National Park Service
U.S. Department of the Interior
Klondike Gold Rush National Historical Park
Skagway, Alaska

Expand Climate Monitoring Network and Upgrade Radio Communication System

Environmental Assessment

April 2, 2010

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Superintendent
Klondike Gold Rush National Historical Park
PO Box 517
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Cover Photo: Weather station assembly and test location in Skagway, Alaska.

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CHAPTER 1: PURPOSE AND NEED FOR ACTION

1.1 Purpose of Action

The National Park Service (NPS) is considering expansion of the network of remote automated weather stations (RAWS) and radio communication repeaters in Klondike Gold Rush National Historical Park (KLGO; Figures 1 and 3). The proposed action addressed in this document would expand Southeast Alaska's RAWS program by establishing four additional weather stations to collect basic climate data including air and soil temperature, precipitation, relative humidity, wind speed and direction, solar radiation, and snow depth. In addition, the park's radio repeater system would be expanded to allow for reliable communications in the park's White Pass Unit.

All of the proposed weather station sites are on federally-owned land. The three proposed sites within KLGO are 1) Chilkoot Pass, adjacent to the existing radio communication repeater; 2) Sheep Camp, adjacent to the west side of the Sheep Camp ranger station; and 3) Taiya River Bridge, in Dyea on the existing Taiya River gauge hut adjacent to the east side of the Taiya River Bridge (Figure 2). A fourth weather station, Goat Lake, along with a radio communications repeater, is proposed for USDA Forest Service land at Goat Lake, co-located with the Municipality of Skagway's radio communications repeater and the Alaska Power and Telephone (AP&T) hydropower facility (Figures 2 and 3). The Goat Lake site is near the KLGO's White Pass Unit and is the best location for a weather station that would provide data representative of the conditions at mid to upper elevations in the park's most remote and least accessible unit. The NPS radio repeater at Chilkoot Pass would also be replaced with a current technology, digital repeater. An interpretive exhibit presenting the park's past and present climactic condition would be installed near the Chilkoot Trailhead in Dyea.

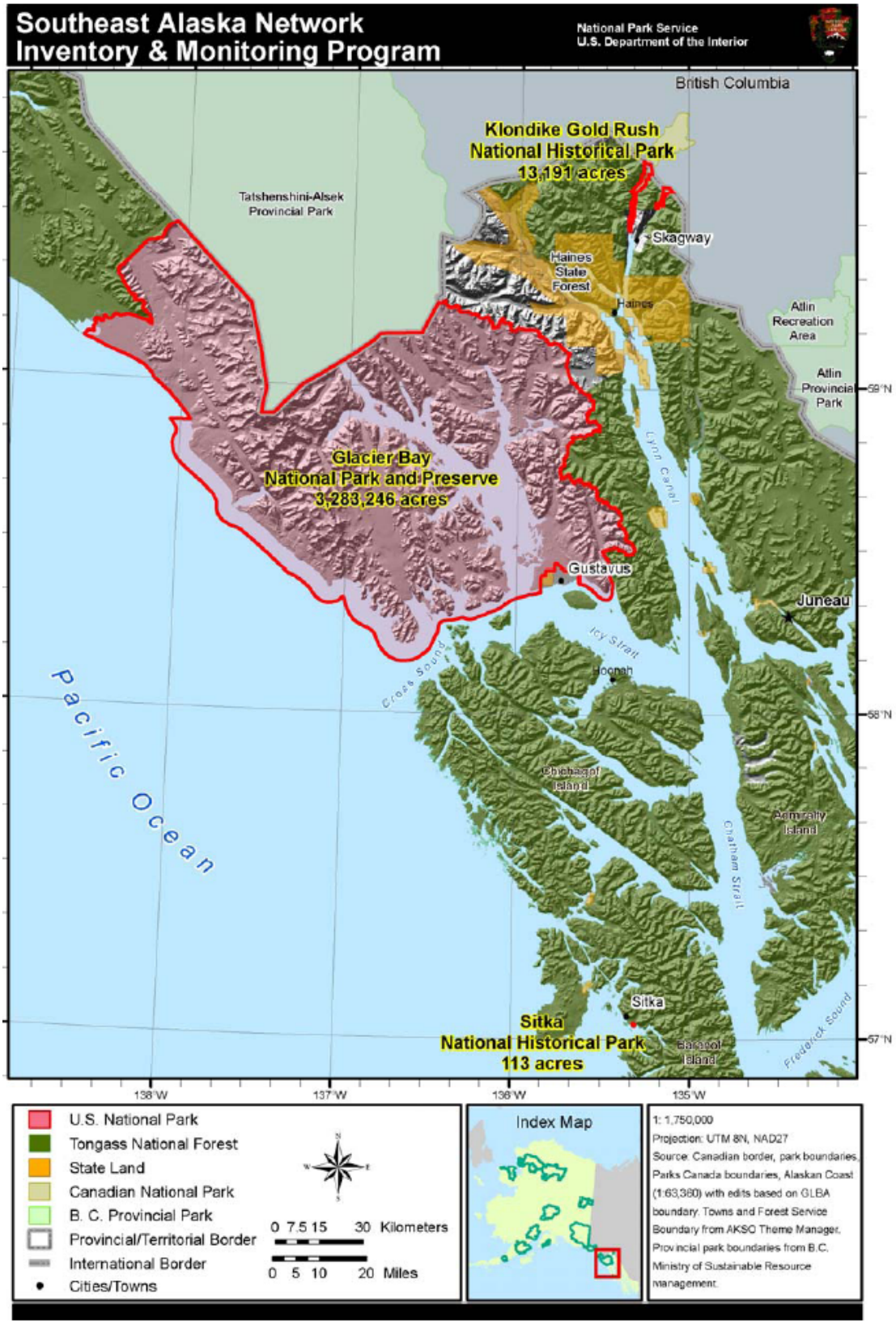

Figure 1. The Southeast Alaska Inventory and Monitoring Network of parks.

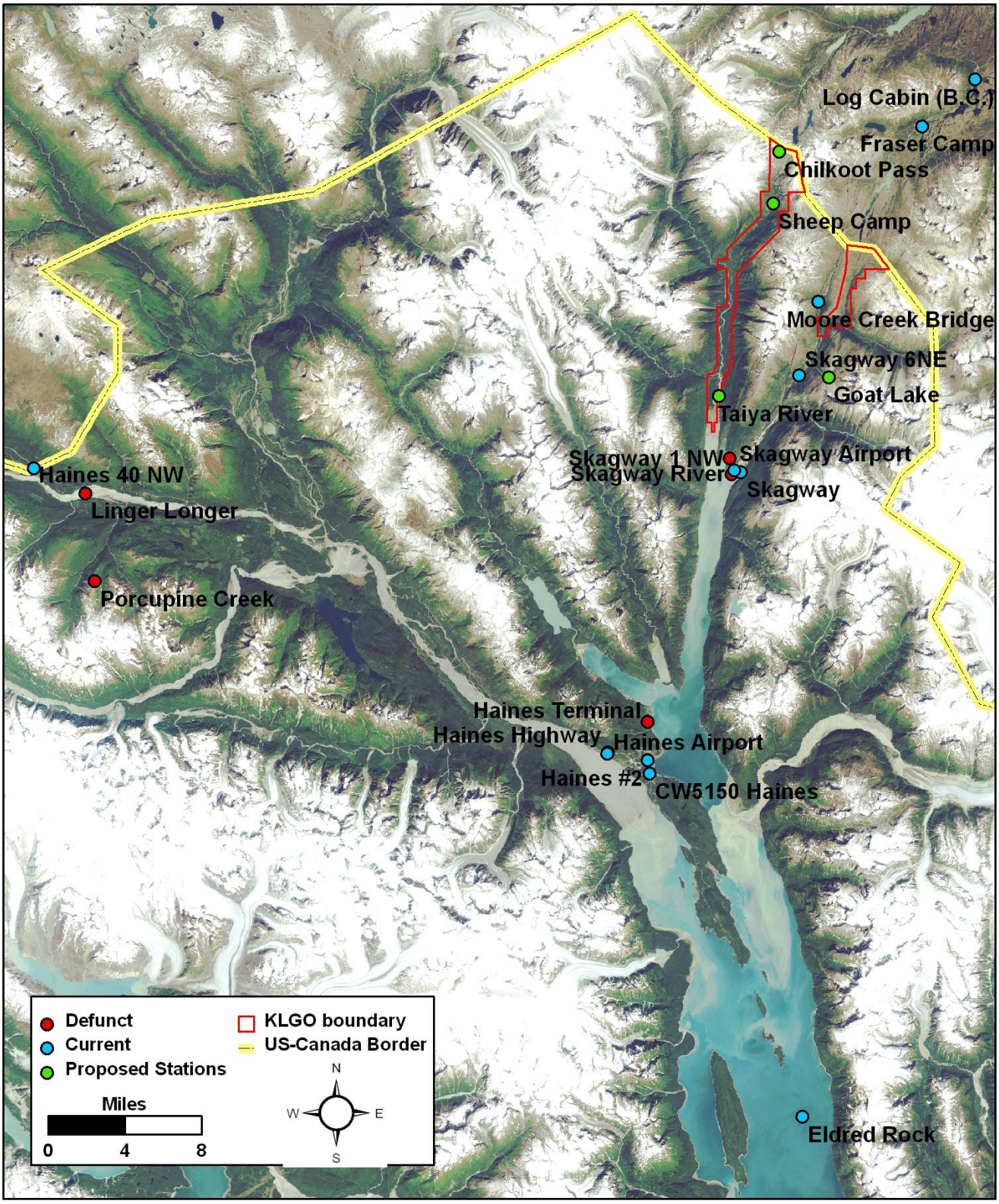

Figure 2.Overview of stations in the Southeast Alaska region.

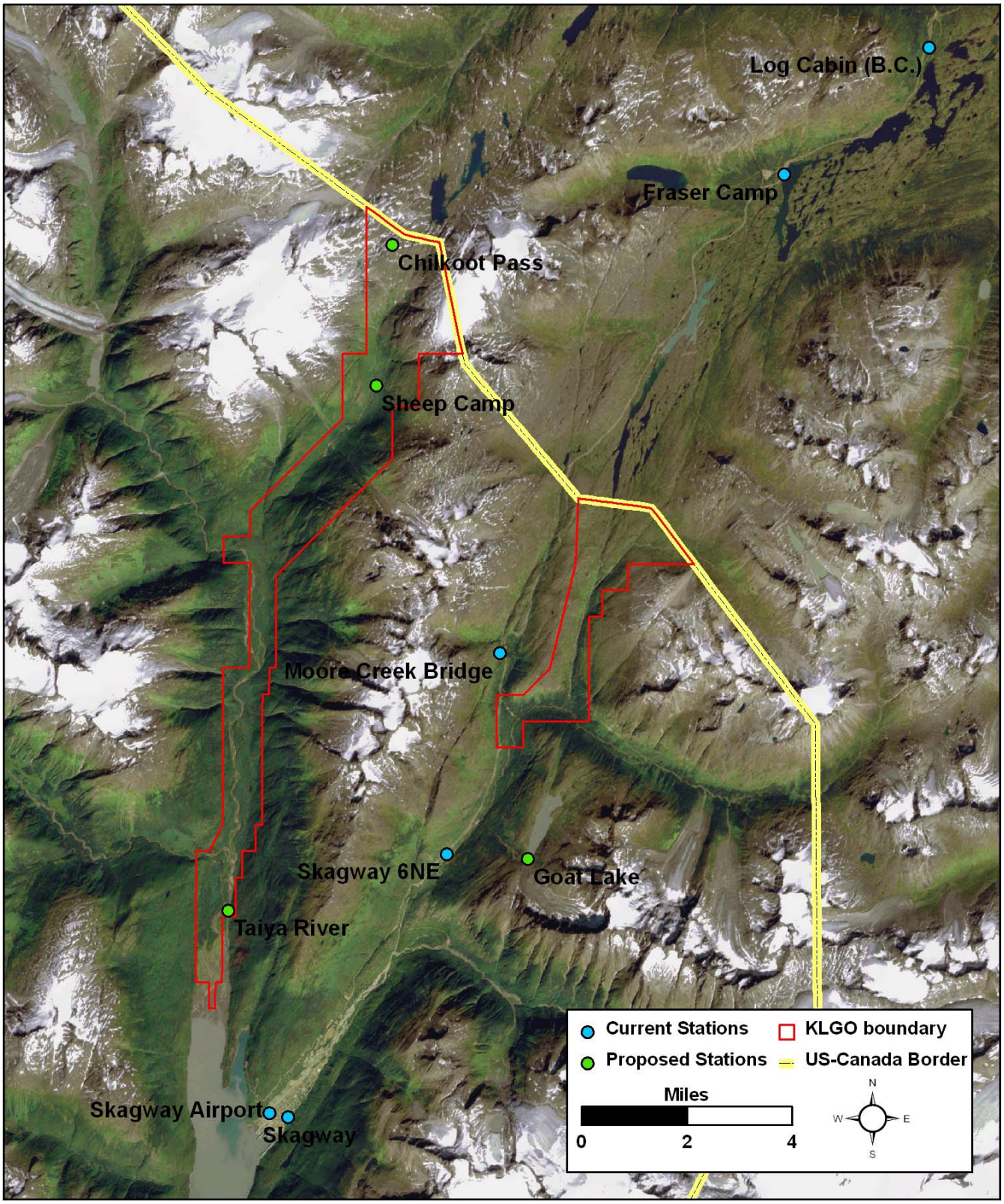

Figure 3. Current stations near KLGO alongside proposed stations at Taiya River, Goat Lake, Sheep Camp and the Chilkoot Pass.

