ecosystem functions and processes, and significant cultural resources. Visitors would be provided with opportunities for solitude, tranquility, and connections with the natural world. The backcountry permit system would continue to monitor and control numbers of visitors in these remote areas in order to minimize visitor impacts to resources.

In designated and potential wilderness, changes in campsite locations or trail re-routes would be permitted, provided there is no net increase in miles of trails.

Recreation

Visitor experiences would include a mix of recreational activities and resource-focused activities while minimizing impacts to natural and cultural resources through increased education efforts and concentrating activities in defined high use areas. A wilderness experience would continue to be available to those who prefer solitude and tranquility in more remote areas of Ross Lake NRA. Interactions with uniformed staff would be widely available, particularly in frontcountry areas of Ross Lake NRA.

Boating

The NPS would manage boats within Ross Lake NRA the same as under Alternative B with the following differences: the NPS would not consider allowing a second water taxi to operate on Ross Lake, and there would be improved information and outreach for self-propelled boaters to encourage their use throughout Ross Lake NRA.

Hunting and Fishing

Hunting would continue in Ross Lake NRA. Hunting regulations would continue to be coordinated with the Washington State Department of Fish and Wildlife. Lead-based ammunition would be prohibited. The NPS would improve visitor education about hunting awareness and visitor safety. The Washington State Department of Fish and Wildlife would continue to regulate fishing in Ross Lake NRA.

Sport Climbing

(Same as Alternative A)

Seaplanes

Seaplanes would be prohibited from landing and taking off on all lakes in Ross Lake NRA. 36 CFR 7.69 would be updated and modified to clarify these changes.

Seaplanes are visually and audibly noticeable and attract attention away from the backcountry character of Ross Lake. Seaplane noise is most intense during a plane's take-off, impacting the natural ambient soundscape. For these reasons, seaplane use would not be allowed in Ross Lake NRA under Alternative C. While it is recognized that seaplane users could fly over these areas, landing and take-off would be prohibited in order to maintain the ambient character.

Updated management guidance for seaplane use on Ross Lake is in response to public comments about maintaining the backcountry and wilderness character of the Ross Lake area and emphasizing non-motorized recreation and natural soundscapes. The NPS considered the totality of public comments on the character of Ross Lake, soundscapes, and seaplane use as well as the relatively small numbers of seaplane users compared to non-seaplane users. This guidance for Alternative C reflects the intent of this alternative to prioritize protecting natural resource conditions.

Commercial Scenic Air Tours

Commercial scenic air touring would be managed to protect soundscapes and the recreational experiences of visitors on the ground. The NPS would coordinate with the Federal Aviation Administration (FAA) to develop an air tour management plan. The NPS would request that the FAA prohibit all commercial scenic air tours over Ross Lake NRA. Concern about overflights, and specifically air tours, was expressed by the public during the planning process. Commenters wanted to make sure that the remote and wilderness character of Ross Lake NRA is not diminished by the presence of air tours.

Backcountry Permit System

Backcountry permits would continue to be obtained in person at additional designated locations, and in partnership with the U.S. Forest Service. A portion of permits would be held for walk-ins.

Interpretation and Education

Ross Lake NRA would be a platform and classroom for education about the North Cascades ecosystem. Opportunities in the NRA would be primarily structured, but some opportunities for self-guided exploration and discovery could occur in the Frontcountry Zone, primarily around existing centers of visitation. Enhanced off-site interpretation and education programs would be provided through partners. NPS would develop and evaluate interpretive and educational messages and programs with partners and increasingly rely on partners to deliver this programming.

Interpretation

Interpretive messages would focus on topics that convey the importance of preserving the North Cascades ecosystem. Interpretive programs and materials would use the most current and dynamic methods to generate curiosity, passion, enthusiasm, and respect for resources to build a sense of stewardship. The NPS would improve traditional interpretive programming within existing facilities by developing, delivering and evaluating targeted messages about ecosystem preservation. The NPS would increasingly rely on effective use of technology as a tool to reach a broader audience as opposed to direct contact with NPS staff.

Visitor Orientation and Informal Education

Visitor orientation and informal education would be enhanced through improved signage, multi-media, and exhibits at existing waysides, contact stations and along interpretive trails. Improved signage would provide visitors with a sense of approach and arrival as well as better orientation to the services and resources within Ross Lake NRA.

Visitors would experience consistent messages from all contact stations and partners as well as from pre-trip planning to the completion of their visit; however, fewer resources would be dedicated to training partners and staffing locations outside Ross Lake NRA.

Curriculum-based Programs

Curriculum-based programs would focus on messages that convey the importance of preserving the North Cascades ecosystem. These programs would emphasize low impact practices for recreating in sensitive ecosystems and include hands-on activities that make learning relevant to students' lives.

Outreach

(Same as Alternative B)

Partnerships for Interpretation and Education

The NPS would enhance partnerships with SCL, British Columbia Parks, the Forest Service, North Cascades Institute, concessioners, and others to enable visitors to have a lasting connection with the North Cascades and their park experience. The NPS would develop and evaluate the interpretive and educational programs and messages and set a standard of excellence, but rely increasingly on partners to distribute and deliver the messages.

The NPS would devote staffing, funding and NPS resources to Environmental Learning Center (ELC) programs and operations. The NPS would develop and evaluate the interpretive and educational messages with NCI, setting a standard of excellence, but rely increasingly on NCI to distribute and deliver interpretive and educational messages focused on conveying the importance of preserving the North Cascades ecosystem.

Access and Transportation

Mechanized and non-mechanized access and transportation would largely be maintained to and within Ross Lake NRA with some changes.

Management of the North Cascades Highway

Management of the North Cascades Highway would largely be the same as Alternative B with the following differences: overlooks and trailheads would continue to go unplowed during the winter months, and the NPS would work with WSDOT to regulate snowmobile use on the closed portion of the road.

Climate Change

(Same as Alternative B and D)

Operations

Staffing

Alternative C would be implemented with the current staffing level (133) plus 18 full-time equivalent staff (FTEs). (One FTE is one person working 40 hours per week for one year, or the equivalent.) It is important to note that these staffing figures are for the North Cas-

cadescades NPS Complex as a whole, as staff work on all three units of the complex. The total number of FTEs is the number of staff required to maintain the assets of Ross Lake NRA at a good level, provide acceptable visitor services, protect resources, and generally support Ross Lake NRA’s operations. The FTE number indicates base-funded, term, and seasonal staff only, not volunteer positions or positions funded by partners. FTE salaries and benefits are included in the annual operating costs.

New positions would include maintenance workers, education and outreach specialists, ecologists, natural and cultural resource specialists, rangers, and administrative technicians to implement Alternative C.

Category	Staffing
Management and Administration	18 + 3 new
Maintenance	44 + 3 new
Interpretation/Education	13 + 2 new
Resource Management	43 + 8 new
Visitor Protection	15 + 2 new
Total Staff	151

Estimated Costs

The cost figures shown here and throughout this plan are intended only to provide an estimate of the relative costs of alternatives. See the “Cost Estimates,” section earlier in this chapter for more detail. Cost estimates for Alternative C are identified below.

Annual Operating Costs	\$8,540,000
Staffing (FTE)	151
Total One-Time Costs	\$4,205,000 \$10,302,000
▪ Facility Costs	\$2,338,000 \$8,438,000
▪ Non-Facility Costs	\$ 1,867,000

Development Costs

One time facility costs to implement Alternative C would be \$2,338,000; \$8,438,000 over the next 15-20 years. One-time facility costs include those for the design, construction, rehabilitation and adaptive reuse

of facilities, such as visitor facilities, roads, parking, and park operations and maintenance facilities. The one-time costs for Alternative C include the \$6,100,000 replacement bridge over the Skagit River to the North Cascades Visitor Center in Newhalem.

These costs are based upon general “class C” estimates for site development and construction. Prior to submitting funding requests for the design and construction phases, “class B” estimates are required, based upon detailed site and facility designs.

These costs do not reflect the cost of acquiring Hollywood, any facility changes at Hollywood, or increased operating cost of maintaining facilities at Hollywood.

Boundary Modification

(Same as Alternative B and D)

ALTERNATIVE D

Alternative D would focus on improving connections between visitors and the outdoors through a variety of enhanced recreation and learning opportunities. The emphasis of NPS management would be to diversify Ross Lake NRA's visitor base and build stewardship through more hands-on/experiential recreation and educational opportunities. Interpretive and educational programs would be offered by the NPS and partners with expanded offerings in the backcountry and limited areas of the Wilderness Zones. NPS management would continue to protect resources and minimize impacts from visitor use.

Overnight accommodations, several new trails, and additional visitor amenities would expand visitor opportunities in Ross Lake NRA primarily along the North Cascades Highway corridor. The Wilderness Information Center would be moved to an easily accessible location on Highway 20. A wide variety of recreational activities would be allowed throughout Ross Lake NRA, and there would be fewer restrictions on recreational activities than the other action alternatives. An online reservation system for permits would allow visitors the opportunity for advance trip planning. In the event of a catastrophic event and the destruction of visitor facilities, the NPS would close affected facilities and build new facilities at other locations to limit net loss of visitor opportunities.

This alternative contains the most Frontcountry zoned areas, including the entire North Cascades Highway corridor, Diablo Lake, Hozomeen, and near Ross Dam.

Management Zones

The management zones for Alternative D are geographically located to identify an area's predominant use and desired future conditions. Specific boundaries and configuration of the management zones is provided in Figures 4.15-4.19. The following description identifies the locations and details for the application of management zones in Alternative D.

Frontcountry Zone: The Frontcountry Zone would extend along the entire length of the North Cascades Highway and encompass developed recreational sites and nearby areas. The Frontcountry Zone would encompass the North Cascades Visitor Center and Newhalem Campground area, Goodell Creek campgrounds, Gorge Lake, Diablo Lake, the Environmental Learning Center area, Colonial Creek Campground area, Thunder Knob, Thunder Point,

the swathe of land between Diablo Canyon and the North Cascades Highway, the southern portion of the Ross Lake area to Cougar Island and Ruby Arm, the Hozomeen area, and the northern portion of Ross Lake from the international border to Silver Creek. Along the North Cascades Highway, the Frontcountry Zone would include 100 feet on either side of the highway center line. Lands within this 200 foot corridor that are owned or managed through easements by either the WSDOT or SCL would be zoned Frontcountry. This 200 foot corridor would allow for limited and necessary modifications to the North Cascades Highway, while ensuring that areas outside of this corridor are protected from more intensive development and use.

Backcountry Zone: The Backcountry Zone would include areas that are dominated by natural conditions where recreational opportunities would focus on providing a sense of remoteness and immersion in nature within a mountainous wilderness setting. The Backcountry Zone would also conceptually function as a transition area between the Frontcountry and Wilderness Zones. In the Skagit River area, the Backcountry Zone would be located between the Skagit River Zone and the Wilderness Zone, including the Thornton Lakes access area, upper Thunder Arm, and expanses of land surrounding Diablo Lake and lower Ross Lake. The Backcountry Zone would also cover the entire surface of the lake and shoreline from Cougar Island to Silver Creek on Ross Lake.

The configuration of the Wilderness, Hydroelectric, and Skagit River zones would be the same as Alternative B and C.

The greatest proportion of Ross Lake NRA (about 73 percent) would be managed in the Wilderness Zone. The Frontcountry Zone would cover about 6 percent, and the Backcountry Zone would cover 17.5 percent. The Skagit River would cover about 3 percent, and about .05 percent of Ross Lake NRA would be managed in the Hydroelectric Zone. (See Table 4.10 for a comparison of the balance of management zones.)

Management Zones Alternative D

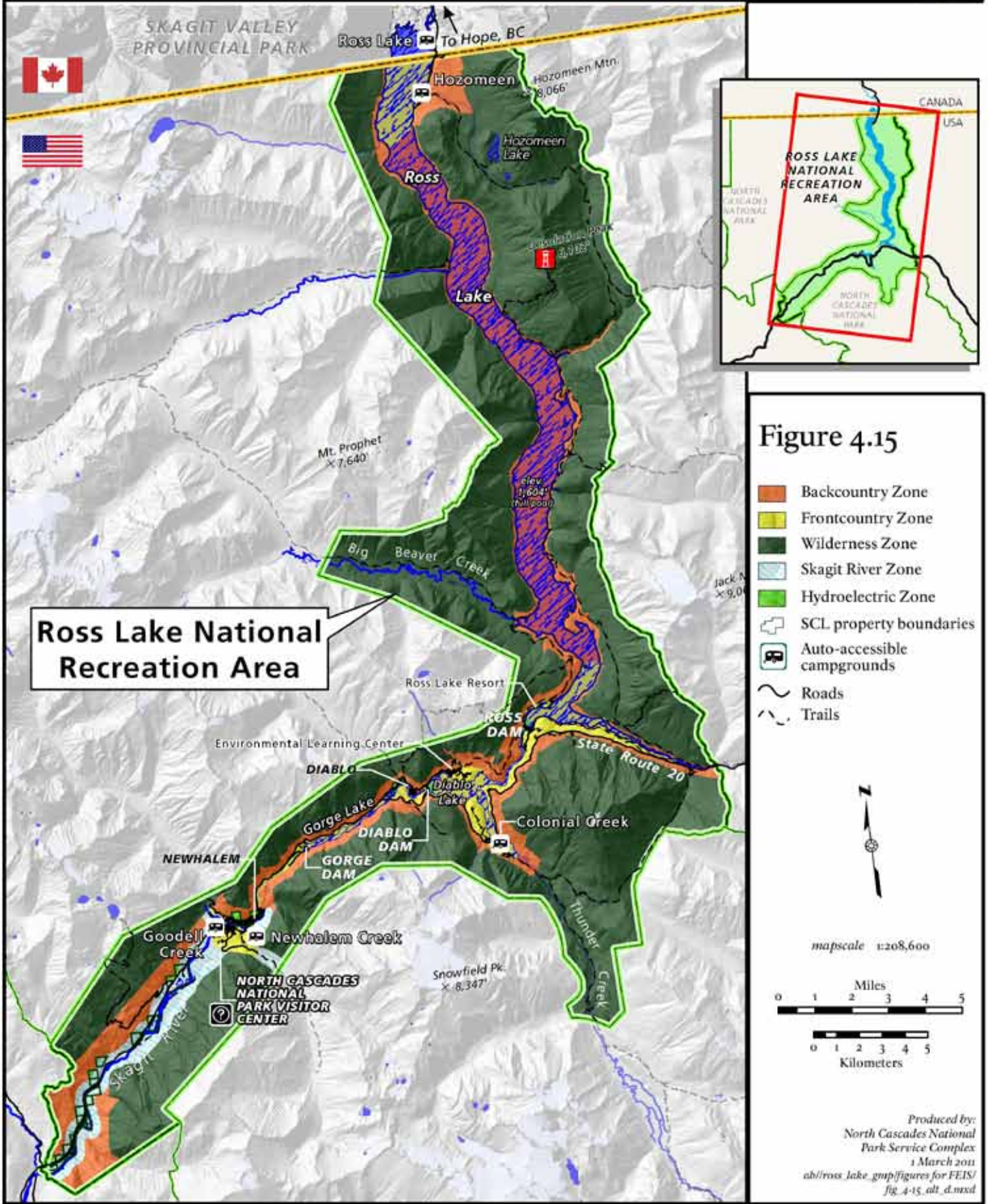

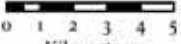


Figure 4.15

- Backcountry Zone
- Frontcountry Zone
- Wilderness Zone
- Skagit River Zone
- Hydroelectric Zone
- SCL property boundaries
- Auto-accessible campgrounds
- Roads
- Trails


 mapscale 1:208,600

 Miles

 Kilometers

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 1 March 2011
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Management Zones - Newhalem to Gorge Dam Alternative D

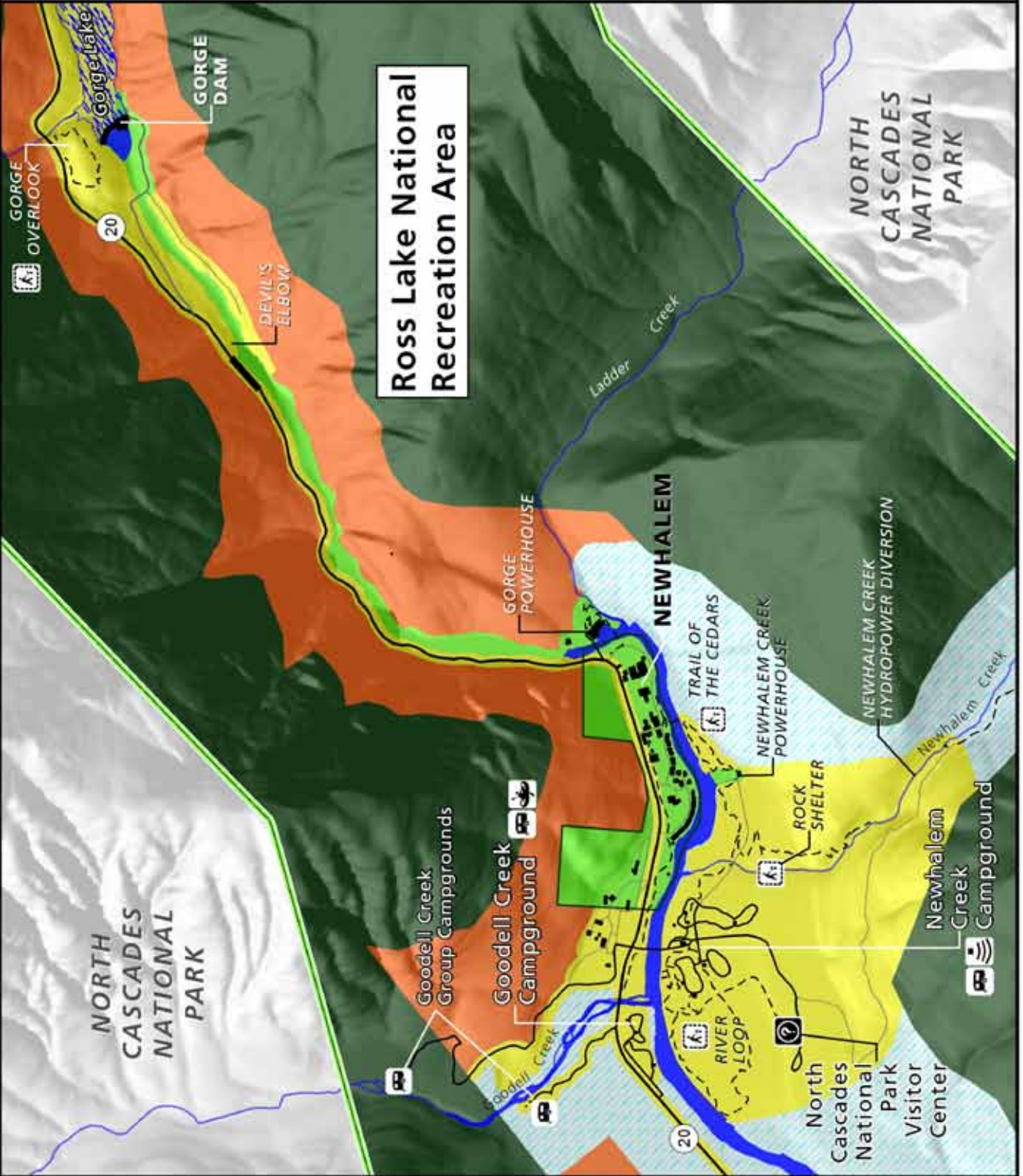
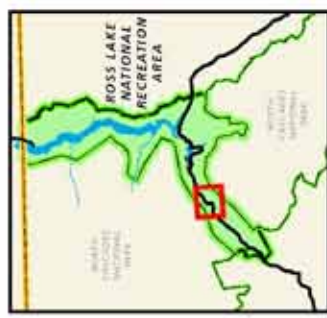
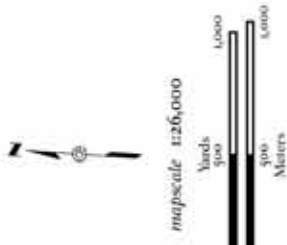
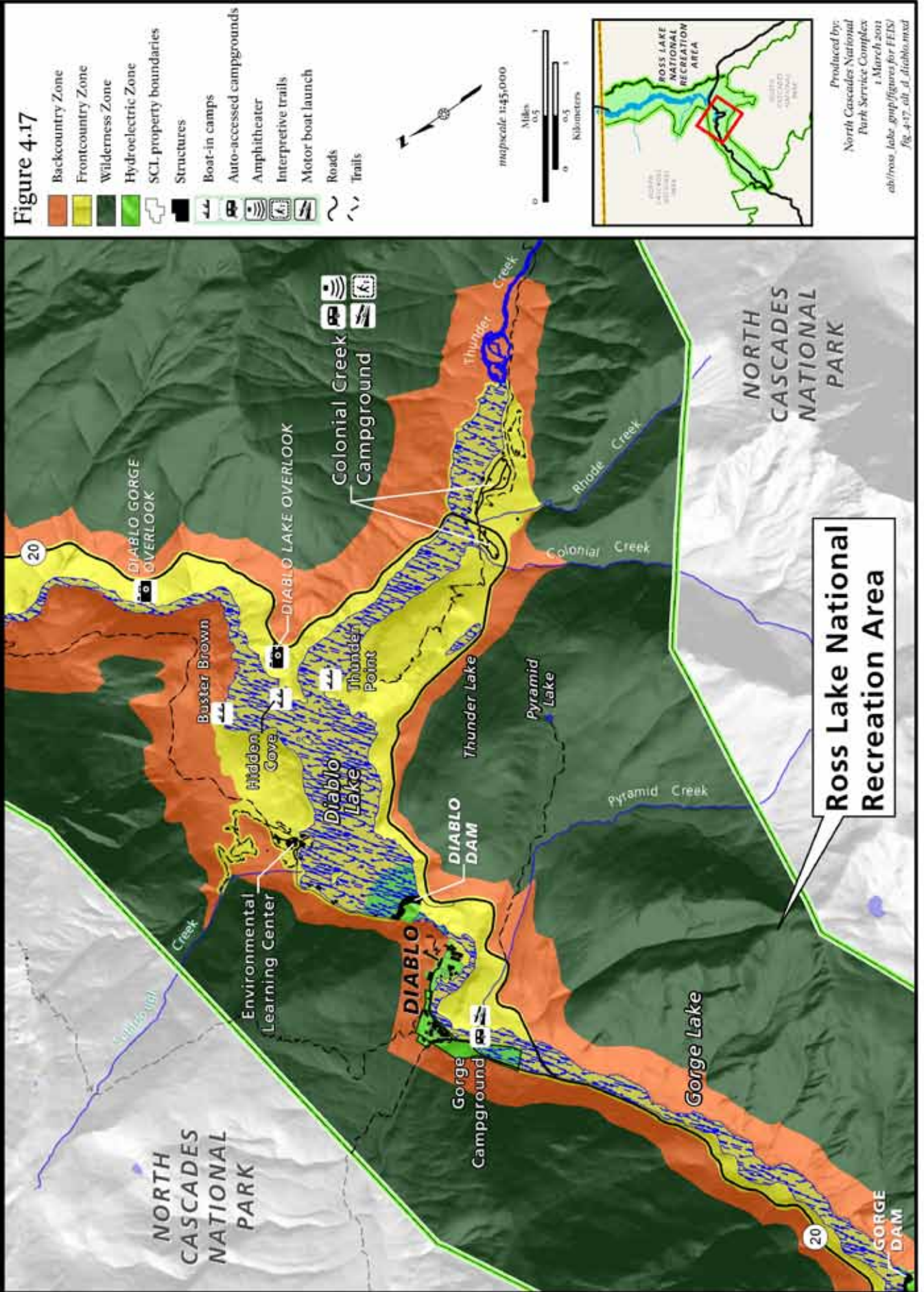


Figure 4.16

- Backcountry Zone
- Frontcountry Zone
- Wilderness Zone
- Skagit River Zone
- Hydroelectric Zone
- SCL property boundaries
- Structures
- Auto-accessed campgrounds
- Amphitheater
- Interpretive trails
- Visitor Center
- Raft launch/ take-out
- Roads
- Trails



Management Zones - Gorge Dam to Diablo Gorge Alternative D



Management Zones - Lower Ross Lake Alternative D

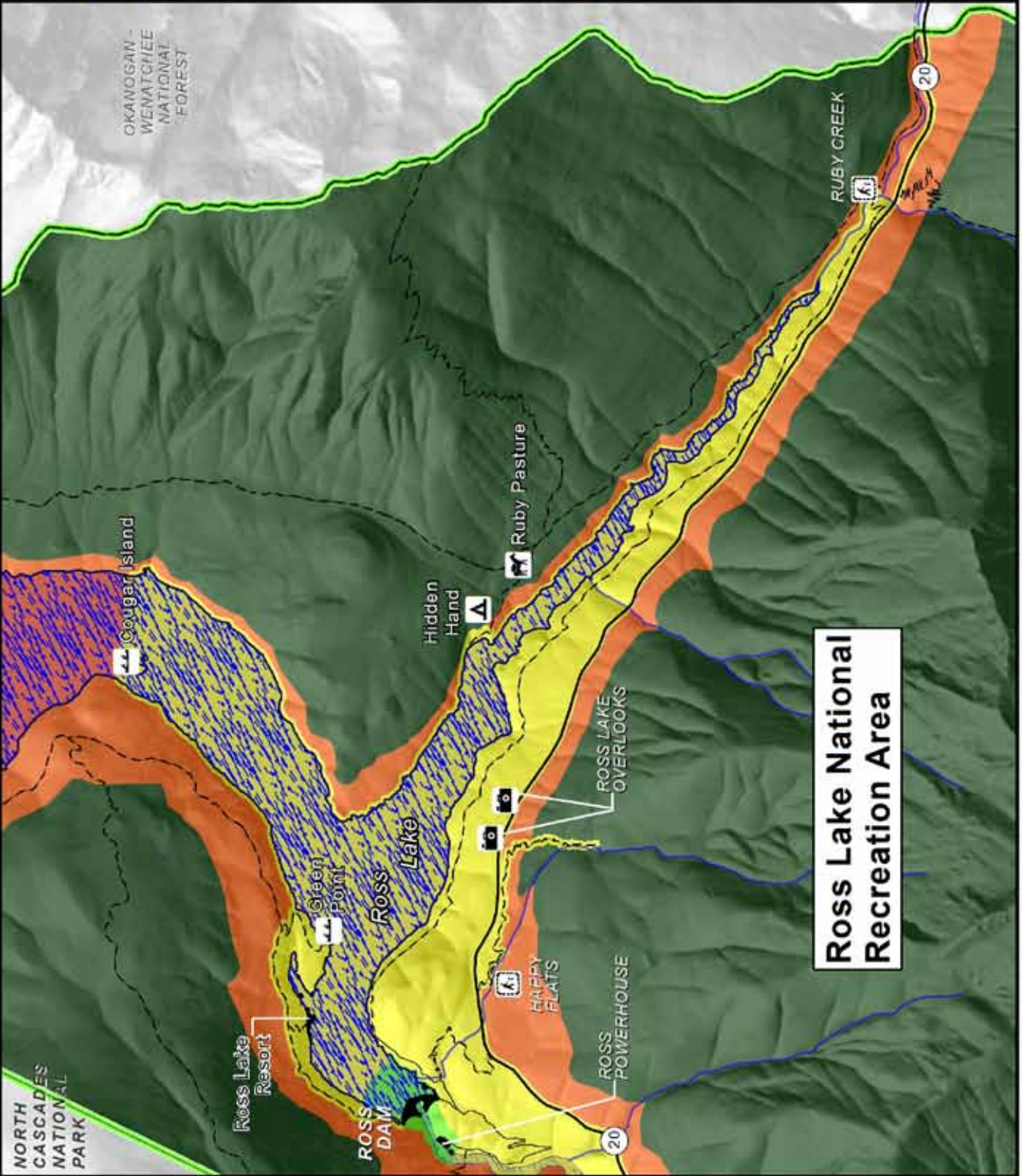


Figure 4.18

- Backcountry Zone
- Frontcountry Zone
- Wilderness Zone
- Hydroelectric Zone
- Structures
- Boat-in camps
- Hiker camps
- Stock camps
- Interpretive trails
- Roads
- Trails



mapscale 1:38,000



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**Ross Lake National
Recreation Area**

