
National Park Service
U.S. Department of the Interior



Wrangell-St. Elias National Park and Preserve
Alaska

McCarthy Communications Sites Environmental Assessment December 2010

Public Review Copy



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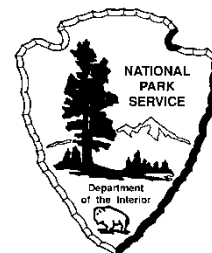


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ACRONYMS AND ABBREVIATIONS

ACS	Alaska Communications Systems
ADF&G	Alaska Department of Fish & Game
ADNR	Alaska Department of Natural Resources
ADOT&PF	Alaska Department of Transportation and Public Facilities
AEIC	Alaska Earthquake Information Center
AGL	above ground level
ANILCA	Alaska National Interest Lands Conservation Act
CDMA	Code Division Multiple Access System
CFR	Code of Federal Regulations
CUA	Commercial Use Authorization
CVW	Copper Valley Wireless
CVTC	Copper Valley Telephone Cooperative
DO	Director's Order
DOI	Department of the Interior
EA	Environmental Assessment
E.O.	Executive Order
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FONSI	Finding of No Significant Impact
GA	general aviation
GMP	General Management Plan
IHOG	Interagency Helicopter Operations Guide
Kbps	kilobits per second
mi	miles
MTA	Matanuska Telephone Association
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NPS	National Park Service
ORV	off-road vehicle
RAWS	remote automated weather station
RFFA	reasonably foreseeable future action
ROD	Record of Decision
ROW	Right(s) of Way
STEEP	St. Elias Erosion and Tectonics Program
T&E	threatened and endangered
the park	Wrangell-St. Elias National Park and Preserve
U.S. or US	United States
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USC	United States Code
USDA	United States Department of Agriculture
USDOI	United States Department of the Interior
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Service
VRLA	valve-regulated
VSAT	very small aperture terminal
WRST	Wrangell-St. Elias National Park & Preserve

1.0 INTRODUCTION

The National Park Service (NPS) is considering issuing Copper Valley Wireless (CVW) two new right-of-way permits and amending one existing right-of-way (ROW) permit for the purpose of improving cellular telephone service in the Chitina Valley. CVW proposes to build one of these communications sites on land managed by NPS that has been identified in the 1986 Wrangell-St. Elias National Park and Preserve (WRST or the park) *General Management Plan, Land Protection Plan, Wilderness Suitability Review* (GMP) as eligible wilderness.

This project would connect the McCarthy, Alaska, area to an existing fiber optic cable in Chitina, Alaska, and ultimately the outside world, providing local residents, businesses and visitors access to state-of-the-art broadband and telecommunications services. This proposal would provide broadband and wireless service to those whose phone service provider uses the Code Division Multiple Access System (CDMA). Service providers using CDMA include Alaska Communications Systems (ACS), Alaska Digital, Matanuska Telephone Association (MTA), Sprint, Verizon, and Alltel. Those whose phone service provider uses the Global System for Mobile Communication (GSM) will not have new service. Service providers using GSM include AT&T, GCI, and T-Mobile.

CVW's project was approved and funded by an American Recovery and Reinvestment Act Grant. The NPS has determined the proposed project would be consistent with the 1986 WRST GMP following the wilderness eligibility boundary revision identified in Appendix C. This suitability review was used to determine whether the communications sites are an appropriate use of NPS lands.

This environmental assessment (EA) provides an overview of the proposed project and analyzes two alternatives and their impacts on the environment: Alternative 1, the No Action Alternative, and Alternative 2, the Proposed Action Alternative to construct, operate, and maintain the McCarthy Communications Sites. The EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and regulations of the Council on Environmental Quality (40 Code of Federal Regulations [CFR] 1500 *et seq.*). The purpose and need for the project is described in Section 1.1 and the proposed action and alternatives are described in Section 2 of this EA. Section 3 describes the existing condition of potentially affected resources, and Section 4 contains the analysis of impacts of each alternative.

1.1 Purpose and Need for Action

McCarthy is currently served by a single facility for wireless telecommunications, and satellite for digital data transfer (see Figure 4). The majority of the McCarthy Road corridor linking Chitina and McCarthy lacks cellular phone coverage. CVW, a subsidiary of Copper Valley Telephone Cooperative (CVTC), has applied for ROWs to construct a new communications site at Gilahina Butte and build a new repeater site on Lakina Terrace. The NPS would also amend CVW's existing ROW for its Sourdough Ridge communications site, allowing CVW to upgrade their equipment there. (see Project Area, Figure 2).

The current communications system, although reasonably reliable, is costly to operate, subject to latency/delay and quality issues inherent in satellite transport, and contains inadequate bandwidth. The vision of CVTC, CVW's parent company, is to be the "full service telecommunications provider of choice by offering cutting edge technology through innovative business approaches" and consistent with the U.S. Department of Agriculture (USDA) initiative to expand broadband services to the rural communities. Residents, businesses and concessionaires from McCarthy and the Kennecott Mines National Historic Landmark (NHL) have requested service improvements that only a terrestrial system can provide. The improved system would serve park inholdings and communities in remote locations surrounded by federal lands.

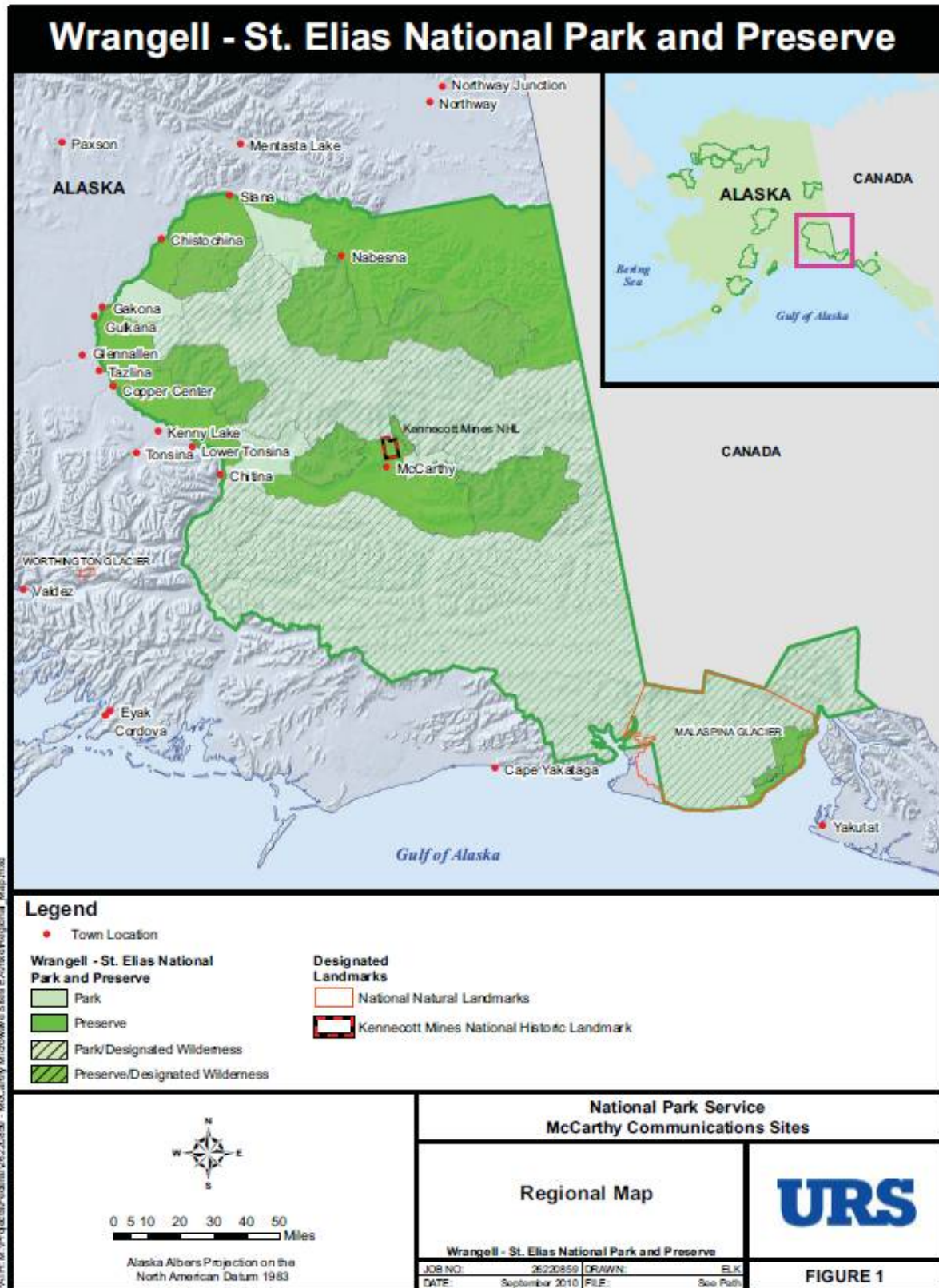


Figure 1. Regional Map

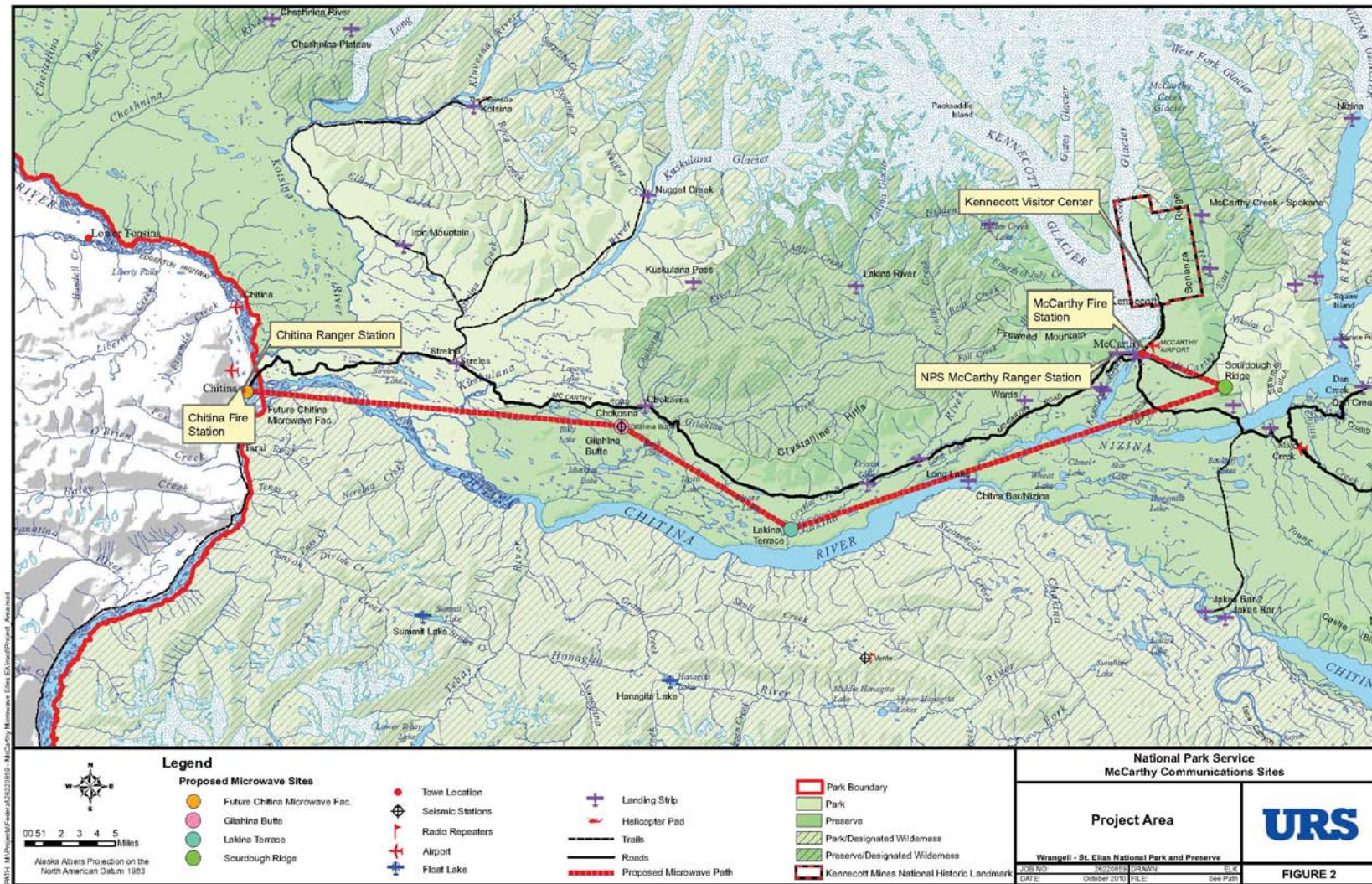


Figure 2. Project Area

1.2 Background

CVTC is a member-owned, community-based telecommunications cooperative that began serving the Valdez/Copper River Basin with telephone service in 1961. It has since expanded its communications services to provide internet and wireless. Wireless service in McCarthy began in 1995. CVTC's mission is to provide best value, state of the art communication services. CVW, a subsidiary of CVTC and the ROW permit applicant, has proposed the construction of a microwave system/path to connect McCarthy to the existing fiber optic network in order to provide broadband service and expanded wireless service to McCarthy and the surrounding area. Satellite-based systems, traditionally used in rural areas, can be slow and unreliable. A faster and more reliable way to backhaul or route digital communication traffic is through a terrestrial system (cable or microwave). Land-based communications systems in more urban areas achieve the greatest data speeds with cable.

McCarthy developed after 1908 as a supply center serving the residents of Kennecott and the surrounding area. It peaked with a population of 800 and was largely abandoned in 1938. The McCarthy-Kennecott area 2000 census recorded 42 fulltime residents, up from 25 in 1990. The area enjoys a larger summer population due to tourism work connected with the Kennecott Mines NHL and popular summer events.

The public and private sectors in the Copper River Basin use two forms of wireless telecommunications: cell phones and satellite (Sat) phones. The NPS also employs FM radios. McCarthy businesses reported that potential business was occasionally lost when customers hung-up during the area's frequent telephone service disruptions (Green 2010).

WRST received approximately 66,000 visitors in 2008 (NPS 2009). Most accessed the park with private vehicles. Visitors enjoy subsistence activities, fishing, backpacking, sight-seeing, flight-seeing, cultural tourism throughout the park, as well as sport hunting within the national preserve.

1.3 Park Purpose and Significance

Wrangell-St. Elias National Monument was established in 1978. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) designated Wrangell-St. Elias National Monument and adjoining Kluane National Park in Canada as a World Heritage Site on October 26, 1979, because of its significant historic and cultural landscapes. Congress designated the area as a National Park and Preserve under the Alaska National Interest Lands Conservation Act (ANILCA) in 1980. WRST encompasses approximately 13.2 million acres which is a large portion of Alaska's Southcentral region (NPS 2010a). There are approximately 800,000 acres of non-federal lands within the boundary of WRST. Table 1-1 provides the acreage by owner. The southern portion of the park interior is accessed predominantly by the McCarthy Road, which connects with the Edgerton Highway at Chitina (Figure 1).

Table 1-1. Non-Federal Land Ownership within WRST

Owner	Acres	Owner	Acres
Ahtna, Inc. (conveyed)	620,500	Native Allotments (38)	3,894
Chitina Native Corporation (conveyed)	62,700	Mining Claims unpatented (25)	456
Chugach Alaska Corporation (conveyed)	54,370	Mining Claims patented (286)	5,625
State of Alaska	38,400	Small Non-Kennecott Mines NHL Private Tracts (67)	5,404
University of Alaska	8,830	Kennecott Mines NHL Private Tracts (71)	186
		Total	800,365

Source: NPS Lands Files, 2010

A map of land ownership within the park for the project area can be found in Figure 3.

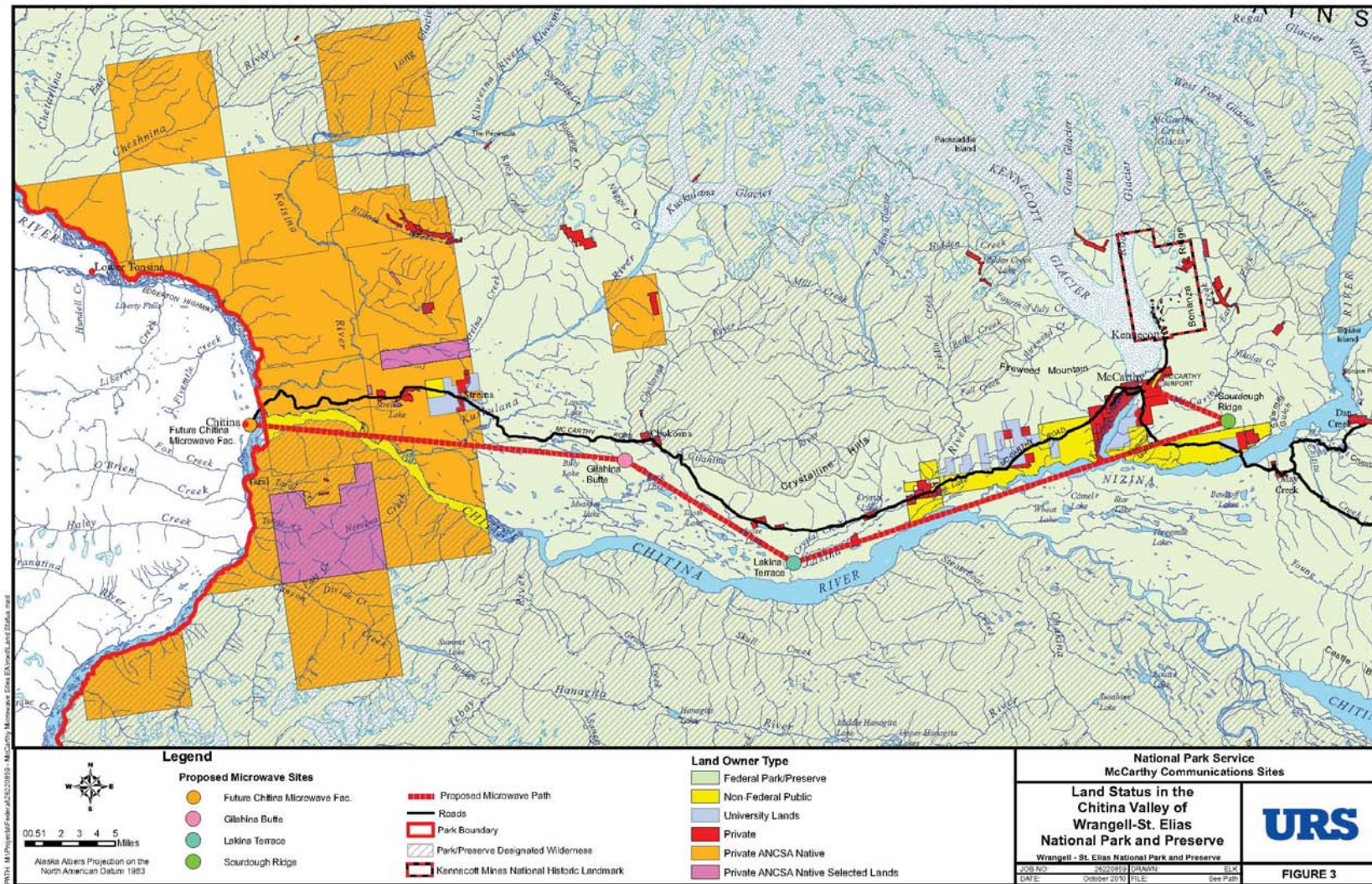


Figure 3. Land Status in the Chitina Valley

The park purpose and significant resources are listed in the GMP (NPS 1986),

Section 201(a) of ANILCA states that the park/preserve will be managed for the following *purposes*, among others: to maintain unimpaired the scenic beauty and quality of high mountain peaks, foothills, glacial systems, lakes and streams, valleys, and coastal landscapes in their natural state; to protect habitat for, and populations of, fish and wildlife including but not limited to caribou, brown/grizzly bears, Dall's sheep, moose, wolves, trumpeter swans and other waterfowl, and marine mammals; and to provide continued opportunities, including reasonable access for mountain climbing, mountaineering, and other wilderness recreational activities. Subsistence uses by local residents shall be permitted in the park, where such uses are traditional in accordance with the provisions of title VIII.