Climate, by determining the temperature and precipitation regimes for any ecosystem, is widely recognized as one of the most fundamental drivers of ecological conditions and surface geomorphology. The physical characteristics of a region provide a foundation that defines the ecosystem. Changes in the physical environment, caused either by climate change or normal physical processes, can have significant impacts on the entire ecosystem. To properly monitor an ecosystem, the changes in the physical environment must be monitored and documented (Sousanes 2006). In general, Alaska has a sparse dispersion of climate monitoring sites (Simpson et al. 2002). There are a few permanent long-term climate monitoring sites in southeast Alaska, though most of them are biased towards low elevation areas of human habitation. There are large regions within Southeast Alaska Network (SEAN; Figure 1) of parks with no climate monitoring stations.

These unmanned stations, consisting of battery-powered (or AC-powered in the case of Taiya River and Goat Lake sites) weather instrumentation units with satellite data links would become part of the SEAN climate monitoring system. The monitoring system would provide reference weather information and support climate trend analysis at local, regional, continental, and global scales.

The visitors to Dyea would be provided information on the local climate and park resources affected by climate change on a set of wayside interpretive exhibits installed near the location of the existing exhibits just south of the day use parking area at the Chilkoot Trailhead and adjacent to the Taiya River gauge hut. The wayside exhibit would interpret climate change-driven isostatic rebound, forest succession, and glacial retreat, all phenomena that are readily viewable on the landscape from this location. The pan-abode hut housing the Taiya River gauge would remain in or very near its current location, but would be modified to include a computer terminal that displays the current and recent (last 24 hours) weather conditions at all the remote weather stations in the park. The near real-time display would only be available during the park's full-time operating season (mid-May to mid-September) and would be useful for hikers in Dyea and those heading up the Chilkoot Trail. However, near real-time weather information would be available year-round on the internet on an easy to use desktop gadget.

The White Pass radio repeater and weather station would be co-located in the proximity of the Municipality's radio repeater at Goat Lake near the south boundary of the KLGO White Pass Unit. From the high-elevation, vantage point, the White Pass repeater would provide improved radio communications inside the park, where current communications are nonexistent. The AC power supply at the site's hydroelectric power facility would provide reliable and consistent power to the radio equipment. This is a unique advantage afforded to a site at such an elevation and remoteness. The reliable power supply would reduce annual maintenance costs and eliminate the waste typically generated through the use of 12-volt, deep-cycle marine batteries. The Goat Lake repeater would be a state-of-the-art digital repeater and follow existing guidance issued by the Federal Communication Commission (FCC).

1.2 Need for Action

The National Parks Omnibus Management Act, passed by Congress in 1998, directs the NPS "to establish baseline resource information and to provide information on the long-term trends in the condition of National Park System resources." The NPS established the Inventory and Monitoring Program to determine the status and trends in the condition of resources in 270 park

units nationwide. Thirty-two Inventory and Monitoring Networks were established to identify and monitor a set of vital signs to represent the overall health or condition of park resources specific to each network. Climate is a fundamental driver of ecological condition and the patterns of plant and animal communities. Climate Monitoring was identified as a high priority vital sign for the SEAN as well as the other three Inventory and Monitoring Networks in Alaska.

This data would directly and indirectly benefit NPS managers, scientists, visitors, and the local community. Deployment of permanent weather stations within KLGO would allow the NPS to make significant progress towards achieving the goal of the climate monitoring vital sign described in the SEAN Vital Signs Monitoring Plan to track climate change and how these changes affect park resources (Moynahan and Johnson 2008). Weather data would contribute to analysis and interpretation of resource data for park management decisions. The distribution of the weather stations would provide visitors and the local community with accurate near real-time weather data on the internet (with a desktop gadget) and at the trailhead display, and would also contribute to future efforts by the NPS and other organizations in broad-scale climate monitoring, analysis, and modeling efforts.

One objective of the SEAN and KLGO resource monitoring programs is to monitor and record weather conditions at representative locations to identify long and short-term trends, provide reliable climate data to other researchers, and to participate in larger scale climate monitoring and modeling efforts (Moynahan and Johnson 2008). Collection of climate data in KLGO (where no RAWS stations currently exist) would advance this objective. Davey et al. (2007), which discusses placement of weather stations in SEAN parks states: “Based on climate change considerations alone, a recommended strategy would entail station placement in the pure coastal zone, in the pure interior zone, at higher elevations closer to the location of what is now quasi-permanent ice, and in transition regions such as drainage divides.” The proposed stations in the coastal Dyea area (Taiya River Bridge), at the mid-elevation Sheep Camp, and at the high-elevation, transition sites of Chilkoot Pass and Goat Lake (to represent the White Pass Unit) all fit within this strategy. Furthermore, during a recent meeting of climatologists from throughout the state of Alaska, a gap analysis revealed that Chilkoot Pass was an important site to install a remote weather station (NPS, P. Sousanes, Climatologist, pers. comm. 2009).

Improved, reliable radio communication for park staff is needed in the KLGO White Pass Unit as work crews begin to work more frequently for longer periods of time inside this remote portion of the park. The White Pass repeater would provide a measure of reliable communications at designated locations throughout the work area for employee safety and operational continuity. As the park initiates archaeological survey work in the near future and develops visitor use plans, the communications infrastructure would be in place to provide for public safety and efficient emergency response.

This environmental assessment (EA) analyzes the potential environmental impacts which could result from the proposed action and 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 -12, Conservation Planning, Environmental Impact Analysis, and Decision-making).

1.3 Purpose and Significance of the Park

The purpose of Klondike Gold Rush National Historical Park is to protect, preserve, and interpret the historic structures, trails, artifacts and lands associated with the Klondike Gold Rush of 1898.

Statements of park significance define what is most important about the park's resources and values and are based on why the park was created. These statements capture the attributes that made the park's resources and values important enough for Congress and the President to establish it as a unit of the National Park System in 1976. Statements of significance for Klondike Gold Rush National Historical Park are:

> KLGO commemorates a great human drama that caught the attention of the Western World, cemented Seattle's prominence in the Pacific Northwest, and transformed Alaska and the Yukon.
>
> KLGO preserves an integral link in a ribbon of sites that connects the places, events, and resources of the gold rush, extending across the international border from Seattle to Dawson and beyond.
>
> KLGO provides outstanding and diverse opportunities for visitors to retrace the steps of the gold rush stampeders, and in so doing, gain personal insight into the motivations, adversities, impacts and significance of the event.
>
> KLGO fosters preservation of the resources related to the three principal American boom towns of the Klondike Gold Rush of 1898, the most popular routes to the Klondike gold fields, and the most vivid reminders of the struggle and determination of the stampeders.
>
> KLGO fosters preservation and understanding of the unique flora and fauna located at the head of the Upper Lynn Canal, where subarctic, alpine, coastal and boreal ecosystems overlap (e.g., the ice-free Chilkoot and White Pass; the interior subarctic, alpine and boreal ecosystems.)

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, analysis of impacts, and creation of mitigation measures to be implemented as part of the preferred alternative.

NPS Organic Act

The NPS Organic Act (1916) and the General Authorities Act (1970) prohibit impairment of park resources and values. The NPS 2006 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;
essential 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 General Management Plan or other relevant NPS planning documents

NPS Omnibus Management Act

The NPS Omnibus Management Act of 1998 (P.L. 105-391, 112 Statute 3497) addresses resources inventory and management in Title II. Section 201 defines the purposes of this title to enhance and encourage scientific study in National Park system units. Section 202 authorizes and directs the Secretary of the Interior to assure management of NPS units is enhanced by a broad program of high quality science and information. Section 205 states the Secretary may solicit, receive, and consider requests from federal and non-federal public or private entities for the use of NPS units for scientific study. Such proposals must be: 1) consistent with applicable laws and the NPS Management Policies, and 2) the study would be conducted in a manner as to pose no threat to park resources or public enjoyment of those resources.

NPS Management Policies

NPS Management Policies 2006 (NPS 2006) addresses the importance of and need for weather and climate monitoring efforts in a number of sections:

Section 4.7.2 *Weather and Climate* "Parks containing significant natural resources will gather and maintain baseline climatological data for perpetual reference".

Section 4.2 *Studies and Collections* "The Service will encourage appropriately reviewed natural resource studies whenever such studies are consistent with applicable laws and policies. These studies support the NPS mission by providing the Service, the scientific community, and the public with an understanding of park resources, processes, values, and uses that will be cumulative and constantly refined… Studies include projects conducted by researchers and scholars in universities, foundations and other institutions, tribal colleges and organizations, other federal and state agencies, and Service staff".

Section 2.3.1.5 *Science and Scholarship* "The collection and analysis of information about park resources will be a continuous process that will help ensure that decisions are consistent with park purposes."

Section 6.3.6.1 *General Policy* "The National Park Service has a responsibility to support the appropriate scientific activities in wilderness and to use science to improve wilderness management. The Service recognizes that wilderness can and should serve as an important resource for long-term research into, and study, and observation of, ecological processes and the impacts of humans on these ecosystems. The National Park Service further recognizes

that appropriate scientific activities may be critical to the long- term preservation of wilderness".

"Scientific activities are to be encouraged in wilderness. Even those scientific activities (including inventory, monitoring, and research) that involve a potential impact to wilderness resources or values (including access, ground disturbance, use of equipment, and animal welfare) should be allowed when the benefits of what can be learned outweigh the impacts on wilderness resources or values. However, all such activities must also be evaluated using the minimum requirement concept and include documented compliance that assesses impacts against benefits to wilderness. This process should ensure that the activity is appropriate and utilizes the minimum tool required to accomplish project objectives."

National Historic Preservation Act

The National Historic Preservation Act (NHPA) sets forth Government policy and procedures regarding historic properties including districts, sites, buildings, structures and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires that federal agencies consider the effects of their actions on such properties, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800).

1.5 Previous Planning for the Climate Monitoring Program

1.5.1 Existing Climate and Weather Networks

Automated Surface Observing System (ASOS): These stations, a joint effort of the National Weather Service (NWS), the Federal Aviation Administration (FAA), and the Department of Defense (DOD), are located usually at major airports and military bases. Almost all ASOS sites are automated. The hourly data measured at these sites include temperature, precipitation, humidity, wind, barometric pressure, sky cover, ceiling, visibility, and current weather. Most data records begin during or after the 1940s, and these data are generally of high quality. An ASOS station has been operating at the Skagway airport (PAGY) since August 22, 1996.

NWS Cooperative Observer Program (COOP): The COOP network has been a foundation of the U.S. climate program for decades and continues to play an important role. Manual measurements are made by volunteers and consist of daily maximum and minimum temperatures, observation-time temperature, daily precipitation, daily snowfall, and snow depth. When blended with NWS measurements, the data set is known as SOD, or "Summary of the Day." The quality of data from COOP sites ranges from excellent to modest.

