ANGOON AIRPORT

Final Environmental Impact Statement and Section 4(f) Evaluation







APPENDIX K CULTURAL RESOURCES TECHNICAL REPORT

Note: The Section 508 amendment of the Rehabilitation Act of 1973 requires that the information in federal documents be accessible to individuals with disabilities. The FAA has made every effort to ensure that the information in the *Draft Angoon Airport Environmental Impact Statement* is accessible. However, this appendix is not fully compliant with Section 508, and readers with disabilities are encouraged to contact Leslie Grey at (907) 271-5453 or Leslie.Grey@faa.gov if they would like access to the information.



CULTURAL RESOURCES TECHNICAL REPORT FOR THE AREA OF POTENTIAL EFFECTS FOR AIRPORT 12A WITH ACCESS 12A (PREFERRED ALTERNATIVE)

ANGOON AIRPORT ENVIRONMENTAL IMPACT STATEMENT ANGOON, ALASKA

Prepared for

Federal Aviation Administration
Alaska Department of Transportation and Public Facilities

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SWCA Cultural Resources Report No. 13-494 SWCA Project No. 24650

October 2015

PUBLIC VERSION - INFORMATION PROTECTED BY FEDERAL LAW HAS BEEN REDACTED

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Appendix A. Phase 1 Cultural Resources Existing Conditions Technical Report for the Angoon Airport Environmental Impact Statement

Appendix B. Shovel Probes

Appendix C. Culturally Modified Tree Photos

1.0 Introduction

This report outlines studies conducted in support of a proposal to construct a land-based public airport to serve the community of Angoon in Southeast Alaska (Figure 1). The Federal Aviation Administration (FAA) is preparing an environmental impact statement (EIS) in response to a request from the Alaska Department of Transportation and Public Facilities (DOT&PF) for funding and other approvals for the new airport. The FAA is the lead federal agency, and the FAA's approvals and funding would constitute the agency's undertaking as defined in the implementing regulations of the National Historic Preservation Act (NHPA). SWCA Environmental Consultants (SWCA) carried out the cultural resource studies under the direction of the FAA. Dr. Robert Kopperl served as the principal investigator, and Molly Odell served as the field lead.

The FAA is considering three potential airport locations (i.e., alternatives) and multiple access road alternatives associated with those airport locations. Two of the three potential airport locations and portions of their associated access roads are located on lands administered by the U.S. Forest Service (USFS) within the Admiralty Island National Monument and Kootznoowoo Wilderness Area. The third alternative occurs on privately owned lands and lands owned by the City of Angoon and Kootznoowoo, Inc. The FAA has identified this latter alternative, known as Airport 12a with Access 12a, as its preferred alternative for the draft EIS.

The FAA, in consultation with the Alaska State Historic Preservation Officer and the USFS, implemented a phased approach to identifying cultural resources that could be affected by construction and operation of the airport. These phases consist of Phase 1 (preliminary studies of all three airports and their associated access road locations) and Phase 2 (expanded studies of only the FAA's preferred alternative). The Phase 1 studies are described in *Cultural Resources Existing Conditions Technical Report for the Angoon Airport Environmental Impact Statement*, which is attached as Appendix A to this report (SWCA 2012). The FAA recognized that the preliminary nature of the field studies conducted during Phase 1 would not provide sufficient information to fulfill the Section 106 requirements of the NHPA for any alternative but would be sufficient for the EIS to compare the relative risk to cultural resources from each alternative.

Once a preferred alternative was identified by the FAA, the agency carried only that preferred alternative through the remainder of the Section 106 process; that is, the FAA moved forward with Section 106 consultation for the preferred alternative only. As such, the FAA focused Phase 2, intensive-level field studies, on Airport 12a with Access 12a. Two potential materials (e.g., gravel, rock, etc.) source locations that were identified *after* the Phase 1 reconnaissance studies were also included in the FAA's Phase 2 study efforts.

This technical document reports the findings of the Phase 2 studies for the preferred alternative and the potential materials sources (described in section 3.0 below). It also provides updates to archival research and descriptions of field methods. Information contained in the Phase 1 report is incorporated by reference, and relevant information from that report has also been included in this Phase 2 technical report.

For the purposes of this report, cultural resources are defined as archaeological, historic, prehistoric, and traditional cultural (heritage) properties. The term "historic properties" is also used in this report. This term refers to cultural resources that have gone through a formal evaluation of their eligibility for listing on the National Register of Historic Places (NRHP), regardless of their resource type, age, or particular cultural affiliation. This report includes information on cultural resources that occur or have the potential to occur in the vicinity of the airport and access road alternative. Raw data collected during the field studies are available for review to the extent allowable by federal law and policy (i.e., within the parameters of protecting confidential information as allowed by federal law). This report also provides the cultural resource consultant's recommendations of NRHP eligibility for cultural resources identified in the Phase 2 area of potential effects (APE).

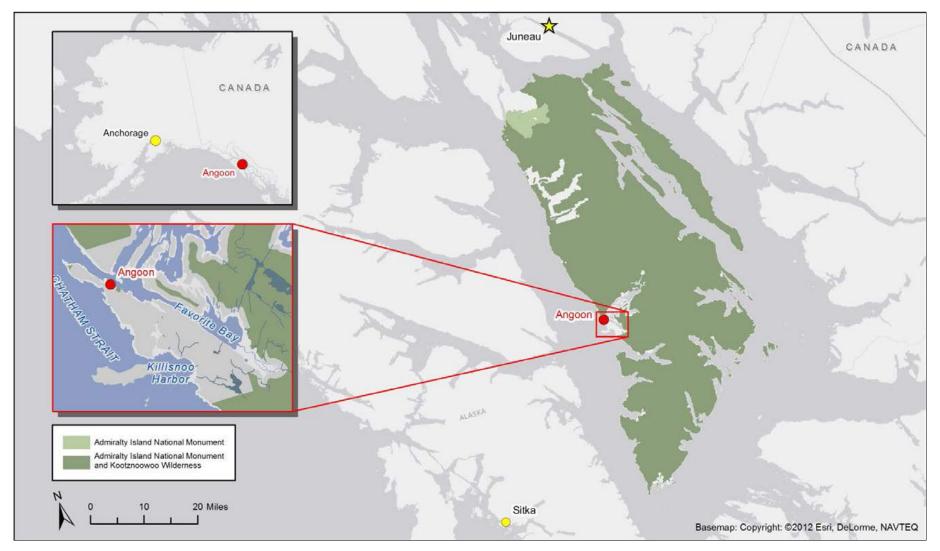


Figure 1. General location of Angoon Airport project.

2.0 Proposed Undertaking

As noted above, the proposed undertaking by the FAA would be the issuance of their approvals and funding for the airport as proposed by the DOT&PF. The proposed airport project consists of construction and operation of a land-based airport and airport access road for the community of Angoon, which currently has no land-based airport. The DOT&PF would own and operate the airport. The land-based airport would accommodate small, wheeled aircraft and would include a single runway with an apron. A new access road for the airport would need to be constructed. The components of the airport are summarized below.

Components of the airport project:

- Runway: Paved; 3,300 feet long and 75 feet wide, with future expansion to 4,000 feet long*
- Runway safety areas: 150 feet wide, centered on runway centerline, extending 300 feet beyond each runway end
- Object free area: 500 feet wide, centered on runway centerline, extending 300 feet beyond each runway end
- Runway protection zone: Standard visual approach dimensions of 500 x 1,000 x 700 feet
- Single, perpendicular taxiway: Paved
- Aircraft apron: Paved
- Navigational aid: Rotating beacon
- Visual approach aid: Precision approach path indicator
- Runway lights: Pilot-controlled, medium-intensity lights

- Terminal space: Sufficient area for a future terminal or passenger shelter
- Lease lots: Approximately 65,000 square feet available for leasing
- Electrical control building: Near future terminal site
- Perimeter fence: For security and wildlife control
- Passenger parking lot: Paved, near future terminal site
- Support facilities: Weather station, communication, etc.
- Access road: Two, paved, 10-foot lanes and 5-foot shoulders
- Overhead utility lines: Power and telephone lines located within the access road corridor**

Construction of the airport would include the following activities:

- Vegetation removal related to the airport, road, and certain avigation easements (clearing of all vegetation for construction, line of sight, and open areas for flight approach and takeoff)
- Tree felling in certain avigation easements (cutting down the trees but not other vegetation). For the effects analysis where tree felling is identified in certain avigation easements, it is assumed that all trees in these easements would be felled (cut down).
- Terrain disturbance related to the airport, airport access road, and access roads to avigation easements (cutting and filling of soil or blasting of bedrock to level the ground)
- Terrain disturbance from potential extraction of construction materials such as gravel, soil, and rock from an on-island materials source
- Laying of pavement related to the airport and road (creating impervious surfaces)
- Culverting, re-routing, or filling of streams
- Movement of construction equipment and vehicles along roads
- Construction activity and equipment in work areas
- Illumination of construction areas and of some equipment for low-light daytime and nighttime construction
- Barging of construction materials to the island and unloading of barged materials at the ferry terminal
- Construction of airport perimeter fence

^{*}Future expansion would be subject to additional environmental review when proposed for construction.

^{**}Utility lines would only be installed if it is determined to be cost-effective.

3.0 Area of Potential Effects

Implementation of the proposed undertaking (i.e., construction and operation of an airport at location Airport 12a with Access 12a) has the potential to affect historic properties in a variety of ways. Construction-related ground disturbance and manipulation of vegetation has the potential to directly affect such properties through physical alteration or damage. Construction- and operation-related noise and visual changes in the existing landscape caused by construction of the airport have the potential to indirectly affect historic properties. To assess the effects from direct disturbance, visual intrusion, and noise, the FAA identified APEs for each of these anticipated types of effect. In some cases, the different APEs overlap or coincide with each other, such as the Noise APE, which is fully encompassed by the Direct APE. In other cases, such as for the Visual APE, the area of anticipated effect is distinct from other APEs. The sections below discuss and describe the different APEs defined by the FAA.

The locational information for the APEs as described below are as follows:

- Direct APE Sections 5, 6, 7, and 8, Township 51 South, Range 68 East, Copper River Meridian, Sitka B-2
- Visual APE Section 6 and 7, Township 51 South, Range 68 East, Copper River Meridian, Sitka B-2
- Noise APE Sections 5, 6, and 8, Township 51 South, Range 68 East, Copper River Meridian, Sitka B-2

In addition to defining specific APEs, the FAA assessed the overall potential for vibration effects to historic properties. This was accomplished by considering resource types vulnerable to adverse effects from vibration during construction. The evaluation of potential vibration effects is discussed further in section 5.5, below.

3.1 Direct APE

The Phase 2 studies focus on the FAA's preferred alternative—Airport 12a with Access 12a—and two potential materials source locations, the Kootznoowoo, Inc. Proposed Materials Source and Materials Source 2, identified after the Phase 1 studies were completed. All of the lands within the Phase 2 Direct APE are privately owned or owned by the City of Angoon.

The Phase 2 Direct APE, shown below in Figure 2, encompasses an area of 267.91 acres on the greater Angoon peninsula and includes all areas that would be subject to vegetation removal, terrain disturbance, and tree felling. The Phase 2 Direct APE is limited to areas that would experience direct effects from landscape disturbance. The FAA received concurrence on the Direct APE from the Alaska State Historic Preservation Office (SHPO) in August 2013 (Bittner 2013). Subsequent to receiving the SHPO's concurrence, the FAA expanded the Phase 2 Direct APE to include the potential materials source locations where ground disturbance may also occur, based on information from the City of Angoon (2008).