The following is a list of the *significant resources* for which the park/preserve was established:

Sensitive Habitats

- Caribou calving areas
- Moose winter concentration and rutting areas
- Bear intensive use areas
- Dall's sheep high-density range
- Mountain goat concentrations
- Trumpeter swan nesting areas
- Eagle nesting concentrations
- Fish spawning areas
- Special vegetation areas
- Migratory bird flyways

Cultural Resources

- Historical sites
- Archeological areas

Special Geological/Hydrological Features

- Unique glaciers and icefields
- High mountain terrain
- Major clearwater streams
- Glacier-dammed lakes with periodic flood outbursts
- Thermal features (e.g., Mt. Wrangell, mud volcanoes, and hot springs)
- Areas of geological interest (Chitistone and Nizina canyons)
- Sand dunes

Other Significant Resource Values

- Scenic beauty and quality
- Wilderness
- Wildlife
- Coastal Areas

1.4 Laws, Regulations, and Policies

1.4.1. NPS Organic Act and General Authorities Act

The NPS Organic Act of 1916 directed the Secretary of the Interior and the NPS to manage national parks and monuments to:

... conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations” (16 United States Code [USC] 1).

The NPS Organic Act also granted the Secretary of the Interior the authority to implement “rules and regulations as he may deem necessary or proper for the use and management of the parks, monuments, and reservations under the jurisdiction of the National Park Service” (16 USC 3).

The General Authorities Act of 1970 and amendments passed in 1978 to the NPS Organic Act expressly articulated the role of the national park system in ecosystem protection. The amendments further reinforce the primary mandate of preservation by stating:

The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the national park system and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided for by Congress (16 USC 1-a1).

Further, the NPS Organic Act and General Authorities Act prohibit the impairment of park resources and values. The 2006 NPS Management Policies use the terms “resources and values” to mean the full spectrum of tangible and intangible attributes for which the park is established and managed, including the NPS Organic Act’s fundamental purpose and any additional purposes as stated in the park’s enabling legislation. The park resources and values are intended to be managed so that they continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

1.4.2 The Wilderness Act of 1964 (16 USC 1131-1136, 78 Stat. 890)

The 1964 Wilderness Act established the National Wilderness Preservation System and identified the NPS as one of the four federal agencies responsible for protecting and preserving the nation’s wilderness resource. The Wilderness Act defines wilderness as follows:

A wilderness, in contrast with those areas where man and his works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this chapter an area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which

- generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable;
- has outstanding opportunities for solitude or a primitive and unconfined type of recreation;
- has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and
- may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Section 4 of the Wilderness Act acknowledges that although certain activities are prohibited in order to protect wilderness, there are also necessary exceptions in order to meet the minimum requirements for the administration of the area as wilderness. The minimum requirement concept is used when making all decisions concerning management of wilderness, including administrative practices, proposed special uses, scientific activities, and equipment use in wilderness. When the minimum requirement is determined, the potential disruption of wilderness character and the physical resource is considered and given more weight than economic efficiency and convenience. The minimum requirement / minimum tool analysis for this project may be found in Appendix B.

1.4.3 ANILCA (16 USC 3101–3233)

ANILCA addresses wilderness management in WRST as follows:

- ANILCA Section 701 designated “approximately eight million seven hundred thousand acres” as wilderness within Wrangell-St. Elias National Park and Preserve. This number has since been refined based on better mapping techniques and consideration of inholdings.
- ANILCA Section 102(13), states that the term “wilderness” as used in ANILCA has the same definition as in the Wilderness Act.
- ANILCA Section 201 states that a fundamental purpose of the Wrangell-St. Elias National Park and Preserve is to provide continued opportunities, including reasonable access, for mountain climbing, mountaineering, and other wilderness recreational activities.
- ANILCA provides some exceptions to national park and wilderness management practices, including under certain circumstances motorized access for subsistence purposes (Section 811) or access to inholdings (Section 1110(b)).
- ANILCA Section 1315(c) allows continued use of existing public use cabins in designated wilderness. Section 1315(b) allows new public use cabins if such cabins are necessary for the protection of the public health and safety.
- ANILCA Section 1316(a) allows the maintenance or construction of temporary campsites, tent platforms, shelters, and other temporary facilities in wilderness when directly related to the taking of fish and wildlife.
- ANILCA Section 1317 directed the Secretary of Interior to review the wilderness eligibility of all NPS lands in Alaska not already designated as wilderness. Wilderness review criteria specific to Wrangell-St. Elias National Park and Preserve were developed to accomplish that task. The park completed its review in the mid-1980s and included its findings in its GMP. The GMP concluded that of the 3,498,000 acres within the park not designated as wilderness, 2,243,800 acres are considered eligible for future wilderness designation. The GMP also identified seven general areas that do not meet wilderness criteria.

The final wilderness review process required under ANILCA section 1317(b) was never completed. The NPS drafted an Environmental Impact Statement for WRST in 1988 (NPS 1988), but no Record of Decision (ROD) was ever signed. However, the preferred alternative identified in the draft document recommended excluding the areas encompassing these three communication sites from eligible wilderness.

A review of the 1986 GMP wilderness eligibility assessment showed that certain revisions are warranted and the proposed eligibility revisions would require a formal amendment of that assessment. Those proposed revisions are discussed in Appendix C.

1.4.4 NPS Management Policies 2006

NPS Management Policies 2006, Chapter 6: Section 6.3.1 establishes that eligible and proposed wilderness on NPS lands should be managed under wilderness policy as follows:

For the purposes of applying NPS wilderness policies, the term ‘wilderness’ includes the categories of eligible, study, proposed, recommended and designated wilderness. NPS wilderness policies apply regardless of category. . . . In addition to managing these classified areas for the preservation of their wilderness values, planning for these areas must ensure that the wilderness character is likewise preserved. . . . The National Park Service will take no action that would diminish the wilderness eligibility of an area possessing wilderness characteristics until the legislative process of wilderness

designation has been completed. Until that time, management decisions pertaining to lands qualifying as wilderness will be made in expectation of eventual wilderness designation.

In accordance with National Park Service procedures for implementing NEPA . . . administrative actions impacting wilderness must be addressed in either the EA or EIS accompanying the approved wilderness management plan, or as a separate environmental compliance document.

This requirement is repeated in NPS Management Policies 2006, Sec. 6.3.10.1, which outlines the provisions for placing administrative facilities, like ranger stations, fire lookouts, radio and/or cellular telephone antennas, radio repeater sites, etc., in wilderness. Such sites may only be allowed in wilderness if determined “to be the minimum requirement necessary to carry out wilderness management objectives and are specifically addressed within the park’s wilderness management plan or other appropriate planning documents.”

NPS Management Policies 2006, Sec. 6.4.8 specifically addresses ROW in wilderness:

Existing rights-of-way that have been included in wilderness should be terminated or phased out where practicable. Rights-of-way subject to NPS administrative control should be administered under conditions outlined in the park’s wilderness management plan that protect wilderness character and resources and limit the use of motorized or mechanical equipment. The Service will not issue any new rights-of-way or widen or extend any existing rights-of-way in wilderness. Rights-of-way and access procedures affecting wilderness areas in Alaska are governed by applicable provisions of the Alaska National Interest Lands Conservation Act and regulations in 43 CFR Part 36, and 36 CFR Part 13.

In addition to determining the environmental consequences of implementing the preferred and other alternatives, NPS *Management Policies 2006* (section 1.4) requires analysis of potential effects to determine whether or not proposed actions would impair a park’s resources and values.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the National Park Service the management discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of the park. That discretion is limited by the statutory requirement that the National Park Service must leave resources and values unimpaired unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values (NPS *Management Policies 2006*). Whether an impact meets this definition depends on the particular resources that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

An impact on any park resource or value may, but does not necessarily, constitute impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or

- identified in the park's general management plan or other relevant NPS planning documents as being of significance.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated.

Impairment may result from visitor activities; NPS administrative activities; or activities undertaken by concessioners, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park.

Impairment findings are not necessary for visitor experience, socioeconomics, public health and safety, environmental justice, land use, and park operations, etc., because impairment findings relate back to park resources and values. The determination of impairment for the preferred alternative is found in Appendix E.

1.4.5 Telecommunications Site Authorities

16 U.S.C. 5 authorizes the NPS to issue ROWs for communications sites. The regulations are at Title 36 of the Code of Federal Regulations Part 14. If the proposed action is approved, NPS will issue a ROW to CVW authorizing use of two parcels of park land for construction of the Gilahina Butte communication site and the Lakina Terrace repeater site. NPS will also authorize CVW to upgrade their Sourdough Ridge Communications Site by amending its existing ROW.

The Telecommunications Act of 1996 (47 USC 322 note) authorizes but does not mandate, a presumption that requests to site non-NPS telecommunication antennas and related facilities on NPS lands will be granted absent unavoidable conflict with the agency mission, or the current or planned use of the property or access to the property.

NPS Management Policies 2006 directs the NPS to avoid or minimize potential impacts by ensuring that telecommunications sites:

- are located where they would have the least impact on park resources and values;
- are not located in scenic, historic, and/or sensitive areas integral to the park's mission; and,
- include maximum potential for future co-location.

The telecommunication site section of *NPS Management Policies 2006* directs the NPS to consider:

- the potential benefit of having telephone access to emergency law enforcement and public safety services; and
- whether the proposal would cause unavoidable conflict with the park's mission, in which case the permit would be denied.

The telecommunication site section of *NPS Management Policies 2006* states:

New traditional towers (i.e., monopole or lattice) should be approved only after all other options have been explored. If a traditional tower is necessary, it should not be visible from any significant public vantage point.

1.5 Relationship of Proposal to Other Planning Projects

In accord with the *2006 NPS Management Policies*, telecommunication sites, atmospheric, and tectonic measuring devices, as well as additional communications facilities should be collocated. The proposed Sourdough Ridge site is already developed and contains communications equipment; the Gilahina Butte site contains a seismic station. Sourdough Ridge and Gilahina Butte would both have microwave and

cellular antennas installed; the Lakina Terrace site would contain only a microwave antenna as a result of this project.

The sites would fall within the geographic areas described in the *McCarthy Road Scenic Corridor Plan* (Alaska Department of Transportation and Public Facilities [ADOT&PF] 1997), an interagency plan that describes the road safety improvements that will maintain a safe, park-like road while accommodating visitors, commercial opportunities, and long-term maintenance and operations. The NPS's pending *Front Country Plan* process will also address projected growth in "front country," including development associated with the McCarthy Road.

1.6 Specific Issues

To focus this EA, specific issues were selected for further analysis and others were eliminated from evaluation. The issues selected for analysis or dismissed were determined through internal scoping among NPS park and regional staff. The issues are evaluated in Section 4.0, Environmental Consequences.

1.6.1 Issues Selected for Detailed Analysis

Visual Resources

The NPS seeks to maintain the undeveloped character in large sections of the park. Aerial and terrestrial views of the park could be altered by the vegetation clearing and facility construction.

Vegetation

The NPS seeks to maintain the natural vegetation in the park. Existing vegetation could be altered or removed as a result of construction activities. Invasive plants could colonize disturbed soils.

Soils

The NPS seeks to maintain the natural soils in the park. Existing soil strata could be altered or removed as a result of construction activities.

Wildlife

NPS seeks to preserve wildlife and their habitat. Microwave facility construction can alter wildlife habitat and continued maintenance of the facilities could temporarily disturb wildlife.

Visitor Services

There are limited communication services available in the vicinity of McCarthy, Alaska. Visitors would have access to increased cellular service and internet service proximal to the road corridor, at NPS facilities, and within eligible wilderness areas.

Visitor Experience

Encountering communications sites on the ground or from the air in WRST could have an effect on the visitor's recreation experience. The use of helicopters to construct and service the sites could also intrude upon visitors' experiences. Access to increased communications services (cellular service and internet service) could also change the experience of visitors to WRST.

Wilderness Character and Values

The construction and maintenance of communications facilities on Gilahina Butte would detract from its wilderness character and the potential to designate future wilderness in an area which is presently eligible for such designation.

Economic Resources

Increased broadband service could improve economic opportunities for some businesses in the project area and create new business opportunities.

Safety

Increased cellular coverage within the park could improve the safety of residents and visitors by increasing available calling areas and speeding the response to emergency calls.

Park Operations and Communications

The increased cellular wireless and broadband internet service could improve the speed and efficiency of NPS communications and enhance operations.

1.6.2 Issues Dismissed from Further Analysis

NEPA regulations emphasize the importance of adjusting the scope of each EA to the details of the project and its setting, and focusing on the specific potential impacts of the project. The following issues were considered but dismissed from detailed analysis and are therefore not addressed further in this EA.

Aviation Hazards

Federal Aviation Administration (FAA) regulations restrict tower height and location to avoid conflicts with helicopter or fixed-wing aircraft. Construction of the communications sites (towers/antennas) would not conflict with FAA or Federal Communications Commission (FCC) guidelines for facility specifications. Therefore, the proposed action would not be considered to cause physical aviation hazards or obstructions.

The construction and operation of the communication sites would contribute a relatively small increase to the volume of air traffic park-wide as well as within the radius of the McCarthy Road corridor, a known General Aviation (GA) flight path. The NPS has policy documents regarding the use of helicopters within park lands, to protect natural, cultural and wilderness resources within the park, and to minimize conflicts with local residents and visiting public. The WRST helicopter policy can be found in Appendix D.

Cultural Resources

Consideration of impacts to cultural resources is required under the National Historic Preservation Act (NHPA) of 1966 and NEPA. Although it is documented that WRST contains cultural features in areas where humans lived for sustained periods of time (along major rivers, lakes, roads, trails, and within historic mining districts), a survey conducted by WRST Cultural Resource Management Specialist K. Greg Biddle and Historian Geoffrey Bleakley on May 26, 2010, produced no evidence of cultural resources at the proposed project locations. However, Gilahina Butte is known to possess an Ahtna place name, suggesting that the site may retain cultural significance or be associated with a larger cultural landscape. However, government-to-government consultation between WRST and the Chitina Tribe failed to identify any special concern (Biddle 2010).

Climate Change

Secretarial Order 3226 directs federal agencies to ensure that climate change impacts are considered in connection with departmental planning and decision making. The *2006 NPS Management Policies* direct the operation and management of facilities, vehicles, and equipment in a manner to minimize the consumption of energy, water, and nonrenewable fuels. The construction, operation, and maintenance of the proposed communications sites would have a negligible impact on climate change, therefore this topic was dismissed from further analysis in this EA.

Environmental Justice

Executive Order (E.O.) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, requires all federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. This project would not result in changes to human health or the environment with disproportionately high and adverse effects on minority or low-income populations or communities.

Human Health

The operation of the proposed communications sites generates a microwave path. This low-level radiation is known to have negligible effects on human health therefore this topic was dismissed from further analysis in this EA.

Subsistence

Effects on subsistence were dismissed from analysis because the ANILCA §810(a) Summary Evaluation and Finding (Appendix A) concluded that the Proposed Action would not result in any restriction of subsistence uses in the project area.

Threatened and Endangered Species

The Endangered Species Act requires an analysis of impacts on all federally listed, threatened, and endangered (T&E) species, as well as species of special concern listed by the State of Alaska. The NPS has determined that there are no listed federal T&E species within the proposed project area; therefore Endangered Species Act §7 consultation with the U.S. Fish and Wildlife Service (USFWS) is not required.

Wetlands

E.O. 11990, *Protection of Wetlands*, requires all federal agencies to minimize the destruction, loss, or degradation of wetlands; and preserve and enhance the natural beneficial values of wetlands in the conduct of the agency's responsibilities for: 1) acquiring, managing, and disposing of federal lands and facilities; 2) providing federally undertaken, financed, or assisted construction and improvements; and 3) conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. WRST Ecologist Miranda Terwilliger surveyed the proposed sites and found that the project would neither occur within nor affect wetlands. Therefore, this EA does not address E.O. 11990, *Wetlands Protection*.

1.7 Permits and Approvals Needed to Implement the Project

The proposal requires authorization from the NPS. If the NPS decides to approve the proposal, it will issue a ROW Permit to CVW authorizing use of two parcels of park land for construction of the Gilahina Butte communication site and the Lakina Terrace repeater site. CVW already possesses a NPS ROW for its Sourdough Ridge communications site. NPS would authorize CVW to upgrade the Sourdough Ridge Communications Site by amending the existing ROW. The term of the permit will be for no more than ten years or the remaining term of the applicants' FCC license, as applicable. CVW's current FCC license expires on October 1, 2019. The ROWs would be renewable.

