



Paradise Cellular Installation Environmental Assessment Mount Rainier National Park

May 2017



Mount Rainier National Park
55210 238th Avenue East
Ashford, Washington 98304

[This Page Left Intentionally Blank]

Paradise Cellular Installation Environmental Assessment Mount Rainier National Park

Executive Summary

The National Park Service is considering issuing right-of-way permits to Verizon Wireless, T-Mobile and AT&T that would allow co-location of a limited range wireless communications facility (WCF) in the Paradise area, Mount Rainier National Park, Pierce County, Washington. The NPS is required by the Telecommunications Act of 1996 to consider all applications for the installation of wireless communication facilities on NPS lands.

This Environmental Assessment (EA) evaluates two alternatives: a no action alternative and an action alternative. Under the no action alternative, cellular service would not be provided at Paradise. The proposed action alternative would include installation of supporting equipment in the east and west attics of the Paradise Visitor Center with antennas mounted on each gable end. Fiberglass panels on the exterior would mask the antennas. The purpose of the facility would be to provide year-round service to the Paradise developed area.

This EA has been prepared the consistent with NPS Director's Order 12 guidance for implementation of the National Environmental Policy Act, and provides the decision-making framework that 1) analyzes a reasonable range of alternatives to meet objectives of the proposal, 2) evaluates potential issues and impacts to the park's resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts.

If you wish to comment on this EA, you may post comments online using the National Park Service Planning, Environment and Public Comment (PEPC) website at: <http://parkplanning.nps.gov/mora> or mail comments to: Superintendent, Mount Rainier National Park, 55210 238th Ave. E., Ashford, Washington, 98304. This EA will be available for public review and comment for 30 days.

Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. Although you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. Bulk comments in any format (hard copy or electronic) submitted on behalf of others will not be accepted.

CHAPTER I. Purpose and Need

Introduction

The National Park Service (NPS) is considering the issuance of separate right-of-way permits to three wireless carriers (Verizon Wireless, T-Mobile and AT&T) for the installation of wireless telecommunications facilities at Paradise within Mount Rainier National Park. The NPS is required by the Telecommunications Act of 1996 to consider all applications for the installation of wireless communication facilities on NPS lands.

The facilities would provide year-round wireless telecommunications service to the Paradise developed area, 24 hours per day, as long as power is available to the park and connection to the Centurylink fiberoptic network connection (backhaul) is available. The proposed action includes installation of supporting equipment in the east and west attics of the Jackson Visitor Center (JVC) with antennas mounted on the inside of the building at each gable end. Fiberglass reinforced plastic (FRP) panels on the exterior would replace and match the color of the existing wood siding. The cellular antennas would not be visible from the outside of the building. The panel antennas located in the east attic would be connected to the west attic via a conduit mounted in the building peak on the inside of the JVC, in the vaulted ceiling. The conduit would match the existing ceiling color. The facility would connect to a CenturyLink (local telephone company) fiber optic line via an existing vault located in the basement of the Visitor Center.

The Paradise area is located on the south slope of Mount Rainier (Figure 1), and is the most popular and heavily used area of the park. Paradise and Longmire are the only visitor use areas that are accessible to cars year-round. The Jackson Visitor Center (JVC) is located in the upper parking lot in Paradise (Figure 2). It was constructed 2006-2008 to replace the original Henry M. Jackson Visitor Center (NPS 2005). In 2016, it is estimated that 950,000 people visited Paradise.

This EA will examine the environmental impacts associated with the proposal to install cellular service at Paradise. To provide a baseline for evaluating the impact of alternative actions, a no action alternative that would not permit installation of cellular facilities within the JVC is included. This EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, regulations of the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations (CFR) §1508.9), and National Park Service (NPS) Director's Order (DO)-12: Conservation Planning, Environmental Impact Analysis, and Decision-Making, and Director's Order 53 and Reference Manual 53 (RM-53, NPS 2009): Special Park Uses (NPS 2009).

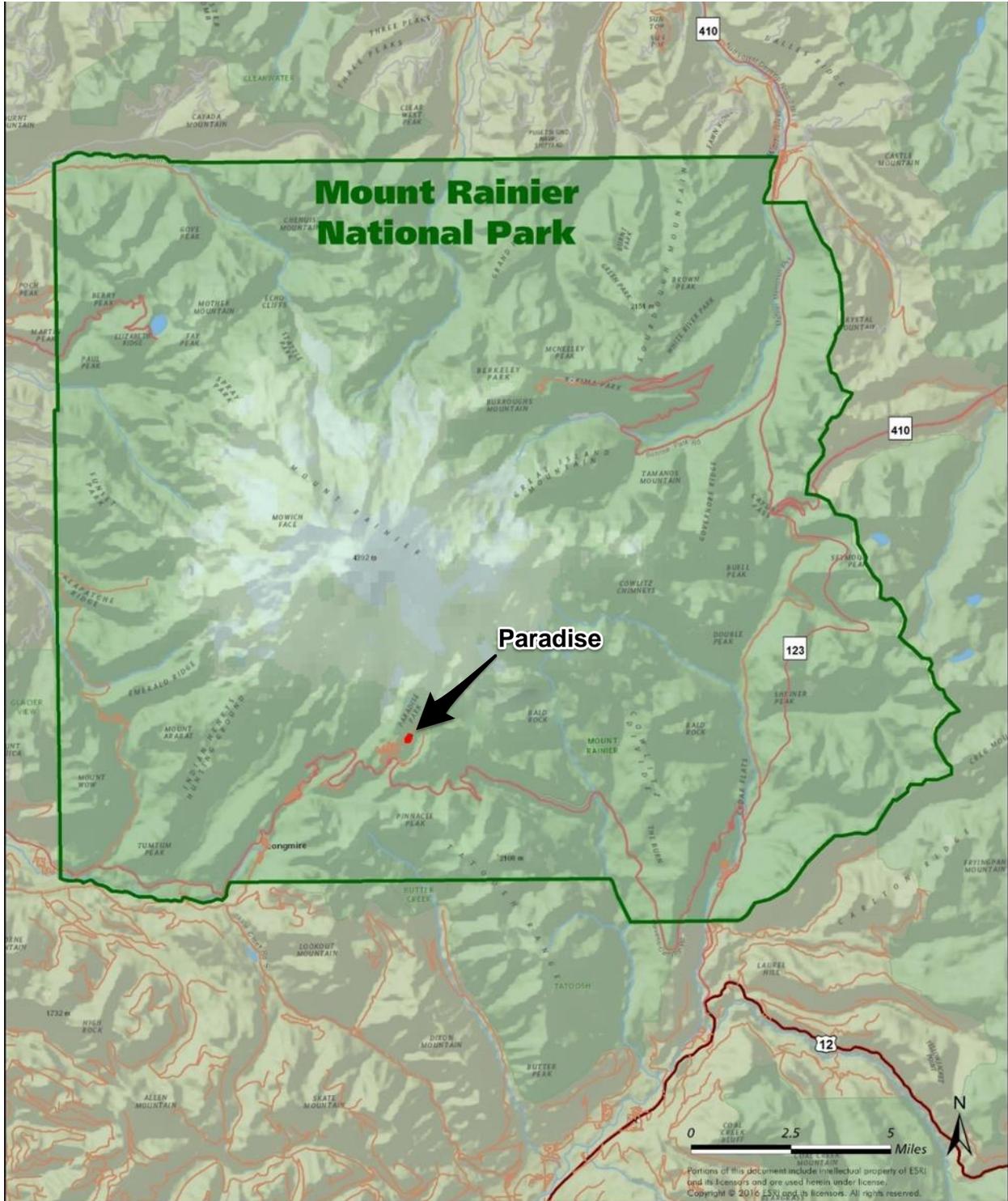


Figure 1. Mount Rainier National Park and Paradise area vicinity map.

Purpose and Need for Action

The purpose and need for this environmental analysis and consideration of the proposal is to:

- Consider wireless telecommunication applications in accordance with the Telecommunications Act of 1996 (47 USC 332 note), which authorizes, but does not mandate, a presumption that such requests be granted;
- Understand, characterize, and analyze the environmental impacts of the proposed action to fully inform a decision as to whether to grant right-of-way permits;
- To give consideration consistent with NPS Management Policies as to whether or not the proposal would cause unavoidable conflict with the park's mission, in which case the permit would be denied;
- To give consideration consistent with NPS Management Policies to the potential benefit of having telephone access for emergency law enforcement and public safety service;
- To give consideration to the proposed project's potential impacts to Park resources and values; and
- To give consideration to existing telecommunication facilities, cumulative impacts, the potential for co-location, and future needs and capacity for Mount Rainier National Park.

Background

Wireless Telecommunications Applications. In January 2015 Verizon Wireless submitted an application to install wireless communications within Mount Rainier National Park at two locations: Sunrise and Paradise. The NPS denied the application for permit at Sunrise, citing lack of fiber optic capability, lack of line-of-sight microwave radio link paths and the unlikelihood of such connectivity in the near future, the limited seasonal access to Sunrise, and likelihood that such a proposal would require a tower that would have the potential to dominate the scenic and historic district.

The NPS initial response to the Verizon Wireless proposal to install wireless facilities at Paradise was "maybe", which initiated a review process that is outlined in RM-53, Appendix 5. After meeting with Verizon Wireless representatives, the NPS requested additional information and details, and held several meetings and field trips to identify potential alternatives that would minimize impacts to the park, including impacts to the scenic and historic resources at Paradise. See **Alternatives Considered but Dismissed**.

Consistent with RM-53, the NPS mailed letters to other cellular providers, inviting them to submit applications. T-Mobile responded to the invitation during February 2015 and

worked with Verizon Wireless to examine the potential co-location of cellular services at Paradise to design an alternative that would minimize impacts to the Mount Rainier National Historic Landmark District (NHLD) and the exceptional scenic resources, as viewed from the Paradise area and adjacent wilderness. A third provider, AT&T, applied for a permit in December 2016, and is proposing an installation that would co-locate with the other providers. The NPS is also reviewing this proposal to determine whether the JVC space and utilities are adequate to support another provider.

The nearest Verizon Wireless cell towers or antennas are located near Ashford, Elbe (west) and at the Crystal Mountain Ski Area (northeast). The tower located along SR 706 between Ashford and Mount Rainier National Park during 2016 was energized during March 2017. T-Mobile is also in the process of securing coverage via a separate site in the vicinity of Ashford, and recently installed antennas at Crystal Mountain Ski Area. Three towers located along the SR12 corridor between Packwood and White Pass are operated by US Cellular (southeast). The nearest AT&T towers are located at Crystal Mountain and White Pass.

Site Description

Henry Jackson Visitor Center

The proposed wireless facilities would be located within the Henry Jackson Visitor Center, located in the Paradise developed area (Figure 3). The National Park Service completed construction of the new Jackson Visitor Center (JVC) in 2008. The new visitor center was designed to be architecturally compatible with the historic Paradise developed area, and to fit with the historic Guide House and Paradise Inn. The center has an A-frame style that can withstand the deep snows of the area, and is compliant with the Americans with Disabilities Act, National Fire Protection Association 101 Life Safety Code, the Uniform Building Code, and the Occupational Safety and Health Administration standards. The structure and roof style provides better shedding of snow and reduced energy consumption and maintenance requirements, which also allows the park to close it during time periods when the road is closed to visitors and staff due to weather related conditions or other emergencies.

The interior of the visitor center is designed to accommodate up to 3,000 visitors over the course of a busy summer day. The center provides year-round visitor services including an information desk, a gift shop, food services and staging for visitors who plan to hike, cross-country ski or snowshoe in the area. The visitor center also includes limited office space for the park and concession staff, with workspace, storage and equipment areas. The JVC is open seven days a week beginning Memorial Day through mid-October, then open only on weekdays and holidays from October through Memorial Day weekend.



Figure 3. Jackson Visitor Center and location of proposed antennas on the interior of the east gable end. Antennas would not be visible from the outside.

Current Communication Services

Two-Way Radios: Mount Rainier National Park staff utilizes a two-way narrowband land-mobile radio system to support park operations and to provide for visitor and employee safety. Some NPS vehicles contain a mobile radio, and most park employees use a portable radio while working and traveling in the field. The system includes use of radio repeaters at specific high-elevation locations in and around the park, including fire lookouts. The repeaters are required to extend the relatively short range of field units to communicate over a wider area, and allow for parkwide communications with the park's Dispatch office (located at the Tahoma Woods Headquarters west of Ashford) and various offices at the Park's largest administrative facility in the Longmire District. Desktop radio consoles connected via copper wires or via the park's voice/data

communications network receive the signals. There are also base station radio units installed at other park facilities including Nisqually Entrance, Cougar Rock, Ohanapecosh, White River, Paradise, Sunrise, Carbon River and Enumclaw.