As shown on Figure 2, the Phase 2 Direct APE overlaps with a portion of the Phase 1 APE and has been, in some locations, reduced in size from the Phase 1 APE. Additional Phase 2 studies were completed in portions of the Phase 2 Direct APE that were previously unsurveyed during Phase 1 and in some overlapping portions that were considered most sensitive for cultural resources to provide additional data for identification and evaluation of potentially significant historic properties. All portions of the Phase 2 Direct APE were surveyed during either the Phase 1 or Phase 2 field investigations. The results of relevant Phase 1 studies that examined portions of the Phase 2 Direct APE are incorporated into the Phase 2 findings and reported below (see section 7.0).

Figure 2. Phase 2 Direct APE and Alaska Heritage Resources Survey (AHRS) point sites within 1 mile of this APE.

3.2 Visual APE

Based on an analysis of anticipated changes to the visual nature of the landscape as a result of the airport project, the FAA defined an APE for visual effects to historic properties (Figure 3). Dense tree cover in the area of Airport 12a, as for all other alternatives, obscures the potential landscape changes associated with the airport and access road from most viewpoints around Angoon; that is, the locations from which landscape changes would be visible are discrete and localized. There are two viewpoints from which the landscape changes associated with Airport 12a would be visible:

- 1. On the eastern shore of Killisnoo Island. Previous surveys have identified cultural resources that may be sensitive to visual intrusion.
- 2. Along the exiting ferry road next to the Salt Lagoon. There are no known sites within this part of the Visual APE.

The FAA included these areas and the known sites in the Visual APE.

3.3 Noise APE

Areas of potential noise effects were identified through a noise model analysis and using FAA guidelines on significant noise effects (Figure 3).

The FAA relies on the day-night average sound level (DNL), which describes the average noise level experienced during an entire 24-hour day, as their primary metric for assessing noise. Using a database of aircraft performance and engine noise characteristics, the FAA used Integrated Noise Model (INM) Version 7.0b to generate and plot DNL noise contours based on airport operational information, such as the number of flights and weather conditions.

For the purposes of this analysis, the Noise APE consists of all lands that would fall within the DNL 65 dBA contour as a result of Airport 12a operation. This APE is based on FAA Order 1050.1E, which states that an action alternative is considered to have a significant effect if it would cause the noise levels at noise-sensitive areas currently exposed to DNL 65 dBA or higher to increase by at least DNL 1.5 dBA.

Figure 3. Phase 2 indirect APEs and AHRS recorded sites within these APEs.

4.0 CULTURAL AND ENVIRONMENTAL SETTING

The area around the community of Angoon is rich in history, heritage, and cultural resources. It has been home to Alaska Natives for thousands of years, and Alaska Natives make up the majority of the population in the community today. The inlets and bays around Angoon offer abundant natural and subsistence resources, as evidenced by large populations of salmon, halibut, other freshwater and saltwater fishes, seals, deer, bears, and a wide variety of marine and upland plants. The area supports a subsistence lifestyle and the maintenance of a unique cultural heritage tied closely to the natural environment. Full discussion of the cultural and environmental setting of the project is presented in the 2012 (Phase 1) technical report (Appendix A; SWCA 2012), which includes pre-contact and ethnographic Native American cultural contexts, historic contexts of Euro-American settlement and industry in the area, and the physical and biological environmental setting in the vicinity of the Phase I APE. This background information was used to develop expectations of sensitivity for cultural resources in the Phase 2 Direct APE and the methods designed to identify resources during the Phase 2 fieldwork. As the 2012 report is provided (Appendix A), only updated information and conditions specific to the Phase 2 APE are presented here.

4.1 Update to Prehistoric Context

Limited archaeological evidence exists for the Early Period (10,000–5,000 B.P.) (see USFS 2009:3–74) in Southeast Alaska, and prior to 2009, there was no evidence from the immediate Angoon area. During the Phase 1 field investigations, however, an obsidian microblade fragment was found in a shovel probe excavated at the Favorite Bay Garden Site (SIT-00302) in another airport alternative (SWCA 2012:37–38). Microblades are diagnostic of Early Holocene cultural traditions in Northern and Central Alaska. While their temporal range is not well-established in Southeast Alaska, the presence of a microblade suggests that humans may have been present in the Angoon area during the Early Period.

4.2 Update to Ethnographic Context

Recent ethnographic research (not available at the time of Phase 1 investigations) has synthesized traditional Tlingit place-names throughout Southeast Alaska—names in which cultural information about the importance, history, resources, and dangers that characterize particular places on the landscape is embedded (Thornton 2012). For lands or features in the vicinity of, but outside, the Phase 2 APEs, 10 traditional place-names have been documented by collaboration between Tlingit elders and modern ethnographers (Thornton 2012:113–118). S'igedí Deiyí ("Beaver Trail") was the primary travel corridor that ran from Killisnoo Harbor to the present-day village of Angoon, and Wooch Géide Tliséet refers to the channel north of Killisnoo Island. Kadus.áak'w ("Little Lake On It") refers to the saltwater lagoon northwest of the proposed airport runway. Tlaaguwu Noow ("Ancient Fort") was a defensive site on the shore of Killisnoo Harbor west of the proposed airport. A cluster of traditionally named places are located along the shore of the same harbor southwest of the proposed airport, and include Keitanji Aan ("Village Where It Continually Lifts Up"), Dákde Yakatan Aas ("Tree Leaning Out"), Daasakwt'aagaanoow ("Fort of the Village Alongside Daasákw"), and Tsax'adaadzaayí Aan ("Seal's Mustache Land"). Féeshwaan Aaní ("Fisherman's Town") was a settlement on Favorite Bay east of one of the potential materials sources examined during the Phase 2 survey. On Killisnoo Island is Kanasnoow ("Windbreak"), which refers to the Killisnoo Settlement, presumably the same settlement recorded as SIT-00014. Some of these names are likely associated with archaeological remains of settlements de Laguna (1960) investigated during her anthropological field investigations in this area. Though none refer to places specifically within the boundaries of the Phase 2 APEs, the names attest to the rich history of the *Xutsnoowú Kwáan*, whose territory is centered on the community of Angoon (Thornton 2012:107).

4.3 Environmental Setting

The majority of the Phase 2 APEs are covered in a dense spruce-hemlock forest. In places the understory is mossy and relatively free of brush, but with abundant deadfall (Figure 4). In other places, there is a thick understory of alder (*Alnus viridis* [*crispa*]), Devil's club (*Oplopanax horridum*), and blueberry (*Vaccinium* spp.) (Figure 5). In addition, there are areas of hydric soils and standing water blanketed by grasses, sedges, skunk cabbage (*Lysichiton americanus*), and a sparse pine-spruce forest (Figures 6-8).



Figure 4. Overview in southeastern portion of the Phase 2 Direct APE, view to the northwest.



Figure 5. Overview of non-contiguous northwest avigation easement, view to the southeast.



Figure 6. Overview of the northeastern edge of the Phase Direct 2 APE in the northeastern portion of the APE, view to the northwest.



Figure 7. Saturated sediments within a forested area of the Phase 2 Direct APE, view to the east.



Figure 8. Saturated sediments in an open bog within the Phase 2 Direct APE.

5.0 METHODS

As part of Phase 1 investigations, the FAA cultural resource consultant team conducted background research and preliminary fieldwork to identify cultural resources that may be impacted by the development of an airport and access road and assessed the eligibility of those resources for the NRHP. As noted previously, this research and initial fieldwork addressed all three airport location alternatives considered in the EIS.

The background research included a literature review of records at the Alaska Office of History and Archaeology (OHA) in Anchorage as well as published and archival sources at public and university libraries, and tribal consultation and interviews with elders, culture bearers, and residents of Angoon.

For Phase 2, the FAA cultural resource consultant team updated the background research to account for the expanded areas of the Phase 2 APE and to include ethnographic data and pertinent cultural resource reports made available since the Phase 1 studies were completed. In addition, the consultants conducted field investigations of the new Phase 2 Direct APE (as shown on Figure 2 and discussed in section 3.0 above). The consultant team also revisited areas investigated during the Phase 1 fieldwork that the team, for various reasons, considered to have a high probability of containing cultural resources.

5.1 Literature Review

As part of the literature review conducted during the Phase 1 studies, the FAA's cultural resource consultant team reviewed the OHA citation database, Alaska Heritage Resources Survey (AHRS) records and location editor (geographic information system [GIS] site locator maps), Alaska Resources Library and Information Services data archives, and the Tongass National Forest Heritage Resources Survey data. Additionally, the consultant reviewed the works of de Laguna (1960), Erlandson and Moss (1983), and Moss and Erlandson (1985), all of whom have conducted extensive work in the Angoon area, as well as the broader regional works of Goldschmidt and Haas (1946) and others. The specific data resources of the OHA and AHRS records were reviewed to identify relevant documentation and information for past archaeological and ethnographic studies and previously documented archaeological sites within 1 mile of the Phase 1 APE. Because the Phase 1 and 2 APEs are slightly different, the cultural resource consultant team updated the literature review search area to a 1-mile radius around the Phase 2 Direct APE. In addition, the search included sources not available at the time of the Phase 1 studies. Updated literature reviews occurred in July 2013 and August 2015.

5.2 Field Inventory

As discussed above in section 3.0 and shown on Figure 2, much of the Phase 2 Direct APE was surveyed during the Phase 1 investigations (SWCA 2012). Phase 1 involved pedestrian survey using transects spaced 20 meters (66 feet) apart as permitted by vegetation, terrain, and hydrography. Shovel probes were excavated in high-probability locations as allowed by soil conditions. The probes were 30 to 40 centimeters (cm) in diameter to depths allowable by hand tools, which varied between 50 and 100 cm below surface (cmbs). All excavated sediment was screened through ¼-inch mesh. These methods and the resulting coverage across the Phase 1 APE were considered adequate in most areas and were not revisited during Phase 2. The goals of the Phase 2 survey were to 1) complete pedestrian survey transect coverage in areas of the Phase 2 Direct APE not surveyed during the Phase 1 investigations, including the potential materials source locations; 2) excavate shovel probes in places within the previously unsurveyed portions of the Phase 2 Direct APE considered to be sensitive for buried archaeological resources, and 3) revisit high-probability portions of the APE previously surveyed during Phase 1 studies and excavate additional shovel probes.

The locations of all shovel probes and notable cultural features were recorded using a handheld Trimble GeoXT 6000 global positioning system (GPS) unit with an external antenna. Digital photographs were taken in all Phase 2 survey areas. These photographs include overviews, profiles of typical shovel probes, and cultural resources. Non-digital field data were recorded on standardized field forms, and included daily work records, photograph logs, resource inventory forms, shovel probe forms, and hand-drawn maps.

5.2.1 Sensitivity Analysis Methods

Sensitivity for cultural resources in the Phase 2 Direct APE was assessed using a combination of the USFS's (2002) sensitivity zone model, described in detail in the Phase 1 technical report (SWCA 2012); review by the project principal investigator of various GIS layers to prioritize fieldwork; and professional judgment of the field crew regarding topography, proximity to tidewater and known prehistoric and historic sites, information obtained from local residents (i.e., traditional knowledge), hydrography, and the presence of certain ecotone habitats. While no portion of the Phase 2 APEs falls in USFS lands, the FAA cultural resource consultants, in consultation with FAA and SHPO, agreed to use the USFS sensitivity zone model for all portions of the EIS field investigations for reasons of consistency. The desktop review of GIS layers and descriptions of the various terrains of Airport 12a from the Phase 1 fieldwork identified high-potential areas to be revisited. They also indicated which areas had greater sensitivity for, and potential preservation of, both aboveground resources and buried archaeological deposits. Factors considered included topographic characteristics (relatively level terraces, saddles, and topographic high-points, as opposed to moderate or steep slopes), vegetation zones (ecotones and forested land, as opposed to the centers of bogs and wetlands), and proximities (known cultural resources and tidewater).

