



Twin Lakes Campground Improvements

Environmental Assessment

March 2005



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**National Park Service
U.S. Department of the Interior**

**Wrangell-St. Elias National Park and Preserve
Alaska**

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ACA	American Camping Association
AKDOT	Alaska Department of Transportation and Public Facilities
ANILCA	Alaska National Interest Lands Conservation Act
BMPs	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
DEC	Alaska Department of Environmental Conservation
DO	NPS Director's Order
EA	Environmental Assessment
GMP	General Management Plan
LWD	Large Woody Debris
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NTU	Nephelometric Turbidity Units
RV	Recreational Vehicle
SCP	Scenic Corridor Plan
SWPPP	Storm Water Pollution Prevention Plan
PWS	Public Water System
USACE	United States Army Corps of Engineers
USCB	United States Census Bureau
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USPHS	United States Public Health Service
WRST	Wrangell-St. Elias National Park and Preserve

CHAPTER 1: PURPOSE AND NEED FOR ACTION

1.1 PURPOSE FOR ACTION

The National Park Service (NPS) is proposing to rehabilitate and expand the existing Twin Lakes campground located at mile 27.8 on Nabesna Road in the Wrangell-St. Elias National Park and Preserve (WRST), Alaska (Figure 1-1).

The NPS Preferred Alternative (Figure 2-3) would develop 12 to 14 new campsites and restore the existing campsites to a natural vegetated landform. Each campsite would include a parking spur, tent pad, table, fire grate, and campsite identification sign. The campground road would be widened and improved for one-way traffic using a new alignment to improve maneuvering and access to the campsites and other amenities. The existing campground road is severely eroded and entrenched and would be restored to a natural landform and revegetated. Facility development and amenities would include a new vault toilet, water well, bear-resistant food storage, open-air pavilion, small amphitheater, rustic canoe launch, elevated observation deck, elevated boardwalk, and day-use area and parking. Existing social trails not required for use would be revegetated to discourage continued use.

The purpose of the action is to: (1) improve campground facilities; (2) expand the number of campsites; (3) develop facilities to accommodate tent camping and recreational vehicles (RVs); and (4) protect the aquatic resources of Twin Lakes.

1.2 NEED FOR ACTION

This action would address the need for a campground identified in the General Management Plan (GMP) for WRST (1986), which states on page 26 “A campground between mile 25 and the end of Nabesna Road will provide a central location for the hikers, hunters, and other recreationists using the Slana-Nabesna area of the park/preserve...the Park Service will develop a small primitive campground and information/orientation wayside in the area.” Specifically, “primitive” campgrounds do not include amenities such as electricity, plumbing, illumination, and paved roads. The NPS Preferred Alternative is fully consistent with the type of campground envisioned by the GMP within the Slana-Nabesna area.

The existing campground is in a diminished condition and requires improvement for sustained future public use. The eight existing campsites do not meet current and projected demands based on overcrowding during peak summer visitation. The campsites are primarily located along the lakeshore; trampling of shoreline vegetation and shoreline erosion are evident. The existing campground road is not surfaced and deeply entrenched; the road is a source of storm water runoff to the lake. Ongoing erosion and increased sediment runoff threaten the water quality and aquatic resources of Twin Lakes. Existing facilities and site conditions diminish the visitor’s camping experience. The proposed action would enhance the recreational experience of the visiting public by improving campground facilities; and meet current and projected use demands by expanding the number of campsites.

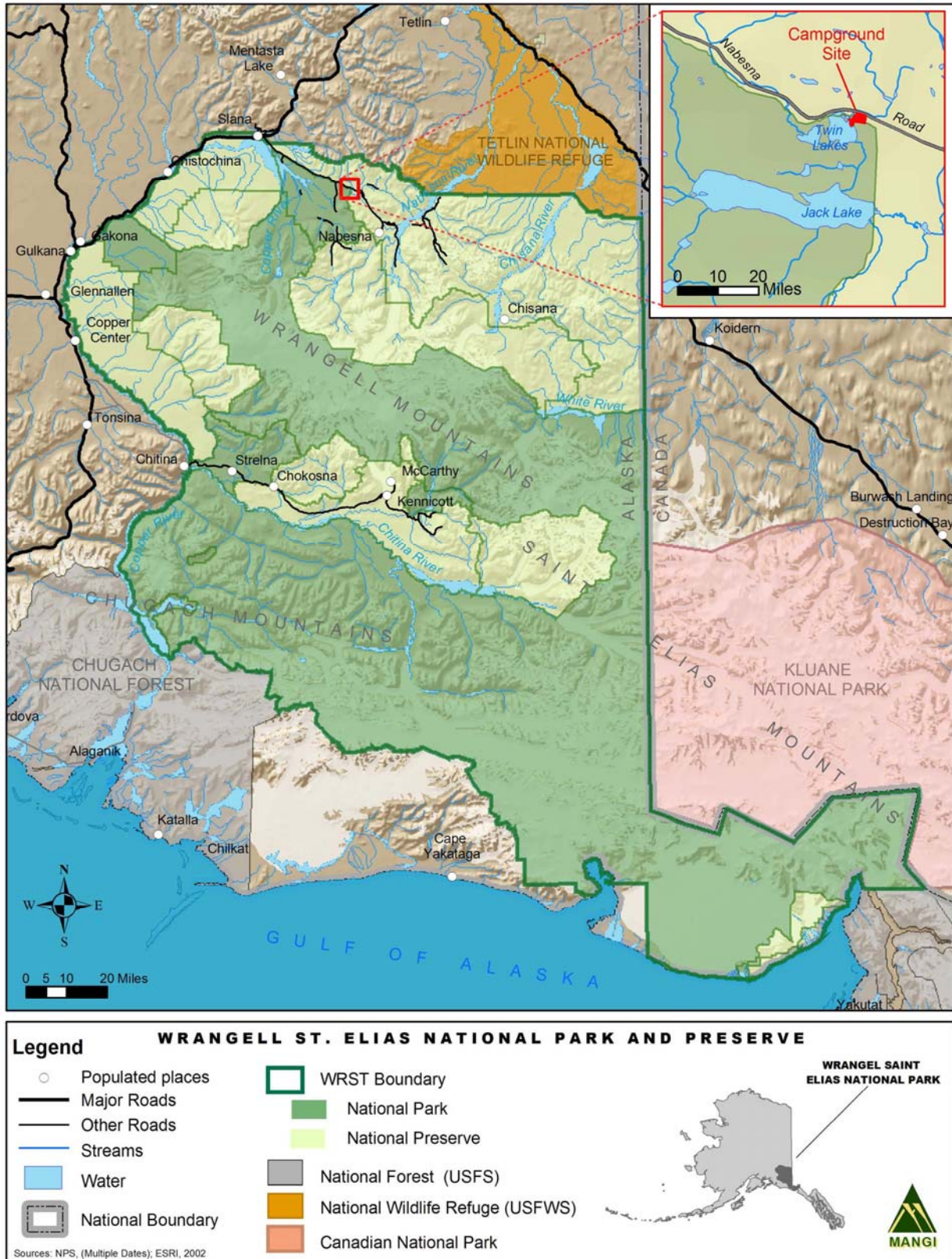


Figure 1-1. Project Vicinity Map

This environmental assessment (EA) analyzes the potential environmental impacts which could result from the alternatives considered, including the No Action alternative. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, regulations of the Council of Environmental Quality (CEQ) (40 Code of Federal Regulations 1508.9), and the NPS NEPA compliance guidance handbook (Director's Order (DO)-12, *Conservation Planning, Environmental Impact Analysis, and Decision-making*).

1.3 PURPOSE AND SIGNIFICANCE OF THE PARK

Wrangell-St. Elias National Park and Preserve was established by the Alaska National Interest Lands Conservation Act (ANILCA, PL 96-487) on December 2, 1980. WRST encompasses 13.2 million acres of superlative scenery, abundant wildlife, and fascinating human history and is the national park system's largest unit. The WRST Wilderness is also the largest unit of the national wilderness preservation system. In conjunction with Kluane National Park in Canada (Figure 1-1), the two areas encompass the largest parkland in North America (NPS, 1986).

The general purposes of the conservation system units established under ANILCA, defined in sections 101 (a), (b), and (c), are as follows:

- To preserve for the benefit, use, education, and inspiration of present and future generations, certain lands and waters in the state of Alaska that contain nationally significant natural, scenic, historic, archeological, geological, scientific, wilderness, cultural, recreational, and wildlife values.
- To preserve unrivaled scenic and geological values associated with natural landscapes; to provide for the maintenance of sound populations of, and habitat for, wildlife species of inestimable value to the citizens of Alaska and the Nation, including those species dependent on vast relatively undeveloped areas; to preserve in their natural state extensive unaltered Arctic tundra, boreal forest, and coastal rainforest ecosystems; to protect the resources related to subsistence needs; to protect and preserve historic and archeological sites, rivers, and lands, and to preserve wilderness resource values and related recreational opportunities including but not limited to hiking, canoeing, fishing, and sport hunting, within large Arctic and subArctic wildlands and on free flowing rivers; and to maintain opportunities for scientific research and undisturbed ecosystems.
- Consistent with management of fish and wildlife in accordance with recognized scientific principles and the purposes for which each conservation system unit is established, designated, or expanded by or pursuant to this act, to provide the opportunity for rural residents engaged in a subsistence way of life to continue to do so.

1.4 LAWS, REGULATIONS, AND POLICIES

The following laws and associated regulations provided guidance for the development of this EA, design of the Preferred Alternative and alternatives, analysis of impacts, and creation of mitigation measures to be implemented as part of the Preferred Alternative.

The NPS Organic Act and the General Authorities Act prohibit impairment of park resources and values. The NPS 2001 Management Policies and Director's Order #55 use the terms "resources and values" to mean the full spectrum of tangible and intangible attributes for which the park was established and is managed, including the Organic Act's fundamental purpose and any additional purposes as stated in the park's establishing legislation. The impairment of park resources and values may not be allowed unless directly and specifically provided by statute. The primary responsibility of the NPS is to ensure that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities to enjoy them.

The evaluation of whether impacts of a Preferred Alternative would lead to an impairment of park resources and values is included in this EA. Impairment is more likely when there are potential impacts to a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified as a goal in the park's GMP or other relevant NPS planning documents.

Section 201(a) of ANILCA states that the park will be managed for the following purposes, among others:

to maintain unimpaired the scenic beauty and quality of high mountain peaks, foothills, glacial systems, lakes and streams, valleys, and coastal landscapes in their natural state; to protect habitat for, and populations of, fish and wildlife including but not limited to caribou, brown/grizzly bears, Dall sheep, moose, wolves, trumpeter swans and other waterfowl, and marine mammals; and to provide continued opportunities, including reasonable access for mountain climbing, mountaineering, and other wilderness recreational activities. Subsistence uses by local residents shall be permitted in the park, where such uses are traditional in accordance with the provisions of title VIII.

Executive Order 11990, *Protection of Wetlands*, directs the NPS to avoid, to the extent possible, the long- and short-term adverse impacts associated with modifying or occupying wetlands, and requires Federal agencies to follow avoidance, mitigation, and preservation procedures regarding wetlands with public input before proposing new construction projects.

The purpose of the Clean Water Act of 1972 (CWA) (33 USC 1251 et seq.) is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Section 404 of the CWA regulates the discharge of pollutants, including dredged or fill material, into navigable waters of the U.S., including wetlands, through a permit system jointly administered by the U.S. Environmental Protection Agency (USEPA) and the U.S. Army Corps of Engineers (USACE). The regulatory definition of Section 404 jurisdictional wetlands is: "*those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions*".

Under Section 401 of the CWA, States can use their water quality standards to protect wetlands. States can review and approve, condition, or deny all Federal permits or licenses that might result in a discharge to State waters, including wetlands. States make their decisions to deny, certify, or condition permits or licenses primarily by ensuring the activity will comply with State water quality standards. The NPS will have to obtain Section 404 and 401 permits from Federal and State agencies in order to implement the Preferred Alternative (Alternative C) as described in Section 1.7 Permits and Approvals Needed to Implement Project. All applicable environmental permits and approvals must be obtained prior to implementing all construction, and rehabilitation activities.

1.5 PREVIOUS PLANNING FOR THE SLANA-NABESNA AREA

A campground between mile 25 and the end of the Nabesna Road is envisioned in both the GMP and the Draft Nabesna Road Scenic Corridor Plan (SCP) (2002). The SCP recommends a campground on NPS land to provide a day-use area, overnight camping, fishing, boating, hiking, and wildlife and waterfowl viewing. Improvements to the existing campground may include interpretive signs, overnight and day use sites, amphitheater, viewing platform, boat launch, hiking trail to Jack Lake, additional vault toilets and trash facilities, and bear-resistant food storage. The SCP report was prepared as a cooperative venture among the NPS, Alaska Department of Transportation and Public Facilities, and Alaska Department of Natural Resources.

1.6 ISSUES AND IMPACT TOPICS

1.6.1 Issues Selected for Detailed Analysis

To focus the content of the EA, the NPS selected specific issues for further analysis and eliminated others from evaluation. Subsequent discussions of the affected environment and environmental consequences related to each alternative focus on those issues retained for further analysis. A brief rationale for the selection of each issue is given below.

Natural Resources

Soils – Soil erosion and compaction could occur from construction activities or deterioration of the campground road.

Aquatic Resources – Arctic grayling habitat could be affected by sediment runoff from the existing campground road, or construction activities, including removal of trees.

Surface Water Quality – Water quality degradation could occur from sediment runoff to Twin Lakes from the campground and from accidental fuel/chemical spills during construction.

Wetlands – Executive Order 11990, NPS Director's Order #77-1, and associated procedural manuals require protection of wetlands. Impacts to wetlands could result from construction of the campsites, campground road, and certain structures.

Vegetation – Vegetation along the lakeshore and social trails could be impacted by trampling or expansion of the campground.

Wildlife – Expansion of the campground could increase bear attractants (food and food odors). Development of additional campsites with unsecured attractants can increase occurrences of human-bear conflicts, and result in increased direct and indirect injury and mortality of black and brown (grizzly) bears. Wildlife habitat would also be affected.

Socioeconomic Environment

Visitor Use and Recreation – There are currently no formal NPS campgrounds in WRST. Campground rehabilitation and expansion would increase and enhance camping opportunities for visitors to the Nabesna area. Construction of a rustic boat launch, viewing platform, day-use area, pavilion, and amphitheater would enhance recreation such as fishing, wildlife viewing, and children's day camp activities.

Visitor Safety – Foods and food odors associated with increased campground use could attract bears and lead to human-bear conflicts.

Land Use – The Twin Lakes Campground is located near private property and near lands identified in two Alaskan Native Veteran Allotment applications.

Subsistence Resources

The Upper Tanana name for Twin Lakes is Uts'en Hach'ileh Mann', meaning fish-swim-out-from-it lake (Reckord, 1983b). For much of the 20th century, the Twin Lakes and Jack Lake area has been the center of subsistence activity for a large Ahtna Athabascan family, living there in some cases seasonally, in other cases year-round. One member of the family lives there today on a native allotment. In addition to subsistence hunting, trapping, fishing, gathering, and woodcutting in the vicinity of the lakes, several family members made a living from a hunting guide operation out of this site for a number of years (Reckord, 1983a). Two members of the family currently have native allotments at Twin Lakes, and the provisions of ANILCA provide for the continued opportunity for local rural residents to engage in subsistence activities in the national park and preserve. Thus, the proposed action should not have an adverse impact on the site as an ethnographic resource.

Title VIII, Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA) requires the analysis of impacts on subsistence resources and lifestyles resulting from federal actions. Rehabilitation and expansion of the Twin Lakes campground could potentially restrict subsistence activities. Analysis of subsistence resources is provided in Appendix A, ANILCA Section 810(a) Summary Evaluation and Findings.

1.6.2 Impact Topics Dismissed from Further Analysis

NEPA regulations emphasize the importance of adjusting the scope of each EA to the particulars of the project and its setting, and focusing on the specific potential impacts of that project. There is no need, according to the regulations, to include information on resources that would not be

affected by the project. The impact topics dismissed from further analysis, and the rationale for their dismissal, are as follows.

Natural Resources

Floodplains – Executive Order 11988, *Floodplain Management*, requires all Federal agencies to take action to reduce the risk of flood loss, to restore and preserve the natural and beneficial values served by floodplains, and to minimize the impact of floods on human safety, health, and welfare. The proposed project location is not within a floodplain therefore, this topic was dismissed from further analysis.

Air Quality – The Clean Air Act (CAA) and NPS *2001 Management Policies* (NPS, 2000) require consideration of air quality impacts from NPS projects. Construction would result in short-term, negligible, adverse impacts on air quality. Therefore, this impact topic was dismissed from further analysis in this EA.

Wilderness – The proposed project would not occur within a wilderness area therefore, this topic was dismissed from further consideration in this EA.

Threatened, Endangered, Candidate Species, and Species of Concern – There are no known Federal or State-listed threatened or endangered species, Federal candidate species, or State-listed species of special concern in the area of potential effect. However, since Alaska does not have a state rare plant list, NPS recognizes the Alaska Natural Heritage Program (AKNHP) list (state rank 3 or less) as rare and has a policy of avoiding impacts to these species. Rare plants are analyzed under Vegetation in this EA.

Cultural Resources

Consideration of cultural resources is required under the National Historic Preservation Act (NHPA) and NEPA. The Twin Lakes campground contains no known historic buildings, cultural landscapes, archaeological sites, or museum collections based on cultural resource surveys conducted for the project site in 2004. Therefore, cultural resources was dismissed from further analysis in this EA.

Socioeconomic Environment

Local Economy – Construction activities associated with campground rehabilitation and expansion would have short-term, negligible, beneficial impacts on the local economy due to short-term increases in employment opportunities and revenues for local businesses and government. Construction-related benefits to the local economy through wages, overhead expenses, material costs, and profits would last only the duration of construction, and would be minimal.

Waste Management – Construction activities would generate a small amount of solid, sanitary, and landscape/vegetative waste; no hazardous wastes would be generated. All construction wastes would be temporarily stored, transported, and disposed of in accordance with State and Federal laws and regulations and NPS policies, in approved disposal facilities. The additional generation and disposal of wastes resulting from improvement of the campground would have a negligible

impact on waste management. Existing disposal facilities have sufficient capacity to accommodate these wastes. Therefore, this topic was dismissed from further analysis in this EA.

Environmental Justice – Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, requires Federal agencies to identify and address any disproportionate adverse human health or environmental effects of its projects on minority or low-income populations. According to this Executive Order, each Federal agency must conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons or populations from participation in, denying persons or populations the benefits of, or subjecting persons or populations to discrimination under, such programs, policies, and activities because of their race, color, national origin, or income level.

Twenty percent of families near the project area live below the poverty level. Fifteen percent are Alaska Natives (USCB, 2000). The proposed project would not have a disproportionate, adverse impact on minority or low-income populations. Therefore, this topic was eliminated from further analysis in this EA.

1.7 PERMITS AND APPROVALS NEEDED TO IMPLEMENT PROJECT

Storm Water Permits

The Alaska Department of Environmental Conservation (DEC) sets water quality standards for Alaska waters and regulates discharges into these waters (18 Alaska Administrative Code (AAC) 70). All discharges of storm water from construction projects disturbing five acres or more require a National Pollutant Discharge Elimination System (NPDES), Storm Water General Permit for Large and Small Construction Activities from the USEPA and must be reviewed by DEC to obtain Section 401 Certification under the CWA. A Notice of Intent (NOI) form must be submitted to USEPA prior to the start of construction activities. The NOI form requests general information about the operator in charge of day-to-day operations of the construction site, location of the site, name of receiving waters, estimated start date and completion date of the project, and other information.

A Storm Water Pollution Prevention Plan (SWPPP) must be prepared prior to submission of an NOI and must:

1. Identify all potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges from the construction site;
2. Describe practices to be used to reduce pollutants in storm water discharges from the construction site; and
3. Assure compliance with the terms and conditions of the permit.

Drinking Water Regulations

Alaska DEC, Division of Environmental Health, Drinking Water Program requires Public Water Systems (PWS) be in compliance with State drinking water regulations (18 AAC 80), in

accordance with the Federal Safe Drinking Water Act and Amendments. The project proposes installation of a water well in the campground to supply drinking water to visitors. The water well would qualify as a Class A PWS, which must be actively supervised by operators who are appropriately certified in accordance with 18 AAC 74. Well protection, source water protection, and well decommissioning are specified under 18 AAC 80.015. A minimum separation distance of 200 feet is required between a vault toilet and water well to protect the drinking water source from pathogen contamination (18 AAC 80.020).