Management Zones - Hozomeen Alternative D

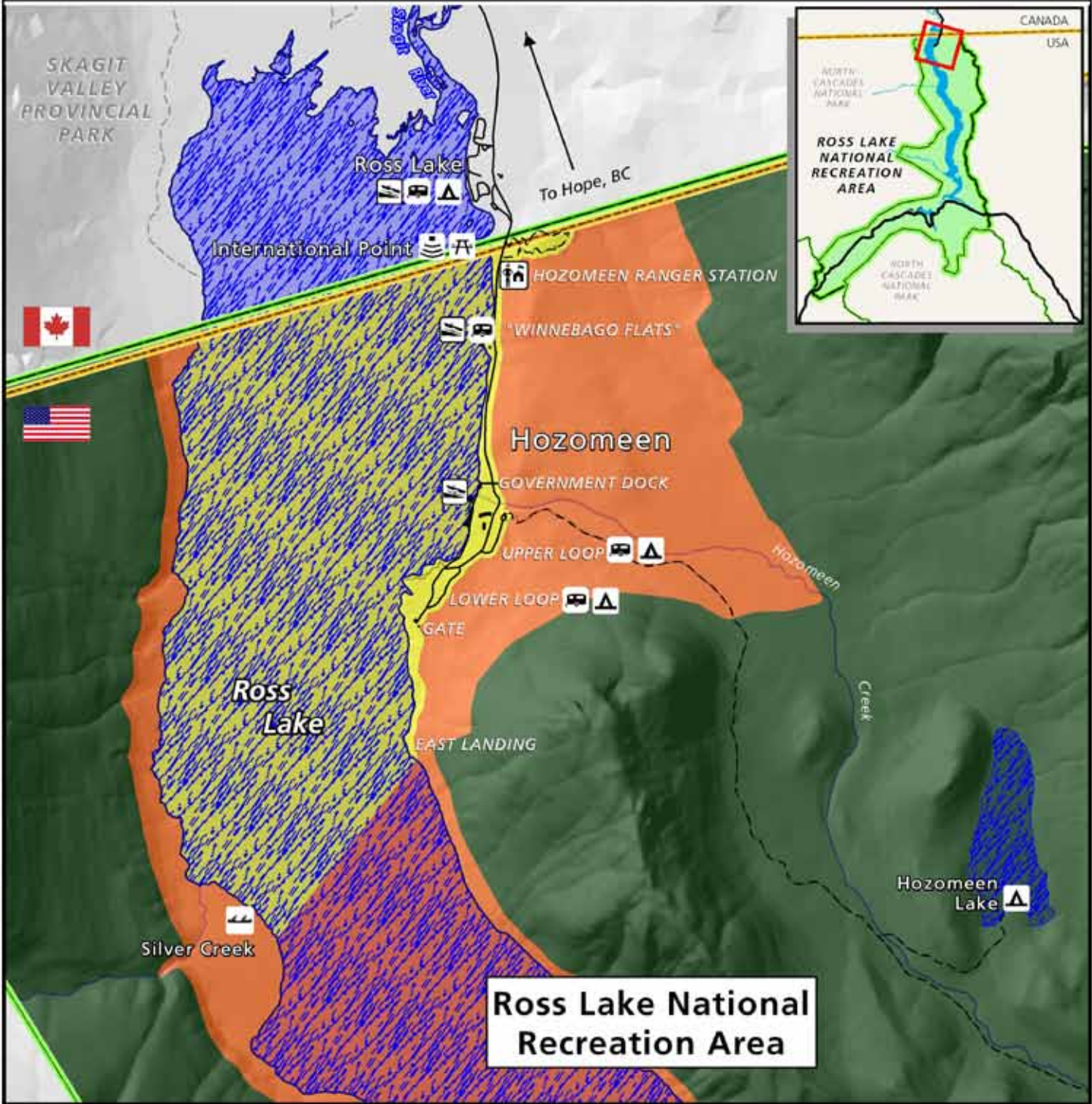
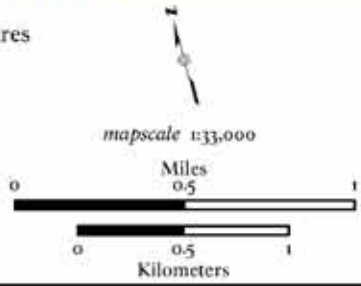


Figure 4.19

- Backcountry Zone
- Frontcountry Zone
- Wilderness Zone
- Roads
- Trails

- Hiker camps
- Boat-in camps
- Auto-accessible campgrounds
- Amphitheater
- Picnic area
- Motor boat launch
- Structures



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Management of Specific Areas

North Cascades Highway Corridor

The North Cascades Highway corridor would be managed similar to Alternative B with the following differences.

Trails within the North Cascades Highway corridor would provide dayhiking opportunities as well as launching points for more extensive hikes into remote areas of the North Cascades NPS Complex. New trails could include the Goodell Landslide Trail, Skagit River Portage Trail at the S curves, Happy Creek Falls Trail, Skagit Talc Mine Trail, and a spur trail to a waterfall from Stetattle Creek Trail.

Along the highway, **parking and pullouts** would be enhanced to improve visitor access and safety. The Ross Dam Trailhead parking lot would be redesigned and constructed for visitor safety, see schematic design on Figure 4.20. The footprint would be enlarged to accommodate a turn lane, single point of ingress and egress, 12 pull-through spaces for oversized vehicles, and capacity for approximately 43 passenger vehicles. New pullouts and waysides would be considered for several specific areas along the North Cascades Highway at Newhalem, Devil's Elbow, Gorge Lake, Panther Creek, and Ross Lake.

Under Alternative D, in the event that there are **facilities destroyed or damaged by severe weather events**, those facilities could be closed, abandoned, and the landscape would be rehabilitated. New facilities would be constructed at other locations to limit net loss of facilities and visitor opportunities.

In the event that **Goodell Creek Campground** is impacted by flooding, debris flow, and/or erosion, affected portions of the campground would be abandoned and rehabilitated. To limit net loss of camping opportunities, new or expanded camping facilities would be considered at other identified locations.

Newhalem

The Newhalem area would be managed the same as Alternative B, except the single lane access bridge across the Skagit River to the North Cascades Visitor Center and campground would be replaced and expanded to accommodate two-way vehicular traffic and bicycle and pedestrian access. The new bridge would remove

the traffic light at each end of the bridge and improve traffic safety.

(Same as Alternative B)

Diablo Lake

Management of Diablo Lake would be similar to Alternative B with the differences discussed below for Colonial Creek Campground.

In the event that Colonial Creek Campground is impacted by severe weather events, affected portions of the campground could be closed as necessary. Proactive management actions could be taken to prevent Colonial Creek Campground from being impacted by flooding, debris flow, and erosion. The NPS would strive to preserve camping opportunities at Colonial Creek. If reconstruction at Colonial Creek is not feasible, the sites lost would be replaced, preferably at another already disturbed location. To limit net loss of camp sites, new or expanded camping facilities would be considered at other identified locations that are not prone to severe hazards.

Diablo Townsite

(Same as Alternative B and C)

Similar to Alternative B, the NPS would recommend Congressional legislation to authorize the NPS to relinquish, sell or exchange Reflector Bar to SCL, and the NPS would seek to acquire Hollywood through exchange or purchase. This land exchange would be reflective of the missions of the two entities: SCL to operate the hydroelectric facilities and the NPS to support visitors and preserve resources. The NPS would manage or cooperatively manage Hollywood for visitor use. Diablo Townsite is located in the Hydroelectric Zone. If the Hollywood area were to be managed or owned by the NPS, the Hollywood area of Diablo Townsite would be included in the Frontcountry Zone.

Hollywood would be geared to overnight opportunities for the public. Hollywood district buildings, structures, and landscape would be demolished and new camping and overnight facilities would be constructed, such as tent cabins and RV camping. National Register listed resources and properties would be preserved and adaptively used and/or interpreted for the public. A site plan would be completed as an implementation plan as part of the successful execution of a land exchange of Hollywood with SCL.

Ross Dam Trailhead Parking Lot: Schematic Design Alternative D

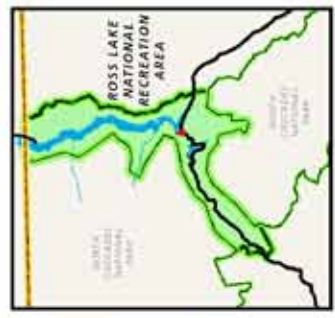
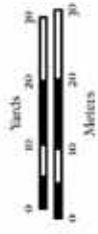


Figure 4.20

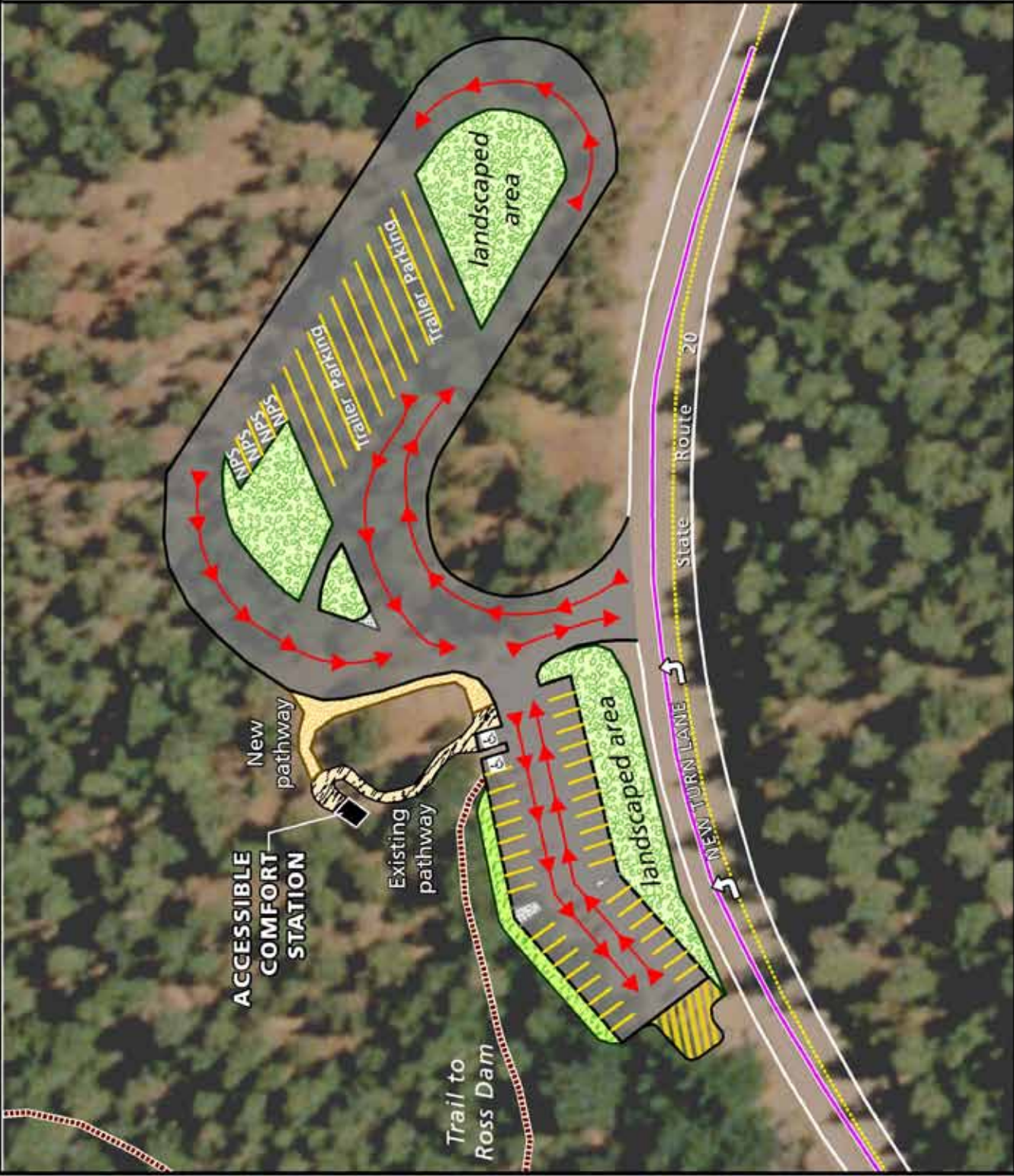
-  Vehicle turn-around
-  Vegetated filter strip
-  Landscaped area



map scale 1:11,000



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Park Service Complex
1 March 2011
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Fig. 4-20_parking_D.mxd



Ross Lake

Ross Lake would be managed similar to Alternative B, however regulations for seaplane use and towing of people would be different under this alternative (See the Recreation section of Alternative D). Additionally, the Roland Point Loop Trail would be constructed in the lower Ross Lake area.

Hozomeen

(Same as Alternative B)

Marblemount Ranger Station

The Marblemount Ranger Station would continue to provide buildings and space for maintenance, resource management, administration, emergency response, and staff housing functions.

The public functions of the wilderness center would be moved to a location in the town of Marblemount on the North Cascades Highway; these functions would include visitor contact and wilderness office space. The communication center and search and rescue cache would stay within the Marblemount Ranger Station.

Employee housing at Marblemount would be improved through the construction of a permanent group housing structure to provide approximately 20-30 additional bed spaces; this could be a dormitory or small apartments and a site plan would be needed. This addition would fulfill a critical seasonal need for employee housing where it is operationally needed.

All Marblemount Ranger Station activities would be compatible with the significance of the National Register listed Marblemount Ranger Station Historic District and its associated structures, landscapes, and features.

Facility Design Standards

(Same as Alternative B and C)

Natural Resources

Natural resource management would largely be the same as Alternative B with the differences listed below.

Ecosystem Functions and Processes

Same as Alternative B except that bank hardening and channelization in limited areas could be used to protect key facilities and recreation access points (such as

Rhode Creek). Preferred techniques however, would include rock barbs, engineered log jams, and bioengineering. Emergency repairs that are necessary would be mitigated at the earliest opportunity.

Air Quality

(Same as Alternative B and C)

Soundscapes

(Same as Alternative B and C)

Lightscaapes

The NPS would work with SCL to reduce light pollution in Diablo and Newhalem. The NPS would complete an inventory of night sky conditions. The NPS would factor in night sky for lighting new construction and would replace existing lighting as needed.

Water Resources

(Same as Alternative B and C)

Glaciology

The NPS would expand research and monitoring on glaciers and glacial process that affect Ross Lake NRA and seek additional partners in that effort. The NPS would be a leader in interpreting glaciology and the connections between glaciers and Ross Lake NRA to the public and seek additional partners in that effort.

Soils/Erosion Control

(Same as Alternative B and C)

Vegetation

The NPS would contain existing invasive non-native species and focus eradication efforts on new populations, as feasible.

Wildlife

The wildlife monitoring programs would be expanded to provide additional data on wildlife and take additional actions to protect wildlife from disease or human disturbance. The NPS would continue to participate in restoring extirpated species where feasible and monitor habitat conditions. The NPS would provide food storage facilities, such as bear boxes or portable bear resistant containers, for overnight camping to minimize the possibility of wildlife obtaining human food. However, the NPS would consider actions that

could lead to increased habitat fragmentation, such as new trails and expanded camping opportunities.

Fisheries

(Same as Alternative B)

Science Communication and Volunteer Programs

(Same as Alternative B)

Cultural Resources

Cultural resource management would be similar to Alternative A and B. Differences are listed below.

Archeology

The archeology program would continue to focus on identification, investigation, documentation, and protection of archeological sites. The program would also expand opportunities for visitors to participate in archeological projects and would develop interpretive materials based on research results of human use in the North Cascades.

Historic Structures

(Same as Alternative B)

Cultural Landscapes

(Same as Alternative B)

Ethnohistory

(Same as Alternative B)

Museum Collections

Same as Alternative A plus the NPS would provide additional public access to collections items both online and on-site. The scope of exhibits, exhibit areas, and travelling exhibits would be increased to provide open display of collection objects and archives.

Wilderness and Backcountry

Management of designated wilderness and potential wilderness would focus on wilderness character, ecosystem preservation, and compatible recreational activities. The NPS would prioritize the protection of resources, natural ecosystem functions and processes, and significant cultural resources. Visitors would be provided with opportunities for solitude, tranquility,

and connections with the natural world. The backcountry permit system would continue to monitor and control numbers of visitors in these remote areas in order to minimize visitor impacts to resources.

In designated and potential wilderness, changes in campsite locations, new designated camps or trail re-routes would be permitted or trail re-routes would be permitted, provided there is no net increase in miles of trails. All such changes would meet the park's minimum requirement analysis standards.

Recreation

It would be a high priority for the NPS to provide a wide range of accessible recreation activities throughout Ross Lake NRA. More and different opportunities to easily access and learn about the North Cascades would be offered, such as guided and group activities. A remote wilderness experience would also be available to those who prefer solitude and tranquility. Interactions with uniformed staff would be widely available, particularly in frontcountry areas of Ross Lake NRA.

While recreation would be managed similar to Alternative B, there are some key differences. Of the four alternatives, Alternative D would offer the widest range of recreational opportunities.

Boating

Boat management would largely be the same as Alternative B with the following differences:

The NPS would establish horsepower, boat size, and/or speed limits only on Ross Lake and in Diablo Canyon for concessions and private boats.

Towing of people, such as water skiing, would be allowed in the Frontcountry Zone, including Gorge Lake, Diablo Lake, and from the international border with Canada at Hozomeen to Silver Creek and from Cougar Island and Ruby Arm to within 1,000 feet of Ross Dam or the log boom closest to the dam.

On the Skagit River, motorboats would continue to be allowed.

Hunting and Fishing

(Same as Alternative B)

Sport Climbing

(Same as Alternative B)

Seaplanes

Seaplane use would be allowed in the Frontcountry Zone only on Ross Lake and Diablo Lake. A permit system would also be developed to establish use levels in order to protect desired soundscape and visitor experience. These actions require an update and modification to 36 CFR 7.69 in order to clarify these changes.

Same as Alternative B, except that the primary difference between Alternative B and Alternative D is that Alternative D provides slightly more Frontcountry-zoned areas on Ross Lake for seaplane use.

Commercial Scenic Air Tours

Commercial scenic air touring would be managed to protect soundscapes and the recreational experiences of visitors on the ground. The NPS would coordinate with the Federal Aviation Administration to develop an air tour management plan that could establish use levels for commercial scenic air tours.

Backcountry Permit System

(Same as Alternative B)

Interpretation and Education

Ross Lake NRA would be used as a platform and classroom for education about the North Cascades, its history and resources, as well as civic engagement, stewardship, and public leadership. There would be opportunities for both structured and unstructured activities, including self-exploration and discovery. Activities would focus in the Frontcountry Zone and some would expand into parts of the Backcountry Zone. Some activities could also be appropriate in limited areas of the Wilderness Zone. The NPS would lead efforts to develop, conduct and evaluate interpretive and educational programs. The NPS would consult and collaborate with partners when appropriate, and partners would assist the NPS in delivering educational messages and programs.

Educational and interpretive programs would fluctuate and cater to different audiences during the year. During the spring and fall seasons, programs and associated facilities would be geared to curriculum-based education and school programs. These programs would focus on immersion, hands-on experiential learning, and environmental stewardship. During the summer season, programs would be geared to families through on-site and outreach programs.

Interpretation

Interpretive programs and materials would use the most current and dynamic methods to generate curiosity, passion, enthusiasm and respect for park resources to build a sense of stewardship. The NPS would provide extensive opportunities for immersion and contact with park staff and resources. The NPS would improve traditional interpretive programming within existing facilities, possible new facilities, and throughout Ross Lake NRA. The NPS would develop, deliver, and evaluate the programs so that they convey a broad range of interpretive and educational themes.

Visitor Orientation and Informal Education

(Same as Alternative B)

Curriculum-based Programs

(Same as Alternative B)

Outreach

(Same as Alternative B)

Partnerships for Interpretation and Education

Same as Alternative B plus the NPS would devote additional interpretive staffing to Environmental Learning Center (ELC) programs and operations. The NPS would develop and evaluate the interpretive and educational messages with North Cascades Institute (NCI), setting a standard of excellence, and increasingly collaborate with NCI at the ELC to distribute and deliver relevant interpretive and educational messages.

Access and Transportation

(Same as Alternative B)

Climate Change

(Same as Alternative B and C)

Operations

Staffing

Alternative D would be implemented with the current staffing level (133) plus 22 full-time equivalent staff (FTEs). (One FTE is one person working 40 hours per week for one year, or the equivalent.) It is important to note that these staffing figures are for the North Cascades NPS Complex as a whole, as staff work on all

three units of the complex. The total number of FTEs is the number of staff required to maintain the assets of Ross Lake NRA at a good level, provide acceptable visitor services, protect resources, and generally support Ross Lake NRA’s operations. The FTE number indicates base-funded, term, and seasonal staff only, not volunteer positions or positions funded by partners. FTE salaries and benefits are included in the annual operating costs.

New positions would include maintenance workers, education and outreach specialists, ecologists, natural and cultural resource specialists, rangers, and administrative technicians to implement Alternative D.

Table 4.8 Alternative D: Staffing	
Management and Administration	18 + 3 new
Maintenance	44 + 4 new
Interpretation/Education	13 + 3 new
Resource Management	43 + 7 new
Visitor Protection	15 + 5 new
Total Staff	155

Estimated Costs

The cost figures shown here and throughout the plan are intended only to provide an estimate of the relative costs of alternatives. See the “Cost Estimates,” section earlier in this chapter for more detail. Cost estimates for Alternative D are identified below.

Table 4.9 Alternative D: Estimated Costs	
Annual Operating Costs	\$8,461,000
Staffing (FTE)	155
Total One-Time Costs	\$20,807,000
▪ Facility Costs	\$18,296,000
▪ Non-Facility Costs	\$ 2,511,000

Development Costs

One time facility costs to implement Alternative D would be \$18,296,000 over the next 15-20 years. One-time facility costs include those for the design, construction, rehabilitation and adaptive reuse of facilities, such as visitor facilities, roads, parking, and park operations and maintenance facilities. The one-time costs for Alternative D include such items as \$6,100,000 for a replacement bridge over the Skagit River to the North Cascades Visitor Center in Newhalem, \$1,775,000

for the Ross Dam Trailhead parking lot and improvements along the North Cascades Highway, \$860,000 for the Thornton Lakes Road removal and trail, and \$1,280,000 for new trails.

These costs are based upon general “class C” estimates for site development and construction. Prior to submitting funding requests for the design and construction phases, “class B” estimates are required, based upon detailed site and facility designs.

These costs do not reflect the cost of acquiring Hollywood, any facility changes at Hollywood, or increased operating cost of maintaining facilities at Hollywood.

Boundary Modification

(Same as Alternative B and C)

ALTERNATIVES COMPARISON TABLE

Table 4.10 provides detailed descriptions of all desired conditions, components, and actions in the alternatives. To make actions easier to compare, reference numbers and subheadings are used. They are listed in the following order:

Alternatives Description (Reference #1)

Management Zones (Reference #2-6)

Natural Resources (Reference #7-22)

- Ecosystem Functions and Processes: Wildland Fire
- Ecosystem Functions and Processes: Floods
- Ecosystem Functions and Processes: Mass Wasting (Avalanches, Landslides)
- Air Quality
- Soundscapes
- Lightscapes
- Water Resources
- Geology
- Glaciology
- Soils/Erosion Control
- Vegetation
- Wildlife
- Wildlife Habitat
- Grizzly Bear “Core Area” Management
- Fisheries
- Science Communication

Cultural Resources (Reference #23-28)

- Archeology
- Historic Structures

- Cultural Landscapes
- Ethnohistory
- Museum Collections
- Tribal Issues

Wilderness and Backcountry (Reference #29-30)

- Thunder Creek Wilderness Area Designation

Wild and Scenic River (Reference #31-35)

- Skagit River, Goodell Creek, and Newhalem Creek Wild and Scenic River Designation
- Skagit River
- Goodell Creek
- Newhalem Creek
- Additional Eligibility and Suitability Analyses

Recreation (Reference #36-49)

- Motor Boats
- Self-propelled Boats
- Rafts on the Skagit River
- Motor Boats on Skagit River
- Hunting
- Fishing
- Sport Climbing in the Skagit Gorge
- Seaplanes
- Scenic Overflights
- Stock Use
- Backcountry Permit System
- Fees
- New and Emerging Recreational Uses

Interpretation and Education (Reference #50-59)

- Interpretive Programs
- Curriculum-based Education
- Outreach Programs
- North Cascades Visitor Center
- Visitor Orientation and Informal Education
- Environmental Learning Center
- Hozomeen Interpretive Programs
- Seattle City Light Interpretive Programs
- Concessions, Commercial Use Authorizations (CUA) Interpretive Programs

Access and Transportation (Reference #60-667)

- Park Entrances
- North Cascades Highway
- National Scenic Byway Designation
- Access to Ross Lake
- Thornton Lakes Road
- Parking Areas
- Bridge across the Skagit at Newhalem
- Maintenance and Gravel Storage Areas

Climate Change (Reference #687)

Facilities (Reference #698-798)

- Wilderness Information Center
- Hozomeen Ranger Station/Orientation Center
- Employee Housing
- Campgrounds
- Hozomeen Campground
- Hiking
- Trails
- North Cascades Environmental Learning Center
- Colonial Creek Campground Boat Launch
- Response to Severe Weather Events and the Destruction of Facilities
- Design Standards

Concessions and Commercial Uses (Reference #8079-832)

- Skagit General Store
- Overnight Lodging
- Ross Lake Resort

Other Uses (Reference #843)

- Communication Facilities

Safety and Security (Reference #854)

Interagency Cooperation and Collaboration and Partnerships (Reference #865-887)

- Seattle City Light
- U.S. Forest Service
- Other Federal and State Agencies

Lands (Reference #898)

- Diablo Townsite

Unit Name (Reference #90)

Staffing (Reference #91-9689-94)

Budget (Reference #97-10095-98)