Citizen Weather Observer Program (CWOP): The CWOP network consists primarily of automated weather stations operated by private citizens who have either an Internet connection and/or a wireless Ham radio setup. Data from CWOP stations are specifically intended for use in research, education, and homeland security activities. Although standard meteorological elements such as temperature, precipitation, and wind are measured at all CWOP stations, station characteristics do vary, including sensor types and site exposure.

Remote Automated Weather Station (RAWS) Network: The RAWS network is administered through many land management agencies, particularly the Bureau of Land Management and the

USDA Forest Service. Hourly meteorology elements are measured and include temperature, wind, humidity, solar radiation, barometric pressure, fuel temperature, snow depth, and precipitation (when temperatures are above freezing). The fire community is the primary client for RAWS data. These sites are remote and data typically are transmitted via GOES (Geostationary Operational Environmental Satellite). Some sites operate all winter. Most data records for RAWS sites began during or after the mid-1980s. Currently no RAWS are deployed near KLGO.

NOAA Buoy and C-MAN Programs: National Oceanic and Atmospheric Administration (NOAA) National Data Buoy Center (NDBC), a part of the NWS. NDBC designs, develops, operates, and maintains a network of data collecting buoys and coastal stations. Moored buoys measure and transmit barometric pressure; wind direction, speed, and gust; air and sea temperature; and wave energy data. C-MAN stations have been installed on lighthouses, at capes and beaches, on near shore islands, and on offshore platforms. C-MAN station data typically include barometric pressure, wind direction, speed and gust, and air temperature; however, some C-MAN stations are designed to also measure sea water temperature, water level, waves, relative humidity, precipitation, and visibility. The closest station to KLGO is at Eldred Rock about 30 miles south of Skagway in the Lynn Canal.

US Department of Agriculture/National Resource Conservation Service (USDA/NRCS) Snowfall Telemetry (SNOTEL) Network: The USDA/NRCS maintains a network of automated snow-monitoring stations known as SNOTEL. The network was implemented originally to measure daily precipitation and snow water content. Many modern SNOTEL sites now record hourly data, with some sites now recording temperature and snow depth. The NPS operates a SNOTEL site and snow course (NRCS-SC) for the NRCS at Moore Creek Bridge (White Pass Unit). This site records hourly precipitation data and has been in operation since 1991. Between 1970 and 1990, this site was operated as manual snow course. Since 2008, KLGO has also measured a manual snow course for NRCS on West Creek about 2 miles upstream from its confluence with the Taiya River in Dyea. Snow course data is available from the NRCS website: http://www.wcc.nrcs.usda.gov/snowcourse/.

Meteorological Service of Canada (MSC) stations are administered through national and regional agencies, with data distributed from Environment Canada (Environment Canada 1986). Hourly meteorology elements are recorded and include temperature, wind, humidity, solar radiation, barometric pressure, snow depth, and precipitation (when temperatures are above freezing).

In addition to these major networks, there are a variety of stations run for specific purposes by specific organizations, government agencies, or scientific research projects (e.g., US Geological Survey, National Science Foundation, university, tribal, community, air quality, etc). Sometimes these are readily accessible, and other times the data are very difficult to obtain, either in near-real-time or in delayed-access mode. Collectively, information from all of these networks may be suitable for obtaining a better picture of the weather at any one time. However, this may have little relationship to their ability to serve as useful climate stations. The main requirements for climate stations are consistency in time of station exposure, observational methodology, instrument type and configuration, data management and data discoverability.

Table 1. Weather stations and dates of collection near Klondike Gold Rush NHP (See Figure 2 for locations). *Source:* Western Regional Climate Data Center.

Site Name	Lat - Long	Elev. M	Network	Start Date	End Date	In Park?
Haines #2	59.238 -135.449	21	COOP	4/19/2000	Present	No
Haines 40 NW	59.451 -136.361	250	COOP	8/1/1989	Present	No
Haines Arpt.	59.243 -135.509	5	COOP	7/1/1930	Present	No
Haines Hwy.	59.400 -135.900	122	COOP	11/1/1946	Present	No
Haines Terminal	59.267 -135.450	53	COOP	9/1/1957	7/16/1988	No
Linger Longer	59.433 -136.283	213	COOP	9/1/1959	4/15/1982	No
Porcupine Creek	59.367 -136.267	488	COOP	1/1/1927	12/31/1936	No
Skagway	59.455 -135.314	11	COOP	11/1/1898	Present	No
Skagway 1 NW	59.467 -135.317	174	COOP	10/1/1972	8/31/1981	No
Skagway 6 NE	59.527 -135.232	274	COOP	4/20/2000	Present	No
Skagway Airport	59.456 -135.324	9	COOP	6/25/1965	8/22/1996	No
Skagway Airport	59.456 -135.324	6	ASOS	8/22/1996	Present	No
Skagway River	59.450 -135.317	0	COOP	11/1/1977	10/31/1987	No
CW5150 Haines	59.228 -135.446	14	CWOP	1/18/2006	Present	No
Log Cabin (B.C.)	59.750 -134.967	884	NRCS-SC	1971	Present	No
Moore Creek Bridge	59.583 -135.200	686	NRCS-SC	1971	Present	No
Eldred Rock	58.970 -135.220	1	C-MAN	M	Present	No
Eldred Rock	58.967 -135.217	16	COOP	3/1/1939	Present	No
Fraser Camp	59.715-135.046	880	MSC	08/01/1980	Present	No

Note: COOP, NWS Cooperative Observer Program; ASOS, NWS/FAA Automated Surface Observing System; CWOP, Citizen Weather Observer Program; NRCS-SC, USDA/NRCS snowcourse network; C-MAN, NOAA/NDBC Buoy and C-MAN Program; MSC, Meteorological Service of Canada stations.

The major weather stations in the KLGO area are not located within the park (see Figure 2). Most of these are operated by the NWS, the FAA. A station does not have to be within the boundaries of a park to provide useful data and information in terms of weather behavior and climatic representativeness. The stations listed in table 1 will all provide useful data for climate research in KLGO and SEAN; however, they do not provide comprehensive coverage of the range of climatic conditions present within KLGO due to the lack of data at mid-elevation (1,700') and high-elevation (3,000') sites. Spatial representativeness is also limited by the absence of long-term data for the Taiya River watershed where the majority of KLGO's lands are located. On the other hand, the weather record for Skagway dates back to 1899.

1.5.2 Selection Criteria for Potential Weather Station Sites in the SEAN Network

Initially, the Western Regional Climate Center (WRCC) was contracted by SEAN in 2006 to identify potential weather station deployment areas which would help to fill in climate monitoring gaps existing in the current network of operating weather stations across the SEAN region. WRCC prepared a report (Davey et al. 2007) characterizing climate in the SEAN region, reviewed the existing network of operating weather stations in southwest Alaska and identified general areas within the SEAN parks which would fill in gaps in the ability of the currently operating network of weather stations to monitor climate.

WRCC used several criteria in identifying potential sites: 1) sites with regional exposure while minimizing local influences, 2) sites dispersed throughout the varied ecoregions, 3) sites at higher elevation sites relative to the existing weather station network, 4) sites without access challenges, which is critical for the long-term success of climate monitoring (Giffen 2007). Ease of access could be the single most important factor in creating a valuable dataset. Exposure to the southern horizon for a GOES (Geostationary Operational Environmental Satellite) link is also critical for a remote station's operation.

Placing stations at key locations along the Chilkoot Trail was identified as a priority for KLGO (Davey et al. 2007). The Chilkoot Pass is the highest priority location due to the lack of high elevation stations in the existing network and because of its unique transitional geography between costal and interior climatic zones. At approximately 1,300 meters elevation (3,500 feet), the Chilkoot Pass area (Figure 3) is accessible by the maintained hiking trail, is the site for an existing park radio repeater, and has a safe heliport. At about 300 meters (900 feet) above sea level, the Sheep Camp site (Figure 3) is along the Chilkoot Trail, near a ranger station that is staffed full-time in the summer and occasionally accessible by air or foot in the winter. The near-sea level Taiya River (Figure 3) site close to the Chilkoot Trailhead would provide data for a (coastal ecoregion and can be accessed by vehicle year-round. Goat Lake (Figure 3), at nearly 900 meters (2,700 feet) above sea level, would provide a comparison site to the Chilkoot Pass for high elevation, interzonal climate data and be representative of the conditions in the park's White Pass Unit in the Skagway River drainage.

1.6 Issues and Impact Topics

Issues and concerns with this project are grouped into distinct impact topics to aid in analyzing environmental consequences, which allows for a standardized comparison of alternatives based on the most relevant information. The impact topics were identified on the basis of federal laws, regulations and orders, NPS Management Policies 2006, and NPS knowledge of potentially affected resources. A brief rationale for selecting or dismissing each topic is provided below.

1.6.1 Issues Selected for Detailed Analysis

Vegetation

Vegetation could be trampled during installation and maintenance of the weather stations. Small areas of vegetation may require clearing beneath and around new weather stations. The station footprint could have an impact on vegetation. The potential also exists for invasive species to be transported to weather station sites on equipment, clothing and footwear.

Wildlife

Installation and maintenance of the weather stations could impact wildlife in the immediate vicinity. Some wildlife habitat could be impacted at the new weather station sites.

Visual Quality

The weather stations may be visible from certain vantages, thus posing an unnatural visual intrusion in pristine environments. Intrusions could include the actual visibility of the tower or glare reflected off the equipment. The modern nature of the equipment may be an intrusion into the cultural landscape association with the historic Chilkoot Trail.

Soundscape
Noise intrusions would occur during installation and maintenance of the weather stations due to presence of field crews, a wind generator (Chilkoot Pass only), and the aircraft used for site access. These noise intrusions would disrupt natural sounds in the park.

Visitor Experience
Encountering a weather station in the park could have a detrimental effect on the visitor's recreational experience. Visitors may see the new weather station sites as intrusions on the scenic integrity of the backcountry and designated cultural landscape. The proposed stations at Chilkoot Pass, Sheep Camp, and Goat Lake are not accessible by road vehicles or visible from any frontcountry location. The Dyea sites are visible and accessible from the road. At the Taiya River site, the station would be incorporated with the existing river gauge building.

Cultural Resources
Unknown cultural resources may be affected by the project, although the weather stations would be co-located with existing facilities at all the proposed locations. Extensive archeological surveys have been conducted in park and numerous archeological resources have been detected, but none are known from the sites proposed for weather station or radio repeater installation. Although historic structures exist in the park, none are located in the vicinity of any of the proposed weather station or repeater locations.

1.6.2 Impact Topics Dismissed from Further Analysis

Executive Order 12898, "Environmental Justice"
Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-income Populations" requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The EA alternatives would have no health or environmental effects on minorities or low-income populations or communities.

Soils
Small holes would be excavated during the installation of the weather station. Although the sites at Chilkoot Pass and Goat Lake allow for installation on bedrock, small areas of soil, where it exists, may be compacted by the installation activities. This compaction, if any, would be negligible. A small cement pad (2.25 square feet) may be installed as a base for each tower. At the Sheep Camp site, soil would be compacted under the cement base and under the guy wire stakes, which are less than 1 inch in circumference and would be driven approximately 1 foot deep.

Floodplains and Wetlands
The proposed sites at Chilkoot Pass and Goat Lake are not located in or adjacent to any floodplains or riparian areas. The Dyea and Sheep Camp sites are within the Taiya River floodplain; however floodplain mapping has not occurred at these sites and the weather station installation will not affect floodplain hydrology or cause potential floodwaters to impact facilities or resources. None of the sites are located within designated wetland areas.

Threatened and Endangered Species
No T&E species are known to occur in the park or the area of the proposed sites (US Fish and Wildlife Service endangered species consultation log 71440-2010-SL-0031).

Subsistence
KLGO is not a subsistence park under ANILCA Section 810. An ANILCA Section 810 Summary Evaluation and Findings is included in appendix A.

1.7 Permits and Approvals Needed to Implement Project

A Memorandum of Understanding is required with NOAA to access the GOES satellite for data transmission. The NPS has a license from the FCC to operate the park's radio and repeater system. The NPS also has an Interagency Agreement with the WRCC to manage, archive, and serve the park's weather data. A Special Use Permit will be requested from the USDA Forest Service to place meteorological and radio communications equipment at Goat Lake pending approval of the actions proposed in this document. The NPS will also apply for a Utility Permit from the Alaska Department of Transportation to install underground power to the existing Taiya River gauge hut. The USGS has an existing permit from the Alaska Department of Transportation for the Taiya River gauge hut, and has authorized the NPS to install and manage meteorological equipment both inside and external to the hut.