While most of the areas in the Phase 2 Direct APE that were not part of the Phase 1 APE lie in regions predicted to have low sensitivity for cultural resources, shovel probes were excavated in places where topography and well-drained soils combined to create a depositional environment likely to preserve buried archaeological materials if present, as well as in ecotone habitats (Figure 9). In addition, the overall sensitivity of the Kootznoowoo, Inc. Proposed Materials Source was given greater consideration when the bear guards accompanying the field crew noted that ancient battles, prior to contact with Euro-Americans, occurred along the hillsides overlooking Favorite Bay (personal communication, A. Johnson 2013; personal communication, D. Johnson 2013). No specific locations or resources were noted by the bear guards, although the Kootznoowoo, Inc. Proposed Materials Source is situated on this aspect. Both pedestrian survey transects and shovel probes on level surfaces and saddles between smaller knolls were used to identify cultural resources that may be present in this area.

Additional shovel probes were excavated in two areas of the Phase 2 Direct APE that were also investigated during the Phase 1 fieldwork. The northwestern portion of the Phase 2 APE near the Salt Lagoon was considered sensitive for cultural resources due to its proximity to tidewater. In addition, the southwestern boundary of the Phase 2 Direct APE near Killisnoo Harbor was subject to additional shovel probing due to its proximity to the known site SIT-00169, the previously documented boundary of which is somewhat ill-defined.

Field investigations were not conducted in most portions of the Indirect APE (e.g., visual and noise) that extend outside the Phase 2 Direct APE. The Noise APE is located entirely within the Phase 2 Direct APE and was adequately investigated during the Phase 1 field survey. The Visual APE, while in a high-sensitivity zone according to the USFS model, has been investigated previously and is unlikely to contain additional cultural resources. One site (SIT-00169) containing structural remains was known to be present in the immediate area of the construction footprint near Killisnoo Harbor. This specific site was visited and assessed for potential vibration effects.

Figure 9. Shovel probe locations in relationship to high probability areas in the Phase 2 Direct APE.

5.2.2 PEDESTRIAN SURVEY

The Phase 2 field survey was conducted between July 25 and August 2, 2013, in weather that was adequate for surface visibility and note taking. The 2013 field survey personnel included three archaeological technicians (Mary Ahonen, Jeanette Hayman, and Allison Neterer) and a geoarchaeological technician (Cyrena Undem), supervised by Molly Odell, M.A. Principal Investigator Robert Kopperl, Ph.D., was present for the first three days of the survey. Two bear guards, local residents Alvin and Donald Johnson, accompanied the team during all fieldwork. Michael Kell, Alaska DOT&PF archaeologist, visited the crew during their fieldwork on July 26 and 27, 2013.

Surveys for Phase 2 were completed using pedestrian survey transects spaced at 10 to 20 meter (33 to 66 foot) intervals to the extent permitted by vegetation, landform, and hydrography. Dense, impenetrable vegetation in some areas made a complete survey with straight transects impractical. In those instances, the field crew made every practical attempt to investigate the area. Pedestrian survey involved examination of all surfaces exposed along the transects, taking every opportunity to observe erosion profiles and mineral soil matrices adhering to the root mass of tree-tips, given the overall thickness of forest duff, preponderance of deadfalls, and density of shrubwood that compromise surface and near-ground visibility year-round. These exposures were examined for artifacts, features, and other evidence of human occupation or cultural modification such as shell midden deposits and anthropogenic charcoal lenses. The pedestrian survey also included examination of potential aboveground features such as culturally modified trees (CMTs), historic structures, and modified landscapes.

The pedestrian survey was conducted in summer when vegetation is at its maximum. In southeast Alaska, thick vegetation is present year-round and the ground surface is typically obscured under a very thick mat of living and decaying vegetation and tree deadfalls regardless of the season. It is likely the field crew would have encountered areas of impenetrable vegetation regardless of the time of year. In addition, surface features and artifacts were clearly visible in SIT-00169 despite the vegetation, suggesting that the field crew would have been able to locate cultural materials on the surface had they been present in other surveyed areas.

5.2.3 Shovel Probes

Shovel probes were excavated by hand with shovels and trowels. Each probe was 35 to 40 cm in diameter and was dug until impenetrable rocks, roots, or the water table was encountered, or until hand excavation was no longer possible. Excavated soils were sifted through ¼-inch screen, and stratigraphic characteristics of excavation profiles were documented prior to backfilling the probes. A total of 105 shovel probes were excavated during the Phase 2 field investigations.

5.3 Visual Analysis

For lands in the Visual APE, the FAA did not conduct additional field studies. The area within the APE has been surveyed before, and cultural sites have been documented. The sites were, however, revisited during the course of field studies for the airport project—either during the Airport 12a survey reported herein or during informal visits associated with previous surveys for the airport alternatives (SWCA 2012). This approach is consistent with the industry standard for identifying visual effects from such undertakings as cell towers, wind farms, solar arrays, and similar structures.

Cultural resources that are sensitive to visual intrusions created in the viewshed of the resource are generally those where the viewshed is or was important to the historical use of the site or the intended design and setting of the site. More specifically, sensitive resources are those whose viewshed is important to the resource's eligibility for listing on the NRHP. Generally speaking, resources that are eligible for the NRHP under Criterion B for associations with important persons or Criterion D for their information potential are not considered sensitive

to visual intrusion. In contrast, resources that are eligible for the NRHP under Criterion A for their particular use in a historically important event or pattern of events and those that are eligible under Criterion C for their structural elements are typically considered to be more sensitive to visual intrusion. However, in both cases, the viewshed must be important to the reasons the resource is eligible under one of the two criteria. For example, a building that is eligible for the NRHP and that is intentionally situated on the landscape and designed to integrate the viewshed into the use of the building—such as a residence with large picture windows looking out on a particular viewshed—would be considered sensitive to visual intrusion within that viewshed.

Potential effects on these sites from anticipated visual changes to the landscape associated with the construction and operation of Airport 12a are evaluated in the Results section of this report (section 7.3).

5.4 Noise Analysis

Because the Noise APE is completely encompassed by the Direct APE, field surveys within the Direct APE covered all lands wherein noise effects would have the potential to damage or otherwise impair the use of historic properties. As such, no additional efforts to identify historic properties were needed specific to the Noise APE.

5.5 Vibration Analysis

As noted in section 3.4, potentially damaging vibration could occur during construction if blasting is necessary. Given the geology of the immediate area in and around Airport 12a, damaging vibration is expected to attenuate very quickly (i.e., over a short distance). Because the exact locations where blasting might occur are not known at this time, and will not likely be known until more detailed engineering of a selected alternative is carried out, the FAA considered potential vibration effects on a broad scale by assessing the presence/absence of resources of the types known to be vulnerable to adverse effects from vibration. Those types of resources are generally limited to standing structures, and exclude sites of a purely archaeological nature. One such resource is present in the vicinity of the construction footprint (SIT-00169), and the potential effects to it from vibration are discussed below.

6.0 Previous Research and Known and Potential Cultural Resources

Several previous assessments for historical, architectural, archaeological, and cultural resources have occurred in the vicinity of the Phase 2 APEs and the general Angoon area. Cultural research and archaeological investigations have been formally documented since the 1940s, spurred by academic interest and more recently by undertakings requiring compliance with Section 106 (36 Code of Federal Regulations [CFR] 800) or Section 110, or both, of the NHPA. Many of these studies have been conducted by the USFS or in conjunction with proposed development. Tables 1 and 2 summarize past cultural resource investigations and known sites within a 1-mile buffer around the Phase 2 Direct APE; this 1-mile buffer encompasses all of the indirect effects APEs. Of the investigations listed below, only two, by Yarborough (2005) and SWCA (2012), took place inside the boundary of the Phase 2 Direct APE. Neither identified any cultural resources in the Phase 2 Direct APE.

Table 1. Previous Investigations within 1 Mile of the Phase 2 Direct APE

Report Title	Author (Year)	Resources Identified within the File Search Study Area
Possessory Rights of the Natives of Southeastern Alaska	Goldschmidt and Haas (1946)	SIT-00302
The Story of a Tlingit Community: A Problem in the Relationship Between Archaeological, Ethnological, and Historical Methods	de Laguna (1960)	SIT-00295, SIT-00303, SIT-00305, SIT-00306, SIT-00169, SIT-00177, SIT-00014, SIT-00015
Archaeological Reconnaissance of the Angoon-Killisnoo Harbor Road	Clark (1976)	SIT-00015
Cultural Resource Investigation at Killisonoo [sic] Harbor	Fields and Davidson (1979)	SIT-00015, SIT-00169, SIT-00177, SIT-00680, SIT-00014
Archaeological Reconnaissance of Favorite Bay, Admiralty Island	McAfee et al. (1982)	SIT-00302
Results of Archaeological Reconnaissance on Admiralty Island National Monument, Southeast Alaska	Erlandson and Moss (1983)	SIT-00169, SIT-00262, SIT-00295
Preliminary Results of Archaeological Investigations on Admiralty Island, Southeast Alaska: 1985 Field Season	Moss and Erlandson (1985)	SIT-00124
1989 Archaeological and Historical Site Monitoring Program for the Chatham Area, Tongass National Forest	Lively and Davis (1989)	SIT-00015
Archaeology and Cultural Ecology of the Prehistoric Angoon Tlingit	Moss (1989)	SIT-00124, SIT-00033
The Antiquity of Tlingit Settlement on Admiralty Island, Southeast Alaska	Moss et al. (1989)	SIT-00124, SIT-00033
An Archaeological Survey of the Angoon- Kootznahoo and Seaplane Base Roads Paving Project, Admiralty Island, Alaska	Campbell (1996)	SIT-00487, SIT-00488, SIT- 00489, SIT-00490, SIT-00491
Haa Aani Our Land: Tlingit and Haida Land Rights and Use	Goldschmidt and Haas (1998)	SIT-00302
Cultural Resources Inventory of the Angoon Proposed Airport	Yarborough (2005)	SIT-00169, SIT-00680, SIT- 00262, SIT-00033, SIT-00302, SIT-00502, SIT-00034
Cultural Resources Existing Conditions Technical Report for the Angoon Airport Environmental Impact Statement Angoon, Alaska	SWCA (2012)	SIT-00302
Angoon Administrative Site, 49SIT-00960, Determination of Eligibility R2013100534010	Gilliam (2013)	SIT-00960

Note: Data obtained through USFS Tongass National Forest Heritage Resources Archives and OHA, Anchorage.