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Description	1	The emphasis of the No Action Alternative would be to protect the values of Ross Lake NRA without substantially increasing staff, programs, funding support, or facilities. Resource preservation and protection would continue to be a high priority for the management of Ross Lake NRA. Staff would continue to work with neighboring agencies for collaborative ecosystem management.	Alternative B would focus on managing Ross Lake NRA as a gateway to millions of acres of wilderness, providing enhanced visitor opportunities along the North Cascades Highway, and making better use of facilities along that corridor while ensuring the long-term stewardship of the surrounding North Cascades ecosystem and wilderness. The North Cascades Highway corridor would be managed to provide a variety of day-use and overnight recreational opportunities for visitors with a range of abilities and interests. Management of wilderness and backcountry areas would focus on ecosystem preservation and compatible recreational activities. Interpretation and education would be a key component of this alternative, emphasizing hands-on experiential learning and stewardship programs delivered by the NPS and its partners.
Management Zones			
Wilderness Zone	2		73%
Frontcountry Zone	3		5%
Backcountry Zone	4		18.5%
Skagit River Zone	5		3%
Hydro-electric Zone	6		.5%
Natural Resources			
Ecosystem Functions and Processes: Wildland Fire	7	<p>Continue to work under the current fire management plan</p> <p>Continue to suppress wildland fires at the U.S. and Canadian border</p> <p>Continue interagency collaboration with the USFS</p>	<p>Work with Canadian land and fire managers to consider cross-boundary ecosystem fire issues, including considering the potential to allow lightning-caused fires and prescribed fires to burn across the international boundary</p> <p>Expand collaboration with the USFS and work to allow lightning-caused fires to burn across the adjacent boundaries on the west side in addition to the east side</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Description	1	Alternative C would focus on broader ecosystem preservation and enhancement through coordinated regional and international environmental stewardship. The focus of visitor experiences would be linked to solitude, tranquility, natural soundscapes, and scenery through traditional outdoor activities. The NPS would actively manage to reduce habitat fragmentation throughout Ross Lake NRA by consolidating development, eliminating certain trails, and limiting construction of new facilities in undeveloped areas. Educational and interpretive opportunities would be primarily structured, and the NPS would increasingly rely on partners to deliver educational and interpretive programs both on-site and off-site.	Alternative D would focus on improving connections between visitors and the outdoors through a variety of enhanced recreation and learning opportunities. The NPS would seek to diversify Ross Lake NRA’s visitor base and build stewardship through more hands-on/ experiential recreation and educational opportunities. Interpretive and educational programs would be offered by the NPS and partners with expanded offerings in the Backcountry and limited areas of the Wilderness Zone. The NPS would continue to protect resources and minimize impacts from visitor use.
Management Zones			
Wilderness Zone	2	73%	73%
Frontcountry Zone	3	1.5%	6%
Backcountry Zone	4	22%	17.5%
Skagit River Zone	5	3%	3%
Hydro-electric Zone	6	.5%	.5%
Natural Resources			
Ecosystem Functions and Processes: Wildland Fire	7	Same as Alternative B	Same as Alternative B

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Ecosystem Functions and Processes: Floods	8	Continue to react to flood events and riverbank manipulation on a case-by-case basis and generally replace and repair in kind due to limitations of funding sources	<p>Consider relocation of facilities (roads, structures, recreational sites) prior to bank hardening and channelization. If needed, preferred techniques employed would include rock barbs, engineered log jams, and bioengineering.</p> <p>Mitigate necessary emergency repairs at the earliest opportunity</p> <p>Consider off site mitigation only if more invasive techniques such as rip rap are required</p> <p>Encourage the Washington State Department of Transportation to construct a longer bridge across Goodell Creek on Hwy 20 to minimize the potential for channel avulsion</p>
Ecosystem Functions and Processes: Mass Wasting (Avalanches, Landslides)	9	Continue to react to mass wasting events on an individual basis and work with Seattle City Light, the Washington State Department of Transportation, and the Federal Highway Administration to mitigate actions when feasible	<p>Work to increase awareness about the risk of mass wasting (such as avalanches, landslides) in Ross Lake NRA</p> <p>Work with Seattle City Light, the Washington State Department of Transportation, the Federal Highway Administration, and others to improve maintenance practices that trigger events and maximize mitigation for actions taken to protect roads and infrastructure</p> <p>Interpret mass wasting events to improve understanding of natural disturbances, such as Goodell landslide</p> <p>Revegetate human caused disturbances</p> <p>Work with the Washington State Department of Transportation, Seattle City Light and County to coordinate and identify disturbed areas for depositing debris and rock from construction projects and mass wasting</p>
Air Quality	10	Continue to operate air quality monitoring for visibility, acid deposition, particulates, and criteria air pollutants on an increasingly limited basis dependent on funding availability	<p>Continue to monitor air quality for visibility, acid deposition, particulates, and criteria air pollutants</p> <p>Pursue research and monitoring to establish levels of atmospheric contaminants (such as mercury, persistent organic pollutants) in Ross Lake NRA</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Ecosystem Functions and Processes: Floods	8	<p>Avoid channelization (hardening stream banks and redirecting stream flows) whenever possible</p> <p>Evaluate areas that have been hardened for restoration (logs and native plants would replace rip rap)</p> <p>Mitigate necessary emergency repairs at the earliest opportunity</p> <p>Encourage the Washington State Department of Transportation to construct a longer bridge across Goodell Creek on Hwy 20 to minimize the potential for channel avulsion</p>	<p>Use bank hardening and channelization in limited areas to protect key facilities and recreation access points (such as Rhode Creek). Preferred techniques would include rock barbs, engineered log jams, and bioengineering</p> <p>Mitigate necessary emergency repairs at the earliest opportunity</p>
Ecosystem Functions and Processes: Mass Wasting (Avalanches, Landslides)	9	Same as Alternative B	Same as Alternative B
Air Quality	10	Same as Alternative B	Same as Alternative B

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Air Quality <i>(continued)</i>	10		Pursue redesignation of Ross Lake NRA from a Class II to a Class I area under the Clean Air Act
Soundscapes	11	Continue to operate existing acoustic monitoring stations to build an inventory of sounds on an opportunistic basis as available through the Natural Sounds Program	<p>Expand the soundscapes program to create a complete inventory of ambient sounds and implement an ongoing monitoring program to assess changes in soundscapes</p> <p>Actively manage Ross Lake NRA for a natural soundscape</p> <p>Identify unacceptable sources of human-caused noise and sound levels and look for ways (such as enforcement of existing noise standards and increased education along the North Cascades Highway) to protect natural soundscapes when feasible</p>
Lightscaapes	12	Seattle City Light would continue to make decisions on a case-by-case basis about lighting in Diablo and Newhalem.	Work with Seattle City Light to reduce light pollution in Diablo and Newhalem Complete an inventory of night sky conditions and work to protect night sky by reducing light pollution within Ross Lake NRA
		Continue to consider night sky for park lighting on a case-by-case basis	Factor in night sky for lighting new construction and actively retrofit exterior lighting to improve night sky conditions
Water Resources	13	<p>Current water resource management programs would continue to be primarily reactive.</p> <p>Continue limited water quality monitoring</p>	<p>Inventory and evaluate facilities, including abandoned mines, that could discharge into water sources, mitigate threats to water quality, and take action to relocate, replace, or remove facilities that do not meet water quality standards (such as wastewater treatment plants, pit toilets, etc.)</p> <p>Seek upgrades to point source contributors and mitigate non-point source threats to water quality, such as parking lot run-off and road maintenance activities</p> <p>Develop and implement a water quality monitoring program for Ross Lake NRA and the upper Skagit tributaries</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Air Quality <i>(continued)</i>	10	Same as Alternative B	Same as Alternative B
Soundscapes	11	Same as Alternative B	Same as Alternative B
Lightsapes	12	Same as Alternative B	Same as Alternative B
		Same as Alternative B	Factor in night sky for lighting new construction and would replace existing lighting as needed
Water Resources	13	Same as Alternative B	Same as Alternative B

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Geology	14	Continue to identify, protect, and interpret geologic features and processes	Consider geologic features and processes when siting trails and facilities in order to protect interesting geologic features and avoid sensitive geologic areas
Glaciology	15	Continue to operate a monitoring program on glaciers and associated processes to assess impacts of climate change and educate the public	Same as Alternative A
Soils/Erosion Control	16	Continue erosion control focused primarily on high use areas Conduct limited restoration on a case-by-case basis	Same as Alternative A plus inventory and monitor human impacts on soils in the backcountry areas and reservoirs to better understand erosion Develop a resource restoration plan for impacted areas
Vegetation	17	Continue piecemeal removal of invasive non-native plant populations through a variety of methods Continue a variety of vegetation restoration projects at selected locations, primarily focused along the North Cascades Highway, on Ross Lake, and along the Skagit River Maintain hazard trees as wildlife habitat, where feasible	Develop a vegetation management plan and establish priorities for restoration in Ross Lake NRA Protect and enhance areas containing rare plant populations Maintain hazard trees as wildlife habitat, where feasible
			Follow invasive plant management principles as outlined in the <i>Invasive Plant Management Plan</i> Prioritize according to ecological threat posed by invasive species and/or threats to high quality and high value habitats Eradicate invasive non-native species where feasible, and use containment strategies when eradication is infeasible
			Collaborate with adjacent landowners and jurisdictions on cooperative weed management, such as working with the Washington State Department of Transportation to replace invasive non-native species with native species

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Geology	14	Same as Alternative A	Same as Alternative B
Glaciology	15	Expand research and monitoring on glaciers and glacial process that affect Ross Lake NRA and seek additional partners in that effort	Lead efforts in interpreting glaciology to the public and seek additional partners in that effort
Soils/Erosion Control	16	Same as Alternative B	Same as Alternative B
Vegetation	17	Same as Alternative B	Same as Alternative B
		Same as Alternative B	Follow invasive plant management principles as outlined in the <i>Invasive Plant Management Plan</i> Prioritize according to ecological threat posed by invasive species and/or threats to high quality and high value habitats Contain existing invasive non-native species
		Lead efforts with adjacent landowners and jurisdictions on cooperative weed management	Same as Alternative B

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Wildlife	18	Continue to participate in restoring extirpated species where feasible and monitor habitat conditions	Same as Alternative A
		<p>Continue to monitor some wildlife species and work to protect wildlife from human disturbance specifically during critical seasons such as denning, nesting and winter</p> <p>Continue to provide food storage in some locations, including bear boxes in all Ross Lake boat-in campsites, communal boxes at Hozomeen campground, and walk-in sites at Colonial Creek</p>	<p>Expand the wildlife monitoring program to provide additional data on wildlife and take additional actions to protect wildlife from disease or human disturbance</p> <p>Minimize the possibility of wildlife obtaining human food by providing and maintaining food storage facilities, such as bear boxes or portable bear resistant containers, for overnight camping</p> <p>Work collaboratively as part of the interagency grizzly bear recovery effort</p> <p>Work to reduce habitat fragmentation, such as consolidating development, and limiting construction of new facilities in undeveloped areas</p>
		Continue to work cooperatively with other wildlife agencies and organizations in Canada and U.S. on a wide range of wildlife issues	<p>Expand cooperative efforts with wildlife agencies and organizations in the U.S. and Canada on research and monitoring efforts to understand the habitat needs of these species in order to protect them on both sides of the boundary, as well as monitor individual animals of these species</p> <p>Increase education and outreach efforts related to specific species including grizzly bear and wolves</p>
Wildlife Habitat	19	Continue to consider preserving unfragmented habitat when evaluating management actions	Actively manage to reduce habitat fragmentation, such as consolidating development, eliminating certain trails, and limiting construction of new facilities in undeveloped areas
Grizzly Bear Core Area Management	20	Maintain a minimum Core Area of ≥ 70 percent within each Bear Management Unit. Grizzly bear habitat would be retained in large, contiguous, isolated blocks, and any new development would be assessed to ensure high quality grizzly bear habitat would not be compromised. This would be done by limiting development, such as new trails, roads, and campsites, in Bear Management Units.	Same as Alternative A

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Wildlife	18	Actively pursue restoring extirpated species in collaboration with other agencies and partners where feasible and monitor habitat conditions	Same as Alternative A
		Same as Alternative B	Same as Alternative B
		Same as Alternative B	Same as Alternative A plus increase education and outreach efforts related to grizzly bears, wolves, wolverines, and other species that move across international boundaries
Wildlife Habitat	19	Same as Alternative B	Consider actions that could lead to increased habitat fragmentation, such as new trails and expanded camping opportunities
Grizzly Bear Core Area Management	20	Same as Alternative A	Same as Alternative A

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Fisheries	21	Continue to rely on the Washington Department of Fish and Wildlife and SCL for management and monitoring of the recreational fishery and fish populations	Cooperate with Washington Department of Fish and Wildlife and SCL on fishery management issues
		Implement the Mountain Lakes Fishery Management Plan	Implement the Mountain Lakes Fishery Management Plan Develop a fisheries management plan that would include a monitoring component for Ross Lake NRA Consider a variety of measures to protect spawning habitat on the Skagit River and its tributaries, such as maintaining side channels and minimizing adverse impacts from the North Cascades Highway and NPS infrastructure where feasible
			Work in partnership with Washington Department of Fish and Wildlife and Seattle City Light to maintain native fish stocks in the reservoirs and tributaries, through a variety of measures such as establishing size limits, fishing moratoriums, and actively managing spawning habitat
Science Communication	22	Continue to communicate the results of scientific findings on a limited basis through internal NPS publications and the Science Learning Network	Develop a formalized program and process to communicate the results of research and monitoring efforts to a variety of internal NPS, interagency, and public audiences Engage partners, such as North Cascades Institute and Seattle City Light, in the process of communicating the results of research and monitoring to a wider public audience
		Continue to engage citizen volunteers in scientific research and natural resource management projects on a limited, case-by-case basis	Expand opportunities to engage citizens in a variety of scientific research and monitoring projects and programs
Cultural Resources			
Archeology	23	Continue to focus on identification, investigation, documentation and protection of archeological sites	Same as Alternative A plus develop a program for paleoecological investigations to expand understanding of past ecological processes and climate conditions Increase opportunities for archeological site interpretation in the field

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Fisheries	21	Same as Alternative B	Same as Alternative B
		Lead efforts to maintain native fish stocks in the reservoirs and tributaries, through a variety of measures such as establishing size limits, fishing moratoriums, and actively managing spawning habitat	Same as Alternative B
Science Communication	22	Develop a formalized program and process to communicate the results of research and monitoring efforts to a variety of internal NPS, interagency, and public audiences	Same as Alternative B
		Same as Alternative A	Same as Alternative B
Cultural Resources			
Archeology	23	Same as Alternative A plus develop a program for paleoecological investigations to expand understanding of past ecological processes and climate conditions	Same as Alternative A plus increase opportunities for archeological site interpretation in the field

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Archeology <i>(continued)</i>	23	Continue to conduct theoretical research investigations, through the archeology program and in partnership with others, that increase understanding of human use of the North Cascades	Same as Alternative A plus expand partnership opportunities for research related to paleoecological processes Develop interpretive materials based on research results of human use of the North Cascades
		Continue to offer qualified researchers and visitors opportunities to participate in archeological excavations	Same as Alternative A plus expand opportunities for qualified researchers to engage in existing and new archeological projects Expand opportunities for visitors to participate in archeological excavations
Historic Structures	24	Continue to identify, document and treat historic structures according to management preservation decisions	Same as Alternative A plus investigate potential for adaptive re-use of historic structures, where feasible Develop interpretive opportunities emphasizing the development and utilization of significant historic structures, such as distinguishing trapping, recreation, and mining sites
Cultural Landscapes	25	Continue to identify, document and treat cultural landscapes according to management preservation decisions	Same as Alternative A plus prioritize preservation treatments for cultural landscapes that provide for interpretation of human uses in the North Cascades Develop interpretive opportunities that illustrate human use of the North Cascades
Ethnohistory	26	Continue to conduct oral histories and research investigations documenting human use of the North Cascades	Same as Alternative A plus develop interpretive opportunities communicating human use of the North Cascades
Museum Collections	27	Maintain collections and archives in their existing locations and provide access for qualified researchers	Same as Alternative A plus develop capacity to preserve and protect paleoecological and emerging collections and archives, such as storage and staffing Provide additional public access to collections items both online and on-site
		Maintain existing exhibits that contain collections objects	Expand visitor center exhibit areas to display museum collection objects

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Archeology <i>(continued)</i>	23	Same as Alternative A plus expand partnership opportunities for research related to paleoecological processes	Same as Alternative A plus develop interpretive materials based on research results of human use of the North Cascades
		Same as Alternative A plus expand opportunities for qualified researchers to engage in existing and new archeological projects	Same as Alternative A plus expand opportunities for visitors to participate in archeological excavations
Historic Structures	24	Same as Alternative A	Same as Alternative B
Cultural Landscapes	25	Same as Alternative A	Same as Alternative B
Ethnohistory	26	Same as Alternative A	Same as Alternative B
Museum Collections	27	Same as Alternative A plus develop capacity to preserve and protect paleoecological and emerging collections and archives, such as storage and staffing	Same as Alternative A plus provide additional public access to collections items both online and on-site
		Same as Alternative A plus develop exhibits related to paleoecological findings and emerging collections	Increase number and scope of exhibits, exhibit areas, and travelling exhibits to provide open display of collection objects and archives

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Tribal Issues	28	<p>Cooperate with and provide guidance to Skagit Tribes to access locations used for ceremonial activities</p> <p>Monitor levels of use and potential resource effects</p> <p>Conduct tours and guided visits for the Skagit Tribes and selected groups to archeological and ethnographic sites Consult with Skagit Tribes to document resource use areas and traditional cultural properties</p> <p>Research and inventory ethnohistoric tribal uses of traditional plant, animal, and mineral resources</p>	Same as Alternative A
Wilderness and Backcountry			
	29	<p>Continue to emphasize the preservation of wilderness character within the designated wilderness and potential wilderness areas</p> <p>Continue to manage non-wilderness portions of Ross Lake NRA for wilderness values</p>	<p>Emphasize the preservation of wilderness character in designated wilderness, potential wilderness and some backcountry areas in Ross Lake NRA. Within these areas, recreational activities, expanded wilderness education, and park operations would be compatible with preserving the wilderness character.</p> <p>In designated and potential wilderness, changes in campsite locations, new designated camps or trail re-routes would be permitted or trail re-routes would be permitted, provided there is no net increase in miles of trails. All such changes would meet the park's minimum requirement analysis standards.</p> <p>Construction of new trails would be minimal and limited to along the North Cascades Highway corridor. In large swaths of trailless wilderness in the NRA and North Cascades National Park, the NPS would strive to preserve opportunities for solitude and the untrammeled and undeveloped character of wilderness when considering new trails.</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Tribal Issues	28	Same as Alternative A	Same as Alternative A
Wilderness and Backcountry			
	29	<p>Emphasize the preservation of wilderness character in all non-developed areas of Ross Lake NRA. Recreational activities, expanded wilderness education, and park operations would be compatible with preserving the wilderness character.</p> <p>In designated and potential wilderness, changes in campsite locations or trail re-routes would be permitted, provided there is no net increase in miles of trails.</p>	<p>Emphasize of the preservation of wilderness character only within the designated wilderness and potential wilderness areas. Recreational activities, expanded wilderness education, and park operations would be compatible with preserving the wilderness character.</p> <p>In designated and potential wilderness, changes in campsite locations or trail re-routes would be permitted, provided there is no net increase in miles of trails.</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Thunder Creek Wilderness Area Designation	30	Convert the Thunder Creek Potential Wilderness Area, totaling 3,559 acres, to wilderness through administrative designation and include in the Stephen Mather Wilderness as part of the National Wilderness Preservation System. These lands would be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical uses. This conversion to designated wilderness would be completed in accordance with the Washington Parks Wilderness Act of 1988, Title IV(a)(2).	Same as Alternative A
Wild and Scenic River			
Wild and Scenic River Designation	31	Recommend Congressional legislation for wild and scenic river designation of Goodell Creek, Newhalem Creek, and the Skagit River from Gorge Powerhouse downstream to the boundary of Ross Lake NRA	Same as Alternative A
Skagit River	32	Designate the 11-mile Skagit River segment, from Gorge Powerhouse to the Ross Lake NRA boundary Classification: Recreational Outstandingly Remarkable Values: fish, wildlife, geology, pre-history, history, scenery, and recreation	Same as Alternative A
Goodell Creek	33	Designate 12.7 miles from its headwaters to its confluence with the Skagit River Classification: Wild from its headwaters to river mile 0.5 and Recreational from river mile 0.5 to its confluence with the Skagit River Outstandingly Remarkable Values: fish, wildlife, geology, and scenery	Same as Alternative A
Newhalem Creek	34	Designate 9 miles from its headwaters to its confluence with the Skagit River Classification: Wild from its headwaters to upstream of the diversion dam at river mile one and Recreational from river mile one to its confluence with the Skagit River Outstandingly Remarkable Values: wildlife, geology, history, pre-history, and scenery	Same as Alternative A

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Thunder Creek Wilderness Area Designation	30	Same as Alternative A	Same as Alternative A
Wild and Scenic River			
Wild and Scenic River Designation	31	Same as Alternative A	Same as Alternative A
Skagit River	32	Same as Alternative A	Same as Alternative A
Goodell Creek	33	Same as Alternative A	Same as Alternative A
Newhalem Creek	34	Same as Alternative A	Same as Alternative A

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Additional Eligibility and Suitability Analyses	35	<p>Evaluate and/or update eligibility for rivers or river segments in the Skagit River watershed within the North Cascades National Park Complex. This evaluation could include, but is not limited to: Bacon Creek, Thunder Creek/Fisher Creek, Ruby Creek, Big Beaver Creek, Little Beaver Creek, and Lightning Creek.</p> <p>Conduct suitability analyses for these creeks as appropriate</p> <p>Cooperate with the Okanogan-Wenatchee and Mt. Baker-Snoqualmie National Forests for evaluations of Bacon Creek, Lightning Creek, and Ruby Creek</p>	Same as Alternative A
Recreation			
	36	<p>Continue to attract visitors who seek experiences to interact with the natural environmental and wilderness through traditional recreational activities</p> <p>The visitor experience would continue to be characterized by frontcountry experiences along the North Cascades Highway, backcountry lake recreation, and those using Ross Lake NRA to experience wilderness and as a stepping stone to the greater North Cascades.</p> <p>Ensure visitors have access to knowledgeable, uniformed NPS staff</p>	<p>Same as Alternative A plus provide additional opportunities along the North Cascades Highway corridor for visitors with a wide range of interests and abilities</p> <p>The visitor experience would include a mix of recreational and resource focused activities while minimizing impacts through education and defined high use areas. A remote wilderness experience would also be available to those who prefer solitude and tranquility.</p> <p>The Newhalem area, with the North Cascades Visitor Center, SCL visitor facilities, the Newhalem Creek Campground, and trails would serve as a center of activity and provide orientation for exploring the NRA and the region.</p> <p>Provide enhanced day-use opportunities along the North Cascades Highway, such as dayhiking, road biking, water recreation, sport climbing, picnicking, increased interpretive services and hands-on stewardship experiences</p> <p>Provide some additional overnight experiences such as new or improved camping areas, including a location for stock camping</p> <p>Ensure visitors have access to knowledgeable, uniformed NPS staff</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Additional Eligibility and Suitability Analyses	35	Same as Alternative A	Same as Alternative A
Recreation			
	36	<p>Same as Alternative A plus seek to broaden awareness of and introduce new and diverse visitor groups to the importance of Ross Lake NRA in the greater North Cascades ecosystem and wilderness</p> <p>Provide opportunities for visitors to learn about and experience wilderness while minimizing impacts to resources through traditional visitor activities such as hiking, backpacking, water recreation, and other self-powered and small group activities. These activities would provide visitor experiences primarily linked to solitude, tranquility, natural soundscapes, scenery and night sky.</p> <p>Ensure visitors have access to knowledgeable, uniformed NPS staff</p>	<p>Same as Alternative B plus provide additional recreational activities that expand beyond the highway corridor, such as day and overnight hiking, as well as additional opportunities for guided and group activities</p> <p>Provide additional and varied overnight opportunities by adaptively reusing already disturbed areas. These opportunities could include tent cabins or other temporary structures as well as showers and electrical hookups that facilitate RV camping.</p> <p>Ensure visitors have access to knowledgeable, uniformed NPS staff</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
<p>Motor Boats</p>	<p>37</p>	<p>Continue unlimited motorboat use on Gorge, Diablo, and Ross lakes</p> <p>Manage number of boats by maintaining limits set by existing infrastructure</p> <p>Existing signage would be maintained.</p>	<p>Manage motor boat use to maintain or improve the current visitor experience, visitor safety, soundscape, and water quality, and visitor experience</p> <p>Manage the number of boats by maintaining current access to the lakes as well as the existing capacity of boating infrastructure, such as campsites, of-boat launches and moorage on all lakes in Ross Lake NRA</p> <p>Permit Ross Lake Resort to run two water taxis on Ross Lake Consider allowing a second water taxi.</p> <p>Establish no wake zones to maintain or enhance visitor experience, safety, and soundscapes on the reservoirs. The intent of no wake zones would be to establish no wake zones to maintain or enhance visitor experience, safety, and soundscapes and prevent shoreline erosion on the reservoirs. No wake zones would be developed to preserve and enhance the experience for non-motorized and small motorized boaters near developed sites, docks, dams, and log booms.</p> <p>Wake limits would also be established for proximity to other boaters.</p> <p>Improve signage and educational materials to guide visitors on known hazards associated with boating on the reservoir, such as alerting visitors to fluctuating lake levels</p>
			<p>Establish horsepower, boat size, and/or speed limits on all lakes in Ross Lake NRA for concessions and private boats should congestion become an issue, tranquility and noise remain a concern, or other assumptions about current constraints to motorboat activity change in order to provide visitor safety and to protect visitor experience and soundscapes. Provisions for emergency, law enforcement, NPS and Seattle City Light operations, and the water taxi would be allowed.</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Motor Boats	37	<p>Same as Alternative B</p> <p>Manage the number of boats by maintaining the capacity of the existing boating infrastructure, such as of boat launches and moorage on all lakes in Ross Lake NRA</p>	Same as Alternative B
		Same as Alternative B	<p>Establish horsepower, boat size, and/or speed limits on Ross Lake and in Diablo Canyon for concessions and private boats in order to provide visitor safety and to protect visitor experience and soundscapes. Provisions for emergency, law enforcement, NPS and Seattle City Light operations, and the water taxi would be allowed.</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Motor Boats <i>(continued)</i>	37		Engage the public and provide opportunities for public involvement when specific limits are developed
		Allow towing of people for recreational use	Prohibit boating recreation that involves towing people behind boats at high speed, such as water skiing or tubing, on all reservoirs. Prohibit towing of people for recreational use on all reservoirs in Ross Lake NRA
		Continue to allow two-stroke and four-stroke engines consistent with EPA regulations	Implement a Clean Engine Requirement in 2015, and prohibit boats that do not meet the Environmental Protection Agency Rules for gasoline spark - ignition marine engines on all lakes within Ross Lake NRA. Require the exclusive use of four-stroke engines, direct-injection two-stroke engines or equivalent technology. The Clean Engine Requirement would apply to NPS and concessions vessels in addition to personal or private vessels operating on all lakes within Ross Lake NRA. Any NPS-operated diesel engines, as they reach the end of their life, would be replaced with cleaner technology. Require exclusive use of four-stroke engines, the new direct injection two-stroke engines, or equivalent, for all motorized vessels on all lakes in Ross Lake NRA by 2015
Self-propelled Boats	38	Provide for use of self propelled boats	Same as Alternative A
Rafts on the Skagit River	39	Continue current regulations for river rafting and include private and commercial opportunities	Evaluate regulations to river rafting for resource protection and visitor experience, such as group size and number of boats
Motor Boats on Skagit River	40	Continue to allow motorboats on the Skagit River within Ross Lake NRA	Exclude motor boats from the Skagit River within Ross Lake NRA, except for emergency, law enforcement, and NPS and SCL operational, research, and monitoring needs
Hunting	41	Continue to allow hunting within existing permitted areas	Maximize visitor safety from hunting activities in the vicinity of trails and developed areas, such as expanding safety zones and/or limiting types of firearms Coordinate with WA State Fish and Wildlife to reduce conflicts between peak visitation and hunting seasons

