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Improvements for Neck Lake and El Capitan Cave Roads

Environmental Assessment

Forest Service
Alaska Region

Tongass National Forest
Thorne Bay Ranger District

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Cover photographs, clockwise from top left:

- Existing road along Neck Lake with forest upslope of the lake (Robert Peccia and Associates [RPA]).
- The existing road on the Neck Lake causeway (RPA).
- A culturally modified tree along the existing road near Neck Lake (RPA).
- A deer crossing the Prince of Wales highway during construction (Forest Service).
- Reading an interpretive sign on the Beaver Falls Karst Interpretive Trail (Forest Service).
- The existing road flooding during high rainfall accumulation in Neck Lake (RPA).

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Introduction

The U.S. Department of Agriculture Forest Service (Forest Service) proposes road improvements to the National Forest System Roads (NFSRs) between Whale Pass and El Capitan Cave and an upgrade to the recreation facilities at the Neck Lake picnic area and boat launch on the Thorne Bay Ranger District (TBRD) of the Tongass National Forest (the Tongass). The project name is Improvements for Neck Lake and El Capitan Cave (NLECC) Roads (the project). This environmental assessment (EA) was prepared to determine whether implementation of the proposed action may significantly affect the quality of the human and natural environment and thereby require the preparation of an environmental impact statement to fulfill agency policy and direction to comply with the National Environmental Policy Act (NEPA). For more details of the proposed action, see the "Proposed Action" section of this document. This EA may also be used to support the special use authorization granting the Alaska Department of Transportation and Public Facilities (ADOT&PF) a Section 4407 right-of-way (ROW). The ADOT&PF would then be granted responsibility for maintenance and operation of the road.

The proposed project is located on the northern portion of Prince of Wales (POW) Island (Figure 1 and Figure 2). The existing roads (NFSRs 1500000, 2000000, 2500000, 3000000, and 3065000) were constructed as single-lane logging roads with a gravel or rock surface. The roads have tight curves, limited shoulders and pullouts, portions without guardrails, and substantial washboarding, which all contribute to adverse traveling conditions. As the road conditions continue to deteriorate, maintenance gets more difficult and expensive. The roads are currently not plowed in the winter and often subject to weather closures. Average winter conditions can make the roads impassable for up to 2 months annually. Daily 2012 traffic counts and the estimated annual traffic are shown in Table 1 for Segments 1 and 2 and Segment 3 (ADOT&PF 2012). A map of the segments is provided as Figure 2.

Table 1. Existing Average Daily Traffic (ADT) and Estimated Annual Traffic (number of vehicles) by Road Segment

Segment	2012 ADT	Estimated 2012 Annual Traffic
1 and 2	40	12,120
3	10	3,030

Source: ADOT&PF (2012).

Frequent maintenance is necessary to keep the existing roads' gravel or rock surface drivable, and the roads' narrow width requires that motorists pay close attention. In addition, there is a need to improve the existing road conditions to support the *Southeast Alaska Transportation Plan* (SATP) (ADOT&PF 2014) and to develop future economic opportunities on North POW Island. Upon completion of the proposed improvements, the road jurisdiction would shift from the Forest Service to the ADOT&PF. Along Forest Highway (FH) 43, the 24.5 miles south of this project between the Neck Lake junction and Coffman Cove junction, upgrades have already occurred. Improvements included realignments, road widening, stream crossing replacements, recreational enhancements, and chip-sealing. During construction, improvements to FH 43 hindered access to North POW, but there is anecdotal evidence that increased recreational access and more efficient travel to North POW have been observed since completion of these improvements.

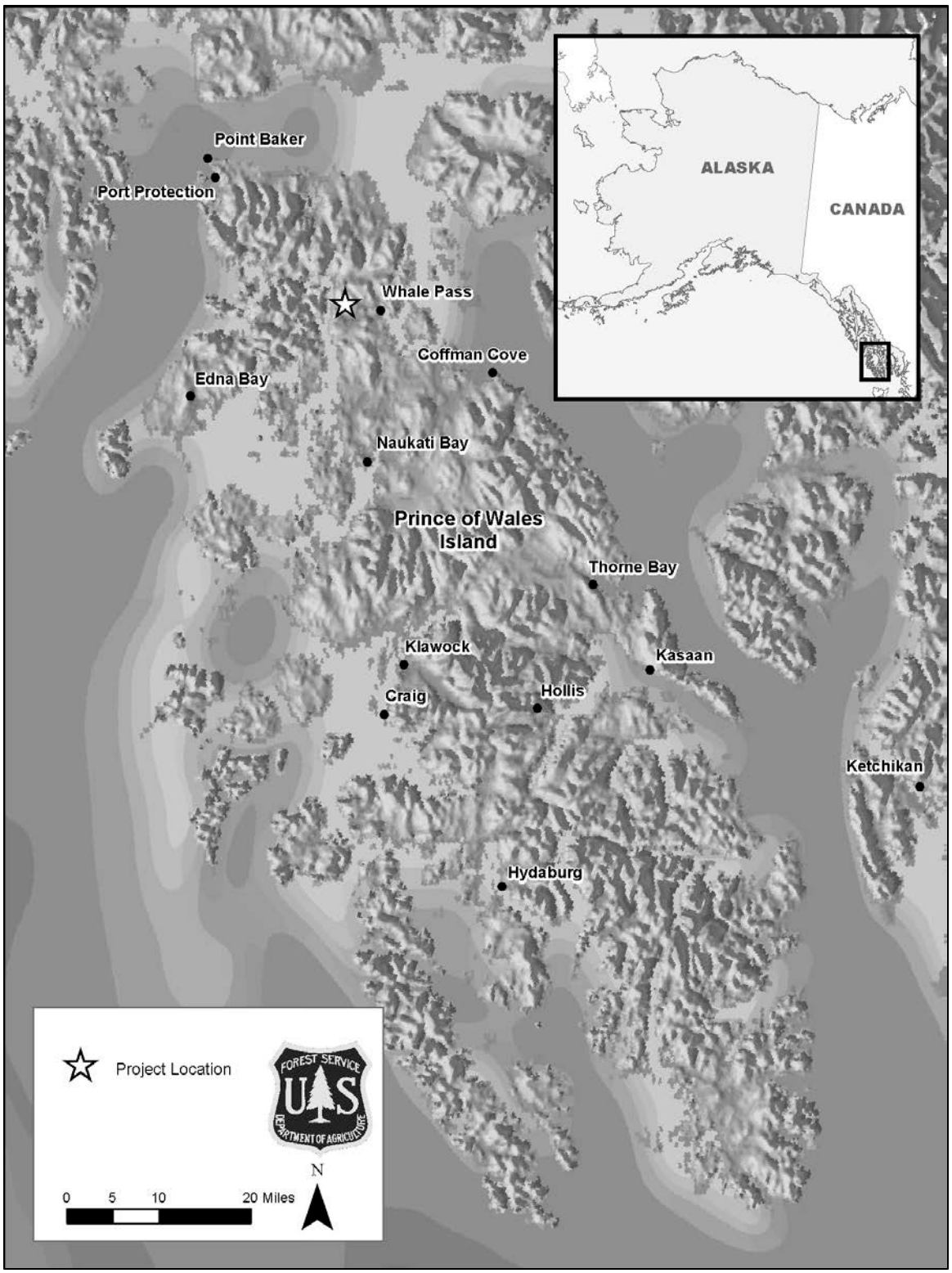

Figure 1. Project vicinity map.

The Neck Lake picnic area and boat launch is located approximately 2.9 miles east of the Neck Lake junction and includes a picnic table, a fire ring, developed pad, and a rustic boat launch. It is anticipated that improvements to the road as outlined above will increase use of the Neck Lake picnic area and boat launch, and upgrading the facilities at this recreation site will better accommodate this anticipated increase. Recreation improvements would include trash and recycling receptacles, signs, a vault toilet, a picnic shelter, and an improved boat launch. As has occurred in the past, dispersed recreation near this site would still be available; i.e., the site would not be designated for day-use only.

Decisions to be Made

Based on the environmental analysis in this EA, the Responsible Official will decide whether to authorize construction, reconstruction, realignment, or other improvements to road conditions on the roads heading east and north from the Neck Lake junction, whether to authorize construction of upgraded recreation facilities at the Neck Lake picnic area and boat launch, and, if one or both are authorized, how the improvements would be implemented. The decision will be made in accordance with the *Tongass National Forest Land and Resource Management Plan* (Forest Plan; Forest Service 2008a) goals, objectives, and desired future conditions and will include the following:

- The location, design, and scheduling of road construction activities.
- The location, design, and scheduling of construction activities associated with recreation improvements at the Neck Lake picnic area and boat launch.
- Resource protection measures and monitoring requirements, including avoiding significant restriction to subsistence uses and impacts to cultural resources.
- Grant a special use authorization to the ADOT&PF for a Section 4407 ROW, assigning the ADOT&PF responsibility of the road at the completion of construction activities.

Need for the Proposal

The purpose and need of this project is to

- support current and future transportation systems, principally the Southeast Alaska Transportation Plan;
- improve the physical and operational features of the existing roads;
- reduce maintenance;
- support planned economic development with efficient access to North POW Island;
- improve access to recreational and subsistence activities; and
- provide a reliable link from North POW Island to the rest of the island.

Support Current and Future Transportation Systems

The proposed improvements would support the SATP; the roads included in the project are identified in the SATP as “essential corridors” (ADOT&PF 2014). A Tongass Forest Plan goal is to “develop and manage roads and utility systems to support resource management activities; recognize the potential for future development of major Transportation and Utility Systems (TUSs)” (Forest Service 2008a:2-8). The draft SATP includes proposed ferry terminals at Red Bay and Labouchere Bay (ADOT&PF 2014) and these roads would improve access to those proposed terminals.

Physical and Operational Features

The driving experience on existing roads is not quality due to numerous ruts and potholes and the need for horizontal alignment improvements (refer to the “Horizontal Alignment” section for a detailed description of this design element). The single-lane roads have low American Association of State Highway and Transportation Officials (AASHTO) design speeds that average 15 miles per hour (mph) to 20 mph (AASHTO 2001), depending on site conditions.

The existing roads were initially built as logging roads with a gravel or rock surface. The roads have tight curves, limited shoulders, limited pullouts, stretches with no guardrails, and substantial washboarding, all of which contribute to adverse traveling conditions. As road conditions continue to deteriorate, maintenance gets more difficult and expensive.

Reduce Maintenance

A chip-sealed road surface would require less-frequent maintenance because it would be more durable than the existing gravel surface. In addition, installing appropriately sized stream crossing structures would better protect the stability of the shoulders while reducing the need for costly future maintenance. Consistent road width and designated travel lanes would concentrate the vehicle load farther from road edges, reducing the need for surface and shoulder maintenance.

Economic Development

Economic development is a priority for POW Island (Sheinberg Associates 2013). The adverse road conditions described in the Introduction section (tight curves, washboarding, etc.) can hinder economic development opportunities on North POW Island. Travel along the existing roads is inefficient because of existing conditions. The existing roads provide access to present and planned commercial operations. This includes logging on State of Alaska and National Forest System (NFS) lands. As discussed in the “Recreation” and “Socioeconomics” sections, tourism and recreational use of the area also contribute to the economic development of Whale Pass. The long travel time to recreational activities, due to adverse road conditions, is not attractive to most tourists. The economic opportunities that could be realized via tourism are inhibited by the existing condition. There is a need to improve the existing road conditions to develop these future opportunities.

Access to Recreational and Subsistence Activities

POW Island residents use the roads to get to recreation sites and areas where they can pursue hunting, fishing, and other subsistence activities. Visitors, who come to the island to enjoy the karst and cave features, scenic beauty, hunt, fish, and boat, also use these roads. This recreational use contributes to the economic development of all communities on the island, including Whale Pass. POW Island has seen an increase in tourism, which is expected to continue (Cerveny 2005). The roads were designated as part of the POW Island Scenic Byway in 2010 as part of an evaluation of all roads on the POW Island road system (von Scheben 2010).

Despite the long travel times, gravel surface, and tight curves, motorists continue to use the roads to access recreational and subsistence activities. Improvements to the current roads would provide motorists with improved safety and more efficient access to these activities.

Additionally, as traffic increases, the risk of accidents due to road conditions increases (Duivenvoorden 2010). The adverse road conditions present increased risks for motorists. Specifically, accident risk increases because of the roads’ narrowness and the lack of pullouts for access to NFS lands. With more vehicles using narrow roads with limited turnouts, it becomes more likely that accidents would increase.

The Neck Lake picnic area and boat launch is an important access point for people who use Neck Lake for recreation and subsistence resources. Anticipated increased use of this site associated with improvements to the project roads can be better met with improved facilities including a picnic shelter, trash and recycling receptacles, signs, a vault toilet, and an improved boat launch. As has occurred in the past, dispersed recreation near this site would still be available; i.e., the site would not be designated for day-use only.

Connection to the Rest of Prince of Wales Island

The roads connect the north part of POW Island and the rest of the island road network. These roads are used year-round by Whale Pass residents traveling to other communities on the island to shop and access services not available in Whale Pass. Whale Pass has limited services and no stores; residents travel to Klawock, Craig, Thorne Bay, and Hollis for groceries and supplies. Whale Pass residents drive approximately 3 hours one way to shop or access services that are available elsewhere on POW Island. The 8 miles closest to Whale Pass are gravel roads, include tight curves, and typically have potholes and washboard. The POW Community Advisory Council (POW-CAC) developed a resolution that included support for the Segment 1 and 2 road improvements (POW-CAC 2014). It also requested improving NFSR 2700000 for improved access to El Capitan Cave (POW-CAC 2014), but the proposed action includes improvements to NFSR 2000000 instead because NFSR 2000000 was identified as an “essential corridor” in the draft SATP (ADOT&PF 2014). Further segment details are discussed in the “Proposed Action” section. POW Island’s medical center is in Craig, and Whale Pass residents must travel on existing unimproved roads to access routine health care and emergency services. The only other transportation option is by boat or scheduled floatplane.

This project contributes to the overall upgrades to the transportation infrastructure on POW Island. Other road and infrastructure improvement projects in the general vicinity that have occurred since 2003 include the Coffman Cove road (FH 44) and North Island Road (FH 43) widening and paving, the Inter-Island Ferry Authority (IFA) terminal built at Coffman Cove, and improvements to the Thorne Bay road.

Forest Plan Consistency

The project is consistent with the following Forest Plan goals and objectives (Forest Service 2008a):

- “Provide access for [Tongass] users” (Forest Service 2008a:2-8). The current roads limit access during winter months. The proposed action would improve access to all users year round because once jurisdiction of the roads transfers to the ADOT&PF, the ADOT&PF would plow the roads in the winter months.
- “Develop and manage roads and utility systems to support resource management activities; recognize the potential for future development of major Transportation and Utility Systems [TUSs]” (Forest Service 2008a:2-8). The proposed improvements, for example widening and chip-sealing, would support resource management and economic development.
- “Manage and maintain roads to protect water, soil, fish, and wildlife resources” (Forest Service 2008a:2-8). The proposed action would replace culverts with appropriately sized stream crossing structures to improve water quality and fish passage.
- “Provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska” (Forest Service 2008a:2-5). The proposed action would improve access and travel times to Whale Pass and El Capitan Cave.

- "Provide a range of recreation opportunities consistent with public demand, emphasizing locally popular recreation places and those important to the tourism industry" (Forest Service 2008a:2-6). The project would provide local residents and tourists with improved safety and more efficient access to recreation sites, including world-renowned karst features.
- "Construct or reconstruct facilities in locations where the need for the facilities are supported by either known use, partnerships for long-term maintenance, or repeated safety concerns" (Forest Service 2008a: 2-6). Improvements of the Neck Lake picnic area and boat launch provide access to Neck Lake for recreation and subsistence activities. This project would provide improved facilities for local residents and tourists with improved safety and services at this site.

Proposed Action

The proposed action would meet the purpose and need by improving roads that are part of the existing and future POW Island TUS, as planned in the SATP (Forest Service 2008a; ADOT&PF 2014). The proposed action includes road reconstruction, realignment, and curve widening along 21 miles of existing unimproved roads heading east and north from the Neck Lake junction. The existing roads were built as single-lane, gravel logging roads and meet AASHTO 15-mph to 25-mph design speeds. The improvements would be a full AASHTO-compliant reconstruction for a 25-mph to 30-mph design speed, according to the *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤ 400)* (AASHTO 2001). The proposed improvements would include a chip-seal surface and would allow vehicles to pass safely in two directions, either by constructing turnouts (visible from either direction) or by widening the roads to two lanes. The additional lane width would accommodate a range of vehicles and drivers that are not familiar with safe driving practices for single-lane roads. Higher design speeds would also allow for more-efficient travel and increased economic development potential in Whale Pass. Larger pullouts would allow for improved recreational and subsistence access. The proposed action would meet the project purpose and need while limiting environmental impacts. The road design phase is currently at 15% complete for Segments 1 and 2, and rough concepts are under development for Segment 3. Because the alignment will continue to be refined, these analyses were conducted on a narrow range of possible alignments. The proposed action also includes consideration of an application from the ADOT&PF for a special use authorization granting the ADOT&PF a Section 4407 ROW. This authorization would transfer responsibility for the road from the Forest Service to the ADOT&PF at the completion of construction activities.

As shown in Figure 2, the proposed improvements are divided into three segments. Additional design details are discussed below.

The proposed action also includes improvement of recreation access facilities at the Neck Lake picnic area and boat launch. The Neck Lake picnic area and boat launch is located approximately 2.9 miles east of the Neck Lake junction and includes a picnic table, a fire ring, a developed pad, and a rustic boat launch. Recreation improvements would include trash and recycling receptacles, signs, a vault toilet, a picnic shelter, and an improved boat launch. As has occurred in the past, dispersed recreation near this site would still be available; i.e., the site would not be designated for day-use only.

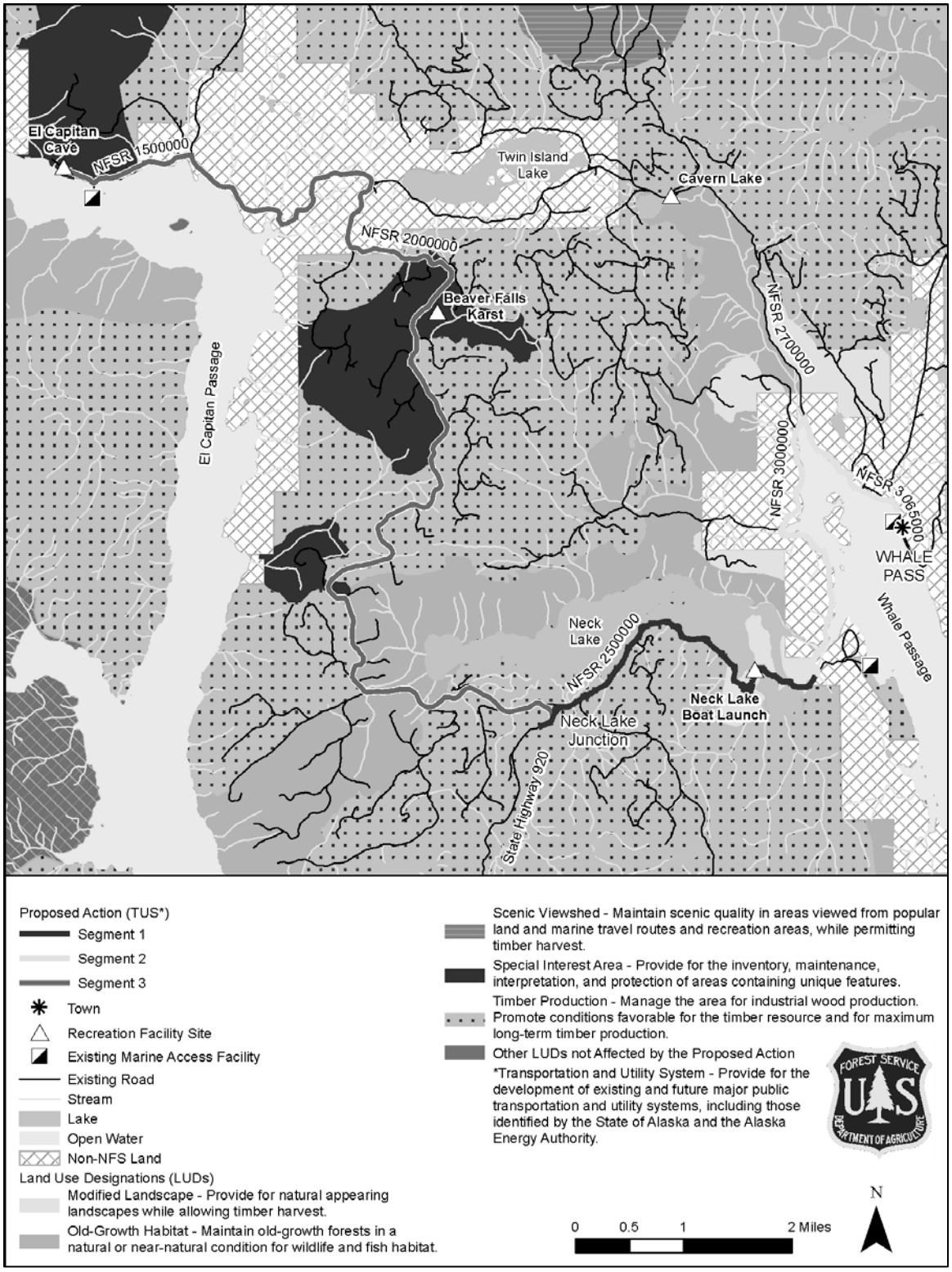

Figure 2. Map of the proposed action.

Common to All Segments

Upon construction completion, maintenance of the roads would shift from the Forest Service to the ADOT&PF. Maintenance efforts would decrease substantially both in the short term and long term after the proposed improvements. One of the purposes of the proposed action is to reduce maintenance of these roads, and several components of the proposed project would do this. As described above, a chip-sealed surface would require less-frequent maintenance because the new surface would be more durable than the existing surface.

The proposed improvements would make the roadway more uniform; it could be as wide as two 11-foot lanes with 3-foot shoulders or as narrow as a single lane with turnouts visible from either direction. These improvements would address the inconsistent road width, lack of shoulders, and substandard driving surface. The redesign would involve grade reductions, changes to curve radii, drainage improvement, marking the road surface, and the addition of signage and guardrails.

The majority of the roads would be reconstructed within the existing corridor to reduce environmental impacts and minimize construction costs. The existing roadway ranges from 12 to 20 feet wide with 5 feet of cleared vegetation on both sides for approximately 66 acres total. Under the proposed action, the approximate completed road corridor width, including cleared vegetation, would range from the current 26 feet to as much as 50 feet. The maximum acreage of the roadway along its entire length after implementation of the proposed action, and inclusive of the existing road corridor, would be at least 128 acres. The direct footprint of the proposed action would require up to 62 acres of currently unaffected lands. Plans are to install a bituminous surface treatment, which is commonly referred to as chip-seal. For most resources, this EA analyzes the wider ROW corridor to accommodate potential realignments, as the final design is developed.

To manage project costs, the engineering design would strive to use materials developed from within the travelway (referred to as balancing cut-and-fills). Blasting may occur along the entire length of the corridor to accommodate these cut-and-fill balances and to further develop rock sources at existing rock pits. Implementation would require space to stage equipment, develop and process fill material, store surfacing material and erosion-protection supplies, and dispose of excess soil excavated during construction. Existing open areas would be used for staging areas, and material would be developed and processed at existing sites. Waste material would be disposed of off-site in upland areas suitable for filling, for example, in existing, inactive rock pits. Slash may be available for residents to use as firewood or burned. Upon completion of construction, disturbed sites within the ROW would be reclaimed and revegetated on NFS lands per Forest Service guidelines and per negotiations with the State of Alaska and private land owners for non-NFS lands.

The project would maintain natural drainage patterns and fish crossings. Where there are existing undersized stream and drainage crossing structures, they would be replaced, and additional drainage culverts would be added. The structures would be designed to accommodate the appropriate design storm, as follows: Bridges would be designed to accommodate the 100-year flood flow; all other drainage crossings would be designed to accommodate the 50-year flood flow. Some bridges may need replacement. Some bridges would accommodate a two-lane road, whereas others would remain designated and signed for single-lane traffic. Crossings designated as resident fish or anadromous fish crossings would be designed to provide aquatic organism passage.

The ADOT&PF estimates the initial cost to construct the proposed action at approximately $60 million (Karpstein 2015). Construction of the segments would be based on funding availability, and thus would likely occur in different seasons or years and may not occur consecutively. It would likely take one season to construct each of Segments 1 and 2, and could take up to two seasons to construct Segment 3. Therefore, construction could take up to four summer seasons total, with the summer construction season being defined as April through October. The construction timing would be staged over multiple years based on funding availability. The order of the stages is not known at this time because the sources of funding would likely define the portions that would be constructed. Logical portions, or phases, would be included in the construction design.

During construction, there would be temporary impacts in the form of traffic delays and inconveniences for road users along the roadway. In order to keep traffic moving along the roads as efficiently and safely as possible, a temporary traffic control plan would be developed prior to construction activity. Traffic control devices, signage, and detour plans would be detailed in this plan. This plan would include public notification procedures. Truck traffic along the roadway would increase as construction materials are hauled to and from material source and disposal sites. The intent would be to minimize impacts to users. The public would be notified in advance of construction activities that would impact travel along the roads.

Established and permitted rock pits on private and NFS lands would provide some source rock for the project, as would rock cuts within the corridor. Existing material source sites (active rock pits) and disposal sites (inactive rock pits) have been identified for Segments 1 and 2 (Rhodes 2013).

It is not anticipated that the construction contractor would need to use sites outside of the limits described for this project. However, some construction activities may take place outside the construction limits that might require ground disturbance, occupation, or clearing, or that could result in some environmental impacts. Such activities could include material extraction, soil waste disposal, water retrieval, and staging. These activities would take place at locations on private, State of Alaska, or NFS lands. Commercial sources located on private lands are defined as established, have provided material to public and private entities on a regular basis over the past 2 years, have appropriate state and local permits, and do not require expansion outside their currently established and permitted area. If the construction contractor requires use of sites outside of the areas analyzed in this EA but on State of Alaska or NFS lands, additional NEPA analyses may be required and the Thorne Bay District Ranger would be notified.

Construction of the improved recreation facilities at the Neck Lake picnic area and boat launch are estimated to cost $80,000–$100,000.

Design Elements and Standards, Best Management Practices, Resource Protection Measures, and Monitoring

The Forest Service uses many resource protection measures in the planning and implementation of land management activities. The application of these measures begins during the planning and design phases of a project. These measures come from or link to the Forest Plan, and continue through all phases of subsequent management related to the project. In addition to Forest Plan Standards and Guidelines and best management practices (BMPs), specific resource protection measures or monitoring may be recommended for activities associated with a specific alternative. The following measures would be implemented for all segments of the roads.

Design Elements and Standards

Design Elements

AASHTO classifies design elements into five major categories: sight distance, horizontal alignment, vertical alignment, combination of horizontal and vertical alignment, and other elements affecting design (AASHTO 2001). Design standards describe the physical characteristics (e.g., road running surface width, cut slope, fill slope, and road surface type) needed to meet the objectives of each design element. To simplify the application of design elements to road design and construction procedures, this discussion relates these elements to the desired design speed for proposed road segments. Other resource protection elements pertaining to fisheries, water quality, wetlands, cultural resources, and karst features include sedimentation traps to protect water quality, diversion of runoff away from karst insurgences, and dispersing the runoff from the surfacing and ditch accumulation, among others. Low-impact construction methods would be implemented in areas where sensitive resources are identified.

Sight Distance

Sight distance is the length of roadway ahead visible to the vehicle operator. At a minimum, this distance should be sufficient to enable a vehicle traveling at design speed to stop before reaching a stationary object in its path. AASHTO recommends that sight distance at every point along the roadway be at least that required for the below-average driver or vehicle to stop within this distance (AASHTO 2001). It is anticipated that sight distance would play a major role in the design and construction of the project roads (e.g., design speeds, levels of excavation, and safety requirements).

Horizontal Alignment

Horizontal alignment is the term that describes the influence of road curvature on travel (design) speed and sight distance. Of specific concern is the ability to maintain stopping sight distance across horizontal curves. Obstacles, such as road cut banks and vegetation, commonly reduce sight distance below minimum stopping distances for given design speeds. Minimizing this effect often involves increasing road vegetation clearing or cut bank excavation to meet minimum sight distance requirements.

Vertical Alignment

Vertical alignment is the term that describes the combination of road grade, changes in these grades, and associated vertical curves on a given road segment. This element can have a major influence on many aspects of a road project. Not only does vertical alignment affect sight distance and design speed, but it can also have substantial influence on aspects such as drainage and surface erosion, and therefore maintenance costs. When road grades are in excess of 15% favorable and 11% adverse, vertical alignment tends to be the design element governing design speed.

Of further concern is the influence of vertical alignment on road surface material. Steep road grades may require the designer to pay special attention to the type of surfacing used to maintain road integrity and minimize maintenance costs through surface erosion.

Combination of Horizontal and Vertical Alignment

This design element combines the effects of both horizontal and vertical alignment. Effects of this design element are most profoundly shown in sight distance. Road design that does not adequately take this element into account can result in a disjointed sight effect. This occurs when a driver approaches the crest of a vertical curve, and looking over the crest, sees a horizontal curve on the other side of the vertical curve before seeing the road directly beyond the crest of the

vertical curve. Not only does this substantially reduce sight distance, but it also can present safety concerns. Oncoming vehicles can be nearly unseen on a disjointed curve situation.

Proper design procedures that address the combination of horizontal and vertical alignment are essential to the success of a road project. Correcting road segments with disjointed sight effects can be very difficult and costly. Due to relatively steep slopes and dissected terrain along various segments of the project roads, disjointed sight effects would likely play a major role in design and construction.