Department of the Army Permits

The Preferred Alternative would require fill activities and construction of structures in approximately 1.0 acre of wetlands. These impacts will require a General Permit (GP) from the Anchorage District of the USACE under Section 404 of the CWA (Stuart, 2004). Since the area of impact is greater than half an acre, the project does not qualify for a Nationwide Permit. GPs are issued for a specific region and type of activity by the local regulatory office. These activities are minor in scope and must result in no more than minimal adverse impacts both cumulatively and individually. In addition, Section 401 of the CWA requires State water quality certification or waiver of certification prior to issuance of a Section 404 permit.

Alaska Department of Transportation (AKDOT) Permits

The AKDOT may require permits for the project's use of the Nabesna Road right-of-way (ROW) for a campground entrance road, signs, and culvert construction. The NPS would acquire the necessary authorization from AKDOT for the project.

CHAPTER 2: ALTERNATIVES

CEQ regulations for implementing NEPA require that Federal agencies explore and objectively evaluate all reasonable alternatives to the Preferred Alternative, and to briefly discuss the rationale for eliminating any alternatives that were not considered in detail. This chapter describes a range of reasonable alternatives, including the No Action alternative, Minimal Action alternative, and Preferred Alternative, and those that were considered and eliminated from further analysis.

2.1 ALTERNATIVE A: NO ACTION ALTERNATIVE

CEQ regulations (40 CFR 1502.14) require the assessment of the No Action alternative in NEPA documents. The No Action alternative provides a baseline against which to measure the impacts of the other proposed alternatives.

Under Alternative A (No Action), the NPS would not rehabilitate or expand the Twin Lakes Campground. The existing campground would remain in its current condition as shown in Figure 2-1.

2.2 ALTERNATIVE B: MINIMAL ACTION

Under Alternative B, the NPS proposes to develop 10 to 12 RV campsites utilizing the existing campsites and disturbed areas of the campground. Figure 2-2 shows the proposed conceptual layout of the campground. Each campsite would include a parking spur, tent pad, table, fire grate, and campsite identification sign. The existing campground road would be widened and improved for two-way traffic using the existing alignment. Facility development and amenities would include a new vault toilet, water well, bear-resistant food storage, open-air pavilion, rustic canoe launch, observation deck, and picnicking/day-use area. Existing social trails not required for use would be revegetated to discourage continued use.

The improved campground road would be designed for two-way traffic with turnaround loops at the far end of the road and in the day-use area. The road would be 24 feet wide, not including shoulder and ditch profile, and between 1,400 and 1,500 feet long. All turning radii would be designed to allow for RVs up to 40 feet in length or vehicles pulling large trailer campers. The existing entrance to the campground would be utilized. A campground sign and kiosk would be installed at the entrance orientating visitors with a map of the campground, instructions for selecting a campsite, bear safety rules, and other helpful information.

Ten to 12 RV campsites would be constructed within the approximate footprint of the existing campsites and disturbed areas and would include the following:

- Parking spur measuring approximately 16 by 50 feet for a single vehicle and defined by timber edging slightly raised above the parking surface grade.
- Table and fire grate.
- Tent pad measuring approximately 12 by 16 feet. The pads would be leveled and defined by timbers with a soft compacted fill material. Any existing trees to remain would be

root pruned to improve potential for survival. Where topography allows, one or more edges may be raised to seating height to promote universal accessibility.

- Bear-resistant food storage (one per campsite).

Currently, one single vault toilet serves the campground. An additional double vault toilet would be installed to accommodate the additional campers. The toilet would be located adjacent to the loop road on opposite ends of the campground from the existing toilet (Figure 2-2). The new unit combined with the existing unit would serve approximately 15 campsites with a seat ratio of 1 per 12 persons, which meets the standards for day program campgrounds specified by American Camping Association (ACA) Standard A-13.

A water well would be drilled to provide potable water. The well would be located next to the day use area and would conform to all Alaska DEC requirements, including a 200-foot radius separation from the vault toilets.

An observation deck measuring approximately 500 to 1,000 square feet would be constructed on the lakeshore near the terminus of the campground road. The deck would be elevated to afford better views and to minimize shoreline erosion and impacts to wetland vegetation. Interpretive signs would be installed on the observation deck describing the types of wildlife habitat and species found at the lake and surrounding area. To minimize impacts during construction, some portions of the observation deck could be of a modular design to allow for offsite assemblage.

A rustic canoe launch would be developed in proximity to the observation deck. The launch would be constructed to minimize erosion, provide long-term, low maintenance access, and conform to the design standards suggested by the non-profit organization, States Organizations for Boat Access.

The picnicking/day use area would be located near the campground entrance in an existing open area. Trees would buffer the day use area from a grass airstrip that runs parallel to Nabesna Road. A centralized food preparation and storage structure would be installed to minimize bear attractants. A foot trail approximately 1,000 to 1,200 feet long would be developed connecting the day use area to the observation deck.

During expansion and rehabilitation of the campground, the campground would be closed to public use. The period of closure would be minimized to one temperate season from early June to late August. Campground site development would disturb approximately 5 to 10 acres. Every effort would be made to preserve or conserve existing vegetation. If damage or destruction to vegetation is unavoidable, then mitigation in the form of root pruning/feeding, transplanting, or importation of native plants would be included.

Specific information on campground facility maintenance operations and logistics are as follows.

Litter control and trash collection. NPS or contracted employees would conduct trash collection and litter control. Bear-resistant trash receptacles would be used. Collected trash would be transported to a landfill in Glennallen.

Maintenance of vault toilets. Pumping of vault toilets by a vacuum truck would occur in the fall season. Pumped waste would be transported for disposal and treatment in sewage lagoons in Glennallen. The waste lagoons have Alaska DEC approval.

Inspection of food storage and preparation area. Regular inspections and cleaning of food storage and preparation facilities would be performed by NPS or contractors to minimize the occurrence and availability of unsecured bear attractants.

Operation and maintenance of well and drinking water treatment. Water treatment operations would be performed by an NPS or contracted employee having the requisite Alaska DEC certification for drinking water system treatment and management. The water would be either chlorinated or iodinated. Water well and treatment operations would be evaluated by a certified individual daily and process adjustments would be made as needed. Other tests would be prescribed and conducted as recommended by U.S. Public Health Service (USPHS) recommendations. USPHS consultants to the NPS would conduct either annual or biannual inspections of the well and treatment systems.

Cost of construction for Alternative B is estimated at \$700,000 to \$900,000, including site preparation, earthwork, water service, storm sewer, concrete paving, site amenities, structures, landscaping, site administration, and contingencies. Annual operation and maintenance costs are estimated to be approximately \$30,000 (Tipton, 2004).

2.3 ALTERNATIVE C: ROAD DAY USE (PREFERRED ALTERNATIVE)

Under Alternative C (Preferred Alternative), the NPS proposes to develop 12 to 14 RV campsites and restore the existing campsites and disturbed areas to a natural condition. Figure 2-3 shows the proposed conceptual layout of the campground. Each campsite would include a parking spur, tent pad, table, fire grate, and campsite identification sign. The campground road would be widened and improved for one-way traffic using a new alignment to improve maneuvering and access to the campsites and other amenities. Facility development and amenities would include a new vault toilet, water well, bear-resistant food storage, open-air pavilion, rustic canoe launch, observation deck, elevated boardwalk, picnicking/day-use/group camping area, and day-use parking. Existing social trails not required for use would be revegetated to discourage continued use. The campground would accommodate both RV and tent camping.

The improved campground road would be realigned further from the lakeshore and surfaced with gravel to minimize erosion and runoff to the lake. The road would be a one-way loop 14 feet wide and 1,850 to 2,000 feet long. All turning radii would be designed to allow for RVs up to 40 feet in length or vehicles pulling large trailer campers. The existing unimproved campground road is severely eroded and entrenched and would be restored to a natural landform and revegetated with native species. The new entrance to the campground would be aligned to improve maneuvering and sight distance for two-way traffic. A campground sign and kiosk would be installed at the entrance orientating visitors with a map of the campground, instructions for selecting a campsite, bear safety rules, and other helpful information.

Twelve to 14 new RV campsites would be constructed along the campground road and would include the same features as described under Alternative B. Existing campsites along the lakeshore would be closed and restored to a natural landform and revegetated.

Currently, one single vault toilet serves the campground. An additional double vault toilet would be installed to accommodate the additional campers. The toilet would be located adjacent to the loop road on opposite ends of the campground from the existing toilet (Figure 2-3). The new unit combined with the existing unit would serve approximately 15 campsites with a seat ratio of 1 per 12 persons, which meets the standards for day program campgrounds specified by ACA Standard A-13.

A water well would be drilled to provide potable water. The well would be located next to the day-use area and would conform to all Alaska DEC requirements including a 200-foot radius separation from the vault toilets.

An observation deck measuring approximately 5,000 to 5,500 square feet would be constructed on the lakeshore at a location that provides undeveloped views of the lake. The platform would be elevated to afford better views and to minimize shoreline erosion and impacts to wetland vegetation. Interpretive signs would be installed on the observation deck describing the types of wildlife habitat and species found at the lake and surrounding area. An elevated boardwalk would be constructed connecting the observation deck to the canoe launch. The alignment proposed for the boardwalk is an existing social trail that is not vegetated. Elevating the boardwalk would allow vegetation to reestablish. To minimize impacts during construction, some portions of the observation deck and boardwalk could be of a modular design to allow for offsite assemblage. A small amphitheater would be constructed in proximity to the observation deck and would be accessible from the boardwalk. It would provide seating for approximately 25 people and would serve as a meeting area for formal evening “campfire talks” by Park Rangers and for other educational purposes.

A rustic canoe launch would be located at the mid-point of the campsite loop road (Figure 2-3). Parking for two vehicles would be provided at the launch for easy access to the lake. The launch would be constructed to minimize erosion, provide long-term, low maintenance access, and conform to the design standards suggested by the non-profit organization, States Organizations for Boat Access. The vegetative buffer alongside the canoe launch would be supplemented with native plantings removed from other areas of the campground during construction.

The day use area would be located to the southeast of the campground entrance in an existing open area comprising approximately 0.5 acres. Trees would buffer the day use area from a grass airstrip that runs parallel to Nabesna Road. An open-air pavilion would be constructed to provide shelter and tables for picnicking and other activities for up to 24 persons. The pavilion would be a pre-fabricated structure consistent with the roaded natural character of the area. A centralized food preparation and storage structure would be installed to minimize bear attractants. Day use parking for 10 to 12 vehicles would be provided along the entrance road adjacent to the day use area. The day use area would also serve as a group camping area for tents only. A foot trail approximately 1,400 to 1,600 feet long would be developed connecting the day use area to the boardwalk, observation deck, or canoe launch.

During expansion and rehabilitation of the campground, the campground would be closed to public use. The period of closure would be minimized to one temperate season from early June to late August. Campground site development would disturb approximately 10 to 15 acres. Every effort would be made to preserve or conserve existing vegetation. If damage or destruction to vegetation is unavoidable, then mitigation in the form of root pruning/feeding, transplanting, or importation of native plants would be included.

Campground facility maintenance operations would be the same as those described under Alternative B.

Cost of construction for Alternative C is estimated between \$1.3 and \$1.5 million, including site preparation, earthwork, water service, storm sewer, concrete paving, site amenities, structures, landscaping, site administration, and contingencies. Annual operation and maintenance costs are estimated to be approximately \$30,000 (Tipton, 2004).

The NPS proposes to implement the preferred alternative in at least two phases. The first phase will be implemented in 2005. It will include the design and engineering for the entire project; planning will include a campground sign on Nabesna Road, campground information bulletin board, and interpretive exhibits at the viewing platform by the lake and at the open-air pavilion. Construction during the first phase will include 1200 feet of the campground road, three campsites pads, two vault toilets, one well with a hand pump, pavilion, canoe launch, viewing platform with boardwalk and some of the interpretive signage.

The NPS would also acquire equipment for the campground improvement which would include such items as picnic tables, fire rings and bear resistant food storage containers and trash receptacles. To complete this first phase of the project, the NPS will be contracting the planning, design and engineering; and will use a combination of local contracts and day labor to complete the construction. Some of the tasks outlined in this first phase might be amended pending the results of the engineering report. Once phase one is completed it may be another 5 years before the second phase is implemented.



Figure 2-1. Alternative A: No Action

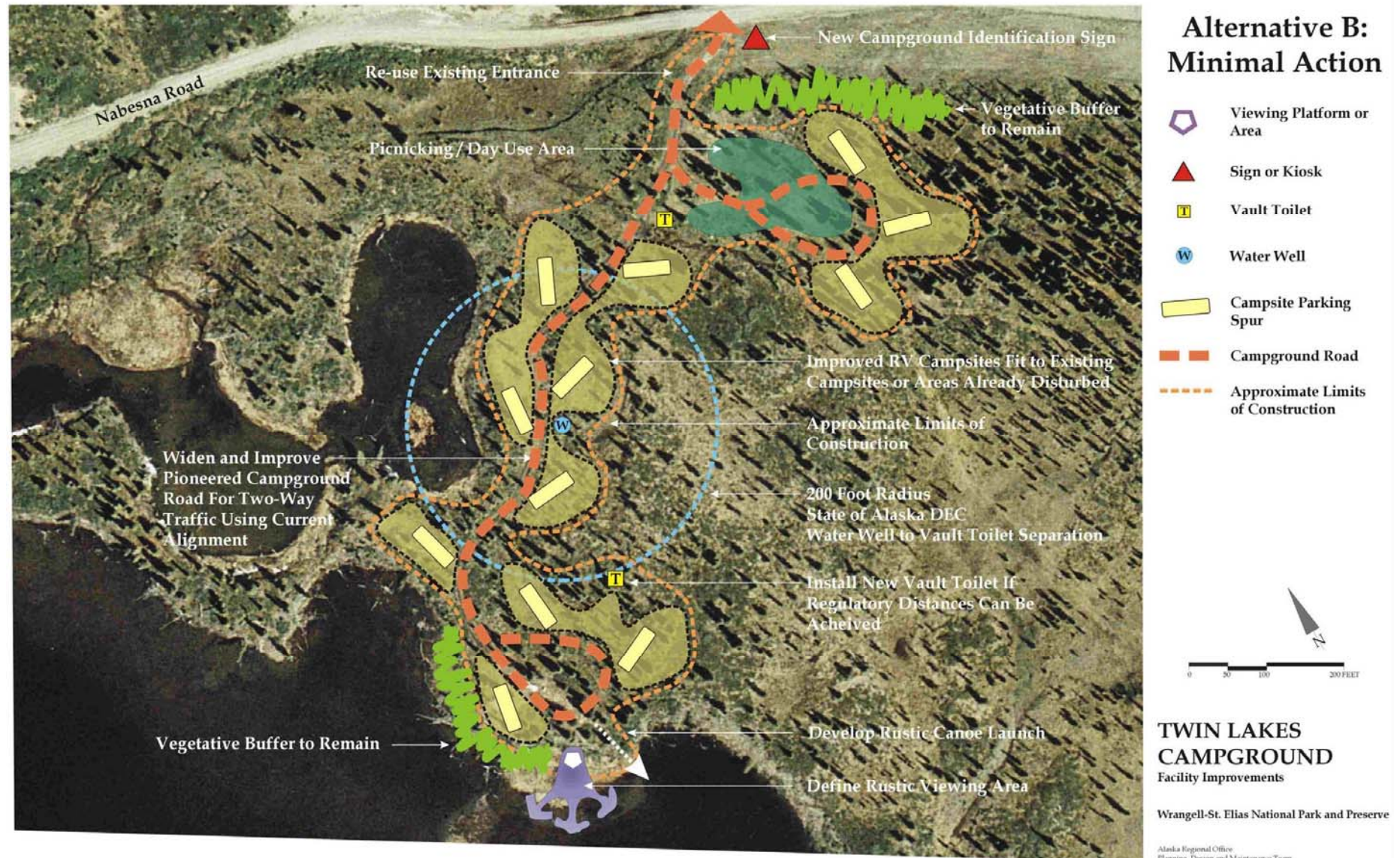


Figure 2-2. Alternative B: Minimal Action

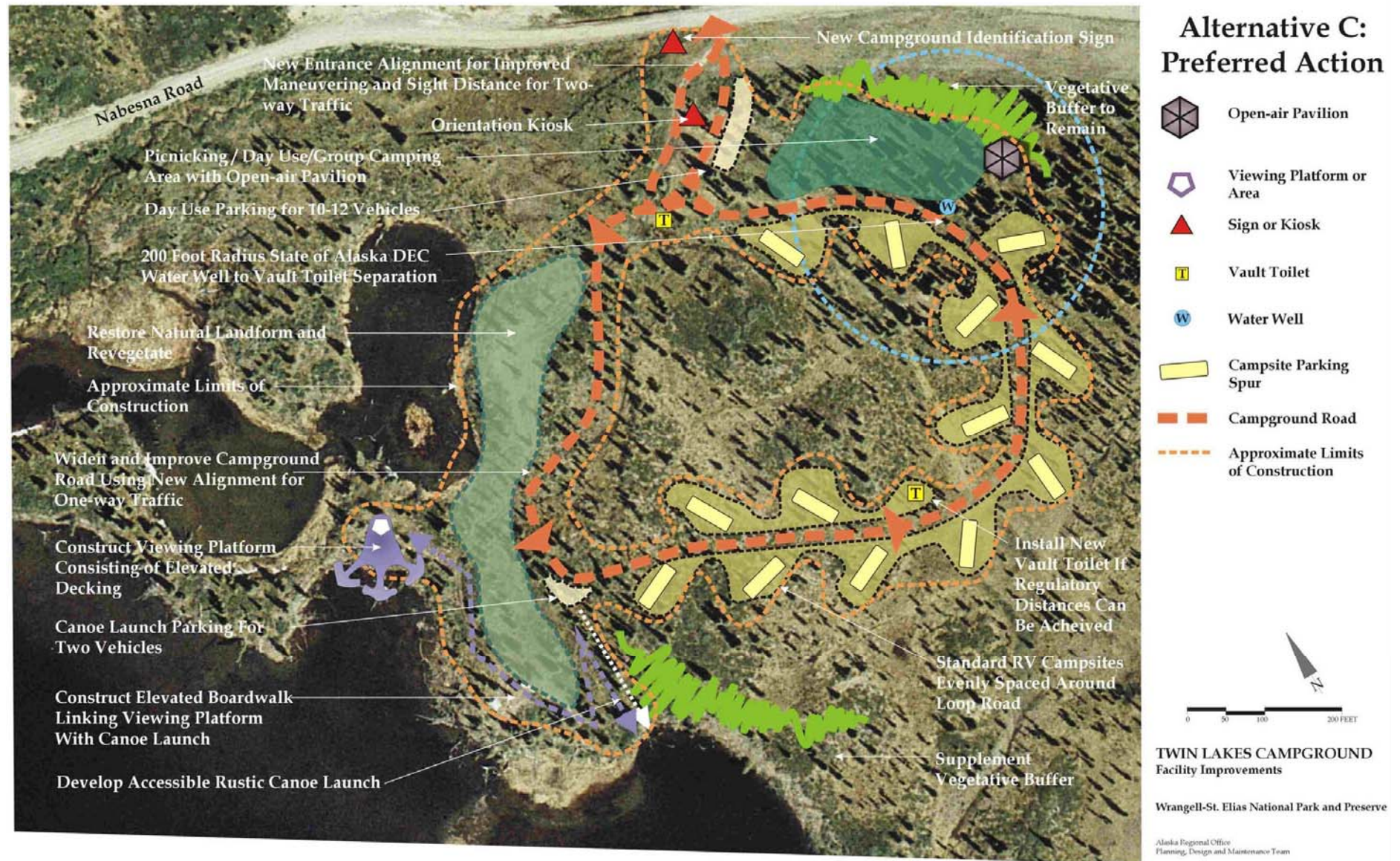


Figure 2-3. Alternative C: Preferred Alternative

2.4 MITIGATION MEASURES

During construction activities, standard best management practices (BMPs) would be implemented. Implementation of these BMPs would control or reduce potential adverse impacts from soil erosion, surface water runoff, and sedimentation. In addition to these measures, other measures would be implemented to minimize or avoid adverse impacts on environmental resources as a result of implementation of the Preferred Alternative. Table 2-1 lists these other measures according to the resource area affected. The NPS would implement these measures as part of Alternative A (Minimal Action) and Alternative B (Preferred Alternative).