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Motor Boats <i>(continued)</i>	37		
		Same as Alternative B	Allow towing of people for recreational use only in the Frontcountry Zone
		Same as Alternative B	Same as Alternative B
Self-propelled Boats	38	Same as Alternative A plus encourage their use through improved information and outreach	Same as Alternative A
Rafts on the Skagit River	39	Same as Alternative B	Same as Alternative B
Motor Boats on Skagit River	40	Same as Alternative B	Same as Alternative A
Hunting	41	Same as Alternative A plus prohibit lead-based ammunition Improve visitor education about hunting awareness and visitor safety	Same as Alternative B

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Hunting <i>(continued)</i>	41		Prohibit lead-based ammunition Improve visitor education about hunting awareness and visitor safety
Fishing	42	Continue to adhere to WA State Fish and Wildlife regulations	Same as Alternative A plus work with WA State Fish and Wildlife to prohibit use of lead tackle in Ross Lake NRA
Sport Climbing in the Skagit Gorge	43	Continue to allow sport climbing in the four areas already agreed upon between NPS and the climbing community	<p>Same as Alternative A plus formalize four existing climbing areas as "Climbing Management Areas" (CMAs)</p> <p>These new CMAs would be authorized and managed on a case by case basis subject to site-specific surveys and assessments, funding, and personnel availability. The survey would determine if the area would be appropriate for sport climbing development and use, and the NPS would evaluate various factors such as presence of natural and cultural resources, access, and other site-specific concerns. If surveys and assessments indicate sport climbing would be appropriate within a proposed CMA, the area would be formally designated as a CMA via the superintendent's compendium and managed according to site specific conditions.</p> <p>Consider and evaluate new "Climbing Management Areas" through dialogue with stakeholders and the general public. "Climbing Management Areas" would be located in areas that are suitable for climbing and do not contain sensitive resources or other concerns (such as roadsides and power line rights-of-way)</p> <p>"Climbing Management Area" boundaries would follow obvious topographic or cultural features (such as creeks and roads) to make it clear to the public and law enforcement personnel where climbing would be allowed or prohibited. Information about "Climbing Management Areas" would be posted and made readily available to climbers and the public.</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Hunting <i>(continued)</i>	41		
Fishing	42	Same as Alternative B	Same as Alternative B
Sport Climbing in the Skagit Gorge	43	Same as Alternative A	Same as Alternative B

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Sport Climbing in the Skagit Gorge <i>(continued)</i>	43	Maintain and monitor routes and access through an Adopt-A-Crag program. Some routes or areas could be closed for resource protection.	Same as Alternative A plus the NPS would also strongly support programs that encourage climbers to take an active role in stewardship of Climbing Management Areas
		Allow new routes that require fixed anchors, and replacements, within the four agreed upon areas	Allow new routes that require placement of fixed anchors and replacements within the "Climbing Management Areas"
		Prohibit intentional physical manipulation of the landscape including scrubbing of lichen, moss, vegetation; movement of rocks and debris (such as terracing); and harm to cultural resources that exceeds de-minimis impact, in accordance with 36 CFR 2.1 (a) Preservation of natural, cultural, and archeological resources and other regulations	Same as Alternative A
		Continue existing parking and limited access to routes	Evaluate and formalize access and parking to climbing routes for safety and resource protection
Seaplanes	44	Continue to allow seaplanes on Diablo and Ross Lake, according to 36 CFR 7.69 and 36 CFR 2.17	<p>Same as Alternative A plus work collaboratively with the seaplane pilots community to gather data on seaplane use, create noise abatement procedures and educate pilots about these procedures and general seaplane use in Ross Lake NRA. Noise abatement procedures (such as reducing propeller speed as much as possible for take-off, avoiding prolonged flight at low altitudes, and maintaining distance from campsites and vessels on the lake) would be instituted through the superintendent's compendium or through voluntary compliance. These noise abatement procedures would seek to minimize noise during take-off and while flying in or near Ross Lake NRA. The NPS would also establish a long term acoustic monitoring program and encourage research to better understand soundscape impacts, particularly on wildlife.</p> <p>Allow seaplanes to land and takeoff in the Frontcountry Zone. Develop a permit system to establish use levels in order to protect desired soundscape and visitor experience. Update and modify 36 CFR 7.69 to clarify these changes</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Sport Climbing in the Skagit Gorge <i>(continued)</i>	43	Same as Alternative A	Same as Alternative A
		Same as Alternative A	Same as Alternative B
		Same as Alternative A	Same as Alternative A
		Same as Alternative A	Same as Alternative B
Seaplanes	44	<p>Seaplanes would be prohibited from landing and taking off on all lakes in Ross Lake NRA</p> <p>Update and modify 36 CFR 7.69 to clarify these changes</p>	<p>Allow seaplanes to land and takeoff in the Frontcountry Zone</p> <p>Develop a permit system to establish use levels in order to protect desired soundscape and visitor experience</p> <p>Update and modify 36 CFR 7.69 to clarify these changes</p> <p>Same as Alternative B</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Scenic Overflights	45	Recommend that pilots maintain a 2000 foot above ground level (AGL) limit when flying over NPS lands (FAA AC91-36D)	<p>Same as Alternative A plus coordinate with FAA to develop an air tour management plan</p> <p>Request that the FAA establish use levels for commercial scenic air tours over Ross Lake NRA in order to protect desired soundscape and visitor experience, and coordinate with the FAA to designate air tour locations</p>
Stock Use	46	Continue to allow stock use on trails where currently allowed and under existing regulations, such as use of weed-free feed and restricting grazing	<p>Same as Alternative A plus expand education and outreach to stock groups on the importance of weed-free feed in Ross Lake NRA</p> <p>Evaluate designating additional frontcountry campsites and/or facilities for stock use</p>
Backcountry Permit System	47	Continue to provide backcountry permits in person at designated locations within 24 hours of the start of the trip	<p>Provide backcountry permits in person and at several different additional locations and in partnership with the USFS. A portion of permits would be held for walk-ins.</p> <p>Develop an online permit system option that could allow for advance trip planning and permitting and a streamlined permit process provide an option for advance trip planning as a fee for service</p>
Fees	48	Continue to limit fees to selected frontcountry campgrounds and backcountry commercial reservations. Backcountry permits would continue to be free of charge.	Evaluate and consider establishing user fees for specialized services, reservations and permits. Fees could be used to sustain reservation and permit systems and improve visitor services and resource programs.
New and Emerging Recreational Uses	49	Continue to react to new and emerging recreational uses on a case-by-case basis as problems arise, such as resource impacts, visitor use conflicts, or safety issues. Potential commercial recreational services would be handled under concessions.	Evaluate and respond to new and emerging recreational uses on a case-by-case basis as soon as they arise to protect resources and preserve the visitor experience. Potential commercial recreational services would be handled under concessions.

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Scenic Overflights	45	<p>Same as Alternative A plus coordinate with FAA to develop an air tour management plan</p> <p>Request that the FAA prohibit all commercial scenic air tours over Ross Lake NRA</p>	<p>Same as Alternative A plus coordinate with FAA to develop an air tour management plan</p> <p>Request that the FAA establish use levels for commercial scenic air tours over Ross Lake NRA in order to protect desired soundscape and visitor experience</p>
Stock Use	46	<p>Same as Alternative A plus expand education and outreach to stock groups on the importance of weed-free feed in Ross Lake NRA</p>	<p>Same as Alternative C plus evaluate designating additional trails and frontcountry campsites and/or facilities for stock use</p>
Backcountry Permit System	47	<p>Provide backcountry permits in person and at additional locations and in partnership with the USFS. A portion of permits would be held for walk-ins.</p>	<p>Same as Alternative B</p>
Fees	48	<p>Same as Alternative B</p>	<p>Same as Alternative B</p>
New and Emerging Recreational Uses	49	<p>Same as Alternative B</p>	<p>Same as Alternative B</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Interpretation and Education			
	50	Continue to provide opportunities for resource immersion within Ross Lake NRA through a variety of personal and non-personal services such as formal interpretive programs, interpretive walks and talks, roving interpreters, waysides, nature trails, websites and publications	<p>Ross Lake NRA is used as a platform and classroom for education about the resources and history of North Cascades, as well as civic engagement, stewardship, and environmental leadership.</p> <p>Provide opportunities for both structured and unstructured activities, including self-exploration, discovery, and fun. Activities would focus in the Frontcountry Zone but could expand into the Backcountry Zone. Activities in the Wilderness Zone would be limited.</p> <p>Work in partnership to develop, conduct, and evaluate interpretive and educational programs. The NPS would consult and collaborate with partners and when appropriate would engage partners to assist the NPS in delivering educational messages and programs.</p>
Interpretive Programs	51	Provide interpretive programs and materials through both formal and informal ranger-led programs and activities, exhibits, and diverse media (such as video, publications, website, social media, etc.)	<p>Use current and dynamic methods to develop, deliver, and evaluate interpretive programs and materials so that they generate curiosity, passion, enthusiasm, and respect for resources and build a sense of stewardship for the North Cascades ecosystem</p> <p>Provide a balance of traditional facility-based interpretive programs and opportunities for people to talk with rangers and be immersed in the park Update interpretive programming within existing facilities, possible new facilities, and other select areas of Ross Lake NRA</p>
Curriculum-based Education	52	Continue existing curriculum-based programs	Explore a curriculum that emphasizes low-impact recreation, hands-on activities, and increases relevance to students' lives, using a broad range of educational and interpretive messages
Outreach Programs	53	Continue to participate in community meetings, festivals and events as a venue for communicating Ross Lake NRA's themes and messages	Expand participation in outreach programs as one of many mechanisms to build local and regional stewardship of the greater North Cascades

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Interpretation and Education			
	50	<p>Same as Alternative B except educational and interpretive opportunities would be primarily structured and focused in the Frontcountry Zone</p> <p>Develop and evaluate interpretive and educational messages and increasingly rely on partners to deliver the programming</p>	<p>Same as Alternative B plus educational and interpretive opportunities could occur in limited areas of the Wilderness Zone</p>
Interpretive Programs	51	<p>Same as Alternative B except interpretive programs and materials would focus on messages that convey the importance of preserving the North Cascades ecosystem</p> <p>Increasingly rely on effective use of technology as a tool to reach a broader audience as opposed to direct staff contact</p>	<p>Same as Alternative B plus provide extensive opportunities for immersion and contact with NPS staff in a variety of disciplines, contexts and resources</p>
Curriculum-based Education	52	<p>Explore a curriculum that emphasizes low-impact recreation, hands-on activities, and increases relevance to students' lives, and focuses on educational and interpretive messages that convey the importance of preserving the North Cascades ecosystem</p>	<p>Same as Alternative B</p>
Outreach Programs	53	<p>Same as Alternative B</p>	<p>Same as Alternative B</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Outreach Programs <i>(continued)</i>	53	<p>Continue outreach programs that focus on building relevancy between the park and Latino and Hispanic members of surrounding communities</p> <p>Continue to collaborate with NPS partners to develop pathways for youth from education and stewardship programs to employment opportunities</p>	<p>Expand outreach programs designed to build relevancy between the park and Latino and Hispanic members of surrounding communities</p> <p>Expand collaboration with NPS partners to develop an increased number of pathways for youth from education and stewardship programs to employment opportunities</p>
North Cascades Visitor Center	54	<p>Maintain existing visitor center with exhibits that enable visitors to experience the many facets of the North Cascades</p>	<p>Update the visitor center to serve as a hub of activity and provide the starting point to a network of ranger- or partner-led, or self-directed resource immersion activities</p> <p>Updated exhibits, multi-media programs, and activities would provide visitors with more engaging, active and interactive opportunities that effectively use technology to cultivate stewards of the North Cascades ecosystem.</p>
Visitor Orientation and Informal Education	55	<p>Continue to offer visitor orientation and informal education throughout Ross Lake NRA and off-site via waysides, signs, interpretive trails, multi-media and additional visitor contact stations, such as park headquarters, the Wilderness Information Center, and North Cascades Visitor Center</p>	<p>Improve signage, multi-media, waysides, and contact stations to provide visitors with a sense of approach and arrival and enhance orientation to the services and resources within Ross Lake NRA</p> <p>Provide consistent messages from all contact stations and partners as well as from pre-trip planning through their visit</p> <p>Emphasize training and collaboration with partners to enhance NPS and partner capacity to distribute and deliver current information</p> <p>Co-locate interpretive rangers at other visitor contact stations, such as the Skagit Tours Information Center, the Environmental Learning Center, and eastside entry points</p>
Environmental Learning Center	56	<p>Maintain existing partnerships with North Cascades Institute in a range of education and interpretation programs offered at the ELC</p> <p>Continue to provide interpretive rangers to conduct programs and assist in program development at the ELC</p>	<p>Same as Alternative A plus develop and evaluate the interpretive and educational messages with North Cascades Institute, setting a standard of excellence, and increasingly collaborate with North Cascades Institute and the ELC to distribute and deliver a broad range of interpretive and educational messages</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Outreach Programs <i>(continued)</i>	53		
North Cascades Visitor Center	54	Same as Alternative B except updated exhibits and programs would on messages that convey the importance of preserving the North Cascades ecosystem	Same as Alternative B
Visitor Orientation and Informal Education	55	Same as Alternative B except fewer resources would be dedicated to training partners and staffing locations outside Ross Lake NRA	Same as Alternative B
Environmental Learning Center	56	Same as Alternative B except increasingly rely on North Cascades Institute to distribute and deliver the priority resource management messages. Messages would focus on conveying the importance of preserving the North Cascades ecosystem.	Same as Alternative B plus devote additional interpretive staffing to ELC programs and operations to enhance capacity

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Hozomeen Interpretive Programs	57	<p>Continue to maintain interpretive shelter at International Point</p> <p>Continue partnership with B.C. Parks to provide joint NPS/Canadian interpretive programs</p>	<p>Expand the partnership with B.C. Parks to provide joint NPS and Canadian land- and water-based interpretive programs to enhance learning opportunities related to the broad range of interpretive and educational messages</p> <p>Expand basic visitor services and improve access to staff and backcountry permits</p> <p>Recruit joint campground hosts to provide visitor services and serve agency functions at both Ross Lake (B.C.) and Hozomeen Campgrounds</p>
Seattle City Light Interpretive Programs	58	<p>Continue to rely on Seattle City Light to provide interpretive information about the history, function, and value of the Skagit Project hydropower operations</p>	<p>Same as Alternative A plus develop a more collaborative relationship with Seattle City Light to introduce visitors to the variety of activities and information available in the area and ensure visitors receive consistent information and messages</p> <p>Consider collaboratively developing additional programming and exhibits that tell about the history and operations of hydropower and the Skagit Project</p> <p>Seek to integrate information from Seattle City Light staff, research and their resource management activities into NPS interpretive programs</p>
Concessions, Commercial Use Authorizations (CUA) Interpretive Programs	59	<p>Continue to provide existing level of interpretive and educational information to concessionaires and CUA permit holders</p>	<p>Enhance collaboration with concessionaires and CUA permit holders to share best practices and standards as well as ensure consistent delivery of interpretive and educational messages and help reach a broader audience</p>
Access and Transportation			
Park Entrances	60	<p>Maintain existing park entrances at both ends of the North Cascades Highway</p>	<p>Develop new park entrance portals at the east and west ends of the park along the North Cascades Highway to provide a distinct sense of arrival in the North Cascades NPS Complex. The entrance portals would be sculptural expressions of the North Cascades ecosystem and would be consistent with design principles and architectural themes of the complex.</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Hozomeen Interpretive Programs	57	<p>Expand the partnership with B.C. Parks to provide joint NPS and Canadian land- and water-based interpretive programs to enhance learning opportunities related to the importance of preserving the North Cascades ecosystem</p> <p>Expand basic visitor services and improve access to staff and backcountry permits</p>	Same as Alternative B
Seattle City Light Interpretive Programs	58	Same as Alternative A plus seek to integrate information from Seattle City Light staff, research and their resource management activities in NPS interpretive programs	Same as Alternative B
Concessions, Commercial Use Authorizations (CUA) Interpretive Programs	59	Same as Alternative B with emphasis given to conveying the importance of preserving the North Cascades ecosystem	Same as Alternative B
Access and Transportation			
Park Entrances	60	Same as Alternative B	Same as Alternative B plus provide additional interpretive media to orient visitors

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Park Entrances <i>(continued)</i>	60		Site elements would include parking and a kiosk or signboard to provide orientation and basic interpretive materials for visitors. Site design would need to consider both pedestrian use and vehicular circulation to ensure visitor safety along the North Cascades Highway.
North Cascades Highway	61	Continue coordination between the NPS and Washington State Department of Transportation (WSDOT) for construction projects on the North Cascades Highway such as signs, parking, and pullouts, consistent with the Highway Easement Deed	Same as Alternative A
		WSDOT The Washington State Department of Transportation would continue to conduct avalanche control on an emergency basis as needed.	Coordinate with WSDOT the Washington State Department of Transportation, Seattle City Light, and North Cascades Institute to determine appropriate conditions for when avalanche control would be necessary, as well as techniques for avalanche control, in order to prevent the use of explosives to minimize disturbance to wildlife and wilderness values
		Continue motorized and non-motorized wintertime use on closed portion of the North Cascades Highway	Same as Alternative A
		Intermittent excessive noise along the North Cascades Highway could continue	Reduce excessive noise resulting from motor vehicle use on the North Cascades Highway through education and enforcement of Chapter 173-60 WAC, Maximum Environmental Noise Levels and Chapter 173-62 WAC, Motor Vehicle Noise Performance Standards
		Overlooks and trailheads would continue to go unplowed during the winter months.	Plow selected overlooks and trailhead areas to provide wintertime recreation access
		Channel aggradation would continue to lead to issues with the North Cascades Highway. The NPS would continue to respond to the Washington State Department of Transportation actions on a case by case basis.	Consider solutions proactively in cooperation with the Washington State Department of Transportation to avoid catastrophic channel avulsion, road closure, and minimize impacts to fish populations and other resources

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Park Entrances <i>(continued)</i>	60		
North Cascades Highway	61	Same as Alternative A	Same as Alternative A
		Same as Alternative B	Same as Alternative B
		Work with the Washington State Department of Transportation to regulate snowmobile use on the closed portion of the North Cascades Highway within Ross Lake NRA	Same as Alternative A
		Same as Alternative B	Same as Alternative B
		Same as Alternative A	Same as Alternative B
		Same as Alternative B	Same as Alternative B

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
North Cascades Highway <i>(continued)</i>	61		Identify and agree upon appropriate mitigation sites for potential future actions
		Continue to ban salt applications on the North Cascades Highway	Same as Alternative A plus coordinate with the Washington State Department of Transportation to manage hazard trees, vista clearing, non-native plant management, and eliminate invasive non-native plants from gravel and sand sources used in road maintenance activities
		Maintain existing overlooks and waysides	Evaluate improvements to waysides, pullouts, and overlooks, such as an additional pullout at Ross Overlook, improvements to Newhalem and Gorge Lake pullout, improvements to the Panther Creek pullout and trailhead, and a wayside at Devil's Elbow in coordination with Seattle City Light
		Maintain existing facilities and signage for bicyclists	Improve facilities (such as covered shelters, stands) in campgrounds for bicyclists and coordinate with the Washington State Department of Transportation to improve signage for safety of bicyclists
		Maintain existing river access at the Portage	Improve river access and a take-out at the Portage
National Scenic Byway Designation	62	Maintain existing management of the North Cascades Highway	Recommend nomination and designation of the North Cascades Highway as a National Scenic Byway to be reflective of its nationally significant resources
Access to Ross Lake	63	Do not develop additional road access from the North Cascades Highway to Ross Lake. Recommend that the only vehicular access to Ross Lake be the road from Hope, B.C. to Hozomeen, and recommend the road be maintained as a gravel road.	Same as Alternative A
Thornton Lakes Road	64	Close Thornton Lakes Road at the wilderness boundary Rehabilitate approximately one mile of the closed portion of the road	Same as Alternative A

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
North Cascades Highway <i>(continued)</i>	61		
		Same as Alternative B	Same as Alternative B
		Same as Alternative A	Same as Alternative B
		Same as Alternative A	Same as Alternative B
		Same as Alternative A	Same as Alternative B
National Scenic Byway Designation	62	Same as Alternative A	Same as Alternative B
Access to Ross Lake	63	Same as Alternative A	Same as Alternative A
Thornton Lakes Road	64	Same as Alternative A	Same as Alternative A

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Thornton Lakes Road <i>(continued)</i>	64	<p>Formalize a parking lot and trailhead at the wilderness boundary in an existing disturbed area</p> <p>Maintain and upgrade trail access to Thornton Lakes</p> <p>Future planning will determine whether trail access to Thornton Lakes is a direct trail up and back along the same alignment, a loop trail, or new alignment. The rationale for a loop trail, which could be of various lengths, would be to gain opportunities for subalpine views.</p>	Same as Alternative A
Parking Areas	65	Maintain existing parking at the Ross Dam Trailhead	Redesign and rebuild Ross Dam trailhead parking lot to address safety issues and maintain approximately the same parking capacity as the existing parking lot. Design for a turn lane on the North Cascades Highway, establishing a single point of ingress and egress, establishing a capacity of approximately 43 passenger vehicles and addressing other safety issues. Within this design, there would be six additional pull-through spaces for oversized vehicles, such as stock trailers, recreational vehicles, and truck and trailers. Parking area would be approximately 1.5 acres.
		Maintain existing parking capacity within Ross Lake NRA	Parking areas and public access at Diablo Ferry dock, Goodell Creek raft area, would be reconfigured, formalized, or developed in cooperation with partners as necessary
Bridge across the Skagit at Newhalem	66	Maintain the existing bridge at Newhalem that crosses the Skagit River	Maintain the existing bridge across the Skagit River in Newhalem until such a time when the bridge needs replacement. In the future, there will continue to be a need for a bridge across the Skagit River in Newhalem to access the Newhalem Creek Campground, trails, natural features, and Seattle City Light hydropower operations. Better pedestrian and bicycle access and a two lane option would be considered in the design for a replacement bridge. Replace existing single lane bridge with an expanded bridge that accommodates two-way vehicle traffic, pedestrian access, and interpretive platforms.

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Thornton Lakes Road <i>(continued)</i>	64	Same as Alternative A	Same as Alternative A
Parking Areas	65	Redesign and rebuild Ross Dam trailhead parking lot to address safety issues and maintain existing parking lot footprint. Design for a turn lane on the North Cascades Highway, establishing a single point of ingress and egress. Capacity of the parking lot would decrease to approximately 39 passenger vehicles. Stock vehicles and RVs would not be allowed. Parking area would be approximately .7 acres.	Redesign and rebuild Ross Dam Trailhead parking lot to address capacity and safety issues and increase the total number of parking spaces. Design for a turn lane on the North Cascades Highway, establishing a single point of ingress and egress, establishing a capacity of approximately 43 passenger vehicles and addressing other safety issues. Within this design, there would be 12 additional pull-through spaces for oversized vehicles, such as stock trailers, recreational vehicles, and truck and trailers. Parking area would be approximately 1.9 acres.
		Same as Alternative A	Same as Alternative B
Bridge across the Skagit at Newhalem	66	Same as Alternative A	Replace existing single lane bridge with an expanded bridge that accommodates two way vehicle traffic, pedestrian access, and interpretive platforms. Same as Alternative A

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Maintenance and Gravel Storage Areas	67	Continue existing use of gravel storage areas	Formalize maintenance and gravel storage location areas for park operations and to minimize resource impacts, such as invasive non-native plant infestations
Climate Change			
	68	Engage in the Climate Friendly Parks program	Same as Alternative A plus lead regional efforts for North Coast Cascades Network on climate change research and planning
		Continue to interpret climate change in existing educational and interpretive programs	The NPS would be a leader in interpreting climate change and its effects on glaciers, watersheds, resources, and people.
		Continue to purchase “green power” for all facilities along the North Cascades Highway corridor. Continue use of four-stroke motorboat engines. Continue to run photovoltaics at select facilities and use biodiesel fuel. Maintain hybrid vehicles in the park’s vehicle fleet.	Same as Alternative A plus reduce carbon emissions and increase energy and fuel efficiency whenever and wherever possible. Phase out two-stroke motorboat engines throughout Ross Lake NRA. Replace existing vehicles, machinery, and equipment with those that use hybrid technology, biodiesel fuel, and use green energy such as photovoltaics, biodegradable fuels and oils, or other emerging products and technologies. Encourage non-motorized recreational activities. Explore opportunities for shuttle systems or public transportation.
		Continue monitoring programs to understand the effects of climate change on park resources.	Support, encourage, and conduct scientific programs and research related to climate change. Programs and research would include understanding the effects of climate change on park resources, natural processes, recreation, operations, facilities, and hydropower.
		Green facility design would continue to be considered in some aspects of construction.	Prioritize green facility design for any new construction, retrofitting, and upgrading of facilities to the greatest extent possible
		NPS would continue to incorporate aspects of sustainable practices as a selection criteria for new contracts.	Prioritize contractors and concessioners that use sustainable practices and local products when selecting contractors for construction, operations, and concessions activities

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Maintenance and Gravel Storage Areas	67	Same as Alternative B	Same as Alternative B
Climate Change			
	68	Same as Alternative B	Same as Alternative B
		Same as Alternative B	Same as Alternative B
		Same as Alternative B	Same as Alternative B
		Same as Alternative B	Same as Alternative B
		Same as Alternative B	Same as Alternative B
		Same as Alternative B	Same as Alternative B

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
<i>(continued)</i>	68	The NPS would continue existing relationships with others to address climate change.	The NPS would work with other agencies, non-governmental organizations, and the public to develop ecosystem adaptation strategies to address anticipated changes to natural and cultural resources and the park infrastructure. Such adaptation planning is in a very early stage of development within the global community, but in general the body of knowledge is currently coalescing around several key aspects of adaptation planning. These steps would include: 1) establish a measurable natural and cultural resource baseline, 2) develop key partnerships both between land management agencies and, non-governmental organizations, and individuals who would be affected by any actions taken, 3) identify and develop adaptation strategies, 4) implement adaptation strategies, and 5) revisit and revise these strategies based on experience and updated science.
Facilities			
Wilderness Information Center	69	Renovate the Wilderness Information Center to improve visitor services and operational efficiencies. The center currently houses the Wilderness Visitor Contact Station, Wilderness Ranger offices, the communications center, public restrooms, and a search and rescue cache.	Same as Alternative A plus redesign the landscape for improved public orientation
Hozomeen Ranger Station/ Orientation Center	70	Continue to maintain the ranger station in its existing condition, providing limited opportunities for visitor contact	Replace the existing ranger station with a small newly constructed ranger station/orientation center, preferably in partnership with B.C. Parks. The station would provide basic visitor services (joint area information and orientation, back-country permits, regulations, etc.) as well as expanded interpretive opportunities and a small office.
Employee Housing	71	Continue to use some available housing through Seattle City Light on an as needed basis	Explore opportunities to partner with Seattle City Light to use existing housing or adaptive reuse of buildings for housing at Diablo and Newhalem excess to their needs for NPS and partner housing, including North Cascades Institute

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
<i>(continued)</i>	68	Same as Alternative B	Same as Alternative B
Facilities			
Wilderness Information Center	69	Same as Alternative B plus hire additional wilderness staff to provide wilderness information at the North Cascades Visitor Center in Newhalem	Move wilderness information center public functions to a location in Marblemount on the North Cascades Highway; these functions would include: visitor contact, and wilderness office space. Communication center and search and rescue cache would stay within the Marblemount Ranger Station.
Hozomeen Ranger Station/ Orientation Center	70	Replace the existing ranger station with a small newly constructed ranger station/orientation center, preferably in partnership with B.C. Parks. The station would provide basic visitor services (joint area information and orientation, backcountry permits, regulations, etc.).	Same as Alternative B
Employee Housing	71	Same as Alternative B	Same as Alternative B plus explore opportunities to develop additional housing compatible with existing architecture in Newhalem