Table 2. Alaska Heritage Resources Sites within 1 Mile of the Phase 2 Direct APE

AHRS Number	Site Type	Site Name	Eligibility
SIT-00014	Historic Tlingit village/Euro-American commercialism [graves, village site, cannery remains]	Killisnoo (Killisnoo Ruins/Kenasnow/ KanasNu/Killishoo/ Killisnoo Island Village)	Eligible
SIT-00015	Prehistoric/historic Tlingit fort/cemetery	Killisnoo Harbor Fort and Cemetery	Undetermined
SIT-00017	Location of late-nineteenth-century Angoon village	Angoon	Undetermined
SIT-00033	Prehistoric/historic stake fish weir	Favorite Bay Fish Weir	Undetermined
SIT-00034	Prehistoric/historic Tlingit site	Favorite Bay Midden/Garden	Undetermined
SIT-00041	Pictographs	Magpie Point Pictographs	Undetermined
SIT-00056	Historic religious building site (Russian Orthodox)	St. Andrews Church	Eligible
SIT-00124	Prehistoric Tlingit site	Killisnoo Picnic Ground Midden	Undetermined
SIT-00135	Possible location of a fort, buried cultural material	Ganaxca Nuwu (Ganax Women's Fort)	Undetermined
SIT-00169	Historic Tlingit occupation site	Ketintci-'an (Killisnoo Harbor Village)	Eligible
SIT-00177	Historic Tlingit site/possible fort/cemetery remains	South Killisnoo Village (Dadakatak Nuwu/Dasuqtag-an/Potato Point)	Undetermined
SIT-00262	Prehistoric midden	Dukdeiyukutun As Midden	Undetermined
SIT-00295	Prehistoric/historic Tlingit occupation site [cabins/lithics/middens/cache pits]	Ta Uk Aan Nee Shoo (Takwanicu/End of Winter Village)	Undetermined
SIT-00302	Prehistoric deposits, historic gardens	Favorite Bay Garden Site	Determined eligible by SHPO and agency
SIT-00303	Historic Tlingit site	Xicwan-'ani (Fisherman's Town)	Undetermined
SIT-00304	Prehistoric/historic midden site	Xanaxaye (Garnes Point Shell Midden)	Determined not eligible by SHPO and agency
SIT-00305	Historic Tlingit garden site	Kootznahoo Roads Garden	Undetermined
SIT-00306	Historic Tlingit cabins and midden site	Scott's Ranch and Midden	Undetermined
SIT-00307	Historic Tlingit structure, garden, and midden site	Kenasnow Camp and Midden	Undetermined
SIT-00308	Midden with possible prehistoric and historic components	South Angoon	Undetermined
SIT-00487	Paleontological shell midden	N/A	Undetermined
SIT-00488	Rectangular depressions	N/A	Undetermined
SIT-00489	Collapsed grave house	N/A	Undetermined
SIT-00490	Three-sided shelter used as drying rack	N/A	Undetermined

Table 2. Alaska Heritage Resources Sites within 1 Mile of the Phase 2 Direct APE

AHRS Number	Site Type	Site Name	Eligibility
SIT-00491	Cluster of buildings	"Japantown"	Undetermined
SIT-00502	Historic Tlingit garden	Garden Site	Undetermined
SIT-00680	Historic Euro-American water flue	N/A	Undetermined
SIT-00749	Historic Aleut and Russian Orthodox cemetery	Killisnoo Cemetery	Eligible
SIT-00960	Mid-twentieth-century wood frame building	Angoon Administrative Site	Not Eligible

Detailed discussion of the previous cultural resource investigations listed in Table 1, above, can be found in the Phase 1 report (Appendix A; SWCA 2012), except for three specific studies, the information for which became available after the Phase 1 report was complete. One of these studies was for the first known federally mandated investigation in the search area and was a survey for the Angoon-Killisnoo Harbor Road. This study included documentation of SIT-00015 by USFS archaeologists (Clark 1976). The second study was a 1996 cultural resource survey conducted as part of the Angoon-Kootznahoo and Sea Plane Base Roads Paving Project for Alaska DOT&PF, resulting in the identification of SIT-00490 and SIT-00491 (Campbell 1996). The third study, conducted by the USFS in 2013, assessed the NRHP eligibility of the Angoon Administrative Site (SIT-00960) (Gilliam 2013).

6.1 Burials and Human Remains

Individual burials and historic cemeteries are present in a variety of locations around Angoon and the broader landscape surrounding the village. Table 2 identifies two formally documented sites containing human remains that are within the file search area, SIT-00015 and SIT-00749. Neither of these sites are located in areas that would directly affected by development of Airport 12a with Access 12a. However, given the intense history of long-term occupation of the Angoon area, it is possible that additional, yet-to-be-identified burials are present in the general area.

7.0 RESULTS

The Phase 2 assessment resulted in the identification of four cultural resource sites and 10 CMTs. All four cultural resource sites had been previously documented as a result of undertakings not related to the airport project. Three of these sites (SIT-00014, SIT-00056, and SIT-00749) are located wholly or partially in the Visual APE on Killisnoo Island, and one (SIT-00169) adjacent to the Direct APE was identified as having structural remains that could be susceptible to vibration impacts from construction activities in the Direct APE. No cultural resource sites were located in the Direct APE, Noise APE, or the portion of the Visual APE next to the Salt Lagoon.

In addition to the 10 newly identified CMTs, all of which are located in the Direct APE, two CMTs identified during the Phase 1 surveys are also located in the Phase 2 Direct APE (Figures 10-12). Thus, a total of 12 CMTs are present in the Phase 2 Direct APE.

The findings of the field survey and the analyses of visual, vibration, and noise effects are discussed below. General information about the findings of shovel probes is also provided.

Figure 10. Shovel probe and CMT locations in the northwestern portion of the Phase 2 Direct APE.

Figure 11. Shovel probe and CMT locations in the northeastern portion of the Phase 2 Direct APE.

Figure 12. Shovel probe and CMT locations in the southern portion of the Phase 2 Direct APE.

7.1 Findings of Shovel Probes

At total of 113 shovel probes were excavated in the Phase 2 Direct APE (refer to Figures 10-12). Of these, 8 were excavated during the Phase 1 field studies (SWCA 2012) and 105 were excavated during the Phase 2 studies. The shovel probes encountered no cultural material but provided valuable stratigraphic data that confirmed the relative geologic age and depositional contexts of the particular landforms that were tested. A shovel probe summary table is given in Appendix B for probes excavated during Phase 2 field investigations. Previously excavated shovel probes are described in the Phase 1 report (Appendix A) (SWCA 2012).

Among the shovel probes excavated in the Direct Effects APE, those shovel probes located in well-drained areas uncovered layers of silt, sand, and angular pebbles and gravels and were terminated at thick roots, regolith, or bedrock. In low-lying areas with hydric soils, probes uncovered organic-rich silt and were terminated at the water table. Several of the shovel probes along the border of the Phase 2 Direct APE near Killisnoo Harbor uncovered evidence of paleo-beach deposits between 80 and 120 cmbs. While identifying paleo-shorelines in subsurface excavations can sometimes lead to the discovery of archaeological material of relatively great antiquity, no cultural materials were found during the testing conducted along the edge of the Direct APE near Killisnoo Harbor.

7.2 Culturally Modified Trees

As noted above, 12 CMTs were identified in the Phase 2 Direct APE (Table 3). Several different types of CMTs were identified during the Phase 2 fieldwork, including trees with blazes, springboard notches, axe marks, burning, stripped bark, and cut and stacked logs.

Field No.	Condition of Tree	Type of Modification	UTM Northing	UTM Easting
CU72109_1	Standing dead	Three springboard notches		
CU72109_2	Living tree	Blaze		
AGN-1	Stumps and cut logs	Cut and stacked logs		
AGN-2	Living tree	Blaze		
AGN-4	Stump	Possible springboard notch		
AGN-5	Living tree	Axe and burn marks		
AGN-5B	Living split trunk tree	Blaze, one on each trunk		
AGN-5C	Stump	Axe marks near base		
AGN-6	Living tree	Stripped bark		
AGN-7	Living tree	Axe mark		
AGN-8	Living tree	Stripped bark		
AGN-9	Stump	Springboard notch		

Table 3. CMTs Identified in the Phase 2 Direct APE

Note: Universal Transverse Mercator (UTMs) collected in North American Datum (NAD) 83 UTM Zone 8N.

Three blaze trees, identified as having a scar cut through the bark, were identified (Figures C-1, C-2, and C-3 in Appendix C). The blaze trees in the Phase 2 Direct APE are distributed widely and do not occur in clusters. The FAA cultural resource consultant field crew could not discern clear functions for any of the blaze trees; however, the blazes could mark property boundaries, old timber units, old trails, or hunting locales. While exact ages could not be determined, the blazes appear to be at least somewhat recent and may have been created in the last 50 years.

Three CMTs with springboard notches or possible springboard notches were also recorded in the Phase 2 Direct APE and Kootznoowoo, Inc. Proposed Materials Source (Figures C-4, C-5, and C-6). Associated with historic logging, the notches were created for the insertion of a plank on which a logger stood while swinging an axe or wielding a cross-cut saw to cut the tree at an acceptable height above its base. Such notched trees are common throughout Southeast Alaska and the Pacific Northwest.

Two of the CMTs recorded in the Phase 2 APE exhibit axe marks (Figures C-7 and C-8). Another exhibits both axe and burn marks (Figure C-9), and two others exhibit areas of stripped bark (Figures C-10 and C-11).

Another type of CMT includes three cut stumps and a stack of cut log rounds (Figure C-12). No roads or trails were visible in the vicinity of the cut trees, and moss growth indicated they had been stacked for quite some time, possibly several decades. No cultural materials were found in shovel probes in the vicinity of the stacked logs. Anecdotal evidence suggests these trees may have been cut for shake (personal communication, A. Johnson 2013).

Six of the identified CMTs are located near Killisnoo Harbor in close proximity to SIT-00169. The FAA cultural resource consultant has determined that these CMTs are not associated with SIT-00169. All six CMTs are located inland from SIT-00169 and are geographically separated from the site by a swale that runs roughly parallel to and just outside the northwest-southeast-trending boundary of the Direct APE. The CMTs appear to be associated with more than one activity or episode, and in some cases their function cannot be determined; one is a possible springboard notch, one is a blaze tree, two are trees with axe marks, one exhibits both axe and burn marks, and one tree has stripped bark. Similarly, the CMTs appear to be from a variety of time periods. The blazes appear quite recent, possibly made in the last 10 to 15 years, while the springboard notches on another tree may be more than several decades old. Time frames for many of the CMTs cannot be determined. No cultural materials were found on the surface or in subsurface probes in the area that might tie activities near the CMTs to SIT-00169, which is discussed in more detail in Section 7.3.3.

7.2.1 NRHP ELIGIBILITY OF CULTURALLY MODIFIED TREES

While CMTs can be eligible for the NRHP—typically under Criterion A for association with historical events or Criterion D for information potential—the trees must meet certain eligibility criteria. In general, CMTs associated with the early historic period or prehistoric period or those associated with significant events or themes regardless of their time period are more likely to be determined eligible for the NRHP. Recent CMTs or those associated with non-significant land uses or themes are unlikely to be considered eligible. Those found in association with archaeological sites may be considered to be a contributing feature of the site rather than eligible in their own right.

None of the CMTs in the Phase 2 Direct APE are known to be associated with any specific historical events or people or hold potential to yield information important to history or prehistory. While the springboard notched CMTs in the Phase 2 survey area are presumably associated with historical logging, logging was never a significant industry in Angoon. Rather, it was short-lived and of limited scale. Most historical logging in the Phase 2 Direct APE was undertaken by local residents or commercial operators to obtain wood for construction of buildings and similar structures. Occasional trees would have also been felled for the construction of canoes or similar watercraft. However, such associations cannot be identified for a specific CMT based on the evidence at hand. Therefore, the CMTs in the Phase 2 Direct APE do not appear to meet the criteria to be considered significant resources. As such, all 12 CMTs are recommended ineligible for the NRHP under all criteria.

7.3 Cultural Resource Sites

As noted above, four cultural resource sites—all of which were documented prior to the current undertaking—are located within the indirect effects APEs for the airport project.

The sections below provide descriptions of the sites, discussion of their NRHP eligibility, and an assessment of anticipated effects from the airport undertaking.

7.3.1 SITE SIT-00014, KILLISNOO ISLAND VILLAGE

SIT-00014 is the Killisnoo Island Village site—a historic Tlingit and Euro-American village and commercial/industrial site (Figure 13). It is located within the Visual APE for the current undertaking. The village was destroyed by a fire in 1928. The site was first documented by the USFS in the early 1970s (Fields and Davidson 1979). Additional documentation was reportedly completed by the USFS for an NRHP nomination form that was never submitted to the NPS, and Saleeby and Mobley investigated the site in 2008 (see Mobley 2012).