Other Elements Affecting Design and Construction

These elements include drainage, erosion control and landscape development, signing and marking, and maintenance of traffic through construction areas. They tend to have much less impact on road geometry and more on overall road cost. Of these, it is anticipated that drainage and erosion control would result in the greatest cost impact on the project. Implementation of Forest Plan Standards and Guidelines (Forest Service 2008a), BMPs, and other resource protection measures could result in design and construction practices that are substantially more costly than those that were originally employed during construction of the existing roads. The following site-specific design elements would be used in project design and implementation to avoid or reduce impacts of the proposed action.

- Where possible, the existing road prism would be used and new surface disturbance would be minimized.
- During future design phases, attempts would be made to avoid cultural resources sites via alignment shifts.
- In locations where NFSR 2500000 is immediately adjacent to the southern shoreline of Neck Lake, the proposed action would raise the roadbed so that the road would not be submerged during high lake levels. Additionally, the lakeside of the roadbed would have fill slope protection (riprap, for example) to avoid wave erosion of the road. Wave action, generated by wind, has been known to affect the southern shoreline (Robert Peccia and Associates [RPA] 2014).
- The Alaska Department of Environmental Conservation (ADEC) permits drinking water sources, but, in Southeast Alaska, not all surface water users obtain permits for their drinking water use. For example, it is common that rural residents obtain drinking water for their homes by piping it from a nearby stream. Efforts would be made to coordinate with both permitted and non-permitted drinking water users in order to avoid disruption to all water supply users during construction.
- Avoidance or minimization measures identified as part of an essential fish habitat assessment and Alaska Title 16 fish passage concurrence/permitting would be incorporated into the final design.
- There would be no construction activities in streams during typical salmon migratory or spawning periods (between approximately June 1 and August 15).
- Coordination with the Southern Southeast Regional Aquaculture Association (SSRAA) would take place regarding construction timing, in order to avoid significantly impacting their Neck Lake coho rearing program.
- Regarding placement of long-term safety structures along Neck Lake, the Forest Service, Western Federal Lands Highway Division (WFLHD), and ADOT&PF would continue to coordinate with SSRAA to provide SSRAA lake access for their operations.

- Rock from the Descon Formation exists along Segments 1 and 2 and was analyzed for its acid-generating and acid-neutralizing potential. Areas along Segment 2, from milepost (MP) 78.6 to MP 79.3 on NFSR 3000000 (refer to Figure 6), have the potential to generate acid rock drainage (ARD) and would not be used in the proposed road improvements (Baichtal 2015). Rock from these areas would not be used in areas that have the potential for surface water or groundwater exposure. Also, material would not be used from the quarry at the easternmost 0.2 mile of the project in the town of Whale Pass on NFSR 3065000 that is privately-owned by Ron Loucks (RPA 2014: Appendix D). The other samples from along Segments 1 and 2 showed no potential to generate ARD and would be available as construction material for the proposed action (Baichtal 2015).
- Quarries would not be backfilled with fine-grained material or slurry, which could introduce sediment into karst groundwater systems. Each quarry would be evaluated for its ability to transmit water into the groundwater system.
- Road design for high vulnerability karst areas may use lower speed limits, shorter sight distances, or divided lanes to protect karst resources. If needed, the roads would have separate lanes or would be rerouted around sinkholes.
- Sinkholes would be avoided to the extent practicable.
- In high-vulnerability karst, bedrock would not be cut for the roadbed. Instead, fill would be used to create required grades.
- Along Segment 3, seismic refraction or other geophysical techniques would be used from MP 99.63 to MP 101.25 on NFSR 2000000 (refer to Figure 7) to detect collapse and sink features. If realignment is needed to the east in the area from MP 95.45 to MP 96.5 on NFSR 2000000 (refer to Figure 7), a geophysical investigation would be conducted.
- Construction methods would flush-cut stumps, avoid grubbing of stumps, use short ditch runs, and avoid log stringers. However, if root wads are desired for stream restoration work, they would be retained.
- New or replaced culverts would be constructed out of material that has long-term durability in low-pH waters. Galvanized steel does not have a long working life in waters draining from wetlands in Southeast Alaska due to the low pH.
- In areas visible from visual priority travel routes and use areas (VPRs), landscape design techniques would be incorporated in the planning process to the extent that they are compatible with land use designation (LUD) objectives.
- Where feasible, designs and materials that are compatible with lines, forms, colors, and textures in the surrounding landscape would be used.
- The roads would be laid out to fit within the existing topography through balancing cut and fill and minimizing disturbance beyond the road prism while maintaining existing vegetation through minimizing clearing limits and area of disturbance.
- Where feasible, rocks that match the color of rocks in the immediate vicinity would be used for slope stabilization. A variety of rock sizes would be used to help reduce visual impacts.
- Organics and native vegetation would be added to cut slopes to blend into the surrounding landscape.
- Waste piles and quarries would be located and sculpted in areas where they do not visually dominate the landscape.
- Large open-faced quarries with steep back walls would be avoided. Inactive quarries would be used for waste piles to reduce visual impacts.

- If containment recommendations are suggested in the future Segment 3 Phase I environmental site assessment (Phase I evaluation), they would be followed. The Phase 1 evaluation for Segments 1 and 2 did identify some sites with *recognized environmental conditions* (RECs), but did not recommend containment measures (Herrera Environmental Consultants, Inc. [HEC] 2015a).
- A stable subgrade for the chip-seal surface across muskeg is achieved by excavating unsuitable material down to a stable base of competent material and backfilling, usually with shot rock. Either realignment would occur around excessively deep unsuitable materials, or they would be partially excavated and backfilled with rock. All material determined to be unsuitable by a geotechnical study would be discarded.
- A wetland delineation would be conducted for Segment 3. Wetlands would be avoided via realignment, and impacts would be minimized by decreasing the project footprint, as much as possible.
- Where possible, road realignment would avoid high-value wetlands, while still adhering to controlling road design elements and standards. Where wetlands are crossed, the road would be constructed to allow the natural cross drainage to be maintained.

Design Standards

The design scenario considered for reconstruction of the project roads could be as wide as two lanes or as narrow as a single lane with turnouts visible from either direction.

Lane Width

The existing one-lane roads that characterize all project roads have various cleared widths dependent on the topography, environmental features, and earth materials (e.g., bedrock, wetlands, and lake) adjacent to the roadside. Generally, the road width of these roads is 16 feet. This EA analysis assumes the maximum two-lane chip-sealed roadway would be 26 feet wide, although it could be as narrow as a single with turnouts visible from both directions. The total cleared area, including vegetation removal, would range from 26 to 50 feet wide. The entire ROW is being analyzed in this EA to accommodate potential realignments, but ultimately the cleared area (at a maximum of 50 feet wide) would occupy 11% of the analyzed ROW. Additional roadway width is anticipated for some sections of the roadway to provide for focused viewing or parking opportunities for new or expanded recreational opportunities (such as biking, hiking, wildlife viewing, and fishing).

A detailed analysis for the project roads was conducted to determine the extent of road clearing needed based on specific environmental road features, amount of cut-and-fill area, clearing and grubbing, excavation, and waterside construction. The chip-sealed road sections would affect the level of construction effort required, the extent of clearing and ground disturbance, and the number of drainage structures that would need to be replaced. A preliminary engineering cost analysis of the level of effort (low, medium, high) needed to construct each segment of road to achieve safe sight distances and acceptable horizontal and vertical alignment was developed for this EA. This analysis takes into account factors such as underlying geology, soils, slopes, horizontal and vertical controls, and streams that would need to be addressed in each segment of road under each alternative. Not included is wetland or other environmental resource protection that may be needed for the project roads. More detailed agency coordination or site-specific field studies will be needed prior to estimating these costs.

Drainage Structures and Bridges

All drainage structures would likely be replaced, either to improve fish passage, or because stream topography does not allow for culvert extensions. Bridge load testing is currently being conducted on Segments 1 and 2. Some bridges may need replacement. Some bridges would accommodate a two-lane road, whereas others would remain designated and signed for single-lane traffic.

Road Surfacing

Chip-sealing is being considered for use in all reconstruction scenarios. There is little effective difference in the design speeds of gravel and chip-seal surfaced roads for any given alignment, excepting under specific weather (wet and dry surface) and road maintenance conditions. The primary differences between aggregate and chip-seal surface are related to initial costs, maintenance costs, and environmental considerations.

The lower initial cost of aggregate gravel surfacing is paired with higher maintenance costs incurred through grading and periodic resurfacing as aggregate breaks down or is lost. Aggregate can be manufactured close to the job site using a portable rock crusher with rock obtained from pits located adjacent to the existing road system.

Although initial costs are higher, chip-seal surfacing has several advantages over aggregate surfacing. A smoothed travel way, with painted centerlines and fog lines, enhances safety and the quality of the ride for vehicle occupants. A chip-seal surface requires less maintenance than an aggregate surface, and is more resilient to the effects of snowplows during snow removal operations. A portable plant would be required to produce asphalt since a permanent plant is not available locally.

Best Management Practices

This section provides an overview of BMPs that would be applied to protect water quality as specified in the Forest Plan (Forest Service 2008a), the Soil and Water Conservation Handbook (Forest Service 2006), and in the National Core BMP Technical Guide (Forest Service 2012). Project implementation would include the following BMPs, to avoid or reduce impacts of the proposed action.

Watershed Management

- **BMP 12.5/AqEco-2, AqEco-3, Plan-2, Plan-3, Road-2** (Wetland Identification, Evaluation, and Protection) – To identify wetland functions and value, and provide appropriate protection measures designed to avoid adverse hydrologic impacts (Forest Service 2006; Forest Service 2012).
- **BMP 12.8/AqEco-2, Fac-6, Road-10** (Oil Pollution Prevention and Servicing/Refueling Operations) – To prevent contamination of surface and subsurface soil and water resources from spills of petroleum product (Forest Service 2006; Forest Service 2012).
- **BMP 12.9/Road-10** (Oil and Hazardous Substances Pollution Contingency Planning) – Prevent the contamination of waters from accidental spills of oil and hazardous substances (including pesticides) at sites where a Spill Prevention Control and Countermeasure (SPCC) plan or hazardous substances contingency plan is required (Forest Service 2006; Forest Service 2012). Spill response equipment could be stored close to sensitive areas such as at the Beaver Falls Karst Interpretive Trail and El Capitan Cave.
- **BMP 12.14** (Planning, Design, and Management Utility Corridors) – To ensure water resource protection measures are incorporated into the construction and maintenance of utility corridors (Forest Service 2006).

- **BMP 12.15** (Management of Sanitary Facilities and Sanitary Guidelines for Temporary Camps and Primitive Developments) – To comply with regulations for the disposal of sewage at administrative sites, facilities under special-use permit, temporary camps, and primitive developments of all types (Forest Service 2006).
- **BMP 12.16** (Control of Solid Waste Disposal) – To protect surface and subsurface soil and water resources from harmful nutrients, bacteria, and chemicals through proper disposal of solid waste and use of alternative construction materials (Forest Service 2006).
- **BMP 12.17/AqEco-4, Fac-2, Fac-10, Road-6, Veg-2, Veg-4** (Revegetation of Disturbed Areas) – To provide ground cover to minimize soil erosion (Forest Service 2006; Forest Service 2012).

Transportation and Other Facilities Management

- **BMP 14.1/Road-1** (Transportation Planning) – To assure soil and water resources are considered in transportation planning activities (Forest Service 2006; Forest Service 2012).
- **BMP 14.2/Rec-8, Road-2, Road-4, Road-11** (Location of Transportation Facilities) – To assure water resources protection measures are considered when locating roads and trails (Forest Service 2006; Forest Service 2012).
- **BMP 14.3/Rec-8, Road-2, Road-3** (Design of Transportation Facilities) – To incorporate site-specific soil and water resource protection measures into the design of roads and trails (Forest Service 2006; Forest Service 2012).
- **BMP 14.5/AqEco-2, Fac-2, Road-3** (Road and Trail Erosion Control Plan) – Develop erosion control plans for road or trail projects to minimize or mitigate erosion, sedimentation, and resulting water quality degradation prior to the initiation of construction and maintenance activities. Ensure compliance through effective contract administration and timely implementation of erosion control measures (Forest Service 2006; Forest Service 2012).
- **BMP 14.6/AqEco-2, Road-3** (Timing Restrictions for Construction Activities) – Minimize erosion potential by restricting the operating schedule and conducting operations during lower risk periods (Forest Service 2006; Forest Service 2012).
- **BMP 14.7/Fac-2, Min-5, Road-3** (Measures to Minimize Mass Failures) – Minimize the chance and extent of road-related mass failures, including landslides and embankment slumps (Forest Service 2006; Forest Service 2012).
- **BMP 14.8/Fac-2, Road-3, Road-6** (Measures to Minimize Surface Erosion) – Minimize the erosion from cutslopes, fillslopes, and the road surface, and consequently reduce the risk of sediment production (Forest Service 2006; Forest Service 2012).
- **BMP 14.9/Fac-2, Road-3, Road-6** (Drainage Control to Minimize Erosion and Sedimentation) – Minimize the erosive effects of concentrated water flows from transportation facilities and the resulting degradation of water quality through proper design and construction of drainage control systems (Forest Service 2006; Forest Service 2012).
- **BMP 14.11/AqEco-2, Road-3, Road-7** (Timely Erosion Control Measures for Incomplete Projects) – Minimize erosion of and sedimentation from disturbed ground on incomplete projects by completing erosion control work prior to seasonal or extended shutdowns (Forest Service 2006; Forest Service 2012).
- **BMP 14.12/Road-3, Road-7** (Control of Excavation and Sidecast Material) – Minimize sedimentation from unconsolidated excavated and sidecast material caused by road construction, reconstruction, or maintenance (Forest Service 2006; Forest Service 2012).

- **BMP 14.14/AqEco-2, Road-7** (Control of In-channel Operations) – Minimize stream channel disturbances and related sediment production (Forest Service 2006; Forest Service 2012).
- **BMP 14.15/AqEco-2, Road-7** (Diversion of Flows Around Construction Sites) – Identify and implement diversion and de-watering requirements at construction sites to protect water quality and downstream uses (Forest Service 2006; Forest Service 2012).
- **BMP 14.17/AqEco-2, Road-7** (Bridge and Culvert Design and Installation) – Minimize adverse impacts on water quality, stream courses, and fisheries resources from the installation of bridges, culverts, or other stream crossings. Use stream simulation techniques, where practicable (Forest Service 2006; Forest Service 2012).
- **BMP 14.18/AqEco-3, Fac-2, Min-5** (Development and Rehabilitation of Gravel Sources and Quarries) – To minimize sediment from borrow pits, gravel sources, and quarries, and to limit channel disturbance from gravel sources permitted for development within floodplains (Forest Service 2006; Forest Service 2012).
- **BMP 14.19/Fac-5, Road-3** (Disposal of Construction Slash and Stumps) – To ensure that debris generated during construction is prevented from obstructing channels or encroaching on stream and sensitive karst features (Forest Service 2006; Forest Service 2012).
- **BMP 14.20/Road-6** (Road Maintenance) – Maintain all roads in a manner which provides for soil and water resources protection by minimizing rutting, road prism failures, sidecasting, and blockage of drainage facilities (Forest Service 2006; Forest Service 2012).
- **BMP 14.22/Road-1, Road-6** (Access and Travel Management) – Control access and manage road use to reduce the risk of erosion and sedimentation from road surface disturbance especially during the higher risk periods associated with high runoff and spring thaw conditions (Forest Service 2006; Forest Service 2012).
- **BMP 14.23/Road-8** (Snow Removal Operations) – To minimize impacts of snow removal operations on road surfaces and embankments and to reduce the risk of sediment production (Forest Service 2006; Forest Service 2012).
- **BMP 14.24/Fac-10, Road-6** (Road Obliteration) – Reduce sediment generated from temporary or short-term roads and return the land to production by obliterating roads at the completion of their intended use (Forest Service 2006; Forest Service 2012).
- **BMP 14.25/Road-9** (Surface Erosion Control at Facilities) – To minimize the amount of erosion and sedimentation through implementation of a Sediment and Erosion Control Plan and Storm Water Pollution Prevention Plan developed in cooperation with the ADEC as part of the Alaska Pollutant Discharge Elimination System (APDES) General Permit application (Forest Service 2006; Forest Service 2012). Planning the location of sediment capture devices to deter downstream movement of sediment would be part of the SWPPP development.
- **Road-11** (Road Storm-Damage Surveys) provides direction for monitoring of roads after major storms (Forest Service 2012).
- If suspect contaminated soils (e.g., soils with petroleum-like odors, or unusual discoloration) are encountered during construction, they would be stockpiled separately, and characterized for disposal.
- As much as possible, transportation of material unsuitable for construction that may be infested with non-native plant seed and plant parts would be avoided.
- Cut and fill slopes would be shaped to resemble the existing topography.
- Rock quarries would not be developed near karst resources without adequate site survey and design. Quarries would be properly closed after abandonment. Abandoned road prism

material would be used where feasible to minimize quarrying of new material. Guidelines in Appendix H of the Forest Plan (Forest Service 2008a) would be followed to ensure karst resource protection.

- During construction, sediment controls would be visually assessed, at least daily, to assure that they work properly.
- Fueling or storage of petroleum products would comply with permit requirements. No storage of fuel, vehicle fueling, or maintenance would be conducted within 100 feet of wetlands, surface waters, or high-vulnerability karst. On-site fuel storage would require double-walled containment.
- Drainage facilities that allow ground infiltration and provide sediment filtration from storm water runoff would be provided.
- Construction contract provisions for waste management would be included that would require contractors to keep food, garbage, petroleum products, and other attractants unavailable to animals, such as bears, during construction.
- Native plants would be planted in areas with bare soil to minimize the potential for the spread of noxious weeds and to avoid topsoil erosion.
- Use weed-free seed in areas where revegetation is required. On NFS lands, contractors would be required to use the Region 10, Tongass-approved seed mix for erosion control.
- Silt fencing would be installed where necessary for erosion control. Avoid straw bales and straw wattles unless they are certified weed-free.
- Only rock sources and material disposal sites with a low risk of harboring invasive plants would be used, as identified through coordination with the Forest Service. All of the sites identified along Segments 1 and 2 in *Proposed Unsuitable Construction Material Disposal Sites & Rock Sources. Reconnaissance Report* (Rhodes 2013) have been approved by the Forest Service for use.
- Currently existing noxious weeds within a minimum of 100 feet of the road centerline would be eradicated or mechanically controlled.

Resource Protection Measures

The following resource protection measures would be used to reduce impacts of the proposed action. Resource protection measures, including monitoring as outlined in the *Monitoring* section, would be included in the terms and conditions of the special use authorization granting a Section 4407 ROW, and responsibility for the road, to the ADOT&PF.

- At the one known location of Japanese knotweed (*Fallopia japonica*) (in Whale Pass near the boat harbor parking area), the following containment options would occur. The known infestation and all portions of the root system would be isolated and contained. Movement of contaminated material would be as limited as possible and, where feasible, contained on-site. If it is moved to a different site, that site would be treated similar to above, and the material would be buried. The site would be carefully monitored for future infestations, and equipment working in the contaminated area or hauling contaminated materials would be thoroughly cleaned before moving to another portion of the project. Containment options could include the following:
    - Full extraction of the infestation, covering with tarps, and burying at least 3 feet deep with clean material
    - Full extraction and incineration of the material

- All equipment working with contaminated soil from the Japanese knotweed infestation would be cleaned before moving it to another area.
- It is recommended that equipment be cleaned before it is transported to the POW Island road system. Equipment cleaning would be the responsibility of the contractor and would be completed on non-NFS lands before arriving at the project site. *Clean* would be defined as free of soil or mud contaminated with plant parts (including roots, seeds, flowers, and stems) on the tractor, wheels, shovel, and undercarriage of the vehicle or equipment (i.e., bare metal or paint).
- The details of compensatory mitigation for permanent wetland impacts would be finalized during the U.S. Army Corps of Engineers (USACE) permitting process under the Clean Water Act Section 404. The ADOT&PF would adhere to all permit conditions and requirements stipulated in the USACE permit. Local compensatory mitigation options are being examined. If an appropriate option is not available, it is likely that an in-lieu fee would be established with the Southeast Alaska Land Trust.
- Before construction and during the eagle breeding season (June 1 through mid-August), biologists would conduct bald eagle nest surveys in a 660-foot buffer of the road centerline to determine nesting activity. Construction activities (including blasting) would not be conducted within 660 feet of observed active nests until the chicks have fledged.
- Before construction and during the goshawk breeding season (March 15 through mid-August), biologists would conduct northern goshawk surveys on NFS lands in a 600-foot buffer of the road centerline to determine nesting activity. Construction activities (including blasting) would not be conducted within 600 feet of observed active nests until the chicks have fledged.
- Unanticipated discoveries of cultural resources would result in immediately halting project work at the site where resources were found. The Forest Service cultural resources specialist would be notified; this specialist would provide additional procedures for the construction contractor to follow.
- The National Historic Preservation Act Section 106 process will be completed in advance of construction, and response to any potential adverse effects to historic properties will be identified as part of that process, including potential avoidance or mitigation measures.

Monitoring

The following monitoring would be required to assure that effects are limited:

- Monitoring for invasive species would occur after project implementation to allow for early detection and rapid response in the event that non-native plants are introduced. The monitoring area would include the road corridor, any staging areas including material use sources, disposal sites for unsuitable fill material, and any areas that required additional erosion-control measures.

Permits and Other Requirements

The following permits and approvals would be required before implementation of the proposed action.

- Alaska SHPO concurrence
- USACE Clean Water Act Section 404 authorization
- ADEC Section 401 Water Quality Certification
- ADEC APDES General Permit for Discharges from Large and Small Construction Activities

- Alaska Department of Fish and Game (ADF&G) Division of Habitat Title 16 Fish Habitat concurrence/permits
- ROWs: Further detailed in the “Land Use and ROW Acquisitions” section

Segment 1: Neck Lake Junction to Southern Whale Pass Marine Access Facility Junction

As shown in Figure 2, Segment 1 starts at the Neck Lake junction as NFSR 2500000 and travels east 3.8 miles along the southern shoreline of Neck Lake to its intersection with NFSR 3000000 (south of the Neck Lake outlet). This is also the junction with NFSR 3000490, which accesses the southern Whale Pass marine access facility (MAF). This segment runs through NFS lands, State of Alaska lands, and private land.

The improvements for this segment would be a full AASHTO-compliant reconstruction for a 30-mph design speed (AASHTO 2001). This segment would likely be two-lane and could include turnouts and curve widening. A typical cross section is shown in Figure 3.

The SSRAA operates a coho rearing program along the southern shoreline of Neck Lake. At the eastern side of Neck Lake, the road crosses a causeway. A boat launch is located on one of the islands that comprise the causeway.

Several realignment locations are still being evaluated in Segment 1:

- Near the junction of NFSRs 2500000 and 2000000 (Neck Lake junction), a realignment would smooth out the horizontal alignment from the current hairpin curve.
- Before the boat launch through an existing rock pit; currently the road travels around this rock pit.
- Along the causeway after the boat launch.
- At the intersection accessing the Southern Whale Pass MAF.

Segment 2: Southern Whale Pass MAF Junction to Whale Pass

Segment 2 is 4.4 miles long and proceeds north along NFSR 3000000 around Whale Passage and then south to the community of Whale Pass along NFSR 3065000 (see Figure 2). The eastern terminus is the Whale Pass boat launch (located 375 feet past the access road to the seaplane base). This segment runs through State of Alaska and private lands.

The improvements for this segment would be a full AASHTO-compliant reconstruction for a 25-mph design speed (AASHTO 2001). A typical cross section is shown in Figure 4. To avoid affecting private land owners adjacent to NFSRs 3000000 and 3065000, the majority of this segment would likely be single-lane with turnouts visible from either direction.

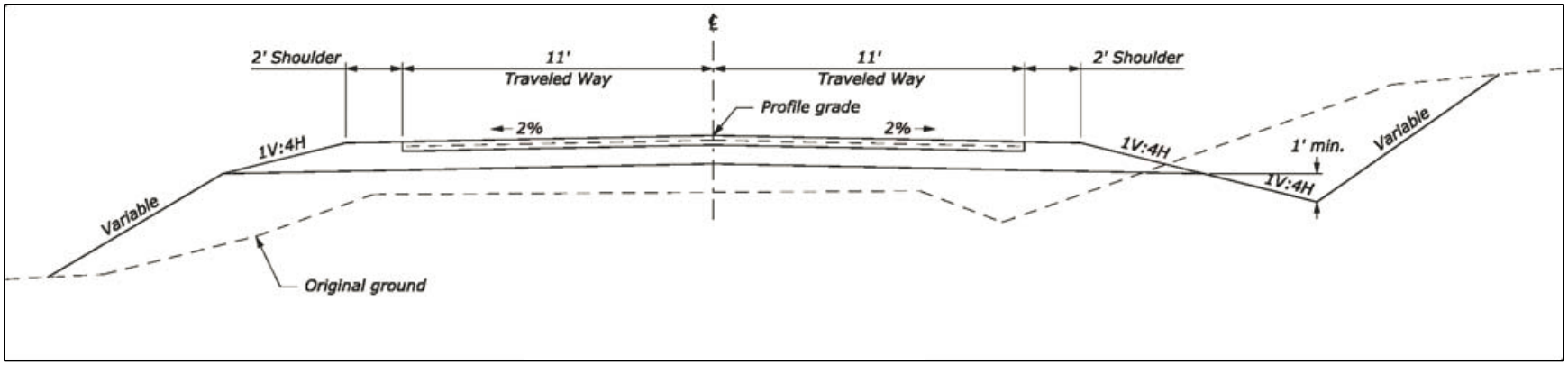

Figure 3. Typical cross section of Segment 1 and 3 roads (RPA 2014).

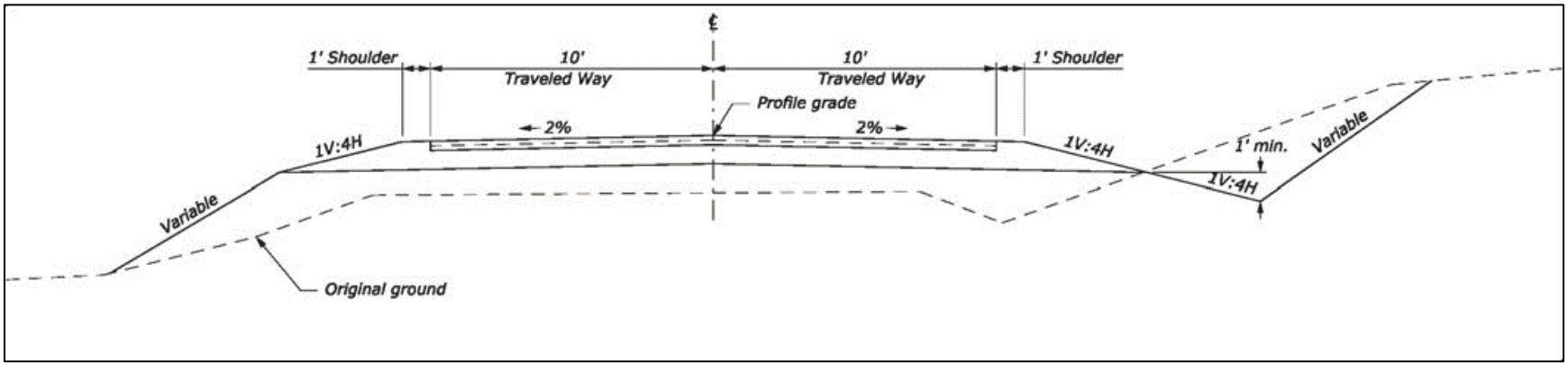

Figure 4. Typical cross section of Segment 2 roads (RPA 2014).

Segment 3: Neck Lake Junction to El Capitan Cave

Segment 3 also starts at the Neck Lake junction and proceeds north and then west to the El Capitan Cave parking lot (see Figure 2). The NFSRs included in Segment 3 from the Neck Lake junction heading west and then north are 2000000 and 1500000, respectively. The western segment is 12.8 miles long. This segment travels through extensive karst resources and includes the Beaver Falls Karst Interpretive Site. This segment runs through NFS lands and State of Alaska lands.

No engineered designs have been completed for Segment 3, but rough concepts are under development. A 30-mph design speed is likely for this segment according to the SATP (ADOT&PF 2014). A typical cross section is shown in Figure 3. The potential for road realignment at the intersection of NFSRs 2000000 and 2500000 with State Highway 920 is being evaluated. It is possible that other realignments would occur along Segment 3, but these have not yet been identified.

No Action Alternative

Under the no action alternative, construction activities would not occur, and forest highway funds would not be spent for improvements to the Neck Lake and El Capitan Cave Roads. The no action alternative would not address the deficiencies identified in the “Need for the Proposal,” would not meet the SATP, and would result in roadway maintenance that would need to be funded and performed by the Forest Service at increasing levels. The no action alternative is synonymous with the existing condition in the “Environmental Impacts of the Proposed Action” section, and is used as the environmental baseline in this EA.

Alternatives Eliminated from Further Analysis

Higher Design Speed Alternative

Higher design speeds were considered, but the Forest Service, WFLHD, and ADOT&PF determined that the AASHTO-compliant 25-mph to 30-mph design speed (AASHTO 2001) would meet the purpose and need while avoiding greater environmental impacts and costs. The 25-mph to 30-mph design speed would meet POW Island transportation infrastructure needs and traffic demands, providing year-round access and safety improvements for the reasonably foreseeable future (20 years). Due to anticipated low ADT and use of the roads by heavy logging equipment, road construction equipment, and multi-use passenger vehicles, high-speed, high-volume highway design standards are not appropriate for this project. These roads are intended to function similar to a country road and not as a high-speed state highway.