Wilderness: The NPS would require a policy waiver or a Wilderness Eligible Revision in order to grant a ROW within what is now classified as eligible wilderness. NPS WRST has completed a Minimum Requirement/Minimum Tool Analysis and a Wilderness Eligibility Revision which address this problem. Those analyses are found in Appendix B and C.

Subsistence: NPS WRST has conducted an ANILCA Section 810 Analysis concerning the impacts on subsistence. The results of that analysis are found in Appendix A.

Aircraft Use: Compliance with the WRST Helicopter Policy (Appendix D) is required for the installation and maintenance of any site requiring helicopter support regardless of whether the site is situated within eligible or designated wilderness.

2.0 ALTERNATIVES

This chapter includes a description of the no action and action alternatives. Also discussed are any alternatives and actions that have been considered but dismissed from further analysis. Table 2-1 summarizes the components and attributes of each alternative. Table 2-4 summarizes the predicted impacts for each alternative on the issues of concern.

The Proposed Action and alternatives were developed through discussions between CVW and the NPS, in concurrence with the programs and goals outlined in WRST's 1986 GMP. The process considered regional and WRST staff recommendations to management. Numerous internal staff discussions led to the project elements proposed and the concepts considered.

As discussed in Chapter 1 of this EA, the 1986 GMP for Wrangell-St. Elias National Park and Preserve included a wilderness eligibility assessment and map. Determination of eligibility was based on a set of criteria developed by the NPS in 1986. As part of this EA, the eligibility assessment and map are proposed to be revised for the following reasons:

- The Gilahina Butte should have been mapped as ineligible in 1986, based on the criteria used and described under Section II of Appendix C. At the time of the review, the Gilahina Butte already possessed a USGS/UAF seismic station and helipad that was, and continues to be, in regular use. WRST believes that such a developed site poses a long term non-conforming use within wilderness and should never have been identified as eligible. The area to be revised consists of 667 acres of land, or just over one complete section.
- Land status has changed. The Lakina Terrace was excluded from eligibility in 1986 because it was Native selected land that had been interimly conveyed out of federal ownership. The 1986 criteria list "federal land under application" as "ineligible but may be eligible if retained in federal ownership." Eventually, the area was de-selected and the Lakina Terrace has been retained in federal ownership. At this time the area remains in an ineligible status and a future wilderness eligibility review would be conducted to determine its eligibility.

The Wilderness Eligibility Revision Map in Appendix C shows the 1986 wilderness eligibility map, depicting eligible and ineligible lands within the analysis area. Superimposed onto that map is the proposed revision of eligible lands to exclude portions of two sections (totaling 667 acres) surrounding the Gilahina Butte site as ineligible. This map also shows the three sections of land around the Lakina Terrace that currently remains in an ineligible status even though Federal ownership has been retained. Appendix C describes in detail the 1986 eligibility criteria and justification for proposing eligibility revisions.

2.1 Alternative 1: No Action Alternative

Under Alternative 1, the NPS would not issue CVW the necessary ROW or ROWs to improve its communications network in the Chitina Valley. The community of McCarthy would continue to receive wireless telephone and internet communications through satellite connectivity provided by CVW and AT&T. No facilities or utilities would be removed, modified, or constructed. Existing needs for broadband would not be addressed and would likely worsen over time as demand for the limited broadband increases. This alternative represents a continuation of the existing situation and provides a baseline for evaluating the changes and impacts of the action alternatives.

2.2 Alternative 2: McCarthy Communications Sites (Proposed Action)

CVW is presently authorized to use the Sourdough Ridge Communications Site under NPS ROW Permit No. RW 9865-8-001. Under Alternative 2, CVW would upgrade their facilities on that site. In addition, the NPS would issue CVW a new ROW or ROWs to construct two new microwave/wireless sites on Gilahina Butte and Lakina Terrace. The Gilahina Butte and Sourdough Ridge sites would have cellular antennas installed thereby providing wireless service. A microwave antenna would be installed at Lakina

Terrace in order to extend the microwave path. In accordance with NPS Management Policies, collocation of communications facilities would be achieved because the proposed Sourdough Ridge site already contains some communications equipment and the Gilahina Butte site already contains a seismic station operated and maintained by AEIC. Images of a communications site similar to the proposed sites are shown below.



A summer and winter image of a communications site in Shoop Bay, Alaska. It is similar to the proposed sites, but with slightly larger dishes and a 50' tower.

As discussed in Chapter 1, the 1986 GMP for Wrangell-St. Elias National Park and Preserve included a wilderness eligibility assessment and map, with the eligibility determination based on a set of criteria specially developed for that assessment. As part of this Environmental Assessment, WRST proposes to revise the 1986 eligibility assessment and map for a small area surrounding Gilahina Butte, as that area appears to have met the 1986 criteria for being ineligible but was not mapped as such. Appendix C describes in detail the 1986 eligibility criteria and justification for proposing eligibility revisions. Figure 9 depicts designated eligible and ineligible lands within the analysis area, as well as the proposed revision.

Gilahina Butte Communications Site

The United States Geological Survey (USGS) constructed a seismic station on Gilahina Butte in the mid-1970s, developing an 5' x 40' site and an adjoining helipad approximately 40' in diameter (see Figure 4 for the location of this and other stations). The current project would require the clearing of a new 45' x 100' site, and the existing helipad would be expanded to approximately 50' in diameter. The total proposed ROW tract boundary would be 150' x 80' or 0.28 acres. The site would not be readily accessible by the public. Up to twelve spruce trees may be cut within the two microwave signal directions paths (see Figure 5). During construction, brush and tree clearing would be accomplished with chainsaws and materials would be disposed of by cutting the debris into small pieces and dispersing throughout the area. During operation, vegetation would only need to be trimmed to 15 feet to maintain the microwave path corridor (Mishmash, 2010a).



Gilahina Butte site aerial view and existing solar-powered seismic facility.

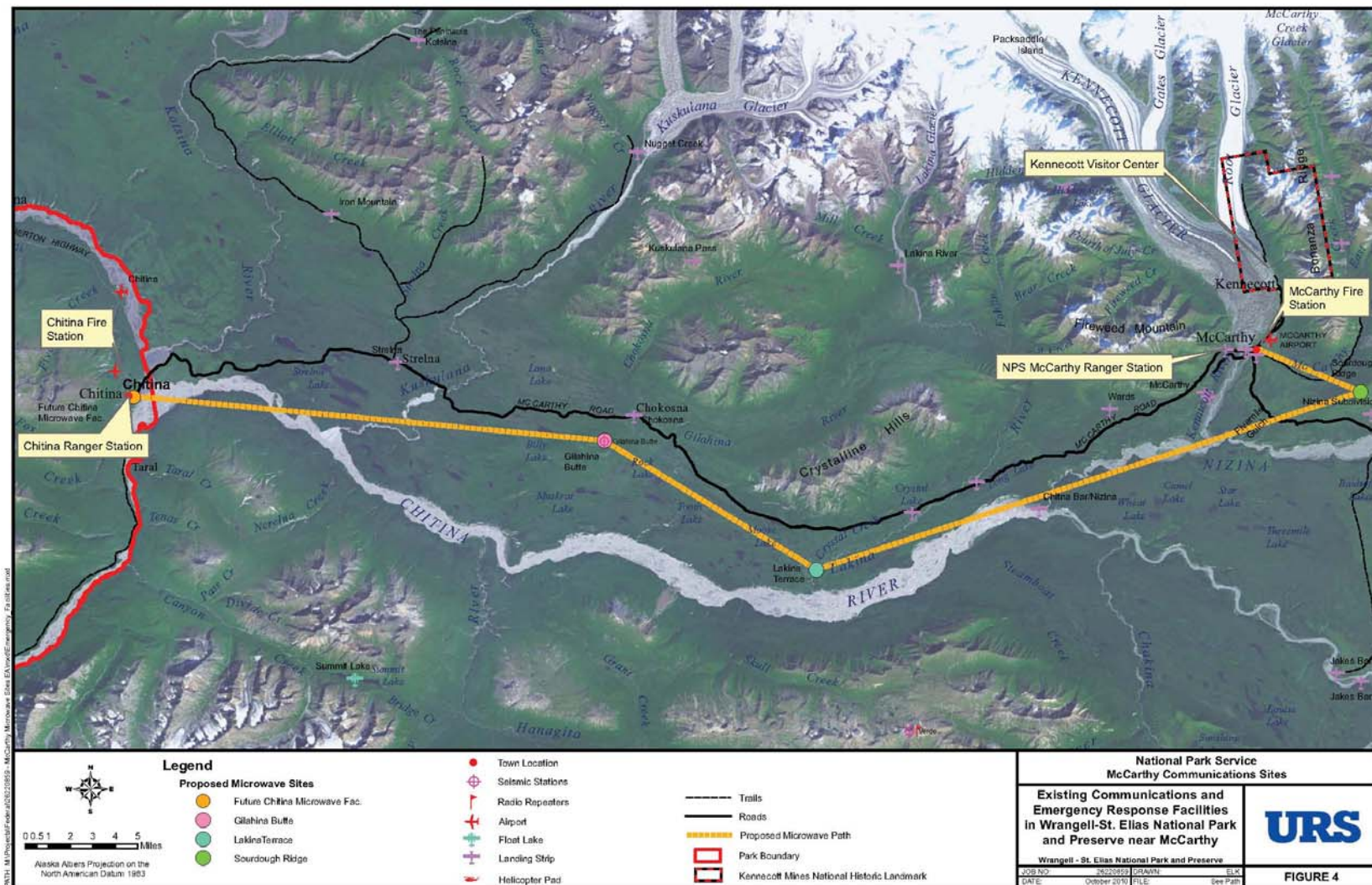


Figure 4. Existing Communications and Emergency Response Facilities

The ground would be excavated for tower and building foundations to a depth suitable for local conditions. Excavation depths would be engineered but are unknown at this time. If bedrock is encountered, no further excavation would be required. In any circumstance, the excavation would not be outside of the limit of cleared vegetation. A small tracked excavator would be flown to the site by helicopter to excavate the footings and level minor contours. Materials would be flown to the site by helicopter and concrete would be mixed on site using a gas-powered mixer. Portable generators, compactors, power tools and welding equipment would also be used during construction and removed once construction was completed.

CVW would use a previously-cleared site on federal land along the McCarthy Road near Chokosna to stage the transportation of workers and materials to/from Gilahina Butte, a distance of approximately 2.0 air miles (See the Chokosna Staging Area location on Figure 6).

Lakina Terrace Communications Site

An area up to 150' x 80' would be cleared of all vegetation in addition to a separate helicopter landing area, together totaling about 0.28 acres. Up to twelve spruce trees may be cut in the two microwave signal path directions (see Figure 7).

CVW would use the Chokosna Staging Area (10.7 air miles away) or private land near Moose Lake (2.8 air miles away) to stage the transportation of workers and materials to Lakina Terrace.



Lakina Terrace Site aerial view

Sourdough Ridge Communications Site

A cleared 82' x 150' area already contains communication buildings, propane storage tanks, a 12-foot cellular antenna on a pole mounted to the building extending 15 feet from ground level (27 feet overall), and a helicopter pad (see the aerial photo on this EA's cover-page). The proposed building addition and a 30-foot self-supporting tower would be constructed within the existing cleared tract (see Figure 8). The total cleared area would remain 12,300 sq ft or 0.28 acres.