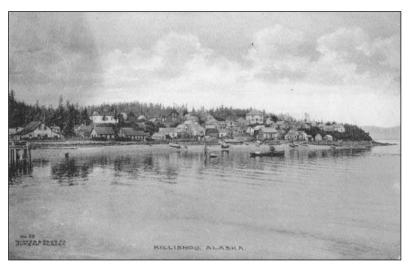


Figure 13. Killisnoo Island Village, ca. 1908.

The site is located

No buildings or building ruins from old Killisnoo Island Village remain; landscape features and artifacts are present on land—primarily in the forested inland area west of the fishing lodge complex—and in the intertidal zone (Mobley 2012:107). Artifacts are scattered across the landscape, though their provenience is questionable in some instances due to the high frequency of recreational exploration on the island, intentional land clearing, and other disturbances. Subsurface archaeological deposits are also likely present in the site area. Artifacts and features represent both the pre-1928 fire period of whaling operations and trading post as well as the World War II and immediate post-war industrial periods of Killisnoo Island.

NRHP Eligibility Review

The FAA has determined this site is eligible for the NRHP under Criteria A and D. The assessment of the site's historical significance and eligibility for the NRHP is outlined below.

Although much of the former Killisnoo Island Village site has been altered through modern ground disturbance and land development, the bulk of the site retains integrity of at least location. The integrity of setting, feeling, association, workmanship, design, and materials has been compromised somewhat by the modern land uses.

The herring plant at Killisnoo in the late 1800s was one of the first industrial enterprises in Alaska after the territory was purchased by the U.S. government (Mobley 2012:95). The whaling operations from the village are also associated with one of the most infamous events in the history of Angoon, namely the shelling of Angoon by the U.S. Navy in 1882. The shelling, which resulted in the deaths of many Alaska Natives from either injury or slow starvation from the destruction of food stores, was a turning point in settlement in the area; following the shelling, many surviving villagers from Angoon relocated to Killisnoo Island, at least seasonally. Further bolstering its association with important historical events, Killisnoo Island Village is directly associated with the relocation of Aleuts from Atka during World War II. For all of these reasons, the FAA has determined that the village site is eligible for inclusion in the NRHP under Criterion A.

The FAA has also determined that the village site is eligible for the NRHP under Criterion D. The investigations conducted extensively by Mobley (2012) and less extensively by the FAA's consultants in 2009 clearly indicate the potential for both surface and subsurface archaeological deposits that could expand the understanding of the history of Killisnoo Island Village. The artifact assemblage has the potential to yield information dating as far back as the prehistoric period and all of the different use periods since then. In particular, the assemblage could provide information about the interactions of the different ethnic, religious, and culture groups that occupied the village both over time and at the same time. Such topics as differential access to goods, cultural adaptation, and industrial technology from the late 1800s to mid-1900s may be addressed by the artifact assemblage.

Due to the destruction and/or demolition of all of the buildings and the near-complete lack of building ruins, the site does not appear to retain sufficient integrity to be eligible under Criteria B and C—that is, the site lacks sufficient integrity to convey its historical associations with any specific historical person or to reflect specific architectural or engineering types, styles, or manners of construction.

Effects Analysis

Site SIT-00014 is located in the Visual APE for the current undertaking. The characteristics for which the site appears to be eligible for the NRHP are not sensitive to visual intrusion. The historical village site was not located on the eastern shore of Killisnoo Island because of its particular viewshed. Rather, all indications are that the village was located as such because of the calm waters afforded by Killisnoo Harbor. During its period of industrial and residential development, the situating of buildings does not appear to have been specifically influenced by the viewshed and was defined by available land, the island's topography, and the development of different zones (e.g., industrial and residential) to separate, at least to a certain degree, living quarters and social activities from the industrial facilities. The historical associations of the village site under Criterion A are not affected by the viewshed of the site.

The eligibility of the Killisnoo Island Village site under Criterion D for its information potential is not vulnerable to changes in the viewshed of the site; the extent, nature, or quality of the data that could be recovered would be in no way affected by alteration of the landscape across the harbor from the site.

Based on the reasons presented above, the anticipated landscape changes from the Airport 12a alternative would have *no adverse effect* on the Killisnoo Island Village site (SIT-00014).

7.3.2 SITE SIT-00056, St. Andrews Church

The St. Andrews Church site was documented in AHRS records in 1974 through an archival exercise associated with Russian Orthodox Church buildings and sites in Alaska. No fieldwork was conducted at that time to verify the existence of the church or any archaeological remains. The documented site location is on the This area is located within the

Visual APE for the current undertaking.

As noted in the discussion of site SIT-00014, approximately two-thirds of the site is now occupied by the Whaler's Cove Lodge complex. A reconnaissance of the documented location of the St. Andrews Church site during the Phase 1 field studies for the Angoon Airport project in 2009 concluded that the property on which the St. Andrews Church was located remains undeveloped there are no physical remains of the church present on that property.

NRHP Eligibility Review

Although St. Andrews Church played a prominent role in the lives of the Russian Orthodox in Killisnoo Village and was an important outpost in the battle between the Russian Orthodox Church and other religious institutions to gain converts among Alaska Natives, the site lacks the integrity to reflect this association or its association with important individuals. Lacking structural remains and standing features, the site also lacks the integrity to represent a particular architectural type or style, method of construction, or artistic design. As such, the FAA has determined that the site, independent of the Killisnoo Island Village site (SIT-00014), is not eligible for the NRHP under Criteria A, B, and C. The FAA does find, however, that the potential for subsurface cultural deposits does exist, although such deposits are likely to be both sparse and shallow due to the relatively short period of time over which the church existed. Therefore, the FAA has determined that site SIT-00056, the St. Andrews Church site, is eligible for the NRHP under Criterion D, at least until proven otherwise by subsurface investigations.

Effects Analysis

deposits.

Site SIT-00056 is located in the Visual APE for the current undertaking. The apparent eligibility of the St. Andrews Church site under Criterion D for its information potential is not vulnerable to changes in the viewshed of the site; the extent, nature, or quality of the data that could be recovered would be in no way affected by alteration of the landscape across the harbor from the site.

Based on the reasons presented above, the anticipated landscape changes from the Airport 12a alternative would have *no adverse effect* on the St. Andrews Church (SIT-00056).

7.3.3 SITE SIT-00169, KILLISNOO HARBOR VILLAGE

Site SIT-00169 is the Killisnoo Harbor Village site.

The first archaeological investigations of the site appear to have been by de Laguna who learned from residents of Angoon that the village had been abandoned after an epidemic, perhaps in the 1830's (de Laguna 1960). She observed garden furrows and found traces of midden in subsurface tests. In the 1970's the site was investigated and formally recorded by Sealaska at which time the remains of two cabins, historical debris, and extensive gardens were noted (Sealaska and Wilsey & Ham 1975). Shortly thereafter, Fields and Davidson (1979) conducted a cursory examination of the area and recorded four decaying cabins, historical debris, depressions, garden plots, and crushed shell possibly indicative of midden

During Phase 2 field investigations, the FAA's cultural resource consultants conducted investigations to determine if any surface or subsurface components of SIT-00169 extended into the Phase 2 Direct APE. A 600-meter-long (1,969-foot-long) section of the northwest-southeast-trending boundary of the Phase 2 Direct APE in

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this area was surveyed with 10-meter (33-foot) transects extending 10 meters (33 feet) outside the APE on the seaward side and 30 meters (98 feet) inside the APE on the inland side. In addition, the field crew located surface features and artifacts

Inland from the surface features and artifacts visible at

The boundary of the Phase 2

Direct APE is inland of the swale along a small rise roughly two meters high.

Subsurface testing was also conducted just inside the Phase 2 Direct APE

Twenty-four shovel probes were placed in this area during Phase 2 field investigations on private parcels where right-of-entry had been obtained from the landowners. Shovel probes were placed in relatively flat areas most likely to have been used for occupation or activity areas. No cultural materials were found in any of the shovel probes. Given that no surface features or artifacts were found within the Direct APE, that no cultural materials were found in shovel probes, that no evidence was found to associate any of the CMTs with the activities at SIT-00169, and that the swale appears to have been a natural barrier to the inland extent of Sit-00169, the FAA believes there is sufficient evidence to suggest that SIT-00169 does not extend into the Phase 2 Direct APE. However, portions of SIT-00169 are located in areas where construction-related vibration could occur outside of the Direct APE.

NRHP Eligibility Review

No formal determination of eligibility has been made for site SIT-00169 as a result of its prior documentation. For the purpose of the current undertaking, the FAA assessed existing information about the site, as well as information gathered during the field investigations discussed herein, and determined that the Killisnoo Harbor Village site (SIT-00169) is eligible for the NRHP under Criterion D, as it has the potential to yield information important in expanding the understanding of historical land uses in the Angoon area, albeit over an apparently short period of time. Additionally, an analysis of the artifact assemblage could yield information that may shed light on the occupants of the area and any cultural, ethnic, or other reasons why they chose to live outside the larger village sites in the area. The FAA has determined that the site is not eligible for the NRHP under Criteria A, B, or C.

Effects Analysis

Site SIT-00169, Killisnoo Harbor Village, is located outside but near the Direct APE, where construction-related vibration may occur. As discussed in section 5.5, above, cultural resources known to be susceptible to damage or impairment from vibration are, with a few exceptions, structural in nature. Since the soil composition in the vicinity of the site is stable and not defined by loose deposits that could allow for movement of subsurface artifacts due solely to vibration, the archaeological component of this site does not appear vulnerable to vibration effects.

The structural component of site SIT-00169 consists of collapsed cabin remains. Because these structures have already collapsed and become overgrown and heavily weathered, they no longer appear susceptible to damage or impairment from potential vibration associated with construction of the airport on adjacent lands.

Long-term effects to historic properties can occur due to new or improved access to areas that may lead to inadvertent or intentional trampling or damage to cultural resources from increased human activity in the area, or looting of artifacts. For Airport 12a with Access 12a, the FAA has determined that this undertaking would not

improve access into currently inaccessible areas. The airport operational area would be surrounded by a fence and would not be available for use as new or improved access to the Killisnoo Harbor shoreline near SIT-00169, or any other areas adjacent to the airport. As such, the FAA anticipates *no adverse effect* to this site from the proposed undertaking.

7.3.4 SITE SIT-00749, KILLISNOO CEMETERY

SIT-00749 is a historical Aleut and Russian Orthodox cemetery (Killisnoo Cemetery) located

(Figure 14). It

is unclear when the site was first documented and by whom, but the most recent documentation was carried out by Saleeby and Mobley, who investigated and evaluated the site in 2008 (see Mobley 2012).

The cemetery contains several dozen graves of primarily Russian Orthodox Alaska Natives. Several Aleut persons, who died during their forced relocation from Atka—in the Aleutian Chain—to



Figure 14. Killisnoo Cemetery, ca. 1908.

Killisnoo during World War II, are also buried in the cemetery, as are at least a few persons of Japanese or Japanese-American descent. Grave markers and remnants of burial houses are still present, though heavily weathered. There is no evidence that the cemetery constitutes a designed landscape.

NRHP Eligibility Review

As a general rule, the NPS, the keeper of the NRHP, does not consider cemeteries and graves eligible for inclusion in the NRHP (Potter and Boland 1992:1). However, the NPS has created exceptions to this rule. These exceptions are known as Criteria Considerations. Criteria Consideration D applies specifically to cemeteries. Under Criteria Consideration D, a cemetery may be eligible for inclusion in the NRHP if it can be nominated individually under Criteria A, B, or C; a cemetery is not eligible for the NRHP if it is chiefly eligible because of its information potential (i.e., under NRHP Criterion D). A cemetery may be eligible under Criteria A, B, or C if it "derives its primary significance from graves or persons of transcendent importance, from age, from distinctive design features, or from association with historic events" (Potter and Boland 1992:16).

The FAA has determined that the Killisnoo Cemetery is eligible for the NRHP under Criterion A. The cemetery does not appear to meet the criteria consideration for associations with persons of "transcendent importance" or retain sufficient integrity of structural features to merit eligibility under Criteria B or C.