Private Telephone and Internet Access: Employees in NPS housing may either order their own residential internet service through CenturyLink, or use park-provided WiFi hotspots at specific locations within housing common areas. Concessioners also use their own WiFi in specific locations, but only for their own business purposes. CenturyLink is the only company with physical telecommunications infrastructure in the area (not including satellite-based service). Due to capacity and cable facilities limitations, the fastest available DSL speed available in the Ashford area is currently 10 Mbps download with 768 kbps upload. DSL speeds are even slower (1.5 Mbps download, 384 kbps upload) in many remote areas. Visitors generally do not have access to the Internet other than the spotty cellular service that might be available. Landline telephones (CenturyLink-provided pay phones or Park-provided toll-free courtesy/emergency phones) are available to the public at several, but not all, developed locations around the park.

Commercial Data and Telephone Service for Official Use: NPS computers connect to a secure network maintained by the Park (wired and WiFi), which is connected to the Department of the Interior Enterprise Services Network managed by Verizon Business under the General Services Administration (GSA) Network contract. Verizon uses both their own infrastructure and CenturyLink's infrastructure (via wholesale agreement) to be able to connect to the park's network. The park obtains telephone service directly from CenturyLink via T1 trunks for the Park's Cisco VoIP phone system, or POTS (plain old telephone service) lines for legacy data devices such as fax and credit card readers.

Conduit and vaults for new electrical and communication lines were installed within the Nisqually to Paradise road corridor in 2015 as part of the Nisqually to Paradise Road Rehabilitation Project (NPS 2012). CenturyLink installed new fiber optic cable in the new conduit from Nisqually Entrance to Longmire in early 2016 and continued fiber cable installation up to Paradise, including connection to the JVC, during 2017. The new fiber optic cable replaces Centurylink's aging ground-laid copper cabling from the Park Entrance to Paradise. The upgrade to fiber optic cable enables cellular service to be considered at Paradise.

Satellite technology: In addition to the use of satellite for navigation (GPS), satellite wireless technology has become more readily available and affordable in recent years for communications, including the use of personal locator beacons (PLB), satellite phones and satellite messengers. Visitors are increasingly using satellite technology as it becomes more affordable and is readily available through outdoor suppliers. People use PLBs for emergency contact only, satellite phones to talk, and messengers for text

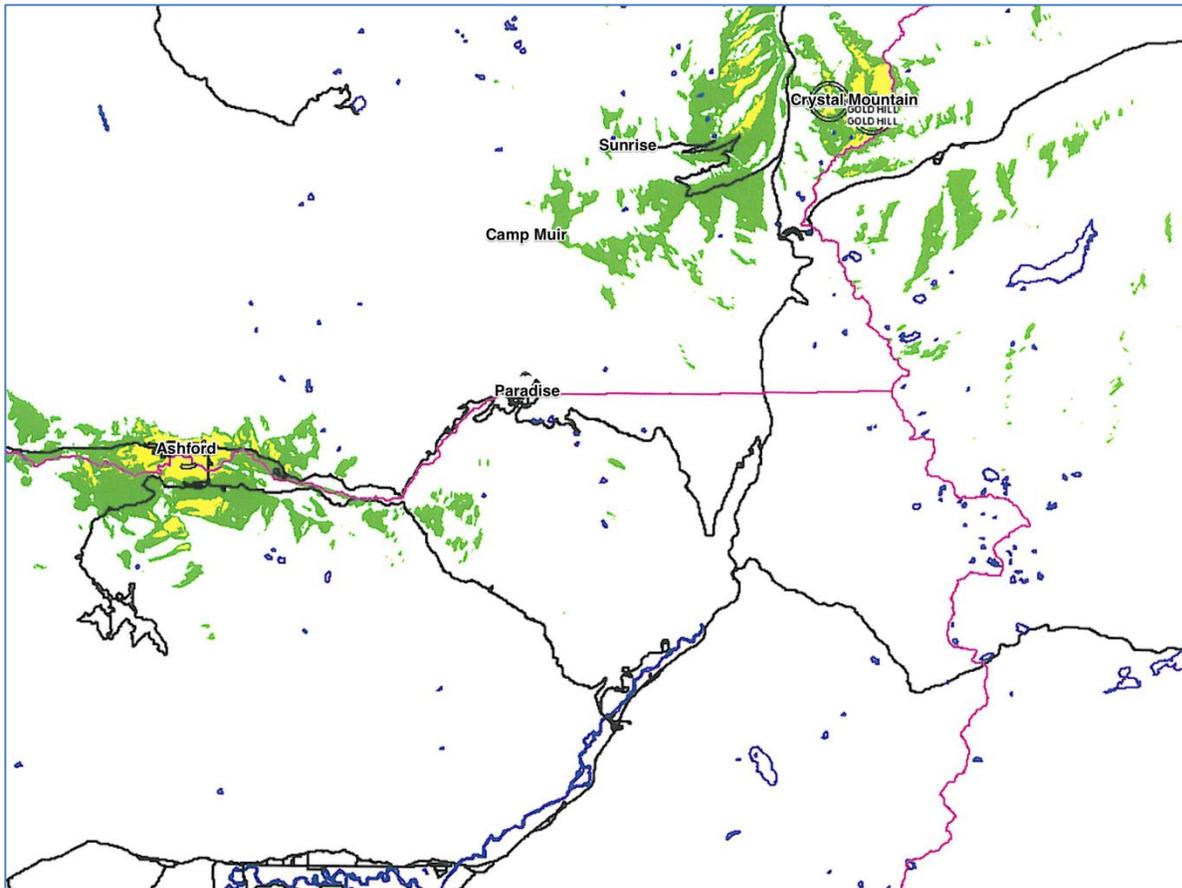


Figure 4. Current coverage in the vicinity of Mount Rainier National Park, provided by Verizon. T-Mobile and AT&T signals overlap Verizon coverage in the northeast corner of the park (Crystal Mountain installations); Verizon coverage in the Ashford area is due to the recent activation of a new tower located between the town of Ashford and the Nisqually Entrance of Mount Rainier National Park.

messaging. The park currently uses a limited number of PLBs in the backcountry, and is now utilizing satellite messengers. Satellite wireless signals are present in most locations; however, signal strength varies depending on location of available satellites, tree cover and number of satellites that personal devices are able to detect.

Cellular Voice/Data: Commercial cell service is currently available at Tahoma Woods Headquarters west of Ashford. Limited and spotty coverage is available throughout the park including Paradise, Camp Muir and Sunrise (Figure 4). Isolated “hot spots” may be found along roads and in the backcountry.

The park utilizes Verizon Wireless “network extender” femtocell devices in Tahoma Woods and Longmire to provide in-building cell service for management purposes only. Cellular service via these femtocells is not intentionally provided to the public, although those who currently have devices on the Verizon Wireless network can receive signals in specific public locations adjacent to work areas. In addition, seismic and GPS monitoring devices that have been installed in the park rely on cellular and/or satellite signals to communicate real-time data to U.S. Geological Survey (USGS) servers.

Issues and Impact Topics

Mount Rainier National Park conducted public scoping November 28-December 12, 2016, and internal scoping with the park interdisciplinary team and managers, regional staff, park concessions, representatives for Verizon Wireless and T-Mobile occurred 2014-2016.

During public scoping 492 comments were received. 249 commenters were supportive of the proposal to install cellular service at Paradise, and 241 commenters were against. Two people were neutral. Those in favor cited safety and accessibility, and ability to coordinate with others. Most who were against personal preference for primitive experiences and the need to retain places where they could be unconnected, and preferred that others remain unconnected. Some were opposed to the presence of cellular signals within National Parks in general, and others identified perceived impacts to wilderness as the primary concern, recommending either that the park limit service to the Paradise developed area or restrict or provide wireless service to only within visitor centers. As a result of internal scoping, the original project proposal was reviewed and modified prior to public scoping to address park issues and reduce impacts to park resources. In this EA, issues were considered, but dismissed, if they were not central to the proposal, or if environmental impacts were reduced or eliminated through project design to the degree that the project no longer had the potential to cause significant impacts. Issues and concerns retained for analysis are categorized into impact topics and described in Chapter 3 of the EA, **Affected Environment and Environmental Consequences**.

Issues and Concerns Retained for Analysis

The following issues/impact topics were retained for further analysis:

The proposed cellular installations have the potential to impact the extraordinary views at Paradise, from areas within and surrounding the Paradise developed area. Mount Rainier is a prominent icon, visible throughout the region, and is a continuing source of inspiration to people, contributing to the human experience in the Pacific Northwest.

This quality contributed to the establishment of Mount Rainier National Park in 1899 (NPS 2002). This issue is addressed under the topic **Cultural Landscapes**.

The presence of modern cellular facilities has the potential to impact the National Historic Landmark District. The NHL is to be protected to the greatest extent possible by ensuring that any new construction within the district or within viewshed proximity would be compatible with the district's historic character and setting and would preserve contributing elements of the cultural environment. This issue will be discussed in more detail under the impact topic **Cultural Landscapes**.

An increase in telecommunication capabilities would potentially affect visitor experience positively or negatively depending on individual preference. Improved cellular signals, and the potential increase in use of mobile devices in the Paradise area, may have positive and negative impacts depending on visitor expectations. Activities related to the construction of the facility may also temporarily inconvenience visitors. This issue is considered under the impact topic **Visitor Experience**.

Cellular signals may negatively impact wilderness character. Ninety-seven percent of Mount Rainier National Park was designated as Wilderness in 1988. While the proposed installation would be constructed in the Paradise developed area and is not intended to target wilderness, improved cellular service would likely extend into adjacent wilderness. Use of personal hand-held electronic devices such as GPS units, personal tracking or locator beacons (some with messaging or texting), avalanche transceivers, portable solar chargers, satellite phones, radios and satellite or cellular phones is acceptable in wilderness and not prohibited by any regulation (NPS RM-41). During the public scoping period some commenters expressed concern that the use of cellular devices for communication and access to networks could result in distracting phone conversations and streaming of media in areas where solitude and natural soundscapes are expected. Opportunities to experience primitive and unconfined recreation may be diminished or enhanced, depending on an individual visitor's point of view regarding the presence of cellular service. This issue is discussed under the impact topic **Wilderness Character**.

Cellular service may improve communications for the public and park operations, potentially improving safety for the public and improving emergency response times. However, improved cellular service along roadways may also increase distraction, and is believed to contribute to accidents, or may increase risk-taking in the adjacent backcountry. Improved access to cellular communications in the adjacent backcountry may contribute to successful search and rescues by reducing search timeframes, but reliance on cellular communications also has the potential to increase confidence and risk taking by backcountry travelers relying on digital communication devices rather than traditional methods. Over-reliance on cellular communications may increase

requests for assistance that are unnecessary, potentially impacting Search and Rescue operations. Potential exposure to radio frequencies is also addressed. These issues are captured under the impact topic ***Safety and Health***.

Issues and Impact Topics Considered but Dismissed

The following issues/impact topics were dismissed from further analysis:

Archaeological Resources. The Paradise area including the Jackson Visitor Center is known to contain archaeological resources. The proposed action was modified so that it eliminated any need to excavate. Archaeological resources would not be impacted by the proposed action.

Park Operations. Impacts to park operations and visitor services are often considered in Environmental Assessments to disclose the degree to which proposed actions would change park management strategies and methods. Park operations would be affected in the near term due to temporary construction impacts, needs for access, and any inspection requirements. In general, these impacts are expected to be minimal and temporary, and would not change park management strategies or methods. Park operations may also be impacted to the degree that communications service would likely improve in the Paradise area, potentially resulting in safety and efficiency benefits of improved cellular service. However, park staff would continue to rely on two-way radio communications, which is not expected to change in the near term. The potential to improve communications related to emergency resources and search and rescue operations is discussed under the impact topic of ***Safety and Health***.