Table 2-1. Mitigation Measures by Resource Area	
Resource Area	Mitigation Measures
Soils & Water Quality	<ul style="list-style-type: none"> The NPS would develop a Storm Water Pollution Prevention Plan to control overland flow and reduce the potential for sedimentation from the construction site as required by the Alaska DEC NPDES Storm Water General Permit for Large and Small Construction Activities. Pursuant to Section 401 of the CWA, the NPS would obtain State water quality certification from Alaska DEC. Twin Lakes would be monitored for turbidity levels during and post construction to ensure water quality standards are met. Measures would be taken to prevent or control accidental spills of fuels, lubricants, and chemicals from entering waterways and wetlands. Specifically, no fuels would be stored at the construction site, refueling would occur away from waterways and wetlands, and an emergency spill kit, containing absorption pads, absorbent material, a shovel or rake, and other cleanup items, would be readily available on-site in the event of an accidental spill. Construction equipment would be staged on Nabesna Road, to minimize soil compaction. Construction materials would be stockpiled within the Nabesna Road right-of-way, away from Twin Lakes. Construction would not be conducted when soils are saturated, such as during or immediately following rain events.
Aquatic Resources	<ul style="list-style-type: none"> Trees removed for construction would be placed in Twin Lakes along the shoreline to provide large woody debris for aquatic habitat. Firewood harvest would not be allowed within 300 feet of the Twin Lakes shoreline. Construction would occur outside the Arctic grayling spawning period which occurs in spring before June 15.
Vegetation	<ul style="list-style-type: none"> The project site would be surveyed by a park botanist prior to design for the presence of rare plant species as designated by the Alaska Natural Heritage Program. Where practicable, all efforts will be taken to mitigate effects on rare plants by impact avoidance. All disturbed areas would be revegetated using native materials removed from the project site for construction. Any storage of the vegetation mat would be limited to the minimum amount of time necessary to prevent loss of seed and root viability, loss of organic matter, and degradation of soil microbial activity.

Table 2-1. Mitigation Measures by Resource Area

Resource Area	Mitigation Measures
Cultural Resources	<ul style="list-style-type: none"> • If previously unidentified archaeological features are encountered during construction, work would cease immediately and the park superintendent would be notified to ensure protection of cultural resources.
Wetlands	<ul style="list-style-type: none"> • The NPS would obtain a General Permit for wetland impacts from the Anchorage District of the USACE under Section 404 of the CWA. • Wetland impacts would be mitigated under the Preferred Alternative by restoration of over 1 acre of disturbed wetlands along the shore of Twin Lakes. • Heavy equipment used in wetlands that are to remain or be restored would be placed on mats to minimize soil and vegetation disturbance. • Construction material would not be stockpiled on wetlands, but rather within the Nabesna Road right-of-way.
Wildlife and Visitor Safety	<ul style="list-style-type: none"> • A bear resistant food storage cache would be installed at each campsite to prevent human-bear conflicts. • Bear safety instructions would be posted at the campground kiosk.

2.5 THE ENVIRONMENTALLY PREFERRED ALTERNATIVE

As stated in Section 2.7 (D) of the NPS DO-12 Handbook, “The environmentally preferred alternative is the alternative that will best promote the national environmental policy expressed in NEPA (Section 101(b)).”

National Environmental Policy Act (NEPA) Sec 101 Goal Statements

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. Attain the widest range of beneficial uses of the environment without degradation, risk to health and safety, or other undesirable and unintended consequences;
4. Preserve important historic, cultural, and natural aspects of our national heritage, and maintain wherever possible, an environment which supports diversity and variety of individual choice;
5. Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(NEPA, 42 USC 4321-4347)

In sum, the environmentally-preferred alternative is the alternative that, not only results in the least damage to the biological and physical environment, but also that best protects, preserves, and enhances historic, cultural, and natural resources. Alternative C (Preferred Alternative) is the environmentally preferred alternative because it attains the widest range of beneficial uses of the environment with minimal degradation, risk to health and safety, or other undesirable and

unintended consequences; and assures for all visitors to the campground safe, healthful, productive, and esthetically and culturally pleasing surroundings.

2.6 ALTERNATIVES CONSIDERED BUT REJECTED

2.6.1 Full Build Out

The NPS considered a full build out of the campground designed for RVs over 40 feet in length with hookups. Under this alternative, the campground road would be paved and campsites would be designed to accommodate pull-throughs. This alternative was rejected because it would not be consistent with the “small primitive campground” called for in the Park’s GMP.

2.7 Comparison of Alternatives

Table 2-2 compares the potential environmental impacts resulting from the No Action, Minimal Action, and Preferred Alternative (Alternatives A, B, and C, respectively). Potential impacts are provided according to environmental resource topic. Chapter 4, *Environmental Consequences*, of this EA contains a detailed discussion of these potential impacts by resource topic.

Table 2-2. Comparison of Alternatives			
Resource Topic	Alternative A (No Action)	Alternative B (Minimal Action)	Alternative C (Preferred Alternative)
Soils	<ul style="list-style-type: none"> Long-term, moderate, localized, adverse impacts to soils from continued erosion of the campground road and compaction of soils in heavily used areas. 	<ul style="list-style-type: none"> Short-term, minor, localized, adverse impacts on soils from potential erosion and compaction during construction. Long-term, minor, localized adverse impacts on soils from campground development. 	<ul style="list-style-type: none"> Short-term, moderate, localized adverse impacts to soils from potential soil erosion and compaction during construction. Long-term, negligible, localized, adverse impacts to soils from campground development.
Aquatic Resources	<ul style="list-style-type: none"> Long-term, minor, localized, adverse impacts to Arctic grayling habitat from the continued degradation of spawning and juvenile habitat in Twin Lakes. 	<ul style="list-style-type: none"> Short-term, minor, localized, adverse impacts to aquatic resources in Twin Lakes from a potential increase in sediment runoff during construction. Long-term, minor, localized, beneficial impacts to aquatic resources in Twin Lakes from a decrease in sediment runoff from road and campsite improvements. Long-term, moderate, localized, adverse impacts 	<ul style="list-style-type: none"> Short-term, minor, localized, adverse impacts to aquatic resources in Twin Lakes from a potential increase in sediment runoff during construction. Long-term, moderate, localized, beneficial impacts to aquatic resources in Twin Lakes from restoration of lakeshore habitat and increase in vegetated buffer.

Table 2-2. Comparison of Alternatives

Resource Topic	Alternative A (No Action)	Alternative B (Minimal Action)	Alternative C (Preferred Alternative)
		on Arctic grayling habitat from a diminished supply of LWD to Twin Lakes.	
Surface Water Quality	<ul style="list-style-type: none"> Long-term, minor, localized, adverse impacts to water quality of Twin Lakes from continued sediment runoff from the campground road and campsites. 	<ul style="list-style-type: none"> Short-term, minor, localized, adverse impacts to water quality in Twin Lakes during construction from potential contamination and increased turbidity. Long-term, minor, localized, beneficial impacts to water quality in Twin Lakes from a decrease in sediment runoff from road and campsite improvements. 	<ul style="list-style-type: none"> Short-term, minor, localized, adverse impacts to water quality in Twin Lakes during construction from potential contamination and increased turbidity. Long-term, moderate, beneficial impacts to water quality in Twin Lakes from lakeshore restoration and increased vegetated buffer.
Wetlands	<ul style="list-style-type: none"> Long-term, minor, localized, adverse impacts to wetlands from repeated disturbance of wetland vegetation, soils, and hydrology. 	<ul style="list-style-type: none"> Long-term, moderate, localized, adverse impacts from the loss of 0.8 to 0.9 acres of wetlands from the extent of construction and development. Short-term, minor, localized, adverse impacts to wetlands from disturbance during construction activities. 	<ul style="list-style-type: none"> Long-term, minor, adverse impacts to wetlands from the extent of construction and development. Restoration of 1.1 acres of disturbed acres would offset loss of 0.9 to 1.0 acres to development. Short-term, minor, localized, adverse impacts to wetlands from disturbance during construction activities.
Vegetation	<ul style="list-style-type: none"> Long-term, minor, localized, adverse impacts to vegetation from repeated disturbance of vegetation. 	<ul style="list-style-type: none"> Long-term, minor, localized, adverse impacts from the removal of vegetation for campground development; much of the area proposed for improvement has already been impacted by visitor use and very few mature trees and other vegetation would be disturbed. Short-term, minor, localized, adverse impacts to vegetation from disturbance during construction. 	<ul style="list-style-type: none"> Long-term, minor, localized, adverse impacts to vegetation from removal of vegetation; much of the area proposed for improvement has not been impacted by visitor use and more mature trees and other vegetation would be disturbed. Restoration of 1.1 acres of lakeshore vegetation would offset vegetation removal within 0.9 to 1.0 acres for development. Short-term, minor, localized, adverse impacts to vegetation from disturbance during construction.

Table 2-2. Comparison of Alternatives

Resource Topic	Alternative A (No Action)	Alternative B (Minimal Action)	Alternative C (Preferred Alternative)
Wildlife	<ul style="list-style-type: none"> Long-term, minor, localized, adverse impacts to wildlife from continued degradation of lakeshore habitat. 	<ul style="list-style-type: none"> Long-term, minor, localized, adverse impacts to wildlife from loss of habitat to campground development. Long-term, negligible, localized, adverse impacts to wildlife from increased human disturbance. Long-term, moderate, beneficial impacts to wildlife from the reduced potential for human-bear conflicts and injury or mortality to bears. 	<ul style="list-style-type: none"> Long-term, minor, localized, adverse impacts to wildlife from loss of habitat to campground development. Long-term, negligible, localized, adverse impacts to wildlife from increased human disturbance. Long-term, moderate, beneficial impacts to wildlife from the reduced potential for human-bear conflicts and injury or mortality to bears.
Visitor Use and Recreation	<ul style="list-style-type: none"> Long-term, moderate, localized, adverse impacts to visitor use and recreation from inadequate campground facilities. 	<ul style="list-style-type: none"> Long-term, moderate, beneficial impacts to visitor use and recreation from campground improvements and expansion. 	<ul style="list-style-type: none"> Long-term, moderate, beneficial impacts to visitor use and recreation from campground improvements and expansion.
Visitor Safety	<ul style="list-style-type: none"> Long-term, minor, localized, adverse impacts to visitor safety from the continued hazardous condition of the campground road. 	<ul style="list-style-type: none"> Long-term, moderate, beneficial impacts to visitor safety from road improvements and reduced potential for human-bear conflicts. 	<ul style="list-style-type: none"> Long-term, moderate, beneficial impacts to visitor safety from road improvements and reduced potential for human-bear conflicts Long-term, moderate, beneficial impacts to visitor safety within the Nabesna District
Land Use	<ul style="list-style-type: none"> Long-term, moderate, adverse impacts to campground access from deteriorating condition of campground road and lack of campsite facilities. 	<ul style="list-style-type: none"> Long-term, negligible, localized, adverse impacts on land use from the increased potential for trespass on nearby private lands. Long-term, moderate, beneficial impacts to campground access from road improvements. 	<ul style="list-style-type: none"> Long-term, negligible, localized, adverse impacts on land use from the increased potential for trespass on nearby private lands Long-term, moderate, beneficial impacts to campground access from road improvements.
Subsistence Resources	<ul style="list-style-type: none"> No significant restriction of subsistence uses. 	<ul style="list-style-type: none"> No significant restriction of subsistence uses. 	<ul style="list-style-type: none"> No significant restriction of subsistence uses.

CHAPTER 3: AFFECTED ENVIRONMENT

3.1 PROJECT AREA

The Twin Lakes campground is located at Mile 27.8 of Nabesna Road, one of two roads providing access into the park (Figures 1-1 and 3-1). Nabesna Road is a 42-mile gravel road from Slana to Nabesna which traverses the headwaters of the Copper River and the upper Tanana drainages in the northwest corner of the park. It is accessible from Glenn Highway commonly known as the Tok Cutoff, and is generally passable by most two-wheel drive vehicles. The Nabesna Road was built in 1933 by the Alaska Road Commission to supply the Nabesna Mine and to ship out its ore. The Secretary of Commerce deeded a 200 foot wide easement (100 feet from centerline) for the Nabesna Road to the newly formed State of Alaska on June 30, 1959. The Alaska Department of Transportation and Public Facilities (AKDOT) is responsible for its maintenance. The NPS manages the national park and preserve lands through which the road passes (NPS et al., 2002). The campground is located on NPS lands in the park along the eastern shore of Twin Lakes. Private lands are located to the east of the campground. The campground was in existence prior to establishment of the park.

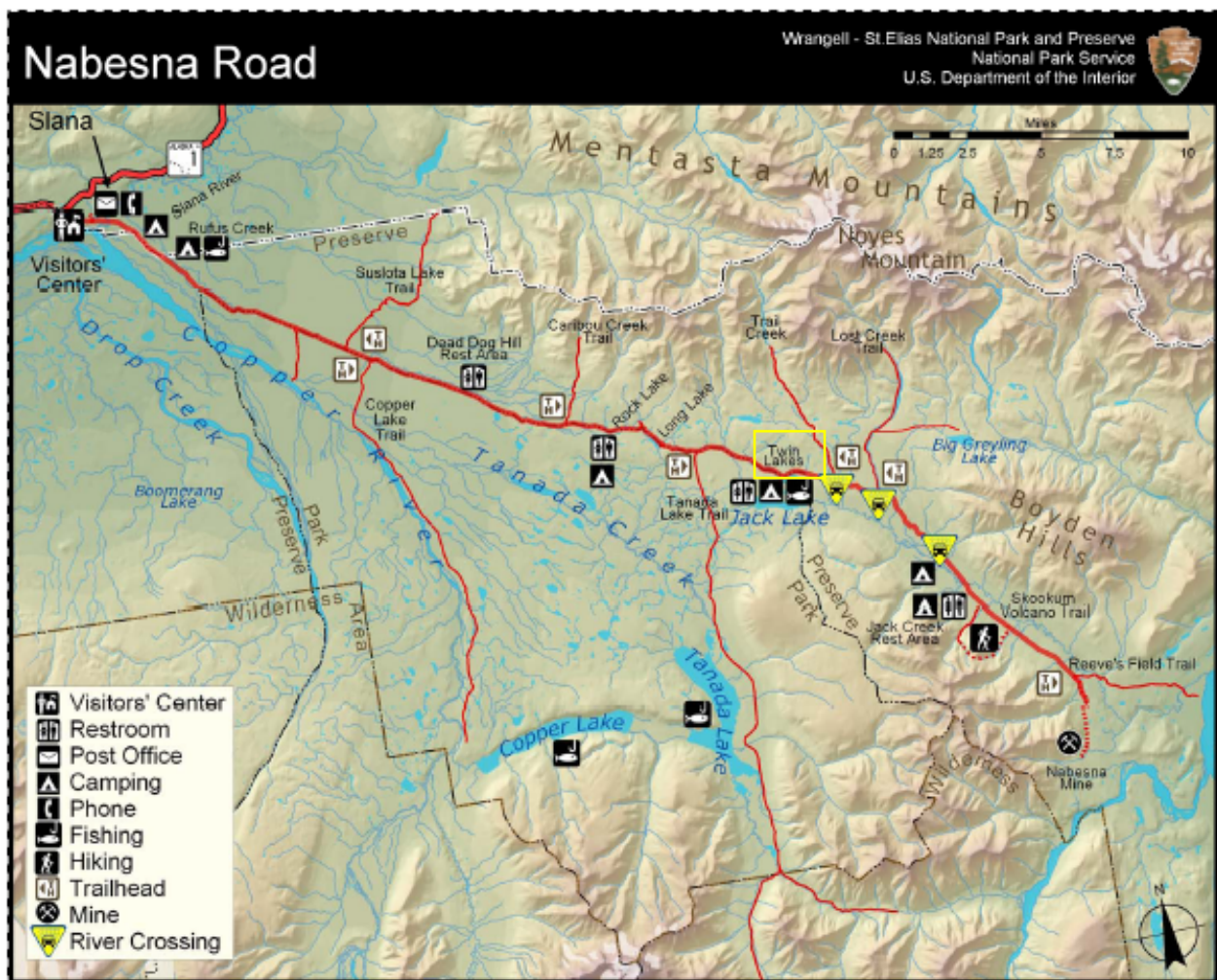


Figure 3-1. Nabesna Road Area

3.2 NATURAL RESOURCES

3.2.1 Soils

The Twin Lakes campground is underlain by discontinuous permafrost where soils are seasonally or perennially frozen. Depth to frozen ground increases along the lakeshore where soils are saturated at the surface. The lake consists of alluvium and the campground area is underlain by glacial till. No soil surveys have been conducted on the campground, however soil conditions were observed during a site visit on August 25, 2004. The soil profile exposed by the campground road cut revealed a thick organic layer. The campground road is naturally surfaced and has eroded so severely in areas that it has become entrenched. Soil compaction on the road and in the campsites have compromised subsoil conditions, thereby affecting permafrost, subsurface lateral drainage and vegetation. In heavily used areas of the campground, soils have been adversely impacted from removal of the vegetation mat and organic layer, exposing soils to erosion and altering their function. A small segment of the lakeshore was observed to be slumping along an established social trail. It appears that the slope failure is due to erosion and the effects of freeze/thaw.

3.2.2 Aquatic Resources

Twin Lakes is one of several lakes along Nabesna Road that provides recreational angling for Arctic grayling (*Thymallus Arcticus*), burbot (*Lota lota*), and lake trout (*Salvelinus namaycush*) (NPS, 1986). Other non-sport fish species found in Twin Lakes include round whitefish (*Prosopium cylindraceum*) and slimy sculpin (*Cottus cognatus*) (Veatch, 2004a). A freshwater fish inventory was conducted in WRST from 2001 to 2003 in the Bremner, Chitina, Coastal, Copper, Nabesna, and White drainages (Markis et al., 2004). Arctic grayling was the only species documented in Twin Lakes during the inventory. The other species were not documented most likely due to the sampling methods used (angling and gill nets) and the timing of the survey (Veatch, 2004b). Arctic grayling spawn in the lake in the spring before June 15 (NPS, 2003). Large woody debris (LWD) along the lakeshore provide habitat for juvenile grayling.

The current condition of the campground has adversely impacted aquatic habitat. Dead trees have been cut along the lakeshore for firewood, decreasing the supply of LWD to the lake. The campground road is not surfaced or maintained so it has become entrenched from long-term erosion. The road channelizes storm water flows to the lake, contributing to increased sedimentation. The deteriorating condition of the campsites and social trails along the lakeshore also contribute to increased sediment runoff to the lake.

3.2.3 Surface Water Quality

The campground is located along the northeastern shore of Twin Lakes at an elevation of 3,080 feet. Twin Lakes are 2 adjacent waterbodies hydrologically connected by a small stream. The larger of the 2 is approximately 50 acres, and the smaller is approximately 19 acres (Figure 1-1). The campground is located along the larger lake. The lakes are fed by 2 drainages whose headwaters originate on the northeast side of Nabesna Road. The outflow of Twin Lakes drains

south to Jack Lake. Jake Lake is fed by Little Jack Creek to the west and outflows to Jack Creek, which flows east to the Nabesna River.

The water quality of Twin Lakes was sampled by the NPS on June 24, 2001. Physical and chemical parameters were analyzed and compared to the Alaska Water Quality Standards (18 AAC 70). All toxic and other deleterious inorganic substances analyzed met the chronic aquatic life criteria for freshwaters (DEC, 2003). Measurement for turbidity was 0.45 nephelometric turbidity units (NTU), well below the not to exceed 5 NTU criteria for turbidity in lake waters for the growth and propagation of fish, shellfish, and other aquatic life and wildlife. However, localized erosion along the lakeshore from human use has potentially increased fine sediment loads to the lake, possibly suggesting that surface water quality has degraded.

3.2.4 Wetlands

Almost half of Alaska is covered by wetlands, approximately 170 million of its 367 million acres (USGS, 1996). Wetlands subject to Executive Order 11990 are areas that are classified as wetland habitat according to the U.S. Fish and Wildlife Service's (USFWS) *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). Under this classification system, followed by the NPS, a wetland must have one or more of the following attributes:

1. At least periodically, the land supports predominantly hydrophytes (wetland vegetation);
2. The substrate is predominantly undrained hydric soil; or
3. The substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

National Wetland Inventory maps have only been completed for 22 of the 100 U.S. Geological Survey quadrangles covering the park and are not available for the Nabesna District. A jurisdictional wetland delineation using the 1987 *Corps of Engineers Wetlands Delineation Manual* (Manual) was not conducted for this site. The Manual requires that all three of the parameters listed above (hydrophytic vegetation, hydric soil, wetland hydrology) be present in order for a habitat to be considered a wetland. Wetlands were identified within the Twin Lakes campground using available data including vegetation types identified from recent color infrared aerial photos (see the following Section 3.2.5 Vegetation), field observations, and documentation of vegetation along the Little Jack Creek/Jack Lake access route located within 1.5 miles of the campground.