CHAPTER 2: ALTERNATIVES

2.1 Introduction

The CEQ regulations for implementing NEPA requires that federal agencies explore and objectively evaluate all reasonable alternatives to the Preferred Alternative and briefly discuss the rationale for eliminating any alternatives that were not considered in detail. This chapter describes the No Action Alternative and the Preferred Alternative; there were no alternatives that were considered and eliminated from further analysis.

2.2 Alternative A: No Action

Under the No Action alternative, no additional weather stations would be established in KLGO. However, several meteorological parameters which continue to be collected and archived from the existing ASOS weather station at the Skagway airport (Figures 2 and 3).

2.3 Alternative B: Expand the Climate Monitoring Program in KLGO and Expand the Radio System (NPS Preferred Alternative)

In support of the SEAN the NPS would establish four permanent, remote, automated weather stations (Figures 4-7) at high-priority sites in and around KLGO (Figure 3). Deployment of these stations is anticipated for the summers of 2010 for Chilkoot Pass and Sheep Camp, and 2011 for Taiya River. The Goat Lake weather station and a radio repeater are anticipated for deployment in summer 2012.

2.3.1 Weather Stations

The weather stations would collect basic weather observations including air temperature, precipitation, relative humidity, wind speed and direction, solar radiation and snow depth and transmit these observations hourly via satellite. These observations would be posted to the WRCC web site in near real-time (http://www.wrcc.dri.edu/NPS.html) and be available over the internet through a desktop gadget.

The Chilkoot Pass, Sheep Camp and Goat Lake weather stations would be composed of a 10-foot tri-leg tower hosting all the sensors, and the data logger. Each of these stations would have two battery boxes. At the Taiya River station, the sensors would be attached to a 4-inch pipe functioning as a mast extending 5 feet above the roof line of the existing Taiya River gauge hut. The data logger and batteries would be housed inside the gauge hut. Eventually, some of the climate sensors may be incorporated into the superstructure of the Taiya River Bridge.

The up to 10-foot steel tower and mast would house the temperature, relative humidity, solar radiation, wind speed and direction, and snow depth sensors, a GPS antenna, and a GOES satellite transmission antenna (Figure 8). A steel equipment enclosure located near the base of the structure houses the electronic equipment cabinet such as the datalogger, GOES transmitter, and batteries. Each of the two battery boxes will house 3, 12-volt batteries each at the base of each station (6 batteries per station). The batteries are sealed, starved electrolyte-type Optima™ 12-volt batteries. The wind speed and direction sensors are located on the top of the 12-foot tall mast mounted to the north leg of the tri-leg tower. The footprint of the tower is approximately 1.5 feet per side. A 48”x13” solar panel would be attached to the south side of the structure for the installation at Sheep Camp. A wind generator would be attached to an 8-foot tall pipe adjacent the tower at Chilkoot Pass. The tower and wind generator pipe are typically anchored to

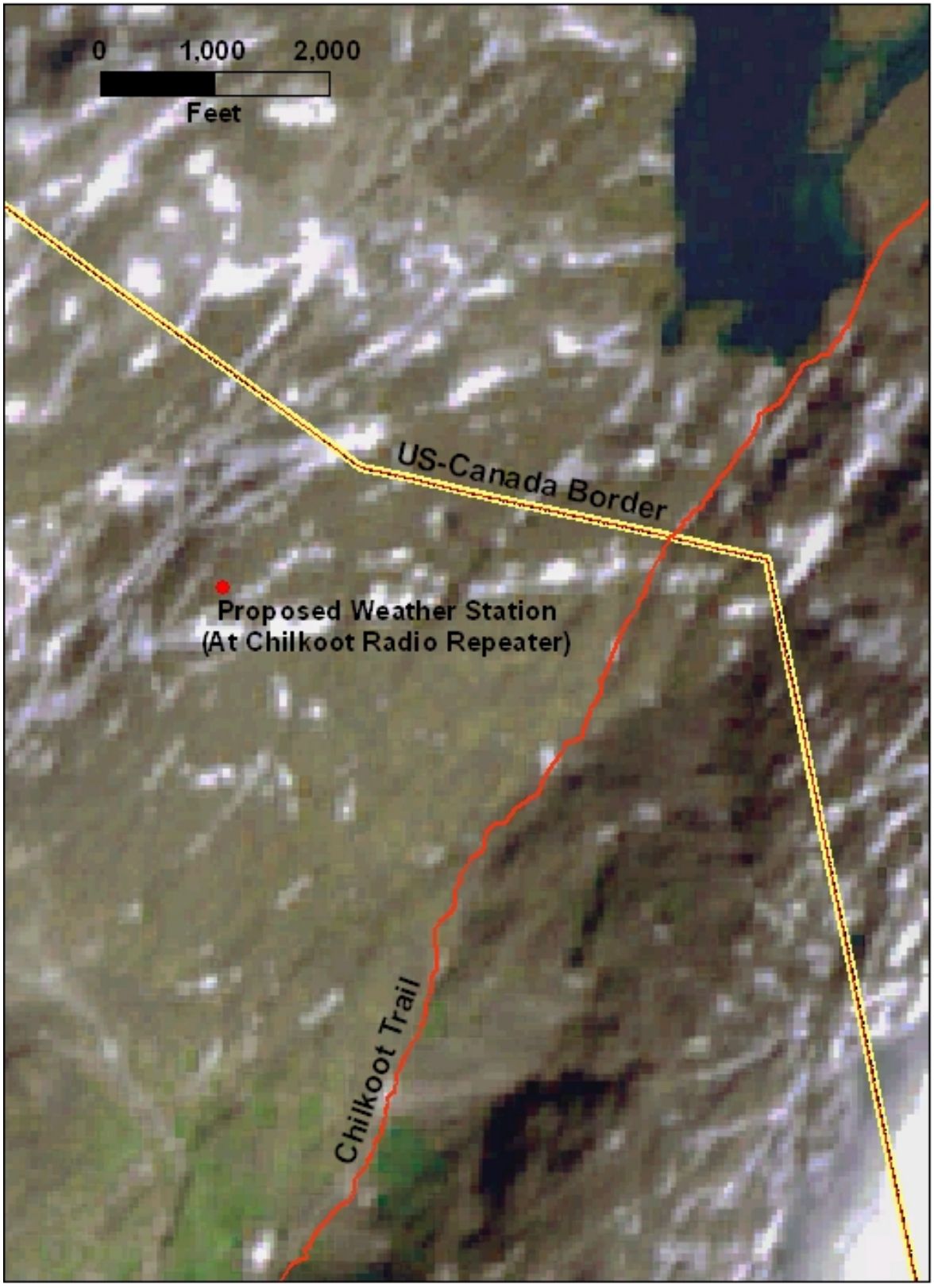

Figure 4. Proposed location for weather station installation at Chilkoot Pass, Klondike Gold Rush NHP.

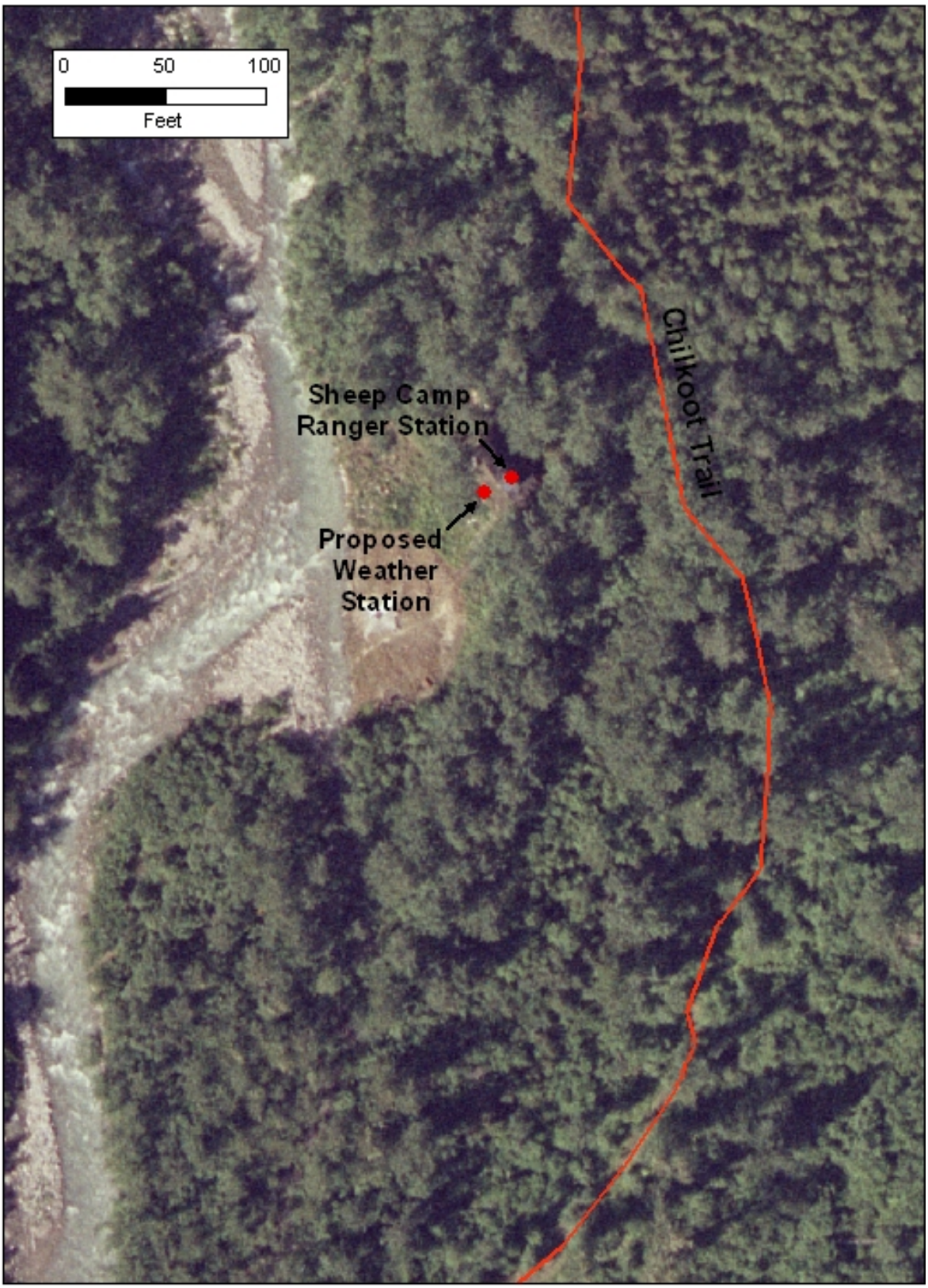

Figure 5. Proposed location for weather station installation at Sheep Camp Ranger Station, Klondike Gold Rush NHP.

Figure 6. Proposed location for weather station installation at Taiya River, Klondike Gold Rush NHP.

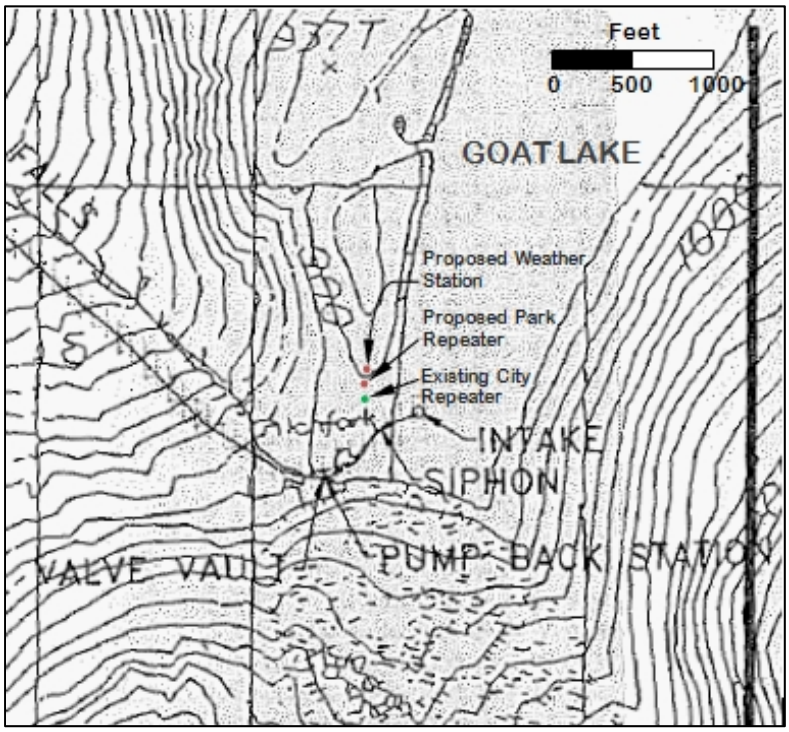

Figure 7. Proposed location for weather station and radio repeater installation at Goat Lake.