Under Criterion A, the cemetery is a significant site for its associations with the history of Killisnoo Island and Killisnoo Island Village. The Killisnoo Cemetery still reflects strong associations with the various cultural and religious affiliations of Killisnoo Island's residents over time. Russian Orthodox, Aleut, Tlingit, Japanese, and Euro-American grave markers are all present and represent the small island's varied occupants. The cemetery also reflects the different periods of occupation of nearby Killisnoo Island Village, from the late 1800s to the mid-1900s. For these reasons, the cemetery site is eligible for the NRHP under Criterion A and meets the criteria considerations set forth by the NPS for cemetery sites.

Effects Analysis

Site SIT-00749, the Killisnoo Cemetery, is located in the Visual APE for the current undertaking. The site is located in a moderately dense, second-growth spruce-hemlock forest. Visibility from the cemetery grounds to the surrounding landscape offshore of Killisnoo Island is somewhat limited by the forest landscape.

Although cemeteries are often intentionally situated on the landscape to take advantage of viewsheds afforded by certain topographic features, that does not appear to be the case with the Killisnoo Cemetery. Rather, the cemetery's location appears from historical maps of the island to be as much, if not more, a matter of available land near the Killisnoo Village as a specific selection based on viewshed. Additionally, the reasons for which the Killisnoo Cemetery is eligible for the NRHP are not specifically because of its role as a cemetery site but rather due to its associations with and ability to reflect the historical activities and cultures of Killisnoo Village and Killisnoo Island over time. These facets of the site's importance are not sensitive to visual intrusion from the landscape across Killisnoo Harbor. As such, the visual changes to the landscape anticipated from Airport 12a are expected to have *no adverse effect* on the significance of site SIT-00749, the Killisnoo Cemetery.

7.4 Potential for Inadvertent Discoveries during Construction

No historic properties were identified within the Direct APE for Airport 12a with Access 12a. As is the case for most projects, however, there exists potential for buried cultural resources and human burials within the APE that were not identified during either the Phase 1 or 2 field investigations. As a result, the FAA will require a Monitoring and Inadvertent Discovery Plan be developed by DOT&PF prior to the start of construction.

8.0 SUMMARY

Two phases of investigation, including archival research, local interviews, field investigations with pedestrian survey and shovel probe excavation, and visual, noise, and vibration effects analysis have been undertaken in the APEs for the FAA's preferred airport and access road location (Airport 12a with Access 12a) for the community of Angoon. Two potential materials source sites that could be used during airport construction have also been investigated in a similar manner.

The investigations resulted in the identification of 12 CMTs in the Direct APE. None of the CMTs are recommended eligible for the NRHP. No archaeological sites or prehistoric or historic structures were identified in the Direct APE or the Noise APE during any of the investigations. Three sites (SIT-00014, SIT-00056, and SIT-00749) are located in the Visual APE and one (SIT-00169) is adjacent to but outside the Direct APE, where construction-related vibration might extend outside of the construction footprint. The FAA has determined sites SIT-00014, SIT-00169, and SIT-00749 are eligible for the NRHP. FAA evaluated each of these three sites relative to the criteria of the NRHP under which they are eligible for the listing and assessed the sensitivity of these sites to visual, vibration, or long-term effects in relation to the applicable criteria. Based on this analysis the FAA concludes that the proposed undertaking would have no adverse effect on any of the three historic properties. Therefore, the FAA has made a determination that the undertaking would result in a finding of **No Adverse Effect to Historic Properties**.

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10.0 ACRONYMS

AHRS Alaska Heritage Resources Survey

APE area of potential effects

CASA Civil Aviation Safety Authority
CFR Code of Federal Regulations
cmbs centimeters below surface
CMT culturally modified trees

DOT&PF Department of Transportation and Public Facilities

EIS environmental impact statement
FAA Federal Aviation Administration
GIS geographic information system

GPS global positioning system
NAD North American datum

NHPA National Historic Preservation Act

NPS National Park Service

NRHP National Register of Historic Places
OHA Office of History and Archaeology
SHPO State Historic Preservation Officer
SWCA SWCA Environmental Consultants

USFS U.S. Forest Service

UTM Universal Transverse Mercator

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Angoon Airport EIS Cultural Resources Technical Report for the Area of Potential Effects for Airport 12a with Access 12a (Preferred Alternative) v2 October 2015

APPENDIX A. PHASE 1 CULTURAL RESOURCES EXISTING CONDITIONS TECHNICAL REPORT FOR THE ANGOON AIRPORT ENVIRONMENTAL IMPACT STATEMENT



CULTURAL RESOURCES EXISTING CONDITIONS TECHNICAL REPORT FOR THE ANGOON AIRPORT ENVIRONMENTAL IMPACT STATEMENT ANGOON, ALASKA

Prepared for

Federal Aviation Administration

and

Alaska Department of Transportation and Public Facilities

Prepared by

SWCA Environmental Consultants

Under authority of U.S. Forest Service ARPA Permit No. JUN709 SWCA Cultural Resources Report No. 2010-20 SWCA Project No. 15489

April 2012

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1.0 Introduction

The Federal Aviation Administration (FAA) is preparing an environmental impact statement (EIS) in response to a request from the Alaska Department of Transportation and Public Facilities (DOT&PF), the Sponsor, for funding and other approvals for a new land-based airport near the community of Angoon in Southeast Alaska (Figure 1). At present, there is no land-based airport runway in or near Angoon. The DOT&PF prepared the Angoon Airport Master Plan (DOT&PF 2007) for their proposed airport location. In addition to the DOT&PF's proposed airport location, the EIS considers two alternative airport locations and multiple access road alternatives associated with those airport locations (Figure 2). (*Note*: Access Alternative 5 was studied and is shown on maps throughout this report, but it was subsequently dropped from consideration in the EIS.) Two of the three potential airport locations and portions of their associated access roads are located on lands administered by the U.S. Forest Service (USFS) within the Admiralty Island National Monument and Kootznoowoo Wilderness Area (hereafter referred to as the Monument–Wilderness Area).

In consultation with the USFS, DOT&PF, the Angoon Community Association (ACA), Sealaska Corporation (Sealaska), and the Central Council of Tlingit and Haida Indian Tribes of Alaska (CCTHITA), the FAA directed its cultural resource consultant team (SWCA Environmental Consultants) to conduct field studies to identify cultural resources that could be directly or indirectly affected by the proposed undertaking. This technical report was prepared to document the area of investigation, the methods employed, and the results of these studies. The information contained herein will assist the FAA and USFS in assessing the potential impact of the proposed airport project on cultural resources and in engaging other agencies and consulting parties through processes associated with Section 106 of the National Historic Preservation Act (NHPA) and the National Environmental Policy Act (NEPA).

This report provides a detailed description of the first phase of studies to identify cultural resources potentially affected by implementation of the proposed airport project. For the purposes of this report, *cultural resources* are defined as archaeological, historic, prehistoric, and traditional cultural (heritage) properties. The term *historic properties* is also used in this report. This term refers to those cultural resources that have gone through a formal evaluation relative to their eligibility for listing on the National Register of Historic Places (NRHP). This report includes information on cultural resources that occur or have the potential to occur in the vicinity of the airport and access road alternatives. Raw data collected during the field studies are available for review to the extent allowable by federal law and policy (i.e., within the parameters of protecting confidential information as allowed by federal law). This report also provides the consultant team's recommendations of NRHP eligibility for those cultural resources identified in the survey area. Those sites recommended "eligible" for the NRHP would be considered *historic properties* upon a final determination of eligibility by the FAA in consultation with the appropriate consulting parties. No findings of effect have yet been made, as the alternatives being considered in the EIS are still being designed. The FAA and USFS will issue joint determinations of eligibility and findings of effect under separate cover when design plans are sufficiently defined to allow for an evaluation of anticipated impacts.

All field investigations took place on privately owned lands, lands owned by the City of Angoon and Kootznoowoo, Inc., and lands administered by the USFS. Investigations carried out on lands administered by the USFS were conducted under authority of USFS Archaeological Resources Protection Act (ARPA) Permit No. JNU709. Field investigations were carried out from July 11 to July 25, 2009, and again on August 29, 2009.

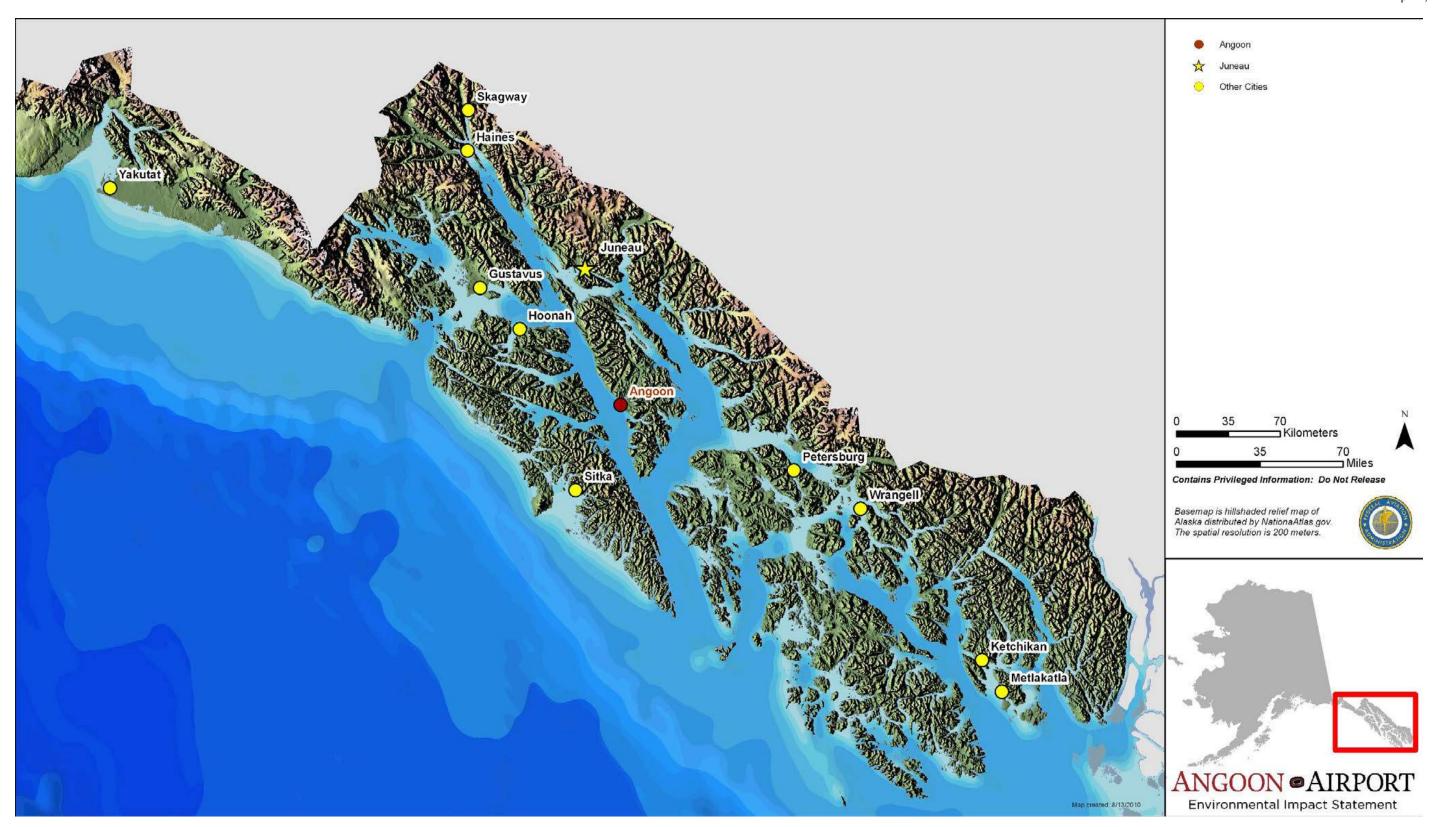


Figure 1. Southeast Alaska regional overview map showing the location of Angoon.