As described in the following Section 3.2.5 Vegetation, three major vegetation communities were identified on the site: mixed white/black spruce woodland, open white spruce forest, and shoreline emergent/scrub shrub. The mixed white/black spruce woodland community is intermixed with small areas of sedge tussock tundra in the wetter areas. Seventy-five percent of the dominant vegetation identified in the mixed white/black spruce woodland are hydrophytes (wetland vegetation) based on their wetland indicator status:

Dominant Species	Wetland Indicator Status
White spruce (<i>Picea glauca</i>)	FACU
Black spruce (<i>Picea mariana</i>)	FACW
Dwarf birch (<i>Betula glandulosa</i>)	FAC
Lingonberry (<i>Vaccinium vitis-idaea</i>)	FAC

Facultative wetland plants (FACW) are plants that occur almost always in wetlands under natural conditions; facultative plants (FAC) are plants with a similar likelihood of occurring in both wetlands and non-wetlands; and facultative upland plants (FACU) are plant that occur sometimes in wetlands, but occur more often in non-wetlands (COE, 1987).

Since this vegetation community supports predominantly hydrophytes, it qualifies as a wetland based on the National Park Service definition of wetlands. According to the USFWS wetland classification system, the community is considered a palustrine forested wetland. A similar community found along the Jack Lake access route to the southwest of Twin Lakes was also considered a wetland (Cook, 2002).

The emergent/scrub shrub marsh along the lakeshore is dominated by hydrophytic sedges, rushes, and willows and is saturated or inundated with water at some time during the growing season of each year, qualifying it as a wetland based on the NPS definition. According to the USFWS wetland classification system, the community is considered a palustrine emergent/scrub shrub wetland.

The majority of the existing footprint of the Twin Lakes campground is located within a disturbed open white spruce forest. The wetland status of this community is questionable since the percentage of dominant vegetation identified does not meet the 50/20 USACE hydrophytic vegetation methodology. A similar community found along the Jack Lake access route was also not considered a wetland (Cook, 2002). A more detailed field survey of the community's vegetation, soils, and hydrology should be conducted to make an accurate wetland determination. For purposes of this EA, this community is considered a wetland.

Wetland hydrology on the site is supplied by spring snowmelt and precipitation. The seasonally frozen soils do not readily allow water from snowmelt or rain to pass through (drain) which maintains wetland hydrology.

3.2.5 Vegetation

Land cover types were identified using a color infrared photo of the campground flown on August 3, 2004. The land cover types and acreages given in the following table are a rough estimate and have not been field verified. These acreages do not include the campground road or airstrip.

Land Cover Type	Acres	Proportion of Site
Mixed White/Black Spruce Woodland	6	55%
Open White Spruce Forest	4	36%
Shoreline Emergent/Scrub Shrub	1	9%

Mixed white/black spruce woodland is the dominant land cover type comprising the Twin Lakes campground. This community has a 10 to 25 percent tree cover dominated by white spruce and black spruce and an open shrub layer dominated by dwarf birch. Lingonberry is also found in the low shrub layer. The ground layer is dominated by feathermosses and lichens. Areas of sedge tussock tundra are intermixed within the woodland community, but were not delineated separately due to their small size. Open white spruce forest is dominated by white spruce with a total tree cover in the range of 25 to 60 percent. Dwarf birch and willows (*Salix* spp.) dominate the shrub layer. Most of the open white spruce forest is disturbed from campground use. The majority of existing campsites and day-use area are found within this community. The shoreline vegetation is comprised of emergent and scrub-shrub vegetation such as sedges, rushes, and willows. According to the Land Cover Map of Wrangell St. Elias National Park and Preserve (Pacific Meridian Resources, 1997), these cover types are common within the park.

Seven known plants with an AKNHP state rank of three or less (known from less than 100 occurrences in Alaska) and considered rare by the NPS, could occur within the area of the Twin Lakes campground based on their habitat and known distribution in the Park (Table 3-1) (Cook, 2004; Cook 2002). There may be additional rare plants occurring on the site since park flora, particularly wetland and aquatic, are poorly known.

Table 3-1. Potential Rare Plant Occurrences in Twin Lakes Area

Taxon	Family	Common Name	AKNHP Rank*	#EO's*	Habitat/Park Distribution
<i>Carex adelostoma</i>	Cyperaceae	Circumpolar sedge	G4 S1	6	Wet places, moist sites and fens. Upper and Middle Copper River Basin
<i>Carex atratiformis</i> ssp. <i>raymondii</i>	Cyperaceae	Black sedge	G5 S2	1	Open coniferous woods, meadows and floodplains. Mentasta Mountains
<i>Carex laxa</i>	Cyperaceae	Weak sedge	G4 S1	2	Wet places, mostly in woods, swamps, and muskeg. Tanana lowlands, Nabesna River
<i>Carex lenticularis</i> var. <i>dolia</i>	Cyperaceae	Tufted sedge	G5 S3	10	Muddy shores, sheltered ponds, lakes and river flats. Granite Range, St. Elias Mountains, Ahtna basin lowlands
<i>Potamogeton obtusifolius</i>	Potamogetonaceae	Blunt-leaf pondweed	G5 S1	1	Shallow ponds and lakes. Upper Copper River
<i>Potamogeton subsibiricus</i>	Potamogetonaceae	Yenisei River pondweed	G3 S3	5	Shallow ponds and lakes. Upper Copper River
<i>Trichophorum pumilum</i> var. <i>rollandii</i>	Cyperaceae	Rolland's leafless-bulrush	G5 S1	2	Bogs, damp, marly lake shores, alkaline seepages, and moist calcareous. Upper Chitna River, Nabesna drainage

***Notes:**

EO's: Element occurrences

Species Global Rankings:

G4: Widespread and apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery, but cause for long-term concern.

G5: Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

Species State Rankings:

S1: Critically imperiled in state because of extreme rarity (5 or fewer occurrences, or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extinction.

Critically endangered throughout the state.

S2: Imperiled in state because of rarity (6 -20 occurrences), or because of other factors making it very vulnerable to extirpation from the state.

3.2.6 Wildlife

Wildlife species in the area include grizzly and black bear, moose, caribou, Dall sheep, wolves, lynx, coyotes, snowshoe hares, and ground squirrels (NPS et al., 2002). Twin Lakes provides habitat for waterfowl and other birds, including but not limited to gray jay, American robin, hermit thrush, warbler species, and white crowned sparrow.

3.3 SOCIOECONOMIC ENVIRONMENT

3.3.1 Visitor Use and Recreation

Summer (Memorial Day to Labor Day) is the height of the park's tourist season, peaking in mid-August. Visitors to the Nabesna District come to enjoy the scenic views of the Mentasta and Wrangell mountains, hike, view wildlife, picnic, fish, bike, ride all-terrain vehicles, and camp. Day camps and other groups also visit the area for day-use activities and group overnight camping. Recreational hunters generally do not camp at the primitive campsites along Nabesna Road (NPS et al., 2002).

Twin Lakes is one of five primitive campgrounds along Nabesna Road (Figure 3-1). There are currently no formal NPS campgrounds in the Park. The Twin Lakes campground existed prior to establishment of the park in 1980. Currently, the NPS manages the campground and has made minor improvements, such as installing and maintaining a single vault toilet and bear-resistant dumpster. There are 8 undeveloped campsites in the campground and several areas along the lakeshore that are used to launch canoes or to fish. A large open area near the entrance of the campground is used for picnicking and day use. The campground does not meet current demands during peak visitation due to the inadequate number of campsites and undefined parking spaces. Visitors often park vehicles in areas that block access to campsites (Penwell, 2004).

3.3.2 Visitor Safety

Human-bear conflicts can be a problem in the park. Park data indicate that park visitors were involved in approximately 30 human-bear conflicts during the years 2000 and 2001 (NPS, 2002).

A common cause of human-bear conflicts is anthropogenic (human) food; food and food odors associated with campground use are bear attractants. Unsecured attractants can increase the number of human-bear conflicts. A human-bear conflict is defined as any instance where human food, garbage, or other attractants bring bears into close proximity with humans; where bears opportunistically receive food rewards from human encounters; where property is damaged; where bears are killed or wounded; or any encounter where bears display aggressive behavior toward humans.

3.3.3 Land Use

There are private lands located to the east and south of the campground. The land to the east consists of two 160-acre tracts and a commercial lodge with a residence. The land to the south is a 5-acre tract on Twin Lakes currently divided into three lots. Land between the existing campground development footprint and the patented land to the east is identified in an Alaskan Native Veteran Allotment application. The land overlaps with the planned buffer area and site development. The land identified in the application has long been used by the public to access Jack Lake and to access the parcel with three private lots on Twin Lakes. The park has determined that conveyance of that allotment is inconsistent with the purposes of the park. A second Alaskan Native Veteran Allotment application describes land south of the first application. The land identified in the second application has also long been used by the public to access Jack Lake. The park has determined that conveyance of the second allotment is also inconsistent with the purposes of the park.

The NPS believes that alternative allotment location descriptions can be found that would ensure that there is sufficient area to construct the campground and provide for buffer between the campground and private lands, as well as provide for continued public access to Jack Lake.

3.4 SUBSISTENCE RESOURCES

The Upper Tanana name for Twin Lakes is Uts'en Hach'ileh Mann', meaning fish-swim-out-from-it lake (Reckord, 1983b). For much of the 20th century, the Twin Lakes and Jack Lake area has been the center of subsistence activity for a large Ahtna Athabascan family, living there in some cases seasonally, in other cases year-round. One member of the family lives there today on a native allotment. In addition to subsistence hunting, trapping, fishing, gathering, and woodcutting in the vicinity of the lakes, several family members made a living from a hunting guide operation out of this site for a number of years (Reckord, 1983a). Two members of the family currently have native allotments at Twin Lakes, and the provisions of ANILCA provide for the continued opportunity for local rural residents to engage in subsistence activities in the national park and preserve.

A summary of the affected environment pertinent to subsistence use is presented in Appendix A, ANILCA Section 810(a) Summary Evaluation and Findings.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

This chapter provides an evaluation of the potential effects or impacts of each of the alternatives on the resources described in the issue statements presented in Chapter 1, *Purpose and Need for Action*.

4.1 METHODOLOGY

The impact analysis has been conducted in a consistent manner based on standardized impact definitions. For each issue or resource, direct, indirect, and cumulative impacts have been characterized as negligible, minor, moderate, or major. Impacts identified for each issue or resource was based on their duration, extent, and intensity. These impact level thresholds are defined below.

Duration of Impact:

Temporary – Impact would occur during the site preparation and construction phases only. Once construction has ended, resource conditions are likely to return to pre-construction conditions.

Short-term – Impact would extend past the construction phase, but would not last more than a couple of years, at most.

Long-term – Impact would likely last more than a couple of years, or over the lifetime of the project.

Extent of Impact:

Localized – Impacts would affect the resource area only on the project site or its immediate surroundings, and would not extend into the region.

Regional – Impacts would affect the resource area on a regional level or on the park as a whole, extending well past the immediate project site.

National – Impacts would affect the resource area on a national level, extending well past the region or park as a whole.

Intensity of Impact:

Negligible – Minimal or no impact on the resource area; any change that occurs is neither noticeable nor measurable.

Minor – Change in a resource area occurs, but no substantial resource impact results; the change in the resource is barely perceptible and would not alter the condition or appearance of the resource.

Moderate – Noticeable change in a resource occurs and this change alters the condition or appearance of the resource, but the integrity of the resource remains intact.

Major – Substantial impact or change in a resource area occurs that is easily defined, highly noticeable, and measurably alters the condition or appearance of the resource.

4.2 CUMULATIVE IMPACTS

Cumulative impacts were assessed by combining the potential environmental impacts of the alternatives with the potential impacts of known projects that have occurred in the past, are currently occurring, or are projected to occur in the future within the region of the Preferred Alternative. Known past, current, and reasonably foreseeable future projects and actions in the vicinity of the project site are described below.

Past and Present Projects and Actions

The Nabesna Road has a gravel road surface maintained by AKDOT. Road maintenance activities include annual grading, removal of flood debris, and culvert cleaning and repair. Flooding in some locations regularly deposits large rocks on the road and causes serious erosion (NPS et al., 2002).

Past private development in the Twin Lakes area includes Sportsman's Lodge and residence; the Hancock/Justin residences; the three private lots on Twin Lakes which contain structures and their associate driveway; and the airstrip paralleling the Nabesna Road.

Past construction and maintenance of the Jack Lake access route to private lands, which originates at Mile 35.7 Nabesna Road, has directly impacted 3 acres of wetlands and soils, and 5,500 linear feet of the Little Jack Creek channel (NPS, 2003).

Future Projects and Actions

Other NPS projects proposed within the Nabesna District include the Slana bunkhouse relocation project. The maintenance division is proposing to move the seasonal bunkhouse and associated tent frames from their current location at the Slana Ranger Station (Figure 3-1) to a 10-acre site near the ranger residence. An access road would also be constructed.

The NPS approved a request to realign two segments of the existing Jack Lake access route to private lands within the park. The existing access road is situated in the Little Jack Creek floodplain, which drains to Jack Lake. Flood events have made the existing alignment unsustainable and inaccessible by normal highway vehicles. The realignment would be situated outside the active floodplain and cross previously undisturbed land, directly impacting 0.6 acres of wetlands, soils, and wildlife habitat (NPS, 2003).

The Nabesna Road Draft SCP (2002) has been prepared by an interagency planning team to plan for future road and safety improvements, and accommodate future visitor's needs. The plan recommends removal of vegetative barriers along the road to open scenic vistas, specific projects

to improve driver safety, material and disposal sites, and construction of waysides to provide parking and vehicle turnarounds.

4.3 ALTERNATIVE A: NO ACTION

4.3.1 Natural Resources

4.3.1.1 Soils. Under Alternative A, moderate, localized, adverse impacts on soils would continue to occur over the long-term. In heavily used areas of the campground, mineral soils have become compacted, increasing runoff and erosion, and inhibiting revegetation. If the road is not improved, the soils underlying the road would continue to erode.

Cumulative Impacts – Past construction of the access road and private residence along Twin Lakes caused short-term soil disturbance and long-term soil alteration.

Past construction and maintenance of the Jack Lake access route resulted in approximately 3 acres of soil disturbance. An additional 0.6 acres of soil disturbance would result from the future realignment of the access route. Past and future soil disturbance in the Little Jack Creek floodplain would result in moderate, long-term, adverse impacts to soils from soil alteration, compaction, and erosion.

The Slana bunkhouse relocation project would disturb 10 acres of soils from road construction and building relocation. Road construction would likely require soil removal, fill, and compaction that would permanently alter soil structure and function. Moderate, long-term, localized, adverse impacts to soils would result.

The Nabesna Road Draft SCP recommends future road safety improvement projects, scenic corridor treatments, waysides, material and disposal sites, and road maintenance which if implemented would disturb soils over a large area and cause major, long-term, adverse soil impacts from soil alteration, compaction, and erosion. Implementation of Alternative A would contribute minor, long-term, cumulative impacts to soils within the Nabesna District.

Conclusion – Alternative A would likely result in long-term, moderate, localized, adverse impacts to soils from continued soil compaction and erosion and contribute minor, long-term, cumulative impacts to soils in the Nabesna District. The level of impact on soils from Alternative A would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.3.1.2 Aquatic Resources. Under Alternative A, minor, localized, adverse impacts on aquatic resources would continue to occur over the long-term. The deteriorating condition of the existing campground road, campsites, and social trails concentrated along the shore of Twin Lakes is degrading Arctic grayling habitat. The campground road is not surfaced or maintained so it has become entrenched from long-term erosion. The road channelizes storm water flows to the lake, contributing to increased sediment loading. Sediment can smother small eggs broadcast during grayling spawning. The disturbed campsites and social trails can also contribute to

increased sediment loads from exposure of bare soils to storm water runoff. Visitors have harvested dead trees along the shoreline for firewood, decreasing the supply of LWD to the lake. A decrease in the long-term supply of LWD can adversely impact juvenile grayling habitat.

Cumulative Impacts – Culvert cleaning and repair on Nabesna Road likely contributes to minor, localized, adverse impacts on aquatic resources of receiving drainages from increased turbidity and suspended sediment. Twin Lakes is fed by two culverted drainages that may be contributing to increased sediment loads.

Past construction of the access road and private residence along Twin Lakes likely contributed to increased sediment loads to the lake, degrading aquatic habitat. However, impacts would have been minor, localized and short-term.

Past construction and maintenance of the Jack Lake access route has resulted in moderate, long-term, adverse impacts on the aquatic resources of Little Jack Creek. Future realignment of the Jack Lake access route would result in moderate, long-term, beneficial impacts on aquatic resources in Little Jack Creek from habitat improvements.

The Nabesna Road Draft SCP recommends projects that if implemented, would have both major benefits (e.g., drainage improvements) and major adverse impacts (e.g., development of waysides) on aquatic resources within the Nabesna District over the long-term. Implementation of Alternative A would contribute minor, long-term, adverse, cumulative impacts on aquatic resources in the Nabesna District.

Conclusion – Alternative A would likely result in long-term, minor, localized adverse impacts on Arctic grayling habitat in Twin Lakes because of continued degradation of spawning and juvenile habitat from increased sediment loads and a decreased supply of LWD. Alternative A would also contribute minor, long-term, adverse, cumulative impacts to aquatic resources in the Nabesna District. The level of impact on aquatic resources from Alternative A would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.3.1.3 Surface Water Quality. Under Alternative A, minor, localized, adverse impacts on water quality would occur over the long-term from continued deterioration of the campground road, campsites, and social trails. Increased sediment loads from erosion of these facilities would degrade the surface water quality of Twin Lakes.

Cumulative Impacts – Culvert cleaning and repair on Nabesna Road likely contributes to minor, localized, adverse impacts on the water quality of receiving drainages from increased turbidity and suspended sediment. Twin Lakes is fed by two culverted drainages that may be contributing to increased sediment loads.

Past construction of the access road and private residence along Twin Lakes likely contributed to increased sediment loads to the lake, degrading water quality. However, impacts would have been minor, localized and short-term.

Past construction and maintenance of the Jack Lake access route has resulted in short-term, moderate adverse impacts on the water quality of Little Jack Creek. Future realignment of the Jack Lake access route would also cause short-term, moderate, adverse impacts on the water quality of Little Jack Creek from construction activities.

The Nabesna Road Draft SCP recommends projects that if implemented, would likely have moderate, adverse impacts on the quality of surface waters within the Nabesna District over the short-term. Implementation of Alternative A would contribute minor, short-term, adverse cumulative impacts to surface water quality within the Nabesna District.

Conclusion – Alternative A would likely result in long-term, minor, localized, adverse impacts on water quality in Twin Lakes from increased sediment yields. Implementation of Alternative A would contribute minor, short-term, adverse, cumulative impacts to surface water quality within the Nabesna District. The level of impact on water quality from Alternative A would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.3.1.4 Wetlands. Under Alternative A, the NPS would not rehabilitate the Twin Lakes campground. Since the campsites and trails of the campground are not formally defined, visitors tend to park and camp in random areas and develop social trails to access the lake. Over time, this leads to an increase in the disturbance footprint causing adverse impacts to wetlands from trampling of vegetation, alteration of hydrology, and soil compaction. Minor, localized adverse impacts to wetlands would likely result from Alternative A over the long-term.

Cumulative Impacts – Past construction of the access road and private residence along Twin Lakes likely resulted in a loss of wetlands from road fill.

Past construction and maintenance of the Jack Lake access route resulted in approximately 3 to 4 acres of wetland fill and disturbance. An additional 0.6 acres of wetland fill and disturbance would result from the future realignment of the access route. Wetland impacts within the Little Jack Creek floodplain are moderate and long-term.

The Slana bunkhouse relocation project has the potential to affect 0.2 acres of wetlands.

The Nabesna Road Draft SCP recommends projects that if implemented, would result in major, long-term, adverse impacts to wetlands within the Nabesna District. Alternative A would contribute minor, long-term, cumulative adverse impacts to wetlands within the Nabesna District.

Conclusion – Alternative A would likely result in long-term, minor, localized, adverse impacts to wetlands from repeated disturbance. Implementation of Alternative A would likely contribute minor, long-term, adverse cumulative impacts to wetlands within the Nabesna District. The level of impact on wetlands from Alternative A would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.3.1.5 Vegetation. Under Alternative A, the NPS would not rehabilitate the Twin Lakes campground. Since the campsites and trails of the campground are not formally defined, visitors tend to park and camp in random areas and have developed social trails to access the lake. Repeated disturbance of vegetation in the same area over time has caused permanent destruction of the vegetation mat. Continued, long-term, minor, localized, adverse impacts to vegetation would likely result from Alternative A.