Soundscapes. Cellular equipment in the JVC attic may cause noise above existing ambient noise. This is of particular concern during the evening. The applicant provided an analysis to determine existing ambient and noise predicted to be generated by cellular facilities (in project file). In summary, most of the equipment to be installed would not produce noise, but equipment racks that would be located in the west attic have fans that may produce noise. Due to the existing concrete floor and noise from existing fans in the JVC attic, equipment noise would not be discernable (Thomas 2016). Public comments identified concerns related to the sounds of cell phone use, including phones ringing, people talking and people playing loud music. This issue is considered most appropriately addressed under the impact topic ***Visitor Experience***. For these reasons, the impact topic "soundscapes" was dismissed from further analysis in this EA.

Wildlife. Two public comments identified concerns that cellular radiation would have an adverse impact on wildlife and migratory birds, citing a USDI, Fish and Wildlife (USFWS) letter to the National Telecommunications and Information Administration (USDI 2014). Because the antennas would be concealed within a building and within the developed

footprint of the Paradise parking lot, the project is fully in compliance with USFWS recommended guidelines (USFWS 2016) for the design and placement of communications facilities (USFWS 2017). Because of this, the impact topic “wildlife” was dismissed from further analysis in this EA.

Indian Trust Resources. Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents (USDI 1997). The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. There are no Indian trust resources at Mount Rainier National Park; therefore, the topic “Indian trust resources” was dismissed from further analysis in this EA.

Environmental Justice. USDI policy requires consideration of environmental justice as a potential impact topic (USDI 1995), and Executive Order 12898 requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. Ashford and other communities surrounding the park contain both minority and low-income populations; however, there are no minority or low-income populations that would be disproportionately affected by the proposed action. In addition, the implementation of the proposed alternative would not result in any identifiable adverse human health effects (see Health and Safety impact topic); therefore, there would be no direct or indirect adverse effects on any minority or low-income population, nor would there be any identified effects that would be specific to any minority or low-income communities. For these reasons, the topic “environmental justice” was dismissed as an impact topic from detailed analysis.

CHAPTER II. Alternatives

Introduction

This Environmental Assessment (EA) evaluates two Alternatives for the proposed Paradise Cellular installation in Mount Rainier National Park. The proposed action was designed to avoid impacts to historic buildings and the National Historic Landmark District, and to preserve scenic resources and vistas. The No Action alternative provides a basis for comparing the existing communication system with the proposed action, which is to issue separate right-of-way permits to Verizon Wireless, T-Mobile and AT&T, and allow construction of a wireless telecommunication facility at Paradise, Mount Rainier National Park. Each alternative is described in detail in this chapter; impacts associated with the proposed action are described in Chapter 3, the **Affected Environment and Environmental Consequences**.

Alternative A – No Action (Deny Right of Way permit application)

Under the No Action alternative, ROW permits would not be issued, and a wireless communication facility providing cellular service would not be added to the Paradise Area. Existing limited “residual” coverage would likely remain the same, as opportunities for coverage extending to the Paradise area from outside the park are limited due to topography. Figure 4 displays current coverage in the Paradise area and areas west of the park. The visitor center would not be modified to include service, and the estimated four to six-week disruption to the facility during project construction and in the immediate vicinity of the visitor center would not occur.

Cellular coverage would not increase for Park visitors or employees, and potential impacts to visitor experience, whether positive or negative that improved communications via cellular signals might cause would not occur. Service would not be improved in the Paradise area. Two-way radios and satellite coverage would continue to be available to those with appropriate devices, and emergency response times would not be expected to change.

Should the No-Action Alternative be selected, the National Park Service may still receive and must respond to future applications to install wireless telecommunications facilities within the park.

Alternative B – Issue ROW Permits

Under Alternative B, the NPS would issue separate right-of-way permits to each carrier to co-locate and provide cellular service to Mount Rainier National Park in the Paradise

developed area. The action alternative would include the installation of supporting equipment in the east and west attics of the Jackson Visitor Center with antennas mounted on each gable end. The facility would connect to existing power and fiber optic connections in the basement of the Visitor Center.

The proposed cellular service at Paradise would consist of LTE transmitted over the 700 MHz, 850 MHz, 1900 MHz, and 2100 MHz bands. Voice and data capabilities using LTE would be available at this site. The National Park Service may still receive and must respond to future applications to install wireless telecommunications facilities within the park; however, future applicants would be considered at Paradise, provided JVC attic space and associated utilities are available. All future proposals would be reviewed for compliance with NPS Policy and law, and consistency with the purposes for which Mount Rainier National Park was established. The National Historic Landmark District and scenic views in developed areas would be protected, as they are with the proposal described in this EA.

The proposed wireless communication facilities would broadcast wireless signals to the Paradise developed area (Figure 5). The signal would be strongest in the upper parking lot of Paradise, radiating northeast and southwest of the Jackson Visitor Center. Moderate wireless signals may extend to ridges within line-of-sight of the antennas mounted on the gable ends, including Mazama Ridge to the east, and Wahpenayo Peak and Eagle Peak to the southeast. Weaker signals would potentially reach additional areas within the southwest corner of the park. The signal reach of an installation within the JVC building gable ends is less than the originally proposed cupola and tower configurations.

Project Description

Verizon Wireless, T-Mobile and AT&T antenna arrays are proposed to be mounted on a metal frame on the interior of the building on the east and west gable ends of the Jackson Visitor Center (Figure 6). The antennas would be mounted as close to the exterior wall of the two gable ends as is possible, and would be invisible from the exterior. The existing rough sawn board and batten exterior treatment on each gable end is proposed to be removed and replaced with a fiberglass panel that would be fabricated to match the existing appearance of the two gable ends.

Fabricated fiberglass panels would be designed to match the existing color and texture of the current board and batten exterior treatment. Given that the two gable ends receive different exposure to the elements and currently do not have a uniform appearance, the new panels would likely need to be hand painted during installation and periodically over time as the rest of the gable exterior walls age and weather and

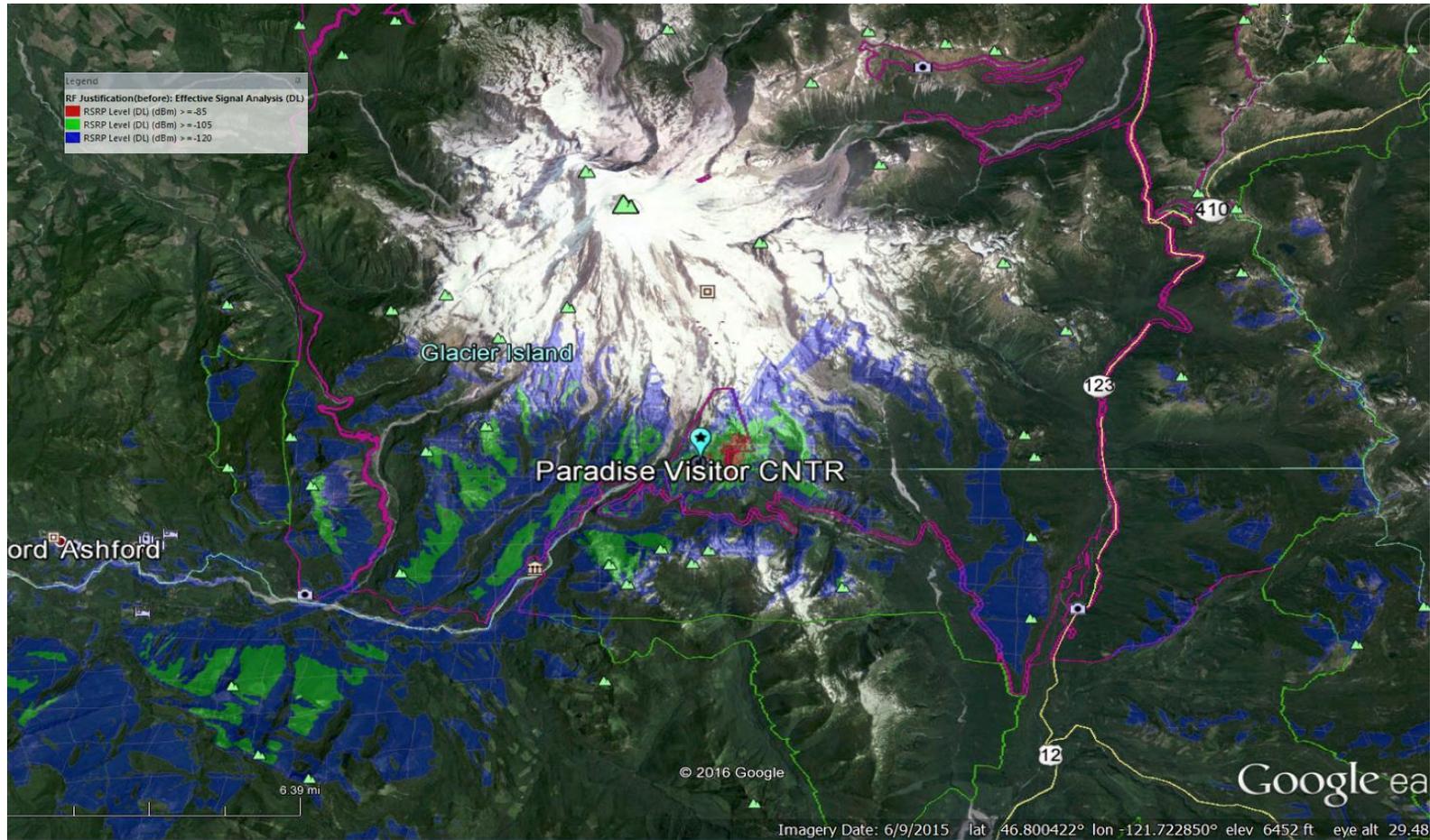


Figure 5. Predicted Verizon coverage if Alternative B is implemented, including the Mount Rainier Wilderness boundary (magenta). RSRP (Reference Signal Received Power, or “signal strength”) levels and coverage greater than -85 dBm = good indoor and outdoor coverage, good data speeds on apps, and reliable VoLTE (voice over LTE) calls; -85 to -105 dBm = poor indoor coverage and average outdoor coverage, poor to average speeds on data apps and reliable VoLTE calls; -105 to -120 dBm: poor indoor and outdoor coverage, poor speeds and unreliable coverage for making VoLTE calls, less than -120 dBm edge of cell coverage. T-Mobile and AT&T coverage would be similar (Appendices).

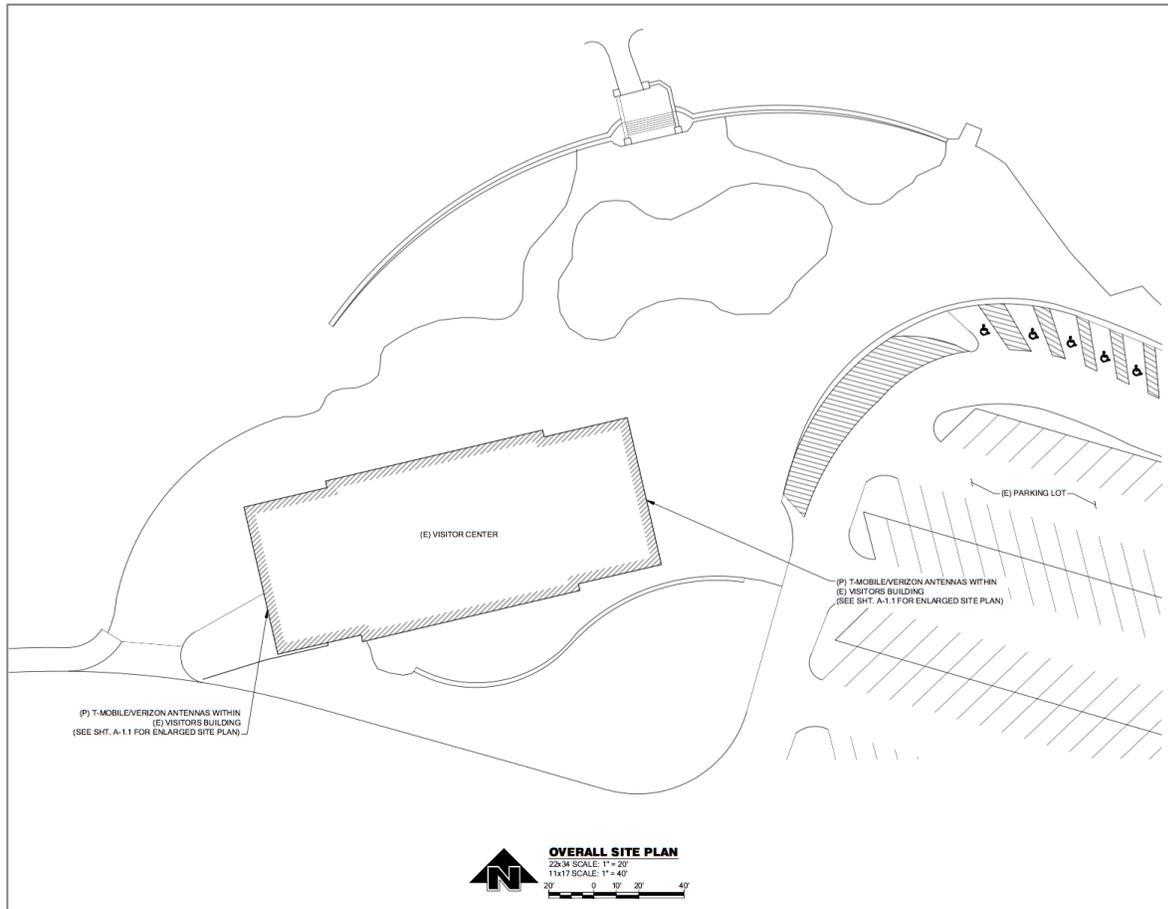


Figure 6. Site plan showing the potential location of antennas within the JVC Attic on West and East gable ends. (from sheet A-1, Verizon and T-Mobile draft plans, May 12, 2016).

change appearance. The final exterior construction would be weatherproof and able to withstand the harsh environmental conditions at Paradise.