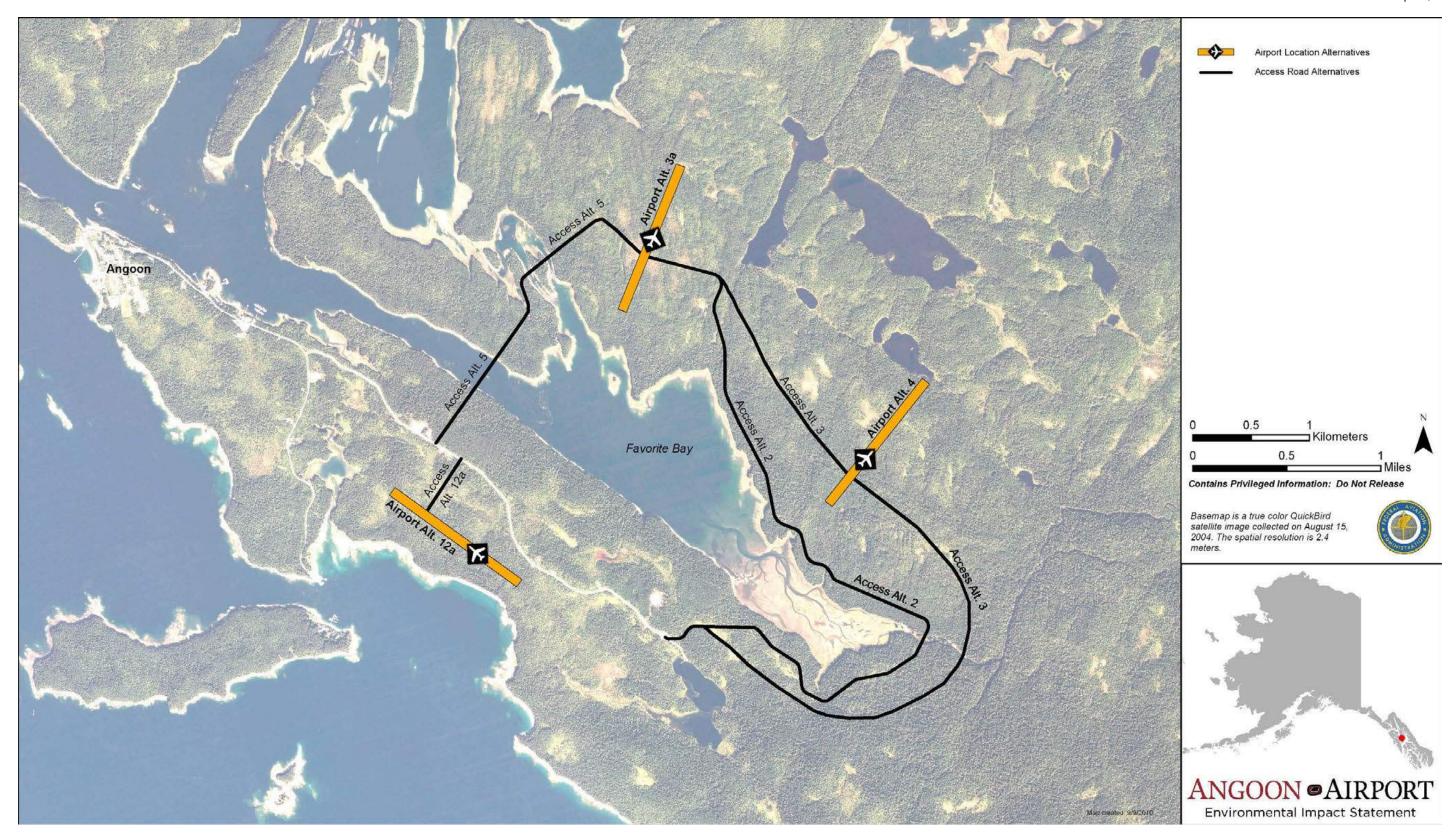


Figure 2. Locations of airport alternatives and access road alternatives. Note: Airport alternatives illustrated on this figure represent locations only and do not depict final areas of disturbance.

2.0 Proposed Undertaking

The proposed airport project consists of construction and operation of a land-based airport and airport access road for the community of Angoon, which currently has no land-based airport. The DOT&PF would own and operate the airport, and they have prepared a master plan for the proposed airport (DOT&PF 2007), identifying a preferred location (see Airport Alternative 3a on Figure 2). They submitted a proposed airport layout plan to the FAA, who has conditionally approved it. The DOT&PF intends to apply to the FAA for construction funding. Before granting final approval of the airport layout plan and funding, the FAA must evaluate and disclose the anticipated impacts of the airport project, consider alternatives to the DOT&PF's proposed action, and identify impact minimization and mitigation measures. To this end, the FAA is preparing the aforementioned EIS, which considers three potential land-based airport locations and associated access alternatives (see Figure 2), as well as the no action alternative. The FAA has not yet identified a preferred alternative.

The land-based airport would be a small, commercial airport typical of other rural airports in the region. The initial construction would include a 3,300-foot-long paved runway; runway length could be extended to 4,000 feet in the future if air traffic warrants it. The runway would be 75 feet wide. Runway safety areas would be 150 feet wide and centered on the runway centerline, and would extend 300 feet beyond each runway end. The airport would have a short, perpendicular taxiway leading from the runway to a roughly 70,000-square-foot apron area, which may eventually contain a small passenger shelter building similar to the facility currently present at the airport in the village of Kake. The airport layout is being designed to accommodate a future full-parallel taxiway, but this taxiway would not be constructed initially and would only be built if air traffic demands are sufficient to warrant this additional safety and efficiency feature. The runway, taxiway, and apron would all be paved with asphalt, while the runway safety areas would remain unpaved. The runway, perpendicular taxiway, and apron would be surrounded by clear areas required for safety. Additional areas of vegetation clearing and/or terrain alteration outside the airport boundary may also be needed for some of the airport locations under consideration in the EIS. At the time the cultural resources field studies were conducted, the exact layouts, boundaries, and additional cleared areas were not known. See section 3.0 below for additional information on the phased approach to identifying cultural resources.

Regardless of the airport location under consideration, an access road would need to be constructed to connect the new airport to the existing Angoon road system. The access road would have a gravel surface and would be two lanes wide (one lane in each direction) with 9-foot-wide lanes and minimal shoulders. The road right-of-way width will vary depending on terrain and cut and fill. Overhead power and utility lines may be placed inside the right-of-way. For two of the access road alternatives considered in the EIS, bridges would need to be constructed over Favorite Creek.

3.0 Area of Potential Effects (APE)

The three airport build alternatives being considered in the EIS are Airport Alternatives 3a, 4, and 12a (see Figure 2). These locations were identified through detailed aviation planning, which indicated that extreme terrain in the area in and around Angoon limits the potential locations for airports that would meet FAA requirements for safe aircraft operations, particularly for approaches and departures. Therefore, only a very small number of potential airport locations is considered viable, and the alignments of the runways at these locations are limited to within a few degrees of variation. Three airport access road alternatives are also under consideration in the EIS: Access Alternatives 2, 3, and 12a (see Figure 2). At the time the field studies reported herein were conducted, a fourth access road alternative, Access Alternative 5, was also under consideration, but the FAA has since eliminated this alternative from consideration.

The extent of the area of potential effects (APE) for any airport and access road built in Angoon depends largely on factors such as terrain and potential uses of the road for purposes other than accessing the airport. For example, for airport locations where the terrain is irregular more cut and fill would be required than would be necessary in a location where the terrain is flatter and more even. Additionally, access road alternatives extending around Favorite Bay are more likely to be used for non-airport purposes, such as accessing subsistence areas, than is a road to an airport on the Angoon peninsula. The non-airport use of access roads would pose a potential risk of indirect impacts to cultural resources near the access roads. However, because the vegetation through which the roads around Favorite Bay would pass consists of thick spruce-hemlock forest with an extremely dense understory, the magnitude of potential cross-country travel from an airport access road is expected to be very different depending on the distance of the road from the shoreline of Favorite Bay. A road closer to the shoreline is expected to see much greater non-airport use than a road farther from the shoreline due to the substantial use of the bay for subsistence gathering by Angoon residents. Access Alternative 2 is located near the shoreline of the bay, and Access Alternative 3 is located approximately 0.20–0.75 miles inland from the shoreline, in an upland area.

Because of the nature of EIS preparation and the timing during which potentially significant resource conflicts must be identified, field studies for cultural resources (and other resources) generally must take place before the design of a proposed action and any alternatives to it are sufficiently advanced. A distinct project footprint and all project design features must be identified to a degree that a firm APE for direct and indirect effects can be established. For this reason, and because of the high cost of conducting cultural resource field studies in Angoon, the FAA opted to proceed with a process of phased definition of the APE and phased identification of historic properties so that survey of areas not directly or indirectly affected by the final alternatives and their designs are limited. The FAA offered the Alaska State Historic Preservation Officer (SHPO), USFS, DOT&PF, and other consulting parties the opportunity to comment on the APE and provide information on cultural resources in and near the APE that should be taken into consideration for the project.

FAA's objectives for defining the APE in phases are as follows:

• Phase 1: Establish an APE sufficient for comparison of alternatives in the Draft EIS. The FAA identified an area—referred to herein as the Phase 1 APE—around the potential runway locations within which the majority of direct effects from construction of the runway, taxiway, apron, and safety areas is likely to occur. The Phase 1 APE also includes a 50-foot-wide corridor along each road alignment for the access road alternatives. This Phase 1 APE, which encompasses 615 acres, does *not* capture areas within which indirect effects might occur. Field studies were conducted within the Phase 1 APE, and therefore it is also referred to in this report as the "survey area." The purpose of these studies was to obtain sufficient information to compare alternatives in the EIS relative to known or potential direct risk to historic properties. Relative potential direct effects on historic properties are also estimated using the USFS cultural resources sensitivity model (see section 5.2.1). Information obtained for the Phase 1 APE is also used in partial fulfillment of the Section 106 process but is insufficient to complete the Section 106 process. The survey of this Phase 1 APE is reported here. The Phase 1 APE is illustrated in Figure 3.

Phase 2: Refine the APE sufficiently to complete the Section 106 process. When the airport and access road locations and designs have progressed sufficiently to allow for more concrete definition of the APE, the APE would be redefined to include all areas of anticipated direct *and* indirect effects. At this time, additional field studies would be conducted as necessary to fulfill the Section 106 process. This phase of APE definition is expected to occur between the Draft EIS and Final EIS, when the FAA has considered public and agency comments on the airport and access road locations and modifies the project designs accordingly or, possibly, eliminates alternatives from further consideration. The FAA fully anticipates that this Phase 2 APE will be larger than the Phase 1 APE. A separate report of survey methods and findings for the Phase 2 APE will be prepared at a later date.

In summary, the identification efforts for historic properties discussed herein apply only to the Phase 1 APE. Additional identification efforts will be necessary to fully capture the extent of direct and indirect effects on historic properties that may result from an airport and access road in Angoon. The FAA will consult with the USFS, SHPO, DOT&PF, and other consulting parties to define the boundaries of the Phase 2 APE and the appropriate level of effort to identify historic properties within those areas. Any cultural resources identified during the subsequent investigations will be addressed per the requirements of Title 36 of the Code of Federal Regulations (CFR), Part 800 with regard to determinations of eligibility, findings of effect, and resolution of adverse effects, should any be identified.