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Employee Housing <i>(continued)</i>	71	Maintain existing RV sites for use by VIPs	Expand and upgrade the RV sites at Newhalem, Colonial Creek, and Hozomeen for VIPs
		Continue to maintain available NPS-owned housing in the Marblemount Ranger Station that is available to a range of staff. Additional NPS staff needing housing in Marblemount beyond existing capacity, both seasonal and permanent, would continue to seek rental opportunities on their own.	Add temporary seasonal housing for employees or volunteers in the form of tent cabins or equivalent types of facilities with supporting infrastructure. A site plan would be needed.
Campgrounds	72	Continue to maintain existing campgrounds	New camping facilities could be considered at Newhalem Creek Campground, and at Upper and Lower Goodell Creek group campsites, and in consultation and cooperation with Seattle City Light on other City Light-owned property. at the aggregate ponds. The auto-accessible sites would also be considered as replacement locations in the event of a loss of sites at other campgrounds.
		No frontcountry overnight campsites would be specifically designed to accommodate stock use. Stock users would continue to make do with existing sites.	Provide a frontcountry overnight campsite that accommodates stock use and is in close proximity to trailheads that permit stock
		Maintain existing overnight opportunities in the campgrounds	Same as Alternative A
		Continue to maintain existing facilities in the campgrounds	Evaluate providing a range of additional services, such as showers or electrical hookups, at select frontcountry campgrounds, or portions of campgrounds
		Maintain existing group sites	Evaluate additional group sites that accommodate a range of group sizes
		Maintain existing picnic sites	Identify additional locations for group picnic sites
Hozomeen Campground	73	Evaluate and rehabilitate Hozomeen Campground and Winnebago Flats to promote a more organized and traditional campground experience	Same as Alternative A

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Employee Housing <i>(continued)</i>	71	Same as Alternative A	Same as Alternative B
		Rent or lease existing housing space in Marblemount for seasonal and other staff	Build a permanent group housing structure at Marblemount to provide additional bed spaces; this could be a dormitory or small apartments. A site plan would be needed.
Campgrounds	72	Same as Alternative A	Same as Alternative B
		Same as Alternative A	Same as Alternative B
		Same as Alternative A	Explore additional overnight opportunities in existing campgrounds, such as tent cabins or other temporary structures
		Same as Alternative A	Provide additional services, such as showers or electrical hookups, at select frontcountry campgrounds, or portions of campgrounds
		Same as Alternative A	Same as Alternative B
		Same as Alternative B	Same as Alternative B
		Same as Alternative B	Same as Alternative B
Hozomeen Campground	73	Same as Alternative A	Same as Alternative A

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Hiking	74	Continue to provide existing hiking and backpacking opportunities	Provide additional dayhiking opportunities, including short frontcountry loops, portage trails and interpretive hikes, primarily in the North Cascades Highway corridor
Trails	75	<p>Maintain current number of trails, existing trail alignments, and trail uses</p> <p>Evaluate new trails, including a Thornton Lakes Trail associated with the Thornton Lakes Road closure, and closing trails on a case-by-case basis</p>	<p>Expand dayhiking trails opportunities. New trails along the North Cascades Highway could include: Goodell Land Slide Trail, Newhalem Boardwalk Trail, Newhalem Falls Loop Trail, Skagit River Portage Trail at the S curves, Happy Creek Falls Trail, and Newhalem Spawning Channel Trail, and rehabilitation of the Stetattle Creek Trail ending at Stetattle Falls. The NPS would consider a modest expansion of trails to scenic vistas along the North Cascades Highway corridor in addition to the specific trails listed above. Work with SCL to ensure connections between SCL trails (such as Ladder Creek Falls sidewalk and trails) and NPS trails to create a large network of trail-based opportunities in Newhalem.</p> <p>Work cooperatively with Canadian agencies to explore the feasibility of constructing a connection trail between Centennial/Skyline II Trail Junction near Whitworth Meadow horse camp to the East Bank Trail at Hozomeen</p> <p>In designated and potential wilderness, changes in campsite locations, new designated camps or trail re-routes would be permitted, following minimum requirement analysis standards. Construction of new trails in wilderness and the backcountry would be minimal and limited to along the North Cascades Highway corridor. In large swaths of trailless wilderness in the NRA and North Cascades National Park, the NPS would strive to preserve opportunities for solitude and the untrammelled and undeveloped character of wilderness when considering new trails.</p> <p>In designated and potential wilderness, changes in campsite locations or trail re-routes would be permitted, provided there is no net increase in miles of trails.</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Hiking	74	Same as Alternative A except some trail closures for resource protection could occur	Provide additional dayhiking opportunities, including short frontcountry loops, portage trails and interpretive hikes throughout Ross Lake NRA
Trails	75	<p>Ensure no net increase in miles of trails</p> <p>Removal of trails within Ross Lake NRA could occur based on future needs of natural resources, particularly wildlife</p>	<p>Expand dayhiking trails opportunities. New trails along the North Cascades Highway could include: Goodell Land Slide Trail, Roland Point Loop Trail, Skagit River Portage Trail at the S curves, Happy Creek Falls Trail, and Skagit Talc Mine Trail</p> <p>Construct a .25 mile spur trail from Stetattle Creek Trail to a 50-foot waterfall on Stetattle Creek</p> <p>Consider additional trail alignments as proposals arise</p> <p>Work cooperatively with Canadian agencies to explore the feasibility of constructing a connection trail between Centennial/Skyline II Trail Junction near Whitworth Meadow horse camp to the Willow Lake Trail at Hozomeen</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Trails <i>(continued)</i>	75		In the event that trails, such as the Newhalem Creek Trail, are removed from the trails inventory as part of subsequent planning efforts for the complex, the remaining portion of trails within Ross Lake NRA would also be removed and the areas would be rehabilitated and restored where appropriate.
North Cascades Environmental Learning Center	76	Allow the construction of facilities as outlined in the original plan and environmental assessment. Facilities that have not yet been built would be constructed, including a dormitory, staff housing, and boathouse. Funding for the construction of these facilities would be provided by North Cascades Institute.	Same as Alternative A plus allow the construction of additional outdoor learning shelters Consider new camping areas at Buster Brown for seasonal North Cascades Institute use and public use. North Cascades Institute would contribute funding to new camping areas.
Colonial Creek Campground Boat Launch	77	Maintain the boat launch in its existing location until such a time that the boat ramp is no longer useable. When the boat ramp is no longer useable, the NPS would consider several options: 1) relocate move the boat launch to the north side of the North Cascades Highway in the vicinity of Diablo Lake boathouse. This action may also require dredging to maintain this new boat launch. Parking would still remain on the south side. Ancillary facilities in the vicinity of the ramp such as a vault toilet and picnic area could be included. 2) Maintain the launch in its current location by periodically dredging a channel from the launch to deeper water. This action would be done in coordination with Seattle City Light so dredging could be done at low water levels to minimize impacts to water quality. 3) If dredging is not feasible due to accelerated sedimentation rates, then the NPS would no longer attempt to maintain a boat launch in the vicinity of Colonial Campground. The NPS would either seek to establish a launch elsewhere on the reservoir, or abandon providing a boat launch on Diablo Lake. Boating would still be encouraged, but the loss of a boat launch would limit boating to paddlecraft, such as canoes and kayaks, or small motorboats, such as Jon boats, that could be launched without a ramp.	Same as Alternative A

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Trails <i>(continued)</i>	75	In the event that trails, such as the Newhalem Creek Trail, are removed from the trails inventory as part of subsequent planning efforts for the complex, the remaining portion of trails within Ross Lake NRA would also be removed and the areas would be rehabilitated and restored where appropriate.	In the event that trails, such as the Newhalem Creek Trail, are removed from the trails inventory as part of subsequent planning efforts for the complex, the remaining portion of trails within Ross Lake NRA would also be removed and the areas would be rehabilitated and restored where appropriate.
North Cascades Environmental Learning Center	76	Same as Alternative A	Same as Alternative B
Colonial Creek Campground Boat Launch	77	Same as Alternative A	Same as Alternative A

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Response to Severe Weather Events and the Destruction of Facilities	78	Continue to be reactive following severe weather events Develop alternatives on a case by case basis in the event that facilities are destroyed in geohazard areas	Close, abandon, or rehabilitate facilities that are destroyed by severe weather events If facilities are impacted or destroyed, first attempt to construct in the general vicinity. Otherwise, construct at another feasible location to limit net loss of facilities and visitor opportunities.
		Clear and repair damage to Colonial Creek Campground entrance road, in the event that Colonial Creek Campground is impacted by flooding, debris flow, and/or erosion, as necessary	Take proactive management actions to prevent Colonial Creek Campground from being impacted by flooding, debris flow, and erosion Close affected portions of Colonial Creek Campground, as necessary, in the event that the campground is impacted by these events
			Strive to preserve camping opportunities at Colonial Creek. If reconstruction at Colonial Creek is not feasible, the sites lost would be replaced, preferably at another already disturbed location.
		Repair damage to Goodell Creek Campground, in the event that the campground is impacted by flooding, debris flow, and/or erosion, on a case-by-case basis	Abandon or rehabilitate affected portions of Goodell Creek Campground, in the event that the campground is impacted by flooding, debris flow, and/or erosion. Alternative access to Lower Goodell would be provided to the west of the existing access road which is threatened by flooding.
		Net loss of sites could occur.	Build replacement sites to the west of the Goodell Creek Lower Group Campground, as necessary
Design Standards	79	Continue to design new facilities and upgrade facilities on a case-by-case basis	Develop design standards to create a visual and architectural identity for the North Cascades NPS Complex. The design standards would be based upon existing examples of design in the complex, including such facilities as the North Cascades Visitor Center and Newhalem and Colonial Creek Campground entrance stations. New construction, renovation, and upgrading facilities in Ross Lake NRA would conform to these new design standards.

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Response to Severe Weather Events and the Destruction of Facilities	78	Close, abandon, or rehabilitate facilities that are destroyed by severe weather events	Close, abandon, or rehabilitate facilities that are destroyed by severe weather events
		Direct visitors to other existing facilities	If facilities are closed, construct new facilities at other locations to limit net loss of facilities and visitor opportunities.
		Some net loss of facilities and visitor opportunities could occur.	
		Close affected portions of Colonial Creek Campground, as necessary, in the event that the campground is impacted by these events	Same as Alternative B plus to limit net loss of camp sites, expanded camping facilities would be considered at other identified locations that are not prone to severe hazards.
		Direct visitors to other camping locations	
		Abandon affected portions of Goodell Creek Campground, in the event that the campground is impacted by flooding, debris flow, and/or erosion	Same as Alternative B plus to limit net loss of camp sites, expanded camping facilities would be considered at other identified locations that are not prone to severe hazards.
		Net loss of sites could occur.	
Design Standards	79	Same as Alternative B	Same as Alternative B

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Concessions and Commercial Uses			
	80	Continue to assess commercial services on a case-by-case basis as proposals arise	Develop a commercial services plan Establish limits on commercial use authorizations if user capacity limits are exceeded
		Maintain existing concessions operations. Additional concessions operations would be evaluated on a case-by-case basis	Explore increasing concession operated visitor services, such as boat transportation services, a second water taxi and/or a scheduled boat ferry around Ross Lake, and boat rentals. Some new facilities could be constructed to support the operations.
Skagit General Store	81	Seattle City Light would continue to operate the Skagit General Store.	Enhance partnering with Seattle City Light on store operations, including available food service. In the event Seattle City Light terminates the store operation, the NPS would explore feasibility of a concession operated store in Newhalem to provide adequate visitor services.
Overnight Lodging	82	Maintain existing overnight lodging opportunities and consider additional overnight lodging opportunities on a case-by-case basis	Work with gateway communities to provide additional lodging outside the complex
			Additional overnight opportunities in buildings and campsites could be provided in Hollywood through educational and research programs and/or by NPS/partner/concession
Ross Lake Resort	83	Ross Lake Resort would be maintained at its existing capacity. Any replacement facilities would follow design guidelines provided by the NPS and appropriate for the concession.	Ross Lake Resort would be minimally expanded within the capacity of the existing sewage system. The water storage system would need to be increased. New and replacement facilities would follow design guidelines provided by the NPS. Expansion of lodging facilities would not exceed 10 percent of existing total number of guest and staff bed spaces. It would be up to the concessioner to determine how these bed spaces would be allocated between guests and staff. A second water taxi service would be included in the operations of Ross Lake Resort to provide access to campsites and trailheads on Ross Lake. Additional visitor services could be incorporated into the concession contract and operating plan.

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Concessions and Commercial Uses			
	80	Same as Alternative B	Same as Alternative B
		Same as Alternative A	Same as Alternative B
Skagit General Store	81	Same as Alternative A	Same as Alternative B
Overnight Lodging	82	Same as Alternative B	Same as Alternative B
		Additional overnight opportunities (open to the public or programmed) could be located in adaptively used Hollywood houses operated by the NPS/partner/or concession	Additional overnight opportunities open to the public could be provided in campgrounds and in Hollywood, including camping and possible RV sites
Ross Lake Resort	83	Same as Alternative A	Same as Alternative B

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Other Uses			
Communication Facilities	84	Existing communication tower permit with Seattle City Light would continue. Placement of communication facilities would be evaluated in accordance with existing NPS policies.	Prohibit installation of non-administrative communication facilities in wilderness, consistent with existing laws and policies. In the event that additional communication facilities are considered outside the wilderness in Ross Lake NRA, the NPS would restrict the location of communication facilities to areas where there is already existing infrastructure in order to minimize impacts to natural and cultural resources and the visual setting.
Safety and Security			
	85	Continue to emphasize safety through programs and activities that enhance the safety of visitors, park operations, and park staff:	Same as Alternative A
		Continue to work with Seattle City Light and other relevant agencies on security plans, evacuation plans, and emergency response plans:	Same as Alternative A
Interagency Cooperation and Collaboration and Partnerships			
Seattle City Light	86	Continue to work with Seattle City Light to use woody debris (dead and downed wood in Ross Lake) for projects as needed. Most woody debris would continue to be burned by Seattle City Light.	Conduct scientific research to determine how best to manage woody debris and keep organic matter in the aquatic ecosystem. Following the initial outcome of research on use of woody debris, work with Seattle City Light to create standards for managing woody debris on the lake.
			Use woody debris for improving riparian areas, wildlife habitat, other restoration and construction projects, and visitor use whenever appropriate. Other management strategies that remove wood from the system should consider ecological impacts and sustainability as well as costs.
		Continue monthly maintenance meetings between NPS and Seattle City Light:	Increase cooperation with Seattle City Light to define and clarify management roles and responsibilities for a range of issues and operations such as maintenance, housing, sharing resources, project compliance, interpretation and education, and other functions within Ross Lake NRA

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Other Uses			
Communication Facilities	84	Same as Alternative B	Same as Alternative B
Safety and Security			
	85	Same as Alternative A	Same as Alternative A
		Same as Alternative A	Same as Alternative A
Interagency Cooperation and Collaboration and Partnerships			
Seattle City Light	86	Same as Alternative B	Same as Alternative B
		Same as Alternative B	Same as Alternative B

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Seattle City Light <i>(continued)</i>	86	Continue to work cooperatively with Seattle City Light and international agencies and organizations, including the Skagit Environmental Endowment Commission, to develop projects and conduct programs for the international benefit of the Upper Skagit Watershed. These projects and programs address resource protection and management, visitor use, and education.	Same as Alternative A
		Continue to provide utilities and infrastructure to support a Canadian crew, employed by Seattle City Light for who performs maintenance duties associated with Ross Lake reservoir on both sides of the Canadian border. Continue to provide housing for Canadian and U.S. interpreters at Hozomeen.	Same as Alternative A
U.S. Forest Service	87	Continue existing partnership activities and collaboration with the USFS	Expand partnership activities and collaboration for resource management, education and interpretation, and operational issues. This could include improved collaboration with USFS for education and interpretation at Washington and Rainy Pass, such as improved waysides and joint staffing.
Other Federal and State Agencies	88	Continue collaboration with other state and federal agencies on resource management, protection and visitor use issues as needed	Expand collaboration with other state and federal agencies on resource management, protection and visitor use issues
Lands			
Diablo Townsite	89	<p>Seattle City Light would continue to own and operate Hollywood. Buildings and utilities at Hollywood would continue to be used primarily by Seattle City Light and some buildings could be leased to others on an as needed basis.</p> <p>The NPS would continue to own land at Reflector Bar. Seattle City Light would continue to own and operate improvements at Reflector Bar. The NPS would continue to lease houses for staff housing on an as needed basis.</p>	Hollywood would continue to be used for housing employees necessary to operate the Diablo facilities of the Skagit River Hydroelectric Project. The NPS would partner with Seattle City Light to use houses in Hollywood for NPS staff and partners, such as the North Cascades Institute.

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Seattle City Light <i>(continued)</i>	86	Same as Alternative A	Same as Alternative A
		Same as Alternative A	Same as Alternative A
U.S. Forest Service	87	Same as Alternative B	Same as Alternative B
Other Federal and State Agencies	88	Same as Alternative B	Same as Alternative B
Lands			
Diablo Townsite	89	Same as Alternative B	Same as Alternative B

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
<p>Diablo Townsite <i>(continued)</i></p>	<p>89</p>		<p>Reflector Bar would continue to be used primarily in support of hydropower development, with respect for its setting in Ross Lake NRA and its visibility from the North Cascades Highway. Any future infrastructure changes in support of hydropower operations in Reflector Bar should be compatible with the mountainous scenery and its location in a unit of the national park system. Although vehicular access to Reflector Bar would be restricted due to security concerns, the NPS would coordinate with Seattle City Light to provide pedestrian access to trails and resources in Reflector Bar within safety and security constraints.</p> <p>If Seattle City Light determines that Hollywood is no longer necessary for hydropower operations in the future, the NPS would work to acquire that land. The NPS interest in Hollywood is to ensure the long-term protection of resources within the legislated boundary of Ross Lake NRA, prohibit inappropriate or incompatible development within Ross Lake NRA, and provide future opportunities for adaptive reuse of the site including future administrative and potential public use. If the land is acquired, a site plan with additional analysis would be developed to determine its future use.</p>
			<p>Recommend Congressional legislation to authorize the NPS to acquire Hollywood through exchange or purchase, and the NPS to relinquish Reflector Bar by exchange, sale, or to grant an interest or give greater control therein to Seattle City Light.</p>
			<p>Participate and/or lead efforts for collaborative management and public use of Hollywood.</p>
			<p>Preserve and adaptively use existing National Register-listed properties. These properties could also be interpreted for the public.</p>

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Diablo Townsite <i>(continued)</i>	89		
		Same as Alternative B	Same as Alternative B
		Preserve Hollywood. Stabilize, rehabilitate, and adaptively use buildings, structures, and landscape to preserve the historic character of the area	Preserve and adaptively use existing National Register-listed properties. These properties could also be interpreted for the public.

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Diablo Townsite <i>(continued)</i>	89		Evaluate preservation of the contributing elements at Hollywood, in the event that the Hollywood district is determined eligible for the National Register. If the district is determined ineligible, some areas could be removed and new facilities could be constructed.
			Hollywood would provide for a mix of future uses depending on the needs of the NPS and partners. This could include research and educational functions, staff housing, and public overnight opportunities.
			Public access would depend on the future needs of the NPS and partners.
			Recommend that Seattle City Light conduct condition assessments of buildings and utilities. Recommend Seattle City Light to continue maintaining and operating utilities for Hollywood.
			Work with Seattle City Light to improve the Stetattle Creek and Sourdough Mountain Trailheads in Hollywood which are presently confusing to find and lack support facilities. Improvements would include redesigning the trailheads with parking, signage, visitor information, and a restroom. Reconfigure the Sourdough Mountain and Stetattle Creek and parking for improved public access and use Sourdough Mountain and Stetattle Creek and parking for improved public access and use
		Continue existing cooperative efforts for interpretation with Seattle City Light	Engage Seattle City Light in joint, on-site interpretation with the NPS to share the history of the Skagit Project
		No additional picnic areas at Diablo Townsite	Provide additional picnic areas on the east side of the barn along the river

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Diablo Townsite <i>(continued)</i>	89		Hollywood buildings, structures, and landscape would be demolished and new camping and overnight facilities would be constructed, such as tent cabins and RV-camping.
		Hollywood would be geared to providing a mix of NPS staff and partner housing and/or partner or concession operated rental houses for a variety of NPS, partner, and public opportunities.	Hollywood would be geared to overnight opportunities for the public.
		Public access for overnight accommodations would be within the context of being part of an existing program operated by partners, concessions or the NPS.	The general public could access the site for a variety of overnight accommodations. A concession could operate the area.
		Same as Alternative B	Recommend Seattle City Light to continue maintaining and operating utilities for Hollywood.
		Same as Alternative B	Same as Alternative B
		Same as Alternative B	Same as Alternative B
		Same as Alternative A	Same as Alternative B

Table 4.10 Alternatives Comparison

	Ref #	Alternative A: No Action	Alternative B: Preferred Alternative
Unit Name			
	90	Maintain "Ross Lake National Recreation Area" as the name of the unit	Recommend a name change for Ross Lake National Recreation Area to "North Cascades National Recreation Area." Congressional legislation would be required to authorize this name change.
Staffing			
Administrative and Management Staff	91	18	18 + 4 new
Visitor Protection Staff	92	15	15 + 4 new
Interpretive Staff	93	13	13 + 6 new
Resources Staff	94	43 + 2 new	43 + 12 new
Maintenance Staff	95	44	44 + 7 new
TOTAL STAFF FTE¹	96	135	155
Budget			
Annual Operating Costs²	97	\$ 7,091,000	\$ 8,542,000
Total One-Time Costs	98	\$ 6,626,000	\$ 13,616,000 \$ 19,716,000
Facility Costs³	99	\$ 60,000	\$ 11,206,000 \$ 17,306,000
Non-Facility Costs⁴	100		\$2,410,000
<p>1. The total number of FTEs is the number of person-years of staff required to maintain the assets of the park at a good level, provide acceptable visitor services, protect resources, and generally support the park's operations. The FTE number indicates ONPS-funded NPS staff, term and seasonal positions. It does not include volunteer positions or positions funded by partners. FTE salaries and benefits are included in the annual operating costs.</p> <p>[For the no-action alternative, the staffing level indicates current approved staffing levels, not existing actual levels, since actual staff levels vary over time.]</p> <p>2. Annual operating costs are the total costs per year for maintenance and operations associated with each alternative, including utilities, supplies, staff salaries and benefits, leasing, and other materials. Cost and staffing estimates assume that the alternative is fully implemented as described in the narrative.</p>			

Table 4.10 Alternatives Comparison

	Ref #	Alternative C	Alternative D
Unit Name			
	90	Maintain "Ross Lake National Recreation Area" as the name of the unit	Maintain "Ross Lake National Recreation Area" as the name of the unit
Staffing			
Administrative and Management Staff	91	18 + 4 new	18 + 4 new
Visitor Protection Staff	92	15 + 3 new	15 + 5 new
Interpretive Staff	93	13 + 3 new	13 + 6 new
Resources Staff	94	43 + 12 new	43 + 8 new
Maintenance Staff	95	44 + 5 new	44 + 8 new
TOTAL STAFF FTE¹	96	151	155
Budget			
Annual Operating Costs ²	97	\$ 8,540,000	\$ 8,461,000
Total One-Time Costs	98	\$ 4,205,000 \$ 10,302,000	\$ 20,807,000
Facility Costs ³	99	\$2,338,000 \$ 8,435,000	\$ 18,296,000
Non-Facility Costs ⁴	100	\$ 1,867,000	\$ 2,511,000
<p>3. One-time facility costs include those for the design, construction, rehabilitation, or adaptive reuse of facilities. Specific examples for Ross Lake NRA include the reconfiguration of construction of a replacement bridge over the Skagit River to the North Cascades Visitor Center in Newhalem, the Ross Dam Trailhead parking lot and improvements along the North Cascades Highway, the Thornton Lakes Road removal and trail, new trails, the Hozomeen orientation facility, improvements to Ross Lake Resort, and camping facilities.</p> <p>4. One-time non-facility costs include actions for the preservation of cultural or natural resources not related to facilities, the development of visitor use tools not related to facilities, and other park management activities that would require substantial funding above park annual operating costs. Examples include interpretive programs and inventory and monitoring programs.</p>			

USER CAPACITY

General management plans are required to include identification of and implementation commitments for user capacities for all areas of a national park unit. The National Park Service defines user capacity as the type and level of visitor use that can be accommodated while sustaining the quality of resources and visitor opportunities consistent with the purposes of a National Park System unit. It is not necessarily a set of numbers or limits, but instead a process involving monitoring, evaluation, actions (managing visitor use), and adjustments to ensure a unit's values are protected.

With any use on public lands comes some level of impact that must be accepted. Therefore, it is the responsibility of the National Park Service to decide what level of impact is acceptable and what actions are needed to keep impacts within acceptable limits. Instead of just tracking and controlling user numbers, the NPS park superintendent and staff manage the levels, types, behaviors, and patterns of visitor use and other public uses as needed to protect the condition of the resources and quality of the visitor experience. The monitoring component of this user capacity process helps test the effectiveness of management actions and provides a basis for informed adaptive management of public use.

The user capacity process for national parks typically involves the following steps:

1. identify desired conditions for resources and visitors
2. identify indicators (things to monitor to determine whether desired conditions are being met)
3. identify standards (limits of acceptable change) for the indicators
4. monitor indicators
5. take management actions to ensure that standards are met
6. evaluate and make adjustments based on new information and lessons learned

General management plans provide a broad approach to addressing user capacity, identifying desired conditions for resources and visitors and focusing more specific monitoring and management on areas where action is most likely needed to achieve conditions. Implementation-level plans, such as a future wilderness management plan, would provide more specific direction for addressing user capacity.

The last steps of user capacity decision making, which continue indefinitely, are monitoring the indicators and standards and taking management actions

to minimize impacts when needed. NPS staff would monitor indicators to determine if standards were being exceeded using techniques that could include non-systematic monitoring of visible impacts to trails or resources as part of regular and volunteer patrols, establishing systematic trail and resource assessments, reviewing special permit requests, and reviewing general information collected with respect to visitor trends, parking problems, vandalism, accidents and visitor complaints.

User capacity decision making is a continuous process; decisions are adjusted based on monitoring the indicators and standards. Management actions are taken to minimize impacts when needed. The indicators and standards included in this management plan would generally not change in the future. However, as monitoring of Ross Lake NRA's conditions continues, managers may decide to modify, add, or delete indicators if better ways are found to measure important changes in resource and social conditions. The results of Ross Lake NRA's monitoring efforts, related visitor use management actions, and any changes to Ross Lake NRA's indicators and standards would be available for public review.

Indicators and Standards

This general management plan includes identification of user capacity indicators and standards. Table 4.11 includes the indicators, standards, related monitoring, and potential future management strategies allocated by management zone that would be implemented as a result of this planning effort. These indicators and standards help translate the broader qualitative descriptions of desired conditions into measurable conditions.

Measurable indicators have been selected for monitoring key aspects of visitor experiences and resources within Ross Lake NRA. Standards that represent the points where visitor experience and resource conditions become unacceptable in each zone were then assigned based on desired conditions. The indicators would be monitored in each zone, and when necessary, management actions would be taken to ensure that visitor use and resource impacts remain within the established standards.

Table 4.11 identifies the indicators, standards, monitoring methods, and potential management actions for each management zone. These were developed in a workshop to address user capacity facilitated in November 2008 by the Cooperative Ecosystem Studies Unit of the University of Washington with the core planning team.