Sourdough Ridge site; existing facilities and helicopter on helipad

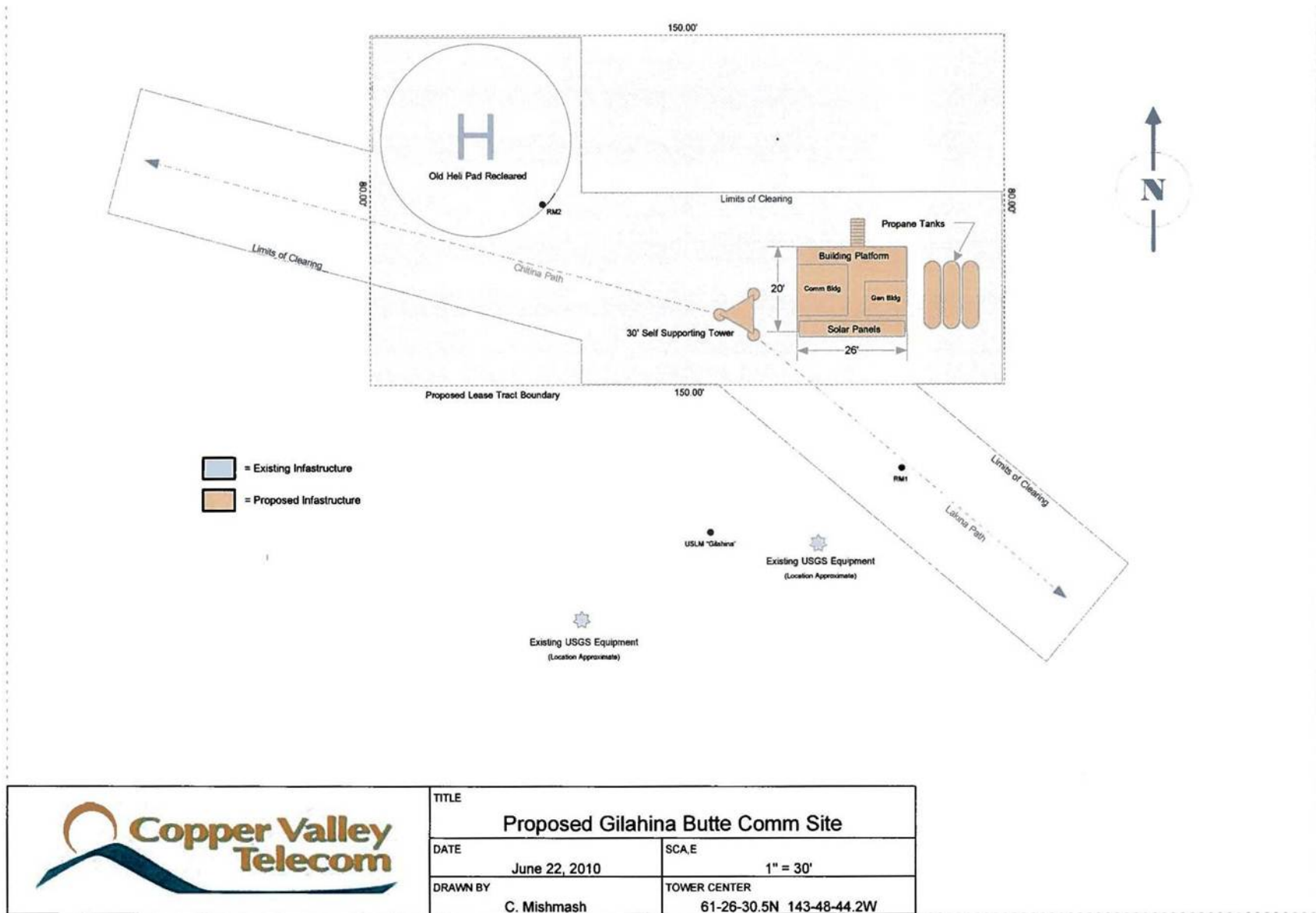


Figure 5. Proposed Gilahina Butte Communications Site Plan

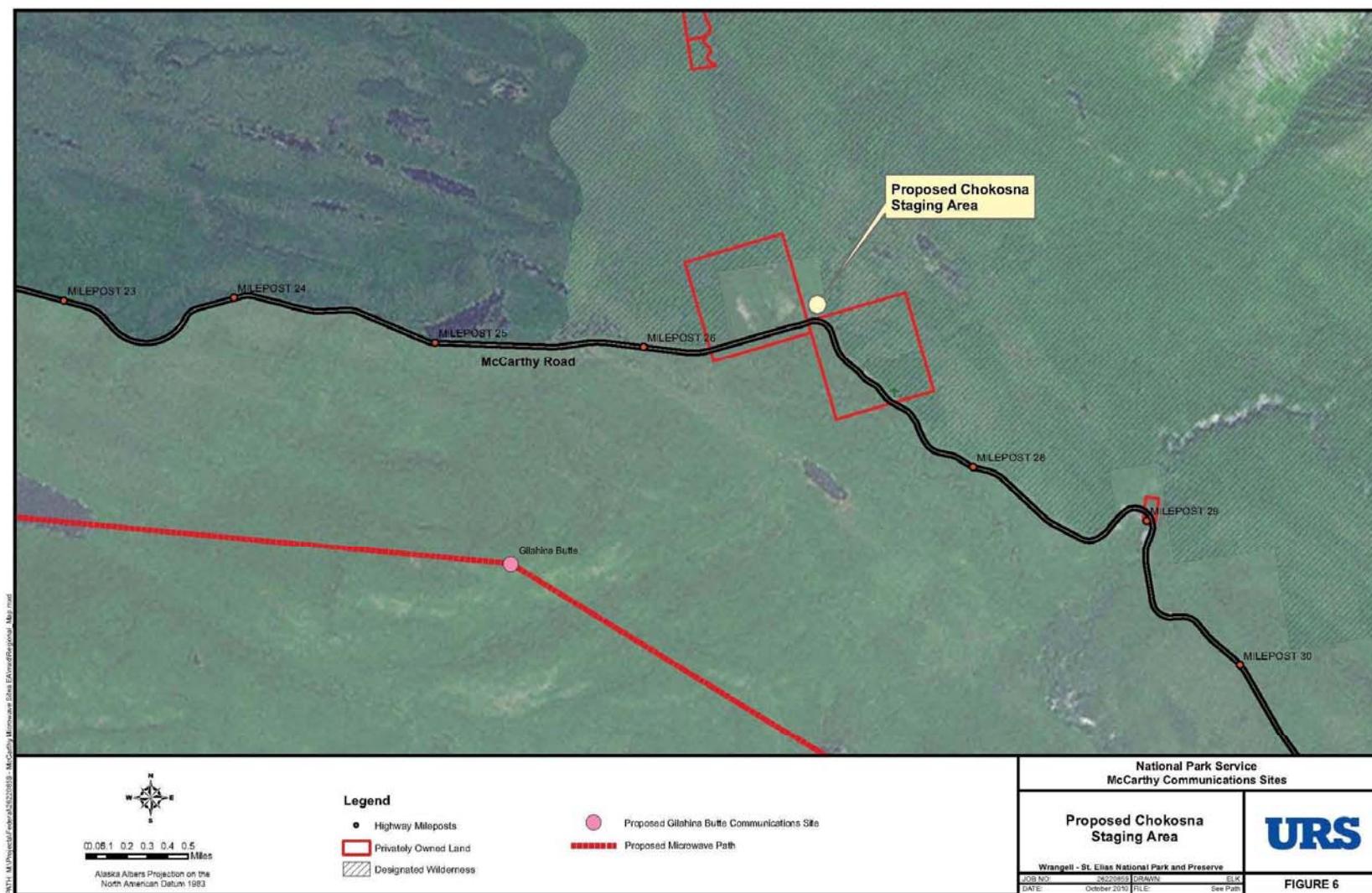


Figure 6. Proposed Chokosna Staging Area

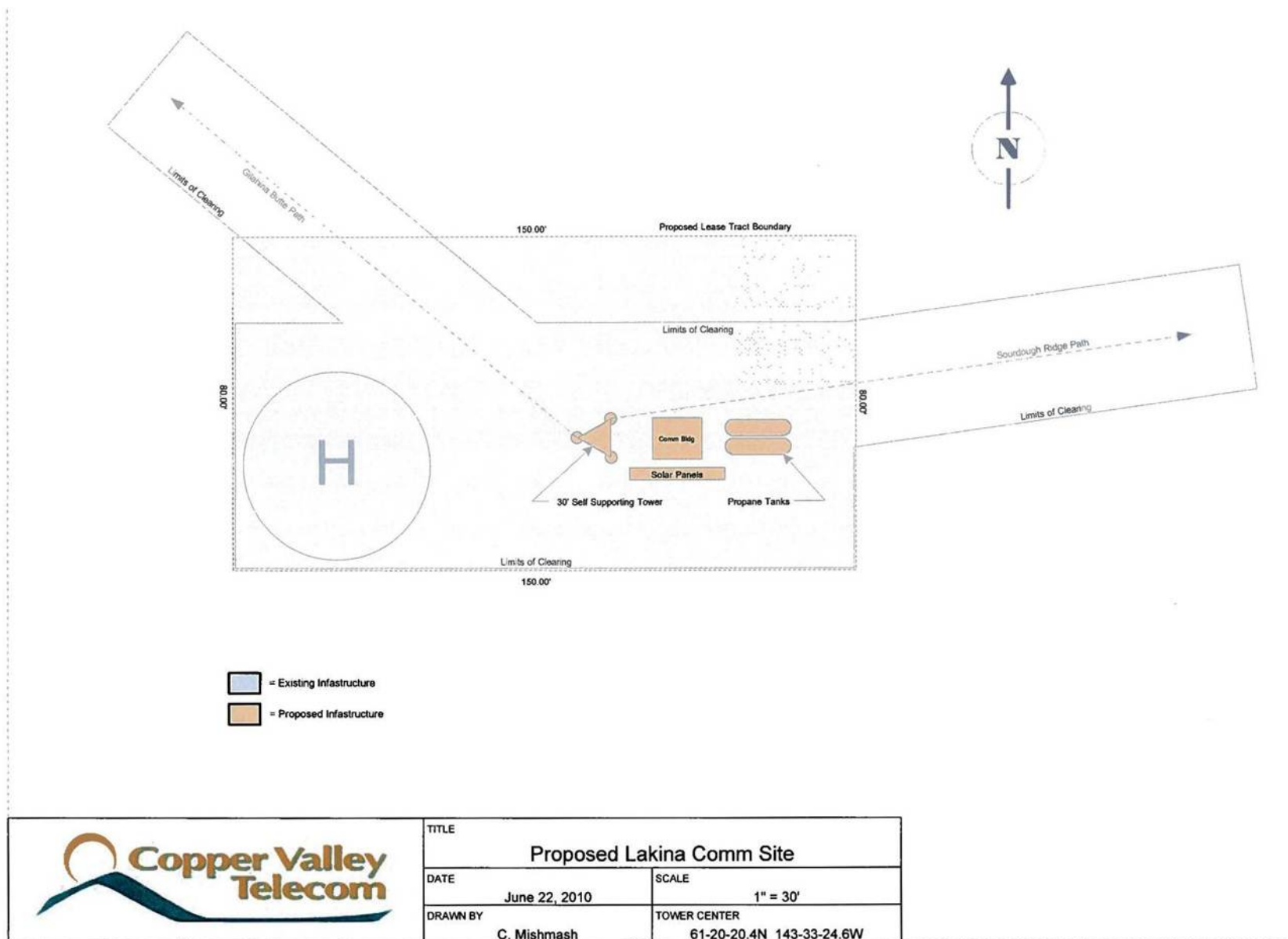


Figure 7. Proposed Lakina Terrace Communications Site Plan

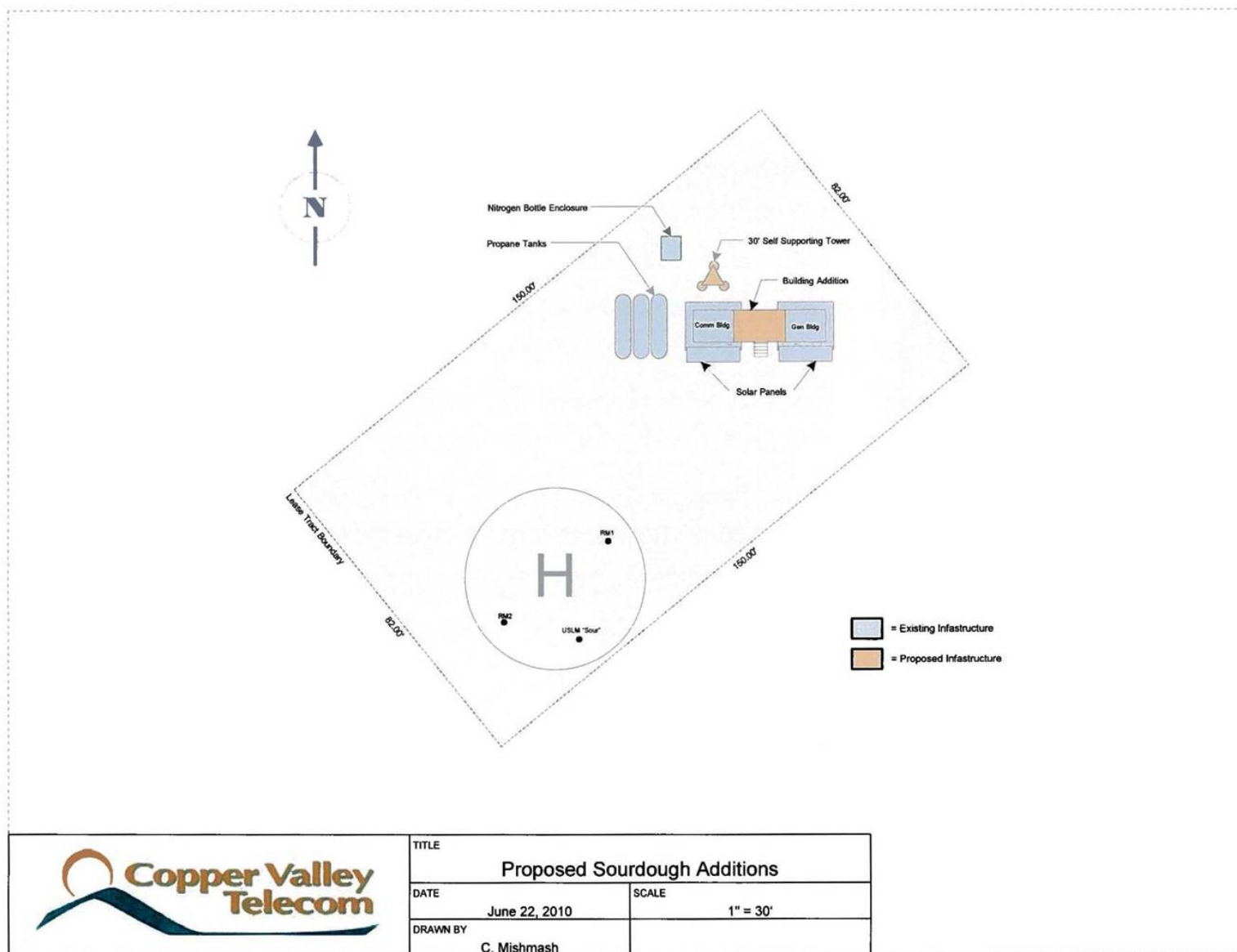


Figure 8. Proposed Sourdough Ridge Communications Site Plan

CVW would stage its Sourdough Ridge operations from the McCarthy Airport, an ADOT&PF-owned facility approximately 4.6 air miles away.

Table 2-1 lists the proposed facilities that would be constructed at each site.

Table 2-1. Proposed Facilities for the Communications Sites

Facility	Dimensions	Description
GILAHINA BUTTE		
Cleared Area	12,000 sq ft or 0.28 acres	Includes an area cleared for the buildings, solar array, tower, propane tanks and helicopter landing pad
Two buildings mounted on a raised metal platform	12' x 12'	Constructed of fiberglass panels and painted a color that blends with the natural setting, approved by the National Park Service (NPS). Contains the microwave radio, wireless telephone, other electronic equipment, cabling, and valve-regulated lead acid (VRLA) batteries.
	8' x 10'	Constructed of fiberglass panels and painted a color suitable to the NPS. Contains two propane-fired power generators and includes up to 15 gallons of motor oil.
Solar array	12' x 24'	An array composed of 20 individual panels attached to the southern edge of the raised metal platform. It would provide an alternative source of power to the propane generators.
Galvanized metal tower	30' tall	This structure would be professionally engineered for local site conditions and would support 2-each 6' diameter microwave dishes and 2-each 12' tall cellular antennas.
Propane tanks	40-inch diameter, 16' long	(3) 1,000-gallon propane tanks would be staged next to the buildings for the generation of electrical power and building heat. It is estimated the tanks would be refilled annually.
LAKINA TERRACE		
Cleared Area	12,000 sq ft or 0.28 acres	Includes an area cleared for the building, solar array, tower, propane tanks, and helicopter landing pad.
One building mounted on a raised metal platform	12' x 12'	Constructed of fiberglass panels and painted a color that blends with the natural setting, approved by the NPS. Contains the microwave radio, wireless telephone equipment, other electronic equipment, cabling, two propane-fired power generators, VRLA batteries, and up to 15 gallons of motor oil.
Solar array	12' x 24'	An array composed of 20 individual panels attached to the southern edge of the raised metal platform. It would provide an alternative source of power to the propane generators.
Galvanized metal tower	30' tall	This structure would be professionally engineered for local site conditions and would support 2-each 6' diameter microwave dishes.
Propane tanks	40" diameter, 16' long	(2) 1,000-gallon propane tanks would be staged next to the building for the generation of electrical power and building heat. It is estimated the tanks would be refilled annually.
SOURDOUGH RIDGE		
Building Addition	8' x 12'	Add on to existing building without increasing footprint by using empty space between existing buildings.
Galvanized metal tower	30' tall	This structure would be professionally engineered for local site conditions and would support 2-each 6' diameter microwave dishes.
STAGING AREAS		
Existing cleared areas to be used for staging construction materials and equipment	N/A	Chokosna Staging Area is an existing cleared area on federal land off of the McCarthy Road near the unincorporated community of Chokosna. It would service the Gilahina Butte site 2.0 miles and the Lakina Terrace site 10.7 miles away.
	N/A	The construction activities on Sourdough Ridge would be staged from the McCarthy Airport, which is located about 4.6 miles from the site.

Table 2-2 demonstrates the total number of helicopter hours per year associated with the construction and maintenance of the communication sites.

Table 2-2. Estimated Helicopter Operating Hours within WRST Associated with the Action

	Construction	Maintenance	Refueling	Estimated Total/year
Gilahina Butte	15 ^a	3	4	22
Lakina Terrace	15 ^a	4	4	23
Sourdough Ridge	15 ^a	6	6	27
<p>Source: Mishmash 2010b</p> <p>a) 10-15 hours estimated total hours of helicopter time estimated to construct each site. There may be less time needed for the sites with less materials to be flown in.</p>				

Table 2-3 summarizes the different characteristics distinguishing the two alternatives.

Table 2-3. Summary of Alternatives

	Description	Attributes	Newly Disturbed Area
Alternative 1 – No Action	No change to the wireless telecommunications and digital broadband systems.	Utilizes existing satellite communications system. Cellular wireless service limited on the majority of McCarthy Road.	None.
Alternative 2 – McCarthy Microwave Facilities Path (Proposed Action)	Expands cellular service on the majority of McCarthy Road and increases broadband capabilities for wireless internet users in the Kennecott Mines NHL and McCarthy areas of WRST.	Construction and on-going maintenance of two microwave communication sites at Gilahina Butte and Lakina Terrace site, and an upgrade of the Sourdough Ridge site. Connects from a microwave path in Chitina and extends to McCarthy.	Less than one acre (approximately 0.56 acres) of vegetation cleared from three sites for structures, helicopter landing pads, and microwave paths. No new vegetation cleared for the proposed staging areas.

As detailed in Chapter 4, Table 2-4 provides a summary of impacts associated with each alternative.

Table 2-4. Summary of Alternative Impacts

Impact Topic	Alternative 1 – No Action Alternative	Alternative 2 – McCarthy Microwave Facilities Path (Proposed Action)
Visual Resources	No change to visual resources.	Clearing less than one acre and constructing communications sites would result in low intensity, long-term, and contextually important, but overall minor negative impacts to visual resources because it would not impair park purpose or integrity.
Vegetation	No change to vegetation resources.	Loss of less than one acre of vegetation would result in high intensity, long-term, negative effects to local resources that are common in context. However, its overall impact would be minor in relation to an estimated 10,600 disturbed acres in a 13.2 million acre park.
Soils	No change to soil resources.	Removal of less than one acre of soil would result in high intensity, long-term, negative effects to local resources that are common in context. However, it would be minor in relation to an estimated 10,600 disturbed acres in a 13.2 million acre park.
Wildlife	No change to wildlife resources.	Disturbance of wildlife in the immediate vicinity of the sites and disturbance of less than one acre of habitat would result in low intensity, long-term negative effects to local resources that are common in context. However, overall impacts would be minor.
Visitor Services	There would continue to be no cellular and internet access on the McCarthy Road and in McCarthy/Kennecott Mines National Historic Landmark (NHL).	Addition of wireless service on the McCarthy Road and improved internet access in McCarthy and Kennecott would have a medium intensity, long-term beneficial effect on a local resource that is common in context for an overall moderate impact to visitor services.
Visitor Experience	There would continue to be no cellular and internet access on the McCarthy Road and no internet access in McCarthy/Kennecott Mines NHL.	Addition of helicopter traffic and intrusions on the landscape would produce medium intensity, long-term negative effects that are common in context, for an overall moderate impact to visitor experience.
Wilderness Character and Values	No change to land use in potentially eligible wilderness lands.	Construction and maintenance of communications facilities on Gilahina Butte and Lakina Terrace would result in high intensity, long-term negative effects to a local resource that is common in context. However, it would be minor in relation to the 2.2 million acres of eligible and 9.7 million acres of designated wilderness in this 13.2 million-acre park.
Economic Resources	Outfitting and other cottage industries would continue to use existing communication services.	Construction and maintenance of communications facilities would result in medium short-term impacts to the local economy for a resource with a common context. The expansion of cellular service and broadband internet would provide long-term, direct beneficial effects on businesses based in McCarthy and long-term indirect beneficial effects to other businesses associated with tourism in WRST for an overall impact that was moderately beneficial.
Safety	Response time for emergencies would remain unchanged.	Cellular service expansion along the McCarthy Road would be medium in intensity because of potential reduced respond times for emergencies. The safety improvement would result in long-term, beneficial effects on safety, and its overall impact would be moderately beneficial.
Park Operations and Communications	Service would continue to decline as bandwidth demand is increased.	Cellular service expansion along the McCarthy Road and broadband internet service to National Park Service (NPS) facilities would increase efficiency of operations. The improvements would be beneficial and long-term for a resource common in context. The overall impact to communications and operations would be moderately beneficial.

Note: Refer to Chapter 4 of this document for more detailed analysis.

2.3 Environmentally Preferred Alternative

As stated in Section 2.7 (D) of the NPS Director's Order (DO) 12 Handbook (NPS' implementation guidelines for NEPA), "the environmentally preferred alternative is the alternative that would best promote the national environmental policy expressed in NEPA (§101(b))." 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.

NEPA §101 Goal Statements:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
2. Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.
3. Attain the widest range of beneficial uses of the environment without degradation, risk to health and safety, or other undesirable and unintended consequences.
4. Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice.
5. Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities.
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources (42 USC 4321-4347).

Alternative 2, the Proposed Action Alternative, better satisfies the goals articulated in *NEPA §101* and is therefore the environmentally preferred alternative.

2.4 Mitigation Measures

Mitigation measures are specific actions that would reduce impacts, protect park resources, and protect visitors. The following mitigation measures would be implemented by the proposed action alternative and are assumed in the analysis of impacts.

2.4.1 Visitor Experience

Steps would be taken to ensure that project construction and operation only minimally interfere with visitor use of park areas. This would be accomplished by means such as constructing the sites in as much as possible during non-peak visitor travel and hunting seasons (i.e., during week days, avoiding holiday weekends).

2.4.2 Soils and Vegetation

Soil compaction would be minimized by placing supplies on rock rather than on plants and soils. The sites would be re-vegetated with native plants (but not trees) to minimize impacts to wildlife habitat and the spread of invasive plants. CVW would utilize erosion blankets on steep slopes. Construction would not be conducted when soils are saturated, such as during or immediately following rain events.

NPS has a program to monitor and remove exotic plants. CVW would supplement this effort by conducting annual site surveys as part of its regularly scheduled maintenance or refueling visits. CVW would follow NPS protocols to identify exotic plants when period maintenance and refueling occurs.

2.4.3 Hazardous Materials/Spill Prevention

Measures would be taken to prevent or control accidental spills of oils, lubricants, and other chemicals from contaminating soils. An emergency spill kit, containing absorption pads, absorbent material, shovel or rake, and other clean-up items, would be readily available on-site in the event of an accidental spill.