The proposed fiberglass reinforced plastic (FRP) panels would provide for a Radio-Frequency friendly medium that allow the RF signal to be transmitted through the panel from the antenna while presenting a uniform and seamless visual appearance as viewed from the ground and from the Paradise parking lot.

Verizon Wireless is proposing a total of 4 panel antennas, and T-Mobile is proposing a total of 2 panel antennas. Two panel antennas, each 46.8" L x 15.6" W x 7.4" D would be installed for Verizon Wireless at each gable end of the building and positioned in the center of the upper gable ends. T-Mobile is proposing one panel antenna for each gable end of the building. The dimensions of the proposed T-Mobile antenna would be 55.6" L x 11.9" W x 7.1" D. The Verizon and T-Mobile antennas would be mounted on the center square panels of each gable end (11' x 11'). Two AT&T antennas similar in size to the Verizon antennas would be installed on each gable end, but attached to the 11' x

11' triangular panels on either side of the square panel (Figures 7 and 8). The AT&T configuration is being reviewed to determine whether space is available.

Interior space requirements for each carrier would require ancillary equipment cabinets and racks located in the west attic: Verizon Wireless would require two radio equipment racks and one battery cabinet, T-Mobile is would require one equipment rack and one radio rack, and AT&T would require one equipment rack and one radio rack (Figure 9).

Climate control: Each carriers' equipment racks and batteries would produce heat that would be cooled via fans contained within the cabinets.

Electrical requirements: Each carrier would require a dedicated 100-amp service (120/240 volts/single phase). Each carrier proposes to have generator backup via the National Park Service's existing generator located in the basement of the Paradise VC. A load study was conducted to document the current draw on the JVC service, which determined that there would be adequate capacity in the existing building service to meet Verizon and T-Mobile's needs in the event of a commercial power outage. A load study is currently being prepared to determine if there is enough capacity to support AT&T's equipment. Electrical service would be extended from the existing power source located in the building basement to the west gable attic area. Conduit would be routed similar to the existing electrical service, and would extend from the basement through the 1st floor cafeteria, through the 2nd floor office space and then into the attic space to connect to the proposed equipment racks.

Connections to power and fiber: Each carrier would install a tenant check meter in the building basement where the current electrical service to the JVC terminates. The power service for each carrier would then be extended to the west end attic gable from the building basement, up into the cafeteria on the 1st floor of the building. The cable would continue into the office/storage area on the 2nd floor, and finally extend into the attic area. The alignment for the fiber would be similar to the electrical service and would be located primarily on the south side of the JVC interior building space in the caged area where CenturyLink's equipment is located. In the event of an outage, the carriers would tie into the park's generator located in the building basement. Figure 9 shows the proposed alignment for power and fiber and coaxial cables extending from the west attic gable to the east attic gable.

Access: Replacement of the exterior siding of the building with a FRP panel would allow for an opportunity to lift special equipment and/or materials into either end of the attics. Because of this, the existing access to each attic should be adequate and new access points or enlargement of the existing openings would not be needed.

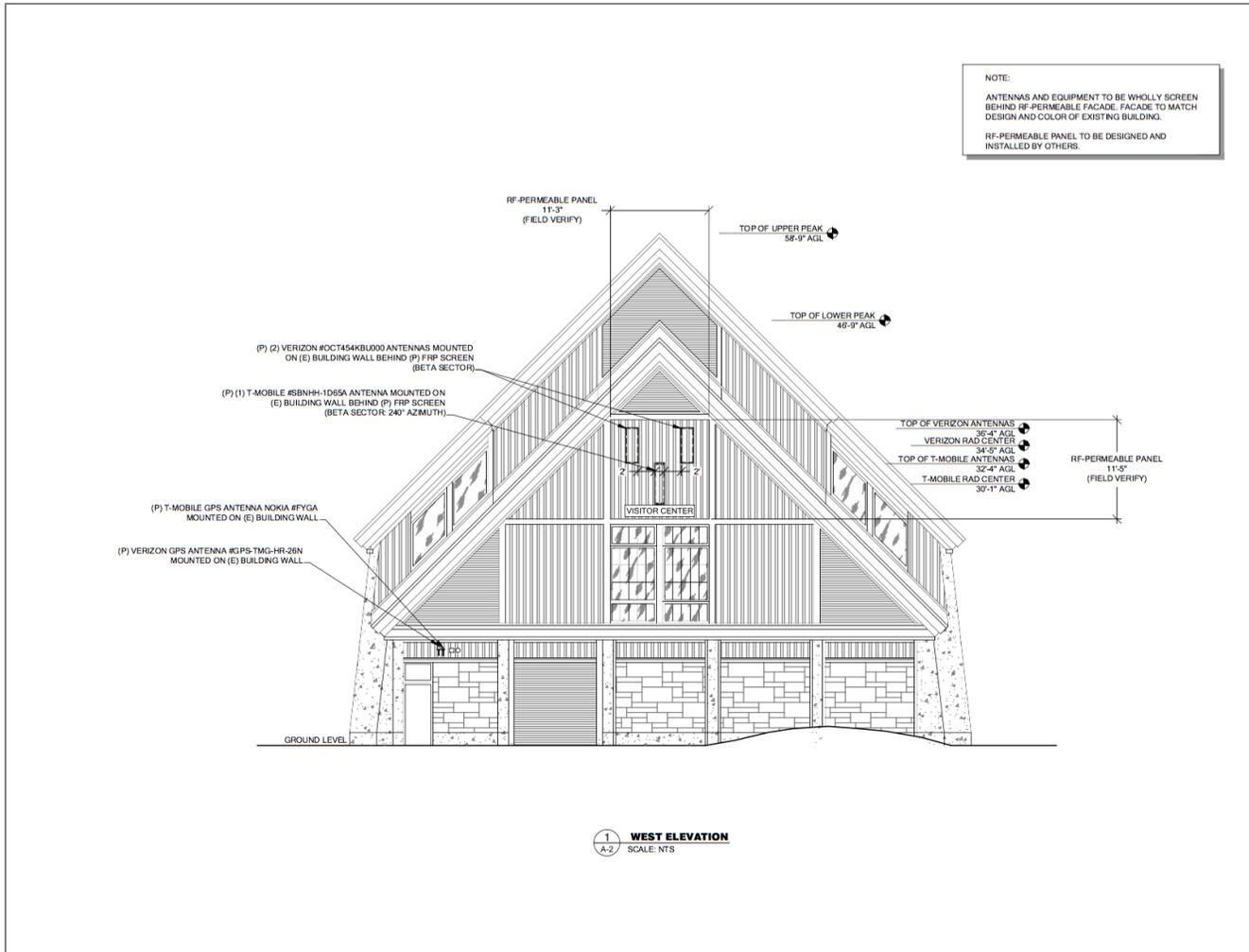


Figure 7. Jackson Visitor Center west elevation (looking east) showing RF Panel and antenna mounting locations. Antennas would be mounted in the building, and to the back of the panels, which are designed to be permeable. Antennas would be shielded from view. Proposed location of GPS antenna(s) is also shown (lower left).

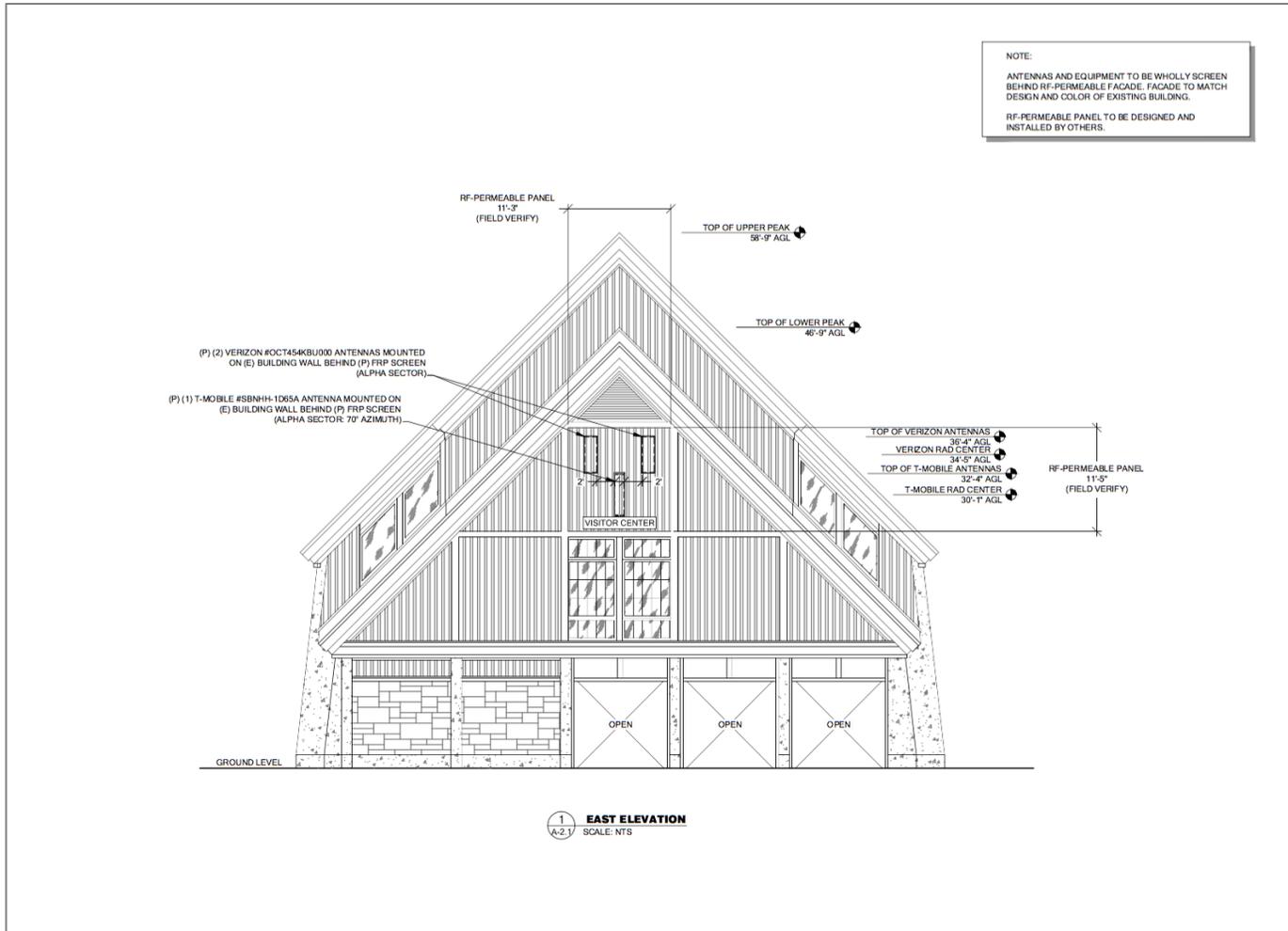


Figure 8. Jackson Visitor Center east elevation (looking west) showing RF Panel and antenna mounting locations. Antennas would be mounted in the building, and to the back of the panels, which are designed to be permeable. Antennas would be shielded from view.