Cumulative Impacts – Past construction of the access road and private residence along Twin Lakes resulted in a minor loss of vegetation within the vicinity of the campground.

Past construction and maintenance of the Jack Lake access route resulted in approximately 3 to 4 acres of vegetation disturbance. An additional 0.6 acres of vegetation disturbance would result from the future realignment of the access route. Disturbed areas, not including the access road, would revegetate over time, diminishing the impact. Overall, adverse impacts to vegetation in the Little Jack Creek floodplain are moderate over the long-term.

The Nabesna Road Draft SCP recommends projects that if implemented, would result in major, long-term adverse impacts to vegetation within the Nabesna District. Implementation of Alternative A would contribute minor, long-term, adverse cumulative impacts to vegetation within the Nabesna District.

Conclusion – Alternative A would likely result in continued long-term, minor, localized, adverse impacts to vegetation from repeated disturbance and destruction of the vegetation mat. Implementation of Alternative A would likely contribute minor, long-term, adverse cumulative impacts to vegetation within the Nabesna District. The level of impact on vegetation from Alternative A would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.3.1.6 Wildlife. Under Alternative A, the NPS would not rehabilitate the Twin Lakes campground. Since the campsites and trails of the campground are not formally defined, visitors tend to park and camp in random areas and have developed social trails to access the lake. Repeated disturbance to vegetation has degraded areas of emergent and scrub/shrub habitat along the lakeshore and areas of open white spruce forest and mixed white/black spruce woodland. Continued degradation of these habitats under Alternative A would have long-term, minor, localized, adverse impacts to wildlife utilizing these habitats.

Cumulative Impacts – Past construction of the access road and private residence along Twin Lakes resulted in a minor loss of habitat within the vicinity of the campground.

Past construction and maintenance of the Jack Lake access route resulted in approximately 3 to 4 acres of habitat disturbance. An additional 0.6 acres of riparian habitat disturbance would result from the future realignment of the access route. Disturbed areas, not including the access road, would revegetate over time, diminishing the impact. Overall, adverse impacts to habitat in the Little Jack Creek floodplain are moderate over the long-term.

The Nabesna Road Draft SCP recommends projects that if implemented, would result in major, long-term adverse impacts to wildlife habitat within the Nabesna District. Implementation of Alternative A would contribute minor, long-term, cumulative adverse impacts to wildlife habitat within the Nabesna District.

Conclusion – Alternative A would likely result in long-term, minor, localized, adverse impacts to wildlife habitat. Implementation of Alternative A would contribute minor, long-term, adverse cumulative impacts to wildlife habitat within the Nabesna District. The level of impact to wildlife from Alternative A would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.3.2 Socioeconomic Environment

4.3.2.1 Visitor Use and Recreation. Alternative A would have moderate, long-term, adverse impacts to visitor use and recreation due to an inadequate number of campsites, undefined parking spaces and campsites, and the continued deterioration of the campground road. During peak visitation in the summer months, the campground is often full and campers have to find alternative campgrounds. Due to undefined parking spaces, visitors often park their vehicles in areas that block access to campsites. The campground road is eroded so severely in areas that it is hazardous to vehicles and likely not passable for many two-wheel drive vehicles. Many campers visit the Twin Lakes campground for the recreational opportunities it offers. A lack of adequate facilities and campsites limit these opportunities for some visitors.

Cumulative Impacts – There are no formal NPS campsites in the park, but there are five primitive wayside camping areas along Nabesna Road at Slana River, Rufus Creek, Rock Lake, and Jack Creek (Figure 3-1). Rock Lake and Jack Creek provide vaulted toilets and Rufus Creek provides fishing opportunities. These primitive campgrounds provide alternatives to the Twin Lakes campground during peak visitation.

The Nabesna Road Draft SCP recommends improvement projects such as removal of vegetative barriers along the road to open scenic vistas, specific projects to improve driver safety, and construction of waysides that would have major, long-term, beneficial impacts to visitor use and recreation in the Nabesna District. Overall, Alternative A would contribute minor, long-term, cumulative adverse impacts to visitor use and recreation in the Nabesna District.

Conclusion – Alternative A would have moderate, long-term, adverse impacts to visitor use and recreation due to inadequate campground facilities. Overall, Alternative A would contribute minor, long-term, cumulative adverse impacts to visitor use and recreation in the Nabesna District. The level of impacts to visitor use and recreation anticipated from the No Action alternative would not result in an impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.3.2.2 Visitor Safety. Alternative A would have minor, long-term, localized, adverse impacts to visitor safety. Continued deterioration of the campground road would make accessing the campsites increasingly hazardous to vehicles.

Cumulative Impacts – The Nabesna Road Draft SCP recommends future road safety improvement projects that would have major, long-term, beneficial impacts to visitor safety in the Nabesna District. Overall, Alternative A would contribute negligible, long-term, adverse cumulative impacts to visitor safety in the Nabesna District.

Conclusion – Alternative A would have minor, long-term, localized, adverse impacts to visitor safety from the continued deterioration of the campground road and would contribute negligible, long-term, adverse cumulative impacts to visitor safety in the Nabesna District. The level of impact on visitor safety from Alternative A would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.3.2.3 Land Use. Under Alternative A, the campground road would not be improved. Implementation of this alternative would have long-term, moderate, adverse impacts to campground access from the continued deterioration of the campground road.

Cumulative Impacts – The Nabesna Road Draft SCP would significantly improve access to the Nabesna area with major road improvements and the development of visitor waysides. These improvements would have long-term, major, beneficial impacts to access to the Nabesna District. Alternative A would contribute negligible, long-term, adverse cumulative impacts to park access.

Conclusion – Alternative A would have long-term, moderate, adverse impacts to campground access from the continued deterioration of the campground road and would contribute negligible, long-term, adverse cumulative impacts to park access. The level of impact on land use from Alternative A would not result in an impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.3.3 Subsistence Resources

The effects of Alternative A on subsistence uses are evaluated in Appendix A, ANILCA Section 810(a) Summary Evaluation and Findings..

4.4 ALTERNATIVE B: MINIMAL ACTION

4.4.1 Natural Resources

4.4.1.1 Soils. Alternative B would result in minor, localized, short-term, adverse impacts to soils from potential soil erosion and compaction during construction. Minor, localized, long-term, adverse impacts to soils would result from permanent alteration of soil function from new campground development. Soil impacts would be greatest in the wet and organic rich areas along the lakeshore. Alternative B would utilize existing campsites, day-use area, and

campground road to rehabilitate and expand the campground. Approximately 5 to 10 acres of construction disturbance would occur over a 3 to 4-month period. The majority of disturbance would occur in previously disturbed areas minimizing soil impacts.

New areas of disturbance would be required for construction of 2 to 4 additional campsites, road widening and turn-around loops, vault toilet, observation deck, and boat launch. New road construction would directly impact soils on 0.6 to 0.7 acres. Campsite pads and the pad supporting the vault toilet would directly impact 0.2 acres. Disruption of the soil horizon and associated vegetation mat from new road and campsite development may alter seasonal thaw and increase permafrost depths, although no more than the continued surface degradation of the organic layer from existing uses. Road construction would compact and destroy the function of the organic soil horizon and remove mineral soils from road-cut areas. Gravel surfacing of the road and the concrete pad foundation for the vault toilet may increase seasonal thaw depths if not properly insulated. Gravel surfacing would also stabilize the soil surface reducing long-term erosion. The observation deck would be elevated above the ground surface to avoid adverse soil impacts. The boat launch would cause minimal soil disturbance during construction and would stabilize soils in a small area along the lakeshore over the long-term. Removal of the vegetation mat and grading during construction would expose mineral soils to potential erosion during storm events. Erosion would be minimized by implementation of erosion and sediment controls before and after construction as required in the SWPPP that will be prepared for this project (see Chapter 1, Section 1.7). All disturbed areas would be revegetated after construction to stabilize soils over the long-term.

Cumulative Impacts – Other projects in the Nabesna District impacting soils include access road development and use in the Little Jack Creek floodplain and the Slana bunkhouse relocation project. These projects would alter soil function and increase soil erosion.

The Nabesna Road Draft SCP recommends future road safety improvement projects, scenic corridor treatments, waysides, material and disposal sites, and road maintenance over a large area, which if implemented, would likely result in major, short-term, adverse impacts to soils from construction activities and major, long-term, adverse impacts from alteration of soil function. Overall, Alternative B would contribute negligible, short-term and long-term, adverse cumulative impacts to soils in the Nabesna District.

Conclusion – Alternative B would result in minor, localized, short-term, adverse impacts to soils from potential soil erosion and compaction during construction. Minor, long-term, localized, adverse impacts to soils would result from permanent alteration of soil function from campground development. Alternative B would contribute negligible, short-term and long-term, adverse cumulative impacts to soils in the Nabesna District. The level of impact on soils from Alternative B would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.4.1.2 Aquatic Resources. Under Alternative B, minor, short-term, adverse impacts on aquatic resources may occur during construction from increased sedimentation. Campground road and campsite improvements would have minor, long-term benefits on aquatic resources from a

decrease in sediment runoff. Long-term, moderate, localized, adverse impacts on aquatic habitat would occur from the diminished supply of LWD to Twin Lakes. Approximately 5 to 10 acres of construction disturbance would be required to rehabilitate and expand the campground. The majority of disturbance would occur in previously disturbed areas. New areas of disturbance would be required for construction of 2 to 4 additional campsites, widening of the road, turnaround loops, vault toilet, observation deck, and boat launch. Disturbed soils may be vulnerable to erosion during storm events causing sediment runoff to receiving waters. Since the majority of disturbance would occur along the lakeshore (Figure 2-2), the potential for uncontrolled sediment runoff to Twin Lakes is high. However, erosion and sediment controls implemented before and after construction as required in the SWPPP (see Chapter 1, Section 1.7) would minimize runoff to the lake. Silt fences or other controls would be placed along the perimeter of the lake to trap sediments. All disturbed areas would be revegetated after construction to stabilize soils, reducing long-term erosion and sedimentation. In addition, the NPS would avoid construction during the period of grayling spawning and egg incubation to protect broadcast eggs from sedimentation. Improvements to the campground road would reduce soil erosion and sediment runoff to the lake, benefiting aquatic resources over the long-term.

A number of mature trees (white spruce) would have to be removed along the lakeshore for construction of the campsites and campground road. All non-diseased removed trees would be considered for placement in open water along the lakeshore to enhance aquatic habitat. Over the long-term, supply of LWD would be diminished due to the campsites developed along the lakeshore. Under this alternative, the average distance of campsites to the lake is 170 feet. A 300-foot vegetated buffer is recommended to ensure a long-term supply of LWD to the lake and to maintain a naturally functioning sediment regime (Veach, 2004a).

Cumulative Impacts – Culvert cleaning and repair on Nabesna Road likely contributes to minor, localized, adverse impacts on aquatic resources of receiving drainages from increased turbidity and suspended sediment over the short-term. Twin Lakes is fed by two culverted drainages that may be contributing to increased sediment loads.

Past construction of the access road and private residence along Twin Lakes likely contributed to increased sediment loads to the lake, degrading aquatic habitat. However, impacts would have been minor, localized and short-term.

Past construction and maintenance of the Jack Lake access route to private lands has resulted in moderate, long-term, adverse impacts on the aquatic resources of Little Jack Creek. Future realignment of the Jack Lake access route would result in moderate, long-term, beneficial impacts on aquatic resources in Little Jack Creek from habitat improvements.

The Nabesna Road Draft SCP recommends projects that if implemented, would have both major benefits (e.g., drainage improvements) and adverse impacts (e.g., development of waysides) to aquatic resources within the Nabesna District over the long-term. Overall, Alternative B would contribute minor, long-term, adverse and negligible beneficial cumulative impacts to aquatic habitat in the Nabesna District.

Conclusion – Alternative B would likely result in minor, short-term, localized, adverse impacts to Arctic grayling habitat in Twin Lakes from a potential increase in sediment runoff during construction and minor, long-term, beneficial impacts from a decrease in sediment runoff due to road improvements. A diminished supply of LWD over the long-term would have a moderate, localized, adverse impact on Arctic grayling habitat. Alternative B would contribute minor, long-term, adverse and negligible beneficial cumulative impacts to aquatic habitat in the Nabesna District. The level of impact on aquatic resources from Alternative B would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.4.1.3 Surface Water Quality. Under Alternative B, minor, short-term, localized, adverse impacts to water quality in Twin Lakes may occur during construction from increased turbidity and potential contamination. Road and campsite improvements would have minor, long-term, localized, beneficial impacts on water quality from a reduction in sediment runoff. Approximately 5 to 10 acres of construction disturbance would be required over a 3 to 4-month period to rehabilitate and expand the campground under Alternative B. As described above, disturbed soils may be vulnerable to erosion during storm events causing sediment runoff to receiving waters. Since the majority of disturbance would occur along the lakeshore (Figure 2-2), the potential for uncontrolled sediment runoff to Twin Lakes is high. Fuels products (petroleum, oils, and lubricants) would be needed to operate some of the equipment used to rehabilitate and expand the campground therefore there is some risk of an accidental fuel or chemical spill, which could adversely affect water quality if the spill were to enter Twin Lakes. Improvements to the campground road would reduce soil erosion and sediment runoff to the lake, improving water quality over the long-term.

Alaska DEC requires a NPDES, Storm Water General Permit for all discharges of storm water from construction projects disturbing five acres or more as described in Chapter 1 of this EA. The permit requires a SWPPP prior to construction that identifies practices to be used to reduce pollutants in storm water discharges from the construction site. The NPS would install erosion and sediment controls such as hay bales and silt fences to minimize sediment runoff to Twin Lakes. All disturbed areas would be revegetated after construction to stabilize soils, reducing long-term erosion and sedimentation. The NPS would ensure that the Alaska water quality criteria for turbidity in lake waters as described in Chapter 3 would not be exceeded. To prevent accidental fuel or chemical spills, no fuels would be stored at the construction site and no refueling would occur near Twin Lakes. The person responsible for equipment fueling would closely monitor the fueling operation, and an emergency spill kit, containing absorption pads, absorbent material, a shovel or rake, and other cleanup items, would be readily available on-site in the event of an accidental spill.

Cumulative Impacts – Culvert cleaning and repair on Nabesna Road likely contributes to minor, localized, adverse impacts on the water quality of receiving drainages from increased turbidity. Twin Lakes is fed by two culverted drainages that may be contributing to increased sediment loads.

Past construction of the access road and private residence along Twin Lakes likely contributed to increased sediment loads to the lake, degrading water quality. However, impacts would have been minor, localized and short-term.

Past construction and maintenance of the Jack Lake access route to private lands has resulted in moderate, long-term, adverse impacts on the water quality of Little Jack Creek. Future realignment of the Jack Lake access road outside the Little Jack Creek floodplain would result in moderate, long-term, beneficial impacts on water quality by reducing scour and siltation.

The Nabesna Road Draft SCP recommends projects that if implemented, would have both major, long-term benefits (e.g., drainage improvements) and adverse impacts (e.g., development of waysides) on the water quality of surface waters within the Nabesna District. Overall, Alternative B would contribute negligible, short-term, adverse cumulative impacts to surface water quality from increased sedimentation as a result of construction projects in the Nabesna District. Alternative B would also contribute negligible, long-term, beneficial cumulative impacts to surface water quality in the Nabesna District.

Conclusion – Alternative B would have minor, short-term, localized, adverse impacts on water quality in Twin Lakes during construction from increased turbidity and potential contamination. Road and campsite improvements would have minor, long-term, localized, beneficial impacts on water quality from a reduction in sediment runoff. Alternative B would contribute both negligible, short-term, cumulative adverse impacts and negligible, long-term, cumulative beneficial impacts to surface water quality in the Nabesna District. The level of impact on water quality from Alternative B would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.4.1.4 Wetlands. Alternative B would have moderate, long-term, adverse impacts on wetlands from wetland fill and short-term, minor, localized, adverse impacts from disturbance during construction activities. Approximately 0.8 to 0.9 acres of wetlands would be directly impacted from campground road widening, construction of turn-around loops, campsite pads, and toilet pad. The wetland types impacted are common within the Nabesna District. Additional disturbance to wetlands may occur during construction from removal of vegetation and soil disturbance. However, short-term impacts would be minimized by mitigation measures. Heavy equipment used in wetlands would be placed on mats to minimize soil and vegetation disturbance. All construction materials would be stockpiled within the Nabesna Road right-of-way to avoid wetland disturbance. All disturbed areas would be revegetated with native vegetation upon completion of construction. The NPS would be required to obtain a Department of the Army permit for wetland impacts from the Anchorage District of the USACE under Section 404 of the CWA. The permit would require compensatory mitigation of wetland impacts.

Cumulative Impacts – Other projects in the Nabesna District impacting wetlands include access road development and use in the Little Jack Creek floodplain and the Slana bunkhouse relocation project. These projects would adversely impact approximately 3.8 to 4.8 acres of wetlands over

the long-term. Approximately 0.2 acres of these wetlands have been severely altered by surrounding development (Cook, 2001).

The Nabesna Road Draft SCP recommends future road safety improvement projects, scenic corridor treatments, waysides, material and disposal sites, and road maintenance which if implemented would likely result in adverse impacts to a significant acreage of wetlands from fill and construction activities. Overall, Alternative B would contribute minor, long-term, adverse cumulative impacts to wetlands in the Nabesna District.

Conclusion – Alternative B would result in moderate, long-term, adverse impacts to wetlands from construction of the campground. Approximately 0.8 to 0.9 acres of wetlands would be filled and additional wetland disturbance may occur during construction. Alternative B would contribute minor, long-term, adverse cumulative impacts to wetlands in the Nabesna District. The level of impact on wetlands from Alternative B would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.4.1.5 Vegetation. Alternative B would have minor, long-term, localized adverse impacts to vegetation from vegetation removal for campground development and short-term, minor, localized, adverse impacts from vegetation disturbance during construction. Alternative B would utilize existing campsites, day-use area, and campground road to rehabilitate and expand the campground minimizing disturbance to vegetation. New areas of disturbance would be required for construction of additional campsites, widening of the road and turn-around loops, vault toilet, observation deck, and boat launch. Trees and ground cover would be removed within 0.8 to 0.9 acres to construct the new campsites, widen the road, and construct turn-around loops. Mature spruce would be preserved to the greatest extent possible. The new vault toilet would be sited in an open area to avoid impacts to tree cover. The observation deck would be elevated to avoid impacting lakeshore vegetation. The boat launch would require removal of vegetation within a small area of the lakeshore. All disturbed areas would be revegetated using native materials temporarily removed and stockpiled from the site for construction.

The campground would be surveyed for the presence of rare species of plants occurring on the site prior to ground disturbance. In the event that rare species are positively identified within the area of construction disturbance, impacts would be mitigated by avoidance.

Cumulative Impacts – Past construction of the access road and private residence along Twin Lakes resulted in a minor loss of vegetation within the vicinity of the campground. Past construction and maintenance of the Jack Lake access route resulted in approximately 3 to 4 acres of vegetation disturbance. An additional 0.6 acres of vegetation disturbance would result from the future realignment of the access route. Disturbed areas, not including the access road, would revegetate over time, diminishing the impact. Overall, adverse impacts to vegetation in the Little Jack Creek floodplain would be moderate over the long-term. The Slana bunkhouse relocation project would disturb approximately 0.2 acres of black spruce woodland and disturbed white spruce woodland. The Nabesna Road Draft SCP recommends projects that if implemented, would result in major, long-term adverse impacts to vegetation within the Nabesna

District. Overall, Alternative B would contribute minor, long-term, cumulative impacts to vegetation within the Nabesna District.

Conclusion – Alternative B would have minor, long-term, localized, adverse impacts to vegetation from campground development and short-term, minor, localized, adverse impacts from vegetation disturbance during construction. Implementation of Alternative B would contribute minor, long-term, cumulative adverse impacts to vegetation within the Nabesna District. The level of impacts to vegetation anticipated from Alternative B would not result in an impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.4.1.6 Wildlife. Campground rehabilitation and expansion under Alternative B would have minor, long-term, localized, adverse impacts on wildlife habitat. As described in subsection 4.4.1.5 above, less than 1 acre of wildlife habitat would be lost to new campsite development, road construction, and structures. Similar habitat is common throughout the Nabesna District. Increased use of the campground would have negligible impacts on wildlife from increased human presence and foot traffic causing temporary and localized displacement and disturbance of resident wildlife.

Alternative B would reduce the potential for human-bear conflicts. To secure bear attractants, campers would be provided bear resistant food storage caches at each campsite, a centralized food preparation and bear resistant food storage cache in the day-use area, and a bear-proof trash receptacle. Bear safety instructions would also be posted at the campground kiosk. Adherence to bear safety and effective bear management by NPS would lower the potential for human-bear conflicts and direct and indirect injury and mortality for both black and brown (grizzly) bears.