Twin Island and Cavern Lakes Alternative

This alternative would improve all of the same roads but would swap NFSR 2700000 for the NFSR 3000000 and NFSR 2500000 portions of Segments 1 and 2. This alternative would achieve some aspects of the purpose and need but doubles the mileage to Whale Pass from the Neck Lake junction (16.7 miles instead of 8.2 miles). Another alternative would be to not improve the southerly 9.1 miles of NFSR 2000000 and provide improved access to El Capitan Cave via Whale Pass around Neck, Cavern, and Twin Island Lakes via NFSRs 2500000, 3000000, 2700000, then connecting to NFSRs 2000000 and 1500000. This would not support the POW Island north-south “essential corridor” planned in the draft SATP (ADOT&PF 2014).

Environmental Impacts of the Proposed Action

This section summarizes the potential impacts of the proposed action for each resource affected. Table 2 lists the issues and resources that have the potential to be impacted by the proposed action. A detailed analysis of these issues and resources follows. This table also provides a rationale for those issues and resources that did not receive further analysis.

Table 2. Issues and Resources

Issue or Resource	Carried Forward for Detailed Analysis?	Rationale (if not carried forward)
Air quality	Yes	
Aquatic resources, including fisheries and hydrology	Yes	
Climate change	No	Continued management of the Tongass for resiliency in the face of uncertain but anticipated change will be done through maintaining mostly intact ecosystems. Climate change is difficult to assess at the project level; however, one factor thought to contribute to climate change is the removal of forest that stores carbon dioxide. The proposed action would remove less than 62 acres of additional vegetation, including trees, from the 21-mile road corridor for road widening and sight distance. Further details regarding vegetation clearing are discussed in the “Vegetation and Wetlands” section of this EA.
Cultural, historical, and paleontological resources	Yes	
Geology, including karst and caves	Yes	
Environmental justice	No	The proposed road improvement project would cause temporary inconvenience to local road users, including low-income and minority individuals, but all road users would be impacted equally.
Hazardous waste sites	Yes	
Inventoried roadless areas	No	The project includes improving an existing road, as outlined. No new roads would be constructed, nor would any roadless areas be impacted. The inventoried roadless areas closest to the proposed action are located 1.2 miles north of El Capitan Cave (Segment 3) and 1 mile south of Neck Lake (Segment 2).
Land use/ROW acquisitions	Yes	
Noise	Yes	
Public services and utilities	Yes	
Recreation	Yes	
Scenery	Yes	
Socioeconomics	Yes	
Soils	Yes	
Subsistence use	Yes	
Transportation	Yes	
Vegetation and wetlands	Yes	
Wildlife	Yes	

Cumulative Impacts

If there are cumulative impacts that would occur from implementation of the proposed action in addition to past, current, and reasonably foreseeable future projects near the proposed road improvements, they are included below in each of the resource analyses.

Past and Present Projects

Past and present projects near the proposed action include timber management (since 1954), recreational use, subsistence use, and mining. Additionally, ADOT&PF constructs, maintains, and operates a regional roadway network that provides direct connections between communities on POW Island.

Three current plans guide land, resource, and transportation management for North POW Island:

- The *Prince of Wales Island Area Plan, Revised October 1998* (ADNR 1998)
- The *Access Travel Management Plan Environmental Assessment, Prince of Wales and Surrounding Islands* (Forest Service 2009a)
- The SATP (ADOT&PF 2014).

Reasonably Foreseeable Future Projects

The Forest Service, State of Alaska, and private land owners plan to continue timber harvest in the analysis area in the foreseeable future. In addition, a number of potential future recreational enhancement opportunities may occur in the analysis area (Table 3).

Table 3. Potential Future Recreation Enhancements in the Analysis Area

Recreation Place	Potential Future Enhancement
El Capitan Cave Interpretive Area	Improve parking and gathering area with the following: New toilet facility Expanded and graded parking (at least five vehicles) New gear shack with covered porch for tour gathering Improved trailhead access
El Capitan Cave Rustic Boat Launch	Improve the boat launch to make it more useable by a wider range of boat sizes.
Neck Lake Access Trails	Coordinate pull-offs along NFSR 2500000 with new gravel trails to access Neck Creek and the Neck Lake estuary. Construct two or three gravel trails, attempting to maintain a grade at 8%–12%. The trails are approximately 200–400 feet long.
Beaver Falls Karst Interpretive Trail	If future road improvements, such as widening, could affect the current location of the toilet, move the toilet and update the trailhead and parking area.

Air Quality

The analysis area for air quality is POW Island. Past and present impacts to air quality across Southeast Alaska, including the analysis area, include mobile emissions from resident cars, fugitive dust from unpaved roads, and heating and electrical sources (e.g., diesel generators, wood-burning fireplaces, and stoves) (ADEC 2012).

The State of Alaska does not monitor air quality on POW Island. However, the Environmental Protection Agency (EPA) cooperates with state governments to monitor air quality at many different geographic levels—from individual cities to entire states. Juneau is the closest community that is part of the Alaska Air Monitoring Network. The community has had periods of non-attainment for particulate matter but has not violated the EPA's particulate matter air quality standard since 1994 (ADEC 2015a). POW Island is considered to meet or exceed the National Ambient Air Quality Standards (NAAQS) (ADEC 2015a).

No Action Alternative

Under the no action alternative air quality would remain at its current level. Because current road segments between Whale Pass and El Capitan Cave are unpaved, it is anticipated that the analysis area could continue to experience occasional problems with fugitive dust from vehicles traveling on these roads during periods of little or no rainfall.

Impacts from the Proposed Action

Air quality in the analysis area would be impacted temporarily during active construction under the proposed action. Impacts would include emissions of exhaust fumes, dust, and particulates from construction vehicles, chip-seal surfacing, and possibly burning of cleared debris. During construction of the proposed action, airborne dust would likely increase; however, this would be a temporary impact and dust control procedures (such as watering the corridor during dry periods) would be implemented to keep the dust at a minimum. The proposed action would not result in long-term degradation of air quality and would not affect the attainment status for the analysis area. Overall, it is anticipated that air quality in the analysis area could improve with completion of the project because the roads would be converted from gravel to chip-seal surface, likely causing a reduction in airborne dust during dry weather periods.

Reasonably foreseeable projects could result in temporary, localized increases in air pollutants due to diesel fuel combustion and dust from equipment and vehicles. Future recreation enhancement projects are mostly associated with increased recreation capacity in the area and, therefore, with increased recreational use and increased emissions from personal vehicles. Potential increases in vehicle emissions and fugitive dust would not result in non-attainment with NAAQS within the analysis area. However, the addition of these actions combined with the proposed action would not result in significant cumulative effects to air quality or to climate change.

Aquatic Resources

The analysis area for aquatic resources (Figure 5) is all of the streams intersected by the proposed action. This area may experience direct or indirect effects from the project to aquatic resources. Past and present impacts to aquatic resources include current drinking water use of surface waters, the existing road, and timber management activities.

Numerous streams cross the proposed road alignment (see Figure 5). Due to the relatively heavy rainfall that occurs throughout the year on POW Island, many of these streams are perennial. The runoff to these streams is primarily from rainfall and moderate snowmelt. Consequently, the highest flows tend to occur in the wetter months from October through December, and the lowest flows typically occur from January through March and again from mid-May through August. Because the existing road surface is not paved, the quantity and timing of delivery of surface water flow to streams is influenced by absorption and detainment by the gravel roads and surrounding vegetation.

Most of the surface water in the analysis area drains to the larger streams (Big, Eagle, Snoose, Wolf, and Neck Lake Creeks) or to El Capitan Passage or Whale Passage. Water bodies in the analysis area support spawning and rearing habitat for pink (humpback) salmon (*Oncorhynchus gorbuscha*), coho (silver) salmon (*O. kisutch*), sockeye (red) salmon (*O. nerka*), and chum (dog) salmon (*O. keta*), as well as Dolly Varden char (*Salvelinus confluentus*), coastal cutthroat trout (*O. clarkii clarkii*), and steelhead and rainbow trout (*O. mykiss*) (the anadromous and resident forms, respectively) (Johnson and Litchfield 2015). Chinook salmon (*O. tshawytscha*) have not been documented in the area and are not known to use any of the streams on POW Island (Forest Service 2014a). The proposed action crosses 17 Class I streams, 14 Class II streams, 10 Class III streams, and 13 Class IV streams (Table 4).

Table 4. Stream Crossings along the Proposed Action Roads

Class I	Class II	Class III	Class IV	Ditches or Unknown
17	14	10	13	22

Note: The proposed action would not change the number of stream crossings from the current alignment.
Source: Forest Service (2014a).

Stream Crossings

Many of the streams in the analysis area cross under the existing roadway through culverts of various sizes and shapes. Along the existing corridor, there are approximately 70 culverts (22 of which are drainage ditches) and seven existing bridge crossings. As recently as 2012, the Forest Service inventoried the fish-bearing stream crossings (Class I or II) in the analysis area to identify fish passage problems and found that 12 of these crossings had fish passage concerns (Forest Service 2014a). All Class I and II stream crossings are shown on Figures 5–7. Individual crossings are identified in Table 5, which was developed in coordination with the ADF&G. ADF&G has field-verified the fish-bearing streams along Segments 1 and 2. Of the 31 fish-bearing stream crossings intersected by the project roads, 17 are on anadromous (salmon-bearing, Class I) fish streams and 14 are on resident (Class II) fish streams.

Drinking Water Sources

There is one ADEC-identified drinking water protection area north of the road alignment along Big Creek (aka 108 Creek). Because the project would be downstream of the protection zone, it would not affect drinking water in Big Creek (aka 108 Creek). There are four permitted drinking water sources immediately upstream of the proposed action: three sources are near Whale Pass and one source is near El Capitan Cave (ADEC 2015b). Two of the sources are for commercial water use from the SSRAA (near Neck Lake) and Bear Valley Lodge (near El Capitan Cave). Other unpermitted drinking water sources could occur in areas where there are dwellings, such as upslope of the private lands surrounding Whale Passage.

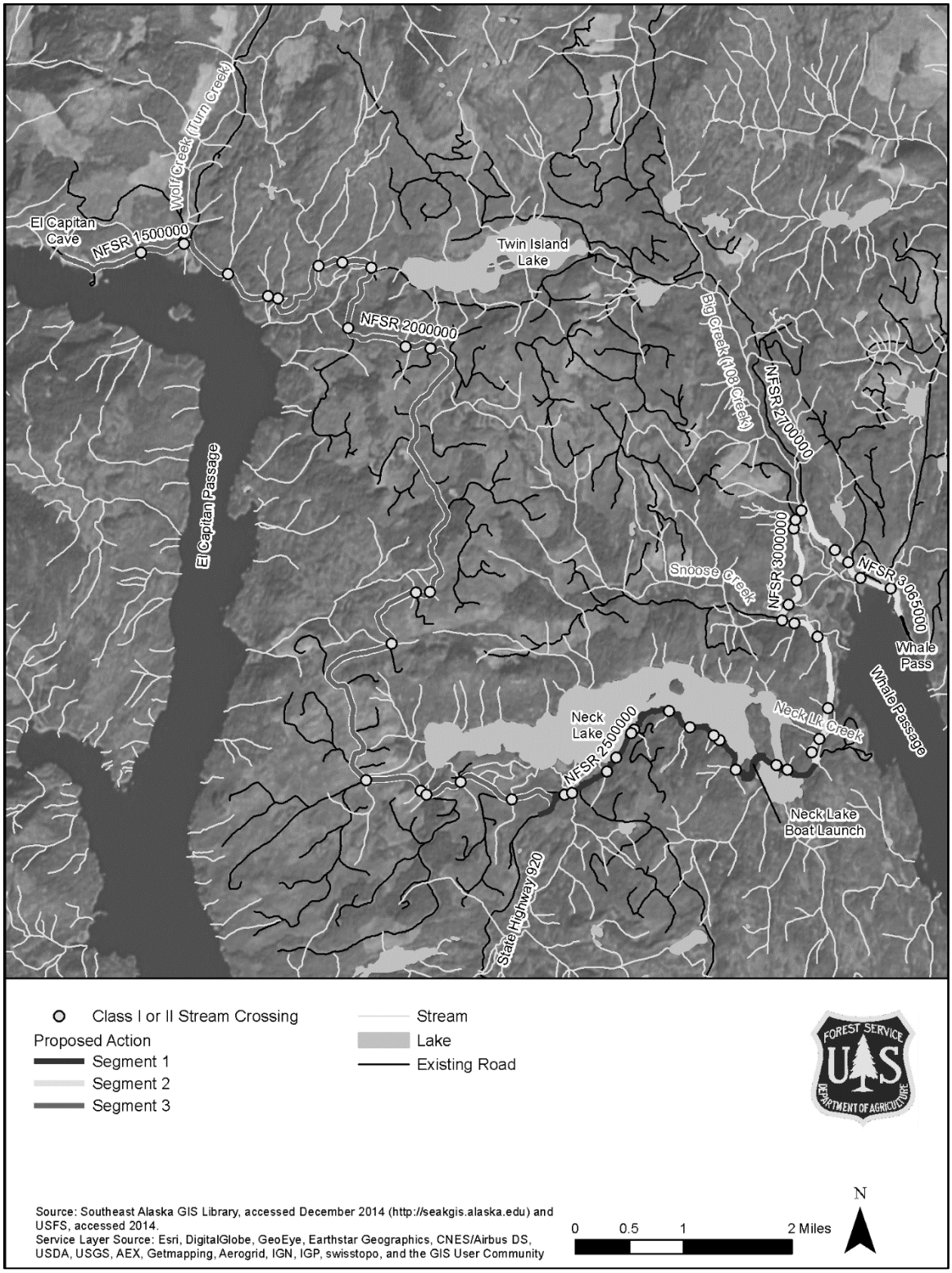

Figure 5. Map of streams intersected by the proposed action.

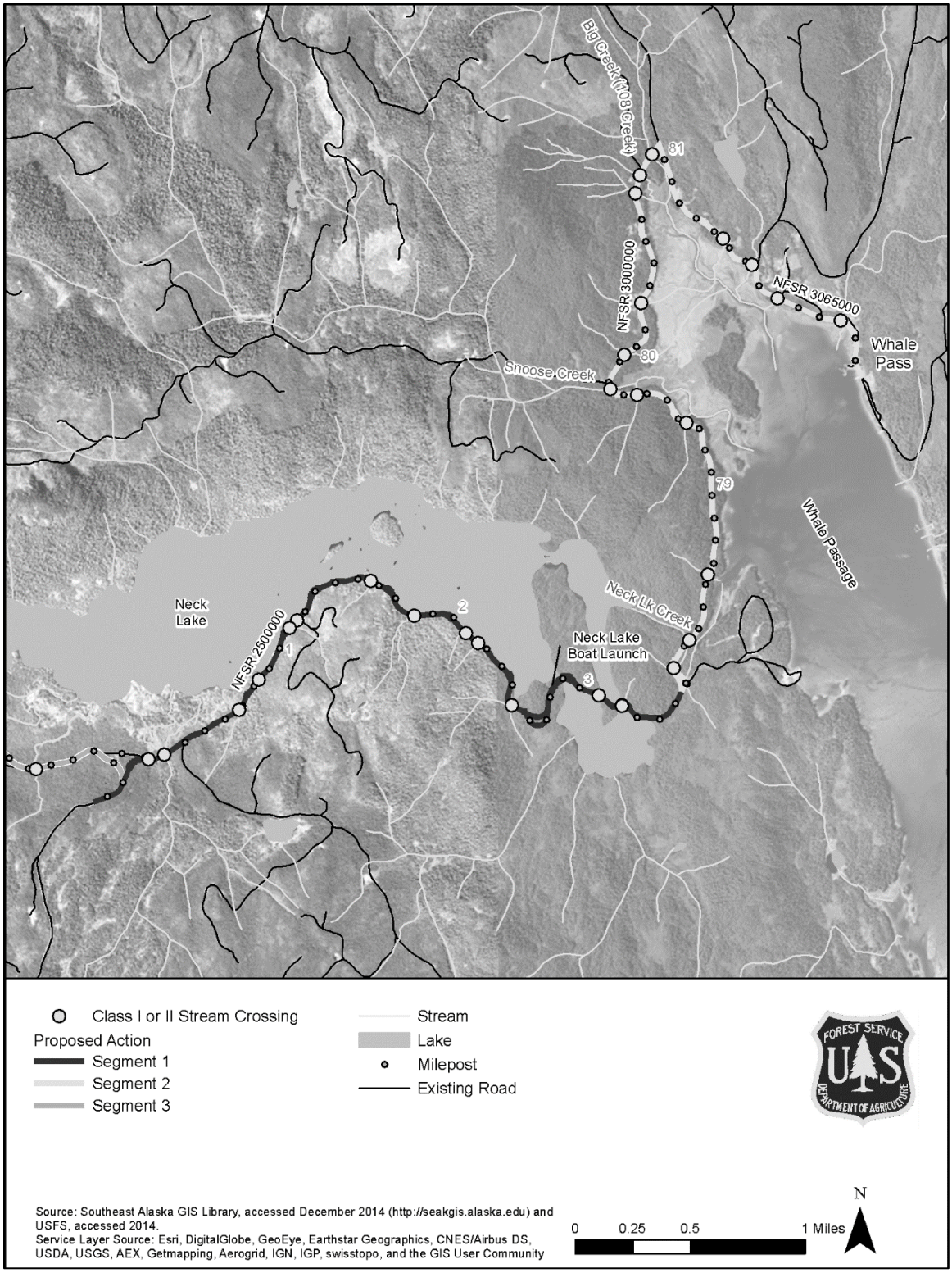

Figure 6. Detailed map of streams intersected by Segments 1 and 2 of the proposed action.

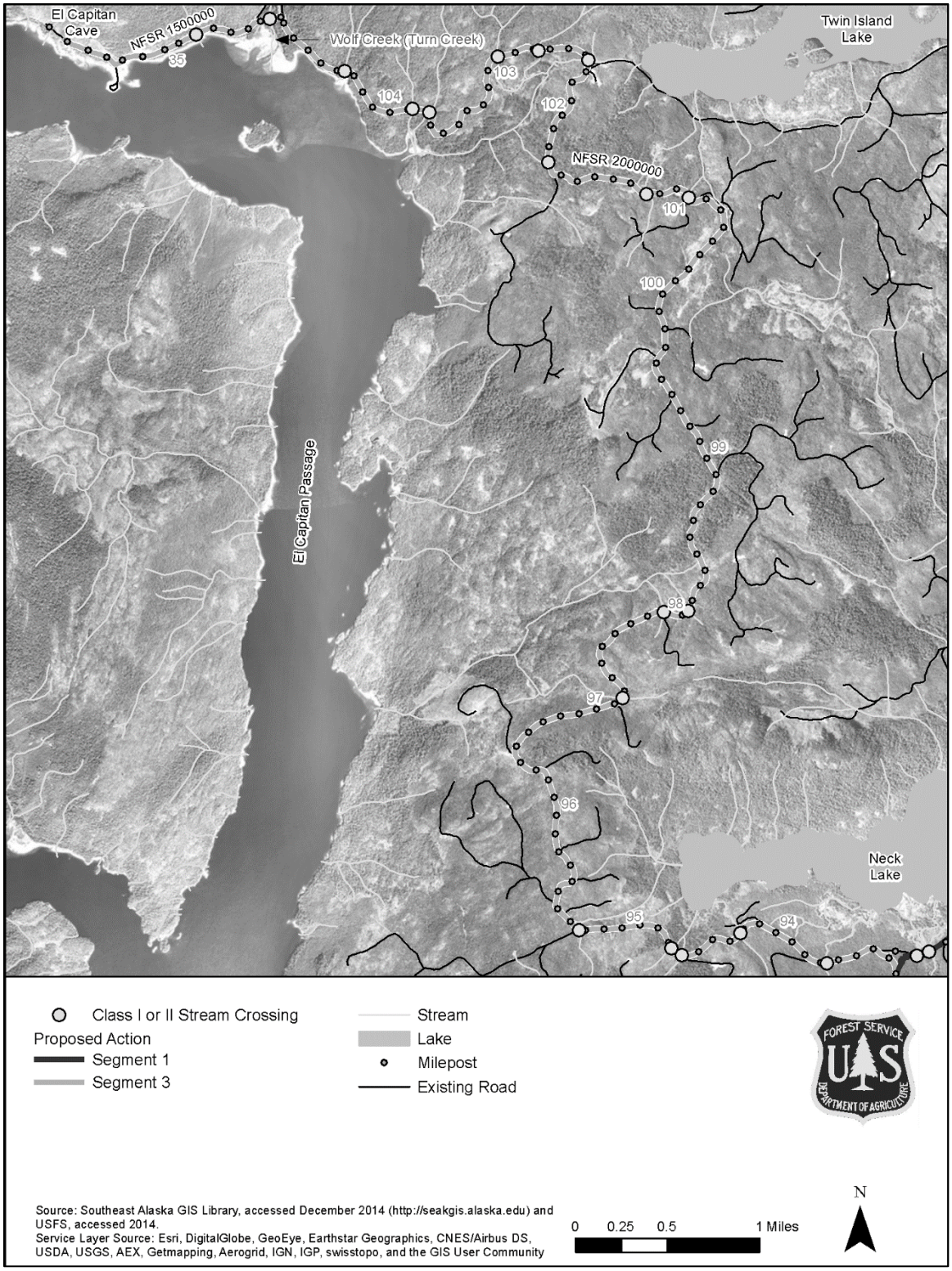

Figure 7. Detailed map of streams intersected by Segment 3 of the proposed action.

Table 5. Fish-Bearing Stream Crossings along the Proposed Action by Road Number and Milepost

Milepost on NFS Road	ADF&G Fish Designation (AWC ID)	Stream Name	Anadromous (A) or Resident (R)	Fish Passage Required? Yes (Y)*	Existing Structure	Passage Status of Existing Structure*† (the distance of upstream habitat in feet, where this information is available)
Segment 3 NFSR 1500000						
35.667	105-42-10100	Wolf Creek (Turn Creek)	A	Y	Permanent bridge	Green
35.546			A	Y	Corrugated metal pipe	Black
34.544			A	Y	Corrugated metal pipe	Green
NFSR 2000000						
104.273			A	Y	Pipe arch	Green
103.769			R	Y	Corrugated metal pipe	Red (1,857 feet)
103.703			R	Y	Corrugated metal pipe	Red (712 feet)
103.352			R	Y	Corrugated metal pipe	Green
102.944	Upstream tributary to 105-42-10110.	Unnamed stream	A	Y	Corrugated metal pipe	Red
102.907			A	Y	Pipe arch	Green
102.685			A	Y	Corrugated Metal Pipe	Green
102.673			A	Y	Corrugated metal pipe	Green
Segment 1 NSFR 2500000						
3.191	All of these streams outlet into Neck Lake. Neck Lake is not catalogued as anadromous due to the waterfall at its outlet.		R	Y	Corrugated metal pipe	Green
2.896			R	Y	Corrugated metal pipe	Green
2.497			R	Y	Corrugated metal pipe	
2.095			R	Y*	Corrugated metal pipe	Red (92 feet)
1.829			R	Y	Corrugated metal pipe	Green (1,985 feet)
1.095			R	Y*	Corrugated metal pipe	Green (276 feet)
0.832			R	Y*	Corrugated metal pipe	Red (233 feet)
0.677			R	Y	Corrugated metal pipe	Green
0.296			R	Y	Permanent bridge	Green
0.227			R	Y*	Corrugated metal pipe	Red (92 feet)

Table 5. Fish-Bearing Stream Crossings along the Proposed Action by Road Number and Milepost

Milepost on NFS Road	ADF&G Fish Designation (AWC ID)	Stream Name	Anadromous (A) or Resident (R)	Fish Passage Required? Yes (Y)*	Existing Structure	Passage Status of Existing Structure*† (the distance of upstream habitat in feet, where this information is available)
Segment 2 NSFR 3000000						
81.621	106-30-10803	Unnamed stream	A	Y	Modular bridge	Green
81.438			A	Y	Plastic pipe	Black (164 feet)
80.894	106-30-10800	Big Creek (108 Creek)	A	Y	Permanent bridge	Green
80.785			A	Y	Modular bridge	Green
80.709			R	Y	Corrugated metal pipe	Red (1,457 feet)
79.940			A	Y	Corrugated metal pipe	Black (886 feet)
79.776	106-30-10770	Snoose Creek	A	Y	Permanent bridge	Green
78.345	106-30-10750	Neck Lake Creek (catalogued as anadromous up to the waterfall; Neck Lake upstream is not catalogued)	A	Y	Permanent bridge	Green
NSFR 3065000						
0.507			A	Y*	Corrugated metal pipe	Red (236 feet)

* All crossings on fish-bearing streams will be designed to provide aquatic organism passage. Those with minimal upstream habitat may be hydraulically designed, while maintaining aquatic organism passage.

† The Forest Service uses these passage categories for culverts in the analysis area:

- Green: conditions that have a high certainty of meeting adult and juvenile fish passage requirements at all desired stream flows.
- Gray: conditions are such that additional analysis is required to determine juvenile fish passage ability.
- Red: conditions that have a high certainty of not providing juvenile fish passage at all desired stream flows.
- Black: more information is required for the analysis to determine juvenile fish passage ability.

Note: Whether the streams are classified as anadromous or resident in this table is based on road condition survey (RCS) field verification of stream class up and downstream (Forest Service 2014a), not on the streams geographic information system (GIS) dataset (Southeast Alaska GIS Library 2014).

Water Quality

Fresh waters (surface water, groundwater, and wetlands) in Alaska are protected by Alaska water quality standards (18 Alaska Administrative Code [AAC] 70) for the following designated uses: drinking water, agriculture, aquaculture, industrial, contact recreation, and non-contact recreation, as well as growth and propagation of fish, shellfish, other aquatic life, and wildlife. The standards at 18 AAC 70 dictate specific parameters and criteria for these designated uses.

Although water quality data are not available for water bodies in the analysis area, surface water quality is likely good due to the limited sources of sediment or contaminant input. Past timber harvest and existing roads could be an existing source of sediment to surface waters in the analysis area. Prior timber harvest has likely changed sediment loading, turbidity, and water yield within the watersheds in the analysis area. These effects can be short-term, as truck traffic associated with logging moves to other areas and as new vegetation establishes, or long-term if hydrology is significantly altered (due to a large percentage of the drainage basin being roaded and harvested).

A study of forest roads in the Pacific Northwest found that roads similar to those in the analysis area typically have ongoing effects to aquatic resources (Flanagan et al. 1998) from both surface water runoff and intercepted subsurface discharge. The alteration of local hydrology can result in altering stream flow patterns, sediment loading, bank erosion, and the distribution of fish species (Beschta 1978; Fowler et al. 1988).

There is documentation of sedimentation and debris moving into karst systems and features from earth-disturbing activities (Wissmar et al. 1997). In addition, studies have demonstrated aquatic productivity differences between carbonate- and noncarbonate-dominated catchment areas and their significance (Bryant and Swanston 1998).

All streams and wetlands in the analysis area are considered waters of the U.S. Wetlands are part of the overall hydrologic connectivity in a watershed. The wetlands' slower or unmoving flow allows sediment to settle out of the hydrologic network, reducing sediment delivery to streams. Waters of the U.S. are further discussed in the "Vegetation and Wetlands" section.

Essential Fish Habitat

All anadromous streams in the analysis area are designated essential fish habitat (EFH); a separate consultation with the National Marine Fisheries Service, as specified under the Magnuson-Stevens Fishery Conservation and Management Act, would be completed.

No Action Alternative

The no action alternative would have minor impacts to aquatic resources from ongoing culvert maintenance projects. In addition, runoff from the existing roadway would continue to add sediment to streams, although the extent of the impacts from this long-term and chronic sediment loading has not been quantified. Under the no action alternative, 12 culverts would continue to inhibit fish passage, limiting access to 5,728 feet of upstream habitat on those fish-bearing streams.

Impacts from the Proposed Action

Under the proposed action the roadway would eventually be chip-sealed, which would reduce the long-term sediment loading to streams but increase the volume of surface water runoff.

Stream Crossings

The State of Alaska's Anadromous Fish Act and Fish Passage Act (AS 16.05.871-.901 and AS 16.05.841, respectively) are designed to protect fish habitat during construction activities, and the Fish Passage Act requires that entities planning to conduct construction activities within or across fish-bearing streams obtain authorization from the ADF&G Division of Habitat. The project would affect 30 fish-bearing stream crossings (see Table 5). Resident fish or anadromous fish crossings would be designed to provide aquatic organism passage. Aquatic organism passage on the existing 12 streams with inhibited passage would be improved, providing access to 5,728 feet of upstream habitat. It is possible that the improved road surface would increase recreational and subsistence fishing in the analysis area.

Drinking Water Sources

The proposed action would impact four permitted drinking water sources. Prior to implementation, efforts would be made to coordinate with both permitted and non-permitted drinking water users, in order to avoid disruption to their water supply during construction.

Water Quality

Water quality parameters that may be affected by the project are sediment, turbidity, and temperature.

Sediment introduction to streams from roads is influenced by many factors: type of structure used at road crossings, road slope, road age, road condition, time since last graded, seasonal timing of maintenance activities, hillslope length, soil depth, and cutbank depth (Croke et al. 2005; Kahklen and Hartsog 1999; Reid and Dunne 1984; Wemple and Jones 2003). Slow erosion of existing gravel roads can increase the sedimentation in roadside ditches, wetlands, streams, lakes, and karst groundwater systems. Roadway runoff increases the erosion and landslide potential during periods of precipitation or snowmelt, affecting fish habitat at the point of entry and downstream.

The amount of vehicle traffic on gravel roads also increases the amount of erosion and sediment potential to streams. More traffic, increased usage by heavy equipment and large trucks, and high levels of precipitation cause increasing amounts of sedimentation and turbidity in streams.