Figure 8. Example sketch of a weather station tower and equipment. Three guy wire, not depicted, would extend about 12' from the tower's base.

the ground with 3 guy wires bolted to the ground. Where pins cannot be driven into the ground and/or gabions cannot be installed, holes would be drilled into the bedrock and the steel pins secured in the holes with epoxy. The tower components are assembled on site. At Taiya River and Goat Lake commercial power would be used to trickle charge the batteries powering the unit and to directly run a heated tipping bucket that measures frozen precipitation. No solar panels or wind generator would be required at the Taiya River and Goat Lake sites.

Table 2. Electricity consumption for proposed weather stations and radio repeater.

Device	Input Voltage Required	Average Power Consumption (Watts)	Maximum Power Consumption (Watts)	Average Current Draw (Amps)	Maximum Current Draw (Amps)	Consumption Pattern
Datalogger	12 VDC	.008	.32	.00067	.019	.6mA idle, 19 mA active. Goes active for five seconds every minute.
GOES Weather Data Transmitter	12 VDC	.1	31	.0085	2.6	5 mA idle, 2.6 A active. Goes active for 10 seconds every hour.
Heated Rain Gauge**	115 VAC	150	300	1.3	2.6	0 Amps idle, 2.6 A active. Thermostat controlled; estimated active 50% of the year.
Radio Repeater	115 VAC	432 / day	850	0.25	8	8 Amp load during transmission. Estimate: 2 hours of transmission per day peak season. 1 hour per month during off season.

*Data from the Campbell Scientific Incorporated operation manuals for the CR1000 Datalogger, GOES Satellite Transmitter, and the Met One 385 Rain Gauge: www.campbellsci.com/manuals.
**Proposed for sites with commercial power, Goat Lake and Dyea. Note: At sites with commercial power, a 2A 115VAC trickle charger will be used to keep a battery bank composed of 6 12V lead acid deep-cycle batteries (Opima 65AH).

2.3.2 Goat Lake Radio Repeater

The Goat Lake radio repeater will be fully contained within a white, 12 foot tall, 7' x 7' fiberglass housing (Figure 9). All the batteries and the antenna are fully contained within this housing. Guy wires will extend from the housing about 12 feet and be anchored to bedrock using expansion bolts.

Figure 9. Example of the Goat Lake (and Chilkoot Pass) radio repeater housing (Note: the planned Goat Lake housing will be white in color.)

2.3.3 Installation

The Campbell Scientific Instruments weather station proposed for each of the sites can be installed in a few days by two people once all the parts and pieces are onsite. Getting the weather stations to each deployment site for Chilkoot Pass, Goat Lake, and Sheep Camp will require one sling load using a helicopter. Transporting the repeater equipment to the Goat Lake site will likely require two helicopter sling loads. The weather station installations may be coordinated with these flights to minimize motorized intrusions and would occur in late July, and August. Hand tools would be used for weather station and radio repeater assembly and site preparation, except at the Chilkoot Pass and Goat Lake sites, where a rotary hammer would be required to drill holes for anchoring and guying the towers.

The Taiya River station could be deployed with a park vehicle, coordinated with monthly data collection from the river gauge or fire-weather station. Prior to installing the sensor array commercial power would be installed on the Taiya River gauge house which is need to power the heated tipping bucket. The electrical line would be buried under the Dyea Road and electrification would occur concurrently with planned maintenance on the Taiya River Bridge in order to minimize additional traffic disruption.

2.3.4 Annual Maintenance

Each station would require one annual maintenance visit. Maintenance activities would be confined to a single day and would primarily occur from June through August. Typically access would be via foot, but a helicopter may be used in conjunction with annual trips to maintain existing infrastructure. Six hours would be required to swap sensors and perform other routine maintenance.

2.4 Mitigation Measures

2.4.1 Vegetation

Where the surfaces of rocks are covered with lichen, disturbance of those rocks will be minimized. If rocks need to be moved or used to fill gabions, the surface rocks with lichen on them would be carefully set aside and rocks from underneath will be used. Rocks with lichens on them would be left lichen-side up and in their original location when possible. Where other plants are present, care would be taken to minimize disturbance (e.g., stepping on rocks where possible rather than on plants and clearing the minimal amount of vegetation necessary).

Mud, dirt, and plant material will be removed from project equipment, footwear, and clothing prior to traveling to the weather station sites, to minimize the possibility of introducing invasive plants to the park. During the annual maintenance visit, weather station sites would be monitored for the presence of invasive plant species.

2.4.2 Wildlife

To the extent possible, installation and maintenance activities would be timed to avoid sensitive periods, such as songbird nesting season. In addition to meeting all FAA and NPS helicopter policy and aircraft requirements, mitigation common to all alternatives for both fixed wing and helicopter flight paths would include:

Maintenance of a 1,500 foot vertical or horizontal clearance from traditional summer and calving or other habitats supporting reproduction as well as adult animals whenever feasible. This includes brown and black bear, moose, caribou, Dall sheep, wolves, mountain goats, wolverines, harbor seals, and Steller's sea lions.

Pilots would not hover over, circle, harass, or pursue wildlife in any way.

Where feasible, flight paths would avoid known bald eagle nests and a minimum quarter-mile clearance will be maintained from all active eagle nests. All nests are considered active from March 1 to May 31. Nests used for nesting activity are considered active through August 31.

To comply with the Migratory Bird Treaty Act, helicopter activity would be scheduled to avoid sensitive bird migration or nesting periods in the project areas. Known seabird colony areas would be avoided.

2.4.3 Visual Quality

The Chilkoot Pass site is located on a knoll, the top of which is not visible from the US side of the trail or while traveling north which is the direction 99% of the hikers travel. The tower will

be visible only from a quarter-mile section of the Canadian side of the trail and only when looking south. On site visibility testing with a story board wand was conducted to select the exact location that minimizes the visual intrusion. The existing radio repeater housing can also act as a storyboard to assess visual impacts associated with the exact site location.

Neither the Sheep Camp nor the Goat Lake stations would be visible from park hiking trails or roads, though visitors who approach the ranger cabin for assistance would see the Sheep Camp station. At these sites, the visual quality of the cultural landscape will not be degraded for the vast majority of visitors. At the Taiya River site, the sensors would be visible from the road but attached to the existing river gauge hut, already equipped with a solar panel and antenna, while the operating equipment would be hidden inside the hut. The differences in appearance from the current condition would be minor. The visibility of the instrumentation on the gauge hut would enhance the interpretive wayside exhibits planned for the site that will describe the effects of climate change in the park.

2.4.4 Visitor Experience

Signs would be posted on the weather station explaining its purpose and listing a person to contact if visitors who happen upon the site have any questions; however, it is unlikely that a visitor will detect the installation at the three backcountry sites. At the Taiya River site, where the station would be visible from the road, an interactive display showing the current weather data and interpreting climate change effects on the park is proposed to enrich visitor experience.

In planning flight paths, all feasible measures would be undertaken to avoid and/or minimize impacts to backcountry users. Planned flight routes would be approved by the park superintendent. Travel routes would be as efficient as possible to minimize flights over conflict areas. Helicopter and aircraft altitude and horizontal distances would be maintained according to the park policy. On days when helicopter activity is likely to occur within the Chilkoot trail corridor, visitors will be notified by NPS staff at the parks Trails Center.

2.4.5 Soundscape

To reduce adverse noise impacts to recreational users and wildlife in the park, helicopters would maintain a minimum altitude of 2,000 to 2,500 feet above ground surface, other than during landing and takeoff, or when visibility is limited by cloud cover, pursuant to FAA Advisory Circular (AC91-36C), “Visual Flight Rules (VFR) Near Noise Sensitive Areas.”

The wind generator at Chilkoot Pass would not be heard from the Chilkoot Trail. At the distance from the site to the trail, the sound of the wind (near the pass) or the Taiya River (near Sheep Camp) in a hiker’s ears will be much greater than (and therefore mask) the sound level of the wind generator. No wind generator would be installed at any of the other sites.

2.4.6 Cultural Resources

Archeological site clearance would be conducted concurrent with installation of equipment, as necessary. Ground disturbance would be minimized. If archaeological features are encountered during equipment installation, work would cease immediately and the Superintendent and KLGO Cultural Resource Specialist would be notified. Procedures would be followed, as per Director's Order 28 and found in the guiding regulations in 36 CFR 800.13. No further action would take place until the NPS provides clearance.

2.5 The Environmentally Preferred Alternative

As stated in Section 2.7 (D) of the NPS Director's Order-12 Handbook, "The environmentally preferred alternative is the alternative that will best promote the national environmental policy expressed in NEPA (Section 101(b))." In sum, the environmentally preferred alternative is the alternative that not only results in the least damage to the biological and physical environment, but that also best protects, preserves, and enhances historic, cultural, and natural resources. Alternative A (No Action Alternative) is the environmentally preferred alternative because no new adverse impacts to the environment would occur from installation of new weather stations.

2.6 Alternatives Considered But Rejected

An alternative placing the Dyea weather station on Kalvick property instead of at the Taiya River Bridge was considered but rejected. Co-locating the weather station with the existing Taiya River gauge hut and having the instrumentation visible as part of an interpretive display is preferred by KLGO staff. Furthermore, the Taiya River gauge hut already houses some of the needed equipment and would provide a small cost savings.

2.7 Comparison of Alternatives

Table 3 compares the potential environmental impacts associated with the No Action and Preferred alternatives. Potential impacts are provided for each environmental resource topic. Chapter 4, Environmental Consequences, of this EA contains a detailed discussion of the potential impacts by resource topic.

Table 3. A compares the potential environmental impacts associated with the No Action and Preferred alternatives.

Impact Topic	Alternative A: No Action	Alterative B: Expand Climate Monitoring Program
Vegetation	No impacts on vegetation would occur. *Minor adverse cumulative impacts*	Minor, long-term, adverse impacts from loss of plants due to anchoring of equipment & vegetation trampling during installation and maintenance of weather stations. *Minor adverse cumulative impacts*
Wildlife	No impacts on wildlife would occur. *Minor adverse cumulative impacts*	Negligible, temporary, adverse impacts to wildlife and minor, long-term, adverse impacts to wildlife habitat from displacement of wildlife & disturbance of wildlife habitat during installation & maintenance of weather stations. *Negligible adverse cumulative impacts*
Visual Quality	No impacts to visual quality would occur. *Minor adverse cumulative impacts*	Minor adverse impacts to visual quality from the installation & presence of weather stations. *Minor adverse cumulative impacts*
Soundscape	No impacts to the natural soundscape would occur. *Minor adverse cumulative impacts*	Negligible adverse impacts on soundscape from noise intrusions during installation & maintenance of weather stations. *Negligible adverse cumulative impacts*
Visitor Experience	No impact to visitor experience would occur. *Minor adverse cumulative impacts.*	Negligible adverse impacts to visitor experience from encounters with the stations & noise from overhead aircraft during installation & maintenance of weather stations. *Negligible adverse cumulative impacts*
Cultural Resources	No impacts to cultural resources would occur. *Minor adverse cumulative impacts*	Negligible adverse impacts to cultural resources from the installation of new weather stations. *Negligible adverse cumulative impacts*

CHAPTER 3: AFFECTED ENVIRONMENT

3.1 Vegetation

Chilkoot Pass and Goat Lake sites are predominately composed of rock and scree. Micro-lichens are the dominant life form and very small level patches alpine tundra occurs. The Sheep Camp site lies in a small clearing containing understory plants such as highbush cranberry, goat's beard, and devil's club, with ground vegetation including ferns, twisted stalk, mosses and pyrolas (KLGO 2006) along with small patches of the invasive tall buttercup, sheep sorrel and dandelions. At the Dyea sites, vegetation noted as significant in an environmental assessment for historical areas in Dyea included yarrow, beach pea, sedges, and both native and exotic grasses, as well as Sitka spruce, cottonwood paper birch and willow. Exotic species in the area include narrowleaf hawksbeard, tall buttercup, sheep sorrel and dandelions.