Cumulative Impacts – Past and future developments in the Nabesna District as described in subsection 4.2 would result in moderate, long-term, habitat loss and alteration, however extensive areas of similar wildlife habitat exists elsewhere in the park. Overall, Alternative B would contribute negligible, long-term, adverse cumulative impacts to wildlife habitat in the Nabesna District.

Conclusion – Campground rehabilitation and expansion under Alternative B would have minor, long-term, localized, adverse impacts to wildlife habitat and negligible, long-term, adverse impacts to wildlife from increased human disturbance. The potential for human-bear conflicts and injury or mortality to bears would be reduced benefiting wildlife over the long-term. The level of impacts to wildlife anticipated from Alternative B would not result in an impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.4.2 Socioeconomic Resources

4.4.2.1 Visitor Use and Recreation. Alternative B would have moderate, long-term, beneficial impacts to visitor use and recreation. Under Alternative B, the Twin Lakes campground would become the first formal NPS campground in the park. Two to four additional campsites would be developed and the existing eight would be improved with a parking spur, tent pad, table and

fire grate, and bear-resistant food storage cache. Clearly defined campsites and parking spaces would make efficient use of campground space and solve the problem of vehicles blocking access to campsites. Campsite additions and improvements would respond to the increased demand for campsites during peak visitation during the summer months. Installation of a water well would provide campers with potable water. The additional vault toilet would serve the expected increase in campers. Road widening, gravel surfacing, and turnaround loops would improve road conditions and vehicle circulation.

The observation deck along the lakeshore would provide visitors easy access to wildlife viewing and interpretive signs would educate visitors on the different kinds of habitat and wildlife found in the area. The rustic canoe launch would make it easier for visitors to access the lake with canoes or small row boats and fish in Twin Lakes.

Cumulative Impacts – The Nabesna Road Draft SCP recommends improvement projects such as removal of vegetative barriers along the road to open scenic vistas, specific projects to improve driver safety, and construction of waysides that would have major, long-term, beneficial impacts to visitor use and recreation in the Nabesna District. Alternative B would contribute minor, long-term, cumulative beneficial impacts to visitor use and recreation in the Nabesna District.

Conclusion – Alternative B would have moderate, long-term, beneficial impacts to visitor use and recreation from campground improvements and expansion. Alternative B would contribute minor, long-term, cumulative beneficial impacts to visitor use and recreation in the Nabesna District. The level of impacts to visitor use and recreation anticipated from Alternative B would not result in an impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.4.2.2 Visitor Safety. Alternative B would have moderate, long-term, beneficial impacts to visitor safety within the campground. Campground road improvements would greatly improve campsite accessibility and vehicle safety. Alternative B would reduce the potential for human-bear conflicts. To secure bear attractants, campers would be provided bear resistant food storage caches at each campsite, a centralized food preparation and bear resistant food storage cache in the day-use area, and a bear-proof trash receptacle. Bear safety instructions would also be posted at the campground kiosk. Adherence to bear safety and effective bear management by NPS would lower the potential for human-bear conflicts and human injury associated with NPS campground use.

Cumulative Impacts – The Nabesna Road Draft SCP recommends future road safety improvement projects that would have major, long-term, beneficial impacts to visitor safety in the Nabesna District. Alternative B would contribute minor, long-term, beneficial cumulative impacts to visitor safety in the Nabesna District.

Conclusion – Alternative B would have moderate, long-term, beneficial impacts to visitor safety within the campground from road improvements and reduced potential for human-bear conflicts. Alternative B would contribute minor, long-term, beneficial impacts to visitor safety within the Nabesna District. The level of impacts to visitor safety anticipated from Alternative B would not

result in an impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.4.2.3 Land Use. Campground road improvements under Alternative B would improve campground access. Alternative B would potentially increase the risk of trespass on private lands near the campground from an increased number of visitors.

Cumulative Impacts – Many small tracts of private lands are interspersed with public lands within the Nabesna area. This mosaic of land ownership allows for the potential trespass on private property. The Nabesna Road Draft SCP would reduce the potential for visitor trespass on private property within the Nabesna District with the development of new visitor waysides to provide parking, vehicle turnarounds, and access to trails and other recreational opportunities and would also significantly improve access to the Nabesna District with major road improvements and the development of visitor waysides. These improvements would have long-term, major, beneficial impacts to public access to the Nabesna District. Overall, Alternative B would contribute minor, long-term, beneficial cumulative impacts to land use in the Nabesna District.

Conclusion – Alternative B would have negligible, long-term, localized, adverse impacts on land use from a potential increase in trespass on private lands adjacent to the campground. Alternative B would have moderate, long-term, beneficial impacts to campground access from road improvements. Overall, Alternative B would contribute minor, long-term, beneficial cumulative impacts to public access to the Nabesna District. The level of impacts to land use anticipated from Alternative B would not result in an impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.4.3 Subsistence Resources

The effects of Alternative B on subsistence uses are evaluated in Appendix A, ANILCA Section 810(a) Summary Evaluation and Findings.

4.5 ALTERNATIVE C: PREFERRED ALTERNATIVE

4.5.1 Natural Resources

4.5.1.1 Soils. Alternative C would result in short-term, moderate, localized, adverse impacts to soils from potential soil erosion and compaction during construction. Long-term adverse impacts to soils would be negligible. Approximately 10 to 15 acres of construction disturbance would occur over a 3 to 4-month period. Use of heavy equipment could compact soils increasing storm water runoff and erosion, impeding root growth, and inhibiting revegetation. Heavy equipment would be staged onsite within the Nabesna Road right-of-way to minimize adverse effects from soil compaction. In addition, construction would not be conducted when soils are saturate, such as during or immediately following rain events. Construction would require grading and removal of the vegetation mat, exposing mineral soils to potential erosion during storm events. Erosion would be minimized by implementation of erosion and sediment controls

before and after construction as required in the SWPPP that will be prepared for this project (see Chapter 1, Section 1.7). All disturbed areas would be revegetated after construction to stabilize soils over the long-term.

The new campground road would be realigned further from the lakeshore protecting the wetter soils from disturbance. New road construction would directly impact soils on 0.6 to 0.7 acres. Construction of campsite pads and concrete pads supporting the vault toilet, pavilion, and amphitheater would directly impact an additional 0.3 acres of soils. Disruption of the soil horizon and associated vegetation mat from new development may alter seasonal thaw and increase permafrost depths. Road construction would compact and destroy the function of the organic soil horizon and remove mineral soils from road-cut areas. Gravel surfacing of the road and the concrete pad foundation for the vault toilet may increase seasonal thaw depths. Gravel surfacing would also stabilize the soil surface reducing long-term erosion. The observation deck would be elevated above the ground surface to avoid adverse soil impacts. The boat launch would cause minimal soil disturbance during construction and would stabilize soils in a small area along the lakeshore over the long-term. Approximately 1.1 acres of previously disturbed areas along the lakeshore would be restored to a natural condition improving soil conditions over the long-term and mitigating the adverse impacts to soils on the 0.9 to 1 acres of new development.

Cumulative Impacts – Other projects in the Nabesna District impacting soils include access road development and use in the Little Jack Creek floodplain and the Slana bunkhouse relocation project. These projects would alter soil function and increase soil erosion. The Nabesna Road Draft SCP recommends future road safety improvement projects, scenic corridor treatments, waysides, material and disposal sites, and road maintenance over a large area, which if implemented, would likely result in major, short-term, adverse impacts to soils from construction activities and major, long-term, adverse impacts from alteration of soil function. Overall, Alternative C would contribute negligible, short-term, adverse cumulative impacts to soils in the Nabesna District from construction.

Conclusion – Alternative C would result in moderate, localized, short-term, adverse impacts to soils from potential soil erosion and compaction during construction. Negligible, long-term, adverse impacts to soils would occur from new campground development. Alternative C would contribute negligible, short-term, adverse cumulative impacts to soils in the Nabesna District from construction. The level of impact on soils from Alternative C would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.5.1.2 Aquatic Resources. Under Alternative C, minor, short-term, adverse impacts on aquatic resources may occur during construction from increased sediment runoff. Restoration of the lakeshore and increased vegetated buffer would have moderate, long-term, benefits to aquatic resources in Twin Lakes. Approximately 10 to 15 acres of construction disturbance would be required to rehabilitate and expand the campground. New road construction and structures would disturb 0.9 to 1 acre of land over the long-term. Disturbed soils may be vulnerable to erosion during storm events causing increased sediment runoff to receiving waters. Since a portion of disturbance would occur along the lakeshore (Figure 2-3), the potential for

uncontrolled sediment runoff to Twin Lakes is high. However, erosion and sediment controls implemented before and after construction as required in the SWPPP (see Chapter 1, Section 1.7) would minimize runoff to the lake. Silt fences or other controls would be placed along the perimeter of the lake to trap sediments. All disturbed areas would be revegetated after construction to stabilize soils, reducing long-term erosion and sedimentation. Gravel surfacing of the campground road would also stabilize the soil surface reducing long-term erosion and sediment runoff to the lake. The NPS would avoid construction during the period of grayling spawning and egg incubation to protect broadcast eggs from sedimentation. A number of mature trees would have to be removed for construction of new campground facilities. All non-diseased removed trees would be considered for placement in open water along the lakeshore to enhance aquatic habitat.

Approximately 1.1 acres of disturbed land along the lakeshore would be restored to a modified natural condition reducing sediment runoff to Twin Lakes and increasing the long-term supply of LWD to Twin Lakes. The vegetated buffer between the lake and campground development would be increased by realignment of the road, relocation of the campsites, and restoration of the lakeshore. The average distance between the campsites to the lake would be 350 feet. The campground road would fall within 200 feet of the lake. Increasing the vegetated buffer would protect the lake from sediment and contaminant runoff and ensure a long-term supply of LWD to the lake.

Cumulative Impacts – Culvert cleaning and repair on Nabesna Road likely contributes to minor, localized, adverse impacts on aquatic resources of receiving drainages from increased turbidity and suspended sediment over the short-term. Twin Lakes is fed by two culverted drainages that may be contributing to increased sediment loads.

Past construction of the access road and private residence along Twin Lakes likely contributed to increased sediment loads to the lake, degrading aquatic habitat. However, impacts would have been minor, localized and short-term.

Past construction and maintenance of the Jack Lake access route to private lands has resulted in moderate, long-term, adverse impacts on the aquatic resources of Little Jack Creek. Future realignment of the Jack Lake access route would result in moderate, long-term, beneficial impacts on aquatic resources in Little Jack Creek from habitat improvements.

The Nabesna Road Draft SCP recommends projects that if implemented, would have both major benefits (e.g., drainage improvements) and adverse impacts (e.g., development of waysides) on aquatic resources within the Nabesna District over the long-term. Overall, Alternative C would contribute minor, short-term, adverse cumulative impacts and minor, long-term, beneficial cumulative impacts to aquatic resources in the Nabesna District.

Conclusion – Under Alternative C, minor, short-term, adverse impacts to aquatic resources may occur during construction from increased sediment runoff. Long-term, moderate, beneficial impacts to aquatic resources would occur from restoration of the lakeshore and increased vegetated buffer between the lake and campground developments. Alternative C would contribute minor, short-term, adverse cumulative impacts and minor, long-term, beneficial

cumulative impacts to aquatic resources in the Nabesna District. The level of impact on aquatic resources from Alternative C would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.5.1.3 Surface Water Quality. Under Alternative C, minor, short-term, localized, adverse impacts to water quality in Twin Lakes may occur during construction from increased turbidity and potential contamination. Lakeshore restoration and an increased vegetated buffer along the lakeshore would have moderate, long-term, beneficial impacts to water quality from a reduction in sediment runoff. Approximately 10 to 15 acres of construction disturbance would be required to rehabilitate and expand the campground under Alternative C. New road construction and structures would disturb 0.9 to 1 acre of undisturbed land. As described in Section 4.5.1.1, disturbed soils may be vulnerable to erosion during storm events causing increased sediment runoff to receiving waters. Since a portion of disturbance would occur along the lakeshore (Figure 2-3), the potential for uncontrolled sediment runoff to Twin Lakes is high. Fuels products (petroleum, oils, and lubricants) would be needed to operate some of the equipment used to rehabilitate and expand the campground therefore there is some risk of an accidental fuel or chemical spill, which could adversely affect water quality if the spill were to enter Twin Lakes.

Alaska DEC requires a NPDES, Storm Water General Permit for all discharges of storm water from construction projects disturbing five acres or more as described in Chapter 1 of this EA. The permit requires a SWPPP prior to construction that identifies practices to be used to reduce pollutants in storm water discharges from the construction site. The NPS would install erosion and sediment controls such as hay bales and silt fences to minimize sediment runoff to Twin Lakes. All disturbed areas would be revegetated after construction to stabilize soils, reducing long-term erosion and sedimentation. The NPS would ensure that the Alaska water quality criteria for turbidity in lake waters as described in Chapter 3 would not be exceeded. To prevent accidental fuel or chemical spills, no fuels would be stored at the construction site and no refueling would occur near Twin Lakes. The person responsible for equipment fueling would closely monitor the fueling operation, and an emergency spill kit, containing absorption pads, absorbent material, a shovel or rake, and other cleanup items, would be readily available on-site in the event of an accidental spill.

Approximately 1.1 acres of disturbed land along the lakeshore would be restored to a modified natural condition reducing sediment runoff to Twin Lakes. The vegetated buffer between the lake and campground development would be increased by realignment of the road, relocation of the campsites, and restoration of the lakeshore. The average distance between the campsites to the lake would be 350 feet. The campground road would fall within 200 feet of the lake. Increasing the vegetated buffer would protect the lake from sediment and contaminant runoff. Gravel surfacing of the campground road would also stabilize the soil surface reducing long-term erosion and sediment runoff to the lake.

Cumulative Impacts – Culvert cleaning and repair on Nabesna Road likely contributes to short-term, minor, localized, adverse impacts on the water quality of receiving drainages from

increased turbidity and suspended sediment. Twin Lakes is fed by two culverted drainages that may be contributing to increased sediment loads.

Past construction of the access road and private residence along Twin Lakes likely contributed to increased sediment loads to the lake, degrading water quality. However, impacts would have been minor, localized and short-term.

Past construction and maintenance of the Jack Lake access route to private lands has resulted in moderate, long-term, adverse impacts on the water quality of Little Jack Creek. Future realignment of the Jack Lake access road outside the Little Jack Creek floodplain would result in moderate, long-term, beneficial impacts on water quality by reducing scour and siltation.

The Nabesna Road Draft SCP recommends projects that if implemented, would have both major, long-term benefits (e.g., drainage improvements) and adverse impacts (e.g., development of waysides) on the water quality of surface waters within the Nabesna District. Overall, Alternative C would contribute minor, short-term, adverse cumulative impacts to surface water quality in the Nabesna District. Alternative C would also contribute minor, long-term, beneficial cumulative impacts to surface water quality in the Nabesna District.

Conclusion – Alternative C would have minor, short-term, localized, adverse impacts to water quality in Twin Lakes during construction from increased turbidity and potential contamination. Moderate, long-term, benefits to water quality in Twin Lakes would result from lakeshore restoration and increased vegetated buffer along the lakeshore. Alternative C would contribute minor, short-term, adverse cumulative impacts and minor, long-term, beneficial cumulative impacts to surface water quality within the Nabesna District. The level of impact on water quality from Alternative C would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.5.1.4 Wetlands. Alternative C would have minor, long-term, localized, adverse impacts on wetlands from fill activities and short-term, minor, localized, adverse impacts from disturbance during construction. New road construction would directly impact 0.6 to 0.7 acres of palustrine forested wetlands. Construction of campsite pads and concrete pads supporting the vault toilet, pavilion, and amphitheater would directly impact an additional 0.3 acres of wetlands of this same wetland type. A valid attempt to restore approximately 1.1 acres of disturbed wetlands along the lakeshore would result in a no net loss of wetlands on the site. Additional disturbance to wetlands may occur within the 10 to 15 acre area of construction disturbance. Impacts would be minimized by mitigation measures. Heavy equipment used in wetlands would be placed on mats to minimize soil and vegetation disturbance. All construction materials would be stockpiled within the Nabesna Road right-of-way to avoid wetland disturbance. All disturbed areas would be revegetated with native vegetation upon completion of construction.

The NPS would be required to obtain a Department of the Army permit for wetland impacts from the Anchorage District of the USACE under Section 404 of the CWA. The permit would require compensatory mitigation of wetland impacts. Through a valid design attempt, Alternative C proposes to restore 1.1 acres of disturbed wetlands along the lakeshore (Figure 2-3) that would

compensate for wetland impacts beyond the minimum required 1:1 mitigation ratio. In addition, the NPS has a wetland mitigation bank available as a result of the Jack Lake access route realignment project.

Cumulative Impacts – Other projects in the Nabesna District impacting wetlands include access road development and use in the Little Jack Creek floodplain and the Slana bunkhouse relocation project. These projects would adversely impact approximately 3.8 to 4.8 acres of wetlands over the long-term. Approximately 0.2 acres of these wetlands have been severely altered by surrounding development (Cook, 2001).

The Nabesna Road Draft SCP recommends future road safety improvement projects, scenic corridor treatments, waysides, material and disposal sites, and road maintenance which if implemented would likely result in adverse impacts to a significant acreage of wetlands from fill and construction activities. Overall, Alternative C would contribute negligible, long-term, adverse cumulative impacts to wetlands in the Nabesna District.

Conclusion – Alternative C would have minor, long-term, localized, adverse impacts to wetlands from campground development and minor, short-term, localized, adverse impacts to wetlands from disturbance during construction. Approximately 0.9 to 1.0 acres of wetlands would be filled for road construction and new structures. This impact would be offset by the restoration of 1.1 acres of disturbed wetlands along the lakeshore. Alternative C would contribute negligible, long-term, adverse cumulative impacts to wetlands in the Nabesna District. The level of impact on wetlands from Alternative C would not result in impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.5.1.5 Vegetation. Alternative C would have minor, long-term, localized, adverse impacts to vegetation. Minor, short-term, localized, adverse impacts would occur from vegetation disturbance during construction. Trees and ground cover would be removed within 0.9 to 1.0 acres to construct the campground road, new campsites, and concrete pads supporting the new vault toilet, pavilion, and amphitheater. Mature spruce would be preserved to the greatest extent possible. The new vault toilet would be sited in an open area to avoid impacts to tree cover. The observation deck would be elevated to avoid impacting lakeshore vegetation. The boat launch would require removal of vegetation within a small area of the lakeshore. All disturbed areas would be revegetated using native materials removed and stockpiled from other areas of the site for construction. Approximately 1.1 acres of disturbed vegetation would be restored to a modified natural condition along the lakeshore (Figure 2-3) offsetting the loss of vegetation from new construction. Restoration of lakeshore vegetation would potentially benefit rare plant species requiring this habitat.

The campground would be surveyed for the presence of rare species of plants occurring on the site prior to ground disturbance. In the event that rare species are positively identified within the area of construction disturbance, impacts would be mitigated by avoidance.

Cumulative Impacts – Past construction of the access road and private residence along Twin Lakes resulted in a minor loss of vegetation within the vicinity of the campground.

Past construction and maintenance of the Jack Lake access route to private lands resulted in approximately 3 to 4 acres of vegetation disturbance. An additional 0.6 acres of vegetation disturbance would result from the future realignment of the access route. Disturbed areas, not including the access road, would revegetate over time, diminishing the impact. Overall, adverse impacts to vegetation in the Little Jack Creek floodplain would be moderate over the long-term.

The Slana bunkhouse relocation project would disturb approximately 0.2 acres of black spruce woodland and disturbed white spruce woodland.

The Nabesna Road Draft SCP recommends projects that if implemented, would result in major, long-term, adverse impacts to vegetation within the Nabesna District. Overall, implementation of Alternative C would contribute negligible, short-term, adverse cumulative impacts to vegetation within the Nabesna District.

Conclusion – Alternative C would have minor, long-term, localized, adverse impacts to vegetation. Short-term, minor, localized, adverse impacts would occur from vegetation disturbance during construction. Implementation of Alternative C would contribute negligible, short-term, adverse cumulative impacts to vegetation within the Nabesna District. The level of impacts to vegetation anticipated from Alternative C would not result in an impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.5.1.6 Wildlife. Campground rehabilitation and expansion under Alternative C would have minor impacts on wildlife habitat. As described in subsection 4.5.1.5 above, approximately 0.9 to 1.0 acres of wildlife habitat would be lost to new campsite development, road construction, and structures. Similar habitat is common throughout the Nabesna area. This loss would also be offset by restoration of approximately 1.1 acres of lakeshore habitat, which would benefit wildlife utilizing the lake for foraging, nesting, and shelter, for the most part during periods of low visitor use. Increased use of the campground may cause a negligible increase in localized displacement and disturbance of resident wildlife from an increase in human presence and foot traffic.