Alaska water quality standards (18 AAC 70) require no measurable increases in concentration of settleable solids above natural conditions. These criteria are for drinking water and are the most stringent criteria related to sediment in the AAC. No sediment data are available for analysis area streams. Although baseline water quality data are not available, the proposed action is not expected to significantly change the baseline water quality conditions in the long term.

Temporary Construction Impacts

The amount of road-widening land disturbance that would occur for the proposed action combined with the prevailing rainfall patterns make it challenging to effectively control erosion and sedimentation in the area streams during construction. These challenges are particularly difficult at road crossings and areas adjacent to the streams and lakes within the analysis area. Roads have been identified as a primary source of fine sediment associated with forest management practices. Increased sediment loading to surface waters results in 1) increased

turbidity and 2) increased sedimentation of the stream substrate. Fine sediment in spawning gravels can affect the quality of aquatic habitat for salmon and trout. Reproductive success of trout is reduced as levels of fine sediment (0.25 inches [<6.5 millimeters]) exceed 20% in spawning gravels (Bjornn and Reeser 1991).

As discussed under the "Design Elements and Standards, Best Management Practices, Resource Protection Measures, and Monitoring" section, appropriate sediment and erosion-control measures would be installed before construction begins and to minimize turbidity and sedimentation in streams.

Long-Term Operation and Maintenance Impacts

The project would result in several beneficial and adverse effects to aquatic resources:

1. **Chip-sealing the road surface would result in increased quantity and faster timing of delivery of surface water runoff to streams.**

   Increased impervious surface area in the analysis area would result in increased quantity and faster timing of delivery of surface water runoff to streams (Federal Highway Administration [FHWA] 2005). The impervious surface area would be 90 acres, which is less than 1% of the acreage of the drainage basins in the analysis area (Table 6). There would be no significant impacts related to increased runoff.

2. **Replacement of stream crossing structures to accommodate for increased runoff volume would improve fish passage at water bodies that support fish.**

   As a result of the increased volume of runoff from impervious surfaces, the flow rate through some of the stream crossing structures or drainage culverts would exceed conveyance capacities. The project would replace all of the existing culverts that do not have a conveyance capacity of at least a 25-year-frequency flood. Culverts that do not provide adequate fish passage conditions would be replaced.

3. **Chip-sealing the road surface would reduce sediment loading and road surface erosion.**

   In addition, the type of runoff delivered from a chip-seal surface would be different from that of a gravel surface. The chip-seal surface would reduce sediment loading to streams because of decreased dust production and surface erosion. It would reduce the road surface erosion by approximately an order of magnitude, thereby reducing the sedimentation into the adjacent streams and karst groundwater systems (Washington Department of Natural Resources 1994).

4. **The new roadway surface would accumulate and deliver greater pollutant loading to streams.**

   The improved roadway surface would accumulate and deliver different types and proportions of pollutants than would gravel (e.g., metals, petroleum hydrocarbons, and other vehicular pollutants) (Barnes et al. 2002). However, given the low traffic volumes expected along the project, the dilution of these pollutants by the increased surface water runoff is unlikely to result in detectable water quality effects to the streams. Although Neck Lake would receive much of the runoff from Segment 1, the lake's water quality is not likely to be adversely affected because of the size of the lake. The improved roadway would also improve traffic safety along the project, thereby reducing the potential for accidents (Zegeer et al. 1988) that could result in spills of hazardous materials, such as fuel.

5. **The improved recreation facilities at the Neck Lake picnic and boat launch would provide sanitary disposal of garbage and human wastes.**

   The improved facilities at the Neck Lake picnic and boat launch would include construction of trash and recycling receptacles, as well as a vault toilet. There are currently no restroom facilities. Construction of a vault toilet would allow for sanitary collection, disposal, and treatment of human waste at the recreation site, reducing chances for uncontrolled waste to flow into or around Neck Lake. This would be considered a beneficial impact. The vault toilet would require regular service and maintenance as necessary, including cleaning, pumping, and removal of waste to an approved treatment facility, as needed.

6. **The improved boat launch at the Neck Lake picnic and boat launch site would reduce erosion compared to the existing primitive boat launch facility.**

   Construction of an improved boat launch, including hardening of surfaces into the lake, would provide improved protection for erosion control at the launch. Hardened surfaces would reduce potential rutting into the wet soils and gravels that have not been hardened.

Road building can have cumulative effects to aquatic resources on a watershed scale. The greater the percentage of a basin that is occupied by roads, the greater there is the potential for sediment introduction to streams and changes to surface water hydrology. The roaded percentage of a basin can be used as an indicator to help quantify the risk of sediment-related impacts to aquatic resources. On Washington's Olympic Peninsula, accumulation of fine sediment in streambeds was highest in basins where the roaded area exceeded 2.5% of the basin area (Cederholm et al. 1980).

In addition to introducing sediment to streams, mid-slope roads can intercept subsurface flow paths and convert subsurface waters to surface waters (Jones 2000; McGee 2000). Road ditches can integrate with and extend the stream network thereby increasing transport efficiency to streams (Montgomery 1994; Wemple et al. 1996).

There are 706 acres of mapped existing roads in the drainage basins that include the analysis area (Table 6; Forest Service 2014a). For this aquatic resources cumulative impacts analysis, a width of 40 feet was used for all existing roads, including temporary and decommissioned roads. Roads with differing use and maintenance regimes have varying degrees of hydrological effect to streams. Including all road miles in each watershed provides the most conservative analysis for determining the effect of roads on watershed hydrology. The project would increase the roaded area by an estimated 33 acres or 5% (Forest Service 2009b; Forest Service 2014a).

The Twin Island Lake basin has the most acres of road (249 miles) and the highest density of roads (2.9% of the basin; see Table 6). The existing condition of this basin exceeds the 2.5% threshold where effects to aquatic resources may occur. The proposed action would add 6 acres to that basin and would not change the total percentage of the roaded area. None of the other basins would exceed 2.5% roaded as a result of the proposed action (Forest Service 2009b; Forest Service 2014a).

Table 6. Acreage of Existing Mapped and Proposed Roads in the Analysis Area by Drainage Basins

Drainage Basin	Drainage Area (acres)	Acres of Existing Roads*	Percentage of Basin as Roads†	Acres of Roads with Proposed Action*	Percentage of Basin as Roads with Proposed Action†
Delta-East El Capitan Passage	1,409	28	2.0	31	2.2
Delta-Ragged Cove to Coffman Cove	2,242	47	2.1	48	2.2
Gamma-East El Capitan Passage	1,939	27	1.4	29	1.5
Iota-East El Capitan Passage	8,373	102	1.2	104	1.3
Neck Lake	10,684	164	1.5	180	1.7
Twin Island Lake	8,692	249	2.9	255	2.9
West El Capitan Mountain	4,173	56	1.4	57	1.4
Whale Passage Frontage	13,886	33	0.2	35	0.3

Notes:
* Existing roads include active and decommissioned roads.
† Assumes standard minimum clearing widths and road surface specifications: 40 feet total road surface and cut slope width.
Sources: Forest Service (2009b, 2014a).

Cultural, Historical, and Paleontological Resources

Current archaeological evidence supports an early and continuous occupation of POW Island beginning as far back as 9,000 years ago. Evidence of this occupation is represented by a variety of site types including fish traps and weirs, petroglyphs and pictographs, large shell middens that are indicative of villages, lithic manufacturing sites, burials, and other sacred sites. Previous work demonstrates that POW is archaeologically rich, with many of the prehistoric sites eligible for the National Register of Historic Places because of their potential to answer questions about the earliest human occupations in Southeast Alaska.

To streamline the successful finding of these sites, the Forest Service developed a predictive model to identify the high and low sensitivity zones where these site types are most likely to occur. Most sites, it was generally thought, were in areas having elevations less than 100 feet, and were near or adjacent to fresh and salt water. This model has recently been refined by ongoing research investigating geomorphological changes in the shoreline because of isostatic rebound after the last ice age. These changes caused old, formerly occupied, shorelines to raise and become inland sites. The new predictive model identifies potential raised marine beaches and former occupation sites at uplifted areas (i.e., potentially greater than 100 feet above sea level in elevation).

The survey area for cultural resources, called the area of potential effects (APE), is based on the geographic area within which an undertaking may directly or indirectly cause changes in the character or use of a historic property. For this project, the APE includes portions of the approximately 21-mile proposed action road corridor ROW. The APE encompasses an area that extends 150 feet perpendicular to the centerline of the existing road where it passes through State of Alaska and NFS lands, effectively defining a 300-foot-wide corridor. Along Segment 2, where the ROW passes through private lands (on the eastern side of the project), the APE is reduced to a

66- to 100-foot corridor that is measured perpendicular to the centerline of the existing road. The ROWs are discussed in further detail in the “Land Use and ROW Acquisitions” section (see Figure 8 for ROW analysis area).

In the APE, 107 acres (20% of the APE) meet criteria defined in the predictive model as the high sensitivity zone for cultural resources. If karst acreage is included, then 90% of the APE is considered to have a high probability for cultural resources. Investigations included background research and archaeological survey. The 2015 fieldwork consisted of pedestrian surveys coupled with soil probes and shovel tests. Ten cultural resources are in the APE, eight of which were discovered as a result of the 2015 survey. They include prehistoric period shell middens, lithic sites, and a cave. The lithic sites are activity areas represented by stone tools and by the debitage that is created from tool production.

The Forest Service is currently consulting with tribal entities and the Alaska SHPO regarding the results of this field study.

No Action Alternative

Under the no action alternative, there would be no impacts to cultural, historical, or paleontological resources because road improvements would not occur.

Impacts from the Proposed Action

The proposed action has the potential to have direct and indirect effects to several newly discovered cultural resources. Direct effects are those impacts that occur as a result of the proposal or alternative in the same place and time as the action. These impacts include the potential to destroy in-situ archaeological materials that have been discovered in the project ROW during previous road construction, archaeological, and geotechnical surveys.

Indirect effects include foreseeable impacts that occur later in time or are further removed in distance from the proposed action. Indirect effects include the potential to continue to destroy in-situ archaeological materials with routine road maintenance and widening, the exposure of archaeological materials in sloughing banks along the road corridor, and through increased public access to archaeologically rich areas.

Geology and Minerals, including Karst and Caves

The analysis area for these resources extends from 300 feet from the road centerline for a total road corridor of 600 feet. Caves identified under the Federal Cave Resources Protection Act (FCRPA) and the Forest Plan (Forest Service 2008a) as significant and caves near the roads were included in the analysis whether they are in the 600-foot road corridor or not. Past and present impacts to geology in the analysis area include the existing road, timber harvest activities, and rock pits. These existing impacts have increased erosion in the analysis area and, in the case of the existing road, have altered the natural topography and surface geology.

The analysis area lies completely within the North Prince of Wales-Kuiu Carbonates ecological subsection (Nowacki et.al. 2001). This subsection is predominately underlain by carbonate (limestone and marble) bedrock and smaller amounts of conglomerate, mudstone, and sandstone. Well-developed karst landscapes characterize this subsection, and these are described below. For additional technical information, see the *Minerals, Geology, and Karst Resources Report for FH 58 Improvement Project* (Forest Service 2015a).

Through chemical oxidation, corrosive and acid-generating rock material has the potential to impact water quality. This occurrence is referred to as ARD, and it has been encountered on POW Island. One small area of the Descon Formation known to be acid-generating is within the analysis area and runs from MP 78.6 to MP 79.3 on NFSR 3000000 (refer to Figure 6) (Baichtal 2015). Also, material would not be used from the quarry at the easternmost 0.2 mile of the project in the town of Whale Pass on NFSR 3065000 that is privately-owned by Ron Loucks (RPA 2014: Appendix D). Other samples from the Descon Formation along Segments 1 and 2, and at the quarry in this bedrock at Latitude North 56.095649°, Longitude West -133.139318° on NFSR 3000490, showed no potential to generate ARD and would be available as construction material for the proposed action (Baichtal 2015).

The U.S. Geological Survey conducted a mineral resource assessment of the Petersburg Quadrangle in conjunction with their Alaska Mineral Resource Assessment Project (Berg 1984). These assessments identified an area north of the analysis area (El Capitan Peak) as being geologically favorable for the occurrence of base metal or precious metal vein deposits. These are deposits derived from the limestone, and they may include silicon, aluminum, iron, and magnesium. During the early twentieth century, copper, gold, silver, and marble were produced in economic quantities on POW Island. Mining for molybdenum occurred in the Shakan tract on non-NFS lands west of the El Capitan Cave area (Forest Service 2008b:3-357). The U. S. Bureau of Mines, during field investigations from 1990 to 1994, did not find any mines, prospects, or mineral occurrences within the analysis area (Maas et al. 1995). Bureau of Land Management mining claim activity reports indicate that there are no mining claims currently within the analysis area.

Karst and Caves

There are 75 caves relevant to the project (location information is protected under FCRPA) and 476 karst features other than caves; further details can be found in *Final Minerals, Geology and Karst Resources Report, El Capitan/North Prince of Wales Road Prince of Wales Island, Alaska* (Ozark Underground Laboratory [OUL] 2004). In the analysis area, the majority of the karst resources are concentrated underneath and along both sides of Segment 3.

Karst lands have specific land management Standards and Guidelines in the Forest Plan (Forest Service 2008a). These Standards categorize karst areas by their vulnerability (low, medium, or high) to being adversely affected by management activities. Vulnerability is a function of the extent of karst development, the openness of the karst system, and the sensitivity of other resources that benefit from the karst groundwater systems. Segment 3 was surveyed for high-vulnerability karst in 2004 (OUL 2004). There are approximately 7.49 miles of high-vulnerability karst in the road corridor (36% of the corridor) (Table 7). The analysis area from MP 95.18 to MP 102.67 on NFSR 2000000 is all high-vulnerability karst (OUL 2004). This area contains an abundance of karst features, few surface streams, elaborate subsurface drainages, and the ability to transport the greatest amount of sediment, debris, contaminants, and organic matter to fish streams miles away in a matter of hours during periods of high precipitation.

The 2004 OUL study included the degree of epikarst development and the presence of caves, insurgences and resurgences, sinkholes, collapsed channels, and other karst features. The effort included dye tracing to evaluate the effects of road construction on recharge areas, geotechnical investigations to determine road stability in karst areas, realigning the roads to avoid significant karst features (caves, vertical shafts, sinkholes, or insurgences), and ensuring that water is not diverted to or from karst features (OUL 2004).

Table 7. Vulnerability of Karst Resources in the Analysis Area

Vulnerability	Miles in the Analysis Area	Percentage of the Analysis Area
Non-carbonate rocks (vulnerability does not apply)	2.15	17%
Low	1.2	9%
Medium	1.8	14%
High	7.49	60%
Total along Segment 3	**12.64**	**100%**

Source: OUL (2004).

No Action Alternative

Under the no action alternative, there would be no impacts to geology and minerals because road improvements would not occur. Impacts related to maintenance of the existing roads would include ongoing slight widening and lowering of the roads and an ongoing need for fill material. Under the no action alternative, sediment from the existing gravel roads could enter the karst and cave networks that are prevalent in the analysis area. Blocked or damaged culverts could potentially alter drainage patterns, directing flow from the existing roads into the karst systems.

Impacts from the Proposed Action

The proposed road corridor would closely follow the existing corridor. There are potential realignments that would occur within the analysis area. Staging areas would be located in existing cleared upland areas and materials from existing sources would be used for fill material, if not already supplied from the road corridor's cut and fill balance.

The primary impacts to geology would occur from realignment activities. Where realignments would occur, cut slopes and fill slopes would be required, resulting in changes in surface relief features. Where the roads are not being realigned, cut and fill would be required to change road grades and slopes. These grading activities would occur primarily within the existing corridor; however, grading impacts are expected to occur along the alignment as necessary to achieve the finished grades.

Rock with potential to produce ARD in Segment 2 would not be used as construction material. Excavation operations along these areas may expose minerals susceptible to weathering and releasing ARD. Included in the "Design Elements" section is the commitment that rock from these sources would not be used in areas with the potential of surface water or groundwater exposure.

There are no mining claims or mines affected by the proposed action or reasonably foreseeable future projects.

Karst and Caves

The proposed action has the potential to disturb cave resources and disrupt surface water flow in karst areas. The Forest Plan (Forest Service 2008a) and Soil and Water Conservation Handbook (Forest Service 2006) specify Standards and Guidelines and BMPs for the management of karst and cave resources to ensure that the resources remain intact and are protected from physical disturbances.

The proposed action could affect the karst resources through direct physical disturbance or by changes in surface water hydrology that may alter the existing karst drainage systems. Physical impacts may occur during construction when the existing road surface is dismantled and a new deeper road surface is constructed. Blasting or significant ground disturbances from heavy equipment could affect the caves in the 100-foot Forest Plan buffer area (Forest Service 2008a). In addition, surface water drainage may be altered, creating disruptions and changes in the existing underground karst ecosystem. Widening and chip-sealing the road surface would also increase the amount of impervious area, which could change the hydrology, infiltration rates, sediment production, and pollutants in the immediate vicinity of the roadway.

Approximately 36% of the analysis area is in high vulnerability karst areas. The intersection of NFSRs 2000000 and 2700000 drains into karst springs and an anadromous stream. The intersection would be realigned to increase sight distance and decrease the likelihood of collisions that could release automotive fluids into surface waters and adversely affect karst resources.

As discussed in the “Best Management Practices” section, appropriate sediment and erosion-control BMPs and karst protection measures would be installed before construction begins and would be maintained throughout construction to minimize effects to geology, karst, and caves.

Increased visitation is a potential indirect effect to karst resources from the proposed action due to the potential for increased access following the road improvements. Although not included in the proposed action, caves with existing or planned recreational development on North POW Island are evaluated by karst specialists to develop recreational site plans that allow for educational, scientific, and recreational enjoyment. The additional visitor use of the existing and planned karst recreation sites (El Capitan Cave, Beaver Falls Karst Interpretive Trail, River’s End Cave, Cavern Lake, Sinkhole Lake, and Starlight Cave) is not expected to result in karst damage, but would be continuously evaluated to ensure resource protection. Additional protection measures may be necessary if visitor usage increases significantly or resource damage is observed. Cave resources are protected by the Federal Cave Resources Protection Act (FCRPA) of 1988. FCRPA provides protection for caves located on federal lands that have been evaluated and determined to have important geologic (or other) value for educational, scientific, or recreational purposes. With the expected increased visitor use of the karst recreation sites near the analysis area, there is the potential for litter and resource damage. If karst resource damage occurs, increased maintenance of the karst recreation sites may be necessary.

As with the proposed action, reasonably foreseeable future actions would be required to comply with Forest Plan Standards and Guidelines, BMPs, or have design elements that would avoid significant impacts to sensitive karst and cave resources (Forest Service 2008a).

Hazardous Waste Sites

The analysis area for hazardous waste sites is the road ROW centered on the proposed action with several larger areas analyzed to accommodate potential realignments. Two contaminated sites on the ADEC Contaminated Sites list were identified near, but not within, the analysis area (ADEC 2015c). Though these sites are accessed via the proposed action, there are no plans to dig or disturb soil at the sites. The sites consist of two MAFs, near Whale Pass and El Capitan Cave. The MAFs are 1616 feet and 766 feet from the road centerline at their closest points, respectively. Cleanup at both sites is complete, and no soil disturbance or transport is anticipated from the project. No underground petroleum storage tanks are known in the analysis area (ADEC 2015d).

A Phase I environmental site assessment (Phase I evaluation) was completed in the analysis area in conformance with the American Society for Testing and Materials Practice E 1527-13 and U.S. EPA All Appropriate Inquiry standards to assess current contamination status, confirm there are no additional sites not listed in the database, and provide containment recommendations (HEC 2015a). Results of an environmental regulatory database search (Environmental Data Resources, Inc. [EDR] 2014) listed 20 orphan sites, all apparently associated with addresses near the City of Ketchikan. Several other sites were identified as having a REC, indicating the presence or likely presence of regulated hazardous or dangerous wastes and/or substances. These sites include the following:

- Burn pile across from the fish hatchery
- Burn pile at the Whale Pass Community Library
- James D. Cummings logging and excavating equipment
- Alaska Power and Telephone Company (AP&T) power generating station
- Last Chance Gas & Store
- H & D Excavating and Trucking
- Whale Pass Volunteer Fire Department

The *Phase I Environmental Site Assessment Neck Lake Road Reconstruction AK PFH 58(1)* includes more details regarding these REC sites and their locations (HEC 2015a). The Phase I evaluation determined that there is a low likelihood of contamination present along Segments 1 and 2, including from the REC sites. No soil sampling was recommended in advance of construction activities. A Phase I evaluation has not yet been conducted for Segment 3.

No Action Alternative

Based on existing information and the Phase I evaluation (HEC 2015a), no impacts are anticipated from the no action alternative.

Impacts from the Proposed Action

No impacts are anticipated from the proposed action based on existing information, the Phase I evaluation conducted along Segments 1 and 2 (HEC 2015a), and the requirement that a Phase I evaluation be completed for Segment 3 prior to implementation of that segment. If suspect contaminated soils (e.g., soils with petroleum-like odors, or unusual discoloration) are encountered during construction, they would be stockpiled separately, and characterized for disposal.

Reasonably foreseeable future actions would be required to analyze for potential waste sites, prepare a Phase I evaluation, and provide containment, if needed. Therefore, the addition of these actions combined with the proposed action would not result in significant cumulative effects.

Land Use and ROW Acquisitions

The analysis area for these resources is the ROW analysis area with several larger areas analyzed to accommodate potential realignments (Figure 8). The ROW analyzed through all State of Alaska and NFS lands is 300 feet wide, while the ROW width for Segment 2 through private lands (on the eastern side of the project) varies between 66 feet and 100 feet.

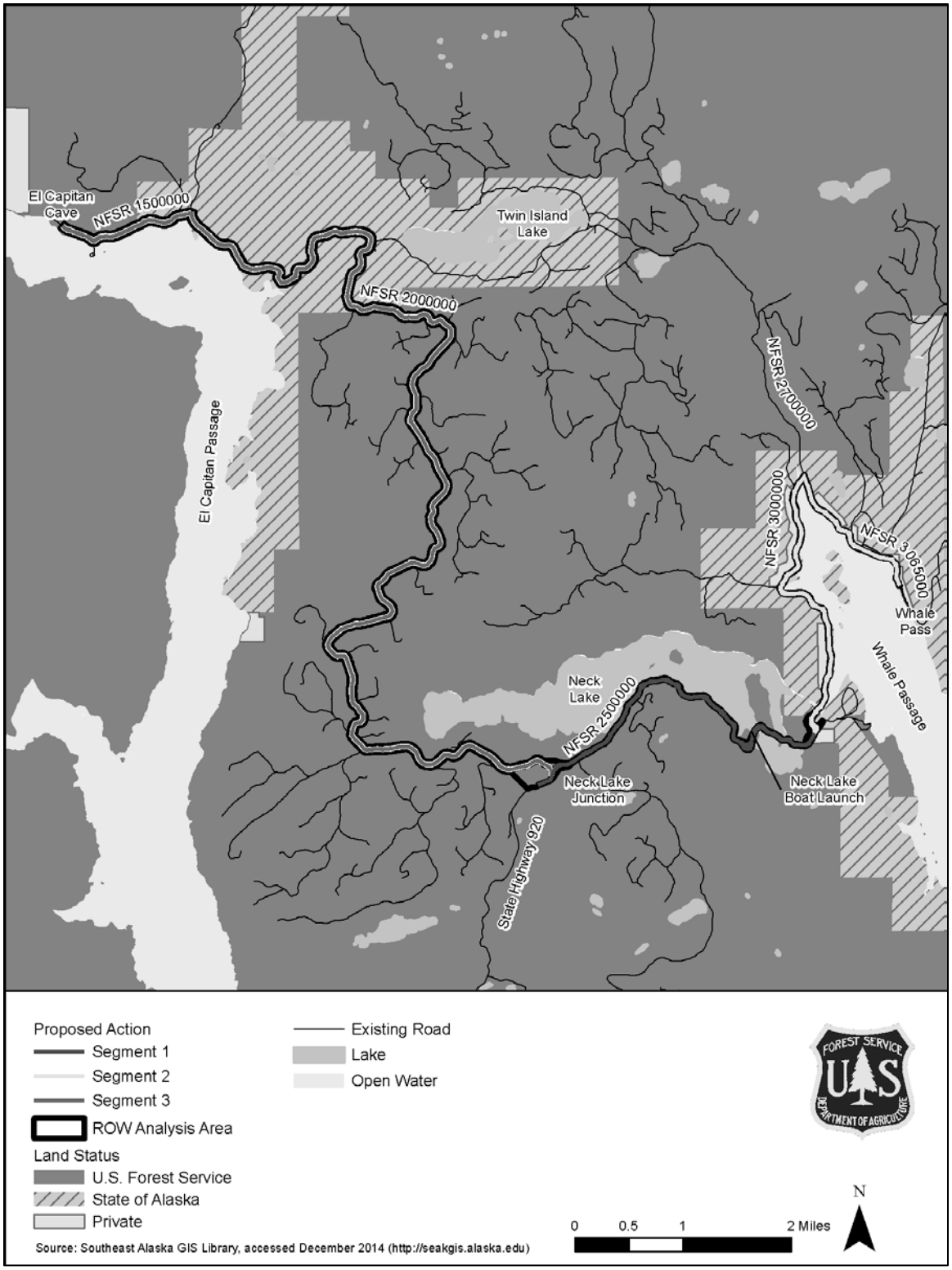

Figure 8. Land ownership status in the analysis area and broader region.

Land Ownership and Management

Figure 8 shows land ownership within this analysis area; surrounding lands are also shown for context regarding land ownership in the broader region. Private lots and state-owned lands are predominant near the east and west termini of the project, while NFS lands are predominant throughout the rest of the analysis area.

Private Land Owners

Within the analysis area surrounding Whale Passage are privately owned lands. These parcels are displayed in Appendix A. Many of these privately owned lands are currently used for residential or industrial purposes. Additionally, the analysis area contains one existing Sealaska Alaska Native Claims Settlement Act 14(h)(1) site near the community of Whale Pass.

State of Alaska

The State of Alaska manages 166 acres of land within the ROW analysis area. The principal uses of these lands near Whale Passage consist of aquatic farming, fish and wildlife, floathomes, forestry, recreation, and settlement (Alaska Department of Natural Resources [ADNR] 1998). On the western side of the project, near the NFSR 2000000 and NFSR 1500000 intersection, the land uses consist of fish and wildlife, forestry, and recreation. Management of these state lands emphasizes the use of commercial forest resources and the important recreation and aesthetic values surrounding El Capitan Passage.

U.S. Forest Service

National Forest System (NFS) lands are managed per the Forest Plan, which assigns Land Use Designations (LUDs). Figure 2 displays LUDs on NFS lands within the analysis area and surrounding landscape. The project crosses four different LUDs: Timber Production, Old-Growth Habitat, Special Interest Area, and Modified Landscape. Detailed LUD descriptions can be found in the Forest Plan (Forest Service 2008a).

ROW Acquisitions

The ROW analyzed through all State of Alaska and NFS lands is 300 feet wide, while the ROW width for Segment 2 through private lands (on the eastern side of the project) varies between 66 feet and 100 feet.

No Action Alternative

Under the no action alternative, there would be no change in land ownership or management of the existing roads and surrounding lands. ROW acquisition would not be required for current road operations, and existing residential, recreation, timber, subsistence, and other land uses would continue at present levels.

Impacts from the Proposed Action

Land Ownership and Management

Table 8 summarizes the ROW acreages that the State of Alaska would acquire from private and NFS lands under the proposed action.

Table 8. Additional ROW Acreages Acquired by the State of Alaska under the Proposed Action

Land Owner	Land Use	Additional ROW Acres Acquired by the State of Alaska
Private	Residential and industrial	1
U.S. Forest Service	Timber Production LUD	219
U.S. Forest Service	Old-Growth Habitat LUD	39
U.S. Forest Service	Special Interest Area LUD	89
U.S. Forest Service	Modified Landscape LUD	15
	Total	**363**

Source: Southeast Alaska GIS Library (2014).

Private Ownership and Land Use

The additional road ROW under the proposed action would include up to 1 acre of private land and would be compatible with current land uses on private land. However, because the proposed road improvements would improve access to Whale Pass, residential and commercial development of private land could occur sooner than if the improvements were not made. Other existing land uses such as timber management would likely continue to occur at the same rate.

The proposed action would require 52 private driveways be reconstructed to match the proposed road width around Whale Passage. Private access roads are currently quite steep and many of the buildings or appurtenances are either cut into the hillsides or situated on retaining structures. In an effort to reduce potential impacts to adjacent land owners, a narrower road section would be used through these private lands adjacent to Whale Passage. The road section would be either a single-lane road with turnouts (visible from either direction) up to as wide as two 10-foot driving lanes and two 1-foot shoulders. As much as possible, proposed cut into the hillsides would be carefully planned so as not to impact any existing structures.

State of Alaska Management and Land Use

Improvements to the existing roads would be compatible with current land uses on State land. Because the proposed road improvements would improve access to State land, residential and commercial development of these lands could occur sooner than if the improvements were not made. Other existing land uses such as timber management would likely continue to occur at the same rate.

U.S. Forest Service Management and Land Use

The proposed action road improvements would be compatible with current land uses and designation on NFS lands. The Forest Plan management guidelines for development and natural setting LUD groups allow for implementation of the proposed road improvements (Forest Service 2008a).

Timber Production LUD

The Forest Plan promotes the development and management of cost-effective transportation systems that also consider future recreation access and that minimize or avoid road crossings on existing trails for this LUD (Forest Service 2008a).

Old-Growth Habitat LUD

The 2008 Forest Plan Amendment process included an interagency biologists' review of all the small Old-Growth Habitat Reserves. Although new road construction is generally inconsistent with this LUD's objectives, the Forest Plan permits reconstruction of existing roads to meet LUD objectives (Forest Service 2008a).