Table 4.11 Indicators and Standards

Zone	Indicator	Standard	Monitoring	Potential Management Actions
Indicator 1: Natural Resources- Social Trails				
Wilderness, Backcountry, Frontcountry, Hydroelectric	Social trails per mile of official trail (A social trail is a stretch of trampled vegetation or bare ground that is not part of the official trail system, which diverges significantly from the official trail, and is created and/or maintained by visitor traffic.)	The average number of social trails per mile of official trail would not exceed current conditions(2010)	Resource management monitoring projects and/or ranger patrols	Visitor information, signage, rehabilitating social trails, place natural barriers, create additional trails
Indicator 2: Natural Resources- Vegetation Impacts				
Wilderness, Backcountry, Frontcountry	Condition class assessment (or comparable categorical metric) of campsites/camps/ facilities	All camps/facilities should have a condition rating of fair or above	Resource management monitoring projects and/or ranger patrols	Visitor information, signage, trail delineation, additional hardening, reduction of party size, reduction of number of sites, selective closures
Indicator 3: Natural Resources- Invasive, Non-native Species				
Wilderness, Backcountry, Frontcountry, Skagit River, Hydroelectric	Infestations of invasive, non-native plant species	No new infestation of high priority species beyond baseline(2007)	Resource management monitoring projects and/or ranger patrols	Visitor information, signage, regulations, selective closures, removal of invasive, non-native species
Indicator 4: Natural Resources- Food Conditioned Habituated Wildlife				
Wilderness, Backcountry, Frontcountry, Hydroelectric	Incidents in which black bears obtain human food and/or attractants (such as toothpaste, deodorant, etc.)	Black bears should never obtain human food or attractants	Staff observations, visitor reports or accounts of incidents	Visitor information, signage, bear-safe food storage requirements, selective closures, on-site capture and release of animals, relocation of problem animals
Indicator 5: Natural Resources- Food Conditioned Habituated Wildlife				
Frontcountry	Instances of wildlife begging for and/or obtaining human food	Individual animals would not repeatedly beg for and/or obtain human food	Staff observations, visitor reports or accounts of incidents	Education, signage, increase staff presence in key areas at peak times, implement regulations preventing visitors from leaving food or feeding animals, on-site capture and release of animals, relocation of problem animals

Table 4.11 Indicators and Standards

Zone	Indicator	Standard	Monitoring	Potential Management Actions
Indicator 6: Cultural Resources- Archeological Resources				
Wilderness, Backcountry, Frontcountry, Skagit River	Archeological sites identified in the Archeological Sites Management Information System that have been found eligible or have not been evaluated for the National Register of Historic Places	Condition of sites does not drop below benchmark conditions 2010	Annual monitoring	Visitor education, signage, engineered protection or site hardening, limited access, selective closures
Indicator 7: Cultural Resources- Ethnographic Resources				
Wilderness, Backcountry, Frontcountry, Skagit River	Ethnographic sites identified in the Archeological Sites Management Information System that have been found eligible or have not been evaluated for the National Register of Historic Places	Condition of sites does not drop below benchmark conditions 2010	Annual monitoring	Visitor education, signage, engineered protection, limited access, selective closures
Indicator 8: Cultural Resources- Historic Structures				
Wilderness, Backcountry, Frontcountry, Skagit River	Historic structures identified in the List of Classified Structures that have been found eligible or have not been evaluated for the National Register of Historic Places	Condition of structures does not drop below benchmark conditions 2010	Annual monitoring	Visitor education, signage, engineered protection, limited access, selective closures
Indicator 9: Visitor Experience- Solitude				
Wilderness, Backcountry	Encounters with other visitor parties	Visitors would not encounter more than 10 other parties of visitors per day	Ranger patrols, visitor self-reporting surveys	Visitor education, voluntary registration, mandatory reservations or permit systems
Indicator 10: Visitor Experience- Camping Availability				
Wilderness, Backcountry	Nights when a campsite is not available at designated camping area	On 95 percent of visitor nights, parties with valid permits would find an available campsite at their designated camping area	Ranger patrols, visitor reports or accounts of incidents	Permit enforcement, increase locations where permit can be obtained, issue fewer permits

Table 4.11 Indicators and Standards

Zone	Indicator	Standard	Monitoring	Potential Management Actions
Indicator 11: Visitor Experience- Access to Information or Assistance				
Frontcountry, Hydroelectric	Visitor comments/complaints reporting lack of access to information or assistance	No more than 6 comments/complaints per year	Visitor reports or accounts of incidents received per year (calendar or fiscal) about lack of opportunity to obtain information or assistance	Visitor information, increase staff at high use locations
Indicator 12: Visitor Experience- Access to Wilderness Information				
Frontcountry	Visitor wait times at the Wilderness Information Center	Wait times to talk with staff would not exceed 15 minutes during peak times	Staff monitoring during peak times	Visitor information, increase staff, add locations for wilderness information
Indicator 13: Visitor Experience- Contact with Uniformed Staff				
Frontcountry	Visitor comments/complaints reporting lack of opportunity to interact with uniformed staff	No more than 6 comments/complaints received per year (calendar or fiscal) about lack of opportunity interact with uniformed staff	Visitor reports or accounts of incidents	Visitor information, increase uniformed staff at high use locations
Indicator 14: Visitor Experience- Access to Diablo Lake Overlook				
Frontcountry	Parking search times at Diablo Lake overlook	During peak use periods at Diablo Lake overlook the time that it takes visitors to find a space to park their vehicles would be less than 1 minute	Staff monitoring and/or ranger patrols	Visitor information, increase staff, parking regulations
Indicator 15: Visitor Experience-Aesthetics				
Skagit River	Visible human waste	Toilet paper and human waste would not be visible	Ranger patrols	Visitor information, additional facilities

Table 4.11 Indicators and Standards

Zone	Indicator	Standard	Monitoring	Potential Management Actions
Indicator 16: Visitor Experience- Rafting Party Encounters				
Skagit River	Rafting party encounters with other vessels	No more rafting encounters than baseline of current (2010) peak conditions in August and September	Ranger patrols, commercial users questionnaires	Visitor information, voluntary registration, registration/permit/scheduling systems
Indicator 17: Soundscapes- Ambient Sound Levels				
Wilderness, Backcountry, Frontcountry, Skagit River, Hydroelectric	Maximum ambient sound levels	Maximum sound levels never exceed 65 dB during day and 35 - 45 dB during night, depending on location	Automated acoustic monitoring	Analysis of data regarding sources of noise; visitor education; enforcement; area closures
Indicator 18: Soundscapes- Change in Sound Exposure				
Wilderness, Backcountry, Frontcountry, Skagit River, Hydroelectric	Hourly change in sound exposure	Hourly change in exposure doesn't exceed 3 dB 65 percent of the day and 85 percent of the night	Automated acoustic monitoring	Analysis of data regarding sources of noise; visitor education; enforcement; area closures
Indicator 19: Soundscapes- Audible Visitor- Generated Sounds				
Wilderness, Backcountry, Skagit River, Hydroelectric	Percentage of time when visitor generated sounds are audible	Visitor generated sounds are audible less than 25 percent of the time during day and 20 percent of the time during night	Automated acoustic monitoring	Analysis of data regarding sources of noise; visitor education; enforcement; area closures
Indicator 20: Soundscapes- Audible Watercraft Sounds				
Backcountry	Percentage of time when watercraft sounds are audible	Watercraft sounds are audible less than 15 percent of daytime hours and 10 percent of nighttime hours	Automated acoustic monitoring	Analysis of data regarding sources of noise; visitor education; enforcement; area closures

Table 4.11 Indicators and Standards

Zone	Indicator	Standard	Monitoring	Potential Management Actions
Indicator 21: Soundscapes- Campground Tranquility				
Frontcountry	Percentage of time that sound levels are above dB standard in campgrounds	Sound levels do not exceed 60 dB for more than 5 percent of daytime hours and 35 dB for more than 5 percent of nighttime hours	Automated acoustic monitoring	Analysis of data regarding sources of noise; visitor education; enforcement; area closures
Indicator 22: Soundscapes- Sounds during Interpretive Programs				
Frontcountry	Percentage of time that sound levels are above dB standard during interpretive programs	Sound levels do not exceed 52 dB for more than 5 percent of time during interpretive programs	Automated acoustic monitoring	Analysis of data regarding sources of noise; visitor education; enforcement; area closures



Bridge over Lightning Creek.

MITIGATION MEASURES COMMON TO ALL ALTERNATIVES

Mitigation measures are the practicable and appropriate methods that would be used under any alternative to avoid and/or minimize harm to natural and cultural resources, wilderness, visitors and the visitor experience, and socioeconomic resources when no other management alternative exists (such as avoidance). These mitigation measures have been developed using existing laws and regulations, best management practices, conservation measures, and other known techniques from past and present work in and around Ross Lake NRA.

The general management plan provides a management framework for Ross Lake NRA. Within this broad context, the alternatives include the following measures that may be used to minimize potential impacts from the implementation of the alternatives. These measures would be applied to all alternatives, subject to funding and staffing levels. Additional mitigation would be identified as part of implementation planning and for individual projects to further minimize resource impacts.

Management and Protection of Natural Resources

Potential mitigation measures identified as effective in addressing specific impacts of management decisions on natural resources, and applicable to any alternative, are listed below:

Air Quality

- implement a dust abatement program including the following potential actions: water or otherwise stabilize soils, cover haul trucks, employ speed limits on unpaved roads, minimize vegetation clearing, and revegetate with native species
- minimize NPS vehicle emissions by using the best available technology whenever possible
- encourage the public and commercial tour companies to employ methods that reduce emissions
- employ sustainable designs that reduce energy demands, thus reducing pollutant production

Natural Soundscapes

- implement standard noise abatement measures during NPS operations, including:

scheduling to minimize impacts in noise-sensitive areas, using the best available noise control techniques wherever feasible, using hydraulically or electrically powered impact tools when feasible, and locating stationary noise sources as far from sensitive areas as possible

- site and design facilities to minimize objectionable noise
- minimize idling of motors when power tools, equipment, and vehicles are not in use
- muffle above ambient noise whenever possible to reduce noise impacts

Lightscares and Night Skies

- replace existing outdoor lighting with fixtures that do not contribute to nighttime light pollution
- install energy-efficient lights equipped with timers and/or motion detectors so that light would only be provided when it is needed to move safely between locations
- use low-impact lighting, such as diffused light bulbs, and techniques such as downlighting in outdoor fixtures, to prevent light spill and preserve the natural lightscape and avoid light pollution

Hydrologic Systems including Wetlands

- time projects adjacent to or in waterways to occur during the dry season (late summer) or during reservoir drawdown (early spring)
- use bioengineering, engineered log jams and other techniques instead of rip-rap
- implement erosion control measures, minimize discharge to water bodies, and regularly inspect construction equipment for leaks of petroleum and other chemicals to prevent water pollution; minimize the use of heavy equipment in a waterway; wash heavy equipment prior to use in or near water bodies
- use bio-lubricants (such as biodiesel and hydraulic fluid)
- develop and implement a spill plan and acquire supporting equipment
- integrate runoff control systems into the designs of larger parking areas near water resources to minimize water pollution
- develop sediment control and prevention plans for projects that could impact water quality
- delineate wetlands and apply protection measures during projects; perform project

activities near wetlands in a cautious manner to prevent damage caused by equipment, or increase erosion, siltation, etc.

- consult with Washington Department of Fish and Wildlife for work below the ordinary high water mark of state owned waters

Soils

- build new facilities on soils suitable for development
- minimize soil erosion at construction sites by limiting the time that soil is left exposed and by applying other erosion control measures, such as erosion matting, silt fencing, and sedimentation basins in construction areas to reduce erosion, surface scouring, and discharge to water bodies
- revegetate construction areas with appropriate native plants in a timely manner
- work with the Natural Resource Conservation Service to complete the soil survey of Ross Lake NRA to provide some of the information needed for sustainable soil management
- conserve native topsoil in construction projects
- consult with U.S. Army Corps of Engineers

Vegetation

- monitor areas used by visitors (such as trails and campsites) for signs of native vegetation disturbance and use public education, revegetation of disturbed areas with native plants, erosion control measures, and barriers to control potential impacts on plants from erosion or social trails
- designate river and stream access/crossing points, and use barriers and closures to prevent trampling and loss of riparian vegetation
- develop revegetation plans for disturbed areas and require the use of genetically appropriate native species (revegetation plans should specify species to be used, seed/plant source, seed/plant mixes, site-specific restoration conditions, soil preparation, erosion control, ongoing maintenance and monitoring requirements, etc.; salvaged vegetation should be used to the extent possible)
- survey for rare plants prior to any ground-disturbing activities; disturbance to rare or unique vegetation would be avoided to the greatest extent possible
- implement an invasive, non-native plant management program (standard measures could include the following elements: use

only weed-free materials for road and trail construction, repair, and maintenance; ensure equipment arrives on-site free of mud or seed-bearing material; certify that stabilization materials (rice straw) are weed-free; identify areas of noxious weeds pre-project; treat noxious weeds or noxious weed topsoil before construction (such as, topsoil segregation, storage, herbicide treatment); soil or gravel should be covered with weed cloth to prevent weed seed introduction when the material is staged prior to using, when depositing ditch spoils along the roads, limit the movement of material to as close as possible to the excavation site; scrupulously and regularly clean areas that serve as introduction points for invasive, non-native plants (campgrounds, staging areas, maintenance areas, and corrals); revegetate with genetically appropriate native species; inspect rock and gravel sources to ensure these areas are free of noxious weed species; and monitor locations of ground-disturbing operations for at least five years following the completion of projects)

Fish and Wildlife

- employ techniques to reduce impacts on fish and wildlife, including visitor education programs, restrictions on visitor and NPS activities, and law enforcement patrols
- implement a wildlife protection program (standard measures would include project scheduling [season and/or time of day], project monitoring, erosion and sediment control, fencing or other means to protect sensitive resources adjacent to project areas, disposing of all food-related items or rubbish, salvaging topsoil, and revegetating)
- consult with National Oceanic and Atmospheric Administration (NOAA) Fisheries for projects within essential fish habitat
- consult with U.S. Fish and Wildlife Service for projects where listed species and their habitats occur

Special Status Species

Mitigation actions would occur during normal NPS operations as well as before, during, and after projects to minimize immediate and long-term impacts on rare, threatened, and endangered species. These actions may vary by project area, and additional mitigation measures may be added depending on the action and location. Many of the measures listed for vegetation,

wildlife, and water resources would also benefit rare, threatened, and endangered species by helping to preserve habitat. Further mitigation efforts the NPS would perform include the following:

- conduct surveys for rare, threatened, and endangered species as warranted
- locate and design facilities/actions/operations to avoid or minimize the removal of rare, threatened, and endangered species habitat; if avoidance is infeasible, minimize and compensate for adverse effects as appropriate and in consultation with the appropriate resource agencies
- plan work in areas in or near suitable threatened and endangered bird habitat as late as possible in the summer/fall
- conduct work outside of critical periods for the specific species when possible
- develop and implement restoration and/or monitoring plans as warranted; plans should include methods for implementation, performance standards, monitoring criteria, and adaptive management techniques
- for projects in or near streams, employ appropriate best management practices
- implement measures to reduce adverse effects of non-native plants and wildlife on rare, threatened, and endangered species
- protect and preserve critical habitat features, such as nest trees, whenever possible

Management and Protection of Cultural Resources

The protection of Ross Lake NRA's cultural resources is essential for understanding the past, present, and future relationship of people with the North Cascades ecosystem and the expressions of our cultural heritage. The NPS would pursue strategies to protect its cultural resources, including museum collections and archeological, historic, ethnographic, and archival resources, while encouraging visitors and employees to recognize and understand their value. The strategies would allow the integrity of Ross Lake NRA's cultural resources to be preserved unimpaired. They would also ensure that Ross Lake NRA is recognized and valued as an outstanding example of resource stewardship, conservation education and research, and public use.

Some of Ross Lake NRA's cultural resources are within designated wilderness. The Wilderness Act specifies that the designation of any areas of the park system as wilderness "shall in no manner lower the standards

evolved for the use and preservation of" such unit of the park system under the various laws applicable to that unit. Thus, the laws pertaining to historic preservation also remain applicable within wilderness. In accordance with NPS management policies, cultural resources that have been included in wilderness would be protected and maintained according to the pertinent laws and policies governing cultural resources, using management methods that are consistent with the preservation of wilderness character and values. These laws include the Organic Act, National Historic Preservation Act, the Archeological Resources Protection Act, the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act, and Executive Order 13007 that addresses government-to-government consultation.

Adverse impacts on historic properties listed in, determined eligible for listing in, or not yet assessed for eligibility to the National Register of Historic Places would be avoided, if possible. If adverse impacts could not be avoided, an assessment of effect and a treatment plan, if necessary, would be developed through a consultation process with all interested parties. In accordance with NPS management policies, proposed adverse effects would be assessed to determine whether the proposed actions constitute impairment of significant fundamental cultural resources.

Archeological Resources

Archeological surveys would precede ground-disturbance required for new construction or removal of eligible historic properties. Known archeological resources would be avoided to the greatest extent possible. If National Register listed, eligible or unassessed archeological resources could not be avoided, an appropriate treatment plan would be developed in consultation with the Washington State Historic Preservation Officer, National Advisory Council and associated American Indian tribes.

Until 2025, Ross Lake archeological resources would continue to be managed in compliance with the *Archeological Resources Mitigation and Management Plan*, established pursuant to City of Seattle and NPS settlement agreements as a condition of the FERC No. 553 license issued to the City.

If previously unknown archeological resources are discovered during project work, NPS cultural resources staff would be immediately informed, work in the immediate vicinity of the discovery would be halted and the location secured until the resources are identified, evaluated, and documented and an appropriate treat-

ment plan is developed, if necessary, in consultation with the Washington State Historic Preservation Office and associated American Indian tribes.

Historic Buildings and Structures

All project work relating to historic structures/buildings would be conducted in accordance with Director's Order 28 and the guidelines and recommendations of the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*. Typical mitigation measures for historic structures/buildings include measures to avoid adverse impacts, such as rehabilitation and adaptive reuse, designing new development to be compatible with surrounding historic properties, and screening new development from surrounding historic resources to minimize impacts on viewsheds, cultural landscapes and ethnographic resources.

Historic structures would be maintained or stabilized until appropriate preservation maintenance could be undertaken. Benign neglect would not be considered an appropriate management strategy. No National Register listed or eligible structure would be removed or allowed to decay naturally without prior review by park and region cultural resource specialists, including approval by the NPS regional director and consultation with the Washington State Historic Preservation Officer. Before a National Register listed or eligible structure is removed, appropriate documentation recording the structure would be prepared in accordance with Section 110(b) of the National Historic Preservation Act, and the documentation would be submitted to the Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER) or Historic American Landscape Survey (HALS) program, if deemed appropriate.

Historic structures that are within designated wilderness areas would be protected and maintained according to the pertinent laws and policies governing cultural resources using management methods that are consistent with the preservation of wilderness character and values. Laws pertaining to historic preservation remain applicable within wilderness but must generally be administered to preserve the area's wilderness character. Consultation of treatment would include appropriate consideration of the application of the provisions of the Wilderness Act in analyses and decision-making concerning cultural resources.

Cultural Landscapes

All project work relating to cultural landscapes would be conducted in accordance with Director's Order 28 and the guidelines and recommendations of the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. Typical mitigation measures for cultural landscapes include measures to avoid adverse impacts, such as designing new development to be compatible with surrounding historic properties and screening new development from surrounding cultural landscapes to minimize impacts on those landscapes and viewsheds.

Ethnographic Resources

The National Park Service would continue to consult with federally recognized Native American tribes with treaty resources in Ross Lake NRA on a government-to-government basis to identify ethnographic resources and develop appropriate strategies to mitigate impacts on these resources. Such strategies could include continuing to provide access to traditional use or spiritual areas and screening new development from traditional use areas to minimize impacts on ethnographic resources. Consultations with American Indians linked by ties of kinship, culture, or history to park lands would address the inadvertent discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony, and all provisions outlined in the Native American Graves Protection and Repatriation Act of 1990 would be followed.

Museum Collections

Mitigation measures related to museum collections consist of conservation of a collection through proper storage, handling, and exhibit of objects as specified in the *NPS Museum Handbook* and NPS Director's Order No. 24, NPS Museum Collections Management.

Management and Protection of Wilderness Values

A new wilderness management plan would be developed for the entire North Cascades NPS Complex, which would include Ross Lake NRA, more specific desired conditions would be developed for wilderness resources, visitor experiences, and management protocols.

In a broad sense, the NPS would manage the Stephen Mather Wilderness to preserve wilderness character, and would work to establish a monitoring program

that measures wilderness character within this wilderness. Recent interagency efforts (Landres et al, 2008) have defined the four primary elements of wilderness character that link directly to the statutory language of the 1964 Wilderness Act, as follows:

- untrammeled quality: wilderness is essentially unhindered and free from modern human control or manipulation
- natural quality: wilderness ecological systems are substantially free from the effects of modern civilization
- undeveloped quality: wilderness retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation
- solitude or primitive and unconfined quality: wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation

Minimum Requirement Process

The Wilderness Act directs that agencies administer wilderness to preserve wilderness character. The purpose of the minimum requirement process is to ensure that managers follow the direction of both the Wilderness Act and agency policy, and to reduce the effects of management on wilderness character and values. It provides a method for developing, evaluating, and selecting the actions that would be the least intrusive on wilderness character and values, while allowing the administration of the wilderness. The concept is applied to all management actions, programs, and activities within Ross Lake NRA that might affect wilderness and potential wilderness.

The minimum requirement concept is applied as a two-step process. The first step determines whether a proposed management action is appropriate and necessary for the administration of the area as wilderness and does not cause a significant impact to wilderness resources and character, in accordance with the Wilderness Act. The second step determines the techniques and types of equipment needed to ensure that impacts on wilderness resources and character are minimized. If the project is found to be appropriate and necessary, then the management method (tool or technique) is selected that would result in the least amount of impact to the wilderness resources and character.

The minimum requirement process provides a formalized method for developing alternative ways to address an issue, and to evaluate each alternative's effects on

wilderness character and wilderness resources. The minimum requirement process assists NPS managers in determining the appropriate environmental compliance.

Scenic Resources

Mitigation measures are designed to minimize human-made visual intrusions. These include the following:

- use facilities such as boardwalks and fences to route people away from sensitive natural and cultural resources while still permitting access to important viewpoints
- design, locate, and construct facilities in ways that minimize adverse effects on scenic views
- provide vegetative screening to mask unwanted visual intrusion of facilities or infrastructure

Socioeconomic Environment

During future planning and implementation of the approved general management plan for Ross Lake NRA, the National Park Service would pursue partnerships with tribes, local communities, and county governments to further identify potential impacts and mitigating measures that would best serve the interests and concerns of both the National Park Service and the local communities.

Sustainable Design and Aesthetics

Sustainable practices would be used in the selection of building materials and sources and building location and siting. Projects would use sustainable practices and resources whenever practicable by recycling and reusing materials, by minimizing materials, by minimizing energy consumption during the project, and by minimizing energy consumption throughout the lifespan of the facility produced.

ALTERNATIVES AND ACTIONS DISMISSED FROM FURTHER CONSIDERATION

The Council on Environmental Quality guidelines for implementing the National Environmental Policy Act (NEPA) requires federal agencies to analyze all "reasonable" alternatives that substantially meet the purpose and need for the proposed action. Under NEPA, an alternative may be eliminated from detailed study for the following reasons [40 CFR 1504.14 (a)]:

- “technical or economic infeasibility;” the inability to meet project objectives or resolve need for the project
- duplication of other less environmentally damaging alternatives
- conflicts with an up-to-date valid plan, statement of purpose and significance, or other policy; therefore would require a major change in that plan or policy to implement
- environmental impacts too great

The following alternatives or actions were considered during the alternatives development phase of the project, but were rejected because they met one or more of the above criteria.

External and Internal Boundary Modifications

The GMP planning team evaluated lands adjacent to Ross Lake NRA, and within the boundaries of the NRA but presently owned and managed by Seattle City Light in accordance with 1978 National Parks and Recreation Act (16 USC 1a-7(b)) and NPS Management Policies 2006 that mandate consideration of potential modifications to the external boundaries of national park units when developing or updating general management plans. The planning team also considered appropriate designations for Ross Lake NRA.

Except for the Hollywood area of Diablo Townsite which **is could be proposed for a land acquisition from exchange with SCL** under Alternatives B, C and D, no other boundary modifications to Ross Lake NRA would be proposed in the alternatives. For an analysis of boundary adjustments considered during the planning process and related land protection issues, see Appendix B.

Areas Considered for Boundary Modification but Dismissed from Consideration:

North Cascades National Park

The NPS dismissed from consideration changing the designation of Ross Lake NRA to North Cascades National Park. Ross Lake NRA was created as a separate unit primarily to accommodate Seattle City Light’s existing and proposed hydroelectric developments. These hydroelectric facilities (three large dams and reservoirs) have dramatically altered the natural landscape and hydrologic systems of the Skagit River and its tributaries. Congress also created Ross Lake NRA to enable enjoyment of a wider variety of recreational activities, including hunting and hiking with pets that

are prohibited in North Cascades National Park. Neither activity is creating a notable resource management or public safety concern.

The “National Park” name is generally associated with large areas with a variety of resources where natural resources are largely unaltered or in their natural state. “National Parks” that do have large-scale hydroelectric facilities were established in the early years of the national park system, such as Yosemite and Grand Teton, and before the “National Recreation Area” designation came into common naming practice. When North Cascades National Park and Ross Lake NRA were designated in 1968, areas with reservoirs were generally named “National Recreation Areas,” such as Bighorn Canyon NRA (1966) and Whiskeytown-Shasta-Trinity NRA (1972). Congress chose to designate the area a “National Recreation Area” based on its significant resources, existing hydroelectric facilities, and range of superlative recreational opportunities.

The NPS dismissed from consideration expanding the boundary of Ross Lake NRA into either the north or south units of North Cascades National Park. Such an expansion would reduce the area of the National Park proper, detract from the purposes and significance of the National Park, and afford no additional benefits to the resources and values of Ross Lake NRA.

Northeastern Skagit River Watershed

The planning team evaluated lands east of Ross Lake NRA that are managed by the U.S. Forest Service, including the North Cascades Highway corridor up to and including Washington Pass, the Pasayten Wilderness, and Forest Service lands that comprise the watershed for the Skagit River (approximately 208,390 acres).

Rationale for evaluation included (a) responding to public comments that requested consideration of such an expansion of Ross Lake NRA; (b) consideration of U.S. Forest Service-administered lands along the highway corridor for access as an eastern gateway to the NRA; (c) consideration of the Skagit River watershed as a logical geographic boundary for ecological purposes, recognizing that drawing boundaries along ecological lines such as watersheds helps to protect and conserve various ecological functions and values; and (d) the administrative history of the establishment of the North Cascades NPS Complex.

A preliminary conclusion has been made that a boundary modification is not warranted given that the predominant U.S. Forest Service management activities

are compatible with the purposes of Ross Lake NRA. USFS management is geared toward ongoing support of recreational activities, though there are limited potential threats from mining on these Forest Service lands; the designation of the Pasayten Wilderness affords resource protection; and since the creation of the NRA and Park the U.S. Forest Service has a track record for administering the area primarily for conservation purposes.

The GMP alternatives address any remaining concerns about management of this area by calling for increased collaboration and cooperation with the U.S. Forest Service.

Lower Bacon Creek Watershed

The planning team evaluated lands southwest of Ross Lake NRA which primarily include U.S. Forest Service lands within the lower Bacon Creek watershed, an ecologically significant area and important habitat for anadromous species of fish such as salmon. While the upper portion of the watershed is protected within the confines of North Cascades National Park, substantial portions of the lower Bacon Creek watershed are presently under U.S. Forest Service jurisdiction.