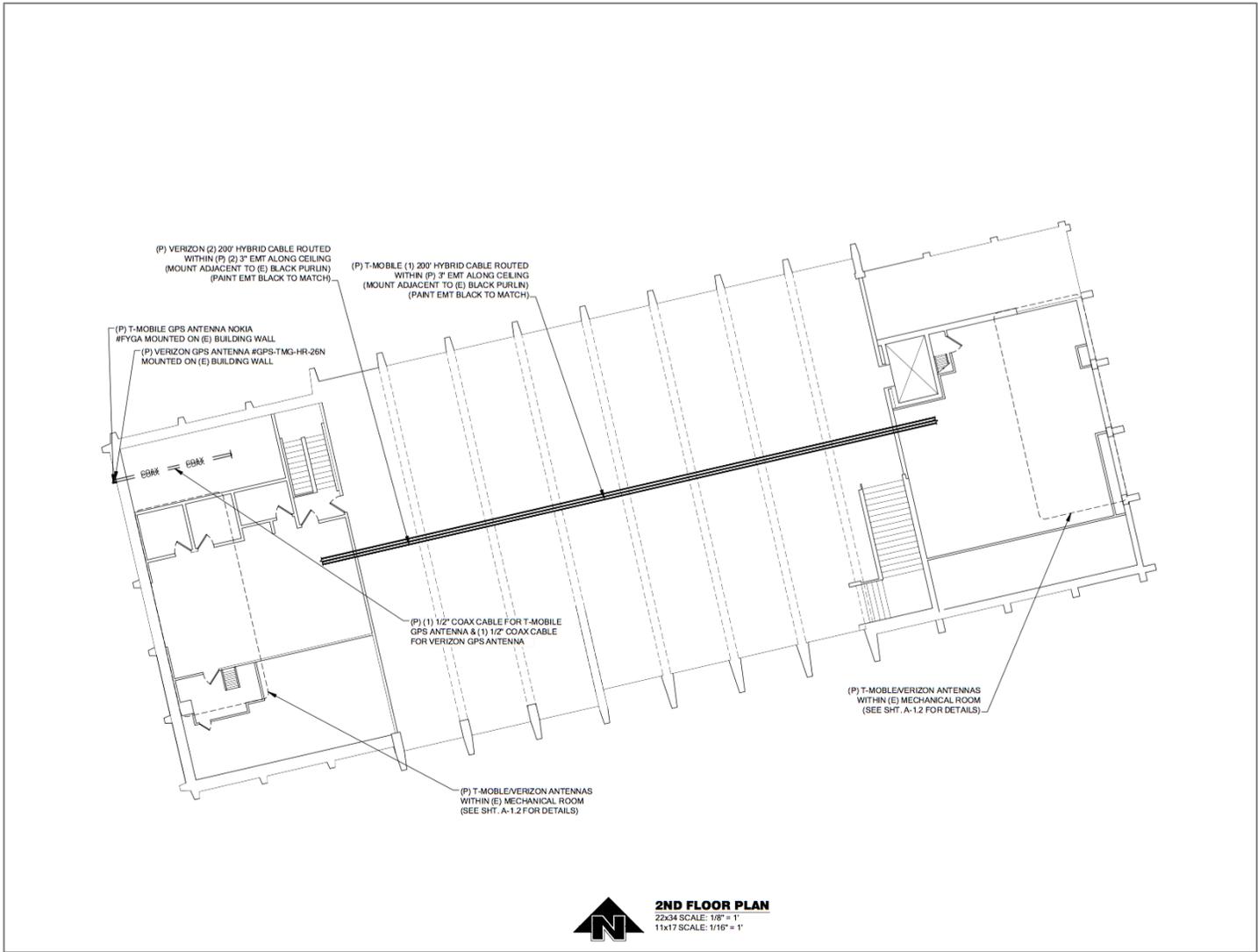


Figure 9. Jackson Visitor Center second floor plan showing mechanical rooms and the “hybrid cable” that connects them.

GPS-TMG-HR-26N, High Rejection 26dB With Enhanced Narrow Band Filtering

The GPS-TMG-HR-26 timing reference antennas feature a 26 dB amplifier and narrow band high rejection filtering specifically designed to support long-lasting, trouble-free deployments in congested cell-site applications with severe interference around the GPS L1 frequency.

The proprietary quadrifilar helix design, coupled with multi-stage filtering provides superior out-of-band rejection and lower elevation pattern performance than traditional patch antennas.

The unique radome shape sheds water and ice, while eliminating problems associated with bird perching. The antenna may be purchased by itself or with pipe mounting hardware. Custom models or site kits options are also available. The antenna label and collar mount are color coded red for differentiation purposes.

This antenna is made of materials that fully comply with provisions stipulated by EU directives RoHS 2002/95/EC.



GP-S24 GPS Antenna Mount



Antenna Element Electrical Specifications

Frequency Band	Antenna Gain	Nominal Impedance	VSWR	Polarization	Connector
1575.42 +/- 10 MHz	3.5 dBic	50 ohms	≤1.5:1	Right hand circular	N, female (one - bottom fed)

Mechanical Specifications

Antenna Dimensions	Shipping Dimensions	Antenna Weight	Shipping Weight	Radome Color
5.0" H x 3.2" D (126 H x 81 mm)	7.5" L x 4.4" W x 3.8" D (190 L x 112 x 96 mm)	0.6 lbs (0.3 kg)	1.9 lbs (0.9 kg)	White

Environmental Specifications

Temperature Range	Humidity
-40° C to + 85° C	95%

Mounting

All mounting options fit pipes of 1"-1.45" (25 mm-37 mm) maximum diameter.

Model	Options
GPS-TMG-HR-26N	Antenna Only. Does not include mounting hardware.

Low Noise Amplifier Specifications

Frequency Band (MHz): 1575.42 +/- 12 MHz
Amplifier Gain: 26.5 dB +/- 3 dB
Nominal Impedance: 50 ohms
Output VSWR: < 2.0:1
Noise Figure (including pre-selector): +4.0 dB @ +25° C (typ.) + 4.5 dB @ +25° C (max.)
Operating DC Voltage: 2.3-12.0 V (regulated)
Survival DC Voltage: 24V
DC Current: + 40 mA @ 9V
Filtering: 4-stage filtering including pre-selector
Out-of-Band Rejection: ± 65 dB @ 1225 MHz ± 65 dB @ 1625 MHz

Dimensions

Width	101.6 mm 4.0 in
Height	101.6 mm 4.0 in
Length	609.6 mm 24.0 in
Pipe Outer Diameter	48.3 mm 1.9 in
Weight	4.5 kg 9.9 lb

General Specifications

Product Type	Wall mount
Application	Pipe-to-pipe
Includes	Clamp halves Hardware Pipe
Material Type	Hot dip galvanized steel
Mounting	Pipe, 38.1-88.9 mm (1-1/2 in to 3-1/2 in) OD
Package Quantity	1
Pipe Length	609.6 mm 24.0 in
Pipe, quantity	1

Regulatory Compliance/Certifications

Agency	Classification
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Figures 10a-b. Proposed GPS unit and support bracket for installation on the service side (west) of the JVC. The cap needs to retain its color (white) and have a clear site distance to the sky, but the bracket and body may be camouflaged in a hollow housing as recommended in the plans.

GPS antennas: Two or three small (5.0" L x 3.2" D) cone-shaped GPS units would be installed on the exterior of the building, on the west gable end next to other equipment mounted and owned by the NPS (see Figures 10, 11).

Traffic management protocols would be developed by the permittees and approved by the NPS. The collective weight of the equipment (FRP panels/antenna frames and antennas and radio racks) is not substantial and is not expected to exceed current Park Service weight limitations for the existing bridge structures. Most equipment would be delivered to the site via pickup trucks. A genie lift or small boom truck would be required to install the proposed FRP panels. Given that the bulk of the construction would occur within the building interior there would be minimal spatial requirements for staging and mobilization.

Construction schedule: The construction of the proposed installations would take approximately four to six weeks to complete with some of the work occurring concurrently. A likely construction sequence would consist of extending power and fiber to the west gable attic space, extending coaxial cables from the east gable to the west gable, installing FR panels at either end of the building, installing antenna frames and antennas, and then installing radio racks and batteries.



Figure 11. Proposed location of GPS unit(s) on the west end of the JVC. A shroud matching the exterior siding would mask the GPS units. One unit would be installed per carrier.

Construction is proposed to begin as early as fall 2017. Equipment would be lifted into the attic from the outside and through the exterior walls where the new panels would be installed. Once equipment is placed inside and the new panels and antennas are installed, the remaining work would be conducted from the inside. Construction of the proposed facility would be limited to weekdays during the time period that the JVC is closed to the public, mid-October to May.

Resource Protection Measures and Best Management Practices (BMPs):

To prevent and minimize potential adverse impacts associated with the proposed installation, best management practices (BMPs) and mitigation measures would be implemented during the construction and post-construction phases of the project.

General and resource specific BMPs and mitigation measures for the project are listed below:

- Construction limits, including the staging area, would be clearly marked prior to the beginning of work. Temporary construction fencing would only be installed where determined necessary by the NPS. As currently designed, the project would stage

immediately adjacent to the JVC during construction.

- Staging areas on existing asphalt surfaces (used for construction equipment storage, vehicle storage, fueling, servicing, and hazardous material storage) would be approved in advance by the NPS.
- Parking of equipment and private vehicles would be restricted to hardened surfaces, such as existing parking areas.
- The permittee would be required to preserve the existing asphalt surface. If asphalt of other NPS property is damaged, the permittee would be required to restore the property to its original condition.
- Vegetation would not be disturbed, and specifically, vegetation next to the JVC. Temporary stockpiling of materials and equipment would be on hardened surfaces.
- All tools, equipment, barricades, signs, surplus materials, and rubbish would be removed from the project work limits upon project completion. Any asphalt surfaces damaged due to work on the project would be repaired to their original condition. All demolition debris would be removed from the project site, including all visible concrete, wood and metal pieces.
- Vehicles would not be allowed to idle longer than 15 minutes when not in use.
- Construction debris would be hauled from the park to a licensed disposal location. Debris would not be disposed of in the park.
- Construction would begin no earlier than the week following Columbus Day in October, and no later than the week before Memorial Day weekend, and only during weekdays when the JVC is closed to minimize impacts to visitors.
- A Hazardous Spill Plan or Spill Prevention, Control and Countermeasures Plan, whichever is determined appropriate, would be in place, stating what actions would be taken in the event of a spill, notification measures, and preventive measures to be implemented, such as the placement of refueling facilities, storage, and handling of hazardous materials. The plan would be submitted prior to the beginning of construction work as specified in the permit terms and conditions.

The following measures would be implemented to limit noise and disturbance from vehicles and construction equipment:

- All motor vehicles and equipment would have mufflers conforming to original manufacturer specifications that are in good working order and are in constant operation to prevent excessive or unusual noise.
- Sound attenuation devices (such as rubber strips or sheeting) would be installed and maintained on all equipment.
- Use of unmuffled compression brakes would be prohibited within park boundaries.
- Use of air horns within the park would not be allowed except for safety.

The following measures are intended to protect and limit interactions between humans and wildlife:

- All motor vehicles and equipment would have mufflers conforming to original manufacturer specifications that are in good working order and are in constant operation to prevent excessive or unusual noise.
- Any roadkill or wildlife collisions would be reported to the park immediately.
- Feeding or approaching wildlife would be prohibited.
- The park wildlife ecologist would be notified if bears or foxes loiter in the project area.
- A litter control program would be implemented during construction to eliminate the accumulation of trash. All food items would be stored inside vehicles, trailers, or wildlife-resistant receptacles except during actual use to prevent attracting wildlife.