3.2 Wildlife

Wildlife in the Chilkoot Pass and Goat Lake areas include pikas, common ravens, and the occasional other bird. Mountain goats, moose, caribou, black bears and brown bears traverse the area but do not linger as there is little suitable habitat. All of these mammals except caribou may also be found at Sheep Camp, along with mink, snowshoe hare, pine marten, fox, lynx, and coyote. Birds include mallard ducks, the most common, as well as green-winged teal, widgeon, common and Barrow's goldeneye, common merganser, and Canada geese, blue and spruce grouse, ptarmigan and a variety of raptors and songbirds (KLGO 2006). Snowshoe hares, voles, and river otters are present in Dyea along with brown bears and black bears.

3.3 Visual Quality

At the Chilkoot Pass, an NPS radio system repeater consisting of an antenna and a small plastic housing holding solar panels on the outside and batteries on the inside is within 100 meters of the proposed station site. The repeater is not visible to the vast majority of visitors backpacking along the trail; however, it is visible to people hiking the trail from north to south as they approach within about 100 m of the pass. At Sheep Camp the clearing is occupied by the ranger station and several outdoor structures including a helipad, a solar panel and a tower with a wind vane. At the Dyea site, the river gauge hut is present. At Goat Lake, AP&T has extensive hydroelectric infrastructure.

3.4 Soundscape

The ambient sounds at the proposed weather station sites consist predominantly of natural sounds, including wind and rain. On this natural background can occasionally be heard the human-made sounds of high-altitude commercial airplanes, helicopters authorized for research and routine park management operations, low-level, fixed-wing aircraft visitor tours, , and motor boats. Human voices may occasionally be heard at sites where limited visitor access is possible, and motor vehicles will be heard frequently in summer on the Dyea Road near both proposed Dyea sites. Table 4 lists decibel levels of sounds that may be heard near weather stations.

Table 4. Decibel Levels of Ambient and Human-induced Sounds. *Source:* NPS Natural Sounds Program.

Source	Decibels (dBA)
Rainfall	50
Normal Conversation	60
Wind	35-85
Shouting	90
Motor Vehicles (on Dyea Rd)	75
Airplanes (overhead)	65-70
Helicopter (at site)	105
Helicopter (5 seconds away)	95
Helicopter (10 seconds away)	85
Helicopter (15 seconds away)	80

3.5 Visitor Experience

KLGO, and in particular the Chilkoot Trail, is managed as a cultural landscape and not specifically to provide a wilderness experience with opportunities for solitude. Most Chilkoot Trail backpackers will encounter up to several dozen other users along the Chilkoot Trail. For those seeking a remote experience at KLGO, the use of the backcountry involves backpacking off trail. The installation of weather stations along the Chilkoot Trail would not change the visitor experience. At the Chilkoot Pass, as at Goat Lake, the potential weather station site is remote and unlikely to be seen or visited. The Sheep Camp weather station would be incorporated with the modern structures at the ranger station, which is occasionally visited by hikers seeking assistance from the ranger. The Taiya River station would be incorporated into the river gauge hut and is unlikely to change the current visitor experience of that area. The interactive exhibit proposed for the Dyea site could enrich visitors' understanding of climate conditions in the park.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This EA evaluates the effects of the proposed weather stations on KLGO. The chapter is organized by alternative and, where applicable, the environmental effects of the alternatives are discussed. This information is based on readily available environmental information, information from NPS resource specialists, and field reconnaissance.

4.2 Methodology

For each issue selected for detailed analysis (see section 1.6) and for which the subject resources are described in Chapter 3, the direct, indirect, and cumulative effects are analyzed. The effects to the subject resources are analyzed on the basis of the duration, extent, and intensity of the impacts. Summary impact levels (characterized as negligible, minor, moderate, or major) are given for each issue topic in the analyses. Definitions of impact terms are provided below. Table 5 presents a summary of impact level thresholds.

Duration of Impact:

Temporary – Impacts would last only a single visitor season or for the duration of the discreet activity, such as weather station installation or maintenance. *Medium-term – Impacts would last 5-10 years. Long-term* – Impacts would extend for several years up to the life of the facility. *Permanent* – Impacts are a permanent change to the resource that would last beyond the life of the facility even if the actions causing the impacts were to cease.

Extent:

Common – The affected resource is widespread and is not identified in enabling legislation as important to the park, nor is it rare within or outside the park. The portion of the affected resource does not fill a unique role within the park or its region of the park. *Important* – The affected resource is identified by enabling legislation or is rare either within or outside the park. The portion of the affected resource does not fill a unique role within the park of its region of the park. *Unique* – The affected resource is identified by enabling legislation and the portion of the affected resource uniquely fills a role within the park and its region of the park.

Intensity of Impact:

Low – A change in resource condition is perceptible, but does not measurably alter the resource function in the park ecosystem, cultural context, or visitor opportunity. *Medium* – A change in a resource condition is measurable or observable and an alteration is detectable to the resource function in the park ecosystem, cultural context, or visitor opportunity. *High* – A change in a resource condition is measurable or observable and an alteration to the resource function in the park ecosystem, cultural context, or visitor opportunity is clearly and consistently observable.

Table 5 Definitions of summary impact levels used in analyzing impacts to resources for different alternatives.

Negligible	Minor	Moderate	Major	Impairment
Effects would generally be low intensity, temporary, and would not affect unique resources.	Effects would tend to be low intensity and short duration, but common resources may sustain medium intensity and long-term effects. Very small areas of common resources (less than 5 square feet) may be permanently impacted.	Common resources would be affected by higher intensity and longer term impacts while important and unique resources are affected by medium to low intensity and shorter-term to temporary impacts, respectively.	Effects are generally medium to high intensity, long-term to permanent and affect important to unique resources.	Impairment occurs when a resource no longer fulfills the specific purposes in the enabling legislation or its role in maintaining the park's natural integrity.

4.3 Cumulative Impacts

Cumulative impacts were assessed by combining the potential environmental impacts of the alternatives with the impacts of projects that have occurred in the past, are currently occurring, or are proposed in the future. Known past, present and reasonably foreseeable future projects and actions in the authorized boundaries of the park include areas of non-federal land, human habitation, roads, trails, buildings, campgrounds, air strips, and land applications. Past projects have taken place at each proposed weather station site.

At Chilkoot Pass, the park installed and maintains a radio repeater which includes a small equipment shelter, solar panels and an antenna. This equipment generally requires annual maintenance and is typically accessed by helicopter on an annual basis by the NPS radio maintenance crew. Any helicopter activity associated with installing or maintaining the weather station would be conducted in conjunction with maintenance of the radio repeater. A warden cabin and a warming shelter are located just north of the US-Canadian border, however; the equipment would not be visible from there structures. The rare visitor hiking south (less than 1% of the total visitation) would be able to see the weather station and the currently existing radio repeater as they approached Chilkoot Pass from the north.

At Goat Lake, AP&T has operated a 4.0-megawatt hydroelectric facility since 1997. Nearby structures include a powerhouse with the generator at the bottom of Pitchfork Falls, a pump house and valve house at the lakeside, buried and above-ground pipes and a stretch of historic railroad (AP&T 1994). These structures are not visible from the Klondike Highway. KLGO currently makes biannual helicopter landings to the proposed site to survey the changes in nearby glaciers and assess the lake as a potential geohazard. Installation and maintenance of the station and repeater could be conducted during these visits to minimize the cumulative impact of traffic to the site.

At Sheep Camp, past projects include construction of the ranger station, wind vane tower, and helipad. Several helicopter trips are made annually to supply the station and provide materials for maintenance of the Chilkoot Trail; the weather station could be installed and maintained in conjunction with these trips. Power for the station could be provided by adding to the existing solar panel array, and the sensors themselves could be installed on the existing wind vane tower, depending on the amount of weight it can hold. These measures could minimize the cumulative impacts of the installation.

At the Taiya River Bridge site, in 2007 the park replaced the USGS river gauge hut with a building of the same footprint, approximately 9 square feet. There is an antenna and solar panel on the roof and buried wires connecting to a pressure transducer and temperature probe in the river. The proposed weather station project would add sensors to a 6 foot mast attached to the gauge hut and house the control equipment within the existing hut. The footprint of the existing structure would not change, and visits to the station would be coordinated with maintenance of the river gauge.

Climate Change
The forces of climate change have already left their mark on the park's cultural and natural resources. For example, isostatic rebound (the process of ground elevation increasing due to the loss of glacial ice) in some portions of the park currently occurs at the rate of over 1 cm per year (Larson et al. 2005). This ongoing process has caused rapid ecological succession and alteration of cultural landscapes. Future climate change is likely to further alter vegetative communities, invasive exotic species cover, frequency and intensity of forest pathogen cycles, fire regime, hydrological regimes and river channel morphology. Some of the effects of climate change are predictable through the use of models, and by applying current observations to verify the model's predictions. However, there is great uncertainty in the magnitude and extent of climate change effects on park resources. In general, current state-of-the-art models for climate change predict less intense effects for Southeast Alaska as compared to interior and arctic Alaska. KLGO lies on the boundary of two very different climactic provinces, the Maritime province of Southeast Alaska and the cold interior province, the placement of the park at the juxtaposition of these two zones may make using model predictions difficult. At the same time, the parks location in a transitional zone makes it an excellent candidate for monitoring climate change. Neither of the actions proposed below will change the course of climate change. However, having accurate long-term meteorological data will help refine existing models of climate change and ultimately make their outputs more robust.

4.4 Alternative A: No Action

4.4.1 Vegetation
Under the No Action Alternative, no new weather stations would be installed. No impacts to vegetation would occur as a result of this alternative.

Cumulative Impacts
Vegetation in parts of the park has been cleared for construction of buildings, roads, trails, and other facilities. Besides the actual footprint of facilities, plants in the immediate surrounding areas have been impacted by trampling from pedestrian. Dispersed vegetation impacts have also

been caused by off-trail pedestrian traffic. Concentrated areas of off-trail pedestrian traffic often take the form of social trails where vegetation is often denuded. The backcountry installations in the park, including camps, cabins and associated infrastructure, and existing radio communications sites, create impacts in very small areas of vegetation. Maintenance activities at these existing stations would continue to have minor impact on the vegetation. The cumulative impact on vegetation from human installations, plus the more extensive impacts from past mining development, human habitation, and buildings would be minor. This alternative would not contribute any adverse cumulative impacts on vegetation in the park.

Conclusion: The No Action Alternative would not have any effects on vegetation. The level of impact to vegetation from the No Action Alternative would not result in impairment of park resources that fulfill specific purposes identified in the enabling legislations or that are essential to the natural and cultural integrity of the park.

4.4.2 Wildlife

Under the No Action Alternative, no new weather stations would be installed. No impacts to wildlife would occur as a result of this alternative.

Cumulative Impacts

Wildlife habitat in parts of the park has been cleared for construction of buildings, roads, trails, and other facilities. Besides the actual footprint of facilities, habitat in the immediate surrounding areas has been impacted by trampling from pedestrian or helicopter traffic. The backcountry installations in the park, including radio communications, impact very small areas of wildlife habitat. Park visitation in the backcountry, and the presence of field crews maintaining existing monitoring stations, could cause localized, temporary displacement of wildlife and disturbance of wildlife habitat. The area of wildlife habitat disturbed by foot traffic and helicopter landings during maintenance activities would be minimal and limited to the area immediately surrounding the stations. Public use cabins, radio repeaters, and ranger / warden stations also add to existing impacts on wildlife and wildlife habitat. These actions have resulted in minor long and short-term habitat loss, displacement of wildlife, and increased human-wildlife conflicts.