Rationale for evaluation included (a) responding to public comments that requested consideration of expansion of Ross Lake NRA; (b) consideration of U.S. Forest Service-administered lands adjacent to Ross Lake NRA; and (c) consideration of the watersheds as boundaries to protect and conserve various ecological functions and values.

A preliminary conclusion has been made that a boundary modification is not warranted because other alternatives for management and resource protection presently exist. The U.S. Forest Service will be revising in 2012 the forest plan for the Mount Baker-Snoqualmie National Forest, including the lands within the lower Bacon Creek watershed. This pending planning effort will provide an opportunity for the U.S. Forest Service to address present concerns in accordance with the spirit and intent of ecosystem management.

The NPS recognizes that Ross Lake NRA and the North Cascades NPS Complex would continue to lack boundaries clearly aligned along ecosystem lines. This lack of an ecosystem-based boundary with a single agency administrator means conservation of the greater North Cascades ecosystem requires a commitment among multiple agency partners, including the NPS, to coordinate and cooperate in a broader conservation vision. Interagency ecosystem management

can be more challenging and less efficient than single-agency administration and management, and lack of commitment or engagement of any one agency partner has the potential to inhibit conservation efforts. The GMP alternatives address this concern by calling for increased collaboration and cooperation with the U.S. Forest Service and Canadian agencies for interagency and transboundary ecosystem management.

International Park Designation

It is widely recognized that transboundary management is beneficial, useful, and often essential for the management of ecosystem processes and functions that do not recognize human imposed boundaries on the landscape. For example, the headwaters of the Skagit River originate in Canada; and wildlife, invasive, non-native species, and fire cross the international boundary at will. Visitors also cross the international border between the U.S. and Canada on long-distance recreational trails. The primary access to Hozomeen is through Canada along the Hope to Hozomeen road. As a result of these realities, the National Park Service, British Columbia Parks, and the Canadian Ministry of the Environment have worked together for decades to cooperatively manage resources and visitor use.

During the planning process, the idea of an international park designation surfaced in planning team discussions. The designation could further solidify cooperation and transboundary management through tandem federal legislation in the United States and Canada. Procedurally, this GMP does not have the authority to designate the international park, rather the GMP would have provided a recommendation for Congressional legislation to designate the international park.

This action was dismissed from further consideration because a working relationship between Canadian and U.S. land managers already exists, and cooperative management continues through joint planning, programs, and projects. The designation is not necessary for a long-term collaborative relationship. This GMP, however, does not preclude other local and/or interested individuals or entities from developing proposals or working toward such a designation.

Moving the Wilderness Information Public Function to Newhalem

The Wilderness Information Center is currently located on the Marblemount Ranger Station, approximately one mile from the main North Cascades Highway. This

office is one of the designated locations where visitors can obtain their backcountry permits prior to the start of an overnight backcountry trip. The location of the Wilderness Information Center, and process by which visitors obtain permits for backcountry travel, are issues that are evaluated in this plan.

During the planning process, the idea of moving the public function of the Wilderness Information Center to the current North Cascades Visitor Center in Newhalem was considered in team discussions. The intent of the idea was to concentrate more visitor information functions in fewer locations for operational efficiency and reduce the confusion for visitors who have to obtain permits in what may be perceived as an obscure location. If the public function of the wilderness program was moved to Newhalem, the Marblemount Ranger Station could be converted to administrative use only.

This action was dismissed from further consideration and analysis in the action alternatives for several reasons. One concern related to the operational efficiency that would be lost by separating the public wilderness information function from other program functions, such as search and rescue. Staff expressed concern that separating these functions could delay response times for emergencies as many staff work in both program areas. There was also concern expressed about the effect on visitors who use the Cascade River Road as an access point for backcountry travel. Obtaining backcountry permits in Marblemount is more convenient than Newhalem for travelers who are coming from the west side of Ross Lake NRA.

While this idea is not evaluated in greater detail in this GMP, should the permit and reservation system for backcountry travel make it feasible to obtain permits remotely or other circumstances change that make this idea viable, this GMP should not preclude consideration of this idea in the future.

IDENTIFICATION OF THE ENVIRONMENTALLY PREFERRED ALTERNATIVE

In accordance with NPS Director's Order-12, Conservation Planning, Environmental Impact Analysis, and Decision-making, the NPS is required to identify the "environmentally preferred alternative" in environmental documents. The environmentally preferred alternative is "the alternative that will promote the national environmental policy expressed in NEPA (Sec. 101(b))".

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act (NEPA) of 1969, which is guided by the Council on Environmental Quality. The criteria outlined in NEPA Sec. 101(b) considers:

1. Fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assuring for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. Attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. Preserving important historic, cultural and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice;
5. Achieving a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
6. Enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources.

The Council on Environmental Quality states that the environmentally preferable alternative is "the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources (46 FR 18026 – 46 FR 18038)." According to NPS NEPA Handbook (DO-12), through identification of the environmentally preferred alternative, the NPS decision-makers and the public are clearly faced with the relative merits of choices and must clearly state through the decision-making process the values and policies used in reaching final decisions.

After the environmental consequences of the alternatives were analyzed, each alternative was evaluated to see how well the goals from NEPA section 101(b) listed above are met.

The following discussion summarizes the analysis and presents the rationale for the selection of the environmentally preferred alternative.

Alternative A, the No Action Alternative, represents the continuation of current management practices. Ross Lake NRA would continue to be managed in accordance with approved plans and policies. The emphasis of this alternative would be to respond to resource im-

pacts and visitor demands as they occur, without substantially changing staff, programs, facilities, or funding support. No comprehensive plan to address potential issues proactively would be formulated. Many traditional uses in Ross Lake NRA would continue, the wilderness areas would continue to be managed in accordance with the principles of wilderness stewardship, and roads and facilities would be maintained. Some infrastructure would be gradually replaced with more sustainable facilities and infrastructure.

Resource preservation goals (1, 4) and sustainability goals (3, 6) would not be met to the same degree as in other alternatives without expanded resource preservation efforts and programs and replacement of facilities and infrastructure with those that are more sustainable and provide added resource protection. Visitor experience goals (2, 3, 5) would be achieved to a lesser degree than under other action alternatives by maintaining existing visitor services, facilities and opportunities.

Alternative B, the Preferred Alternative, would focus on the concept that Ross Lake NRA serves as a gateway to millions of acres of surrounding wilderness. The North Cascades Highway corridor serves as a window to the wilderness of the North Cascades, but also provides diverse recreational opportunities for visitors consistent with a traditional national park experience. In this alternative, park management would enhance efforts to protect and preserve natural and cultural resources, with an emphasis on wilderness protection, through leadership in integrated resource protection fulfilling resource preservation goals (1,4) while also providing a range of quality recreation, interpretation, and education opportunities for visitors that are consistent and appropriate in a national park setting, fulfilling visitor experience goals (2, 3,5). Proactive leadership and enhanced partnerships with other agencies and organizations such as the North Cascades Institute (NCI) and Seattle City Light (SCL) would enhance resource preservation efforts and opportunities for visitors. Operational and facility management strategies that include making better use of facilities along the North Cascades Highway as opposed to new construction as much as possible also provide a more sustainable future for Ross Lake NRA, fulfilling sustainability goals (3,6). Taken as a whole, this alternative is the environmentally preferred alternative because it would best meet all six goals stated in the National Environmental Policy Act.

Alternative C would focus on the role of Ross Lake NRA in preserving the greater North Cascades ecosystem which extends across two additional National

Park System units, two national forests, as well as provincial parks and protected areas across the Canadian border. The emphasis of park management and education efforts would focus on broader ecosystem issues through coordinated regional and environmental stewardship, fulfilling resource preservation goals (1,4). This alternative also emphasizes sustainable facilities and operations, fulfilling sustainability goals (3,6). However, this alternative would only partially meet the visitor experience goals (2,3,5). This alternative provides greater limitations on visitor access and recreational experiences and opportunities through its management zoning of Ross Lake NRA. A greater percentage of Ross Lake NRA is zoned backcountry in this alternative, limiting the range of visitor experiences that are available throughout Ross Lake NRA and on the Gorge, Diablo, and Ross lakes. Therefore, this alternative would not meet visitor experience goals to the same degree as other alternatives.

Alternative D would focus on improving connections between visitors and the outdoors through a variety of techniques, including enhanced recreation and learning opportunities. The emphasis of park management would be on engaging visitors and building stewardship through more hands-on experiential recreation and educational opportunities in Ross Lake NRA. The greatest percentage of frontcountry zoning exists in this alternative, providing greater access to park resources than Alternative C, fulfilling visitor experience goals (2, 3, 5) but greater efforts would be undertaken to maintain recreation facilities in their existing locations and expand utility services, which may not best preserve natural resources. Additionally, this alternative provides for the potential demolition of non-National Register properties in Hollywood if acquired by the NPS, which may not best preserve cultural resources. Therefore, this alternative would only partially fulfill resource preservation goal (1).

SECTION 106 SUMMARY

Section 106 of the National Historic Preservation Act (16 USC 470 e seq.) requires (1) that federal agencies consider the effect of their projects on historic properties (including archeological resources) eligible for the National Register of Historic Places, and (2) that agencies give the Advisory Council on Historic Preservation and the state historic preservation office an opportunity to comment on projects.

As required by section 110 of the National Historic Preservation Act, federal land management agencies survey cultural resources on lands under their jurisdic-

tion and evaluate these resources by applying criteria for the National Register of Historic Places. A number of surveys, inventories, and studies have been completed or are ongoing, and further resource evaluation and documentation will continue in Ross Lake NRA.

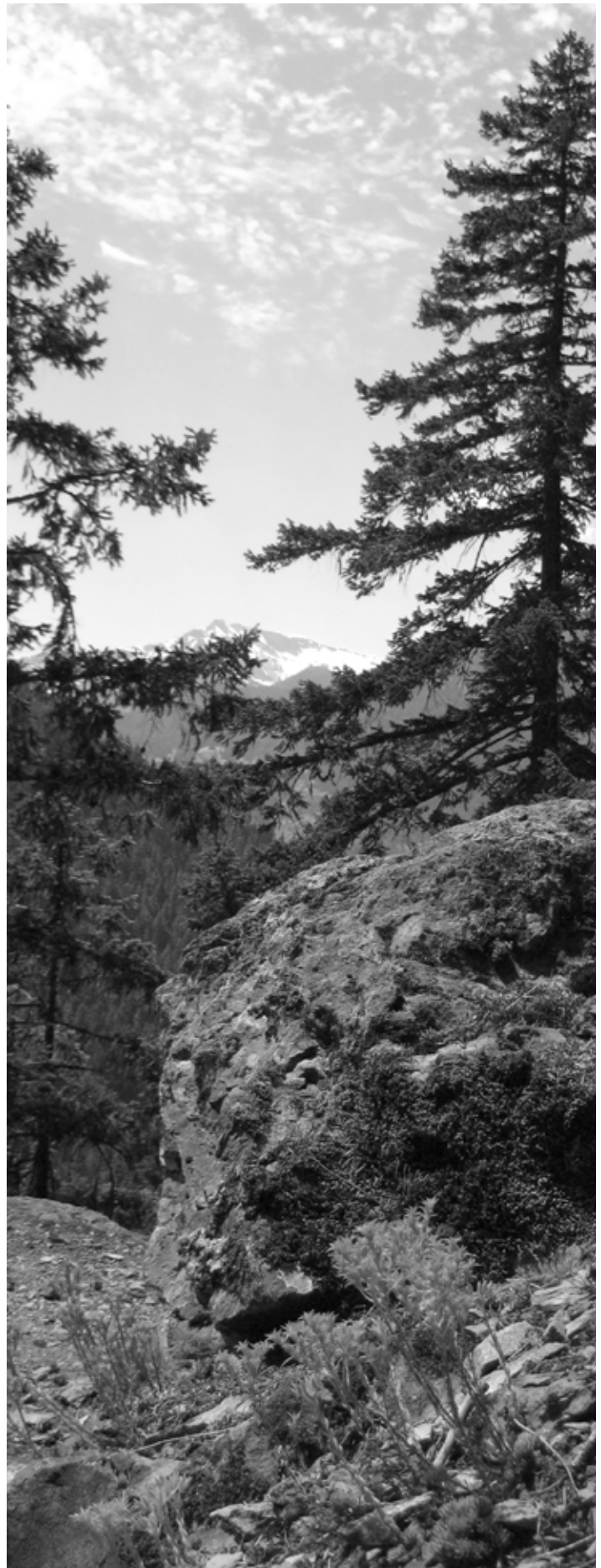
At this time, there is not enough information to identify an undertaking-determined area of potential effect or make a determination of effect consistent with section 106 of the National Historic Preservation Act of 1966 (as amended, 16 U.S.C. 470-470w-6) for the actions related to historic properties. Undertakings Actions that have the potential to effect resources eligible for or listed on the National Register of Historic Places will be incorporated into a programmatic agreement that is tied to the general management plan. The programmatic agreement would identify proposed actions for which further section 106 consultation is required, such as any ground disturbing construction activities for Ross Dam trailhead parking or undertakings actions related to the Hollywood District of the Town of Diablo, will fulfill all procedural requirements specified in 36 CFR 800 (as amended in August, 2004). As more information is available, NPS staff will continue to consult with the SHPO.

In the interim, no historic properties would be inalterably changed without consultation with the State Historic Preservation Office and the Advisory Council on Historic Preservation, as appropriate. Archeological sites would be protected in an undisturbed condition unless it is determined through formal processes that disturbance or natural deterioration is unavoidable and when disturbance is unavoidable appropriate treatment would follow in consultation with the Washington State Historic Preservation Office, the three Skagit River tribes (Upper Skagit, Sauk-Suiattle, and Swinomish) and Seattle City Light (the latter only in those sites managed under FERC relicense No. 553).

Copies of this draft GMP/EIS have been distributed to affected/concerned Native American Tribes, the Washington State Historic Preservation Office, and the Advisory Council on Historic Preservation for review and comment related to compliance with section 106 of the National Historic Preservation Act.

SUMMARY OF IMPACTS

Table 4.12 provides a summary of the environmental impacts of implementing each alternative, organized by impact topic. Please see Volume II, Chapter 6 for the complete analysis of environmental consequences.



East Bank Trail.

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative A: No Action	Alternative B: Preferred Alternative
IMPACTS ON NATURAL RESOURCES			
Air Resources	1	<p>Direct and indirect impacts to air quality under Alternative A would remain negligible to minor and adverse. These impacts would result from emissions associated with park operations and visitor use. Wildland fire would occasionally result in minor to moderate adverse impacts to air quality, primarily via impacts associated with smoke, particulate matter and visibility reductions. Cumulative impacts to air quality would remain negligible to minor, because the air quality within Ross Lake NRA is predominately influenced by human activities outside of Ross Lake NRA, including regional and global sources of pollution. The management actions proposed under Alternative A would have short-term negligible to minor adverse impacts on air resources. There would be no derogation or impairment of air resources within Ross Lake NRA.</p>	<p>Direct and indirect impacts to air quality under Alternative B would generally be similar to Alternative A, except for negligible beneficial impacts (reduced emissions) from prohibiting 2-stroke engines on Ross Lake. Cumulative impacts to air quality would generally be similar to Alternative A, because the air quality within Ross Lake NRA is predominately influenced by human activities outside of Ross Lake NRA, including regional and global sources of air pollution. These impacts would range from minor to possibly major, as there is a great deal of uncertainty over the planning horizon as to how air resource–related impacts will evolve in the face of rapidly changing technologies and increased awareness of the need to take aggressive measures to reduce fossil fuel consumption and human-caused sources of greenhouse gas emissions.</p> <p>The management actions proposed under Alternative B would have short-term negligible to short-term major adverse impacts, primarily from wildfires, on air resources. There would be no impairment of air resources within Ross Lake NRA as a result of implementing Alternative B.</p>
Natural Soundscapes	2	<p>Impacts to the natural soundscape would vary based on the time of year, duration of the impact, and location. Major adverse impacts would occur in the daytime during peak use in heavily developed areas such as Colonial Creek campground, where noise events are closely spaced together. Minor impacts would occur in the wintertime along closed portions of the highway, and year-round along the Skagit River and in wilderness. Minor to moderate impacts would occur on the reservoirs due to boat and seaplane use. Cumulative impacts would range from minor to major. Implementation of Alternative A would not result in impairment to this resource or value.</p>	<p>Under Alternative B, many actions would be taken that would result in further protection or improvement in the natural soundscape compared to current conditions. Impacts would vary based on the time of year and location and would range from minor to moderate. Minor impacts would occur along the highway during the wintertime and as a result of expansion of activities and facilities. Minor to moderate impacts would occur during peak use times along the highway and on the reservoirs due to an increase in boating opportunities. Cumulative impacts would range from minor to moderate. Implementation of Alternative B would not result in impairment.</p>

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative C	Alternative D
IMPACTS ON NATURAL RESOURCES			
Air Resources	1	<p>Similar to Alternatives B, direct and indirect impacts to air quality would generally be negligible to minor and adverse. Cumulative impacts to air quality would remain negligible to minor, because the air quality within Ross Lake NRA is predominately influenced by human activities outside of Ross Lake NRA, including regional and global sources of pollution. The management actions proposed under Alternative C would generally be negligible to minor and adverse. Impacts from wildland fire could be adverse and major, but would not endure. There would be no impairment of air resources within Ross Lake NRA.</p>	<p>Similar to Alternatives B and C, direct and indirect impacts to air quality would generally be negligible to minor and adverse. Cumulative impacts to air quality would remain negligible to minor, because the air quality within Ross Lake NRA is predominately influenced by human activities outside of the NRA, including regional and global sources of pollution. The management actions proposed under Alternative D would generally be negligible to minor and adverse. Impacts from wildland fire could be adverse and major, but would not endure. No impairment of air resources.</p>
Natural Soundscapes	2	<p>Under Alternative C, several more actions would be taken that would result in further protection or improvement in the natural soundscape compared to current conditions. Impacts would vary based on the time of year and location and would range from minor to moderate. Minor impacts would occur along the reservoirs, and moderate impacts would occur during peak use times along the highway. Cumulative impacts would range from minor to moderate. Implementation of Alternative C would not result in impairment.</p>	<p>Under Alternative D, some actions would be taken that would result in protection or improvement in the natural soundscape compared to current conditions. Impacts would vary based on the time of year and location and would range from minor to moderate. Minor impacts would occur along the highway during the wintertime, as a result of expansion of activities and facilities, and due to an expansion in boat transportation opportunities. Minor to moderate impacts would occur during peak use times along the highway. Cumulative impacts would range from minor to moderate. Implementation of Alternative D would not result in impairment.</p>

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative A: No Action	Alternative B: Preferred Alternative
<p>Water Resources (including Water Quality, Hydrologic Systems and Processes, and Hydraulic Processes)</p>	<p>3</p>	<p>Direct and indirect adverse impacts to water quality would range from negligible to minor and adverse. Impacts would primarily be associated with operations and maintenance related activities. There would be negligible impacts to hydrology. Impacts to hydraulics would be localized, long-term, adverse and of negligible to moderate intensity. These impacts would be primarily associated with local manipulation of hydraulics to protect roads, campgrounds and facilities from erosion. Cumulative impacts to water resources would be negligible to major (depending upon location), long-term and adverse because there would be no substantive changes to existing park operations or operations associated with the Skagit River Hydroelectric Project. Moreover, the impacts from climate change on water resources are expected to remain relatively small within the 15-20 year lifespan of this plan. Direct and indirect adverse impacts to water resources would remain negligible to moderate and cumulative impacts would be moderate to major because there would be no substantial changes to current management. Therefore, there would be no impairment of water resources under Alternative A.</p>	<p>Impacts to water quality would range from negligible to minor and adverse. Impacts would be associated with NPS operations and maintenance related activities, including road and facility maintenance, and boating operations. There would also be impacts stemming from the industrial uses associated with SCL, with motor vehicle use, and with maintenance of the North Cascades Highway corridor. There would be negligible impacts to hydrology. Impacts to hydraulics would be localized, long-term, adverse and of negligible to moderate intensity. These impacts would be primarily associated with local manipulation of hydraulics to protect roads, campground and facilities from erosion. Cumulative impacts to water resources would be negligible to moderate, long-term and adverse because there would be no substantive changes to existing park operations or operations associated with the Skagit River Hydroelectric Project. Moreover, the impacts from climate change on water resources (water quantity, quality and hydrology) are expected to gradually increase within the 15-20 lifespan of this plan, but then accelerate rapidly beyond the planning horizon (UWA Climate Impacts Group, 2009).</p> <p>Direct, indirect and cumulative adverse impacts to water resources would remain negligible to moderate because there would be no substantial changes to current management. Therefore, there would be no impairment of water resources under Alternative B.</p>
<p>Geologic Resources and Processes (including Soils)</p>	<p>4</p>	<p>Alternative A would cause minor to moderate, long-term, adverse impacts to the geologic resources locally within Ross Lake NRA and negligible to minor overall, primarily from maintenance of the existing infrastructure of roads, trails, campgrounds and facilities. These actions would also manipulate some hydraulic processes to reduce erosion, causing minor indirect effects to some surficial</p>	<p>Direct and indirect impacts to soils and geologic resources from recreation-related activities would be negligible to minor, long-term and adverse. Impacts from management of facilities and the transportation infrastructure would be minor to moderate, long-term and adverse. Cumulative impacts from past and reasonably foreseeable future management actions associated with</p>

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative C	Alternative D
<p>Water Resources (including Water Quality, Hydrologic Systems and Processes, and Hydraulic Processes)</p>	<p>3</p>	<p>Impacts to water quality would range from negligible to minor and adverse. Impacts would be associated with NPS operations and maintenance related activities, including road and facility maintenance, and boating operations. There would also be impacts stemming from the industrial uses associated with SCL, with motor vehicle use, and with maintenance of the North Cascades Highway corridor.</p> <p>There would be negligible impacts to hydrology. Impacts to hydraulics would be localized, long-term, adverse and of negligible to moderate intensity. These impacts would be primarily associated with local manipulation of hydraulics to protect roads, campgrounds and facilities from erosion. Cumulative impacts to water resources would be negligible to minor, long-term and adverse because there would be no substantive changes to existing park operations or operations associated with the Skagit River Hydroelectric Project. Moreover, the impacts from climate change on water resources (water quantity, quality and hydrology) are expected to gradually increase within the 15-20 year lifespan of this plan, but then accelerate rapidly beyond the planning horizon (UWA Climate Impacts Group, 2009). Direct, indirect and cumulative adverse impacts to water resources would remain negligible to moderate because there would be no substantial changes to current management. Therefore, there would be no impairment of water resources under Alternative C.</p>	<p>Impacts to water quality would range from negligible to minor and adverse. Impacts would be associated with NPS operations and maintenance related activities, including road and facility maintenance, and boating operations. There would also be impacts stemming from the industrial uses associated with SCL, with motor vehicle use, and with maintenance of the North Cascades Highway corridor. There would be negligible impacts to hydrology. Impacts to hydraulics would be localized, long-term, adverse and of negligible to moderate intensity. These impacts would be primarily associated with local manipulation of hydraulics to protect roads, campground and facilities from erosion. Cumulative impacts to water resources would be negligible to minor, long-term and adverse because there would be no substantive changes to existing park operations or operations associated with the Skagit River Hydroelectric Project. Moreover, the impacts from climate change on water resources (water quantity, quality and hydrology) are expected to gradually increase within the 15-20 year lifespan of this plan, but then accelerate rapidly beyond the planning horizon (UWA Climate Impacts Group, 2009). Direct, indirect and cumulative adverse impacts to water resources would remain negligible to moderate because there would be no substantial changes to current management. Therefore, there would be no impairment of water resources under Alternative D.</p>
<p>Geologic Resources and Processes (including Soils)</p>	<p>4</p>	<p>Direct and indirect impacts to soils and geologic resources from recreation-related activities would be negligible to minor, long-term and adverse. Impacts from management of facilities and the transportation infrastructure would be adverse, negligible to minor and long-term. Cumulative impacts from past and reasonably foreseeable management actions would range from negligible to</p>	<p>Direct and indirect impacts to soils and geologic resources from recreation-related activities would be negligible to minor, long-term and adverse. Impacts from management of facilities and the transportation infrastructure associated with the North Cascades Highway and Skagit Hydroelectric Project would be long-term, moderate to major and adverse. Cumulative impacts from past</p>

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative A: No Action	Alternative B: Preferred Alternative
Geologic Resources and Processes (including Soils) <i>(continued)</i>	4	geologic resources by locally modifying the underlying geologic processes that are fundamental to the dynamic landscape of North Cascades. Cumulative impacts would remain negligible to minor and long-term. Impacts to geologic resources would be negligible to minor. There would be no impairment of surficial geologic resources.	hydroelectric projects and the North Cascades Highway primarily beyond the scope of NPS jurisdiction would be moderate to major and long-term. Adverse impacts associated with the GMP would range from negligible to moderate in intensity. There would be no major, long-term adverse impacts from NPS management actions. There would be no impairment of soils and geologic resources as a result of implementing Alternative B.
Vegetation (including Special Status Species)	5	Alternative A would continue to result in negligible to minor direct, indirect and cumulative impacts to vegetation, primarily from maintenance-related activities associated with roads, trails, campgrounds. There would be no impairment to vegetation as a result of Alternative A.	Alternative B would have negligible to moderate, adverse impacts on vegetation in regard to management of the transportation and administrative infrastructure. Recreation-related impacts would be adverse and negligible to minor. Suppression of natural wildfires would have long-term, adverse and moderate to major impacts on vegetation. Cumulative impacts to vegetation would be adverse for areas affected by continued development and visitor use, and beneficial for areas that would be restored and revegetated. Impacts to vegetation would generally be negligible to moderate. There would be no impairment of vegetation resources.
Fish and Wildlife (including Special Status Species)	6	Consumptive recreational uses such as hunting and fishing would continue to cause minor adverse impacts to fish and wildlife populations. Other recreational uses within Ross Lake NRA would have negligible to minor impacts, primarily associated with temporary disturbance such as noise and transient human presence. Park management and operations would continue to result in minor direct, indirect and cumulative impacts to fish and wildlife, primarily due to localized disturbance of habitats to operate and maintain the transportation and facility infrastructure within Ross Lake NRA. These management actions may affect, but are not likely to adversely affect federally listed species. Direct, indirect and cumulative impacts would remain minor to moderate and adverse.	Impacts to wildlife from hunting and fishing would continue to cause negligible to minor impacts to fish and wildlife populations. Recreational use and various park operations would continue cause negligible to minor long-term impacts to wildlife. Facility closure and or relocation would reduce habitat fragmentation and have a negligible to minor beneficial impact on fish and wildlife. The cumulative effect of human-forced climate change would be uncertain, but likely to be adverse. There would be no impairment of fish and wildlife resources.