The following measures would reduce impacts to Visitor Experience and would support Public Safety:

- The proposed construction schedule and status of construction would be provided to the park, which would be communicated to the public via a number of outlets: the park website, regional newspapers, radio, entrance stations, visitor centers, news releases, local newspapers, media outlets, postings in local businesses, and via social media.
- The majority of material deliveries would be made and disruptive work would be done during the week, rather than on weekends or holidays, and would occur before or after peak visitation periods. Deliveries would be coordinated with the NPS.
- Paved areas used by vehicular and pedestrian traffic would be kept clean of construction debris and soils, as necessary.
- Staging areas and contractor access to the Annex would be managed to minimize visitor and concessionaire impacts. All access during construction and maintenance of facilities would be coordinated with the park and Rainier Guest Services.
- Construction workers and park staff would wear appropriate protective gear such as hard hats, gloves, and goggles to protect themselves when working in the construction zone. This project would be compliant with all federal, state, and local requirements and in accordance with Occupational Safety and Health standards pertaining to employee or worker safety.
- Visitors would not be allowed in the construction zone.

Alternatives Considered but Dismissed

Cell tower. A cell tower was considered for placement in the lower Paradise parking lot, which is outside the NHLD, but visible from the NHLD. Tower heights ranging from 70 to 130 feet were considered. Equipment could have been installed in the ski dorm, either within the existing building or in the bay area. The tower would have been installed in the west end of the lower parking lot or behind the ski dorm. The tower proposal would have extended cellular service to a broader geographic area than Alternative B. This alternative was dismissed because all configurations would have resulted in a monopole visible from many locations within the Paradise area and from surrounding trails within the NHLD and wilderness. Dismissing this alternative maintained visual quality objectives and scenic values described in the Mount Rainier National Park General Management Plan (NPS 2002).

Construct a cupola on the JVC roof that would house an antenna array. A cupola was included in the original application, and would have been located on the roof of the new Jackson Visitor Center. This configuration would have provided for a taller antenna array than the proposed action, and would have extended cellular service to a broader geographic area. The proposed cupola would have disrupted the roof line of the 2008 JVC and changed its character. It would have created a new opening in the roof that would have required a redesign that would need to address snow loads, structural engineering, and a longer-term and much more invasive construction period than the proposed alternative.

Install equipment within the Historic Guide House. This alternative was initially proposed because it is the building with the highest elevation in the Paradise area. The proposal included exterior as well as interior elements that had the potential to cause an adverse effect to the historic property, which is a contributing element to the Paradise Historic District. This alternative was abandoned because the JVC provided a feasible alternative that would not impact historic buildings or the Paradise Historic District.

Add antennas on the north and south walls of the JVC attic. An intermediate design included the installation of panels on the north and south walls of each of the attics. This option would have extended cellular service to broader geographic areas to the north and south of the JVC as compared with Alternative B. This proposal was rejected because the building HVAC equipment limits the space. A second iteration including small antennas covered with RF panel shrouds would not have interfered with the HVAC equipment; however, this option was rejected because the eaves would have been diminished due to the thickness of the antennas and shroud configuration, potentially impacting their function.

CHAPTER III. Affected Environment and Environmental Consequences

Introduction

This chapter describes the existing environmental conditions that may be affected by the proposed action (“affected environment”) and analyzes the potential environmental impacts that could occur with implementation of elements of the proposed action (“environmental consequences”). The chapter is organized by impact topics that were derived during scoping and introduced in Chapter 1. The environmental consequences for each impact topic were considered as direct or indirect, or cumulative (40 CFR 1508.7). A conclusion is provided for each impact topic, which addresses potential significance of impacts based on context, duration and intensity. Table 1 provides a summarized comparison of alternatives.

Cultural Landscapes

Affected Environment

Mount Rainier is visible throughout the region and is a continuing source of inspiration to those who visit the Pacific Northwest (NPS 2002). This enduring quality contributed to the establishment of Mount Rainier National Park in 1899. Proposed installations have the potential to impact the extraordinary landscape and views at Paradise and from areas surrounding Paradise, where sweeping natural vistas are a fundamental resource and value of the park.

The proposed project would be located within the National Historic Landmark District (NHLD), which was designated in 1997. Most of the developed areas within the park, including most of the park’s road system and the Wonderland and Northern Loop trails, are within the NHLD. Prior to the designation of the NHLD, six historic districts were designated in the park for their rustic architectural significance. The Paradise Historic District is one of the six, and was placed on the National Register of Historic Places on March 13, 1991. The district includes the historic portion of the Paradise developed area of the park. The subalpine Paradise District surrounds its primary structure, the Paradise Inn, which is a National Historic Landmark. The Paradise Inn and five other buildings including the Guide House are all located within the district. All are also located within view of the non-historic Jackson Visitor Center where the project would be located. The EA for the Project to Replace the Jackson Visitor Center, Rehabilitate the Upper and Lower Parking Areas, and Rehabilitate the Paradise Inn provides a detailed historical overview and construction history of the Inn (NPS 2005).

Environmental Consequences

Impacts of Alternative A (No Action). There would be no wireless communications facilities added to the Paradise Historic District or the NHLD under the No Action alternative and therefore, no potential for impacts to cultural resources.

Impacts of Alternative B. The new Henry M. Jackson Visitor Center (JVC) was identified as a preferred site for installation because the JVC provided a viable option where it could be installed in the attic, and hidden from view. Alternative B therefore avoids potential impacts of an external cellular facility to the NHLD and the Paradise Historic District, and the scenic quality of the area.

Construction would be confined to the new Jackson Visitor Center and would have short-term impacts to the NHLD related to the visual impacts of construction equipment and materials. Construction would be confined to small areas at each end of the building, and would occur mid-week, after the visitor center closes on weekdays for the winter, and prior to opening in the spring. External construction activities would be short-term, lasting two weeks, as equipment is placed inside the JVC attics from the outside. Approximately two to four weeks of the work would be conducted from the inside during weekdays when the JVC is closed, including installation of a conduit that would be located in the peak of the vaulted ceiling, connecting the east and west attics. All work in the attics would be invisible to the public. The work would not require power outages. Impacts of construction would be temporary and short-term, and the timing would minimize impacts to concessioners.

Fiberglass panels on the east and west gable ends would replace existing wood paneling, and the new panels would screen the proposed antenna arrays. The FRP panels would be textured and painted to match the existing wood panel. All but the panels on the two gable ends and two small GPS antennas (one for each carrier) would be located on the building interior. The only feature on the interior that may be visible to visitors would be the conduit that would house the cables connecting the two attics, however it would be tucked against the peak of the ceiling and painted so that it blends in with the existing beams and framing elements that are currently exposed in the vaulted ceiling of the JVC.

While the fiberglass panels would be painted to match the building's existing board and batten exterior treatment, the panels and the wood surfaces are expected to weather differently. Maintenance would be essential to ensure differences are minimized. Because of this, an operations and maintenance plan would be required and added to the Right-of-Way permit terms and conditions for each carrier.

Two to three small (5" L x 3" diameter) cone-shaped GPS units would be installed on the exterior of the building on the west gable end, next to other equipment mounted

and owned by the NPS (see Figures 10, 11). The cone-shaped antennas (white) cannot be painted, but the brackets and body can be painted a color that blends in with the building, and a shroud can mask the units. The placement of the GPS units on the west gable end and with other NPS devices on the service side of the building would minimize visual impacts to the NHLD.

Improved cellular service may impact visitors' experience of the Paradise Historic District. While some visitors use technology to learn and improve their experience, others value locations and experiences where technology is scarce. Public comments received during the scoping process identified this as a benefit and a concern, voicing support or opposition to the installation as a result. This impact is discussed under the **Visitor Experience** and **Wilderness** topics.

Cumulative Impacts. Construction of the cellular facility within the Paradise Historic District and the NHLD would add to the visual impacts of current construction activities occurring in the Paradise area that began in 2015 and would continue through 2018 due to the rehabilitation of the Nisqually to Paradise Road Phase 2 (2015-2017), and the rehabilitation of the Paradise Inn Annex, which will begin August 2017 and continue through late spring of 2019 (NPS 2016a). The presence and use of construction equipment, construction materials and safety measures would add to the larger impact of other construction activities in the area. Given the small scale of the construction and because the timing of work would occur on the shoulder season, cumulative impacts of the proposed action would be negligible.

Conclusion

Because the installation would be housed within the JVC, scenic resources would be maintained and not diminished. The only external feature would include two small GPS antennas, one for each carrier, mounted on the west gable of the JVC. The placement of the GPS units and shrouds would not diminish the scenic quality of the Paradise area.

The National Park Service has determined that implementation of the project would have no adverse effect on either the Paradise Historic District or the National Historic Landmark District (NHLD). The Washington State Historic Preservation Officer concurred with this preliminary determination via email. A formal request for concurrence will be submitted to the State Historic Preservation Officer with the publication of this EA, and written concurrence would be documented in the final decision, or FONSI (finding of no significant impact).

Visitor Experience

Affected Environment

The impact topic “Visitor Experience” focuses on the majority of park visitors who visit sites within the Paradise developed area, who drive through, or who stay in Park or local hotels, and/or who day hike within two hours of trailheads.

Located one to two hours from the metropolitan Puget Sound area with nearly four million people, Mount Rainier National Park is one of the most popular visitor attractions in the Pacific Northwest. About 80 percent of visitor use occurs between May and October (Johnson et al. 1990, NPS 2013). Estimated annual visitation to the park has ranged from 1.5 million visitors to 2.3 million (NPS 2016b). Park visitors participate in a variety of recreational activities, including camping, hiking, scenic driving, mountain climbing, skiing, snowshoeing, and walks to nearby viewpoints. Most visitors stay within the developed areas, and most day hikers do not venture more than two hours from the trailhead (NPS 2013). Day use is limited by available parking.

Visitation to Mount Rainier National Park is highly dependent on regional weather conditions. Visitors are drawn to the park from the surrounding region when the weather is clear and the mountain is visible, particularly on weekends. Visitation figures may also be affected by other external factors, such as cost of travel (fuel), road construction or flood damage on major access routes, or may vary due to changes in methods of counting visitors. Most visitors to Mount Rainier National Park visit Paradise (70%), which is accessible via car year-round. Park visitation begins to increase in spring, peaking in July and August, then decreases substantially beginning in October (Figure 12). Park visitation typically represents at least 40 percent and sometimes exceeds half of total annual visitation during the peak months (with over 1 million visitors counted during July and August alone) (NPS 2013).

Environmental Consequences

Impacts of Alternative A (No Action). There would be no change in visitor experience under the no action alternative. Visitors would continue to experience spotty cellular coverage in the Paradise area. Spotty cellular coverage is currently available in the Paradise parking lot, in a few locations along the Paradise trails, as well as in spots on the upper mountain. Anecdotal evidence suggests that people carrying phones typically notice a signal when they receive a notification on their phones. Visitors increasingly use phones as cameras, and may take photographs locally and for viewing and sharing later, when they return home. Visitors who travel with electronic devices would continue to use them for photography, music (with and without earphones),

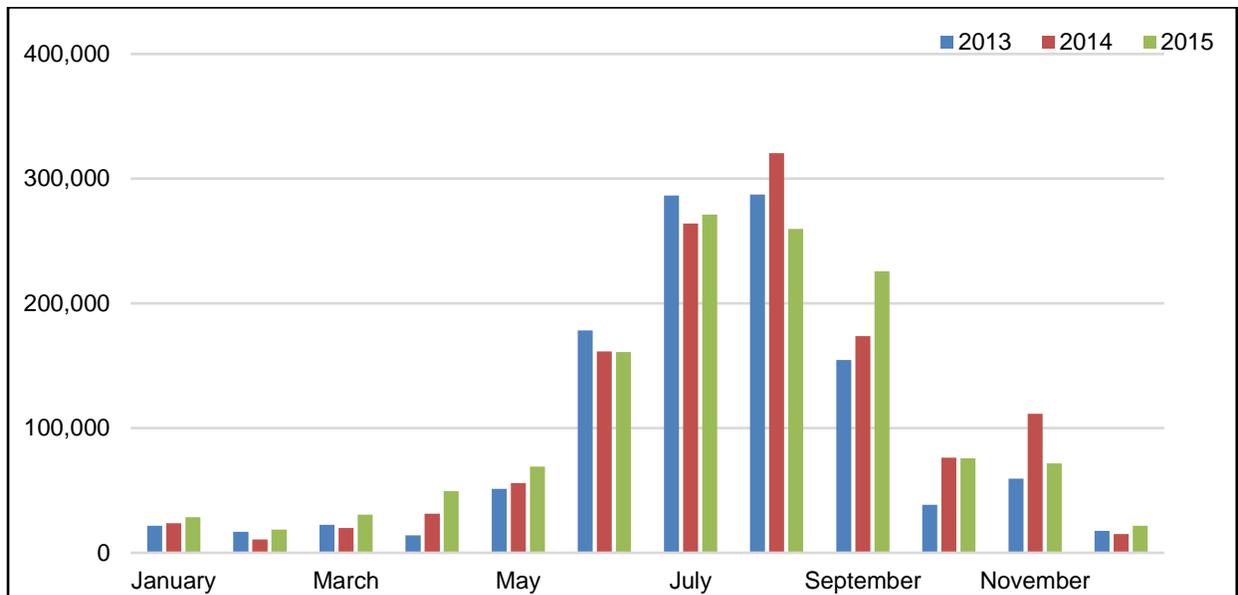


Figure 12. Total monthly visitation in Mount Rainier National Park 2013-2015.

information (such as guidebooks), and as route-finding tools (if devices contain GPS technology). 85% of visitors currently obtain park information online.