The cumulative impact on wildlife and habitat from human installations, plus the more extensive impacts from past mining development, human habitation, trails, and buildings would be minor. The No Action alternative would not contribute any adverse cumulative impacts on wildlife and habitat.

Conclusion: The No Action Alternative would not have any effects on wildlife and habitat. The level of impact to wildlife from the No Action Alternative would not result in impairment of park resources that fulfill specific purposes identified in the enabling legislations or that are essential to the natural and cultural integrity of the park.

4.4.3 Visual Quality

Under the No Action Alternative, no new weather stations would be installed, and there would be no impacts on visual quality.

Cumulative Impacts

Visual quality is affected by the presence and operation of human installations in the backcountry near Chilkoot Pass including the existing radio repeater, and the warden cabin and warming shelter on the Canadian side of the boarder. Very few hikers view the existing communications station, which currently has a minor impact on the pristine visual quality of the areas. The cumulative impact on visual quality from human installations, plus the more extensive impacts from past mining development, human habitation, and buildings would be minor. The No Action Alternative would not contribute any cumulative impacts on visual quality.

Conclusion: The No Action Alternative would not have any adverse effects on visual quality. The level of impact to visual quality from the No Action Alternative would not result in impairment of park resources that fulfill specific purposes identified in the enabling legislations or that are essential to the natural and cultural integrity of the park.

4.4.4 Soundscape

Under the No Action Alternative, no new weather stations would be installed, thus there would be no impact on the natural soundscapes of the park.

Cumulative Impacts

Cumulative effects to the natural soundscapes of the park include the occasional military aircraft, and passenger jets, small aircraft overflights, and helicopters operating in the park. Aircraft noise disturbances are much more frequent during the summer months than other times of year. Helicopter use is required to access the existing radio repeater site at Chilkoot Pass usually once per year, for routine maintenance, and to supply the ranger station at Sheep Camp 8 miles south of Chilkoot Pass. These helicopter flights would be direct from the heli-base to the sites and of limited duration, thus noise intrusions would be temporary and of short duration, although spread throughout the park. Human voices may occasionally be heard at sites where limited visitor access is possible.

Existing and potential noise disturbance in the park have minor adverse cumulative impacts on soundscape. The No Action Alternative would not contribute any cumulative impacts on soundscape in the park.

Conclusion: The No Action Alternative would not result in any impacts to the natural soundscape in the park. The level of impact to soundscape from the No Action Alternative would not result in impairment of park resources that fulfill specific purposes identified in the enabling legislations or that are essential to the natural and cultural integrity of the park.

4.4.5 Visitor Experience

Under the No Action Alternative, no new weather stations would be installed and there would be no impacts on visitor experience.

Cumulative Impacts

Park visitors encountering existing radio repeaters, and other installations in the backcountry, and exposed to noise from aircraft flying over and landing to install or maintain equipment, would have a diminished visitor experience. Combined with known past, current and future projects and actions, there would be minor adverse cumulative impacts on visitor experience. The No Action Alternative would not contribute any cumulative impacts on visitor experience.

Conclusion: The No Action Alternative would not have any adverse impacts on visitor experience.

4.4.6 Cultural Resources

Under the No Action Alternative, no new weather stations would be installed and there would be no impacts on cultural resources.

Cumulative Impacts

The park contains historic and archeological sites which evidence the rich cultural history of prehistoric habitation, early native Alaskan camps and villages, and most significantly the Klondike Gold Rush for which the park was created. Impacts to historic and prehistoric resources associated with human activities in the park include exposure of buried sites, changes in artifact condition, destruction of artifacts or structures, loss of context of artifacts, site covering, and contamination of sites. Some looting and vandalism of archeological sites have occurred.

Known past, current and future projects and actions would have minor adverse cumulative impacts on cultural resources. This alternative would not contribute any cumulative impacts on cultural resources since no new weather stations would be installed.

Conclusion: The No Action Alternative would not result in any impacts to cultural resources. The level of impact to cultural resources from the No Action Alternative would not result in impairment of park resources that fulfill specific purposes identified in the enabling legislations or that are essential to the natural and cultural integrity of the park.

4.5 Alternative B: Expand Climate Monitoring Program and Co-locate a Weather Station and Radio Repeater Site at Goat Lake

4.5.1 Vegetation

Under Alternative B, four new weather stations would be installed at: the radio repeater site near Chilkoot Pass, the Sheep Camp ranger station, in Dyea at the Taiya River Bridge stream gauge, and at the Goat Lake hydropower facility. Where a sensor tower and wind generator would be installed, each tower would have a ground footprint of about 100 square feet (about 0.002 acre), depending on whether gabions are used for anchoring the towers. At Chilkoot Pass and Goat Lake the sites consist of bare rock, rock rubble, and/or small pockets of soil supporting low growing herbaceous vegetation. At Sheep Camp the vegetation is growing ground and understory plants. This vegetation would be removed prior to constructing the 2.25 square foot cement pad (1.5'x1.5') on which the weather station tower would be placed. The Taiya River station would have no footprint beyond existing structures. At all sites, direct impacts on vegetation would result from anchoring of equipment and foot traffic, in addition to vegetation being trampled or destroyed by anchoring techniques. There would also be localized vegetation trampling from foot traffic during installation and maintenance; however, the area trampled would likely be minimal and limited to the area immediately surrounding the weather stations. Additionally, localized trampling of any existing vegetation from helicopter landings would occur; however, helicopters would land on bare rock or snow wherever possible. Foot traffic and landing zones at the site would comprise an area of about 360 square feet (about 0.008 acre).

Exotic plants or seeds could be transported to the sites on equipment, clothing and footwear. New introductions could allow for exotic plants to become established and spread, especially in areas where the ground is disturbed by installation activities. However, mitigation to ensure that equipment, clothing and footwear do not contain exotic plant material would be implemented.

Impacts on vegetation, although permanent, would be minor since very little vegetation would be removed (2.25 sq. feet) and trampling of plants would occur over a very small area surrounded by native vegetation.

Cumulative Impacts
Vegetation in parts of the park has been cleared for construction of buildings, roads, trails, and other facilities. Besides the actual footprint of facilities, plants in the immediate surrounding areas have been impacted by trampling from pedestrian and vehicle traffic. Dispersed vegetation impacts have also been caused by off-trail pedestrian traffic. Concentrated areas of off-trail pedestrian traffic often take the form of unofficial social trails where vegetation is often denuded.

The backcountry installations in the park, includes radio communications sites, backcountry cabins and hardened campsites impact very small areas of vegetation. Maintenance activities at these existing stations would continue to impact vegetation. The cumulative impact on vegetation from human installations, plus the more extensive impacts from past mining development, human habitation, and buildings would be minor. This alternative would also contribute minor adverse cumulative impacts on vegetation.

Conclusion: Alternative B would result in minor, permanent, adverse impacts to vegetation from loss of plants due to anchoring of equipment and vegetation trampling during installation and maintenance of weather stations. The level of impact to vegetation from Alternative B would not result in impairment of park resources that fulfill specific purposes identified in the enabling legislations or that are essential to the natural and cultural integrity of the park.

4.5.2 Wildlife
Under Alternative B, installation of new weather stations would temporarily displace wildlife in the immediate vicinity during installation. Disturbance would be temporary as installation would require only one day at each site. Wildlife would be disturbed temporarily by helicopters accessing the sites and by the short-term presence of people. Although there have not been any reports of wildlife disturbance or habituation at existing seismic, RAWS, and other monitoring sites, it is documented that wildlife startle responses to helicopters include fleeing, cessation of foraging, and disruption of bedding (Cote 1996; Larkin 1996; Frid 1999a, 1999b). Frid (1999c) found that activity disruptions occurred when the helicopter was a median distance of 1 km away. Helicopter disturbance during installation would be minor as there would be one or two annual round-trip flights to the site. Disturbance from maintenance activities on wildlife would be minor as each site would be visited only once every year. The sites accessed by foot or vehicle for yearly maintenance would have a lower intensity of impacts to wildlife as compared to those sites accessed by helicopters.

RAWS have a combined footprint of about 100 square feet (0.002 acre), depending on whether gabions are used for anchoring the towers. Although much of the proposed sites consist of either

bare rock, rock rubble, and small pockets of soil supporting low growing herbaceous vegetation, or manicured lawn, direct impacts to wildlife habitat would result from anchoring of equipment and from foot traffic. There would also be localized habitat disturbance from foot traffic during installation and maintenance; however, this area would likely be minimal and limited to the area immediately surrounding the weather station. Additionally, localized habitat disturbance from helicopter landings would occur; however, helicopters would land on bare rock or snow wherever possible. Foot traffic and landing zones at each new site would comprise an area of about 360 square feet (0.008 acre).

The maximum direct impacts to wildlife habitat from the installation the station including the equipment footprint (0.002 acres) and foot traffic and landing zones (0.048 acres), would be about 0.05 acres per site for a total of.144 acres (Taiya River Bridge station will be erected on an existing structure). All sites already have some ground disturbance, thus any new disturbance to wildlife habitat should be minimal. Brown and black bear, river otters and many bird species are present, but do not tend to stay for long periods of time for feeding or resting. The arctic ground squirrel, snowshoe hares, and various voles, and shrews are likely to inhabit underground burrows at all of the proposed sites. However, it is unlikely that wildlife species would be susceptible to disturbance from the installation and maintenance of the weather stations as the sites are not located within sensitive nesting, breeding, or foraging habitats.

Impacts on wildlife and habitat would be minor since human activity during installation and maintenance would be temporary and of short duration, and very little habitat would be disturbed when considering thousands of acres of untouched habitat in the park.

Cumulative Impacts
Wildlife habitat in parts of the park has been cleared for construction of buildings, roads, trails, and other facilities. Besides the actual footprint of facilities, habitat in the immediate surrounding areas has been impacted by trampling from pedestrian and vehicle traffic. The backcountry installations in the park, including radio communications and RAWS, impact very small areas of wildlife habitat. Park visitation in the backcountry, and the presence of field crews maintaining monitoring stations, could cause localized, temporary displacement of wildlife and disturbance of wildlife habitat. The above human installations and public use, plus impacts from past development, human habitation, roads, buildings and land applications have resulted in long and short-term habitat loss, displacement of wildlife, and increased human-wildlife conflicts. Combined with known past, current and future projects and actions, there would be minor adverse cumulative impacts on wildlife. This alternative would contribute negligible adverse cumulative impacts on wildlife and habitat.

Conclusion: Alternative B would result in negligible, temporary, adverse impacts to wildlife and negligible, long-term, adverse impacts to wildlife habitat from displacement of wildlife and disturbance of wildlife habitat during installation and maintenance of the weather station. The level of impact to wildlife from Alternative B would not result in impairment of park resources that fulfill specific purposes identified in the enabling legislations or that are essential to the natural and cultural integrity of the park.

4.5.3 Visual Quality

Under Alternative B, four new weather stations would be installed. The visual quality and aesthetics at each site would be affected by the weather and wind generator towers at the Chilkoot Pass and Goat Lake, which would be visible to the very few visitors who may encounter the sites. As discussed in the Affected Environment chapter, there is also the possibility that the Chilkoot Pass stations could be visible to a few hikers and climbers from a distance of one to two miles from ridge tops, but varies greatly with the viewing angle and whether the towers are silhouetted against the sky or against terrestrial background. The site is not visible from the Chilkoot Trail when traveling north which is the direction over 99% of hikers travel. During the summer months, however, a few pilots and passengers would also see the weather stations from low-flying aircraft. At Sheep Camp, the station would affect the visual quality of the ranger station for the occasional hiker who visits the ranger. A station at the Taiya River bridge site would be incorporated into the existing structure, adding only sensors to the roof of the river gauge hut.

Cumulative Impacts

Visual quality is affected by the presence and operation of human installations in the backcountry. Few hikers and climbers view existing weather, ranger, and communications stations, which continue to have a minor impact on the pristine visual quality of the areas. During the summer months, however, a few pilots and passengers see the existing radio repeater, and other structures located in the park. Many visitors to Dyea see the river gauge hut. Combined with known past, current and future projects and actions, there would be minor adverse cumulative impacts on visual quality. This alternative would contribute minor cumulative impacts on visual quality of the park.

Conclusion: Alternative B would result in minor adverse impacts to visual quality from the permanent installation and presence of weather stations. The level of impact to visual quality from Alternative B would not result in impairment of park resources that fulfill specific purposes identified in the enabling legislations or that are essential to the natural and cultural integrity of the park.