Special Interest Area LUD

Tongass goals for Special Interest Areas consist of "provid[ing] for the inventory, maintenance, interpretation, and protection of the existing characteristics and attributes of areas with unique cultural, geological, botanical, zoological, recreational, scenic, or other special features" (Forest Service 2008a:3-40). Transportation systems that are compatible or that improve interpretation of the values of Special Interest Areas are permitted under this LUD. Forest Plan karst Standards and Guidelines would be followed (Forest Service 2008a).

Modified Landscape LUD

The NFS lands near the Whale Pass end of the corridor are designated as Modified Landscape and are intended to provide natural-appearing landscapes while allowing timber harvest and a mix of other resource activities (Forest Service 2008a). This LUD permits the development of cost-effective transportation systems.

Road improvements resulting in improved safety and navigation along the roads would also comply with Forest Plan transportation objectives (Forest Service 2008a).

ROW Acquisitions

Following construction, ADOT&PF would apply for a 300-foot Section 4407 ROW easement along the entire proposed action, except along the privately owned lots. The 66-foot and 100-foot ROWs along Segment 2 would be retained through the privately owned lots. To maintain the improved road, the proposed action would require that ADOT&PF have ROW through 1 acre and 362 acres of private and NFS lands, respectively.

All ROW acquisitions would be conducted in accordance with the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended in 1987. Because all ROW acquisitions would only require partial lot acquisition, the proposed action would not require the relocation of any residences or businesses as part of road improvements.

Reasonably foreseeable actions are unlikely to have a significant impact on land use when combined with the proposed action. Timber harvest on federal, state, and private lands would not change land designations. Recreational enhancement projects or other road projects may require additional ROW to implement, but, due to estimated project size, these acquisitions would not significantly change the land use in the area.

Noise

The analysis area for noise is defined as a 0.5-mile buffer surrounding the proposed road segments because construction noise would markedly decrease within approximately 0.5 mile of the noise source. This analysis area assumes that noise generated as a result of project construction actions or vehicular traffic would diminish over this geographic distance back to existing baseline conditions.

The entire analysis area is set within a rural setting. Current noise levels in the area are low to moderate and include traffic on the existing roads (both residential and commercial), as well as sporadic timber management, recreation, and subsistence activities. The existing (2012) average daily traffic in the analysis area is 40 vehicles per day for Segments 1 and 2, and 10 vehicles per day for Segment 3 (ADOT&PF 2012). Northern POW residents are the primary users of the road; a typical pickup truck has a sound level of 55–75 A-weighted decibels (dBa) at 50 feet (FHWA 2006). Logging trucks also use the roads and may have sound levels up to 85 dBa.

No Action Alternative

Under the no action alternative, noise levels in the analysis area would continue to be influenced by existing noise sources, resulting in low to moderate noise levels from vehicle traffic and other activities. Existing road maintenance would also continue, which would result in brief, temporary increases in noise level during routine maintenance activities.

Impacts from the Proposed Action

During construction of the proposed action, operation of heavy machinery, construction traffic, and blasting (where required) would temporarily increase the amount of noise heard in the analysis area. An estimated 37 construction vehicles or pieces of equipment and 20 personal construction worker vehicles would be present on-site during the construction period. Table 9 provides a summary of standard noise levels for commonly used construction equipment.

Table 9. Noise Levels from Common Construction Equipment

Equipment	Typical Sound Level (dBa)			
	50 feet*	500 feet†	1,500 feet†	3,000 feet†
Backhoe	78–80	59	50	44
Front end loader	79–80	59	50	44
Grader	85	64	55	49
Pickup truck	55–75	54	45	39
Dozer	82–85	64	58	52
Dump truck	76–84	63	54	48
Tractor	84	63	54	48
Blasting	94	74	64	58

* Data from FHWA (2006).
† Estimated noise levels at distances away from the equipment item (beyond 50 feet) are conservative because the only attenuating mechanism considered was divergence of the sound waves in open air. In general, this mechanism results in a 6-dBa decrease in the sound level with every doubling of distance from the source.

As displayed in Table 9, construction noise would be expected to decrease markedly within approximately 0.5 mile of the noise source. Following 23 Code of Federal Regulations (CFR) 772, all construction equipment and vehicles would also comply with pertinent EPA noise standards and have fully functional noise-reduction equipment and mufflers in place at all times.

Following construction of the proposed action, it is anticipated that traffic could increase due to road improvements. However, these noise increases would be intermittent, and any additional noise generated from that traffic would be consistent with the type and noise levels currently generated by use of the road.

Reasonably foreseeable future projects, including timber management, recreational enhancement opportunities, and road maintenance would increase noise in the area adjacent to the proposed action. However, these noise increases would be intermittent, and any additional noise generated from increased traffic would be consistent with the type and noise levels currently generated by use of the road. Therefore, the addition of these actions combined with the proposed action would not result in significant cumulative effects.

Public Services and Utilities

The analysis area for public services and utilities is the community of Whale Pass and the ROW analysis area (see Figure 8) with several larger areas analyzed to accommodate potential realignments. This is the area where direct and indirect impacts have the potential to occur from construction and use of the road. Public services that would be potentially impacted by construction and use of the improved roads include water, sewer, electricity, education, and health and emergency services.

Water and Sewer

There is no municipal water supply or sewer system in Whale Pass; most residents use rainwater catchment, streams, or springs for their domestic water source and use direct discharge or septic systems. See also the “Drinking Water Sources” section above.

Electricity

Electricity in Whale Pass is provided by AP&T. An overhead power line runs half of the existing corridor’s length, providing power from Whale Pass to the private land owners along the road.

Education and Health, and Emergency Services

There is a small K-12 school in Whale Pass currently attended by 11 students (Alaska Department of Commerce, Community, and Economic Development [ADCCED] 2015). Emergency medical services and a fire department are provided by volunteers. In emergencies, ambulances with injured or ill patients travel to the medical center in Craig along the existing NFSR 2500000 and FH 43, and this travel time averages 3 hours.

No Action Alternative

Under the no action alternative, there would be no impacts to water, sewer, or electricity services from construction and upgrade of the existing road. Emergency response times and school transportation times would remain at current levels.

Impacts from the Proposed Action

Water and Sewer

No measureable impacts to these services are anticipated during construction or from use of the improved road. Prior to implementation, efforts would be made to coordinate with both permitted and non-permitted drinking water users, in order to avoid disruption to their water supply during construction. Utility locates would be performed prior to construction. Precautionary measures would be used to minimize the potential for damage to exposed utilities, such as pipe support systems, trench sheeting, and shoring.

Electricity

Overhead power and telephone poles could be affected during road construction, because some of them would need to be relocated to accommodate road widening. A determination of the number of poles and miles of power line affected has not been made at this time; however, disruption (from relocations) to utility services during construction would be expected to be minimal. All affected power utility customers would be contacted prior to construction.

Education and Health and Emergency Services

Temporary road closures, delays, and detours would occur during the construction of the improved road. Likely detour routes and times are further discussed in the “Transportation” section. This would temporarily impact emergency service providers who use these roads to access the medical center in Craig and the people being transported by these providers. Prior to construction activity, the anticipated construction road closures would be coordinated with local fire departments, Alaska State Troopers, and other first responders via a temporary traffic control plan to avoid substantial delays in response times. Unless bridges were actively being replaced, it would be possible for emergency vehicles to be escorted through the active construction zone. Following construction, emergency response times are expected to decrease due to the improvements of the roads and improved safety, which would provide an increase in safe and timely medical treatment for the community of Whale Pass.

Temporary road closures and delays could also temporarily impact school travel during construction depending on the time of year construction occurs (i.e., whether school is in session). As with emergency response times, school transportation times are expected to decrease due to improvements of the road. Improvements to the roads would help to limit potential school travel-related accidents and provide for improved safety for passengers.

The proposed action would not have measureable impacts to public services and utilities. Reasonably foreseeable future projects would have to occur at the same time as the proposed action for there to be a cumulative impact. At this time, there are no plans developed for the recreational enhancement opportunities that would impact the same services and utilities as the proposed action. Timber harvest on private and federal lands could lead to an increase in traffic use during construction of the proposed action but would not result in additional road closures or delays.

Recreation

The analysis area used for recreation resources consists of a 0.5-mile radius around the project (Figure 9). Past and present impacts to recreation in this analysis area include timber management activities and mining.

The analysis area provides opportunities for a wide range of outdoor recreation experiences, including freshwater fishing, big game and waterfowl hunting, off-highway vehicle use, kayaking and canoeing, hiking and wildlife viewing, local subsistence uses, picnicking, and camping. Although many acres of land are available for recreation use, steep terrain, wetlands, and heavy vegetation confine most recreation activities to lands accessible from adjacent roads, waterways, or shoreline. Because the proposed action is for road improvements, only the lands accessible from adjacent roads would be affected by the project.

Communities on POW Island range in size from 13 residents in Point Baker to 1,200 in Craig. POW Island's economy traditionally has been based on timber harvesting, manufacturing, mining, fishing, and seafood processing (ADCCED 2015). However, tourism has played a larger role in the island's economy in recent years, and the POW Chamber of Commerce is actively seeking diversification and economic growth.

The Recreation Opportunity Spectrum (ROS) inventory system describes and provides guidelines about the types of recreation opportunities that are compatible with management activities in an area based on setting, activity, and experience (Forest Service 1982; Forest Service 2008a). All lands in the analysis area, including non-NFS lands, have been assigned ROS classifications. As shown in Figure 9, most of the lands available for recreation in the analysis area, approximately 97%, are in the Roaded Modified (RM) class (Table 10).

Roaded Modified areas are characterized by being close to roads; natural conditions are predominant, but evidence of human activity and resource development is evident. The RM category encourages recreation experiences that are consistent with human use and exposure, commodity production, limited recreation facility development, and access via local or secondary roads. All forms of access and travel modes may occur, although roads may not be well suited to highway-type vehicles.

NFS lands in the analysis area have specific management prescriptions according to their LUDs as specified in the Forest Plan (Forest Service 2008a). Two LUD groups apply: the Development LUD group and the Natural Setting LUD group. Figure 2 shows the LUDs intersected by the project. The Development LUD group includes the Timber Production LUD and the Modified Landscape LUD; these account for 49% of the analysis area. The Natural Setting LUD group includes the Old-Growth Habitat LUD and the Special Interest Area LUD; these account for approximately 21% of the analysis area. Approximately 30% of the ROS classified lands in the analysis area are located on non-NFS lands and do not have LUDs (Figure 2 and Figure 9). The lands classified as Roaded Modified, Semi-Primitive Non-Motorized, and Roaded Natural are split approximately in half between the Development LUD group and the non-NFS lands or Natural Setting LUD group. The lands classified as Semi-Primitive Motorized are mostly located in the Old-Growth Habitat LUD (see Table 10).

Table 10. Acres of Recreation Opportunity Spectrum Class by LUD in the Recreation Resources Analysis Area

LUD	Semi-Primitive Non-Motorized (SPNM)	Semi-Primitive Motorized (SPM)	Roaded Natural (RN)	Roaded Modified (RM)	Totals
Non–national forest (30%)	3	1	181	2,995	3,180
Development LUDs (49%)					
• *Modified Landscape*	7	0	0	624	631
• *Timber Production*	147	0	0	4,421	4,568
Natural Setting LUDs (21%)					
• *Old-Growth Habitat*	0	10	0	933	943
• *Semi-Remote Recreation*	0	0	5	<1	6
• *Special Interest Area*	0	0	0	1,364	1,364
Total	**157**	**11**	**186**	**10,337**	**10,691**

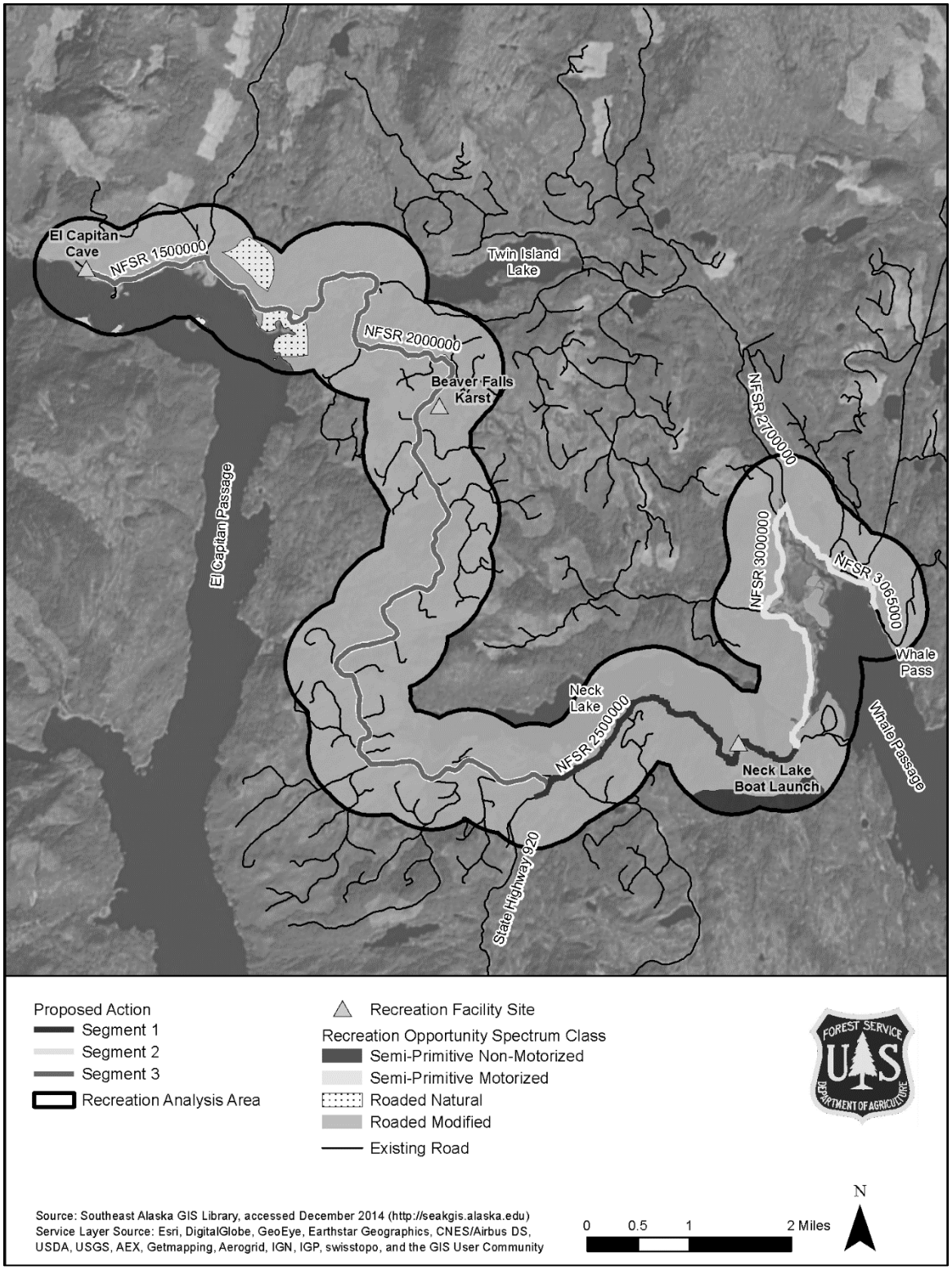

Figure 9. Recreation resources and ROS class in the recreation resources analysis area.

Recreation Places in the Analysis Area

Recreation places are those areas that are commonly used for recreation activities and that are easy to access; examples include roads, trails, boat anchorages, and concentrated use areas. Table 11 lists the developed and dispersed recreation sites in the analysis area; details about these sites and additional analysis are provided in the *Recreation Resources Report for Improvements for Neck Lake and El Capitan Cave Roads Environmental Assessment* (SWCA 2015a). Some POW Island residents have cabins north of the analysis area and use the project roads to access their cabins. POW Island visitors also access recreation places north of the analysis area via the project roads, such as Cavern and Twin Island Lakes, Red Bay and Lake, and Memorial Beach.

Table 11. Recreation Places in the Analysis Area

Recreation Place	ROS Class
Developed Recreation Sites	
El Capitan Cave Interpretive Area	RM
El Capitan Cave Rustic Boat Launch	RM
Beaver Falls Karst Interpretive Trail	RM
Neck Lake Picnic Area and Boat Launch	RM
Dispersed Recreation Sites	
El Capitan Peak	RM
Neck Lake	RM
108 Creek	RM

Special Use Permits

Special use permits authorize research, commercial activities, and ROWs on NFS lands. There are 27 special use permittees in the recreation resources analysis area. These permittees maintain public utilities, manage an aquaculture operation, operate lodges, or guide recreational users for fishing, hunting, wildlife viewing, and cave tours.

The SSRAA has a special use permit authorizing a coho salmon rearing program in Neck Lake. Facilities associated with the coho salmon rearing program include rearing pens and feed barges in the lake and a bulkhead along NFSR 2500000 to facilitate transfer of fish food onto the barges. Other facilities (a residence, a bunkhouse, a raceway, and a fish ladder) associated with the rearing program are located on non-NFS lands at the outlet of Neck Creek.

No Action Alternative

Under the no action alternative, there be no effects to ROS classes within the analysis area because there would be no changes to the naturalness of the area, no additional access, no increases in encounters, and no new or improved recreational facilities. Special use permittees and non-commercial recreationalists would not experience disturbance or displacement because no construction would occur within the recreation resources analysis area.

No impacts to recreation places, both developed and dispersed, would occur. It is possible that increased funding for recreation facility development or improvements could still occur under the no action alternative through the Recreation Roads, Roads to Trails, Federal Land Access Program, and Capital Facility Development funding sources or non–Forest Service sources.

Under the no action alternative, there would be an estimated 0.05% ADT increase for the analysis area over time (Karpstein 2015). The roads would not be plowed or maintained in the winter, and they could continue to be impassable for up to 2 months in the winter. See Table 12 below for estimated increases in traffic under the no action alternative.

There would be no change in the recreation facilities at the Neck Lake picnic area and boat launch. Existing facilities include a primitive boat launch, picnic table, and no restroom facilities.

Impacts from the Proposed Action

The majority of the proposed action is located in the RM ROS class, and 0.5 mile of Segment 3 (the northwest end of NFSR 2000000) is located in the RN ROS class. The proposed action would modify 5% (541 acres) of the recreation resources analysis area, but there would be no major change in naturalness of the area because the area is already roaded. Because the roads would be plowed during the winter, recreation access could increase during this time, and therefore encounters with other users could increase during the winter months. However, user encounters are not anticipated to increase, and the sense of remoteness would not be changed, beyond what is prescribed for the RM and RN classes (Forest Service 2008a). While the proposed action would increase access to the area during the winter months, it would not introduce new methods of access, nor would it introduce new recreation areas.

The Forest Plan management guidelines for development and natural setting LUD groups allow for implementation of the proposed road improvements (Forest Service 2008a).

The Neck Lake picnic site and boat launch would be improved to include trash and recycling receptacles, signs, a vault toilet, a picnic shelter, and a boat launch. The improved facilities would be consistent with the current ROS class RM. It is anticipated that improvement of the roads, as described in the proposed action, has the potential to increase use of the recreation facilities at the Neck Lake picnic site and boat launch. Facility improvements would better accommodate the increased use with such things as managed waste disposal for trash, recyclable items, and human waste. Construction of the facilities would temporarily disrupt use of the site during construction. However, over the long term, these improvements would improve the recreational experience for users and better accommodate future visitors. As has occurred in the past, dispersed recreation near this site would still be available; i.e., the site would not be designated for day-use only. The addition of these improvements with the proposed action would not result in significant effects.

Under the proposed action, no impacts to the other developed recreation places discussed above would occur because they are all located within the RM ROS class and because the proposed action does not include additional funding for recreation facility development or improvements. Future funding could occur from the same sources as described for the no action alternative: the Recreation Roads, Roads to Trails, Federal Land Access Program, and Capital Facility Development funding sources or non–Forest Service sources. With the widening and potential for realignments included in the proposed action, some dispersed recreation sites may be reduced in size or obliterated.

The proposed action may result in some disturbance to or displacement of both special use permittees (including outfitter and guides) and non-commercial recreationalists during construction. Construction crews and equipment would be present, and access to construction areas would be restricted for public safety. However, these effects are not expected to result in prolonged disturbance or displacement of special use permittees or non-commercial recreationalists because detour routes identified as part of a temporary traffic control plan would still provide access and because each construction phase is expected to be completed in a few months.

Table 12 compares estimated traffic increases as part of the no action alternative and proposed action. The analysis year starts at 2017, assuming that project construction would be completed by that year. Table 12 includes the estimated 0.05% annual increase in ADT that is project to occur whether the proposed action is selected or not. The 2 additional months of drivable conditions under the proposed action would allow an estimated 20% more traffic per year on the project segments.

The proposed reasonably foreseeable future recreation enhancements conform to the current ROS classes on North POW Island. During construction of these proposed future enhancements as well as during future timber harvest and hauling, special use permittees' operations and non-commercial recreationalists could be temporarily displaced or disturbed. However, over the long term, these enhancements would improve the recreational experience for these users and allow these recreation places to better accommodate future visitors via increased parking and human waste capacity. Therefore, the addition of these projects combined with the proposed action would not result in significant cumulative effects.

Table 12. Estimated Existing and Future Average Daily Traffic and Annual Traffic (number of vehicles) for Road Segments by Alternative

Segment	Existing Condition		No Action (Roads are typically passable for 10 months)				Proposed Action (Roads would be passable year-round)			
	2012 ADT	2012 Annual Traffic	2017 ADT	2017 Annual Traffic	2035 ADT	2035 Annual Traffic	2017 ADT	2017 Annual Traffic	2035 ADT	2035 Annual Traffic
1 and 2	40	12,120	41*	12,426	45*	13,593	41*	14,969	45*	16,375
3	10	3,030	10*	3,107	11*	3,398	10*	3,742	11*	4,094

*Assumes 0.05% annual increase in ADT.
Source: ADOT&PF (2012).

Scenery

The roads were designated as part of the POW Island Scenic Byway in 2010 as part of an evaluation of all roads on the POW Island road system (von Scheben 2010). The analysis area for scenery consists of the viewshed surrounding the proposed action roads. In addition to the resources in the footprint of the proposed surface disturbance, the viewshed includes the adjacent areas seen an observer using travel routes and use areas (VPRs) to gain access to the area. VPRs are inventoried and catalogued by the Tongass based on public input, validated through public participation, and then listed in the Forest Plan (Forest Service 2008a). VPRs for the Tongass can be water-based or land-based. The landscapes that can be visually accessed from these locations are classified as *seen* and are included in the scenery analysis area. Areas that are unseen from these routes or not located on NFS lands are not included. Table 13 and Figure 10 summarize the VPRs along the road corridor.

The landscape near the proposed action consists of rounded but often rugged mountains over 3,000 feet separated by hilly or rolling terrain and lowlands. In the central portion of the island, numerous small, steep valleys dissect the mountains and coalesce to form broad U-shaped valleys along larger drainages and along steep-sided fiords. The unit is dominated by forest vegetation. The forests are often moderately to highly productive on the steeper slopes and valley bottoms and nonproductive or minimally productive in the wetter lowlands. Open shrubby bogs and fens occur in the wettest spots. High-gradient, moderate-gradient, mixed-control, and contained streams make up the majority of the stream types. At mid-valley, these streams often flow

through large elongated lakes before emptying into fiords at their termini. Much of POW Island has been influenced by humans; roads, buildings, and other structures are very visible in or near POW Island communities, including the Whale Pass area. Extensive timber management has been conducted since the 1950s, with private lands extensively harvested during the past 30 years and peak harvest on NFS land in the 1960s. Many timber stands are now in early successional stages. Almost 4,000 miles of road were built on POW and the surrounding islands in association with this harvest. Despite these examples of human influence, some areas appear uninfluenced by humans.

Table 13. Visual Priority Routes and Use Areas in the Analysis Area

Types of VPRs and Use Areas	Name
Public use roads	Control Lake to El Capitan Cave
Communities	Whale Pass
Small boat and mid-size tour boat routes	El Capitan Cave to Coronation El Capitan Passage Coffman Cove to Whale Pass
Saltwater use areas	El Capitan Cave to Shaken Bay
Dispersed recreation areas	Neck Lake
Developed recreation areas	El Capitan Cave Interpretive Site Beaver Falls Karst Interpretive Trailhead Neck Lake Boat Launch
Private resorts	Whale Pass Resort El Capitan Lodge
Hiking trails	El Capitan Cave Trail Beaver Falls Karst Interpretive Trail

Effects to scenery resources were analyzed based on the *Landscape Aesthetics: A Handbook for Scenery Management* (Forest Service 1995) and the Forest Plan (Forest Service 2008a), which establishes scenery guidelines, goals, and objectives. Scenery guidelines, known as Scenic Integrity Objectives (SIOs), provide acceptable scenic modifications for all human-based management activities on NFS lands. SIOs are established based on distance zones and LUDs. These visual objectives also establish a timeline for the modifications to meet the scenery guidelines (Table 14; see Figure 2 for LUDs).

Several other design factors are considered to meet SIOs.

- The landscape's existing scenic integrity (ESI) rating is an inventoried condition that rates the degree of change that has already occurred on the ground. It is important to compare the ESI of the analysis area to the SIOs assigned by the Forest Plan (Forest Service 2008a).
- The visual absorption capability (VAC) is an estimate of the relative ability of a landscape to absorb management activities. These ratings reflect the degree of landscape variety in an area, viewing distance, and topographic characteristics. For example, a low VAC setting generally has steep slopes with little landscape variety, whereas a high VAC setting may be relatively flat and/or has a high degree of variety in the landscape.

- Inherent scenic attractiveness (ISA) is the primary indicator of the intrinsic beauty of a landscape and of the positive responses it evokes in people. It helps determine landscapes that are important for scenic beauty, as well as those that are of less value, based on commonly held perceptions of the beauty of landform, vegetation pattern, composition, surface water characteristics, land use patterns, and cultural features (Forest Service 1995).

There may be instances where the SIO can be met even though the proposed activity is greater than the guideline, or there also may be cases where the activity must be smaller to meet the intent of the SIO.

Table 14. Scenic Integrity Objective Classifications for NFS Lands* along the Road Corridor

Scenic Integrity Objective Classification	LUD	Guidelines	Miles of Corridor (% of analysis area)*
High	Special Interest Areas and Old-Growth Habitat	Design activities to keep them from being visually evident to the casual observer. This objective should be accomplished within 6 months following project completion.	7.1 (57%)
Intermediate	Modified Landscape	Design activities to be subordinate to the landscape character of the area. This SIO should be accomplished within 1 year of project completion.	1.5 (12%)
Low	Timber Production	Activities may visually dominate the characteristic landscape but must have visual characteristics similar to those of natural occurrences within the surrounding area or character type. This SIO should be met within 1 year in the foreground distance zone and within 5 years in the middle and background distance zones following project completion.	3.8 (31%)
Very low		Activities may dominate the characteristic landscape yet, when viewed as background, should appear to be a natural occurrence.	

*Because Forest Service SIOs only apply to NFS lands, the 8.6 miles of the project through private and State of Alaska lands are not included here.
Note: Where the roads have different SIO classifications on either side, the higher classification is applied (Ouderkirk 2015).

No Action Alternative

Under the no action alternative, scenery resources would remain the same with the greatest impact immediately following routine maintenance or clearing of vegetation. During hot dry weather, vehicle-driven dust from the gravel roads would continue to coat the surrounding vegetation and landscape.

Proposed Action

Landscapes in the analysis area are not categorized as *sensitive*, as summarized in Table 15.

Table 15. Landscape Characteristics of Sensitive Landscapes Compared to Landscapes in the Analysis Area

Landscape Characteristics	Sensitive Landscapes	Landscapes in the Analysis Area
VAC	Low	Low
ESI	Very high or high	Moderate
ISA	Distinctive	Typical

Viewing the roads from the adjacent VPRs is restricted to limited segments with the exception of Neck Lake. The road corridor is restricted to a tight foreground viewing distance due to the dense forested landscape that is typical along the roads at the clearing limits of the corridor. The roads in their current configuration have a moderate ESI and typical ISA. It is expected that the proposed action would result in meeting a moderate SIO if design features are included in subsequent engineering of the project to reduce visual impacts from the surrounding landscape character. More information on scenery resources are available in the *Scenery Resources Report for Improvements for Neck Lake and El Capitan Cave Roads Environmental Assessment* (Corvus Design 2015). Recommended design features are included in the "Design Elements" section of this EA. The proposed action would not change the Scenic Byway designation of the roads.

Areas of Concern

For the purposes of the EA, areas that may not meet the SIO are addressed as areas of concern. Recommendations are included here for areas of concern along the entire proposed action. As Segment 3's design is further developed, it may need to be re-evaluated by a landscape architect. Figure 11 depicts the locations of the areas of concern for scenery resources. Table 16 describes the areas of concern and impact-reduction measures. The "Design Elements" section includes recommendations to reduce or avoid these concerns.

The ESI for the entire road corridor (i.e., the VPR) is moderate. Through consideration of the areas of concern, by incorporating "Design Elements," and by attempting to meet the highest level of the corresponding SIO during future engineering and design, it would be expected that the proposed action would maintain the moderate ESI along the entire corridor and therefore would not place any additional scenery impacts upon the existing landscape character.

The addition of reasonably foreseeable future projects, recreational enhancements, and timber harvest combined with the proposed action would not result in significant cumulative effects because these types of projects are already part of the existing landscape character.