Some visitors may continue to rely on satellite technology for emergencies (personal locator beacons, satellite communicators, or satellite phones) without the convenience that improved cell coverage might provide.

Educational programs presented by Mount Rainier National Park would continue to use existing technology to share information and provide interpretive services to visitors. The park increasingly utilizes social media to communicate with the public about park conditions, and visitors increasingly rely on use of social media to monitor weather and road conditions within the park. Currently, park visitors must obtain information from communities where WiFi and cellular signals are available, or in person at park visitor centers. They may also receive information via state highway AM radio located along highways that access the park.

Impacts of Alternative B. As with the No Action alternative, under Alternative B and in areas with improved cellular service, visitors may increase their use of cellular devices for route finding, information (via electronic educational and interpretive media), communication with family members (notification that they are late or need a ride), emergency services, and with park information services (interpreters, rangers). There may be a perceived improvement of contact with search and rescue services and park rangers (see “Wilderness Character” and “Safety and Health” topics).

Mount Rainier National Park General Management Plan (NPS 2002) does not specifically address telecommunications sites, but it does discuss the use of a variety of systems to inform visitors on the diversity of recreational opportunities within the park and in corridors leading to the park, including “new technologies such as improved communications via satellite with hand held or in-vehicle devices.” Such devices would be used to communicate park conditions to visitors, including where parking is available during peak visitation, or the waiting times at entrance stations. The park would continue to utilize social media to provide information about park conditions to the public, and would have the opportunity to try new techniques so visitors can receive information about the park in real time.

Improved cellular service would also present an opportunity to observe and measure recreation activities and locations through social media (Heikinheimo, et al. 2017, Stelmach and Beddow 2016), which could be used to make management decisions regarding the distribution of people on the trail system in the Paradise area. This could improve visitor experience and potentially reduce resource impacts, including those in the wilderness.

There would likely be more encounters with people talking on their cell phones, or broadcasting music or other noise. Public comments received during scoping revealed concerns about people with cell phones not paying attention to the surrounding scenery, or not considering the experience of others. People opposed and supportive of cellular service at Paradise cited this concern as a potential drawback to improved cellular service in the front country as well as the back country.

Cumulative Impacts. Cumulative impacts associated with park visitor experiences may include an increase in frequency of disruptions due to use of cell phones in the developed areas of Paradise, and Paradise Meadows in addition to existing use of mobile (unconnected) technology, such as streaming music. The NPS has a servicewide initiative for WiFi in NPS unit visitor centers. The park is proposing to add public WiFi service to NPS facilities in visitor centers where backcountry permits are obtained. The addition of Wi-Fi service to the JVC would allow people with mobile devices to purchase permits regardless of their carrier.

Conclusion

Improved cellular service would provide the NPS opportunities to more easily and quickly communicate park conditions, including real-time traffic information, to visitors. Parking availability is the number one public complaint (NPS 2013) and service may provide new ways to use technology as an educational tool. Visitors may benefit from improved cellular signals in the immediate Paradise area because of ready access to park information, but they may also observe an increase in disruptions due to use of

cell phones by other visitors that may degrade some individual's experience at Paradise. The new NPS Wi-Fi service at the JVC may contribute to congestion as people seek connectivity, while cell service may reduce the potential for people to congregate.

Wilderness Character

Affected Environment

The proposed project is located physically in the Paradise developed area, which is not wilderness. However, a cellular signal may extend into wilderness surrounding the Paradise developed area and Paradise Meadows. Figure 4 shows current coverage in the vicinity of Mount Rainier National Park.

In 1988, Congress designated approximately 97 percent (228,480 acres) of Mount Rainier National Park as wilderness because of its scenic, natural and historic qualities. In accordance with the Wilderness Act of 1964, a wilderness generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; and has outstanding opportunities for solitude or a primitive and unconfined type of recreation. The purpose of wilderness in the national parks includes the preservation of wilderness character and wilderness resources in an unimpaired condition and, in accordance with the Wilderness Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific educational, conservation, and historical use (NPS 2006).

The Washington Parks Wilderness Act (1988), which designated Mount Rainier Wilderness, states "Congress does not intend that wilderness areas designated under this Act lead to the creation of protective perimeters or buffer zones around such wilderness areas. The fact that non-wilderness activities or uses can be seen or heard from areas within the wilderness shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area" (Title IV—General Administrative Provisions, (a)(3)).

The Mount Rainier Wilderness provides opportunities for a range of recreational experiences, including camping, hiking, mountain climbing, backpacking, photography, picnicking, snowshoeing, cross-country skiing, and snowboarding. Most visitors to the Paradise area do not spend more than two hours in the park and do not enter Wilderness, or only access its edge (see Visitor Experience). One to two percent of the total number of recreation visitors to the park obtain backcountry permits annually. This impact topic addresses wilderness that lies beyond what is described as the Paradise area, and potential impacts as they relate to wilderness character.

Environmental Consequences

Impacts of Alternative A (No Action). There would be no new impacts and no reduction in quality of wilderness character with the implementation of Alternative A. Cellular coverage currently exists in wilderness surrounding the Paradise area, but is spotty and weak, allowing for occasional voice and text service (Figure 4). Signals are generally not strong enough to allow for data streaming. Electronic devices including smartphones with cameras are still present and common. Potential impacts of existing cellular service and use of electronic devices to wilderness character includes negative impacts to visitor's experience of solitude and opportunities for primitive and unconfined recreation. The degree of impact is subjective, depending on individual visitor preference. Evidence of impacts is anecdotal, but reported as intrusive behavior, such as people talking on phones, phone noises related to notifications, and streaming or playing of music. Some visitors to wilderness areas prefer to have access to cellular signals within the park and in wilderness and seek them out, as suggested by a collaborative effort to identify and report cellular signals by smartphone app developers.

Impacts of Alternative B. Implementation of Alternative 2 would result in a stronger cellular signal in the immediate Paradise area, and extend to wilderness beyond the Paradise developed area and Paradise Meadows, a much larger coverage area than currently exists. The signal is expected to reach ridges beyond the Paradise area and into wilderness (Figure 5). The strongest wireless signals (> -85/-88 dBm) would extend to ridges within line-of-site of the antennas mounted on the gable ends of the Jackson Visitor Center, including Mazama Ridge to the east and Wahpenayo Peak and Eagle Peak to the southeast.

Cell phone coverage, even though it does not have a physical presence in wilderness, may be used as a proxy indicating potential subjective effects on wilderness experience. Public comments opposed to improved cellular service in backcountry and wilderness areas identified the potential for distraction, noise and a false sense of security due to reliance on smart phones for communication and route finding. Noise and the proliferation of cellular devices may affect the perception of solitude, and the natural quality of wilderness for visitors who are sensitive to the potential intrusion. The wilderness quality of *solitude or primitive and unconfined recreation* could be impacted by spillover of cellular signal from the Paradise developed area. Because primitive recreation requires self-reliance and skills in wilderness travel, opportunities for such experiences may be considered degraded by the presence of facilities or technologies that make wilderness travel easier (Landres, et al. 2015).

Those concerned about the impacts of technology on wilderness cite the "change of expectations and loss of the unknown, changing the way we view wilderness" (Borrie 2000). If cell phone coverage is improved and empowers more people to venture into

wilderness when they otherwise would not, there may be an increase in visitation to more remote areas. Some visitors in wilderness areas report that improved communications improves accessibility and is empowering, allowing them to travel where they might otherwise not do so (Shultis 2015).

Alternatively, some visitors appreciate the opportunity to use cellular mobile devices and similar technologies in the backcountry and rely on them for route-finding and communicating their location to an emergency contact as a safety measure (Pope and Martin, 2011). Mobile devices, whether connected or not also provide opportunities for the sharing of information, education, research and experience. Improved safety may result from improved communications for wilderness rangers and managers, and visitors (discussed under "Health and Safety").

Cumulative Impacts. Cellular service would be more available to visitors in the Paradise area, also in wilderness adjacent to the Paradise area. New cellular towers planned for construction in Ashford may result in spillover of cellular signals to adjacent wilderness managed by the U.S. Forest Service (Glacier View Wilderness), and Mount Rainier Wilderness. To differentiate between satellite and cellular signals, areas with enhanced coverage would support the streaming of data, whereas typical satellite coverage that is most available to wilderness visitors is limited to texting, short calls, emergency notification and GPS tracking depending on the satellite device used. Additional cellular signals within wilderness would add to other, existing radio waves including satellite, FM radios, and existing weak cell signals that spillover onto park boundaries from other lands, and anticipated new towers planned for adjacent properties near the southwest, or Nisqually Entrance of the park.

Conclusion

Potential impacts to wilderness experience are speculative, but in summary, (1) some people experience cellular mobile devices and technology as an intrusion if other visitors are using cellular mobile devices, and (2) some people experience such devices to be beneficial if they provide opportunities for the sharing of information, education, accessibility and improve safety. The availability of wireless technology (cellular, satellite, radio, etc.) has the potential to decrease traditional skills such as self-reliant recreation, including the possibility of creating a false sense of safety or security. The quality is considered to be degraded when visitors make a choice to use technology (including modern gear and tools) in wilderness, and depends on the perspective of individuals. Even with the presence of cellular signals, the opportunity continues to exist for self-reliance and experiencing wilderness without the aid of modern technology including hand-held electronic devices, as people can choose not to use them. The facility would not be visible from Wilderness, and would not add to impacts related to the developed quality. The primary impact to wilderness would be indirect but

negligible, impacting the quality defined as solitude or primitive and unconfined recreation. While the objective of the proposal would be to focus on the non-wilderness Paradise area, stronger cellular coverage may have a beneficial impact to the wilderness quality “other features of value” related to research and education.

Safety and Health

Affected Environment

Safety and health of the public, employees, contractors, volunteers and other park visitors are core National Park Service values (NPS 2006,). Director’s Order (DO) 53 (RM-53, 2000) contains the procedures applicable to the permitting of wireless communications facilities in NPS units, which includes direction to consider the safety of the visiting public as a factor when reviewing applications.

The Mount Rainier National Park GMP (NPS 2002) describes the use of technology to deliver real-time information to inform visitors about locations where parking is available (during peak visitation).

Peak visitation occurs June-September (Figure 12), and represents the time period when most search and rescue (SAR) operations are needed. 40 to 50 SAR operations are conducted annually within the park, with most originating out of Paradise. Mount Rainier National Park is also a popular winter destination, and as a result, the need for winter search and rescue operations is common. Several locations along the Nisqually to Paradise Road are exposed to risk related to flooding and geohazards. Because of this, the reliability of communications year-round is critical to emergency responders and park officials.

Environmental Consequences

Impacts of Alternative A (No Action). Under the No Action alternative there would be no changes to existing health and safety conditions in the Paradise area, or within Mount Rainier National Park. There would continue to be limited cellular coverage from existing residual signals from external sources, and visitors would continue to receive spotty service along roads and in the Paradise area, and take advantage of it when they are able to. Travelers would also continue to use satellite technology such as GPS, personal locator beacons (PLB) and satellite messengers if they prefer to, and as satellite becomes more affordable. Visitors would continue to rely on direct contact with park staff to communicate emergencies or request assistance. Park staff would then, in most cases, use the park’s two-way radio system to communicate with park emergency services including law enforcement. There would be no change in the availability of cellular service along roadways, and no potential exposure to electromagnetic fields

(EMF) related to a new cellular installation. Park operations and emergency responders would continue to rely on two-way radios to communicate with dispatchers and park headquarters.