2.4.4 Wildlife

The transportation of equipment, supplies, and project personnel from the staging areas to the project areas and vice versa would be limited to avoid sensitive periods, such as breeding or nesting seasons. If animals (e.g., bears, moose, and Dall's sheep) are observed near the proposed communications sites, flights would be rerouted or rescheduled in order to avoid or minimize disturbance. No helicopter flights would be made over Dall's sheep habitat (above the 4000' contour north of the Chitina River) from August 5 through September 20. It is understood that remedial maintenance is unavoidable in order to maintain service.

In addition to meeting all FAA and NPS helicopter policy (see Appendix D) and requirements, mitigation common to the action alternative for 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's sheep, and wolves.
- Pilots shall not hover, circle, harass, or pursue wildlife in any way.
- Where feasible, flight paths would avoid known Dall's sheep breeding areas from May 15 through June 15.
- A minimum quarter-mile clearance would be maintained from all active bald eagle nests. All nests are considered active from March 1 to May 31. Nests used for nesting activity are considered active through August 31.
- Flight paths would avoid known wilderness users and areas where such users are known to concentrate or visit frequently.

In accordance with the National Bald Eagle Management Guidelines (USFWS 2007) for building construction:

- If the activity would be visible from a nest: maintain a distance of 660 feet.
- If the activity would not be visible from a nest: maintain a distance of 330 feet from nests and construction should occur outside of breeding season.
- Helicopters should avoid operating aircraft within 1,000 feet of the nests during the breeding season, except where eagles have demonstrated tolerance for such activity.

In accordance with NPS regulations regarding bear management, CVW would utilize proper food storage containers while at each site.

2.4.5 Visual

The building and roof colors should blend with the natural setting to reduce visual impact from the air.

2.4.6 Wilderness Character and Values

Solitude and Primitive Recreation Quality

All three sites would be constructed and/or serviced from the Chokosna Airstrip or the McCarthy Airport, both of which are accessible by road. This would allow CVW to transport supplies and materials most of

the way by truck, shortening the area of the park to be over flown and the total amount of flight time. This would substantially reduce noise intrusions.

Guidelines developed for WRST's Helicopter Use Policy (NPS 2005) would be followed. In planning flight paths, all feasible measures would be taken to avoid and/or minimize impacts to backcountry users. Planned flight routes would be submitted to the park superintendent for approval and monitored by park managers. Flights would be minimized over sensitive areas or areas of known backcountry use. Aircraft would avoid high public use and residence areas when feasible. Helicopter altitude and horizontal distances would conform to WRST's Helicopter Use Policy (see Appendix D). The use of helicopters during hunting season would be avoided.

Undeveloped Quality

Antennas at the communications facilities would be installed in such a way as to minimize protrusion beyond the silhouette/horizon of the sites. Structures and antennas would be painted with appropriate colors to blend in with their specific environment. Only a minimum of vegetation (including large trees) necessary for flight safety and antenna clearance would be removed to minimize impact on the local view shed.

Natural Quality

No mitigation proposed.

Untrammeled Quality

No mitigation proposed.

2.5 Alternatives and Actions Considered but Eliminated from Detailed Study

Buried fiber optic cable along the road system – Burial and maintenance of a cable along the long and challenging roadway is too costly and would be prone to damage in some areas due to potential shallow burial depths, unstable soils, and other extreme environmental conditions.

Installing a system similar to the one proposed using private inholdings – A system on private properties would require more sites to be constructed along the road (up to five) and contain very tall towers (over 150' tall) because they would be situated in areas of low relief. Therefore, such a system would be very conspicuous and result in greater impact to the view shed.

3.0 AFFECTED ENVIRONMENT

3.1 Project Area

The project area is between the towns of Chitina and McCarthy. Chitina is located on the west bank of the Copper River, at its confluence with the Chitina River, its largest tributary. McCarthy is located approximately 61 road miles east of Chitina, just east of the Kennicott River. Much of the Copper River watershed and its tributaries lie within WRST; approximately 17 percent of the drainage basin is covered by glaciers (NPS 2009). All three of the proposed project sites are situated on glaciated bedrock or morainal features (topographic high points) within the Chitina River Valley.

Gilahina Butte site

The Gilahina Butte site is located on top of a bedrock knob at an elevation of 848 meters (2,783 ft). A seismic station was constructed by the USGS in the 1970s. It occupies a cleared area that is 5' x 40' with a 40 ft diameter helipad that is presently overgrown and would need to be cleared of vegetation.

Lakina Terrace site

The Lakina Terrace site is located on an upland terrace between the Chitina River and the smaller Lakina River at an elevation of 381 meters (1,250 ft). Currently, there is no equipment at the proposed Lakina Terrace site.

Sourdough Ridge site

The Sourdough Ridge site is located on a bedrock ridgeline at an elevation of 1,082 meters (3,549 ft). A communications site was constructed on Sourdough Ridge in late 1990s. A ROW was granted by the NPS which includes an area 82' x 150' is cleared of vegetation.

Although CVW also intends to construct a new microwave facility in Chitina, Alaska, that site is situated outside WRST and will occur whether or not WRST issues a new ROW for the sites located within the park.

3.2 Resource Impact Topics

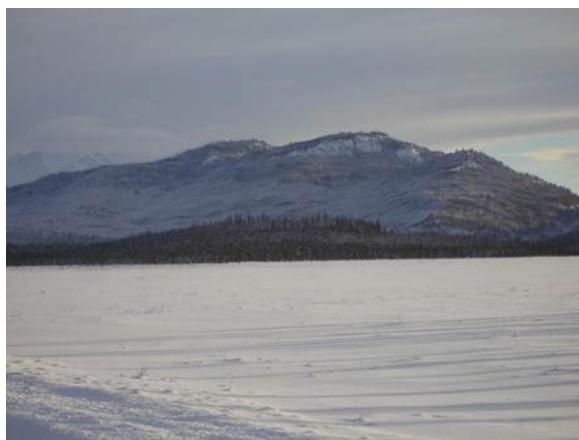
This section describes the affected environment for resource impact topics potentially impacted by the proposed action.

3.2.1 Visual Resources

The proposed communication sites are located in the Chitina River Valley along the southern flank of the Wrangell Mountains. The visual landscape in this area includes expansive mountain vistas, multiple glaciers, undulating hills, valleys, rivers, and lakes. The predominate vegetation types at the sites include white and black spruce, aspen, and alder.

View sheds surrounding the Gilahina Butte include Billy Lake to the west, Muskrat Lake and Rock Lake to the south and a portion of the Chitina River. View sheds from the Lakina Terrace site include the Crystalline Hills to the north and Lakina Lake to the east. View sheds from the Sourdough Ridge site include the Kennicott Glacier to the northwest, the Kennicott River to the west, Sourdough Peak to the northeast, and the Nizina River to the south.

Both the Gilahina Butte and Lakina Terrace sites are located within three miles of the McCarthy Road although only the upper portion of Gilahina Butte is visible from the road (See photographs below). McCarthy Creek is situated about 1.9 miles to the north of the Sourdough Ridge site and the Nizina Road is about 1.8 miles to the south. The site is not clearly visible from either area. Both the community of McCarthy and the McCarthy Airfield are located approximately 6.2 miles to the northwest of Sourdough Ridge. While McCarthy buildings and cabins, the airfield, and portions of Kennecott Mines NHL are visible from the site, a visitor would not be likely to view the site from any existing developed areas.



View of Gilahina Butte from approximately Mile 18 of the McCarthy road in fall and summer.

Hiking trails in the project area include the Crystalline Hills Trail that starts at mile 34.8 of McCarthy Road and forms a loop into the Crystalline Hills to the north of the road. The trail is approximately 6.4 km (4 miles) northwest of the Lakina Terrace site and almost 16.1 km (10 miles) southeast of the Gilahina Butte site. Generally the sites would not be visible from ground-level viewpoints on nearby trails, towns or airstrips. All three sites, however, would be visible from aircraft passing directly overhead. The Lakina and Gilahina sites would also be visible from some elevated locations in the Crystalline Hills.

3.2.2 Vegetation

Nowacki et al. published the delineation of 32 major ecological regions within Alaska in 2001. The communication sites are located along the border of Copper River Basin ecological region to the south and Wrangell Mountains ecological region to the north (Nowacki 2001). D. K. Swanson further classified these regions into ecological sections and subsections which are appropriate for describing vegetation (Swanson 2001; Cook et al. 2007). The proposed Gilahina Butte and Lakina Terrace sites are situated in the Chitina Valley Moraines and Hills subsection and the Sourdough Ridge site occurs in the Chitina Valley Floodplains and Terraces subsection closely adjacent to the McCarthy Mountains subsection (NPS 2003). The vegetation within each of these ecological subsections is broadly described in Table 3-1.

Table 3-1. Project Area Ecological Subsections

Ecological Subsection	Relevant Communications Site	Description
Chitina Valley Moraines and Hills	Gilahina Butte and Lakina Terrace	Mostly closed (canopy density) white spruce forest. May be some open (canopy density) black spruce forest in depressions.
Chitina Valley Floodplains and Terraces	Sourdough Ridge	Non-vegetated gravel bars, deciduous shrubs and poplar forest, and white spruce forest. Some late successional areas near the foot of bluffs appear to have open black spruce forest or woodland.
McCarthy Mountains	Sourdough Ridge	Sparse dwarf shrub tundra at higher elevations, with shrubs becoming denser and taller at lower elevations.

Source: NPS, 2003

The following site specific descriptions of vegetation composition are based on photographs taken during site visits in May 2010:

Gilahina Butte site and Sourdough Ridge site

No invasive or threatened and endangered plants have been documented on Gilahina Butte. The Butte itself is very dry and the site contains no classifiable wetland habitat. The predominant vegetation type at the project site is open mixed woodland canopy (35 percent) with white spruce (*Picea glauca*), aspen (*Populus tremuloides*), and alder (*Alnus crispa*). The trees are mostly stunted and are clearly in a post fire succession. Charred stumps are present, although not a lot of downed woody debris. The site contains a great deal of *Salix glauca*, but it has been heavily browsed by moose and is now generally only knee high. Understory low shrub species include *Rosa acicularis*, *Vaccinium uliginosum*, and *Empetrum nigrum* (Terwilliger 2010).

Lakina Terrace site

No invasive or threatened and endangered plants have been documented on Lakina Terrace and the site contains no classifiable wetland habitat. The Lakina Terrace is also post fire succession vegetation although it contains a very heavy amount of downed woody debris (approximately 15 percent cover). The site can be classified as mixed woodland canopy containing both spruce (*Picea mariana*) and aspen (*Populus tremuloides*) (approximately 10 percent), but with the predominate vegetation type being closed tall shrub canopy (approximately 85 percent) or willow (primarily *Salix glauca* *S. bebbiana*, and *S. pulchra*). The understory is sparse but included *Vaccinium uliginosum*, *Ledum groenlandicum*, *Empetrum nigrum*, and *Lupinus arctica*.

3.2.3 Soils

The majority of the Chitina Valley is underlain by the Strelna formation, of Mississippian age. Rock types in this formation include sedimentary shale, slate, limestone, and chert, volcanic tuffs and flows, and plutonic rocks including diorite and gabbro. Also visible in exposed sections are rocks of the Nicolai Greenstone stratigraphic unit, originally basaltic lava flows extruded during the Triassic period (Moffit 1923; Moffit 1938). Surficial deposits in the Chitina River Valley area consist of Quaternary age glacial and lacustrine sediments, which blanket the central part of the Copper River basin. The Chitina River region has been subjected to recurring pressure and heat over extended periods of geologic time, which have brought about an intricate system of folds and faults in the Chitina Valley (ADNR 1973). Transported volcanic rock and large scale mudflows appear in road cuts between Chitina and McCarthy (Connor 1988). Bedrock within the region has undergone several phases of mineralization which have produced economic deposits of base metal minerals, resulting in a rich history of hard rock mining activity.

Gilahina Butte Site

The Gilahina Butte is composed of gabbro and gneiss, which have been shaped by large glaciers that extended down the Chitina Valley (NPS 2009a). The bedrock is Quaternary to Pennsylvanian in age with ground moraine deposits of the last glaciation (Pleistocene) (Yehle 2001).

Lakina Terrace Site

The Lakina Lake area consists of primarily Holocene age, fine grained deposits with ground moraine deposits similar to the Gilahina site. Also found in this area are trace swamp, bog marsh, and peat deposits.

Sourdough Ridge Site

Sourdough Ridge is primarily composed of lateral and end moraine deposits of the Pleistocene glaciations. Also noted in this area are kame deposits (sand, gravel, and till typically that accumulate in depressions of retreating glaciers) of Pleistocene age (Yehle 2001).

Surface soils in the Chitina-McCarthy portion of the Chitina Valley are classified primarily as loamy soil with coarse fragments, fairly well drained, with a surficial organic layer, and likely permafrost in

depressed areas (NPS 2001). The dominant soil in the Chitina Valley is a well-drained, shallow silt loam overlying gravelly materials on moraines and terraces. Associated with these soils are well-drained stony and gravelly soils on lower slopes, and wet soils with permafrost in depressions. Recent moraines bordering glacial fronts consist of stony to very gravelly till. Older moraines and mountain foot slopes are covered by well-drained gravelly to loamy acid soils associated with peat (Institute of Social and Economic Research, 2010). Samples were not taken at the three sites and moraine age was not determined, but the soils likely meet the characteristics of the dominant soil in the area.

3.2.4 Wildlife

There is a vast amount of wildlife in WRST given the diversity of habitat. Brown and black bears that occur throughout the park concentrate around lakes and rivers in the spring. Moose are found in brushy areas or bogs (NPS 1986). WRST contains one of the largest concentrations of Dall's sheep in North America (NPS 2010a). Smaller mammals found in the park include wolves, lynx, wolverine, beaver, marten, porcupine, fox, wolves, marmots, river otters, ground squirrels, pikas, and voles (NPS 2010b). The Copper River Basin is a major migratory route for numerous bird species. Golden and bald eagles, peregrine falcons and gyrfalcons, pine grosbeaks, black-capped chickadees and several woodpeckers nest within the park. Year-round residents include willow ptarmigan, spruce grouse, ravens, goshawks and great horned owls (NPS 2010a). A complete checklist of bird species found in the park is available on the NPS website at: <http://www.nps.gov/wrst/naturescience/birds.htm> (NPS 2010c).

Wildlife known to frequent the project area include a relatively high density of moose (Reid 2008); Dall's sheep occurring in the Crystalline Hills north of the Lakina Terrace site and at higher elevations around the Sourdough Ridge site (NPS 2010e); transient brown and black bears; bald eagles nesting along the Chitina River (Putera 2009); and trumpeter swans that occur in the valleys near the Gilahina Butte site (NPS 2010f). Other common mammal and bird species presumably occupy or travel through each site. The three sites within the project area are not known to be important habitat areas for breeding or feeding. There are no threatened or endangered species present in the project area (Putera, 2010).

3.2.5 Visitor Services

In the project area, NPS provides information, orientation, interpretation, and administrative services at the Kennecott Mines NHL, information and orientation at the McCarthy Road Information Station, and information at kiosks located in McCarthy Road waysides. The main park visitor center is located in Copper Center, outside the project area. There is a summer visitor contact station in Chitina. The primary visitor season to WRST is early June through mid-September, although people can access the park year round. While WRST has no entrance stations or gates, the Kennecott Mines NHL is a key visitor destination. Activities for visitors include talks, nature walks, film viewings, and self-guided tours. The NPS provides emergency response and law enforcement services within WRST (for more detail on NPS operations, see Section 3.2.10). Currently, cellular service in the park is restricted to a small portion of McCarthy Road. Residences and businesses access internet services using dial-up through landlines. The use of wireless communications and broadband within the park is not described in the *Long-Range Interpretive Plan*.

As described in the 1986 GMP Management Objectives for Visitor Use and Interpretation, WRST is managed to provide unstructured and wilderness-oriented uses while providing limited opportunities for a broader spectrum of visitors predominantly from May-September. Visitors to WRST that reach McCarthy or the Kennecott Mines NHL pursue self-initiated activities along the McCarthy Road or backcountry wilderness-oriented activities accessed by airplane or raft.

WRST envisioned that commercial operators would provide information to park visitors because of their common goal "of providing a quality experience of clients/visitors to WRST" (NPS 2005). The NPS has issued 54 commercial-use authorizations (CUAs) to businesses providing services in the park (Keogh

2010). These permits are granted to private businesses for small-scale commercial activities which have minimal impact on park resources and values (NPS 2010).

The NPS website lists 35 local outfitters and guide companies located within the park and surrounding communities (some companies provide multiple services) holding such permits. The remaining 19 companies may be based in other parts of Alaska or the Lower 48. These businesses provide the following services:

- (10) Hiking & Backpacking Guides
- (4) Mountaineering Guides
- (12) Air Taxis & Flightseeing
- (2) McCarthy Road Transport
- (7) River Guides

Within the project area, a few private food and lodging businesses serve visitors, such as the Kennicott Glacier Lodge, the McCarthy Lodge, the New Golden Saloon, the McCarthy Mercantile, and several bed-and-breakfasts.

When WRST was established, certain forms of hunting and trapping were also authorized. NPS and the Alaska Department of Fish and Game (ADF&G) cooperatively manage the park's wildlife resources. Sport hunting is only allowed within the preserve in accordance with Alaska State law. Subsistence hunting is authorized in both the park and preserve. Fourteen registered hunting guides operate under permit within the preserve. No concession hunting businesses are based within the area affected by the proposed project.

3.2.6 Visitor Experience

The ways in which WRST is accessed by the public are characterized in the 1986 GMP in three categories:

- First-time visitors who merely drive along the highways adjacent to the park
- Unstructured users who access along roads within the park/preserve.
- Wilderness-oriented users of the backcountry for those seeking a more remote experience.

The WRST *Long-Range Interpretive Plan* describes a visitor study conducted in 1995 that found,

“most visitors (61 percent) stayed more than one day, and the Milepost (a for-profit guide to the Alaska Highway) was the most important source of information about the park (45 percent). Most of the visitors from the US were from Alaska (31 percent), while 11 percent of all visitors were international. The most common activities were scenic driving (82 percent), viewing wildlife (57 percent) walking around Kennecott Mines NHL (51 percent) and day hiking around the park, including Nabesna (49 percent)” (NPS 2005).

The *Long-Range Interpretive Plan* further describes the categories of visitors to the park. McCarthy and Kennecott Mines NHL visitors include a high percentage of Alaskans, with most spending at least one night. There are also small tour groups affiliated with special interests groups (i.e. church, youth or non-profits), and large commercial package tours that drive or fly, primarily to the Kennecott Mines NHL.