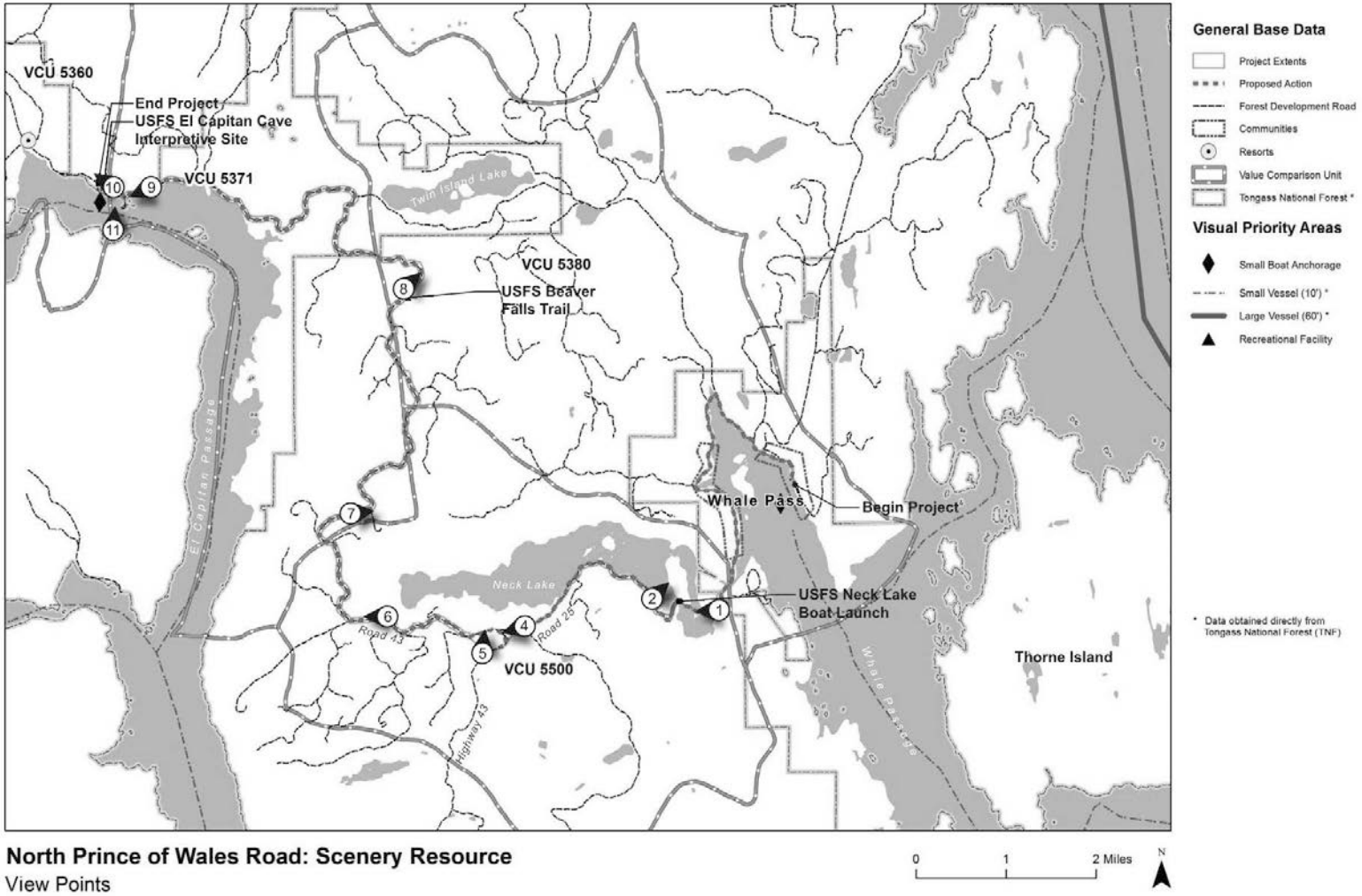

Figure 10. Map of visual priority routes and use areas with key viewpoints in the scenery analysis area.

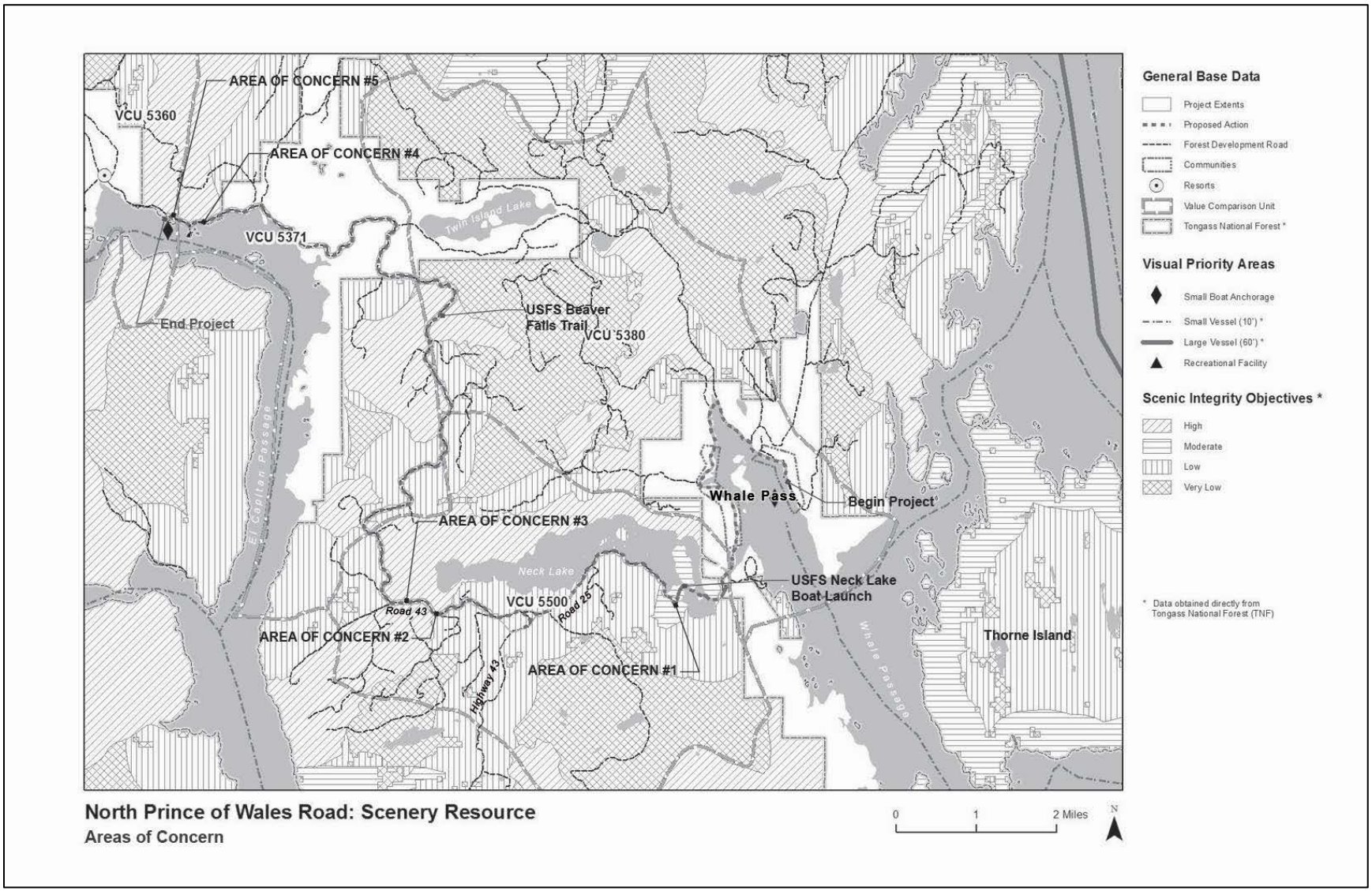

Figure 11. Areas of concern in the scenery analysis area.

Table 16. Areas of Concern Affected by the Proposed Action and Impact-Reduction Measures

Scenic Integrity Objective Classification	LUD	Guidelines	Area of Concern: Location	Concern	Impact-Reduction Measures
High	Old-Growth Habitat and Special Interest Areas	Design activities to keep them from being visually evident to the casual observer. This objective should be accomplished within 6 months following project completion.	Area 2: Road 43 as it enters the Old Growth LUD from the east and passes through a 20-foot cut rock face while making a sharp curve.	It is likely that the curve would need to be realigned and the rock face extended to 35–40 feet high; could have impacts consistent with a low SIO. On the opposite side is an old rock source, and, if this becomes a new source for rock, expanding this quarry could have impacts consistent with a low SIO.	Minimizing impacts to Areas 2 and 3 through use of design features could minimize visual impacts to a moderate SIO; however, this would likely not meet the high SIO. An exception could be considered as allowable under this LUD.
			Area 3: A long extensive seep along the south side of the roads that exits the Old Growth LUD to the west.	Existing engineering structures in this area indicate that an extensive retaining wall system may be needed as part of the proposed action to stabilize soils. A large extensive retaining wall could have impacts consistent with a low SIO.	
			Area 4: An extensive cut rock face to the east of the El Capitan Cave Interpretive Site that was a previous rock source site.	Additional extraction from this quarry could have further visual impacts consistent with a low SIO, given the adjacency to the El Capitan Cave Interpretive Site and given that this is one of the few segments of the proposed action that is viewable from an adjacent VPR (El Capitan Passage).	Design features or resource protection to reduce the impacts would be beneficial. An exception could be considered as allowable under the Special Interest Area LUD if an alternative rock source is not feasible.

Table 16. Areas of Concern Affected by the Proposed Action and Impact-Reduction Measures

Scenic Integrity Objective Classification	LUD	Guidelines	Area of Concern: Location	Concern	Impact-Reduction Measures
			Area 5: El Capitan Cave Interpretive Site	The roads currently meet a moderate SIO and, including facilities improvements (parking, trailhead, and day use recreation area), would likely maintain the moderate SIO with design features and would not be expected to meet the high SIO.	An exception for recreation facilities could be considered as allowable under the Special Interest Area LUD.
			Areas 4 and 5 as well as all of Value Comparison Units (VCUs) 5371, 5380 and 5360	Existing road corridor through Special Interest Area LUD currently meets a moderate SIO. The proposed action would likely also meet a moderate SIO and would not be expected to meet high SIO.	An exception could be considered as allowable under the Special Interest Area LUD.
Intermediate	Modified Landscape	Design activities to be subordinate to the landscape character of the area. This SIO should be accomplished within 1 year of Project completion.	Area 1: Existing quarry with 25-foot rock back walls, as well as the edge of Neck Lake at the western limit of this LUD.	The roads would be relocated through both these points and would likely result in higher wall heights on both sides of the road; could have impacts consistent with a low SIO. Additional cutting at the edge of Neck Lake could result in wall height up to 40 feet; would contrast with existing shoreline conditions found along Neck Lake and could have impacts consistent with a low SIO.	Minimizing impacts to these two points through the use of design features could minimize visual impacts to a moderate SIO and meet the requirements of the Modified Landscape LUD. Alternatively, an exception could be considered as allowable under this LUD.

Socioeconomics

The analysis area for socioeconomics consists of Whale Pass, which is the Southeast Alaska community most likely to be impacted by road improvements. However, for context, this section also describes socioeconomic conditions for POW Island, in general.

The population of POW Island was generally steady from 1990 to 2000 and then experienced a decline from 2000 to 2010 before increasing again in recent years. Community populations in the analysis area also follow this general trend, decreasing from 58 in 2000 to 31 in 2010, and then increasing to 39 in 2014 (Table 17) (Alaska Department of Labor and Workforce Development [ADL&WD] 2014; U.S. Census Bureau 2015).

Table 17. Population Estimate for Prince of Wales Island and Whale Pass

Location	1990	2000	2010	2014
Whale Pass	75	58	31	39
POW Island	6,278	6,146	5,559	6,426

From the mid-1950s until the mid-1990s, the timber harvesting industry provided a high level of economic activity on POW Island. With the decline in the timber industry in the 1990s, the island's economy has increasingly centered on "small proprietorships such as family-run specialty wood mills, fishing and seafood, and hospitality businesses" (ADL&WD 2012:10). Table 18 lists the 2013 top industries for POW Island and Whale Pass (ADL&WD 2014). It should be noted that the data below do not include federal workers, members of the military, or self-employed individuals. This is because the local and regional information available through the ADL&WD only captures data for workers in the private sector, state government, and local government covered by unemployment insurance in Alaska.

Table 18. Top Industries for Whale Pass and Prince of Wales Island in 2013

Industry	Whale Pass (% of Total Employed Workers)	POW Island (% of Total Employed Workers)
Local government	16%	40%
State government	12%	3%
Leisure and hospitality	20%	5%
Education and health services	8%	8%
Trades, transportation, and utilities	12%	17%
Information	--	<1%
Professional and business	--	2%
Financial services	--	4%
Natural resources and mining	16%	6%
Construction	16%	9%
Manufacturing	--	4%
Other	--	1%

According to the American Community Survey, the median household income for POW Island was $46,071 in 2013, and 15% of residents were living below the poverty level (U.S. Census Bureau 2015). For Whale Pass during the same timeframe, no median household income was reported; however, 41% of the population reported an annual household annual income of $10,000 to $14,000, and 58% of residents were living at incomes below the poverty level.

No Action Alternative

Under the no action alternative, there would be no change to current socioeconomic conditions at Whale Pass or POW Island, because construction of the proposed road improvements would not take place. No direct route to Whale Pass would be chip-sealed, and, therefore, some tourists could choose to avoid the community, resulting in limitations to economic development and revenue.

Impacts from the Proposed Action

Construction of the proposed action would generate an estimated 30 construction jobs. These temporary construction jobs would likely be staffed by a combination of local and non-local workers. During the FH 43 improvements, approximately 82% of Southeast Roadbuilders Inc.'s employees were POW residents (Swinton 2015). It is likely that a temporary increase in local employment and spending could occur within Whale Pass or surrounding communities during the 7-month construction period. (April–October and 10-hour workdays were used as the construction period for purposes of this analysis.) Based on State of Alaska salary schedules and assuming the position would likely be hired at a pay range of 53 ($24/hour) under the Labor, Trades, and Crafts Class I (Alaska Department of Administration Division of Finance 2014), the project could generate an estimated $1.5 million in construction worker wages.

Following construction, the project would improve access between Whale Pass and El Capitan Cave and would improve access for recreational and subsistence areas along the route. As a result of these improvements, economic revenue from tourism activity and other business opportunities could increase over the long term in Whale Pass.

Road improvements would help the residents of Whale Pass by increasing the number of tourists who are likely to visit the community and who may buy retail goods and services in the area. The road improvements would also reduce the driving time between Whale Pass and the larger island cities of Klawock and Craig, where there are more retail goods, services, and employment opportunities.

Land values could increase over time if the community is able to permanently attract visitors. This is likely only if more services are provided in the future.

Soils

The analysis area for soils consists of the ROW analysis area with several larger areas analyzed to accommodate potential realignments (Figure 12). The ROW analyzed through all State of Alaska and NFS lands is 300 feet wide, while the ROW width for Segment 2 through private lands (on the eastern side of the project) varies between 66 feet and 100 feet. Past and present impacts to soils in the analysis area include the existing road, timber harvest activities, and rock pits. These existing impacts have increased soil erosion in the analysis area and, in the case of the existing road, have altered the natural topography and surface geology.

The soil conditions in Southeast Alaska have been influenced by cold temperatures and abundant rainfall. The climate conditions cause organic matter to accumulate and decompose slowly. At the same time, the rainfall tends to flush nutrients from the mineral soils. Poorly developed drainage patterns on POW Island, result in patches of wet and swampy conditions. Forested, poorly drained, organic soils are widely distributed throughout the analysis area. Other soil types in the analysis area include well-drained organic matter less than 20 inches thick over bedrock mineral soil and relatively thick organic mats covering mineral soils.

Glaciation of the island has resulted in deposits of glacial till with depths from a few centimeters to more than 30 feet. At higher elevations on steeper slopes, glacial till soils are less than 20 inches thick. Dense glacial till soils restrict vertical movement of water and likely cause pockets of perched groundwater at shallow depths throughout the area.

Approximately 58% of the soils in the analysis area are well drained, and 42% are poorly drained. The well-drained soils support hemlock and spruce forests. The poorly drained soils support either low-volume cedar-hemlock forests, scrub-shrub forests, or non-forested wetlands. On the existing road corridor, native soils have been disturbed and either replaced with or filled over by gravel, rock, and other fill, and slopes have also been altered. Soil stability is assessed by soil hazard class (Table 19) and the use of existing landslide maps. Soil hazard classes in the analysis area are primarily Class I, II, or III. Approximately 15 acres of Class IV soils have been mapped in the analysis area. Mass Movement Index Class IV soils are generally avoided for road construction because these soils have a high potential for mass movement. The only Class IV soils in the analysis area are located in Segment 3 near the southwest end of Neck Lake.

Landslide maps and local knowledge have identified two areas of existing landslides in the analysis area. The first is located approximately 0.3 mile north of the Beaver Falls Karst Interpretive Trail. The original road construction in the 1970s cut into wet, dense glacial till at this location and caused several small landslides. The road in this location was relocated uphill and is currently in a stable location; however, care must be taken to avoid overloading the slope in this area. The second unstable area identified by the landslide inventory is at the western end of Neck Lake, approximately 1.4 miles west of the junction with NFSR 2500000 to Whale Pass. The rock pit development at this location overloaded the slope below the road and caused two small landslides. Dense till underlies this area, and care should be taken to avoid overloading the slope.

Table 19. Soil Hazard Class in the Analysis Area

Soil Hazard Class	Acres
I: Low hazard	174
II: Moderate hazard	149
III: High hazard	203
IV: Very high hazard	15
Total	**541**

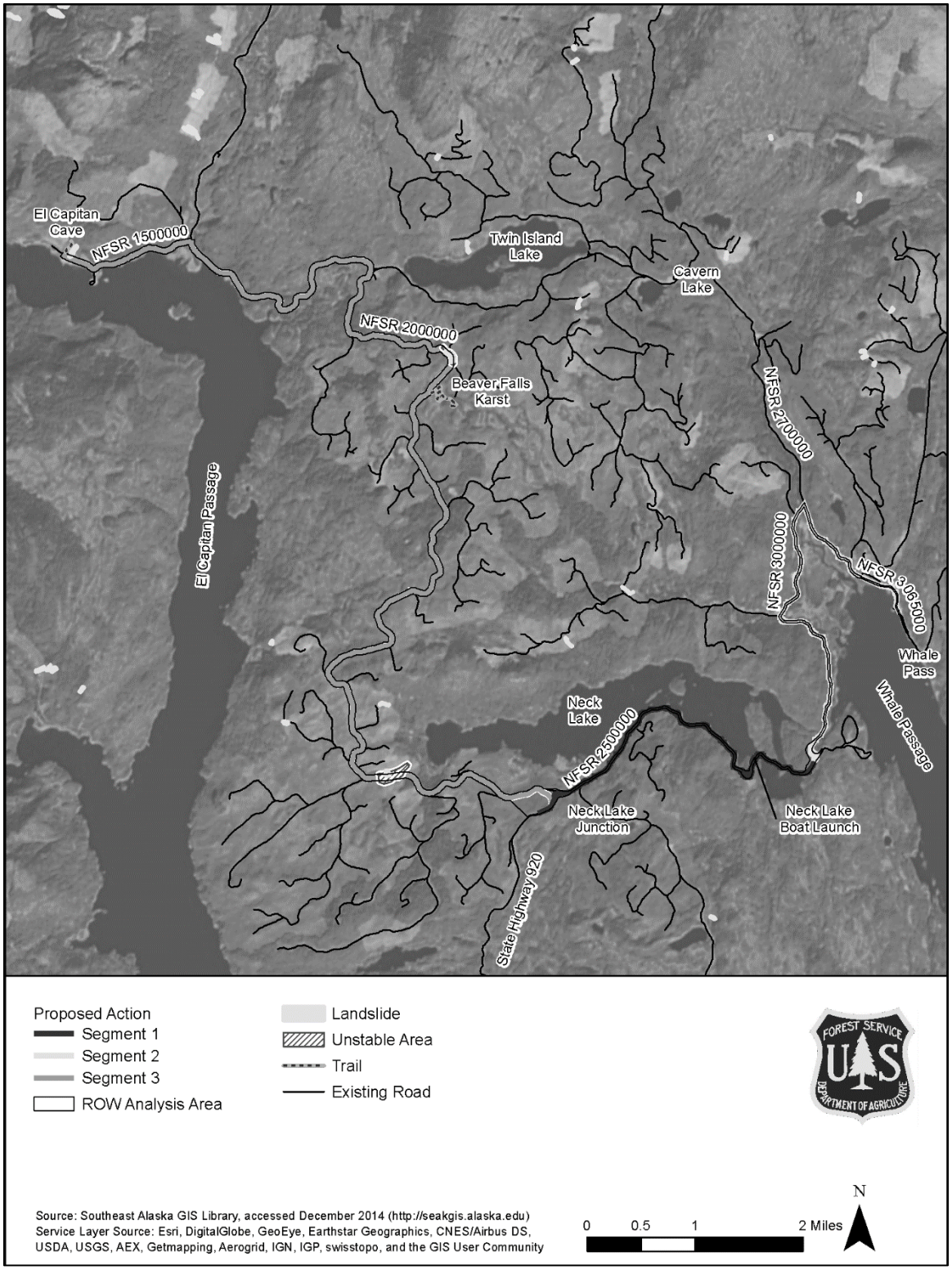

Figure 12. Trails, landslides, and unstable slopes along the ROW analysis area.

No Action Alternative

Under the no action alternative, there would be no impacts to soils because road improvements would not occur. Impacts related to maintenance of the existing roads would include ongoing slight widening and lowering of the road, an ongoing need for fill material, and potential drainage alterations from blocked or damaged culverts.

Impacts from the Proposed Action

The proposed road corridor would closely follow the existing corridor. There are potential realignments that would occur within the analysis area. Staging areas would be located in existing cleared upland areas. No additional soils movement would be necessary for staging equipment.

The primary impacts to soils would occur from realignment activities and from cut and fill actions to change road grades and slopes. Grading impacts are expected to remain within the existing corridor, but some may occur along the alignment as necessary to achieve the finished grades.

Exposed areas of fresh cuts and fills are subject to wind and water erosion. These areas would be stabilized with a fast-growing nonaggressive seed mix to minimize erosion. Appropriate sediment- and erosion-control BMPs would be installed before construction begins and would be maintained in working order throughout the construction period and until vegetation is established. All BMPs would be inspected and repaired according to the stipulations in applicable permits to maintain the continued effectiveness of the controls. Erosion controls would be left in place until vegetation becomes established.

Road design should avoid placing fill on the two unstable slopes identified by the soil and landslide inventories. Surface and subsurface water in these areas should be controlled to avoid adding runoff water to the unstable slopes. Blasting should also be avoided in these areas during saturated soil conditions.

Groundwater seeps or water seeping into excavations may occur where old beach gravel or organic deposits are encountered, especially during periods of wet weather. During construction, appropriate measures would be taken to keep groundwater from entering excavations. Methods could include intercepting and diverting the water or grading to divert the water to sump locations for permitted disposal.

Some road segments would be realigned if deep unsuitable materials are encountered because these areas do not provide a solid supporting surface over the long term. Where road improvements are required in areas currently containing corduroy roads, the excavation and displacement technique would be used. This method requires excavation of unsuitable material and filling with rocks. Because of the high precipitation rates and resulting natural moisture of the soils associated with the project roads, many will likely be deemed unsuitable for use in construction of the roadway embankment and therefore must be discarded. All material determined unsuitable by a geotechnical study would be discarded. Every effort would be made to use all suitable excess material in the reconstruction of the roadway. The remaining waste material would be disposed of off-site in an upland area suitable for filling.

Erosion-control measures are also needed to stabilize waste disposal areas. Waste materials consisting of dense till are subject to erosion and fill failure. Waste disposal areas would be designed so that waste material is stacked in a stable manner.

Construction activities would increase the road width from the existing average of 16 feet to 28 feet of chip-seal and shoulders. The current cleared area is approximately 26 feet wide, totaling 66 acres. The improved road disturbance area would be approximately 50 feet wide and total 62 additional acres. Ground disturbance for these activities would total 128 acres, but because the exact alignment is still being defined, this EA analyzes a 541-acre area using the entire ROW.

Road construction would occur on 15 acres of Class IV soils. These areas are more prone to mass movement, and slope stability measures would be necessary to protect the soil resources in these areas.

As described in the “Design Elements and Standards, Best Management Practices, Resource Protection Measures, and Monitoring” section, BMP 14.7 would be implemented for the sections of the roads with unstable soils (identified in Figure 12), and regional blasting guidelines would be applied. BMPs that protect soil resources, as described in the Region 10 Soil and Water Conservation Handbook (FSH 2509.22), would be applied (Forest Service 2006). Over the long term, there could be an increase in erosion at undeveloped and dispersed recreation sites from increased human visitation due to the improved travel conditions. Ongoing monitoring of these dispersed recreation sites would avoid significant erosion impacts from increased visitation.

Soils could be disturbed during construction of the reasonably foreseeable future recreation enhancements and during future timber harvest. However, under the proposed action and these projects, adherence to BMPs such as erosion-control monitoring and revegetation would avoid substantial cumulative effects.

Subsistence Use

North POW Island provides opportunities for a wide range of subsistence opportunities, including fishing; big game, small game, and waterfowl hunting; plant collection and gathering; berry picking; and marine vegetation and invertebrates gathering. Although many acres of land are available for subsistence use, steep terrain, wetlands, and heavy vegetation may limit some subsistence users to areas accessible from adjacent roads, waterways, or shorelines. Because the proposed action is for road improvements, only the land, waters, and shorelines accessible from adjacent roads would be affected by the project. Therefore, the analysis area used to determine potential effects to subsistence resources and uses consists of a 0.5-mile radius around the project, similar to the recreation resources analysis area (see Figure 9). The project provides subsistence access by secondary roads (such as logging roads) and it direct access to Whale Passage and El Capitan Passage.

Because a portion of the project is on federal land, an evaluation for compliance with the Alaska National Interest Lands Conservation Act (ANILCA) Section 810 was also required and is in the project record (SWCA 2015b).

Whale Pass is the community that primarily uses the existing road corridor for subsistence access, although residents from the greater POW Island also come to the analysis area for subsistence purposes. Past and present impacts to subsistence uses include the existing road, timber harvest and thinning activities, recreational hunting, and other tourist activities.

Because the community of Whale Pass has seasonal and cyclical employment, subsistence harvest takes on special importance. The ADF&G Community Subsistence Information System indicates that 100% of Whale Pass households use subsistence resources and that Whale Pass residents harvested an estimated 248 pounds of subsistence resources per capita in 2012 (ADF&G

2015). Most of the harvested resources are fish, followed by large land mammals, marine invertebrates, plants, and birds and eggs (Table 20). More detailed information regarding subsistence resources and use in the analysis area is provided in the *Subsistence Resources Report and Section 810 Evaluation for Improvements for Neck Lake and El Capitan Cave Roads Environmental Assessment* (the Subsistence Resources Report*;* SWCA 2015b).

Sharing is an important component of the subsistence lifestyle, as indicated by the number of households who have either given or received resources from another household. Residents of communities throughout Southeast Alaska and in other parts of Alaska give and receive resources to and from residents of Whale Pass. Some resources may be reported as being used locally, but it should be noted that a given resource may not have been harvested from within the analysis area.

Table 20. Whale Pass Resource Harvest by Major Resource Category

Resource	Percentage of Households					Per Capita Harvest in Pounds
	Use	Attempt to Harvest	Successful Harvest	Receive	Give	
All resources	100	100	100	67	76	248
Fish	100	76	71	62	67	128
Salmon	95	62	57	48	57	52
Non-salmon fish	95	76	71	38	52	76
Land mammals	81	81	67	24	24	80
Large land mammals	76	76	57	24	19	80
Small land mammals*	33	33	33	0	5	<1
Birds and eggs	19	19	19	5	0	13
Marine invertebrates	81	57	57	14	48	24
Vegetation	100	100	100	24	14	3

Source: ADF&G (2015).
* Per capita harvest assesses only those small land mammals harvested for meat, not the pounds of animals harvested for sale of furs or ceremonial purposes.

No Action Alternative

Under the no action alternative, subsistence resource abundance and distribution along with access to and competition for the use of subsistence resources would remain the same and change only within annual variability based on local weather conditions and existing harvest levels. ADF&G monitors and manages wildlife populations in administrative units called Wildlife Analysis Areas (WAAs). Deer harvest in WAA 1527 (El Capitan) is not exceeding 10% of the deer habitat capability (DHC, as defined by Forest Service 2008b:3-428). Hunter success can be expected to decline when harvest demand represents 10%–20% of DHC. The demand in WAA 1530 (Exchange Cove/Whale Pass) has exceeded 10% in the past and has averaged 9% over the past 10 years. The Forest Service would continue to provide road maintenance on the roads. Winter snow plowing would not occur. Culverts would be replaced as needed under routine road maintenance. Passage improvements for aquatic organism would continue as part of the overall Forest Service program of work.

Under the no action alternative, the Forest Service, State of Alaska, and private land owners plan to continue timber harvest in the analysis area. During active timber harvest and hauling, subsistence users would be temporarily displaced or disturbed. Over the long term, timber harvest would affect wildlife abundance and availability. If additional roads are opened or constructed in support of timber harvest, access to subsistence resources could be increased. Competition for resources could increase if subsistence users displaced by timber harvest move into areas occupied by other subsistence users. On NFS lands, these reasonably foreseeable future projects (timber harvest and access management) were evaluated in the Forest Plan (Forest Service 2008b) and the 2009 POW Access and Travel Management Plan (ATM) (Forest Service 2009a) and were determined to result in a possibility of a significant restriction of subsistence uses. Both of these public processes included Section 810 subsistence hearings, and testimony for those hearings are included in the project record for the Forest Plan (Forest Service 2008a) and POW ATM (Forest Service 2009a).