Impacts of Alternative B. Cellular service would improve communications for the public and park operations, potentially improving safety and emergency response times. Visitors in the Paradise area would be able to connect more easily with park staff and 911 services to request assistance in the event of an emergency. Improved access to cellular communications in the adjacent Paradise Meadows and backcountry may contribute to more successful search and rescue operations by reducing search timeframes and improve timeliness of notifications. Moreover, more detailed information also serves to better protect and prepare responders.

Park staff conducting routine operations may benefit to some degree from cellular coverage in the Paradise area, but it is predicted that most routine communications would continue to occur via two-way radios. Cellular signals are not expected to improve in areas where there are gaps in radio coverage. The primary benefit to operations (including emergency operations) would likely be because of the potential improvement of communications with parties responding from locations outside of the park. This would be most beneficial during the most serious events that would require external support, or extended searches and other incidents involving many different organizations that participate in mountain rescues. Park staff would also benefit from cellular service as a backup to standard radio communications.

Potential negative consequences of improved cellular coverage in the backcountry include over-reliance on cell phones and an increase in confidence and risk taking by backcountry travelers relying on digital communication devices rather than traditional methods (Pope and Martin 2011). Over-reliance on cellular communications may increase requests for assistance that are unnecessary, potentially increasing demand for Search and Rescue operations. Improved cellular service along roadways may also increase distraction, and is believed to contribute to accidents. However, there would be limited coverage on roadways below Paradise because the cellular antennas are positioned east of a ridge located between the upper and lower parking lots. Due to the proximity of the cellular antennas proposed for installation on the east and west gables to public and employee spaces within and surrounding the JVC, and because the FCC requires an analysis of RF emissions and specifies standards for installations, the applicants provided a report including an analysis of emissions that would be expected if the project was implemented (Thomas 2016). Assuming a maximum power level of 2,000 watts, the analysis estimated RF exposure at six feet above ground level to be 7.4% of the maximum permissible exposure. Because the total power in any given sector of the proposed facility would be less than 2000 watts,

the project exposure to RF emissions would be even lower, and would be exempt from routine environmental reviews.

Visitors and employees working at ground level, surrounding properties, inside and on existing structures would experience RF exposures much lower than the maximum permissible exposure as indicated. If the project is installed, NPS employees who are tasked with entering the attic of the JVC would be trained to minimize potential RF exposure and ensure that exposure is within the occupational limits. Both Verizon Wireless and T-Mobile would install the required signage at the entrance to both attic areas and in the vicinity of their equipment.

Cumulative Impacts. Cumulative impacts would be very limited, if not nonexistent. While the installation of a wireless communication facility would improve existing, spotty coverage in the area, and may affect visitor and employee safety (beneficial and adverse), there are no projects planned that would further increase wireless service within the park in the foreseeable future.

Conclusion

Potential impacts to visitor safety and health are difficult to quantify, but it is clear that some visitors would welcome improved coverage over existing conditions and would feel more safe (see Visitor Experience and Wilderness Character discussions). However, improved service and communications may encourage more risk-taking, or result in inappropriate requests for help (and calls to 911) (Carlson et al. 2015), and potentially impact workload and availability of search and rescue operations. But these concerns have been present for some time - since affordable GPS units and personal locator devices have been available. These potential impacts (behaviors) would occur in the Paradise area, and extend upslope to the Paradise Meadows and to ridges beyond, assuming improved service would lead to an increase in overreliance and potential for misuse of the wireless technology (see Figure 5).

Alternatively, response times to emergencies may decrease, and visitors may be more readily informed of hazards in the park in real-time if cellular service is improved in the Paradise area. Hazards such as storm events and high avalanche danger could be communicated from the Northwest Avalanche Center (NWAC) to visitors and park employees when they are at Paradise, and the NWAC would have the opportunity to adjust forecasts in response to local observations provided by park avalanche experts in real-time. Cellular technology could be used to notify travelers when hazards exist and to avoid the park or certain roadways. The implementation of the proposed cellular facilities would support programs that the GMP was envisioning (see also Visitor Experience). Improved cellular service in the heavily used Paradise area may improve response times for search and rescue operations year-round.

CHAPTER IV. Consultation and Coordination

Scoping

Public scoping was conducted November 28-December 12, 2016. 492 comments were received. 249 commenters were supportive of the proposal to install cellular service at Paradise, and 241 commenters were against. Two people were neutral.

In summary, many of those who commented and were supportive suggested adding coverage to other areas within the park including the Carbon River entrance and Sunrise. Some highlighted the drawbacks (annoying behavior by people who use phones in public places), but were in favor because of the potential safety implications including improved response times to emergencies. A few people shared that coverage would allow them to visit the park, citing the ability to stay connected with loved ones, and suggesting coverage in the Paradise area improved accessibility. Many were clear that they would not support the installation of a tower, and accepted the discrete installation and limited coverage. Several who cited safety concerns encouraged improved coverage in the backcountry to include the Muir snowfield – assuming the proposal would extend coverage to Camp Muir, which it does not. A few pointed out that the proposal did not extend to Camp Muir, and questioned the need to provide coverage in the parking lot. Some preferred that coverage be limited to the developed sites and avoided the backcountry. A small number of people cited “emergency only” options.

Those who were against the proposal and recommended denial of the permit cited personal preference for primitive experiences and the need to retain places where they could be unconnected. Some emphasized that National Parks should be places where people can be “unplugged”. Many also cited safety concerns, including a potential for more search and rescue needs as people may have an over-reliance on cell phones as a communication backup, increased and unnecessary calls for help (potentially diverting limited resources), and a potential for increased vehicle accidents due to distracted drivers. Many felt that other people’s use of cell phones could degrade their experience at Paradise, and in wilderness. Some people were concerned about spillover of cellular signals to wilderness, and impacts to the wilderness quality of solitude and unconfined recreation.

Internal scoping was conducted by an interdisciplinary team of professionals from the park, and the concessioner that operates services within the JVC, Rainier Guest Services. Team members met multiple times from 2014 through 2015 to discuss the purpose and need for the project, various alternatives, potential environmental impacts, reasonably foreseeable actions that may have cumulative effects, and resource protection measures.

Agencies and Tribes Consulted

The State Historic Preservation Officer (SHPO) from the Washington State Department of Archeology and Historic Preservation was notified of the project, and determined that the project would have no adverse effect on historic properties. The SHPO and the following American Indian tribes will receive a copy of this EA, and will be invited to comment:

Cowlitz Indian Tribe
Muckleshoot Indian Tribe
Nisqually Indian Tribe
Puyallup Tribe of Indians
Squaxin Island Tribe
Yakama Nation

Environmental Assessment Review

This EA is subject to a 30-day public comment period. To inform the public of the availability of the EA, the NPS will publish and distribute a letter to various agencies, tribes, and the park's mailing list, as well as place an ad in the local newspapers.

The EA will be available for review on the Planning, Environment and Public Comment (PEPC) website at <http://parkplanning.nps.gov/mora>. The EA also will be available at the following libraries, in addition to visitor center locations in the park: Buckley Library, Eatonville Library, Enumclaw City Library, Tacoma Public Library (Tacoma Branch), and Yakima Valley Regional Library. During the 30-day public review period, the public is encouraged to submit their comments to the NPS via the PEPC website, as described in the instructions at the beginning of this EA. Following the close of the comment period, all public comments will be reviewed and analyzed prior to the release of a decision document. The NPS will issue responses to substantive comments received during the public comment period and make an Errata available when the FONSI is issued.

List of Preparers

The following persons assisted with the preparation of this EA.

National Park Service, Mount Rainier National Park

Randy King, Superintendent
Tracy Swartout, Deputy Superintendent
Karen Thompson, Environmental Coordinator, EA writer
Jared Infanger, Historical Architect
Saylor Moss, Historical Landscape Architect

Kraig Snure, Wilderness District Ranger
Casey Hicks, Telecommunications Specialist
Roger Andrascik, Chief of Natural and Cultural Resources (retired)
Darin Swinney, Acting Chief of Natural and Cultural Resources
Kathy Steichen, Chief of Interpretation
Lindsey Kurnath, Chief Administrative Officer, Concessions
Ian Bailey, Civil Engineer
Aaron Bougie, Electrician
Jim Fuller, Utilities Supervisor

National Park Service, Pacific West Region

Peter Dederich, Regional Right-of-Way Coordinator
Alan Schmierer, Regional Environmental Coordinator
Sueanne Brown, Regional Historical Architect

National Park Service, Washington Office

Roger Semler, WASO Wilderness Coordinator

References

- Carlson, T., J. Shultis and J. Van Horn. 2015. The Use of New Technology in Wilderness: Emerging Issues and Need for Policy and Management. Society for Wilderness Stewardship White Paper on Stewardship Issues.
- Borrie, W. T. 2000. Impacts of Technology on the Meaning of Wilderness. USDA Forest Service Proceedings, RMRS-P-14. Pages 87-88.
- Heikinheimo, V., E. Di Minin, H. Tenkanen, A. Hausmann, J. Erkkonen and T. Toivonen. 2017. User-Generated Geographic Information for Visitor Monitoring in a National Park: A Comparison of Social Media Data and Visitor Survey. International Journal of Geo-Information. 2017, 6, 85; doi:10.3390/ijgi6030085.
- Landres, P., C. Barns, S. Boutcher, T. Devine, P. Dratch, A. Lindholm, L. Merigliano, N. Roeper and E. Simpson. Keeping it Wild 2. USDA Forest Service, Rocky Mountain Research Station. General Technical Report RMRS-GTR-340. October 2015.
- National Park Service (NPS). 2002. Mount Rainier National Park Final General Management Plan Environmental Impact Statement Washington and Record of Decision. National Park Service. January.
- National Park Service (NPS). 2005. Project to Replace the Jackson Visitor Center, Rehabilitate the Upper and Lower Parking Areas, and Rehabilitate the Paradise Inn. Environmental Assessment. Mount Rainier National Park, WA. May.
- National Park Service (NPS). 2006. National Park Service Policies. Ch. 1.9 and Ch. 6.
- National Park Service (NPS). 2009. National Park Service Reference Manual 53: Special Park Uses. Appendix 5-Rights-of-Way, A5-14.
- National Park Service (NPS). 2012. Mount Rainier National Park Nisqually to Paradise Road Rehabilitation Project. December.
- National Park Service (NPS). 2013. National Park Service Reference Manual 41: Wilderness Stewardship. May 2013.
- National Park Service (NPS). 2013. Mount Rainier National Park Visitor Study, Summer 2012.
- National Park Service (NPS). 2016a. Mount Rainier National Park Paradise Inn Annex and Snowbridge Rehabilitation Project.

National Park Service (NPS). 2016b. National Park Service Visitor Use Statistics – Mount Rainier National Park.

Pope, K. and Martin, S.R. 2011. Visitor Perceptions of Technology, Risk, and Rescue in Wilderness. *International Journal of Wilderness*. August 2001, Volume 17, Number 2. Pages 19-26, 48.

Shultis, J. 2015. "Completely Empowering": A Qualitative Study of the Impact of Technology on the Wilderness Experience in New Zealand. *USDA Forest Service Proceedings RMRS-P-74*. Pages 195-201.

Stelmach, M. and C. Beddow. 2016. Unpublished paper: Measuring and Mapping Recreation with Social Media. *GEOG 569*. August 19, 2016.

Thomas, B. J. 2016. Non-Ionizing Electromagnetic Exposure Analysis and Engineering Certification. Site names SE04311A Paradise/TAC Paradise. Prepared for Verizon and T-Mobile.

U.S. Department of the Interior (USDI). 1995. Environmental Compliance Memorandum No. ECM 95-3. National Environmental Policy Act Responsibilities Under the Departmental Environmental Justice Policy. May 30.

U.S. Department of the Interior (USDI). 1997. Environmental Compliance Memorandum No. ECM 97-2. Departmental Responsibilities for Indian Trust Resources and Indian Sacred Sites on Federal Lands. May 8.

U.S. Department of the Interior (USDI). 2014. Letter from the Director of the Office of Environmental Policy and Compliance of the USDI to the National Telecommunications and Information Administration, U.S. Department of Commerce. February 7.

U.S. Fish and Wildlife Service (USFWS). 2016. Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning. Division of Migratory Bird Management. August.

U.S. Fish and Wildlife Service (USFWS). 2017. V. Harke Email received March 3. Concurrence that proposal meets USFWS Guidelines.