Alternative C would reduce the potential for human-bear conflicts. To secure bear attractants, campers would be provided bear resistant food storage caches at each campsite, a centralized food preparation and bear resistant food storage cache in the day-use area, and a bear-proof trash receptacle. Bear safety instructions would also be posted at the campground kiosk. Adherence to bear safety and effective bear management by NPS would lower the potential for human-bear conflicts and direct and indirect injury and mortality for both black and brown (grizzly) bears.

Cumulative Impacts – Past and future developments in the Nabesna District as described in subsection 4.2 would result in major, long-term, habitat loss and alteration, however extensive areas of similar wildlife habitat exists elsewhere in the park. Overall, Alternative C would not contribute to cumulative impacts to wildlife in the Nabesna District.

Conclusion – Campground rehabilitation and expansion under Alternative C would have minor, long-term, localized, adverse impacts on wildlife and wildlife habitat. The potential for human-

bear conflicts and injury or mortality to bears would be reduced benefiting wildlife over the long-term. Alternative C would not contribute to cumulative impacts to wildlife in the Nabesna District. The level of impacts to wildlife anticipated from Alternative C would not result in an impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.5.2 Socioeconomic Resources

4.5.2.1 Visitor Use and Recreation. Alternative C would have moderate, long-term, beneficial impacts to visitor use and recreation. Under Alternative C, the Twin Lakes campground would become the first formal NPS campground in the park. Twelve to 14 new campsites would be developed with a parking spur, tent pad, table and fire grate, and bear-resistant food storage cache. The existing campsites along the lakeshore would be restored to a modified natural condition improving the scenic view of the lake and providing interpretive opportunities of the restoration. Clearly defined campsites and parking spaces would make efficient use of campground space and solve the problem of vehicles blocking access to campsites. Campsite additions and improvements would respond to the increased demand for campsites during peak visitation during the summer months. Installation of a water well would provide campers with potable water. The additional vault toilet would serve the expected increase in campers. Road realignment and gravel surfacing would improve road conditions and vehicle circulation.

Additional campground facilities would enhance the experience of visitors to the campground. The observation deck along the lakeshore would provide visitors easy access to wildlife viewing and interpretive signs would educate visitors on the different kinds of habitat and wildlife found in the area. A small amphitheater would serve as a meeting area for formal “campfire talks” by Park Rangers and for other educational purposes. The rustic canoe launch would make it easier for visitors to access the lake with canoes or small row boats and fish in Twin Lakes. A day-use pavilion would provide shelter and tables for picnicking and other activities for up to 24 persons. Day-use parking would also be provided to improve access to the day-use area and provide parking for group camping. A designated foot trail would provide easy access to campground facilities.

Cumulative Impacts – The Nabesna Road Draft SCP recommends improvement projects such as removal of vegetative barriers along the road to open scenic vistas, specific projects to improve driver safety, and construction of waysides that would have major, long-term, beneficial impacts to visitor use and recreation in the Nabesna District. Overall, Alternative C would contribute moderate, long-term, cumulative beneficial impacts to visitor use and recreation in the Nabesna District.

Conclusion – Alternative C would have moderate, long-term, beneficial impacts to visitor use and recreation from campground improvements and expansion. Overall, Alternative C would contribute moderate, long-term, cumulative beneficial impacts to visitor use and recreation in the Nabesna District. The level of impacts to visitor use and recreation anticipated from Alternative C would not result in an impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.5.2.2 Visitor Safety. Alternative C would have moderate, long-term, beneficial impacts to visitor safety within the campground. Campground road improvements would greatly improve campsite accessibility and vehicle safety. Alternative C would reduce the potential for human-bear conflicts. To secure bear attractants, campers would be provided bear resistant food storage caches at each campsite, a centralized food preparation and bear resistant food storage cache in the day-use area, and a bear-proof trash receptacle. Bear safety instructions would also be posted at the campground kiosk. Adherence to bear safety and effective bear management by NPS would lower the potential for human-bear conflicts and human injury associated with NPS campground use.

Cumulative Impacts – The Nabesna Road Draft SCP recommends future road safety improvement projects that would have major, long-term, beneficial impacts to visitor safety in the Nabesna District. Overall, Alternative C would contribute minor, long-term, cumulative beneficial impacts to visitor safety in the Nabesna District.

Conclusion – Alternative C would have moderate, long-term, beneficial impacts to visitor safety within the campground from road improvements and a reduced potential for human-bear conflicts. Overall, Alternative C would contribute minor, long-term, cumulative beneficial impacts to visitor safety in the Nabesna District. The level of impacts to visitor safety anticipated from Alternative C would not result in an impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.5.2.3 Land Use. Campground road improvements under Alternative C would greatly improve campground access. Alternative C would potentially increase the risk of trespass on private lands near the campground from an increased number of visitors.

Cumulative Impacts – Many small tracts of private lands are interspersed with public lands within the Nabesna area. This mosaic of land ownership allows for the potential trespass on private property. The Nabesna Road Draft SCP would reduce the potential for visitor trespass on private property within the Nabesna District with the development of new visitor waysides to provide parking, vehicle turnarounds, and access to trails and other recreational opportunities. The Nabesna Road Draft SCP would also significantly improve access to the Nabesna area with major road improvements and the development of visitor waysides. These improvements would have long-term, major, beneficial impacts on access to the Nabesna District. Overall, Alternative C would contribute moderate, long-term, beneficial cumulative impacts to public access to the Nabesna District.

Conclusion – Alternative C would have negligible, long-term, localized, adverse impacts to land use from the potential increase of trespass on private lands near the campground. Alternative C would have moderate, long-term, beneficial impacts to campground access from road improvements. Overall, Alternative C would contribute moderate, long-term, beneficial cumulative impacts to public access to the Twin Lakes Campground. The level of impacts to land use anticipated from Alternative C would not result in an impairment of park resources that fulfill specific purposes identified in the WRST enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.5.3 Subsistence Resources

The effects of Alternative C on subsistence uses are evaluated in Appendix A, ANILCA Section 810(a) Summary Evaluation and Findings.

CHAPTER 5: CONSULTATION & COORDINATION

5.1 PUBLIC INVOLVEMENT

Public involvement activities implemented as part of the EA process included a press release and public open house. A press release for planned projects in the Nabesna District was issued on May 26, 2004 and announced over a public radio station for 6 days beginning May 28, 2004. A public open house was held at the Slana Ranger Station on June 2, 2004 to present information on a variety of projects planned for the Nabesna District including the Twin Lakes campground rehabilitation and expansion. The open house was attended by 10 local residents who did not have any comments on the campground project beyond a general inquiry as to the nature of the project. All were informed that the EA for the project would be available for public review in 2004 or 2005.

Table 5-1 lists the agencies, organizations, and persons contacted for information, which assisted in identifying issues, developing alternatives, and analyzing impacts of the alternatives.

Table 5-1. Persons and Agencies Contacted	
Person Contacted	Agency/Organization
Mary Beth Cook, Botanist	U.S. Department of Interior, National Park Service (NPS), Wrangell-St. Elias National Park and Preserve (WRST)
Devi Sharp, Chief, Resource Management	U.S. Department of Interior, NPS, WRST
Will Tipton, Facility Manager	U.S. Department of Interior, NPS, WRST
Danny Rosenkrans, Geologist	U.S. Department of Interior, NPS, WRST
Vicki Penwell, Interpretive Park Ranger	U.S. Department of Interior, NPS, WRST
Mason Reid, Wildlife Biologist	U.S. Department of Interior, NPS, WRST
Michele Jespersen, Cultural Resource Management Specialist	U.S. Department of Interior, NPS, WRST
Richard L. Anderson, Environmental Protection Specialist	U.S. Department of Interior, NPS, Alaska Regional Support Office
Paul L. Schrooten, Landscape Architect	U.S. Department of Interior, NPS, Alaska Regional Support Office
Kevin Noon, Wetland Scientist	U.S. Department of Interior, NPS, Washington Office, Water Resources Division
Bob Frisbie, Maintenance Supervisor	U.S. Department of Interior, NPS, WRST
Lee Penwell, Slana Maintenance	U.S. Department of Interior, NPS, WRST
Jan Stuart, Ph.D., Project Manager	Regulatory Branch, East Section Alaska District Army Corps of Engineers

5.2 LIST OF PREPARERS

U.S. Department of the Interior, National Park Service

Steve Hunt, Environmental Specialist, NPS, WRST

Paul L. Schrooten, Landscape Architect, NPS, Alaska Regional Support Office

Eric Veach, Fisheries Biologist, NPS, WRST

Vicki Snitzler, Park Planner, NPS, WRST

Barbara Cellarius, Cultural Anthropologist/Subsistence Specialist, NPS, WRST

The Mangi Environmental Group

Linda Erdmann, Project Manager and Senior Analyst

Robin Olsen, Document Manager

Tim Gaul, GIS Mapping and Analysis

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APPENDIX A

ANILCA Section 810(a)

Summary Evaluation and Findings

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ANILCA SECTION 810(a)

SUMMARY EVALUATION AND FINDINGS

I. INTRODUCTION

This section was prepared to comply with Title VIII, Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA). It summarizes the evaluations of potential restrictions to subsistence activities which could result from the National Park Service (NPS) efforts to rehabilitate and expand the existing Twin Lakes campground, located along the Nabesna Road in Wrangell-St. Elias National Park and Preserve, Alaska. In addition enhancing recreational visitor experience by increasing the number of camp sites and adding campground amenities, the rehabilitation effort will help protect the aquatic resources of Twin Lakes.

II. THE EVALUATION PROCESS

Section 810(a) of ANILCA states:

"In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands ... the head of the federal agency ... over such lands ... shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease, permit, or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be effected until the head of such Federal agency -

(1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to section 805;

(2) gives notice of, and holds, a hearing in the vicinity of the area involved; and

(3) determines that (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions."

ANILCA created new units and additions to existing units of the national park system in Alaska. Wrangell-Saint Elias National Park, containing approximately eight million one hundred and forty-seven thousand acres of public lands, and Wrangell-Saint Elias National Preserve containing approximately four million one hundred and seventeen thousand acres of public lands, was created by ANILCA, section 201(9), for the following purposes:

“To maintain unimpaired the scenic beauty and quality of high mountain peaks, foothills, glacial systems, lakes, and streams, valleys, and coastal landscapes in their natural state; to protect habitat for, and populations of, fish and wildlife including but not limited to caribou, brown/grizzly bears, Dall sheep, moose, wolves, trumpeter swans and other waterfowl, and marine mammals; and to provide continued opportunities including reasonable access for mountain climbing, mountaineering, and other wilderness recreational activities. Subsistence uses by local residents shall be permitted in the park, where such uses are traditional, in accordance with the provisions of Title VIII.”

The potential for significant restriction must be evaluated for the proposed action's effect upon "...subsistence uses and needs, the availability of other lands for the purposes sought to be achieved and other alternatives which would reduce or eliminate the use."

III. PROPOSED ACTION ON FEDERAL LANDS

The National Park Service is considering three alternatives for the rehabilitation and expansion of the existing Twin Lakes Campground, located at mile 27.8 on the Nabesna Road in Wrangell-St. Elias National Park and Preserve. A full discussion of the alternatives and their anticipated effects are presented in the EA. The alternatives are summarized briefly below with particular attention to subsistence resources.

Alternative A (no action alternative): The National Park Service would not rehabilitate or expand the Twin Lakes campground. The existing campground would remain in its current condition.

Alternative B (minimal action alternative): The NPS would develop 10 to 12 small (class C) recreational vehicle (RV) campsites at the Twin Lakes campground largely using the existing footprint of campsites, disturbed areas, and road. The road would be widened and improved for two-way traffic using the existing alignment, and existing campsites would be improved, with parking spur, tent pad, table, fire grate, bear-resistant food storage, and identification sign at each site. Additional developments would include a new vault toilet, water well, open-air pavilion, canoe launch, observation deck, and picnicking/day-use area. Existing social trails not used in the rehabilitated campground design would be revegetated.

Alternative C (preferred alternative): The NPS would develop 12 to 14 new RV campsites, a realigned campground road, and other facilities at the Twin Lakes site, and it would restore the existing campsites, road and other disturbed areas to a natural condition. A new campground entrance would improve maneuvering and sight distance for two-way traffic. A one-way loop road would be developed further from the lakeshore than the existing road and surfaced with gravel to minimize erosion and runoff into the lake. Both the road and campsites would accommodate small (class C) RVs. Each campsite would have a parking spur, tent pad, table, fire grate, bear-resistant food storage, and sign. In addition, a new vault toilet, water well, open-air pavilion, canoe launch, observation deck, elevated boardwalk, picnicking/day-use/group camping area, and day-use parking. Existing social trails not used in the rehabilitated campground design would be revegetated.

IV. AFFECTED ENVIRONMENT

A summary of the affected environment pertinent to subsistence use is presented here. The following documents contain additional descriptions of subsistence uses within Wrangell-St. Elias National Park and Preserve:

General Management Plan/Land Protection Plan, Wrangell-St. Elias National Park and Preserve, NPS Alaska Region, 1986.

Final Environmental Impact Statement, Wilderness Recommendation, NPS Alaska Region, 1988.

Wrangell-St. Elias Subsistence Management Plan, NPS Alaska Region, 1998.

Subsistence uses are allowed within Wrangell-St. Elias National Park and Preserve in accordance with Titles II and VIII of ANILCA. The national preserve is open to federal subsistence uses and state authorized general (sport) hunting, trapping and fishing activities. Qualified local rural residents who live in one of the park's twenty-three designated resident zone communities or have a special subsistence use permit issued by the park superintendent may engage in subsistence activities within the national park. State regulated sport fishing is also allowed in the national park. The proposed action falls within the park, although the site is adjacent to national preserve lands, which are located to the north and east. Federal subsistence regulations are not applicable to the native allotments and other private inholdings that are in the general vicinity of the campground site.

The landscape included within Wrangell-St. Elias National Park and Preserve ranges from forests and tundra to the rock and ice of high mountains. The region's main subsistence resources are salmon, moose, caribou, Dall sheep, mountain goat, ptarmigan, grouse, snowshoe hare, furbearing animals, berries, mushrooms, and dead and green logs for construction and firewood.

The Nabesna Road is a popular moose hunting area, and this is the major subsistence wildlife resource commonly found at the site of the proposed action. Other subsistence wildlife resources in the area include grizzly and black bear, furbearers, and waterfowl. During the 1970s, caribou were harvested in the area (Record 1983: 147). The only fish species documented in Twin Lakes during the park's recent freshwater fish inventory was Arctic grayling, however, fish species found in other lakes and streams in the area include burbot, lake trout, whitefish, and slimy sculpin, and these species could potentially occur in Twin Lakes as well (Markis et al. 2004; Eric Veach, personal communication, 11/15/2004). Currently subsistence harvest of freshwater fish in Twin Lakes and nearby streams is relatively limited; however, the lake historically provided a relatively productive fishery, with grayling being the most significant species. An Ahtna family maintained a residence in the Twin Lakes area beginning in the early to mid-20th century, and one member of that family still lives on a native allotment in the area. Conversations with members of that family indicate subsistence harvest of grayling using fish traps. Vegetation within the project area consists of mixed white and black spruce woodland, open white spruce forest, and emergent scrub shrub along the lakeshore. Ground cover vegetation includes tussock grasses, forbs, berry bushes, dwarf birch, willow shrubbery, feathermosses and lichens. There are

areas of sedge tussock tundra in wetter areas. Blueberries and low-bush cranberries (also known as lingonberries) are harvested in the late summer and fall.

The NPS recognizes that patterns of subsistence use vary from time to time and from place to place depending on the availability of wildlife and other renewable natural resources. A subsistence harvest in a given year may vary considerable from previous years due to weather conditions, migration patterns, and natural population cycles.

V. SUBSISTENCE USES AND NEEDS EVALUATION

To determine the potential impact on existing subsistence activities, three evaluation criteria were analyzed relative to existing subsistence resources which could be impacted.

The evaluation criteria are:

1. the potential to reduce important subsistence fish and wildlife populations by (a) reductions in numbers; (b) redistribution of subsistence resources; or (c) habitat losses;
2. what affect the action might have on subsistence fisher or hunter access;
3. the potential for the action to increase fisher or hunter competition for subsistence resources.

The potential to reduce populations:

Subsistence species and habitats would be subjected to minimal potential impacts and disturbances as a result of the campground rehabilitation and expansion proposed under Alternatives B and C. Alternative B would directly affect 0.8 to 0.9 acres of previously undisturbed land and wildlife habitat for species used by local rural residents for subsistence purposes (e.g. moose, black bears, snowshoe hares, spruce grouse, and berry picking), while Alternative C would affect 0.9 to 1 acre of previously undisturbed habitat and rehabilitate about 1.1 acres of disturbed land. Such wildlife habitat is generally widespread in the local area, however, and thus this habitat loss would not significantly affect subsistence wildlife populations.

Alternative C and to a lesser extent Alternative B would increase the presence of humans at the site during the summer months, as a result of increased campground use, which could have long-term, low-level localized impacts on the distribution of resident wildlife species. That said, the current condition, Alternative A, also has some potential for wildlife disturbance from human presence, and it is difficult to predict whether the human increased presence will have a significantly larger impact on wildlife distribution.

With regard to fish, erosion from the existing campground road and campsites (Alternative A) has a minor localized, long-term impact on water quality in Twin Lakes and thus on habitat for grayling and other freshwater fish. The impact on the freshwater fish population as a subsistence resource is likely negligible, however. Once the construction phase is completed, Alternatives B

and C are anticipated to improve the existing condition by reducing the sediment loads going into the lake and therefore the impact. Thus, the proposed alternatives have no more than a negligibly adverse impact on fish habitat, and the proposed and minimal alternatives could reduce this impact.

Construction or other project activity at the site, including vegetation removal or site preparation, will entail some temporary and spatially limited disturbance and displacement to wildlife species inhabiting the site such as birds, red squirrels, snowshoe hares, mice and voles. Under Alternatives B and C, construction is anticipated to be of short duration (about 3 to 4 months). The area impacted under Alternative B would be 5 to 10 acres and under Alternative C, 10 to 15 acres. Mobile species, including most subsistence species, would avoid the area during actual construction activity, and no long-term impact is anticipated. Any short-term impact on subsistence hunting in the vicinity of the campground from the construction could be minimized by completing the construction outside the hunting season (August 15 to 28 and September 1 to 30). In sum, the proposed alternatives are not expected to significantly alter wildlife movements or reduce populations of important subsistence resources. The amount of potential habitat reduction is limited when compared to the overall size of the park.

Beyond this, NPS regulations and provisions of ANILCA provide the tools for adequate protection of fish and wildlife populations on federal public lands while ensuring a subsistence priority for local rural residents. NPS regulations allow the superintendent to enact closures, restrictions, or both if necessary to protect subsistence opportunities and ensure the continued viability of particular fish or wildlife populations.

The effect on subsistence access:

Access for subsistence use on NPS lands is provided section 811 of ANILCA. Although access is not restricted at the campground, members of the Ahtna family that has traditionally used the Twin Lakes and Jack Lake area report that the public use of the Twin Lakes campground today has curtailed subsistence activity there. This is anticipated to continue with or without the proposed actions. Otherwise, none of the three alternatives discussed in this analysis would have a measurable impact on subsistence access.

The potential to increase competition:

Competition for wildlife or other resources is not expected to significantly impact subsistence users as a result of any of the proposed actions. No significant increase in competition for subsistence hunting is expected from any of the alternatives. Although Twin Lakes are open to both subsistence and sport fishing, subsistence fishing at this location is negligible to minimal at the present time. Any increase in berry picking by recreational visitors over and above the current situation (Alternative A) is anticipated to be minimal.

National Park Service regulations and ANILCA provisions mandate that if and when it is necessary to restrict taking of fish or wildlife, subsistence users are the priority consumptive users on federal public lands and would be given preference over other consumptive uses (ANILCA, section 802(2)). Continued implementation of the ANILCA provisions should

mitigate any increased competition from resource users other than subsistence users. Therefore, the proposed action is not expected to adversely affect resource competition.