4.5.4 Soundscape

Under Alternative B, four new weather stations would be installed. Helicopters, which would be required for initial installation of three of the stations, would intrude upon the natural soundscape for one day at each site, with one or two round-trip flights that day.

Subsequent to initial weather station installation, site visits would be conducted annually for routine maintenance. Maintenance of the station would not require helicopter access; rather sites could be reached by foot. Helicopters would be required for access the site every three years when batteries need to be replaced. All access for maintenance would require one hike in trip per year.

Since helicopter-produced sound can be heard at long distances (see table 4 for sound levels of helicopters at various distances), the natural soundscape would be diminished. However, these intrusions of the natural soundscape would be minor as they would be temporary and of short duration, and would occur one day every three years.

Cumulative Impacts
Cumulative effects to the natural soundscapes of the park include the occasional military aircraft, and the occasional passenger jets, small aircraft overflights, and helicopters operating in the park. Aircraft noise disturbances are much more frequent during the summer months than other times of year. Helicopters are currently used to access the existing NPS repeater, survey Goat Lake for geohazard data, and supply Sheep Camp. Battery replacement flights would co-occur with repeater maintenance flights whenever possible. These helicopter flights would be direct from the heli-base to the sites and of limited duration, thus noise intrusions would be temporary and of short duration, although spread throughout the park. Human voices may occasionally be heard at sites where limited visitor access is possible.

Combined with known past, current and future projects and actions, there would be minor adverse cumulative impacts on soundscape. Alternative B would contribute minor cumulative impacts on soundscape the park.

Conclusion: Alternative B would result in minor adverse impacts on soundscape from noise intrusions during installation and maintenance of the weather station. The level of impact to soundscape from Alternative B would not result in impairment of park resources that fulfill specific purposes identified in the enabling legislations or that are essential to the natural and cultural integrity of the park.

4.5.5 Visitor Experience
Under Alternative B, four new weather stations would be installed. Park visitors encountering equipment at close range, or subjected to overhead aircraft noise during installation and maintenance, could have a diminished visitor experience. At Chilkoot Pass and Goat Lake, due to the remote location and inaccessibility of the site, as well as the limited time during which sites would be installed or maintained, it is estimated that a very small percentage of annual visitors would be impacted. A few more would see the Sheep Camp station in the context of visiting the ranger, while many visitors would drive by the Dyea station. The impact on visitor experience would be negligible at the most remote sites, as the likelihood of visitors encountering the sites would be very low and few visitors would be disturbed by aircraft accessing the sites for installation and maintenance. The impact of the Dyea and Sheep Camp sites would be minor as more visitors would see the stations, but they would see them in the context of a less remote setting with existing infrastructure.

Cumulative Impacts
Park visitors encountering weather stations, radio repeaters, and other installations in the backcountry, and exposed to noise from aircraft flying over and landing to install or maintain equipment, would have a diminished visitor experience. Combined with known past, current and future projects and actions, Alternative B would contribute minor adverse cumulative impacts on visitor experience.

Conclusion: Alternative B would likely result in minor adverse impacts to visitor experience from encounters with the stations and noise from overhead aircraft during installation and maintenance of weather stations.

4.5.6 Cultural Resources

Several archaeological resources inventories have been conducted along the Chilkoot trail, and no archaeological sites are known from any of the locations where these installations are proposed. If any archeological or historical resources would be discovered during installation at any of the new stations, the installation would be halted and the NPS Superintendent and park cultural resource managers would be notified as soon as possible. No further action would take place until the NPS provides clearance, which would occur sometime after consultation with the State Historic Preservation Office. No historic buildings are located near any of the proposed installation sites. Any structures in the vicinity of the proposed location are of not historic origins. Impacts on cultural resources would be negligible as many of the proposed sites have been surveyed prior to existing facility construction do not contain cultural resources and great care would be taken to avoid adverse effects at sites where they could occur. Impacts to the cultural landscape would be minor at all four of the sites.

Cumulative Impacts

Combined with known past, current and future projects and actions, there would be minor adverse cumulative impacts on cultural resources. This alternative would contribute negligible adverse cumulative impacts on cultural resources.

Conclusion: Alternative B would result in negligible adverse impacts to cultural resources from the installation of a new weather station. The level of impact to cultural resources from Alternative B would not result in impairment of park resources that fulfill specific purposes

CHAPTER 5: CONSULTATION AND COORDINATION

5.1 Public Involvement

This environmental assessment is available for public review and comment for 30 days. It is available online at the National Park Service Planning, Environment, and Public Comment (PEPC) website. Go the http://parkplanning.nps.gov to access the PEPC site. Public comments on this environmental assessment can also be provided on the PEPC website.

A press release announcing the public comment period and availability of the environmental assessment was issued by the National Park Service and announced over local public radio stations.

5.2 List of Preparers and Consultants

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

Klondike Gold Rush National Historical Park
David Schirokauer, Natural Resources Program Manager
Theresa Thibault, Chief of Resources
Jessica Wilbarger, Ecological Science Intern
Tim Steidel, Chief Ranger

Central Alaska I&M Network
Pam Sousanes, Climatologist

Alaska Regional Office
Glen Yankus, Environmental Protection Specialist

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APPENDIX A. 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 proposal to install remote automated weather stations and radio communications repeaters at locations in Klondike Gold Rush National Historical Park (KLGO) and on federal lands in the Tongass National Forest (TNF).

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, 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 affected 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;

(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 conservation system units and additions to existing units of the national park system in Alaska. Section 816 of ANILCA prohibits the taking of wildlife in national parks and monuments except as specifically authorized. KLGO and the TNF were established in 1976 before the passage of ANILCA. ANILCA and National Park Service (NPS) regulations do not authorize subsistence use on federal lands within KLGO. Subsistence hunting is authorized on lands within the TNF following regulations published by the Federal Subsistence Management Program.

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 NPS is considering installing up to four remote automated weather stations, three of the stations would be within KLGO, and one would be on USDA Forest Service lands adjacent to Goat Lake within the Borough of Skagway. This alternative proposes the automated weather stations be installed at the following sites:

Chilkoot Pass: A remote, automated weather station would be installed near the existing radio communications repeater site. This mountaintop site is about 1/2 mile west of where the Chilkoot Trail crosses the Chilkoot Pass and is not visible from the Chilkoot Trail. The habitat consists of alpine-lichen-dominated bedrock with small patches of tundra. The instrumentation would be installed on a 10-foot tower anchored directly to bedrock and will be powered by a small wind generator placed on an adjacent 8-foot tall pipe stand. The existing radio communications repeater would be replaced with new equipment and a new housing at the existing site concurrently with the installation of the weather station.

Sheep Camp: A remote, automated weather station would be installed adjacent to the west side of the existing Sheep Camp Ranger Station. The instrumentation would be installed on a 10-foot tower anchored to a small cement slab. It would be powered by solar panels.

Dyea - Adjacent to the Taiya River Bridge: An automated weather station would be installed on the existing Taiya River gauge hut, which is adjacent to the northeast corner of the Taiya River Bridge. The instrumentation would be installed on a 10-foot mast attached to the hut. The instrumentation would be powered by commercial power with battery backup.

Goat Lake - Co-located with Existing Hydropower Infrastructure: A remote, automated weather station and a radio communications repeater would be installed adjacent to the existing radio communication repeater operated by the City of Skagway at Goat Lake. The weather station instrumentation would be attached to a 10-foot tower. The radio communication repeater would be installed inside a fiberglass shell. Both units would be powered by commercial power that already exists at the site.

Detailed information describing all of these sites is available in the body of the draft environmental assessment (EA): Expand Climate Monitoring Network and Upgrade Radio Communication Systems at Klondike Gold Rush National Historical Park.

Access: Access to any of these sites would not be changed or restricted in any way if remote automated weathers stations were installed.

This EA analyzes two alternatives: the “No Action” alternative and the “Proposed Action” alternative. A full discussion of the alternatives and anticipated effects can be found in the draft EA for this project. The draft EA has been prepared in accordance with the National Environmental Policy Act of 1969 and regulations of the Council on Environmental Quality (40 CFR 1508.9).

IV. AFFECTED ENVIRONMENT

A summary of the affected environment pertinent to subsistence is presented here. For a comprehensive description, see the "Affected Environment" and "Environmental Consequences" sections of the EA. The Resource Management Plan (RMP) contains additional descriptions of the environment of KLGO (NPS 2001). Land and Resource Plan for the Tongass National Forest provide a comprehensive description of the TNF (USDA Forest Service 2008).

Federal lands within KLGO are closed to subsistence uses. Other federal lands adjoining the park in the TNF are open for subsistence uses. Regional subsistence activities that take place include hunting, fishing, trapping, berry picking, and plant gathering. Black bear, moose, fish, furbearers, small mammals, waterfowl, berries, other edible plants, and wood constitute the major subsistence resources used by local residents in Game Management Unit 1D.

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 that could be impacted:

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

1) The potential to reduce populations:
The "No Action" alternative is the status quo. NPS lands in KLGO are and would continue to be managed according to direction in the 1996 *KLGO GMP/Development Concept Plan* and the Superintendent's Compendium (NPS 2009). Federal and state regulations provide protection for fish and wildlife populations within KLGO. Federal lands within the TNF would continue to be managed for subsistence use following the Subsistence Management Regulations published by the US Fish and Wildlife Service Federal Subsistence Management Program.

No remote, automated weather stations would be installed. Consequently the no-action alternative has no potential to reduce populations of subsistence resources through the actual reduction of numbers, the redistribution of resources, or habitat loss beyond the existing level resulting from the existing level of development of the project area.

The "Proposed Action" alternative involves installing four automated weather stations. Three of these weather stations would be installed on NPS lands within KLGO. No subsistence is known to occur in these areas. These weather stations are not expected to reduce or redistribute subsistence resources. Wildlife and habitats would be subjected to minimal temporary impacts and disturbances caused during the installation of the equipment. The potential impacts would be temporary and would not reduce wildlife populations or their habitat. One remote, automated weather station would be installed on federal lands within the TNF. Subsistence use is known to occur in the vicinity of Goat Lake within Game Management Unit 1D and is authorized for black bear, goat, coyote, fox, hare, lynx, wolf, wolverines, grouse, and ptarmigan (36 CFR Part 242; 50 CFR Part 100). The weather station is not expected to reduce or redistribute subsistence resources. The site proposed for the weather station at Goat Lake is already developed as a

hydropower facility operated by the local utility (Alaska Power & Telephone). Wildlife and habitats would be subjected to minimal temporary impacts and disturbances during the installation of the equipment. The potential impacts would be temporary and would not reduce wildlife populations or their habitat. Weather station installation would occur during the months of June or July when there are no open seasons for any subsistence species in Game Management Unit 1D.

2) Restriction of access:
The "No Action" alternative, the status quo would not significantly limit or restrict access to subsistence uses on federal public lands within the region.

The "Proposed Action" alternative is not expected to significantly limit or restrict the access of subsistence users to subsistence uses on federal public lands within the region. Federal and state regulations assure the continued viability of fish and wildlife populations.

3) Increase in competition:
The "No Action " alternative, maintaining the status quo would not result in increased competition for fish, wildlife or other resources that would significantly impact subsistence users on federal public lands within the region.

The "Proposed Action" would not result in increased competition for fish, wildlife or other resources that would significantly impact subsistence users on federal public lands within the region. Federal and state regulations assure the continued viability of particular fish or wildlife populations.

VI. AVAILABILITY OF OTHER LANDS

The availability of other lands outside and within the park has been considered in the proposed actions. There is no other feasible way to meet NPS needs to collect long-term, climate data on lands in or adjacent to the park. The proposed actions are consistent with NPS mandates. Because the proposed actions within KLGO occur on federal lands that are not available for subsistence use, and would not affect subsistence resources and use on TNF lands, the proposed actions do not affect the availability of federal lands for subsistence use.

VII. ALTERNATIVES CONSIDERED

No alternatives other than the "No Action" and "Proposed Action" alternatives were considered.

VIII. FINDINGS

This analysis concludes that the "Proposed Action" alternative will not result in a significant restriction of subsistence uses. The "No Action" alternative will also not result in a significant restriction of subsistence uses.

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