Impacts from the Proposed Action

The proposed action would alter 62 additional acres to the existing 66-acre road corridor, for a total of 128 acres of road corridor at construction completion. The final road corridor would occupy 1% of the analysis area. Existing culverts and bridges would either be retained as-is or improved to provide additional vehicle capacity, hydrologic connection, and aquatic organism passage. Construction could take place for three to four summer seasons total, and winter plowing is not planned during construction. After construction and once the ADOT&PF assumes jurisdiction of the road, it would be plowed and maintained in the winter, improving winter access to places that were previously inaccessible or accessible only by snowmobile.

During the construction seasons, animals would likely avoid the immediate construction area because of human and vehicular activity. This temporary disruption to resource abundance and availability would affect 1% of the analysis area. Once construction is complete, this effect would no longer occur.

For several seasons following construction, deer populations may exhibit increases in abundance and local availability, because deer forage vegetation regrowth along cleared margins adjacent to dense forest habitats (Turek et al. 1998). In the long term, the distribution of local wildlife populations may change in response to increases in human activity in 1% of the analysis area. The *Biological Evaluation and Wildlife Resources Report for Improvements for Neck Lake and El Capitan Cave Roads Environmental Assessment* (BE and Wildlife Resources Report; SWCA 2015c) anticipates a reduction in deer habitat capability (DHC) of less than 0.05% for both WAAs from the proposed action; therefore, deer harvest (demand) would not exceed 10% of the DHC under the proposed action. For other species that do not prefer edge habitat, such as upland birds, the conversion of an additional 62 acres of habitat into road corridor could slightly reduce long-term abundance and availability as these animals move to non-edge habitat. The “Wildlife” section and the BE and Wildlife Resources Report discuss in further detail the potential for long-term minor reductions in species abundance, including from vehicle mortality (SWCA 2015c).

Improved winter access for subsistence users could cause an indirect effect to the abundance and distribution of some subsistence resources in the analysis area, particularly for land mammals such as Sitka black-tailed deer and the Alexander Archipelago wolf. The proposed action could facilitate hunting and trapping in winter months, which previously did not have regular winter access. Increased harvest pressure could contribute to minor long-term declines in those populations as well as changes in their distribution patterns.

Improved winter access to areas along Neck Lake and Twin Island Lake could increase fish harvest and contribute to minor reductions in abundance and availability of subsistence fish resources in those areas. Similarly, the improved winter access could facilitate an increased harvest of marine fish, invertebrates, and vegetation, but this minor reduction, if any, in abundance and distribution of those resources would not be significant.

It is anticipated that the increase in harvest pressure would minimally affect abundance and distribution of subsistence resources and that per capita harvest of subsistence resources is likely to stay within annual variability of resource abundance and distribution.

Improvements to culverts and bridges under the proposed action would provide improved aquatic organism passage, potentially increasing abundance and distribution of fish throughout the analysis area.

Access to Resources

The proposed action would restrict subsistence users' access to 1% of the analysis area during the three to four summer construction seasons. Following construction, widening and chip-sealing of the roads would result in permanent loss of those same acres for subsistence resources and uses. However, the proposed road improvements would improve access during winter months across the analysis area for the long term. The road system in the analysis area would continue to provide rural residents with reasonable access for subsistence uses.

Competition for the Use of Resources

As a result of the proposed action, it is anticipated that traffic and use of the roads could increase up to 20% over existing conditions as a result of winter road maintenance providing year-round access. Competition could also increase due to the improved road surface providing shorter drive time and increased motorist comfort. Competition between rural and non-rural users for collection of vegetation, fish, or hunted wildlife may increase. Increased winter use of the roads could expand the existing hunting, trapping, and sport fishing activities in the area, bringing in more recreational hunters and anglers and contributing to a minor increase in competition for subsistence resources throughout the area.

During construction of the proposed future recreation enhancements and timber harvest and hauling, subsistence users could be temporarily displaced or disturbed, and access to subsistence use areas could be reduced. Over the long term, these recreational enhancements could increase human use of the analysis area, which could affect access to and competition for subsistence resources in those areas. Over the long term, timber harvest could affect wildlife abundance and availability. If additional roads are opened or constructed in support of timber harvest, access to subsistence resources could be increased. Competition for resources could increase if subsistence users displaced by timber harvest move into areas occupied by other subsistence users. These reasonably foreseeable future projects, timber harvest, and access management combined with the proposed action could result in a significant possibility of a significant restriction of subsistence uses. A Section 810 subsistence hearing will be held concurrently with the public meeting during the 30-day comment period for this EA, in February 2016.

Transportation

The analysis area for this resource consists of the ROW analysis area (see Figure 8), with several larger areas analyzed to accommodate potential realignments, as well as the entire POW Island transportation system for context.

The “Proposed Action” section provides a discussion of existing and proposed design standards. The current roads are designed to AASHTO 15-mph to 25-mph design speeds (AASHTO 2001).

Currently, especially along Segment 2 where the road passes through private land, people walk, bicycle, and ride off-highway vehicles (OHVs) on the narrow road. The potential for accidents between unsafe motorists and motorized or non-motorized recreationalists exists.

No Action Alternative

Under the no action alternative, there would be an estimated 0.05% ADT increase for the analysis area over time (Karpstein 2015). The roads would not be plowed or maintained in the winter, and they could continue to be impassable for up to 2 months in the winter. See Table 12 in the “Recreation” section for estimated increases in traffic under the no action alternative. The potential for accidents between unsafe motorists and recreationalists would remain at the same level.

Impacts from the Proposed Action

The proposed action would meet the purpose and need by improving roads that are part of the existing and future POW Island TUS (Forest Service 2008a), as planned in the SATP (ADOT&PF 2014). The improvements would increase the AASHTO design speed from 15–25 mph to 25–30 mph (AASHTO 2001). Table 12 in the “Recreation” section indicates the two additional months of drivable road conditions under the proposed action would allow an estimated 20% more traffic per year in the analysis area.

Before construction activity, to keep traffic moving along the roads as efficiently and safely as possible, a temporary traffic control plan would be developed. Traffic control devices, signage, and detour plans would be detailed in this plan. This plan would include public notification procedures. Truck traffic along the roadway would increase as construction materials are hauled to and from material source (active rock pits) and disposal sites (inactive rock pits). Under the traffic control plan, this impact is expected to be minimal and not significant. The public would be notified of construction activities that would impact travel along the road.

The best detour route would be identified for a variety of reasons, including safety. During construction of Segments 1 and 2, traffic accessing Whale Pass would likely be detoured around Twin Island and Cavern Lakes via NFSRs 2000000 and 2700000. It is possible that during construction of Segment 3, northbound traffic would be detoured around Neck Lake via NFSRs 2500000 and 2700000. Such detours would be temporary, would occur only during construction, and would depend on specific work at specific points along the roads during those times. These detours could take approximately an additional 1–2 hours. Upon completion of the chip-seal surface, travel time along the 8.2 miles (Segments 1 and 2) to Whale Pass and 12.8 miles to El Capitan Cave (Segment 3) would be almost halved from the Neck Lake junction.

The improved road conditions under the proposed action have the potential to alter traffic patterns. The road would be wider and turnouts (visible from either direction) would be added, improving safety; but some motorists could exceed the design speeds on the chip-seal surface. The potential for accidents between unsafe motorists and recreationalists would likely remain the same as under the no action alternative.

Whether OHVs would be allowed on the roads depends on the roads' jurisdiction. Under Forest Service jurisdiction, most roads near Whale Pass are designated for mixed use (i.e., OHVs are allowed). When jurisdiction transfers to the ADOT&PF following the proposed road improvements, then OHVs would be illegal. If the Alaska State Troopers observe OHVs on the roads, the drivers can be ticketed. Cities can pass resolutions that allow OHVs within the city limits under certain speeds and providing they follow safety guidelines.

Improvements to the side roads and ancillary transportation facilities are out of the scope for this project, which proposes improvements to the mainline roads and the Neck Lake picnic area and boat launch. Requests made by communities and the public during scoping were provided to the ADOT&PF for their long-range transportation planning. The Forest Service would also assist the communities and ADOT&PF in pursuit of Federal Lands Access Program (FLAP) funding for these projects.

The reasonably foreseeable future projects include potential recreation enhancements and timber harvest on North POW Island. These projects would benefit from improved access provided by the proposed action. Significant cumulative effects to the POW Island transportation network, especially from timber hauling would be avoided by improving these project roads.

Vegetation and Wetlands

This section describes the potential impacts of the project on vegetation and wetlands in the ROW analysis area (Figure 13), with several larger areas analyzed to accommodate potential realignments. The ROW analyzed is 300 feet wide through all State of Alaska and NFS lands, whereas Segment 2's ROW width through private lands (on the eastern side of the project) varies between 66 and 100 feet. Most of the proposed action would closely follow the existing road corridor, but the larger ROW analysis area is analyzed to accommodate potential realignments that might still be designed.

Vegetation Types

Vegetation types in the analysis area are summarized in Table 21 and Figure 13. Old-growth forest and young-growth forest comprise most of the area. Forested wetlands, which occur within both old-growth forest and young-growth forest, are discussed in the *Wetland Delineation Report Neck Lake Road Reconstruction AK PFH 58(1)* (HEC 2015b).

Table 21. Vegetation Types in the Analysis Area

Vegetation Types	Acres in the Analysis Area
Productive old-growth forest	144
Young-growth forest	320
Unproductive forest	22
Forested muskeg	37
Non-forest	7
Unknown/miscellaneous	6
Total Acres of Vegetation	538

Source: Southeast Alaska GIS Library (2014).

Productive Old-Growth Forest

Old-growth forest has a timber volume of at least 8 thousand board feet per acre. Most of the old-growth forest in the analysis area occurs near Neck Lake. Dominant old-growth forest vegetation includes western hemlock (*Tsuga heterophylla*), Sitka spruce (*Picea sichensis*), and western redcedar (*Thuja plicata*). Common understory species include Sitka alder (*Alnus crispa*), blueberry (*Vaccinium* spp.), salal (*Gaultheria shallon*), Sitka sedge (*Carex sitchensis*), sword fern (*Polystichum munitum*), skunk cabbage (*Lysichiton americanum*), and deer cabbage (*Fauria crista-galli*). Forested wetlands and mixed forested wetlands with at least 8 thousand board feet per acre are included in the old-growth forest vegetation type.

Young-Growth Forest

The Forest Plan defines young-growth forest as “forest growth that has regenerated naturally or has been planted after some disturbance (e.g., clearcut harvest, serious fire, catastrophic windthrow, or insect attack) to the previous forest growth” (Forest Service 2008a). If it has originated naturally (i.e., was not harvested), then it is generally is defined as having an average age of less than 150 years (Krosse and O’Connor 2009). Old-growth characteristics may take as much as 150 years to reestablish (Staney Community Forestry Project 2006).

Unproductive Forest

Unproductive forests are incapable of yielding crops of industrial wood because of site conditions that limit timber production. Lands are often poorly drained forests, subalpine forests, or steep rocky areas where topographic conditions are likely to prevent management for timber production. In most cases, these areas produce less than 20 cubic feet mean annual growth. However, these habitats still provide cover and food for wildlife species.

Muskeg and Non-forested Wetlands

Muskeg and non-forested wetlands, which occur in areas with poor drainage and wet soil conditions, are present throughout the analysis area. Common plant species in this vegetation type include several types of mosses, bog laurel (*Kalmia microphylla occidentalis*), Labrador tea (*Ledum groenlandicum*), bog blueberry (*Vaccinium uliginosum*), deer cabbage, skunk cabbage, Alaska yellow cedar (*Chamuecyparis nootkatensis*), and lodgepole pine (*Pinus contorta*). Trees in muskeg areas are slow growing, and maximum tree height is less than 60 feet. Moss muskeg wetlands, emergent tall sedge muskeg wetlands, and emergent short sedge wetlands are included in the muskeg and non-forested wetlands vegetation type.

Sensitive and Rare Plants

Field surveys for sensitive and rare plants were conducted during summer 2014. Before fieldwork, several databases were checked for prior documentation of rare and sensitive plant species in the project vicinity. These databases include the Alaska Natural Heritage Program, Arctos, and the Forest Service Natural Resources Information System.

No federally listed or candidate plant species are known or suspected to occur in the analysis area (Forest Service 2015d). One sensitive plant species and four rare plants are known to occur in the analysis area (Table 22). In addition, if the analysis area overlapped the known or suspected range of sensitive or rare plant species, and suitable habitat was noted during field surveys, then those species were suspected to occur in the analysis area. These eight sensitive and 17 rare plants suspected to occur in the analysis area are discussed in more detail in the *Botany Report, North Prince of Wales Island Environmental Study* (Forest Service 2015c) and the *Biological Evaluation for Plants, North Prince of Wales Island Environmental Study* (Forest Service 2015d).

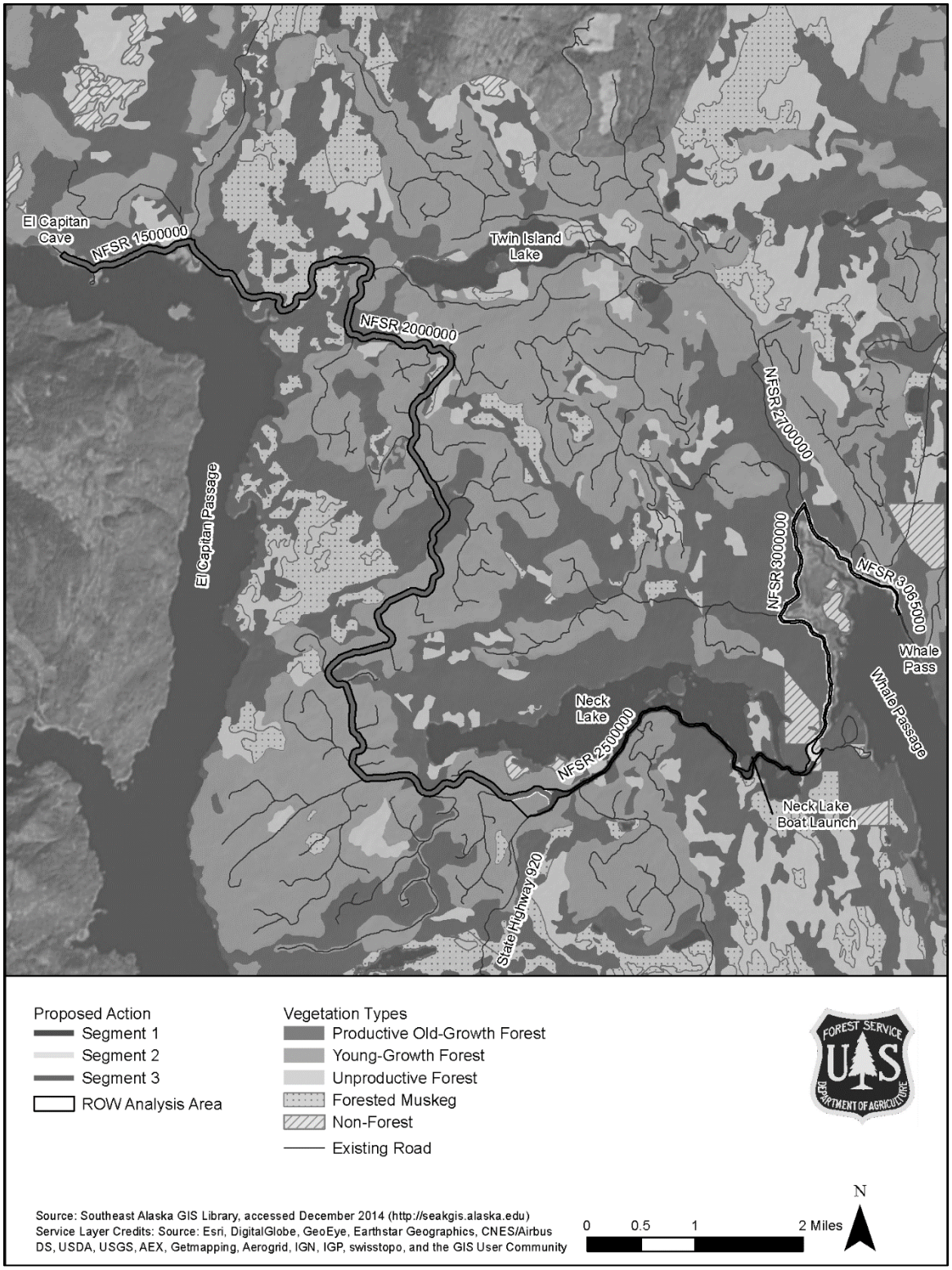

Figure 13. Vegetation types in the ROW analysis area.

Table 22. Sensitive and Rare Plants Known to Occur in the Analysis Area

Common Name ***Scientific Name***	**Listing Status on Forest Service Plant List**	**Habitat in the Analysis Area**	**Known Locations in the Analysis Area**
Large yellow lady's slipper *Cypripedium parviflorum* var. *pubescens*	Sensitive	Open forest, forest edge, and peatlands	Two locations in the analysis area adjacent to Segment 3: NFSR 2000000 at MPs 95.92 and 96.66.
Whiteflower rein orchid *Piperia candida*	Rare	Forest edges, forest, roadsides, and road ROWs	Two general areas, totaling an estimated 50 plants: • Adjacent to NFSR 2500000 crossing the southeastern end of Neck Lake. • Along NFSR 2000000, just south of the turn to El Capitan Cave.
Swaying bulrush *Schoenoplectus subterminalis*	Rare	Wet areas, lakeshores, and shallow-water areas	Adjacent to NFSR 2500000 crossing the southeastern end of Neck Lake.
Douglas spirea *Spirea douglasii*	Rare	Lakeshores, wetlands, and streambanks	Two general areas: • Adjacent to NFSR 2500000 crossing the southeastern end of Neck Lake. • Along NFSR 1500000 and along the NFSR 2000000, just south of the turn to El Capitan Cave.
Western meadow-rue *Thalictrum occidentale*	Rare	Streambanks, wet meadows, lakeshores, and fens	Adjacent to NFSR 2500000 crossing the southeastern end of Neck Lake.

Source: Forest Service (2015b).

Invasive Plants

Invasive plant surveys were conducted along the entire road corridor in August 2005. Since then, incidental invasive plants have been documented in the analysis area, and the area was resurveyed for invasive plants in August 2014. Twenty-nine known non-native plants have been documented in the analysis area. The *Invasive Plants Report, North Prince of Wales Island Environmental Study*, included in the project record, summarizes these species, discusses their invasiveness ranking, and comments about the infestations (Forest Service 2015e).

Some habitats are more vulnerable to invasive plant infestation. Habitat vulnerability depends on site-specific factors and typically focuses on two elements that promote the spread of invasive plants: 1) open sunlight and 2) exposed mineral soil (typically associated with a disturbance). Table 23 lists existing conditions in habitat types in the analysis area.

Exposed mineral soil has a higher vulnerability to invasive plant infestations than exposed organic soils. Mineral soils are generally found along riparian areas, estuaries, and mountain and hill slopes of forested habitats. Organic soils are generally found in wetlands, beach fringes, and alpine areas. Therefore, natural habitats with the highest vulnerability related to soil type are riparian areas, estuaries, and other stream corridors directly adjacent to road corridors.

Table 23. Existing Habitat Types in the Analysis Area and their Associated Invasive Plant Vulnerability

Habitat Type	Habitat Vulnerability Due to Light	Habitat Vulnerability due to Disturbance
Forest		
Old-growth forest	Low	Low
Young-growth forest		
Recent harvest (approx. 0–20 years)	High	Moderate
Canopy closure (approx. 20–40 years)	Low	Low
Advance young-growth (approx. 40+ years)	Low	Low
Wetlands (marshes, muskegs, meadows, beach fringe)	High	Moderate
Riparian areas (floodplains, alluvial fans, and other stream crossings)	Moderate to High	Moderate to High
Karst features (sinkholes, overflow channels, caves, resurgences, insurgences)	Low to High	Moderate to High
Beach	Moderate to High	Moderate to High

Within the analysis area, non-native and invasive plants are along the roads and have been found in some of the vulnerable natural habitats. For example, Canada thistle and Japanese knotweed are along the edge of the roads and the beach in Whale Pass.

Vehicles transported between road systems and from the mainland can act as vectors for the introduction of new invasive plant infestations. Vehicles on the POW road system arrive on the Inter Island Ferry or by barge. Spread of species on the island occurs via the road system. In fact, most of the known non-native plant infestations on POW Island are concentrated to the road corridors. This is because 1) the habitat on the road corridors is suitable (i.e., disturbed with high amounts of available light), and 2) there are a high number of potential vectors from when the roads were built and the continued use that they receive. Road maintenance also acts as a potential vector.

Wetlands

Wetlands are defined as areas where hydric soils, hydrophytic vegetation, and wetland hydrology occur. Hydric soils are formed under saturated water conditions. Hydrophytic vegetation is defined as a dominance of plants that are adapted to wet soil conditions. Wetland hydrology is defined as soils that are saturated within 12 inches of the ground surface for at least 14 consecutive days during the growing season. Wetlands in the analysis area were identified and mapped through field surveys using the Tongass GIS wetland classification system that uses the three wetland parameters described above and the National Wetlands Inventory (NWI) classification approach (Cowardin et al. 1979) shown below in Table 24.

Field investigations in the analysis area in 2014 documented forested and emergent wetlands intersected by Segments 1 and 2 of the road corridor (HEC 2015b). The field delineations documented approximately 1.5–2.8 times more wetlands than were previously mapped in the NWI data. Segment 3 of the road corridor would be delineated before construction, and NWI data were used to calculate this segment's acreage of affected wetlands in this EA. It is assumed that there could be 2.8 times more wetlands documented at the time of delineation, and those extrapolated numbers are used for describing impacts in this EA.

Table 24. Wetland Types in the Analysis Area

Wetland Types	Adjusted Acres in the Analysis Area*	Acres in the Analysis Area NWI†
Estuarine and marine	2.98	1.41
Freshwater forested/shrub	123.99	47.90
Freshwater forested/shrub/freshwater emergent	0.28	0.28
Freshwater scrub-shrub	0.05	0.05
Freshwater emergent	37.64	13.47
Freshwater emergent/freshwater forested/shrub	0.62	0.62
Lacustrine	0.31	0.31
Total Wetland Acres	**165.87**	**64.04**

* Acres of 2014 delineated wetlands in the Segments 1 and 2 analysis area combined with NWI mapped wetlands multiplied by 2.8 for Segment 3 (i.e., adjusted for likely increase in wetlands after delineation for Segment 3).
† Acres of 2014 delineated wetlands in the Segments 1 and 2 analysis area combined with NWI mapped wetlands for Segment 3, which may contain fewer mapped wetlands than are in the analysis area.
Source: Southeast Alaska GIS Library (2014).

Wetlands provide valuable benefits to the environment and society by providing these functions: 1) flood and stormwater control, 2) baseflow and groundwater support, 3) erosion and shoreline protection, 4) water quality improvement, 5) natural biological support, 6) overall habitat functions, 7) specific habitat functions, and 8) cultural and socioeconomic characteristics. The degree to which wetlands perform these functions depends on the type of wetland and its setting (level of disturbance occurring within a wetland). Because the existing road corridor has interrupted hydrologic connectivity, most of the wetlands within the corridor have already been reduced in function.

No Action Alternative

There are no direct or indirect effects to upland vegetation as a result of the no action alternative for this project. The no action alternative is not expected to increase the risk of invasive plant introduction and spread. However, given the other past, present, and reasonably foreseeable future actions, it is expected that established non-native plants may continue to spread, and possibly lead to future introductions to other areas.

The wetlands along the existing corridor have been previously impacted. The no action alternative is not expected to impact additional wetlands or change their function.

Impacts from the Proposed Action

Upland Vegetation

Because the road improvements would closely follow the existing corridor, the primary impact to vegetation would occur from realignment and widening. These impacts would include the permanent removal of vegetation in the new road alignment as well as temporary removal of vegetation during construction along the entire corridor. The temporary impacts would remain until revegetation is successful. Following construction, the areas not needed for the final corridor and temporary pullouts would be seeded and mulched, using a Region 10, Tongass-approved seed mix.

The proposed action would occupy approximately 11% of the ROW analysis area (excluding the existing road), which would impact approximately 62 acres of vegetation. Some acres of vegetation would be lost where the existing single-lane roads would be expanded to two lanes, and some acres would convert old-growth forest to shrub and/or grass habitat where the road shoulder and roadside clear zone would occur on either side of the roadway (see Table 26). Because the exact road alignment is still being determined, the exact acreages and vegetation types that would be affected are still being defined. Construction staging areas may also result in temporary disturbance to vegetation where road equipment is stored.

Where temporary impacts to riparian areas occur, appropriate riparian vegetation would be planted or transplanted, and woody debris from site clearing would be scattered over disturbed surfaces where appropriate.

As discussed in the “Best Management Practices” section, appropriate sediment and erosion control BMPs would be installed before construction begins, and they would be maintained in working order throughout the construction period and until vegetation is established. All BMPs would be inspected, and, if any repairs are needed, they would be completed as soon as possible to maintain the continued effectiveness of the controls. Erosion controls would be left in place until vegetation becomes established.

Under the proposed action combined with reasonably foreseeable future projects, especially timber harvest, there could be cumulative impacts to upland vegetation. To avoid significant cumulative impacts, revegetation should be included with future projects, as well as efforts to reduce project footprints to the extent possible.

Sensitive and Rare Plants

Given that sensitive and rare species have been documented in the analysis area and given that the area has limited disturbance beyond the road, the project may adversely impact individuals, but it is not likely to result in a loss of viability in the analysis area. With the recommended resource protection and monitoring measures, the proposed action would not cause a trend toward federal listing for all sensitive or rare plant species.

However, if no resource protection or monitoring measures are implemented for the known yellow lady's slipper populations along NFSR 2000000, it is possible that this project could result in a loss of viability in the analysis area, or in a trend toward federal listing. Given the presence of this species outside of the analysis area, the likelihood of federal listing as a result of this project is low. However, the determination cannot be split from the fact that impacts to these two known populations would affect two out of five known populations on POW Island, which does have a great likelihood of affecting the species' viability on POW Island.

Further details regarding suspected sensitive and rare plants are discussed in the *Botany Report, North Prince of Wales Island Environmental Study* (Forest Service 2015c) and the *Biological Evaluation for Plants, North Prince of Wales Island Environmental Study* (Forest Service 2015d).

On NFS lands, field surveys for rare and sensitive plants would be conducted prior to implementation of the reasonably foreseeable future projects, both recreational enhancements and timber harvest. Measures would likely be taken to avoid impacts to rare and sensitive plants on NFS lands under these future projects. On state and private lands, it is possible that individuals of rare or sensitive plant species could be affected by future timber harvest, but because inventory, monitoring, and avoidance would be conducted on NFS lands, cumulative impacts to populations of these plants would not likely be significant.

Invasive Plants

The improved road surface would likely increase use of the existing road, since travel would become easier and faster. Passenger vehicles would likely make more frequent trips, since the roads would be easier to drive. It may also increase commercial use of the road for both outfitters and guides as well as for other commercial activities. This increased use would increase the potential vectors for spreading invasive plants in the area.

The proposed action is expected to contribute a high risk of invasive plant introduction and spread, since there are existing noxious and invasive plants in the analysis area. However, the planned implementation of resource protection and monitoring measures would decrease the risk to low. The measures would help prevent and detect new introductions of invasive plants, as well as limit the overall spread of species.

The presence of more vehicles on the roads from reasonably foreseeable projects would increase the likelihood of the spread of invasive plants. However, implementation of a noxious weed eradication plan would minimize the introduction and spread of noxious weeds in the area. Post-construction monitoring would help prevent and detect new introductions of invasive plants, as well as limit the overall spread of species.

Wetlands

The proposed road improvements would closely follow the existing corridor so the primary impact to wetlands would occur from the realignment and widening. The proposed action would occupy approximately 11% of the ROW analysis area (excluding the existing road), which would

impact 7.05–18.25 acres of wetlands. Because the exact road alignment is still being determined, the exact locations and wetland types that would be affected are still being defined. Wetlands are common on North POW Island, and the wetlands that would be impacted are not unique and have been previously impacted from the existing road.

The filling or excavation of wetlands is regulated under Section 404 of the Clean Water Act (33 United States Code 1344). Where filling or dredging of wetlands may occur, mitigation must be approached with the sequential process of avoidance, minimization, and compensation. If impacts to wetlands cannot be avoided or minimized, compensatory mitigation is required.

Because 12%–31% of the project corridor is wetlands, this resource would be impossible to avoid completely. However, wherever practicable, road widening boundaries and road straightening locations would be adjusted to reduce the long- and short-term impacts associated with loss or modification of high-quality wetlands.

Two types of impacts to wetlands would occur under the proposed action:

- Permanent impacts from filling wetlands currently within cleared areas adjacent to the roadway; conversion of those wetlands to non-wetland gravel or chip-seal roadway.
- Conversion from one wetland type to another: forested wetlands currently adjacent to the roadway but beyond the cleared area to emergent wetlands within cleared areas. This conversion would include a change in forested wetland vegetation to low shrubs and forbs, and consequently, the functionality of the wetlands would be altered.

Depending on the results of a future wetland delineation along Segment 3, the proposed action would result in the filling or altering of approximately 7.05–18.25 acres of wetlands for roadside clearing, ditches, movement and storage of heavy equipment during construction, roadside turnouts, new side slopes, and revegetation using a Region 10, Tongass-approved seed mix. Wetland hydrology is expected to change due to the increased impervious surfaces of the chip-sealed roads. Stormwater runoff and pollutant loadings would more likely drain to adjacent wetlands because the gravel surfaces would no longer be present to absorb rainfall directly. However, air- and water-borne sediments entering wetlands would be reduced.

Where project impacts on wetlands cannot be avoided, appropriate steps would be taken to minimize the adverse impacts by using the minimum road width and length allowable. In addition, all applicable BMPs [33 CFR 323.4 (a)(6) (I-XV)] would be implemented. Once avoidance and minimization have been implemented to the maximum extent possible, compensatory mitigation may be necessary. Impact reduction measures are outlined in the description of the BMPs in the “Design Elements and Standards, Best Management Practices, Resource Protection Measures, and Monitoring” section.