The majority of visitors to WRST and residents of McCarthy travel by private vehicle on the McCarthy Road off of the Edgerton Highway. It is expected that, “visiting WRST demands a certain level of preparation and self-reliance; visitors need accurate current information about the park to plan their visit . . . before they embark down the . . . McCarthy Road, or before they enter the . . . backcountry” (NPS 2005). Lakina Terrace and Gilahina Butte are not known to be visitor destinations or receive any

significant backcountry visitation. Hunters would be the group of backcountry users most likely to actually visit those specific areas.

The project area is generally situated between Chitina and McCarthy, connected by the McCarthy Road. It serves the first two categories of users that rely on the road as a sole means to experience the park or as the entry-point. The project area is also a widely used air traffic corridor for private and commercial users that pass-through to reach scenic locations. The average annual air traffic is 3,725 take-offs or landings per year for the airports near the proposed improvements (FAA 2010).

None of the existing or proposed communication sites would be in locations directly accessible by road vehicles traveling the McCarthy Road, or readily visible from the popular visitor destinations of McCarthy or the Kennecott Mines NHL. As described in Section 3.2.1, Mile 18 of the McCarthy Road is likely the only point along the road that a proposed communications site would potentially be visible. The other sites may be visible by backcountry hikers, but not along existing trails.

As described in Section 3.2.10, the majority of McCarthy Road does not have cellular phone service and there is no wireless internet access for NPS facilities or private businesses at the Kennecott Mines NHL or the town of McCarthy.

3.2.7 Wilderness Character and Values

Although the two sites addressed in this EA are proposed to be constructed on lands that the eligibility review in Appendix C determines to be ineligible, this EA will evaluate the wilderness character and values of the eligible area surrounding both sites. Wilderness character is broadly defined in the Wilderness Act of 1964, Section 2c, but is not further defined in NPS Management Policies. NPS has not prepared a formal wilderness quality classification for wilderness in Wrangell-St. Elias National Park and Preserve. However, a recent federal interagency strategy prepared as a framework for monitoring trends in wilderness character has been adapted for use in this EA to provide applicable indicators and measures related to eligible wilderness in the study area (Landres, et.al., 2008). This framework classifies wilderness lands based on the four qualities of wilderness character. Briefly, the four qualities of wilderness character are: 1) Untrammeled, 2) Natural, 3) Undeveloped, and 4) Solitude or Primitive and Unconfined Recreation.

Untrammeled

Wilderness is essentially unhindered and free from modern human control or manipulation. In order to ascertain what constitutes “untrammeled” we must ask what past or current actions are taken that control or *manipulate* the “earth and its community of life” inside wilderness. Indicators relative to the “untrammeled” quality include the extent of actions by federal land managers and actions not authorized by federal land managers. Few known management activities affect the eligible wilderness lands within the analysis area; there have been no specific actions to manage animal populations, no fuel suppression, and no known stocking of fish in the wilderness lakes. Based on these measures, the untrammeled quality of the eligible wilderness lands surrounding the two sites appears to be high.

Natural

In order to ascertain what constitutes “natural” we must ask what past or current actions are taken that affect the terrestrial, aquatic, and atmospheric natural *resources* and *processes* inside wilderness. Indicators relative to the natural quality include plant and animal communities, physical resources, and biophysical processes. Specific measures indicate that plant and animal communities within the eligible wilderness remain largely in their natural state. NPS has not documented any non-indigenous species (Terwilliger 2010) and no indigenous species are extinct or listed as threatened, endangered, sensitive or of special concern in the analysis area.

Measures identified for the physical resources indicator show that the natural quality of air, water, and soil remains generally high. Measures related to biophysical indicators involve the fire regime, climate

change, pathways for movement of non-indigenous species, and the potential for loss of connectivity within the surrounding landscape. Available measures for these three indicators show no change or minimal influence on the natural quality of the area. Therefore, the natural quality of the area is considered to be high.

Undeveloped

Wilderness retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation. Indicators relative to the undeveloped quality include non-recreational structures, installations, and developments; inholdings; use of motorized vehicles, motorized equipment, or mechanical transport; and loss of statutorily protected cultural resources.

The eligible lands adjacent to and surrounding the proposed sites at Gilahina Butte and the Lakina Terrace exist in a complex matrix of land status that include designated wilderness, eligible wilderness, and non-eligible lands. Private lands, many of which are permanently or seasonally occupied are located throughout the area, and attendant development exists adjacent to wilderness lands. There are several airstrips on private inholdings which are adjacent to the McCarthy Road. The Gilahina Butte site is host to a USGS seismic monitoring station and associated helicopter pad that have been in continuous operation since before the park and preserve were established.

The sights and sounds of commercial and private aircraft, commercial and private motor vehicles, snowmachines and ATVs are prevalent depending upon the season. Such visible and audible evidence of mechanized use diminishes the undeveloped quality of the eligible wilderness in certain specific locations. Based on these indicators there has been localized moderate diminishment of the undeveloped quality of wilderness lands within the analysis area.

Solitude or Primitive and Unconfined Recreation

Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation. Landres et al. (2008) identify four indicators relative to the solitude or primitive and unconfined quality. They include remoteness from sights and sounds of people, remoteness from occupied and modified areas outside of wilderness, presence of facilities that decrease self-reliant recreation, and management restrictions on visitor behavior. While formal studies have not been conducted, NPS personnel estimate that approximately 50 percent of the eligible wilderness lands in the study area are affected by motorized travel routes in adjacent non-wilderness areas.

The soundscapes within the wilderness are affected by motorized uses on non-wilderness lands, including aircraft, motor vehicles, snowmachines and ATVs. While there are no agency authorized facilities that decrease self-reliant recreation, a large portion of the eligible wilderness lands within the study area are accessible by motor vehicle from the road, by aircraft landing on private airstrips along the road, or by foot.

With respect to management restrictions, there are very few regulations applicable to visitors accessing the area. The lack of required permits, registration, or pre-departure educational programs lends the experience a more primitive feel.

Based on the indicators and measures discussed above, there has been moderate overall diminishment of the quality for solitude or primitive and unconfined recreation within the eligible wilderness. This characterization is based primarily on the influences from access provided by the McCarthy Road, and from travel activity originating outside of the area such as commercial and private overflights and general aviation traffic.

3.2.8 Economic Resources

Economic data in rural Alaska is highly variable due to the vast size, small population, remote location and complexity of the economic structure of the region (Goldsmith 2007). While the Alaska Economic Information System, a state-sponsored source of information on local economic indicators, used to

provide economic descriptions at the census-area level, it has now been discontinued. A 1997 issue of *Alaska Economic Trends*, a publication of the Alaska Department of Labor and Workforce Development, contains the only recent analytical description of the Copper River subcensus area's economy. It identifies the Copper River School District as the region's largest employer, the Copper River Native Association, a regional non-profit healthcare organization, as the second-largest employer, and the NPS as third. (Windisch-Cole 1997). Most growth has occurred in the trade and service sectors, particularly tourism. Cottage industries like bed and breakfasts, outfitters, and flight-seeing are typical entrepreneurial activities in McCarthy. Unfortunately, these also provide only seasonal earnings. The number of tourists to WRST has tripled since the 1980s to over 60,000 per year, but in contrast, visits to Denali National Park and Preserve were 432,301 in 2008 (NPS 2010). Visits to Kennecott Mines NHL totaled 10,600 in 2010 (Keogh 2010).

NPS negotiates concessions contracts and other permits with outfitters who operate within the park in accordance with section 1307 of ANILCA and PL 89-249 (Concessions Policy Act), and contribute to the economy of the region. More detail on the number and types of outfitters and guides that are authorized to work within the park is described in Section 3.2.5 Visitor Services.

Figure 3 demonstrates the land ownership within the park boundary by non-federal entities. The private lands support a variety of economic activities. Although future private development plans remain unclear, this entrance area to WRST and the McCarthy Road Corridor represent areas for potential development.

3.2.9 Safety

The communities within the Chitina River Valley rely almost entirely on volunteers to meet their needs in the event of an emergency. Emergency medical services, including emergency response, ambulance transport, Medivac assistance, and patient care are provided through Copper River Emergency Medical Services (Copper Valley Electric Association 2010). The service has ambulances in Kenny Lake, Glennallen, and Copper Center, and trained responders in Chitina. There are currently 15 active responders, who answer roughly 130-150 calls per year.

The community of Chitina has one local clinic for minor medical treatment. Other emergencies are directed to the Cross Roads Medical Center in Glennallen, Alaska. The community of McCarthy currently has no medical center. All non-emergency medical treatment is deferred to Chitina and Glennallen. Currently, 911 calls are available from community land lines; cellular phone service is not comprehensive (also see Section 3.2.10).

Often emergencies are related to vehicle accidents on the Richardson Highway, Edgerton Highway, and McCarthy Road. However, responders are concerned about future wildfire events. The Copper River basin has seen the second largest infestation of the Alaska Spruce Bark Beetle in the State of Alaska. This area has not burned since the 1920s (Native Village of Chitina 2007), although there was a 60,000 acre forest fire south of the Chitina River during the summer of 2009. This suggests that the McCarthy Road corridor is due for a catastrophic wildfire.

Response Time

The Alaska Division of Forestry response time into the communities of Chitina and McCarthy is approximately 30 minutes via helicopter. Under ideal conditions, highway vehicles require at least one hour to travel the highway between Glennallen and Chitina, and an additional two hours by gravel road to McCarthy. The McCarthy Road is open but sometimes impassible during winter months.

The Chitina volunteer fire department has one 5,000-gallon water tender and five pump trucks, in various states of repair (Native Village of Chitina, 2007). The community of Strelina, Alaska, approximately 15 miles east of Chitina, also has one fire engine/pump truck, and one brush truck (Strelina Volunteer Fire Department 2008).

3.2.10 Park Operations and Communications

The NPS provides emergency response and law enforcement services within WRST in cooperation with other state and municipal entities. Currently, if an accident were to occur in a spot with no cell coverage along the McCarthy Road, a typical response time could take up to 5 hours because of the distance to responders and the need to walk within cellular range to make an emergency call (Christian 2010). Figure 4 demonstrates the lack of medical facilities within the project area and the distances between NPS facilities and fire stations. During the 2009 Chakina Fire, temporary communications facilities were needed to enable the NPS and the Alaska Department of Natural Resources to manage that incident.

Telecommunication services are currently provided by CVW by satellite-based data transfer. Such telephone connections can experience delay and static. The download and upload speed range is 60-155 kilobits per second (Kbps), compared to 6,000 Kbps for more urban areas enjoying microwave and buried cable wireless systems.

Mobile Telecommunications

The NPS employs three forms of wireless telecommunications: cell phones, FM radio transmitters, and satellite phones. Cell phones are the most commonly used mobile device because they are very small and light and can be used outside of the park by connecting to cell sites throughout the state. Within the park, there are numerous locations where there is no cellular coverage. Specific to the proposed action, there are also numerous locations along the McCarthy Road between Chitina and McCarthy where there is no cellular coverage (Christian 2010). FM radio transmitters are used throughout the park by park employees, but they must be in line-of-sight to repeater stations situated on nearby peaks (Christian 2010). Satellite phones are similar to cellular phones, but they connect to orbiting satellites instead of terrestrial cell sites. Within WRST staff, satellite phones are generally restricted to supervisors, emergency response staff, pilots, and law enforcement personnel (Christian 2010). Although they are very expensive, they provide the most reliable wireless service. Outfitters also carry these devices when they are out of range of cellular service.

Internet

NPS has low-speed internet service at the visitor center and ranger stations within the project area. Data transfer is slow, particularly for large files. Bandwidth is inadequate and internet demand increases during the summer months (March – September) when additional seasonal staff are employed at the Kennecott Mines NHL (Christian 2010).

4.0 ENVIRONMENTAL CONSEQUENCES

This section provides an evaluation of the potential effects or impacts of each of the alternatives on the resources described in the issue statements presented in Section 1.6.1, Issues Selected for Detailed Analysis.

4.1 Methodology and Impact Criteria

The direct, indirect, and cumulative impacts are described for each issue (impact topic). The impacts for each issue are based on the intensity (magnitude), duration, and context (extent) of the impact. Summary impact levels (negligible, minor, moderate, or major) are given for each issue. Definitions are provided below.

Intensity

Low:	A change in a resource condition is perceptible, but it does not noticeably alter the resource's function in the park's ecosystem, cultural context, or visitor experience.
Medium:	A change in a resource condition is measurable or observable, and an alteration to the resource's function in the park's ecosystem, cultural context, or visitor experience is detectable.
High:	A change in a resource condition is measurable or observable, and an alteration to the resource's function in the park's ecosystem, cultural context, or visitor experience is clearly and consistently observable.

Duration

Temporary:	Impacts would last only a single visitor season or for the duration of discreet activity, such as construction of a trail (generally less than two years).
Long-term:	Impacts would extend from several years up to the life of the plan.
Permanent:	Impacts are a permanent change in the resource that would last beyond the life of the plan even if the actions that caused the impacts were to cease.

Context

Common:	The affected resource is not identified in enabling legislation and is not rare either within or outside the park. The portion of the resource affected 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 resource affected does not fill a unique role within the park or its region of the park.
Unique:	The affected resource is identified by enabling legislation and the portion of the resource affected uniquely fills a role within the park or its region of the park.

Overall Summary Impact Levels

Summaries about the overall impacts on the resource synthesize information about context, intensity, and duration, which are weighed against each other to produce a final assessment. While each summary reflects a judgment call about the relative importance of the various factors involved, the following descriptors provide a general guide for how summaries are reached.

Negligible:	Impacts are generally extremely low in intensity (often they cannot be measured or observed), are temporary, and do not affect unique resources.
Minor:	Impacts tend to be low intensity or of short duration, although common resources may have more intense, longer-term impacts.
Moderate:	Impacts can be of any intensity or duration, although common resources are affected by higher intensity, longer impacts while unique resources are affected by medium or low intensity, shorter-duration impacts.
Major:	Impacts are generally medium or high intensity, long-term or permanent in duration, and affect important or unique resources.

Impairment

Impairment of a park resource(s) occurs when a resource would no longer fulfill the specific purposes identified in the park's establishing legislation (or proclamation) or its role in maintaining the natural or cultural integrity of the park, as described in the park's GMP, foundation document, or other significant guiding plan.

Cumulative Impacts

Cumulative impacts are the additive or interactive effects that would result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). Interactive impacts may be either *countervailing* – where the net cumulative impact is less than the sum of the individual impacts or *synergistic* – where the net cumulative impact is greater than the sum of the individual 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 within the project area. Historically, these cumulative impacts have been due to increased visitor use, in conjunction with the development of administrative and visitor services, and the construction of seismic and climate monitoring stations for research purposes.

Recent Past Actions

Within the park there are approximately 100 miles of road, 600 miles of trails, and 286 patented mining claims encompassing over 10,600 acres of disturbed land (NPS 1990 as found in NPS 2006a). Native lands near Chitina were logged in 1990. Lands near Chokosna, Moose and Lakina Lakes, and McCarthy were subdivided and sold, and many property owners have developed parcels within the park (see land status in Figure 3) (Rosenkrans, 2010). The project area contains the McCarthy Road, the primary entry corridor into the southern portion of the park. The area also includes the Chitina Visitor Contact Station, McCarthy Road Information Station, and Kennecott Company Store that serves as the primary visitor information station for the NHL. Other infrastructure includes cleared fields, driveways, trails, waysides, and small airstrips.

The Kennecott Mines NHL remains the primary visitor destination within the project area. The site contains numerous occupied and unoccupied historic structures used for NPS administration and staff housing, as well as a privately-owned lodge. WRST provides power, fuel, water, and sewer to park

facilities within the NHL and at its West Side Administrative Support Complex, just west of McCarthy. The Alaska Department of Transportation handles road maintenance on the McCarthy Road and the road from McCarthy to Kennecott, both of which are state facilities. Local land owners, like the Kennicott Glacier Lodge, produce their own power and provide their own fuel, water, and sewer.

Table 4-1 contains a description of the variety of human installations located in the project area. The stations and facilities described in Table 4-1 require on-going maintenance by vehicle, off-road vehicle, fixed-wing aircraft or helicopters to remote locations.

Table 4-1. Communications, Research, and Access Facilities in WRST near the McCarthy Road

Installations/Facilities	Approximate Footprint
Seismic stations, very small aperture terminal (VSAT) stations, NPS repeaters, and “STEEP facilities	Footprint: 120 sq ft (0.0003 acres) Description: Typically, an approximately 4’ x 4’ fiberglass weatherproof hut about 5’ high would house an antenna, electronic equipment, and gel cell batteries, charged by a 2’ x 3’ solar panel array.
Three existing FCC-registered cell towers	75’ tower in McCarthy 27’ pole-mounted cellular antenna at Sourdough Ridge site 60’ tower in Chitina.
Four public use cabins (within 50 miles of McCarthy)	The typical public use cabin site footprint measures approximately 100’ x 100’.
Two remote automated weather stations (RAWS) in the McCarthy Area	Description: Each station consists of a 15.5’-tall, steel precipitation tower securely anchored to the ground with steel pins and a 10’ mast tri-leg tower with a 10’ mast anchored by rebar and weighted with rocks. The precipitation tower has four legs on a 5’ wide base and tapers to 1.5 feet wide at the top.
One constructed hiking trail	Crystalline Trail: Three miles long ending at an elevation of 2,050 ft. Two acres of vegetation were cleared to establish the trail, which starts at mile 34.8 of McCarthy Road.
Numerous inholding access points	Various active driveways, roads, ORV trails, airstrips, parking areas, and waterlines associated with private property within the WRST boundary.
Note: More detailed descriptions can be found in the St. Elias Erosion and Tectonics Project (STEEP) EA (NPS 2006) and Climate Monitoring Program EA (NPS 2005a), and Access to Inholdings (NPS 2007).	

Present Actions

Fixed-wing aircraft flights occur within WRST on a daily basis and are permitted to cross the park or land practically anywhere. WRST contains approximately 85 recorded airstrips.

Helicopters access existing remote automated weather stations (RAWS), seismic, and radio repeater stations for inspections and maintenance. These helicopter flights are point to point and of limited duration, thus noise intrusions are temporary although spread throughout WRST’s designated and eligible wilderness. In certain locations, fixed-wing aircraft are also used to maintain communications and monitoring stations. Some NPS activities and permitted research projects also use helicopters each field season. WRST issues about 12 scientific research permits a year that require helicopter access. Flight paths traverse both designated and eligible wilderness and aircraft land there.