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative C	Alternative D
Geologic Resources and Processes (including Soils) <i>(continued)</i>	4	moderate in intensity. There would be no major, long-term adverse impacts from NPS management actions. There would be no impairment of soils and geologic resources as a result of implementing Alternative C.	and reasonably foreseeable management actions would be long-term and major. There would be no impairment of soils and geologic resources as a result of implementing Alternative D.
Vegetation (including Special Status Species)	5	Alternative C would have negligible to moderate, adverse impacts on vegetation in regard to management of the transportation and administrative infrastructure. Recreation-related impacts would be negligible to minor, and adverse. Suppression of natural wildfires would have long-term, adverse and moderate to major impacts on vegetation. Cumulative impacts to vegetation would be adverse for areas affected by continued development and visitor use, and beneficial for areas that would be restored and revegetated. Impacts to vegetation would generally remain negligible to moderate. There would be no impairment of vegetation resources.	Alternative D would have negligible to moderate, adverse impacts on vegetation in regard to management of the transportation and administrative infrastructure. Recreation-related impacts would be negligible to minor, and adverse. Suppression of natural wildfires would have long-term, adverse and moderate to major impacts on vegetation. Cumulative impacts to vegetation would be adverse for areas affected by continued development and visitor use, and beneficial for areas that would be restored and revegetated. Impacts to vegetation would generally remain negligible to moderate. There would be no impairment of vegetation resources as a result of implementing Alternative D.
Fish and Wildlife (including Special Status Species)	6	Direct and indirect impacts to fish and wildlife would be negligible to minor in regard to impacts from hunting and fishing (a consumptive use) and for general recreation use of the area. NPS management and operations would cause negligible to moderate impacts to fish and wildlife in limited areas, primarily those areas associated with the park's visitor service infrastructure. Cumulative impacts from NPS management actions would be negligible to minor. Most cumulative adverse impacts would result from management activities outside the boundary of Ross Lake NRA, or associated with the hydroelectric facilities. The cumulative effect of human-forced climate change would be uncertain, but likely to be adverse. Alternative C would cause	Direct and indirect impacts to fish and wildlife would be negligible to moderate in regard to impacts from hunting and fishing (a consumptive use) and for general recreation use of the area. NPS management and operations would cause negligible to moderate impacts to fish and wildlife in limited areas, primarily those areas associated with the park's visitor service infrastructure. Cumulative impacts from NPS management actions would be negligible to minor. Most cumulative adverse impacts would result from management activities outside the boundary of Ross Lake NRA, or associated with the hydroelectric facilities. The cumulative effect of human-forced climate change would be uncertain, but likely to be adverse. There would be no

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative A: No Action	Alternative B: Preferred Alternative
Fish and Wildlife <i>(continued)</i>	6	<p>The cumulative effect of human-forced climate change would be uncertain, but likely to be adverse. There would be no impairment of fish and wildlife species or their habitats.</p>	
IMPACTS ON CULTURAL RESOURCES: SECTION 106 SUMMARY			
Archeological Resources	7	<p>Activities associated with the archeology program would contribute moderate long-term benefits from enhanced preservation activities and increased understanding and awareness of resources. Avoidance of National Register eligible or -listed archeological resources during excavation, construction, and demolition would result in no adverse effect. If, however, archeological resources could not be avoided, the historic property would be managed in accordance with 36 CFR Part 800. Implementation of Alternative A would not contribute to overall adverse cumulative effects on archeological resources. There would be no impairment to this resource as a result of implementing Alternative A.</p>	<p>Increased emphasis on paleoecological investigations and expanded partnership opportunities for research would contribute to long-term archeological preservation objectives and have moderate long-term benefits. Adverse impacts associated with new construction would likely be minor and localized. Cumulative impacts would be the same as Alternative A and implementation of Alternative B would not contribute to cumulative adverse impacts. There would be no impairment to this resource or value as a result of implementing Alternative.</p>
Historic Structures and Cultural Landscapes	8	<p>The implementation of Alternative A would have no adverse effect on the historic structures and cultural landscapes of Ross Lake NRA. The continued program of cultural resources management in the park, including preservation and maintenance activities, would have minor to moderate beneficial impacts on these resources. The magnitude of impacts to the Hollywood district could range from no effect to major and adverse depending on the outcome of National Register Eligibility determinations and SCL's plans to concentrate operations in Newhalem and reduce their presence in Diablo. The cumulative effects from past activities could have adversely affected these resources. Ongoing cultural resource management, such as the identification, preservation, and maintenance of historic structures and cultural landscapes, has resulted in minor beneficial cumulative effects, resulting in no adverse effect. Alternative A would contribute modestly</p>	<p>The implementation of Alternative B would result in long-term, beneficial effects to historic buildings and cultural landscapes through preservation treatments that emphasize adaptive reuse and education or interpretive potential. Should the NPS acquire Hollywood from SCL, there could be additional benefits to historic structures and cultural landscapes give the NPS's preservation mission. Acquisition of Hollywood and potential future uses that involve a mix of opportunities for the NPS, park partners and visitors could result in increased support for historic preservation through education and personal experiences and contribute long-term moderate benefits to historic properties. Adverse impacts to individual properties could range from minor to major depending on the level of significance for the individual property affected and the action taken. Alternative B would not contribute to the adverse cumulative effects. There would be no</p>

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative C	Alternative D
Fish and Wildlife <i>(continued)</i>	6	generally negligible to minor impacts to fish and wildlife resources. There would be no impairment to this resource or value as a result of implementing Alternative C.	impairment to this resource or value as a result of implementing Alternative D.
IMPACTS ON CULTURAL RESOURCES: SECTION 106 SUMMARY			
Archeological Resources	7	Impacts from implementation of Alternative C would be similar to Alternative B and would result in moderate long-term benefits to archeological resource, even though Alternative C does not include as extensive integration with interpretation and education opportunities. Cumulative impacts would be the same as Alternative A. Alternative C would not contribute to adverse cumulative impacts. There would be no impairment to this resource or value as a result of implementing Alternative C.	Implementing Alternative D would result in moderate long-term benefits from enhanced preservation activities and increased understanding and awareness of resources. For the purposes of the National Historic Preservation Act section 106, the determination would be no adverse effect on archeological resources. Implementation of Alternative D would have a negligible contribution to overall adverse cumulative effects on archeological resources. There would be no impairment to this resource or value as a result of implementing Alternative D.
Historic Structures and Cultural Landscapes	8	Alternative C would result in minor to moderate benefits similar to Alternative A. Should the NPS acquire Hollywood from SCL, there could be additional benefits to historic structures and cultural landscapes give the NPS's preservation mission. Acquisition of Hollywood with a commitment to long-term protection of historic properties for adaptive reuse could have additional moderate long-term benefits to historic preservation. The beneficial effects of Alternative C would contribute modestly to the overall beneficial cumulative effects. There would be no impairment to this resource or value as a result of implementing Alternative C.	The implementation of Alternative D would result in long-term moderate benefits to historic buildings and cultural landscapes. Should the NPS acquire Hollywood from SCL, there could be additional benefits to historic structures and cultural landscapes give the NPS's preservation mission. Alternative D would have no adverse effects and would not contribute to the adverse cumulative effects. There would be no impairment to this resource or value as a result of implementing Alternative D.

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative A: No Action	Alternative B: Preferred Alternative
Historic Structures and Cultural Landscapes <i>(continued)</i>	8	to the overall beneficial cumulative effects, and would not contribute to the adverse cumulative effects. There would be no impairment to this resource or value as a result of implementing Alternative A.	impairment to this resource or value as a result of implementing Alternative B.
Museum Collections	9	The ongoing program has resulted in major beneficial impacts on the museum collections. The planned cumulative activities would result in major beneficial long-term impacts. Alternative A would not add to these impacts. There would be no impairment to this resource or value as a result of implementing Alternative A.	The ongoing program has resulted in major beneficial long-term effects to the museum collections. Alternative B would have minor long-term beneficial impacts on museum collections by adding resources to the collections, making it more complete and more useful for interpretation and research. There would be no impairment to this resource or value as a result of implementing Alternative B.
Tribal Issues and Ethnohistory	10	Actions under Alternative A would result in moderate long-term benefits from ongoing consultation with Skagit Tribes and any adverse effects to ethnographic resources would be mitigated to negligible through a cooperative agreement. Past actions including dam and reservoir construction have contributed cumulative long-term adverse impacts on ethnographic resources in Ross Lake NRA of unknown magnitude. Alternative A would also contribute a negligible to minor increment to the long-term adverse cumulative impacts. There would be no impairment to this resource or value as a result of implementing Alternative A.	Actions under Alternative B would result in moderate long-term benefits similar to Alternative A. Cumulative impacts would be the same as Alternative A and Alternative B would not contribute to adverse cumulative impacts. There would be no impairment to this resource or value as a result of implementing Alternative B.
IMPACTS ON WILDERNESS CHARACTER AND VALUES			
Wilderness Character and Values	11	Adverse impacts to wilderness character would range from minor to moderate. Minor impacts would result from manipulation of wilderness by fish stocking or removal and fire suppression. Minor to moderate impacts would result from natural resource issues, development, motorized vehicle and equipment use, and management restrictions on unconfined recreation. Cumulative impacts would range from minor to moderate. Implementation	Although a number of actions would be taken that would benefit wilderness character, several past, present, or future activities will have cumulative impacts ranging from minor to moderate. Impacts would result from manipulation of wilderness by fish stocking or removal, fire suppression, other natural resource issues, development, motorized vehicle and equipment use, and management restrictions on unconfined recreation.

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative C	Alternative D
Historic Structures and Cultural Landscapes <i>(continued)</i>	8		
Museum Collections	9	Implementation of Alternative C would have moderate long-term benefits similar to Alternative A. Alternative C would also contribute a negligible to minor increment to the long-term adverse cumulative impacts.. There would be no impairment to this resource or value as a result of implementing Alternative C.	Impacts would be similar to Alternative A, with major beneficial impacts to the museum collections from ongoing management programs, facilities, and increased public appreciation from better access to museum collections in visitor center displays. Cumulative impacts are the same as Alternative A and would result in major beneficial long-term impacts on the museum collections. Alternative D would contribute additional minor long-term benefits. There would be no impairment to this resource or value as a result of implementing Alternative D.
Tribal Issues and Ethnohistory	10	Implementation of Alternative C would have a negligible to minor adverse impact on ethnographic resources. Alternative C would contribute a small component of the minor to moderate long-term cumulative adverse impacts on ethnographic resources. No impairment of ethnographic resources.	Implementing Alternative D would have moderate long-term benefits from ongoing consultation with Skagit Tribes and mitigation of any adverse effects to ethnographic resources. Cumulative impacts would be the same as Alternative A and implementation of Alternative D would have a negligible contribution to cumulative adverse impacts. There would be no impairment to this resource or value as a result of implementing Alternative D.
IMPACTS ON WILDERNESS CHARACTER AND VALUES			
Wilderness Character and Values	11	Actions under Alternative C would best protect or improve wilderness character. Although many actions would be taken that would benefit wilderness character, several past, present, or future activities will have cumulative impacts ranging from minor to moderate. Impacts would result from manipulation of wilderness by fish stocking or removal, fire suppression, other natural resource issues, development, motorized vehicle	Under Alternative D, very few actions that would impact wilderness character differ from those under the Preferred Alternative. Those few actions, identified above, would have minor adverse impacts. As in the Preferred Alternative, a number of actions would be taken that would benefit wilderness character, but several past, present, or future activities will have cumulative impacts ranging from minor to moderate. Impacts would

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative A: No Action	Alternative B: Preferred Alternative
Wilderness Character and Values <i>(continued)</i>	11	of Alternative A would not result in impairment.	Implementation of Alternative B would not result in impairment.
IMPACTS ON WILD AND SCENIC RIVER VALUES			
Wild and Scenic River Values	12	Impacts due to Alternative A are dependent on unknown factors regarding flood events and what actions would be taken to protect roads or facilities vs. river protection. Impacts are also dependent on the type and amount of boating and trail recreation use that occurs in the future. Resource and river values are also expected to have beneficial impacts due to water resource project evaluations done to avoid adverse impacts and continued monitoring, management and restoration of resource areas. Overall, some minor adverse impacts are likely to occur under Alternative A. There would be no impairment of wild and scenic river resources or values.	<p>With more regulated river access, improved facilities, and water resource and floodplain protections, eligible wild and scenic river segments would be more protected, ensuring the preservation of outstandingly remarkable values. This would result in moderate beneficial impacts over the long-term.</p> <p>In conjunction with past, present, and reasonably foreseeable actions, cumulative impacts to eligible wild and scenic river segments would generally be minor to moderate and beneficial over the long-term.</p> <p>There would be no impairment of wild and scenic river resources and values.</p>
IMPACTS ON VISITATION			
Visitation	13	The impacts of continuing current management on visitation would result in adverse negligible impacts during most of the year, and minor to moderate impacts during the peak summer season. Because visitation to Ross Lake NRA is condensed into a few months per year, and is largely concentrated along the North Cascades Highway, actions that occur along the highway will impact a large proportion of NRA visitors.	The impacts of the Preferred Alternative on visitation would range from negligible to minor during the peak summer season, and negligible during the rest of the year.
IMPACTS ON VISITOR OPPORTUNITIES			
Visitor Opportunities (Rec. Opps, Facilities, and Services)	14	The full spectrum of visitor opportunities would continue to provide for visitor enjoyment and recreation activities. Continuing current management practices under Alternative A, little would change in	The full spectrum of visitor opportunities would continue to provide for visitor enjoyment and recreation activities. Under Alternative B, there would be moderate to major beneficial impacts to most users

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative C	Alternative D
Wilderness Character and Values <i>(continued)</i>	11	<p>and equipment use, and management restrictions on unconfined recreation.</p> <p>Implementation of Alternative C would not result in impairment.</p>	<p>result from manipulation of wilderness by fish stocking or removal, fire suppression, other natural resource issues, development, motorized vehicle and equipment use, and management restrictions on unconfined recreation. Implementation of Alternative D would not result in impairment.</p>
IMPACTS ON WILD AND SCENIC RIVER VALUES			
Wild and Scenic River Values	12	<p>With more regulated river access and visitor use and protections for natural resources and floodplains, eligible wild and scenic river segments would be more protected, ensuring the preservation of outstandingly remarkable values. This would result in moderate beneficial impacts over the long-term.</p> <p>In conjunction with past, present, and reasonably foreseeable actions, cumulative impacts to eligible wild and scenic river segments would generally be minor to moderate and beneficial over the long-term. NPS’s leadership in natural resource protection and restoration of river banks would help mitigate any adverse impacts created by other entities.</p> <p>There would be no impairment of wild and scenic river resources and values.</p>	<p>With more regulated river access, improved facilities, and water resource protections; eligible wild and scenic river segments would be more protected, ensuring the preservation of outstandingly remarkable values. This would result in minor beneficial impacts over the long-term.</p> <p>In conjunction with past, present, and reasonably foreseeable actions, cumulative impacts to eligible wild and scenic river segments would generally be minor and beneficial over the long-term.</p> <p>There would be no impairment of wild and scenic river resources and values.</p>
IMPACTS ON VISITATION			
Visitation	13	<p>The impacts of Alternative C on visitation would range from negligible to moderate. Since there would be a potential reduction in facilities, crowding and congestion would be more likely to occur more often. Seasonal variations in visitation, as described in the other alternatives, would also occur under Alternative C.</p>	<p>The impacts of Alternative D on visitation would range from negligible to minor during the peak summer season, and negligible during the rest of the year. Maintenance or expansion of facilities would help to mitigate the impacts of growing visitation.</p>
IMPACTS ON VISITOR OPPORTUNITIES			
Visitor Opportunities (Rec. Opps, Facilities, and Services)	14	<p>A range of visitor opportunities, facilities and services would continue to provide for visitor enjoyment and recreation activities, and new opportunities would result from the acquisition of Diablo</p>	<p>The full spectrum of visitor opportunities would continue to provide for visitor enjoyment and recreation activities. The full array of recreational opportunities would continue to be available under</p>

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative A: No Action	Alternative B: Preferred Alternative
<p>Visitor Opportunities (Recreation Opportunities, Facilities, and Services) <i>(continued)</i></p>	<p>14</p>	<p>the array of opportunities along the North Cascades Highway or in Ross Lake NRA's backcountry areas and designated wilderness. Impacts would be negligible to moderate, long-term, and both beneficial and adverse. Beneficial impacts would be minor to moderate from the continuation of existing opportunities that serve the needs of most visitors. Adverse impacts could occur from reservations and fees, conflicting uses, possible loss of campsites due to severe weather or reorganization of Hozomeen, lack of stock-accessible frontcountry camping opportunities, and limited access to wintertime activities.</p> <p>There would be moderate long-term beneficial cumulative impacts on visitors in the broader North Cascades. Implementation of Alternative A would have a modest contribution to these cumulative impacts.</p>	<p>from potential expansion, improvements, and new opportunities along the highway corridor and at Hozomeen. There would also be moderate to major benefits from limiting net loss of camping opportunities and possibility of public overnight lodging at Hollywood. Cumulative effects would be similar to Alternative A. Adverse impacts could occur from reservations and fees, conflicting uses, and possible loss of campsites due to reorganization of Hozomeen, reduction in areas where seaplanes can land. Alternative B would have a greater long-term contribution to moderate to major benefits with enhancements along the highway corridor, and the addition of overnight stock camping facilities, and the potential to convert Hollywood to public use.</p>
<p>IMPACTS ON INFORMATION, INTERPRETATION, AND EDUCATION OPPORTUNITIES</p>			
	<p>15</p>	<p>Overall, the impacts of implementation of Alternative A would result in long-term moderate beneficial impacts to visitor experiences. Continuation of current programming and activities would generate curiosity, interest and respect for resources. NPS information centers in Ross Lake NRA along the North Cascades Highway would continue to be located a short drive off the main road, which could result in a minor to moderate adverse impact to those visitors who miss turn-offs to obtain information.</p> <p>Opportunities for visitors to obtain information from a variety of outside local, state, and federal offices would continue. These facilities and information outlets would result in long-term moderate beneficial cumulative impacts on visitor enjoyment in Ross Lake NRA. Implementation of Alternative A would have a cumulative moderate, long-term beneficial impact on visitor enjoyment as it relates to opportunities to access useful information and orientation, to interact with interpretive and educational</p>	<p>Overall, implementation of Alternative B would result in moderate to major long-term beneficial impacts to visitor experiences in the area of information, interpretation, and education. Expansion of partnerships with SCL, North Cascades Institute and British Columbia Parks would all contribute to beneficial impacts. Focusing the North Cascades Visitor Center in Newhalem as a hub of information, and updating exhibits and programming would also contribute long-term benefits. NPS information centers within Ross Lake NRA boundary along the North Cascades Highway would continue to be located a short drive off the main road, which could result in a minor to moderate adverse impact to those visitors who miss turn-offs to obtain information.</p> <p>Cumulative impacts would be the same as Alternative A. Alternative B would contribute greater long-term benefits to cumulative impacts by focusing on the North Cascades Visitor Center as a hub of activity for visitors. Increased partnerships, collaboration and outreach would also</p>

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative C	Alternative D
<p>Visitor Opportunities (Recreation Opportunities, Facilities, and Services) <i>(continued)</i></p>	<p>14</p>	<p>Townsite, resulting in moderate to major long-term beneficial impacts on the visitor experiences; however, eliminating seaplane use throughout Ross Lake NRA could have moderate long-term adverse impacts. There would be moderate long-term beneficial cumulative impacts on visitors in the broader North Cascades. Implementation of Alternative C would have a modest contribution to these cumulative impacts.</p> <p>There would be overall moderate long-term beneficial cumulative impacts on visitors in the broader North Cascades. Implementation of Alternative C would have a modest contribution to these cumulative impacts.</p>	<p>Alternative D. Impacts would be negligible to moderate, long-term, and both beneficial and adverse. Beneficial impacts would be moderate to major from the contributions related to sustaining the full range of recreation opportunities, limiting net loss in camping opportunities, and increasing access to information through both staff and permitting systems, and providing new overnight camping and lodging opportunities in both in existing campgrounds and in Hollywood. Adverse impacts could occur from those associated with reservations and fees, some conflicting uses.</p> <p>There would be moderate long-term beneficial cumulative impacts on visitors in the broader North Cascades. Implementation of Alternative D would have a modest contribution to these cumulative impacts.</p>
<p>IMPACTS ON INFORMATION, INTERPRETATION, AND EDUCATION OPPORTUNITIES</p>			
	<p>15</p>	<p>Overall, implementation of Alternative C would result in moderate to major long-term beneficial impacts to visitor experiences in the area of information, interpretation, and education. Expansion of partnerships with SCL, North Cascades Institute and British Columbia Parks would all contribute to beneficial impacts. Improvements to signage, media, displays, and mechanisms for outreach would also contribute long-term benefits.</p> <p>Focusing on priority resource management messages, enhancing curriculum-based programming, and other actions could help engage visitors and youth in hands-on stewardship and contribute long-term benefits. NPS information centers within Ross Lake NRA boundary along the North Cascades Highway would continue to be located a short drive off the main road, which could result in a minor to moderate adverse impact to those visitors who miss turn-offs to obtain information. Cumulative impacts would be the same as Alternative A and B.</p>	<p>Overall, implementation of Alternative D would result in moderate to major long-term beneficial impacts to visitor experiences in the area of information, interpretation, and education. Using Ross Lake NRA as a platform and classroom for education about the North Cascades, its history and resources, as well as civic engagement, stewardship, and public leadership providing additional opportunities for both structured and unstructured activities that focus in the frontcountry zone but extend into the parts of the backcountry zone would have major long-term benefits.</p> <p>Interpretive programs and materials that use the most current and dynamic methods to generate curiosity, passion, enthusiasm and respect for park resources to build a sense of stewardship, and provide extensive opportunities for immersion and contact with park staff and resources would have a major beneficial impact to visitor experience. New facilities, increased staff at existing facilities and expanded partnerships</p>

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative A: No Action	Alternative B: Preferred Alternative
<i>(continued)</i>	15	programs and media, and have meaningful experiences and interaction with resources in Ross Lake NRA.	contribute to long-term cumulative benefits by increasing the availability and quality of information delivery to visitors and the public.
IMPACTS ON ACCESS AND TRANSPORTATION			
Access and Transportation	16	The impacts of continuing current management on access and transportation would result in adverse, minor to moderate impacts during the peak season and beneficial, but negligible impacts during non-peak times. Access would be most impacted during busy summer weekends at popular destinations.	The impacts of the Preferred Alternative on access and transportation would result in adverse, minor to moderate impacts during the peak season as well as beneficial impacts due to improvements in access and during non-peak times.
IMPACTS ON THE SOCIOECONOMIC ENVIRONMENT			
Socioeconomics	17	Alternative A would have a continuing moderate, beneficial impact to the influence area socioeconomics, but adverse impacts on traffic. The impact would be greater in the immediate areas surrounding the recreation area. The impacts of Alternative A and impacts of other projects would combine to have short- and long-term, moderate, beneficial cumulative impacts to the influence area's social and economic environment.	Alternative B would have a minor beneficial impact to the socioeconomic environment of the influence area. The impact would be greater in the immediate areas surrounding the recreation area. The impacts of the actions proposed in Alternative B and impacts of other projects in the area combine to have short- and long- term, minor, beneficial cumulative impacts to the influence area's social and economic environment.
IMPACTS ON NPS MANAGEMENT AND OPERATIONS			
Management and Operations	18	Under Alternative A, there would be little overall change to facilities for park operations, and sustainability of the facilities and operations would improve incrementally, resulting in minor long-term benefits. Staffing levels would continue to be inadequate to meet the future needs of NRA operation, resulting in minor, long-term adverse impacts to NRA operations. As more projects are completed that repair, upgrade, and replace aging facilities and infrastructure, and more sustainable systems are installed, maintenance needs would be reduced, resulting in moderate, long-term benefits. However, until those facilities are replaced, periodic and extensive maintenance would be required. The	Under Alternative B, there would be some noticeable changes to facilities as facilities like the Hozomeen contact station would be replaced, others like the Ross Dam trailhead parking would be expanded in size, and new facilities like trails could be added, resulting in both moderate benefits and adverse effects. Additional changes to improve the environmental sustainability in all aspects of facility and infrastructure management could have long-term moderate benefits to park operations. Changes in staffing and operational efficiency would have long-term moderate benefits to park operations. As more projects are completed that repair, upgrade, and replace aging facilities and infrastructure,

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative C	Alternative D
<i>(continued)</i>	15		would all contribute moderate to major long-term benefits. Cumulative impacts would be the same as Alternatives A, B and C and Alternative D would have a modest contribution to long-term cumulative benefits.
IMPACTS ON ACCESS AND TRANSPORTATION			
Access and Transportation	16	The impacts of the Alternative C on access and transportation would result in adverse, minor to moderate impacts during the peak season as well as beneficial impacts due to a few improvements in access and during non-peak times.	The impacts of the Alternative D on access and transportation would result in adverse, minor to moderate impacts during the peak season as well as minor to moderate beneficial impacts due to improvements in access and during non-peak times.
IMPACTS ON THE SOCIOECONOMIC ENVIRONMENT			
Socioeconomics	17	Alternative C would result in a negligible to minor, beneficial, impact to the influence area socioeconomics. The impact would be greater in the immediate areas surrounding the recreation area. The impacts of the actions proposed in Alternative C and impacts of other projects combine to have short- and long-term, minor, beneficial cumulative impacts to the influence area's social and economic environment.	Alternative D would result in a negligible to minor, beneficial impact to the influence area socioeconomics. The impact would be greater in the immediate areas surrounding the recreation area. The impacts of the actions proposed in Alternative D and impacts of other projects combine to have short- and long-term, minor, beneficial cumulative impacts to the influence area's social and economic environment.
IMPACTS ON NPS MANAGEMENT AND OPERATIONS			
Management and Operations	18	<p>Under Alternative C, there would be noticeable changes to facilities as some facilities would be replaced, others would be expanded in size or services and utilities offered, and new facilities could be added, resulting in both moderate benefits and adverse effects. However, greater effort would be taken to maintain the structures in the Hollywood District, resulting in an increase to the number of facilities that would need to be maintained but also greater flexibility for Ross Lake NRA in terms of housing staff and providing overnight accommodations for visitors.</p> <p>Additional changes to improve the environmental sustainability in all aspects</p>	<p>Under Alternative D, there would be noticeable changes to facilities as some facilities would be closed while others could be expanded in size or reconfigured for new uses such as the Hollywood District. New facilities could also be added, resulting in both moderate benefits and adverse effects to park operations.</p> <p>Additional changes to improve the environmental sustainability in all aspects of facility and infrastructure management could have long-term moderate benefits to park operations. Changes in staffing and operational efficiency would have long-term moderate benefits to park operations. As more projects are</p>

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative A: No Action	Alternative B: Preferred Alternative
<p>Management and Operations <i>(continued)</i></p>	<p>18</p>	<p>overall effects of implementing Alternative A on park operations would be long-term, minor and beneficial.</p>	<p>and more sustainable systems are installed, maintenance needs would be reduced, resulting in moderate, long-term benefits. However, until those facilities are replaced, periodic and extensive maintenance would be required.</p> <p>The overall effects of implementing Alternative B on park operations would be long-term, moderate and beneficial.</p>

Table 4.12 Summary of Impacts Table

IMPACT TOPIC		Alternative C	Alternative D
<p>Management and Operations <i>(continued)</i></p>	<p>18</p>	<p>of facility and infrastructure management could have long-term moderate benefits to park operations. Changes in staffing and operational efficiency would have long-term moderate benefits to park operations. As more projects are completed that repair, upgrade, and replace aging facilities and infrastructure, and more sustainable systems are installed, maintenance needs would be reduced, resulting in moderate, long-term benefits. However, until those facilities are replaced, periodic and extensive maintenance would be required. The overall effects of implementing Alternative C on park operations would be long-term, moderate and beneficial.</p>	<p>completed that repair, upgrade, and replace aging facilities and infrastructure, and more sustainable systems are installed, maintenance needs would be reduced, resulting in moderate, long-term benefits. However, until those facilities are replaced, periodic and extensive maintenance would be required. The overall effects of implementing Alternative D on park operations would be long-term, moderate and beneficial.</p>