VI. AVAILABILITY OF OTHER LANDS

No other lands would satisfy the goal of rehabilitating and improving the existing Twin Lakes campground. Other sites along the Nabesna Road have been considered as campground locations (see part VII of this analysis), however, locating a campground at another location along the road would have resulted in similar impacts to subsistence resources. Indeed, locating a campground at a potentially undisturbed location could result in a greater impact than renovating an existing site. Additionally, other federal public lands both within and outside of the park and preserve are available for subsistence.

VII. ALTERNATIVES CONSIDERED

The EA and this evaluation have described and analyzed the proposed alternatives. Other or additional camping areas along Nabesna Road are considered in the General Management Plan for the park and preserve and in the draft Scenic Corridor Plan. These include locations near Jack Lake, Reeves Field trailhead, Jack Creek, and the Slana River.

The proposed actions are consistent with NPS mandates and the General Management Plan for the park and preserve. No other alternatives that would reduce or eliminate the use of public lands needed for subsistence purposes were identified. It is possible for subsistence users to utilize other lands inside and outside the park and preserve. Subsistence users extend their activities to other areas as necessary to obtain subsistence resources.

VII. FINDINGS

This analysis concludes that all three alternatives for the proposed action will not result in a significant restriction of subsistence uses.

APPENDIX B

Statement of Findings for Executive Order 11990 Protection of Wetlands

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**STATEMENT OF FINDINGS FOR EXECUTIVE ORDER 11990
(PROTECTION OF WETLANDS)
Twin Lakes Campground Rehabilitation and Expansion
Wrangell-St. Elias National Park and Preserve**

RECOMMENDED:

SUPERINTENDENT, WRANGELL-ST. ELIAS NATIONAL PARK AND PRESERVE

DATE:

CERTIFIED FOR TECHNICAL ADEQUACY AND SERVICEWIDE CONSISTENCY:

CHIEF, NPS WATER RESOURCES DIVISION

DATE:

APPROVED:

REGIONAL DIRECTOR

DATE:

INTRODUCTION

Wrangell-St. Elias National Park (WRST) and Preserve was established by the Alaska National Interest and Lands Conservation Act (ANILCA) on December 2, 1980. Section 201(9) of ANILCA states that WRST will be managed “to maintain unimpaired the scenic beauty and quality of high mountain peaks, foothills, glacial systems, lakes and streams, valleys, and coastal landscapes in their natural state; to protect habitat for, and populations of, fish and wildlife including but not limited to caribou, brown/grizzly bears, Dall’s sheep, moose, wolves, trumpeter swans and other waterfowl, and marine mammals; to provide continued opportunities, including reasonable access for mountain climbing, mountaineering, and other wilderness recreational activities. Subsistence uses by local residents shall be permitted in the park, where such uses are traditional, in accordance with the provisions of title VIII”. WRST is the largest unit of the national park system. The Wrangell-St. Elias Wilderness is the largest unit of the national wilderness preservation system.

The proposed action under consideration by the National Park Service (NPS) is rehabilitation and expansion of the existing Twin Lakes campground located at mile 27.8 on Nabesna Road in WRST. The NPS Preferred Alternative would develop 12 to 14 new campsites and restore the existing campsites to a natural vegetated landform. Each campsite would include a parking spur, tent pad, table, fire grate, and campsite identification sign. The campground road would be widened and improved for one-way traffic using a new alignment to improve maneuvering and access to the campsites and other amenities. The existing campground road is severely eroded and entrenched and would be restored to a natural landform and revegetated. Facility development and amenities would include a new vault toilet, water well, bear-resistant food storage, open-air pavilion, small amphitheater, rustic canoe launch, elevated observation deck, elevated boardwalk, and day-use area and parking. Existing social trails not required for use would be revegetated to discourage continued use.

The purpose of the action is to: (1) improve campground facilities to enhance the recreational experience of the visiting public; (2) expand the number of campsites to meet current and projected demands; (3) develop facilities to accommodate tent camping and recreational vehicles (RVs); and (4) protect the aquatic resources of Twin Lakes.

The need for the action is that the existing campground has become considerably degraded from increased use, resulting in adverse impacts to natural resources and visitor experience. The eight existing undeveloped campsites are primarily located along the lakeshore, causing trampling of shoreline vegetation and shoreline erosion. The existing campground road is unsurfaced and has become deeply entrenched, channelizing storm water runoff to the lake. Continued erosion threatens the water quality and aquatic resources of Twin Lakes from increased sediment runoff. The degraded facilities and shoreline diminish the camping experience of the visitor.

The General Management Plan (GMP) for WRST (1986) states “A campground between mile 25 and the end of Nabesna Road will provide a central location for the hikers, hunters, and other recreationists using the Slana-Nabesna area of the park/preserve...the Park Service will develop a small primitive campground and information/orientation wayside in the area.” The NPS

Preferred Alternative is fully consistent with the type of campground envisioned by the GMP within the Slana-Nabesna area.

As required by the National Environmental Policy Act, the National Park Service (NPS) prepared an environmental assessment for the project which will be made available for public review and comment. The environmental assessment documented the alternatives and associated environmental impacts. The alternatives are:

1. Alternative A: No Action
2. Alternative B: Minimal Action
3. Alternative C: Road Day Use (Preferred Alternative)

ALTERNATIVE A: NO ACTION ALTERNATIVE

CEQ regulations (40 CFR 1502.14) require the assessment of the No Action alternative in NEPA documents. The No Action alternative provides a baseline against which to measure the impacts of the other proposed alternatives.

Under Alternative A (No Action), the NPS would not rehabilitate or expand the Twin Lakes Campground. The existing campground would remain in its current condition as shown in Figure 2-1 of the EA.

ALTERNATIVE B: MINIMAL ACTION

Under Alternative B, the NPS proposes to develop 10 to 12 RV campsites utilizing the existing campsites and disturbed areas of the campground. Figure 2-2 of the EA shows the proposed conceptual layout of the campground. Each campsite would include a parking spur, tent pad, table, fire grate, and campsite identification sign. The existing campground road would be widened and improved for two-way traffic using the existing alignment. Facility development and amenities would include a new vault toilet, water well, bear-resistant food storage, open-air pavilion, rustic canoe launch, observation deck, and picnicking/day-use area. Existing social trails not required for use would be revegetated to discourage continued use.

The improved campground road would be designed for two-way traffic with turnaround loops at the far end of the road and in the day-use area. The road would be 24 feet wide, not including shoulder and ditch profile, and between 1,400 and 1,500 feet long. All turning radii would be designed to allow for RVs up to 40 feet in length or vehicles pulling large trailer campers. The existing entrance to the campground would be utilized. A campground sign and kiosk would be installed at the entrance orientating visitors with a map of the campground, instructions for selecting a campsite, bear safety rules, and other helpful information.

Ten to 12 RV campsites would be constructed within the approximate footprint of the existing campsites and disturbed areas and would include the following:

- Parking spur measuring approximately 16 by 50 feet for a single vehicle and defined by timber edging slightly raised above the parking surface grade.

- Table and fire grate.
- Tent pad measuring approximately 12 by 16 feet. The pads would be leveled and defined by timbers with a soft compacted fill material. Any existing trees to remain would be root pruned to improve potential for survival. Where topography allows, one or more edges may be raised to seating height to promote universal accessibility.
- Bear-resistant food storage (one per campsite).

Currently, one single vault toilet serves the campground. An additional double vault toilet would be installed to accommodate the additional campers. The toilet would be located adjacent to the loop road on opposite ends of the campground from the existing toilet (EA Figure 2-2). The new unit combined with the existing unit would serve approximately 15 campsites with a seat ratio of 1 per 12 persons, which meets the standards for day program campgrounds specified by American Camping Association (ACA) Standard A-13.

A water well would be drilled to provide potable water. The well would be located next to the day use area and would conform to all Alaska DEC requirements, including a 200-foot radius separation from the vault toilets.

An observation deck measuring approximately 500 to 1,000 square feet would be constructed on the lakeshore near the terminus of the campground road. The deck would be elevated to afford better views and to minimize shoreline erosion and impacts to wetland vegetation. Interpretive signs would be installed on the observation deck describing the types of wildlife habitat and species found at the lake and surrounding area. To minimize impacts during construction, some portions of the observation deck could be of a modular design to allow for offsite assemblage.

A rustic canoe launch would be developed in proximity to the observation deck. The launch would be constructed to minimize erosion, provide long-term, low maintenance access, and conform to the design standards suggested by the non-profit organization, States Organizations for Boat Access.

The picnicking/day use area would be located near the campground entrance in an existing open area. Trees would buffer the day use area from a grass airstrip that runs parallel to Nabesna Road. A centralized food preparation and storage structure would be installed to minimize bear attractants. A foot trail approximately 1,000 to 1,200 feet long would be developed connecting the day use area to the observation deck.

During expansion and rehabilitation of the campground, the campground would be closed to public use. The period of closure would be minimized to one temperate season from early June to late August. Campground site development would disturb approximately 5 to 10 acres. Every effort would be made to preserve or conserve existing vegetation. If damage or destruction to vegetation is unavoidable, then mitigation in the form of root pruning/feeding, transplanting, or importation of native plants would be included.

Specific information on campground facility maintenance operations and logistics are as follows.

Litter control and trash collection. NPS or contracted employees would conduct trash collection and litter control. Bear-resistant trash receptacles would be used. Collected trash would be transported to a landfill in Glennallen.

Maintenance of vault toilets. Pumping of vault toilets by a vacuum truck would occur in the fall season. Pumped waste would be transported for disposal and treatment in sewage lagoons in Glennallen. The waste lagoons have Alaska DEC approval.

Inspection of food storage and preparation area. Regular inspections and cleaning of food storage and preparation facilities would be performed by NPS or contractors to minimize the occurrence and availability of unsecured bear attractants.

Operation and maintenance of well and drinking water treatment. Water treatment operations would be performed by an NPS or contracted employee having the requisite Alaska DEC certification for drinking water system treatment and management. The water would be either chlorinated or iodinated. Water well and treatment operations would be evaluated by a certified individual daily and process adjustments would be made as needed. Other tests would be prescribed and conducted as recommended by U.S. Public Health Service (USPHS) recommendations. USPHS consultants to the NPS would conduct either annual or biannual inspections of the well and treatment systems.

Cost of construction for Alternative B is estimated at \$700,000 to \$900,000, including site preparation, earthwork, water service, storm sewer, concrete paving, site amenities, structures, landscaping, site administration, and contingencies. Annual operation and maintenance costs are estimated to be approximately \$30,000 (Tipton, 2004).

ALTERNATIVE C: ROAD DAY USE (PREFERRED ALTERNATIVE)

Under Alternative C (Preferred Alternative), the NPS proposes to develop 12 to 14 RV campsites and restore the existing campsites and disturbed areas to a natural condition. Figure 2-3 of the EA shows the proposed conceptual layout of the campground. Each campsite would include a parking spur, tent pad, table, fire grate, and campsite identification sign. The campground road would be widened and improved for one-way traffic using a new alignment to improve maneuvering and access to the campsites and other amenities. Facility development and amenities would include a new vault toilet, water well, bear-resistant food storage, open-air pavilion, rustic canoe launch, observation deck, elevated boardwalk, picnicking/day-use/group camping area, and day-use parking. Existing social trails not required for use would be revegetated to discourage continued use.

The improved campground road would be realigned further from the lakeshore and surfaced with gravel to minimize erosion and runoff to the lake. The road would be a one-way loop 14 feet wide and 1,850 to 2,000 feet long. All turning radii would be designed to allow for RVs up to 40 feet in length or vehicles pulling large trailer campers. The existing unimproved campground road is severely eroded and entrenched and would be restored to a natural landform and revegetated with native species. The new entrance to the campground would be aligned to improve maneuvering and sight distance for two-way traffic. A campground sign and kiosk

would be installed at the entrance orientating visitors with a map of the campground, instructions for selecting a campsite, bear safety rules, and other helpful information.

Twelve to 14 new RV campsites would be constructed along the campground road and would include the same features as described under Alternative B. Existing campsites along the lakeshore would be closed and restored to a natural landform and revegetated.

Currently, one single vault toilet serves the campground. An additional double vault toilet would be installed to accommodate the additional campers. The toilet would be located adjacent to the loop road on opposite ends of the campground from the existing toilet (Figure 2-3). The new unit combined with the existing unit would serve approximately 15 campsites with a seat ratio of 1 per 12 persons, which meets the standards for day program campgrounds specified by ACA Standard A-13.

A water well would be drilled to provide potable water. The well would be located next to the day-use area and would conform to all Alaska DEC requirements including a 200-foot radius separation from the vault toilets.

An observation deck measuring approximately 5,000 to 5,500 square feet would be constructed on the lakeshore at a location that provides undeveloped views of the lake. The platform would be elevated to afford better views and to minimize shoreline erosion and impacts to wetland vegetation. Interpretive signs would be installed on the observation deck describing the types of wildlife habitat and species found at the lake and surrounding area. An elevated boardwalk would be constructed connecting the observation deck to the canoe launch. The alignment proposed for the boardwalk is an existing social trail that is not vegetated. Elevating the boardwalk would allow vegetation to reestablish. To minimize impacts during construction, some portions of the observation deck and boardwalk could be of a modular design to allow for offsite assemblage. A small amphitheater would be constructed in proximity to the observation deck and would be accessible from the boardwalk. It would provide seating for approximately 25 people and would serve as a meeting area for formal evening “campfire talks” by Park Rangers and for other educational purposes.

A rustic canoe launch would be located at the mid-point of the campsite loop road (Figure 2-3). Parking for two vehicles would be provided at the launch for easy access to the lake. The launch would be constructed to minimize erosion, provide long-term, low maintenance access, and conform to the design standards suggested by the non-profit organization, States Organizations for Boat Access. The vegetative buffer alongside the canoe launch would be supplemented with native plantings removed from other areas of the campground during construction.

The day use area would be located to the southeast of the campground entrance in an existing open area comprising approximately 0.5 acres. Trees would buffer the day use area from a grass airstrip that runs parallel to Nabesna Road. An open-air pavilion would be constructed to provide shelter and tables for picnicking and other activities for up to 24 persons. The pavilion would be a pre-fabricated structure consistent with the roaded natural character of the area. A centralized food preparation and storage structure would be installed to minimize bear attractants. Day use parking for 10 to 12 vehicles would be provided along the entrance road

adjacent to the day use area. The day use area would also serve as a group camping area for tents only. A foot trail approximately 1,400 to 1,600 feet long would be developed connecting the day use area to the boardwalk, observation deck, or canoe launch.

During expansion and rehabilitation of the campground, the campground would be closed to public use. The period of closure would be minimized to one temperate season from early June to late August. Campground site development would disturb approximately 10 to 15 acres. Every effort would be made to preserve or conserve existing vegetation. If damage or destruction to vegetation is unavoidable, then mitigation in the form of root pruning/feeding, transplanting, or importation of native plants would be included.

Campground facility maintenance operations would be the same as those described under Alternative B.

Cost of construction for Alternative C is estimated between \$1.3 and \$1.5 million, including site preparation, earthwork, water service, storm sewer, concrete paving, site amenities, structures, landscaping, site administration, and contingencies. Annual operation and maintenance costs are estimated to be approximately \$30,000 (Tipton, 2004).

WETLANDS AFFECTED BY THE PROPOSED ACTION

National Wetland Inventory maps have only been completed for 22 of the 100 U.S. Geological Survey quadrangles covering the park and are not available for the Nabesna District. Wetlands were identified within the Twin Lakes campground using available data including a color infrared photo of the campground flown on August 3, 2004, limited field observations, and documentation of vegetation along the Jack Lake access route located within 1.5 miles of the campground. The wetland communities and acreages given in the following table are a rough estimate and have not been field verified. These acreages do not include the campground road or airstrip.

Wetland Community	Acres	Proportion of Site
Mixed White/Black Spruce Woodland	6	55%
Open White Spruce Forest	4	36%
Shoreline Emergent/Scrub Shrub	1	9%
Approximate Total Site Acreage	11	100%

Mixed white/black spruce woodland is the dominant wetland community comprising the Twin Lakes campground. This community has a 10 to 25 percent tree cover dominated by white spruce (*Picea glauca*) and black spruce (*Picea mariana*) and an open shrub layer dominated by dwarf birch (*Betula glandulosa*). Lingonberry (*Vaccinium vitis-idaea*) is also found in the low shrub layer. The ground layer is dominated by feathermosses and lichens. Areas of sedge tussock tundra are intermixed within the woodland community, but were not delineated separately due to their small size. Seventy-five percent of the dominant vegetation identified in the mixed white/black spruce woodland are hydrophytes (wetland vegetation) based on their wetland indicator status (facultative (FAC) and facultative wetland (FACW)). Since this vegetation community supports predominantly hydrophytes, it qualifies as a wetland based on

the National Park Service definition of wetlands. According to the USFWS wetland classification system, the community is considered a palustrine forested wetland. A similar community found along the Jack Lake access route was also considered a wetland (Cook, 2002).

The emergent/scrub shrub marsh along the lakeshore is dominated by hydrophytic sedges, rushes, and willows and is saturated or inundated with water at some time during the growing season of each year, qualifying it as a wetland based on the NPS definition. According to the USFWS wetland classification system, the community is considered a palustrine emergent/scrub shrub wetland.

Open white spruce forest is dominated by white spruce with a total tree cover in the range of 25 to 60 percent. Dwarf birch and willows (*Salix* spp.) dominate the shrub layer. Most of the open white spruce forest is disturbed from campground use. The majority of existing campsites and day-use area are found within this community. The wetland status of this community is questionable since the percentage of dominant vegetation identified does not meet the 50/20 USACE hydrophytic vegetation methodology. A similar community found along the Jack Lake access route was also not considered a wetland (Cook, 2002). A more detailed field survey of the community's vegetation, soils, and hydrology should be conducted prior to construction to make a more accurate wetland determination. For purposes of the EA, this community was considered a wetland.

Based on NPS policies, requirements, and standards for wetland protection; and color infrared photo of the campground flown on August 3, 2004; limited field observations; and documentation of vegetation along the Little Jack Creek/Jack Lake access route, the preferred alternative has the potential to affect approximately 0.9 to 1.0 acres of wetlands classified as palustrine forest (open white spruce forest and mixed white/black spruce woodland). According to the Land Cover Map of Wrangell St. Elias Park and Preserve (Pacific Meridian Resources, 1997), these wetland communities are common within the park in the Nabesna District.

ALTERNATIVES NOT AFFECTING WETLANDS

There are no practicable alternatives that would facilitate rehabilitation and expansion of the Twin Lakes campground without affecting wetlands. The campground and its surrounding area is a mosaic of wetlands. Alternative B would impact less wetland acreage (0.8 to 0.9 acres) however it would not include restoration of 1.1 acres of disturbed wetlands as discussed in the section "Wetland Minimization and Mitigation" and its development in close proximity to the lake (submerged wetlands) would be potentially more damaging.

PROJECT IMPACT ON WETLANDS

Approximately 0.9 to 1.0 acres of open white spruce forest, mixed white/black spruce woodland, and sedge tussock tundra would be directly affected by rehabilitation and expansion of the Twin Lakes campground. Impacts would occur from fill for road construction, campsite pads, and concrete pads for structural support of a pavilion, amphitheater, and vault toilet. Temporary disturbance to wetlands from construction may also occur. A valid design attempt to restore

approximately 1.1 acres of disturbed wetlands to a modified natural condition would provide mitigation.

WETLAND MINIMIZATION AND MITIGATION

All possible wetland avoidance and mitigation measures were incorporated into the project design including elevation of the observation deck and boardwalk along the lakeshore to avoid impacting shoreline emergent/scrub shrub wetlands. Heavy equipment used in wetlands would be placed on mats to minimize soil and vegetation disturbance. A valid design attempt to restore over 1 acre of disturbed wetlands along the lakeshore to a modified natural condition using native materials from the site would provide mitigation. Attempted restoration would offset the 0.9 to 1.0 acre of wetland impacts and result in a no net loss of wetlands. The project would require a General Permit from the Anchorage District of the USACE under Section 404 of the CWA. The attempted restoration of disturbed wetlands proposed as part of the project would likely be accepted by the Anchorage District as adequate compensatory mitigation for wetland impacts. The NPS has a net balance of wetlands as a result of the Jack Lake Special Use Permit project that could also be used for mitigation.

CONCLUSION

The National Park finds that there are no practicable alternatives to disturbing approximately 0.9 to 1.0 acre of wetlands within the project area. Care was taken to select an alternative that would minimize impacts to natural resources, including wetlands, while still meeting project objectives. Wetlands have been avoided to the maximum extent practicable and the wetland impacts that could not be avoided will be minimized. Proposed mitigation for this project is greater than a 1:1 ratio. This project is consistent with the NPS no-net-loss of wetlands policy. The National Park Service, therefore, finds that this project is in compliance with Executive Order 11990: Protection of Wetlands.

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