Wetland functions and biological significance would be considered when assessing mitigation for the impacted wetlands in the analysis area. To determine the nature and extent of wetland creation, careful consideration would be given to the likelihood of success and the risk of failure. Wetland or stream restoration would be considered where degraded wetlands and streams occur in the project vicinity.

Other future road improvement projects would result in additional wetland loss and conversion on North POW Island. However, because a large percentage of this area is forested wetland, no significant loss of wetlands is expected from these reasonably foreseeable future projects.

Wildlife

Because of the wide range of species potentially affected and the variation among the species in landscape use and mobility, two analysis areas are analyzed for wildlife: 1) a landscape analysis area and a 2) project analysis area (Figure 14). Highly mobile species—those that need a large amount of habitat for daily or seasonal needs—are analyzed in terms of the landscape analysis area. Less-mobile species—those that can satisfy all of their daily or seasonal needs within a small habitat area—are analyzed in terms of the project analysis area. The landscape analysis area consists of a combination of the two ADF&G WAAs in which the project corridor is located (WAA 1527 and WAA 1530). WAAs are administrative units designated by ADF&G within which they monitor and manage wildlife populations. The project analysis area for wildlife consists of a 660-foot buffer from the project corridor centerline. This buffer distance is used because it is the required bald eagle nest buffer.

The BE and Wildlife Resources Report for the project describes in detail the baseline habitat conditions and potential effects of the project (SWCA 2015c). Impacts to acres of wildlife habitat were used as the impact indicator for wildlife resources. Past and present projects currently impacting vegetation, and therefore wildlife habitats, include timber management and existing roads. Timber harvest since 1954 has increased fragmentation of productive forest habitat and has reduced the amount of high-quality habitat in the north/central POW biogeographic province, which has experienced more harvest than other portions of the Tongass.

Wildlife habitats are dominated by temperate coniferous rainforest composed primarily of Sitka spruce and western hemlock. Interspersed within the forest are muskegs, other wetlands, and other non-forest habitats (Alaback 1982). Table 25 summarizes acres and relative abundance of each wildlife habitat type. The most common habitat type in the project analysis area is young-growth forest (42%), which consists of previously cleared and regenerating forest. The most common wildlife habitat type in the landscape analysis area is productive old-growth forest (41%). Old-growth forests support high levels of biodiversity because of their structural and ecological complexity. In Southeast Alaska, old-growth forests are typically greater than 150 years old and are characterized by complex canopies; an interspersion of trees of multiple age classes; the presence of snags, decadent trees, and fallen trees; and variation in the amounts and distribution of live trees.

Table 25. Area and Relative Abundance of Wildlife Habitat Types

Wildlife Habitat Types (referred to also as Vegetation Types)	Project Analysis Area		Landscape Analysis Area	
	Acres	Relative Abundance (%)	Acres	Relative Abundance (%)
Productive old-growth forest	1,059	35%	45,333	41%
Young-growth forest	1,293	42%	22,114	20%
Unproductive forest	137	4%	23,132	21%
Forested muskeg	165	5%	12,080	11%
Non-forest	113	4%	3,702	3%
Open fresh water (i.e., lakes)*	169	6%	2,244	2%
Unknown/miscellaneous	116	4%	879	1%
Total	**3,053**	**100%**	**109,484**	**100%**

*The open fresh water acreages do not include marine waters.

Source: Southeast Alaska GIS Library (2014).

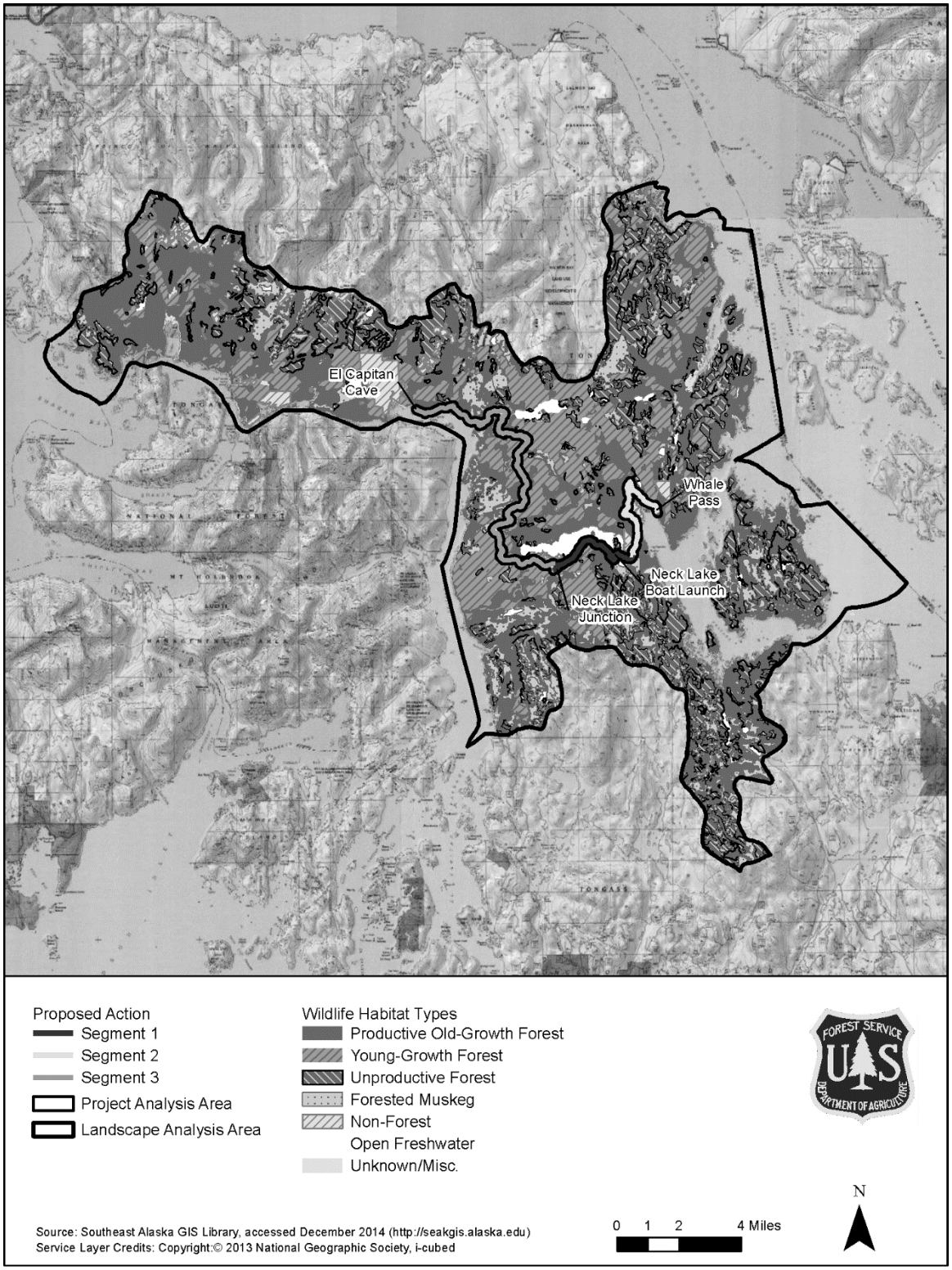

Figure 14. Wildlife habitat types in the wildlife landscape and project analysis areas.

Wildlife Species with Special Status

No threatened, endangered, or candidate species have the potential to occur in the analysis areas or be directly or indirectly affected by the project. Some Forest Service Sensitive Species, Management Indicator Species, and other species of interest use the analysis areas and may be impacted by the project (Table 26). A full list of species and their descriptions are available in the BE and Wildlife Resources Report (SWCA 2015c); only species that may be affected by the project are summarized in the EA.

Table 26. Direct Impacts from the No Action and Proposed Action Alternatives

Wildlife Habitat	No Action Impacts (Acres)	Proposed Action Impacts (using the ROW analysis area)*		
		Acres	% of Project Analysis Area	% of Landscape Analysis Area
Productive old-growth forest	0	144	5%	< 1%
Young-growth forest	0	320	10%	< 1%
Unproductive forest	0	22	1%	< 1%
Forested muskeg	0	37	1%	< 1%
Non-forest	0	7	< 1%	< 1%
Open fresh water (i.e., lakes)†	0	4	< 1%	< 1%
Unknown/ miscellaneous	0	6	< 1%	< 1%
Total	**0**	**538**	**18%**	**1%**

*Ultimately, the road corridor would occupy only 11% of the proposed action impacts (ROW analysis area) in Table 26, but because the exact road alignment is still being determined, these larger areas are analyzed.

†The open fresh water acreages do not include marine waters."

Source: Southeast Alaska GIS Library (2014).

No Action Alternative

Under the no action alternative, the roads would remain in their current condition. There would be an estimated 0.05% increase in ADT in the analysis area over time (Karpstein 2015). The roads would not be plowed or maintained in the winter, and they could continue to be impassable for up to 2 months in the winter.

The no action alternative would have no direct effects and negligible indirect and cumulative effects to wildlife and their habitat because no action would be undertaken. Negligible indirect effects would be attributed to a slight increase in the existing potential for mortality due to vehicle strikes, which would be proportionate to estimated increases in traffic. Current levels of habitat fragmentation would continue. Hunter access would not change as a result of the project, with total NFS road miles (open and closed) remaining the same. (Additional discussion of subsistence resources are in the Subsistence Resources Report [SWCA 2015b]).

Impacts from the Proposed Action

The total road miles (open and closed) on NFS lands would not change as a result of the proposed action; however, winter road maintenance would increase passability on the roads from 10 months on average to year-round. Note that the width of the final roadway would vary from the existing 26 feet up to 50 feet, for a total of up to 128 acres. The maximum width would accommodate the two lanes up to 11 feet wide with 3-foot shoulders and 10-foot vegetation clearing on either side of the roadway. The expectation is that road improvements would result in a road corridor no more than 50 feet wide, so the actual proposed action direct impacts would be 11% of those reported in Table 26. To accommodate potential realignments, this EA discloses acreages of wildlife habitat affected by the ROW analysis area, a wider corridor than would ultimately be occupied by the chip-sealed road and cleared vegetation. Most impacts would occur in young-growth forest habitat, which is primarily used by some migratory bird species and spruce grouse but may also be used by the Queen Charlotte goshawk. The road improvements would also affect approximately 144 acres (5%) of productive old-growth forest, resulting in impacts discussed in more detail below. All other wildlife habitat types would experience 1% or less of affected habitat. Overall, direct impacts would affect 18% of the project analysis area and less than 1% of the landscape analysis area. Of the 18% total affected in the project analysis area, 10% of this habitat is young growth acres. The effect to young growth acres has less of an impact to most wildlife species and biodiversity than effects to old growth acres. Table 27 summarizes potential impacts of the proposed action by species (or species group) and action.

The proposed action would provide year-round access to the analysis area where there is no winter access under the existing condition. There would be increased hunting opportunities and a potential for increased wildlife harvest. The Subsistence Resources Report details the existing and potential changes to wildlife harvest because of the proposed action (SWCA 2015b).

Table 28 describes general cumulative effects of timber harvest by species. These effects have occurred with past timber harvest (since 1954), and are amplified with the additional habitat affected by current and future projects, including the proposed action.

The current and future transportation improvements could increase recreation and hunter access to areas with previously low levels of human disturbance, at least in the winter months. Increased human access could lead to a higher hunting and trapping effort, which could ultimately lead to overexploitation of game and furbearer populations. Additional discussion of effects of increased access on subsistence resources are in the Subsistence Resources Report (SWCA 2015b).

The future recreation enhancement projects are mostly associated with increased recreation capacity in the area and increased recreational use. In general, these projects would further decrease available habitat for species in the area. They would be likely to draw more visitors to the area, and would result in more human noise and activity, which would displace wildlife from the area. Additional road and parking improvements could lead to higher travel speeds and an increase in traffic use, increasing potential for wildlife mortality due to vehicle strikes. New trail construction would provide hunter access into areas previously unused, leading to a higher risk of over-exploitation for game and furbearer species. However, given the available habitats on the island, the addition of these projects combined with the proposed action would not result in significant cumulative effects.

Table 27. Potential Impacts on Wildlife from the Proposed Action

Species	Status	Typical Habitats Used	Action: Blasting	Action: Road Widening (includes vegetation clearing)	Action: Increased Traffic/Vehicle Speeds and Year-Round Access
Black oystercatcher	Sensitive species	Productive old-growth (POG) forest, marine	Temporary displacement, disruption of nesting behavior if occurs during nesting season	No effect	No effect
Queen Charlotte goshawk	Sensitive species	POG, young-growth (YG) forest	Temporary displacement, disruption of nesting behavior if occurs during nesting season	Minor, long term	No effect
American marten	Management indicator species	POG, forested muskeg (FM), open fresh water (OW) (e.g., lakes)	Temporary displacement	Minor, long term	Minor, long term
Bald eagle	Management indicator species	POG, YG, FM, OW	Temporary displacement, disruption of nesting behavior if occurs during nesting season	No effect	No effect
Black bear	Management indicator species	POG, YG, FM, OW	Temporary displacement	Minor, long term	Minor, long term
Brown creeper, hairy woodpecker, and red-breasted sapsucker	Management indicator species	POG	Brown creeper: no effect Others: temporary displacement, disruption of nesting behavior if occurs during nesting season	Minor, long term	No effect
River otter	Management indicator species	POG, OW	Temporary displacement	No effect	Minor, long term
Sitka black-tailed deer	Management indicator species	POG	Temporary displacement	Minor reduction in deer abundance, long term	Increased potential for vehicle strikes and increased hunting pressure, long term
Vancouver Canada goose	Management indicator species	POG, unproductive forest (UF), FM, OW	Temporary displacement, disruption of nesting behavior if occurs during nesting season	Minor, long term	No effect
Wolf	Management indicator species	POG, UF	Temporary displacement	Minor reduction in deer abundance, long term	Increased hunting pressure, long term

Table 27. Potential Impacts on Wildlife from the Proposed Action

Species	Status	Typical Habitats Used	Action: Blasting	Action: Road Widening (includes vegetation clearing)	Action: Increased Traffic/Vehicle Speeds and Year-Round Access
Endemic species	Endemic	All	Temporary displacement, disruption of nesting behavior if occurs during nesting season	Minor, temporary	Increased potential for vehicle strikes and increased hunting pressure, long term
Marbled murrelet	Dependent on old-growth	POG	Temporary displacement, disruption of nesting behavior if occurs during nesting season	Minor, temporary	Minor, temporary
Migratory birds	Protected under Migratory Bird Treaty Act of 1918	All	Temporary displacement, disruption of nesting behavior if occurs during nesting season	Minor, temporary	Minor, temporary

Note: Management indicator species are species whose response to land management activities can be used to predict the likely response of other species with similar habitat requirements (Forest Service 2008a).

Table 28. Cumulative Effects of Timber Harvest in Game Management Unit 2 by Species

Species	Effects
Queen Charlotte goshawk	Reduced availability of nesting habitat; decreased prey (spruce grouse) availability.
American marten	Reduced landscape connectivity.
Black bear	Loss of large hollow trees and root masses for denning. Short-term increase in forage availability.
Red-breasted sapsucker, hairy woodpecker, brown creeper	Reduced amount of foraging and nesting habitat; decreased suitability of habitat due to fragmentation and loss of interior forest conditions. Young-growth forest provides foraging habitat in the short term.
Sitka black-tailed deer	Reduced habitat capability, which may result in local population declines.
Wolf	Decreased prey (deer) availability.
Prince of Wales flying squirrel	Reduced denning, nesting, and foraging habitat; decreased patch size and suitability of remaining habitat due to fragmentation; subpopulation may become isolated from lack of connectivity.
Prince of Wales spruce grouse	Reduced availability of large, unfragmented habitat patches; increased road density.
Keen's myotis	Reduced availability and increased fragmentation of habitat; reduced amount of forest flyways for commuting between foraging and roosting areas.
Marbled murrelet	Reduced availability of nesting habitat.
Migratory birds	Reduced availability of nesting habitat; reduced habitat suitability due to fragmentation.

Persons and Agencies Contacted

An interdisciplinary team of resource specialists was consulted in the development of this environmental analysis.

A scoping document was distributed by mail, email, and the Tongass schedule of proposed actions on January 5 and 6, 2015 (Appendices A and B of Forest Service 2015b). The scoping period closed on February 6, 2015. Public scoping meetings were held in Naukati, Whale Pass, and Craig, Alaska; a presentation was also given at the monthly POW-CAC meeting in Hydaburg, Alaska. The intent of these meetings was to give members of the public as well as agency personnel the opportunity to view project information and ask questions. Meeting attendees were also encouraged to provide comments on the issues that would be included in the EA.

Government-to-government consultation for this project was initiated when the Forest Service mailed the scoping document to these federally recognized tribes and village and regional native corporations:

- Klawock Cooperative Association
- Craig Tribal Association
- Hydaburg Cooperative Association
- Organized Village of Kasaan

- Wrangell Cooperative Association
- Central Council of Tlingit and Haida
- Klawock Heenya Corporation
- Shann Seet, Inc.
- Sealaska Corporation and the Sealaska Heritage Institute

A list of all individuals, federal, state, tribal, and local agencies consulted during the development of this EA is included as Appendix F of the scoping report (Forest Service 2015b).

Scoping period details, including meeting announcements and details discussed, attendees, comments received, and the scoping report can be accessed online (Forest Service 2015b).

This EA will be provided to all who commented on this project during the scoping period, as well as to all those who remained on the electronic mailing list. A legal notice offering a 30-day comment period on the proposed action will be posted in the Ketchikan Daily News, the newspaper of record in mid-February 2016.

The Forest Service will hold a public meeting followed by a subsistence hearing for the project. The purpose of the meeting and subsequent hearing will be to give you the opportunity to provide comments concerning the scope and content of the EA, including the Subsistence Section 810 Evaluation. The meeting and subsequent hearing will be held at the Whale Pass Library on February 24, 2016, at 1 pm.

The proposed project is subject to 36 CFR 218, Subparts A and B. Only individuals or entities who submit timely and specific written comments about the proposed action during this or another public comment period established by the Responsible Official will be eligible to file an objection. Comments must be within the scope of the proposed action, have a direct relationship to the proposed action, and include supporting reasons for the Responsible Official to consider. Persons submitting comments must provide the following information: name and address, title of the proposed project, specific written comments, and signature or other verification of identity upon request. Other requirements to be eligible to submit an objection are listed at 36 CFR 218.25(a)(3). It is the responsibility of the sender to ensure timely receipt of any comments submitted.

Opportunities for Public and Agency Comment

Specific written comments for the Responsible Official may be submitted in the following ways:

- By U.S. mail addressed to U.S. Forest Service, Craig Ranger District, c/o Rich Jacobson, Project Leader, P.O. Box 500, Craig, AK 99921
- By fax to (907) 826-2972
- By email to comments-alaska-tongass-thorne-bay@fs.fed.us
- In person at the Craig or Thorne Bay Ranger District Offices during normal business hours, 8:00 am to 4:30 pm, Monday through Friday.

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Appendix A. Maps of Private Land Ownership Surrounding Whale Passage

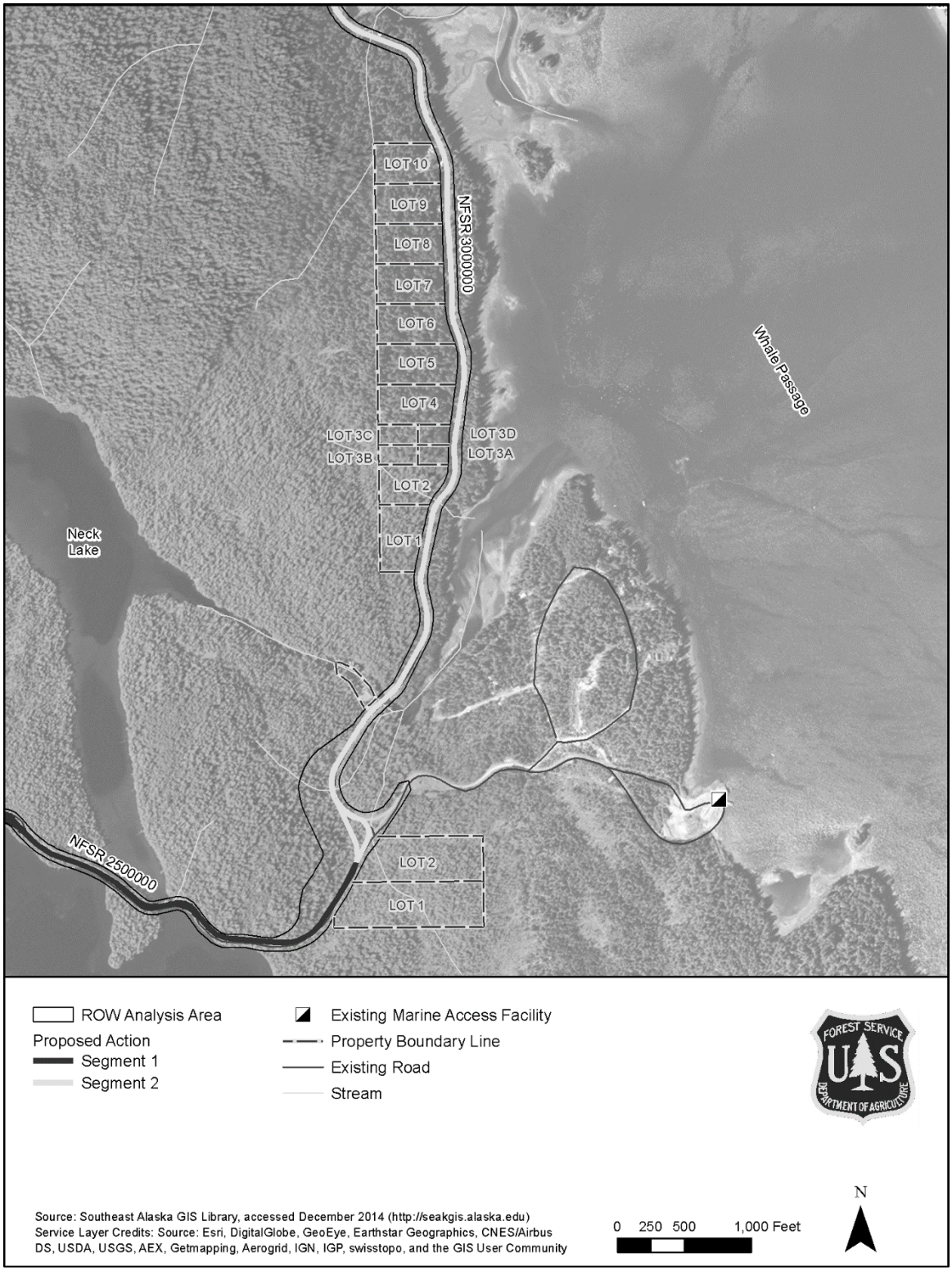

Figure A. Private land ownership along Segment 2, heading north from the outlet of Neck Lake.

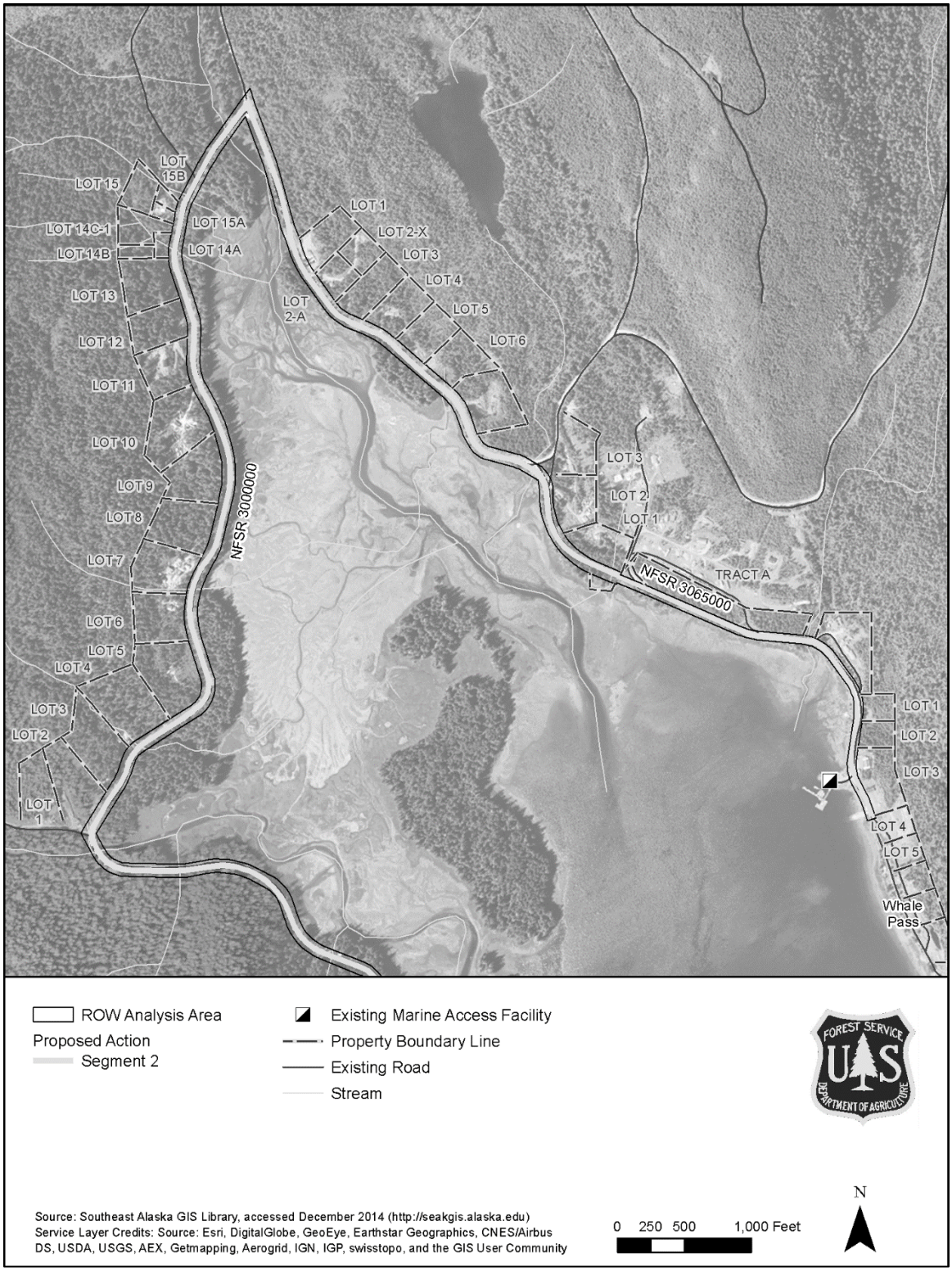

Figure B. Private land ownership along Segment 2, near the town of Whale Pass.

Appendix B. List of Acronyms and Abbreviations

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AAC	Alaska Administrative Code
AASHTO	American Association of State Highway and Transportation officials
ADCCED	Alaska Department of Commerce, Community, and Economic Development
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADL&WD	Alaska Department of Labor and Workforce Development
ADNR	Alaska Department of Natural Resources
ADOT&PF	Alaska Department of Transportation and Public Facilities
ADT	average daily traffic
ANILCA	Alaska National Interest Lands Conservation Act
APDES	Alaska Pollutant Discharge Elimination System
AP&T	Alaska Power and Telephone Company
APE	area of potential effects
ARD	acid rock drainage
AS	Alaska Statute
ATM	Access and Travel Management Plan
AWC	Anadromous Waters Catalog
BE	biological evaluation
BMP	best management practices
CAC	Community Advisory Council
CFR	Code of Federal Regulations
CSIS	Community Subsistence Information System
DHC	deer habitat capability
DOWL	DOWL Engineers
DWP	Drinking Water Protection Map
EA	environmental assessment
EDR	Environmental Data Resources, Inc.
EFH	essential fish habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESI	existing scenic integrity
FCRPA	Federal Cave Resources Protection Act
FH	Forest Highway
FHWA	Federal Highway Administration
FLAP	Federal Lands Access Program
FM	forested muskeg
FSH	Forest Service Handbook
GIS	geographic information system
HEC	Herrera Environmental Consultants, Inc.
IFA	Inter-Island Ferry Authority
ISA	inherent scenic attractiveness
LEI	LEI Engineering & Surveying, LLC
LLC	Limited Liability Corporation
LUD	land use designation
MAF	Marine Access Facility
MP	milepost
mph	miles per hour

NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFS	National Forest System
NFSR	National Forest System Road
NLECC	Neck Lake and El Capitan Cave
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OUL	Ozark Underground Laboratory
OW	open fresh water
POG	productive old-growth
POW	Prince of Wales
RCS	road condition survey
REC	recognized environmental condition
RM	Roaded Modified
RN	Roaded Natural
ROS	Recreation Opportunity Spectrum
ROW	right-of-way
RPA	Robert Peccia and Associates
SATP	Southeast Alaska Transportation Plan
SHPO	Alaska State Historic Preservation Office
SIO	Scenic Integrity Objective
SPM	Semi-Primitive Motorized
SPNM	Semi-Primitive Non-Motorized
SSRAA	Southern Southeast Regional Aquaculture Association
SWCA	SWCA Environmental Consultants
SWPPP	Storm Water Pollution Prevention Plan
TARGET	Technology & Accessible Resources Give Employment Today
TBRD	Thorne Bay Ranger District
Tongass	Tongass National Forest
TTY	teletypewriter
TUS	transportation and utility system
UF	unproductive forest
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
VAC	visual absorption capability
VPR	Visual Priority Travel Route~~s~~ and Use Area
WAA	Wildlife Analysis Area
WDNR	Washington State Department of Natural Resources
WFLHD	Western Federal Lands Highway Division
YG	young-growth