Reasonably Foreseeable Future Actions

There are no currently planned future actions (RFFAs) in the project area, other than the maintenance of existing federal and permitted scientific facilities, and continuing private development (Bleakley 2010). The only federal projects presently funded for FY 2011 are historic structure stabilization-related activities in the Kennecott Mines NHL (Bleakley 2010). GCI has requested an Airspace Hazard

Determination for a proposed 180-foot-tall communication tower in Chitina (Fulton 2010). Another shorter structure in that area has also been proposed, although its proponent and height are currently unknown. ADOT&PF has plans to maintain and upgrade the McCarthy Road over time, as described in the 1997 *McCarthy Scenic Corridor Plan*.

4.2 Analysis of Impacts

The following sections describe the impact associated with the Alternative 1 – No Action and Alternative 2 – Proposed Action alternatives.

4.2.1 Visual Resources

Alternative 1 – No Action Alternative

Direct and Indirect Impacts

Under implementation of Alternative 1, no direct or indirect impacts would occur to visual resources since there would be no change to the visual landscape or to viewer response to the visual landscape at the three sites in the project area.

Cumulative Impacts

Past actions that have impacted visual resources in the project area include changes and additions to park infrastructure; the installation of cell towers, seismic stations, and remote automated weather stations; and the development of private property. All have introduced colors and forms that do not mimic the natural environment.

RFFAs that could occur within the project area are described in Section 4.1. Of these, ongoing maintenance of the seismic stations and remote automated weather stations and construction equipment temporarily staged for stabilization and/or restoration at the Kennecott Mines NHL would all impact visual resources. However, stabilization of the NHL's historic structures also helps maintain its cultural landscape, a key element of the area's visual resources.

With no direct or indirect impacts to visual resources under Alternative 1, there would be no contribution to cumulative impacts on this resource.

Conclusion

Implementation of Alternative 1 would result in no new impacts on visual resources. No communication facilities would be constructed or modified and there would be no impairment to the purposes of the park or to the integrity of the significant resources for which the park was established.

Alternative 2 - McCarthy Communications Sites (Proposed Action)

Implementation of Alternative 2 would cause direct impacts to visual resources. During the construction period, visual resources in the project area would be altered by the presence of crews and activities. Visual resources would also be altered during construction by the helicopters used to transport equipment and crews to the sites. Once completed, the sites' visual resources would be altered by their lack of vegetation (trees and shrubs) and the presence of the communications facilities. Maintenance activities would also temporarily effect visual resources due to the going use of helicopters for access.

The construction and maintenance of the communications sites would affect the visual quality and aesthetics at each site, although the total area of the sites is very small (approximately .56 acre). The scale of the communications sites would be small relative to the surrounding landscape and the dominance of structures at each site would be reduced, as the buildings would be finished in a color that blends with their natural surroundings. The communications sites do not have any exterior lights in the design (Mishmash 2010). Given the remoteness of the sites it is unlikely that the Sourdough Ridge and Lakina Terrace communications sites would be visible from lower elevations and that park visitors would only

encounter them from higher elevations, such as people hiking in close proximity or from aircraft passing overhead. It is likely the Gilahina Butte site would be visible in the background for brief, limited periods near Mile 18 of the McCarthy Road. However, the number of people viewing the site would be small as most visitors would not be looking for the visual intrusion.

The impacts on visual resources from Alternative 2 would include the introduction of colors and forms that do not mimic the natural environment. Localized impacts to visual resources would include the presence of the communications facility for the life of the project. However, considering the small size of the sites, the limited period of construction and maintenance activities, and the small number of visitors that would encounter them, that impact would be minor.

Cumulative Impacts

Past, ongoing, and future actions that have had and would continue to have minor overall impacts to visual resources in the project area are described under Alternative 1. The implementation of Alternative 2 would affect visual resources by leaving cleared sites, constructed facilities, and an increased need for helicopter traffic. However, given the small size of the communications sites, the small number of visitors that would encounter the sites, and the limited increase in the number of helicopter flights needed for maintenance activities, there would be a relatively small increase in cumulative impact to visual resources in the park. The cumulative negative impacts attributable to implementation of Alternative 2 would be minor but long-term.

Conclusion

Implementation of Alternative 2 would result in impacts to visual resources that would be minor, but long-term. Impacts would be of low intensity, long-term duration, and important in context. However, they would not impair the purpose of the park or the integrity of any significant resources for which the park was established.

4.2.2 Vegetation

Alternative 1 – No Action Alternative

Direct and Indirect Impacts

Under implementation of Alternative 1, no direct or indirect impacts to vegetation would occur since additional excavation or clearing of vegetation would not take place at the three sites in the project area.

Cumulative Impacts

Past actions that have impacted vegetation in the project area include the development of park infrastructure, such as roads and trails, small airstrips and helicopter pads, radio repeaters, and public-use cabins; the installation of scientific research facilities, such as weather and seismic stations; and the development of private property. Cumulative impacts related to these actions include the clearing of vegetation and the potential introduction of invasive species.

RFFAs that could occur within the project area are described in Section 4.1. Of these, the ongoing maintenance of park infrastructure and scientific research facilities and the continued development of private property could potentially impact vegetation. These impacts could include the direct loss of vegetation and the potential introduction of invasive species. Impacts would be highest during the summer when these activities generally occur.

With no direct or indirect impacts to vegetation under Alternative 1, there would be no contribution to cumulative impacts on this resource.

Conclusion

Implementation of Alternative 1 would have no impact on vegetation. There would be no impairment to the purpose of the park or to the integrity of the significant resources for which the park was established.

Alternative 2 - McCarthy Communications Sites (Proposed Action)

Direct and Indirect Impacts

Implementation of Alternative 2 would cause direct impacts to vegetation. Construction for the two new communications sites and the upgrade of an existing communication facility would result in the loss of approximately .56 acre of regionally common vegetation. All vegetation would be cleared for the construction of the communications sites and helicopter landing areas at the Gilahina Butte site and Lakina Terrace site. Additional trees would be cut in the two directions that the microwave signals would travel at these two sites. All organic material would also be removed by excavation at the Gilahina Butte site and Lakina Terrace site for tower and building foundations. The Sourdough Ridge site would require minor clearing of vegetation and minor excavation for tower footings as it is an existing site with adequate space for upgrading facilities. No threatened or endangered species of vegetation would be cleared at any of the sites.

Indirect impacts resulting from this activity include the creation of an area suitable for establishment and propagation of invasive and exotic plant species. Trampling of surrounding vegetation could also occur during construction activities and operations due to increased access to the sites.

The impacts on vegetation from Alternative 2 would include direct loss of native plant cover and a potential reduction in ecological function, such as wildlife habitat, biomass production or carbon dioxide sequestration. These impacts would be minimized by the mitigation measures described in Section 2.5.

Localized impacts to vegetation would be high, as they would result in the loss of vegetation within the project footprint for the life of the project. However, considering the small amount of regionally common vegetation impacted relative to the size of the region, this impact would be minor.

Cumulative Impacts

Past, ongoing, and future actions that have had and would continue to have minor overall impacts to vegetation in the project area are described above under Alternative 1. The implementation of Alternative 2 would directly result in the additional loss of .56 acre of regionally common vegetation. The vegetation that has been or would be lost as a result of past, ongoing, and RFFAs are a small fraction of the existing disturbed lands in the McCarthy road corridor, estimated at 10,600 acres (NPS 1990 as found in NPS 2006) and even less of a contribution to the 13.2 million-acre park. The implementation of Alternative 2 would therefore contribute a relatively small increase in the current loss of vegetation in the park. The cumulative impacts attributable to implementation of Alternative 2 would be minor and long-term.

Conclusion

Implementation of Alternative 2 would result in impacts to vegetation that would be minor, but long-term. Impacts would be of low intensity, long-term duration, and common in context. There would not be impairment to the purpose of the park or to the integrity of the significant resources for which the park was established.

4.2.3 Soils

Alternative 1 – No Action Alternative

Direct and Indirect Impacts

Under implementation of Alternative 1, no direct or indirect impacts to soils would occur since no excavation or ground disturbance is proposed. Existing impacts to soils from past activities would

continue, including the maintenance of the current monitoring stations and Sourdough Ridge installations in the area.

Cumulative Impacts

Past actions that have impacted soils in the project area include the development of park infrastructure, such as roads and trails, small airstrips and helicopter pads, radio repeaters, and public-use cabins; the installation of scientific research facilities, such as weather and seismic stations; and the development of private property. Cumulative impacts related to these activities include the initial placement of the Sourdough Ridge communications facility, seismic, and weather stations, and channelization of runoff from impervious surfaces and subsequent erosion of local soils.

RFFAs that could occur within the project area are described in Section 4.1. Of these future actions, the ongoing maintenance of park infrastructure and scientific research facilities and the continued development of private property could potentially impact soils. These impacts could include a direct loss of vegetation or soil cover, and soil disturbance during construction and maintenance activities. Impacts would be highest during the summer when these activities generally occur. However those impacts would be minor.

With no direct or indirect effects to soils expected under Alternative 1, there would not be a contribution to cumulative impacts on these resources.

Conclusion

Implementation of Alternative 1 would have no direct or indirect impacts to soils. There would be no impairment of park resources that fulfill specific purposes identified in enabling legislation of the park or that are key to the natural and cultural integrity of the park and preserve.

Alternative 2 - McCarthy Communications Sites (Proposed Action)

Direct and Indirect Impacts

Implementation of Alternative 2 would disturb about .56 acre of shallow subsurface soils in the areas of proposed improvements at the Gilahina Butte, Lakina Terrace and Sourdough Ridge sites, during excavation, construction and maintenance for the new facilities and communication equipment. Direct impacts on soils as a result of Alternative 2 would be of high intensity to a localized area and would include exposure, compaction, and direct loss of soil cover in the area of the new facilities, and exposure of soils to localized runoff and erosion. Direct impacts from the initial project activities would be highest during construction, but would continue at reduced levels during maintenance activities.

Indirect impacts on soils would occur under these alternatives. However, these impacts would be minor. Examples of indirect impacts could include the alteration of permafrost characteristics in local areas, if those areas contain permafrost-bearing soils.

Cumulative Impacts

Past, ongoing, and future actions that have had and would continue to have minor overall impacts to soils in the area are described above under Alternative 1. The implementation of Alternative 2 could directly result in the loss of ground cover on up to one acre of regionally common soils. The soils that are or would be lost as a result of past, ongoing, and RFFAs are a small fraction of the existing disturbed lands in the McCarthy Road corridor, estimated at 10,600 acres (described in Section 4.1). The less than one acre of soil impacts would be a negligible contribution to the disturbed area within a 13.2 million-acre park. Thus, the implementation of Alternative 2 would contribute a relatively small increase to the already low amount of surface soils lost park-wide. The cumulative negative impacts attributable to implementation of this alternative would be minor and long-term.

Conclusion

Topsoil removal/excavation and system installation would result in direct and indirect impacts to soils that would be high in intensity, of long-term duration, and common in context. The overall impact would be minor because less than one acre is a negligible contribution to the total park acreage. There would be no impairment of park resources that fulfill specific purposes identified in enabling legislation of the park or that are key to the natural and cultural integrity of the park and preserve.

4.2.4 Wildlife

Alternative 1 – No Action Alternative

Direct and Indirect Impacts

Under implementation of Alternative 1, no direct or indirect impacts to wildlife would occur since the displacement of wildlife from construction and maintenance activities, and no alteration or removal of wildlife habitat would occur at the three sites in the project area.

Cumulative Impacts

Past actions that have impacted wildlife in the project area include the development of park infrastructure including roads and trails, small airstrips and helicopter pads, radio repeater sites, and public-use cabins; the development of scientific facilities, such as seismic stations and remote automated weather stations; and the development of private property. Cumulative impacts related to these actions include the disturbance of wildlife from construction and maintenance activities, and the alteration or removal of wildlife habitat.

RFFAs that could occur within the project area are described in Section 4.1. Of these, ongoing maintenance of park infrastructure and scientific research facilities, and additional private development could potentially impact wildlife. These impacts could include a direct disturbance of wildlife and the indirect alteration or removal of wildlife habitat.

With no direct or indirect impacts to wildlife under Alternative 1, there would be no contribution to cumulative impacts on this resource.

Conclusion

Implementation of Alternative 1 would have no impact on wildlife. There would be no impairment to the purpose of the park or to the integrity of the significant resources for which the park was established.

Alternative 2 - McCarthy Communications Sites (Proposed Action)

Direct and Indirect Impacts

Implementation of Alternative 2 would cause direct impacts to wildlife. During the construction period, wildlife in the immediate vicinity of the construction activities would be temporarily displaced. Wildlife would also be temporarily displaced by the helicopters used to transport equipment and construction crews to the sites. Maintenance activities would also disturb wildlife, with helicopters flying to each site approximately six times per year to perform maintenance activities.

Indirect impacts resulting from this project include the loss of less than one acre of habitat. However none of the new proposed stations would be located in wildlife sensitive areas. The area of habitat disturbance during installation and maintenance would be minimal and limited to the area immediately surrounding the equipment. Remote facilities in other parts of Alaska have occasionally been approached and damaged by curious bears. If damage occurs to the equipment, it would be repaired or replaced.

The impacts on wildlife from Alternative 2 would include the direct displacement of wildlife and a potential reduction in available wildlife habitat. These impacts would be minimized by the mitigation measures described in Section 2.5.

Localized impacts to wildlife would be high, as they would result in the permanent loss of habitat within the project footprint for the life of the facility. However, considering the small amount of habitat impacted relative to the size of the region, and the limited period of construction and maintenance activities, the impact would be minor.

Cumulative Impacts

Past, ongoing, and future actions that have had and would continue to have minor overall impacts to wildlife in the project area are described above under Alternative 1. The implementation of Alternative 2 would directly result in the disturbance of wildlife within the vicinity of the sites and the loss of less than one additional acre of habitat. The habitat that would be lost as a result of past, ongoing, and RFFAs is a small fraction of the existing disturbed lands in the McCarthy Road corridor, estimated at 10,600 acres and even less of a percentage of the 13.2 million-acre park. The implementation of Alternative 2 would therefore contribute a relatively small increase in the current loss of available habitat in the park. The cumulative negative impacts attributable to implementation of Alternative 2 would be minor and long-term.

Conclusion

Implementation of Alternative 2 would result in impacts to wildlife that would be minor, but long-term. Impacts would be of low intensity, long-term duration, and common in context. There would not be impairment to the purpose of the park or to the integrity of the significant resources for which the park was established.

4.2.5 Visitor Services

Alternative 1 – No Action

Direct and Indirect Impacts

Visitor services would not change under the No Action Alternative. There would be no change to facilities or programs. The level of visitation is expected to keep pace with overall tourism levels in the state. NPS meets the 1986 GMP Management Objectives for Visitor Use and Interpretation through the stationing of visitor interpretation facilities within the project area and providing online web-based content (accessed by visitors while outside the park boundary).

Cumulative Impacts

Private commercial operations provide essential visitor services. The number of businesses catering to visitor needs has increased. ADOT&PF road infrastructure has improved steadily since WRST was established in 1980. Past and present actions to enhance visitor services in the park include the development of the Copper Center Visitor Center, the Chitina Visitor Information Station, and the McCarthy Road Information Center, as well as a greatly increased presence in the Kennecott Mines NHL. Development of waysides within the McCarthy Road Corridor, upgrades to the McCarthy and Chitina Airports, and various airstrip, road and trail improvements have also occurred. These have aided in directing visitors to accommodations, preparing visitors for backcountry experiences, and fostering an appreciation of the cultural and natural resources for which the park was established. With no direct or indirect impacts to visitor services, Alternative 1 would have no contribution to the cumulative impacts to visitor services.

Conclusion

Implementation of Alternative 1 would have no impact on visitor services therefore there would be no impairment to the purpose of the park or to the integrity of the significant natural resources for which the park was established.

Alternative 2 – McCarthy Communications Sites (Proposed Action)

Direct and Indirect Impacts

The installation of the cellular antennas would bring new cell phone service to the majority of the McCarthy Road corridor. The installation of facilities would expand broadband internet capacity to NPS offices and private businesses subscribing to CVW service within the microwave path. The expansion of wireless and broadband service would not be provided by NPS, but would be a noticeable change to the services within the McCarthy Road corridor and at the Kennecott Mines NHL. WRST visitors would have high-speed connections to the internet from both McCarthy and Kennecott and experience reliable cellular service to contact local and regional businesses and emergency services while traveling the McCarthy Road. Expanded communication would directly and indirectly benefit commercial operator and park visitors and thereby enhance visitor services.

The park purposes included maintenance of “unimpaired” natural resources and reasonable access for wilderness recreational activities. This requires a level of preparedness and self-reliance on the behalf of visitors and excludes certain types of visitors. Expanded cellular and wireless internet service could have an indirect effect of increasing the number of visitors and decreasing opportunities for solitude. Travelers may be more willing to travel off the McCarthy Road to use existing public facilities and trail systems with the knowledge of the increased capacity to obtain assistance in the event of an emergency.

The *Long-Range Interpretive Plan* notes that many WRST visitors never contact NPS staff during their visit, but instead receive their information from local outfitters and businesses. Therefore, another indirect effect of the expanded access to broadband may be that additional visitors receive interpretive services online.

Cumulative Impacts

Past and present actions to visitor services in WRST are described under Alternative 1. The implementation of Alternative 2 would directly result in new broadband services that would improve the speed with which visitors access the NPS website at the visitor center. It would also improve the speed and reliability of digital data transmission between NPS facilities. Businesses within the microwave path would experience enhanced digital data transmission that could facilitate the distribution of park interpretive information to current and potential clients. Alternative 2 would have a moderate contribution to the cumulative impacts to visitor services.

Conclusion

Impacts on visitor service under this alternative would be medium in intensity because the addition of wireless service availability would be observable and detectable. The new wireless services would be long-term in duration because of the durability of the antennas and microwave dishes. This project would have beneficial effects on visitor services, which are considered common in context. There would not be any impairment to the purpose of the park or to the integrity of the significant resources for which the park was established.

4.2.6 Visitor Experience

Alternative 1 – No Action

Direct and Indirect Impacts

Visitor experience would not change under the No Action Alternative. There would be no change to telecommunications, internet access, or NPS interpretation. The level of visitation is expected to keep pace with overall tourism levels in the state. NPS meets the 1986 GMP Management Objectives for Visitor Use and Interpretation by providing “adequate and feasible access to park/preserve resources” through the stationing of visitor interpretation facilities within the project area and providing online web-based content (accessed by visitors while outside the park boundary).

Cumulative Impacts

Past and present actions affecting visitor experience in the project area include the development of the Kennecott Mines NHL, the development of visitor contact facilities in Chitina, Kennecott, and just west of McCarthy, improvements to the McCarthy Airport, and various road and trail improvements. These have aided in directing visitors to accommodations, preparing visitors for backcountry experiences, and fostering an appreciation of the cultural and natural resources for which the park was established. With no direct or indirect impacts to visitor experience under Alternative 1, there would be no contribution to cumulative impacts to visitor experience.

Conclusion

Implementation of Alternative 1 would have no impact on visitor experience therefore there would be no impairment to the purpose of the park or to the integrity of the significant natural resources for which the park was established.

Alternative 2 – McCarthy Communications Sites (Proposed Action)

Direct and Indirect Impacts

The installation of the cellular antennas would bring new cell phone service to the majority of the McCarthy Road corridor, and the installation of the microwave dishes would expand broadband internet capacity to NPS offices and private subscribers. WRST visitors would have high-speed connections to the internet from the Kennecott Mines NHL and experience reliable cellular service to contact McCarthy and other regional businesses as well as emergency services while traveling the McCarthy Road. If desired, WRST visitors could experience “connectivity” to the outside world that may make visitors feel safe and at-ease. Because these sites are not known to be in areas frequented by park visitors, the effects to the backcountry visitor experience would be minimal.

There are no trails leading to the communications sites, so an on-the-ground approach to the sites would be uncommon. However, visitors may be able to view the Gilahina Butte site from select locations on the McCarthy Road and all of the sites from the air. An additional impact to the backcountry experience would include the increased helicopter use needed to construct and maintain the sites. Both the presence of helicopters and the noise could diminish visitor experiences. However, the three sites are situated along a existing flight path where helicopter activity is already relatively common.

The park purpose included the maintenance of “unimpaired” natural resources and reasonable access for wilderness recreational activities. Expanded cellular and wireless internet service could have an indirect effect of increasing the number of visitors and decreasing opportunities for solitude. More travelers may

be more willing to travel off the McCarthy Road to use existing public facilities and trail systems with the knowledge of the increased capacity to obtain assistance in the event of an emergency. If travelers choose to be “connected” within the McCarthy Road corridor, there could be the indirect impact of diminishing the wilderness experience of people that choose WRST for this purpose.

Cumulative Impacts

Past and present actions to visitor experience in WRST are described under Alternative 1. The implementation of Alternative 2 would directly result in introduction of human structures to the landscape, a new sense that visitors are not in wilderness because of cellular and internet access, and increased helicopter noise and distraction. Alternative 2 would have a moderate negative contribution to the cumulative impacts to visitor experience.

Conclusion

Impacts on visitor experience under this alternative would be medium in intensity because the additional availability of wireless service, helicopter presence, and communications sites construction would be observable and detectable. The impact on visitor experience due to new wireless services would be long-term in duration because of the durability of the antennas and microwave dishes. CVW services could affect visitor experience, which is not a natural resource; visitor experiences are considered common in context. There would not be impairment to the purpose of the park or to the integrity of the significant resources for which the park was established.

4.2.7 Wilderness Character and Values

The proposed action is predicated on the approval of the Wilderness Eligibility Revision proposed in Appendix C. In this case, both the Gilahina Butte site and the Lakina Terrace site will be located outside eligible wilderness and no analysis of impacts is necessary. However, due to their proximity to eligible and designated wilderness, there are still possible effects to the wilderness character of the surrounding lands.

Alternative 1 – No Action

Direct and Indirect Impacts

The No Action Alternative would result in no new impacts to Wilderness Character and Values. No communications facilities would be constructed or improved. Maintenance of the existing Sourdough Ridge facility would continue at present levels.

Cumulative Impacts

Past actions that have impacted wilderness character and values in the project area include the development of park infrastructure including roads and trails, small airstrips and helicopter pads, as well as private inholdings, seismic stations, radio repeaters, and remote automated weather stations. Cumulative impacts related to these actions include the effects from construction, maintenance, and operational activities, and the associated erosion of wilderness values. With no direct or indirect impacts to wilderness character and values due to implementation of Alternative 1, there would be no contribution to cumulative impacts.

Conclusion

The implementation of Alternative 1 would result in no new impacts on wilderness character and values, experience therefore there would be no impairment to the purpose of the park or to the integrity of the significant natural resources for which the park was established.

Alternative 2 – McCarthy Communications Sites (Proposed Action)

Direct and Indirect Impacts

The Proposed Action Alternative would result in minor adverse effects to the following highly localized wilderness character and values, defined in Section 3.2.7.

Untrammeled Quality

The two communication facilities proposed for construction on lands adjacent to eligible wilderness would not affect the untrammeled quality of WRST wilderness character. Although the area around the two sites would be cleared of vegetation, the effects are highly localized, would not have a widespread impact on the “community of life”, nor result in large scale manipulation of the biophysical environment.

Natural Quality

The proposed CVW communication facilities would leave wilderness ecological systems substantially free from the effects of modern civilization. While plant and animal resources, biophysical and physical processes would be minimally impacted, the effect of the two sites on the adjacent natural quality of WRST wilderness character would be mostly local.

Undeveloped Quality

The construction, operation and maintenance of the proposed CVW communication facilities at the two sites would negatively affect the undeveloped quality of eligible lands immediately adjacent to both sites. The development of a new helicopter pad, towers, antennas and attendant equipment would affect the area’s primeval character. Increased mechanization from construction would be temporary, but continuous operation and maintenance site visits would increase mechanization at the site and throughout the area.

A total of about .56 acre (24,000 sq ft) of vegetation would be cleared and removed from the sites, detracting from the naturalness of the area. CVW proposes to clear and level up to .28 acre (12,000 sq ft) of land at the Gilahina site and up to .28 acre (12,000 sq ft) at the Lakina Terrace site. At the Lakina Terrace site a new helicopter landing pad would be necessary. Both sites would require 30’ towers and poured concrete pads. As many as 36 trees may be removed from the line of site path of the towers. Gasoline powered generators and tracked vehicles would be used during the construction phase of this project.

The CVW communications site on Gilahina Butte would be visible from a short section of the McCarthy Road, from eligible wilderness immediately adjacent to the sites, and both facilities would be visible from the air, thus posing unnatural intrusions into the view shed. Such intrusions would include actual visibility of the facilities as well as glare reflected by their solar panels. Other visual intrusions would include the presence of the helicopters required to construct and maintain the sites. The Lakina Terrace site might be visible from short stretches of the lower Lakina River but would not be visible from the Chitina River.

Solitude and Primitive Recreation Quality

Although the sites themselves would not be situated within eligible wilderness, the construction, operation and maintenance of the proposed CVW communication facilities would increase noise intrusions due to the presence of field crews and the helicopter necessary to access the sites. These noise intrusions would detract from the wilderness solitude of the immediate surrounding area.

The effect of helicopter operations on soundscapes in support of the CVW communication facilities would be both temporary and long term. Sound intrusions will be experienced by the visiting public during times of construction and maintenance.

Encountering a communication facility outside but surrounded by eligible wilderness would have a detrimental effect on visitor experiences. Copper Valley Wireless estimates that there would be up to 10 helicopter landings per year per site for the upkeep of these facilities for a cumulative effect of 30 helicopter landings per year.

Cumulative Impacts

Past actions that have impacted wilderness character and values in the project area include the development of park infrastructure including roads and trails, small airstrips and helicopter pads, as well as private inholdings, seismic stations, radio repeaters, and remote automated weather stations. Cumulative impacts related to these actions include the effects from construction, maintenance, and operational activities, may be described as moderate, localized, and long-term. The proposed action alternative would result in additional moderate, localized, and long-term impacts to eligible and designated wilderness lands surrounding and immediately adjacent to the two sites.

Conclusion

The Wilderness Eligibility Revision proposed in Appendix C would remove the Gilahina Butte from eligible wilderness, and maintain the ineligible status of the Lakina Terrace. Therefore, the action alternative would result in additional low, long-term, but highly localized impacts to the wilderness character and values of eligible and designated lands surrounding and adjacent to the two sites by adversely affecting its untrammeled, natural, and undeveloped qualities as well as its potential to provide solitude and primitive recreation. However, it would not result in impairment of park resources that fulfill specific purposes identified in enabling legislation of the park or that are key to the natural and cultural integrity of the park and preserve.

4.2.8 Economic Resources

Alternative 1 – No Action Alternative

Direct and Indirect Impacts

There would be no change to the economy under the No Action Alternative because there would be no new construction and no new cellular service or broadband expansion. There would be no change to the tourism industry, federal employment in the Copper Valley region, or indirect multiplying effect to the local private sector by the change in communications technology.

Cumulative Impacts

The economy of the McCarthy area has grown as a result of past and present actions taken within the park. NPS continues to be a major employer for the area in order to achieve the park mission. McCarthy Road construction and maintenance as well as construction on private properties along the road corridor also contribute to local and regional economic opportunities. Stabilization and restoration activities at the Kennecott Mines NHL has increased employment opportunities. The on-going maintenance of STEEP, RAWs and other remote equipment utilizes private aviation services and specialized engineers. Most tourism-related outfitters that bring visitors to WRST are based outside of the project area, but they have a beneficial impact to the local economy. With no direct or indirect impacts to economic resources due to implementation of Alternative 1, there would be no contribution to cumulative impacts.

Conclusion

Implementation of Alternative 1 would have no direct or indirect impact on economic resources. There would be no impairment to the purpose of the park or to the integrity of the resources for which the park was established.

Alternative 2 – Construct and Operate McCarthy Communications Sites (Proposed Action)

Direct and Indirect Impacts

The Proposed Action would have direct impacts on economic resources. Construction of the new communications sites would result in a few temporary jobs and require the supplies and services of Alaskan companies. CVW would utilize existing staff and contractors to design and install the communications sites. An Alaskan helicopter company would be chartered to transfer materials and staff to the sites over the lifetime of the communication sites.

Implementation of Alternative 2 would have an indirect impact on economic resources due to the expansion of internet broadband and cellular service to McCarthy businesses. These services would improve visitor success booking their travel accommodations (phone and internet connections would not be unreliable and slow) and customer service while they are in McCarthy (visitors could maintain communications outside the park). Reliable broadband connections are known enhance many non-traditional employment opportunities including telecommuting arrangements and online businesses (Mishmash, 2010). The USDA finds that broadband technology encourages growth. Its benefits include efficiencies in electronic ordering, servicing and accounting, as well as attracting and retaining residents and businesses (USDA 2007; CVTC 2010).

The indirect effect could be an increase in visitors to WRST and more repeat or referral customers to the private businesses in McCarthy. As communication services expand, the range of visitors that may be attracted to the area could increase.

Localized impacts to economic resources would be of medium intensity because the economic impact (generally considered beneficial) would be measurable and long-term mainly associated with the ongoing use of chartered helicopters for routine maintenance. The indirect impact of Alternative 2 would be low in intensity because the addition of wireless service availability could indirectly influence an increase in visitors to WRST and expand non-traditional employment opportunities. However, the proposed action would have no effect on the efficiency of CUAs with offices outside of McCarthy.

Cumulative Impacts

Past and present actions in WRST that have impacted local economic resources are described under Alternative 1. The implementation of Alternative 2 would contribute a relatively small increase in the total economic activity to the region in the long-term because the communication facilities are small in size and require the services of one helicopter, approximately six times a year to service. The direct result of the new communications sites would be an increase to broadband services and expand the range of cellular phone service. Although no economic figure is projected, the USDA supports the expansion of broadband into rural areas because of its indirect impact to economic growth. WRST may experience increased visitors because of the improved wireless services for McCarthy businesses and changed perception of park safety and accessibility.

Conclusion

Implementation of Alternative 2 would have a medium intensity impact to McCarthy's economy and low intensity impact to the Copper River region economy for a long-term duration. Economic resources are not identified as a resource in enabling legislation so it would be considered common in context. The expansion of cellular service and internet broadband would have a long-term, direct benefit to businesses based in McCarthy and indirect benefit to businesses associated with tourism in WRST for an overall moderate impact to the economy. There would no impairment to the purpose of the park or to the integrity of the significant resources for which the park was established.

4.2.9 Safety

Alternative 1 – No Action Alternative

Direct and Indirect Impacts

Under implementation of Alternative 1, there would be no direct impacts to local safety procedures and activities since no new site alterations or services would be proposed. Existing impacts to safety from past activities would continue, including maintenance of current emergency medical response systems.

Cumulative Impacts

Past actions that have impacted safety include the seasonal maintenance of the McCarthy Road, as well as public use facilities and other improvements in the McCarthy Road Corridor. RFFAs that could occur within the project area are described in Section 4.1, but none relate to local safety.

Alternative 1 would have no direct or indirect impacts to safety, and there would be no contribution to cumulative impacts for safety.

Conclusion

There would be no direct or indirect impacts to safety from implementation of Alternative 1. There would be no impairment of park resources that fulfill specific purposes identified in enabling legislation of the park or that are key to the natural and cultural integrity of the park and preserve.

Alternative 2 – McCarthy Communications Sites (Proposed Action)

Direct and Indirect Impacts

Implementation of Alternative 2 would include the construction and maintenance of new communication equipment between Chitina and McCarthy. Direct impacts on safety would include improved communication between communities and with nearby emergency medical services, and a potential reduction in response times during emergency situations. During the sites' construction, there would be an expected increase in potential safety issues, due to working remotely, working near helicopters, and building large structures. Indirect impacts on local safety could also occur, including a possible increase in visitor traffic due to the increased sense of comfort provided by the improved communications. Travelers may be more willing to travel to these areas and use existing public facilities and trail systems with the knowledge of the increased capacity to obtain assistance in the event of an emergency.

Direct impacts from the initial project activities would begin immediately following the installation of the proposed improvements. Direct and indirect impacts to safety would be low in intensity, of long-term duration, common in context, and minor overall. The impacts would generally be considered beneficial to the safety of local residents and park visitors.

Cumulative Impacts

Past, ongoing, and future actions that have had and would continue to have minor overall impacts to safety in the area are described above under Alternative 1. Implementation of Alternative 2 would contribute a relatively large expansion in communication capacity within the McCarthy Road Corridor, and would potentially increase the use of existing local public facilities and trail systems. The cumulative impacts attributable to implementation of this alternative would be minor and long-term, and would generally be considered beneficial to the safety of local residents and park visitors.

Conclusion

Implementation of Alternative 2 would result in a similar level of direct and indirect impacts to safety, that are minor overall. However, Alternative 2 would offer both direct and indirect beneficial impacts, as communication systems would be expanded, allowing local community members and visitors to maintain better communication between communities and emergency responders. Overall cumulative impacts on safety would be beneficial and minor overall.

There would be no impairment of park resources that fulfill specific purposes identified in enabling legislation of the park or that are key components to the natural and cultural integrity of the park and preserve.

4.2.10 Park Operations and Communications

Alternative 1 – No Action Alternative

Direct and Indirect Impacts

Park operations and communications for NPS staff would not change under the No Action Alternative. There would be no change to cellular phone reception, range, or broadband internet speed. The use of satellite phones, FM transmitters, and cellular phones in range of cellular towers would continue. The level of digital transfer is expected to increase as overall visitor numbers grow because of the NPS role in interpretation, search and rescue, and law enforcement. However, these duties would continue as currently described in Section 4.2.9.

Cumulative Impacts

Park operations and communications have increased as a result of past and present actions taken within the park. Past actions have included development of telephone lines, cellular towers, FM transmitters, and buried cables by NPS and private companies. NPS coordinates between headquarters and ranger stations built within the park in order to fulfill its mission. With no direct or indirect impacts to park operations and communications from the implementation of Alternative 1, there would be no contribution to the cumulative impacts on this resource.

Conclusion

Implementation of Alternative 1 would have no impact on park operations and communications. There would be no impairment to the purpose of the park or to the integrity of the significant resources for which the park was established.

Alternative 2 – Construct and Operate McCarthy Communications Sites (Proposed Action)

Direct and Indirect Impacts

The installation of the cellular antennas would improve cell phone service along the McCarthy Road corridor and within McCarthy and Kennecott by increasing service speed, reducing static, and extending coverage. The expanded cellular service would facilitate communication among WRST employees, thereby improving internal communications and benefiting park operations, including interpretation, ranger patrols, search and rescue missions, law enforcement, and cooperative resource management.

Several indirect benefits are also possible: The expanded cellular service may facilitate park services by encouraging visitor questions and improving response times. The cost and use of satellite phones and FM radios may also be reduced by the greater reliance on cellular phones.

Cumulative Impacts

Park operations and communications that have increased as a result of past and present actions taken within the park are described above under Alternative 1. The implementation of Alternative 2 would have a moderate contribution to cumulative impacts on park operations, which would generally be considered beneficial.

Conclusion

Impacts on park operations and communications under this alternative would be medium in intensity because the addition of wireless availability and expanded broadband internet service would be

observable and detectable. The new services would be long-term in duration because of the durability of the antennas and microwave dishes. CVW services would affect park operations in the long term. Park operations and communications are a service, rather than a natural resource and are considered common in context. The Proposed Action would have an overall moderate impact on park operations. There would be no impairment of park resources that fulfill specific purposes identified in enabling legislation of the park or that are key components to the natural and cultural integrity of the park and preserve.

5.0 CONSULTATION AND COORDINATION

5.1 Agency Consultation and Coordination

The NPS is the lead agency in the development of this EA. There was no public scoping in the development of this document. NPS policies do not require public scoping during draft document preparation of an EA. This EA will be available for public review and comment for a minimum of 30 days. Following the public review period, all the public comments will be considered.

A final decision by the NPS Alaska Regional Director may come in the form of a Finding of No Significant Impact (FONSI), which would take into account any new information and public comment, and select an alternative to implement. If a FONSI is approved, it would be sent to those individuals and organizations that commented during the public review period, and it would be available on the park's web site (<http://www.nps.gov/wrst/> and <http://www.nps.gov/wrst/parkmgmt/planning.htm>) and the NPS Planning, Environment, and Public Comment web site (<http://parkplanning.nps.gov/>).

The NPS has determined that there are no T&E Species expected in the immediate project area; therefore Section 7 consultation with the USFWS is not required.

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