4.0 CULTURAL AND ENVIRONMENTAL SETTING

The area around the community of Angoon is rich in history, heritage, and cultural resources. It has been home to Alaska Natives for thousands of years, and Alaska Natives make up the majority of the population in the community today. The inlets and bays around Angoon offer abundant natural and subsistence resources, as evidenced by large populations of salmon, halibut, other freshwater and salt water fishes, seals, deer, bear, and a wide variety of marine and upland plants. The area supports a subsistence lifestyle and the maintenance of a unique cultural heritage tied closely to the natural environment.

4.1 Cultural Context

The following sections provide a brief discussion of the important cultural contexts and periods of significance for the Angoon area. The discussion addresses both chronological sequencing and temporal themes relevant to understanding the cultural resources in the Angoon peninsula and Favorite Bay area.

4.1.1 Prehistoric Period

Archaeological evidence dates prehistoric occupation of Southeast Alaska to at least 7,000 years before present (B.P.). However, archaeological investigations on Admiralty Island, and specifically around Angoon and Favorite Bay, have been limited. For these reasons, the scientific and anthropological understanding of the area's cultural history is still being developed. The lack of documented archaeological evidence of prehistoric occupation in and around Angoon is most likely due to the relative scarcity of detailed archaeological studies in the area and not to an actual lack of sites. It is important to note that regardless of the current state of archaeological data, Angoon Tlingit oral histories document a long-term occupation extending back millennia.

The prehistoric chronology of Admiralty Island has been categorized in different ways by different researchers. The USFS, in preparing its environmental analysis for the Thayer Lake Hydroelectric Project near Angoon, assigned the prehistory of the Admiralty Island area to the general chronology of the Northwest Coast cultural sequence (USFS 2009:3–74). That coarse sequence comprises three temporal periods as follows: Early Period (10,000–5,000 B.P.); Middle Period (5,000–1,500 B.P.), and Late Period (1,500 B.P.–A.D. 1741).

The Early Period in Southeast Alaska is known only from a few archaeological sites. No sites from this period have been documented in the immediate Angoon area. The archaeological hallmark of these sites is the presence of microblade tools. Research on the microblade tool tradition is most well developed for northern and central Alaska and less understood for Southeast Alaska, and it is presently unclear if microblade tools from archaeological contexts in Southeast Alaska represent the same temporal range as they do for areas farther north, or if their use persisted into more recent periods as cultural traditions made their way south along the Alexander Archipelago.

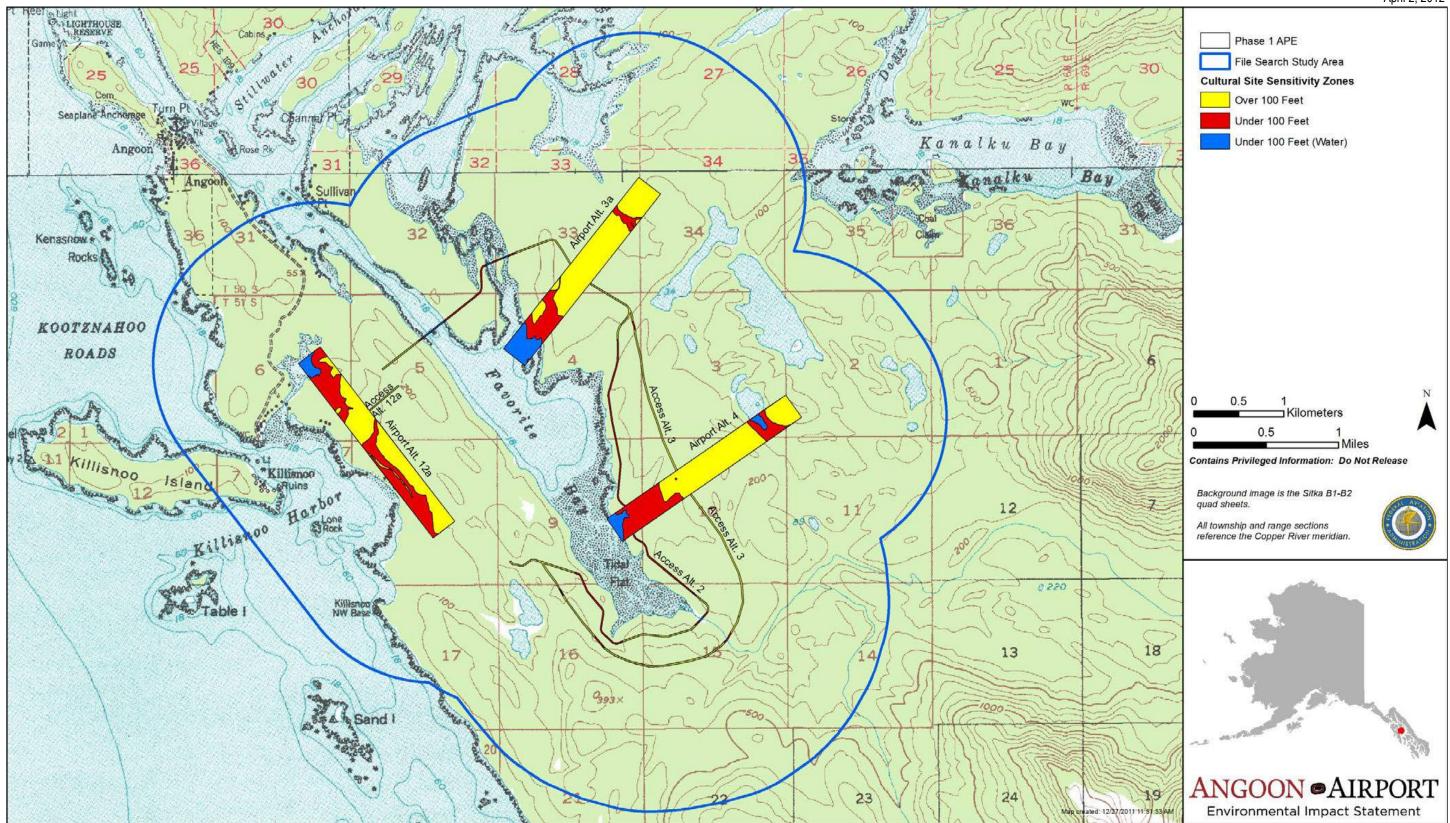


Figure 3. Location of the Phase 1 APE, also referred to as the survey area, including high-sensitivity zones distinguished by elevation.

As a general rule, known sites from the Early Period are rare, but as with essentially all periods in the history of Southeast Alaska, the material evidence of those few sites depicts a clear reliance of the prehistoric occupants on maritime resources. However, the maritime cultural tradition was not yet fully developed.

By the Middle Period, adaptation to a true maritime culture was in full swing. This is reflected in the archaeological record by an apparent intensified occupation of coastal zones, an expansion of the diversity and volume of stone and bone tools designed for use in acquiring and processing marine resources, and more extensive use of wood stake fish weirs and fish traps for catching large quantities of fish, suggesting there was a need to feed a larger number of people in a localized area. Archaeological evidence of larger and more permanent camp sites (often referred to as fort sites) has also been found. In the Angoon area, the Favorite Bay Fish Weir site (SIT-00033) and the Killisnoo Picnic Ground Midden site (SIT-00124) have been dated to this period. The oldest archaeological evidence for human occupation of the Angoon and Favorite Bay areas comes from the Favorite Bay Fish Weir site. Radiocarbon dating of this weir yielded an oldest date of just over 3,200 years B.P. and a youngest date of just over 2,170 years B.P., suggesting prolonged use of the site.

The Late Period on Admiralty Island and in the Angoon area appears to be marked more by intensification of coastal occupation and increasing population than a change in cultural tradition or material culture. Fort sites datable to the period are more common and tend to be larger than those of the Middle Period. Many such fort sites are known throughout the general Angoon area, particularly in the vicinity of Kootznahoo Inlet and Mitchell Bay. No such fort sites have yet been identified in the immediate Favorite Bay area. Garden plots appear in association with many terminal Late Period archaeological sites, but archaeological research is sufficiently limited that it is unclear whether this is a result of Late Period horticultural activity or ethnographic period reoccupation of Late Period sites.

4.1.2 ETHNOGRAPHIC PERIOD

During the ethnographic period (the period immediately after initial European contact in the mid-1700s), several Tlingit villages were located around the shores of Favorite Bay, on the Angoon Peninsula, and on various islands in the surrounding area (see de Laguna 1960; Moss 1989; Moss and Erlandson 1985; Moss et al. 1989). It is unclear whether villages were occupied at the same time or sequentially. Ethnographic data indicate that occupants of these early Angoon villages periodically relocated to new places in the area for a variety of reasons, the most recent of which was the bombing of the last known historical village by the U.S. Navy in the late 1800s. During this period, and extending well into the historic period, the Tlingit food economy was based on a combination of horticulture and seasonal round subsistence gathering. Along the shores of Favorite Bay and other bays and islands in the Angoon area, villagers established garden plots where root vegetables, particularly potatoes and turnips, were grown. The gardens are a clear reflection of cultural trade and intermingling, with the initial root stock for the crops coming not through native plant species but through cultural exchange. Archaeological evidence of these gardens remains intact at numerous sites along the eastern shoreline of Favorite Bay.

The ethnographic Tlingit of the area are described by Yarborough (2005) interpreting information provided by de Laguna (1960) as having "an economy based upon fish (particularly anadromous fish); settled villages; a highly sophisticated woodworking industry; a highly developed and distinctive art form; a social organization structured around lineages, clans, and phratries; and a ritual life focused upon totemism, shamanism, and the attainment of status through potlatching." Yarborough further describes a pattern of movement across the landscape and resource use consistent with a seasonal round lifeway wherein centralized villages are occupied during the winter but largely abandoned at other times of the year when individuals and families relocated to fishing and hunting camps. The lifeway of the ethnographic Tlingit peoples left its mark on the landscape surrounding Favorite Bay in the form of structural remains, occasional isolated artifacts, and distinctive marks left on trees in the dense spruce-hemlock forest. In particular, various types of cuts visible on tree trunks today reflect past

Tlingit activities such as gathering pitch for waterproofing canoes and other items, marking trails or routes to subsistence gathering areas, or obtaining materials for the extensive woodworking for which the Tlingit peoples are still well known today.

Ethnographically, the Angoon Tlingit traditional territory was first occupied by the <u>Ganaax</u>teidi' (Raven) clan of the Raven moiety. Later, the Deisheetaan (Beaver) clan of the Raven moiety arrived, having followed Beaver across the isthmus, according to oral tradition. The <u>Ganaax</u>teidi' eventually left the area, giving all rights to the village to the Deisheetaan. Other clans of the Raven moiety, as well as clans of the Eagle/Wolf moiety migrated into the Angoon area over time. In addition to the Deisheetaan, the Raven moiety included the Aanxaakhittaan clan (Dog Salmon House). The Eagle/Wolf moiety included the Wooshkeetaan clan (Shark House), Teikweidi clan (Bear house), and Daklaweidi clan (Killer Whale House).

4.1.3 HISTORIC PERIOD

The historic period—the period of written history—began in Southeast Alaska with the 1741 arrival of Russian explorer Vitus Bering's ships off the west coast of Prince of Wales Island, about 150 miles south of Angoon (Betts and Bowers 1994:18). More than 50 years later, in 1794, the ships of British Royal Navy Captain George Vancouver made their way to Admiralty Island, visiting a native village in the vicinity of Killisnoo Island, which is located just off the coast of the peninsula on which modern-day Angoon is located. This village may have been an earlier location of Angoon (de Laguna 1960:172).

Killisnoo and the Whaling Industry

The Russian empire laid claim to Alaska and established its capital at Sitka (then called New Archangel) in 1799. Euro-American explorers and traders forayed into the Angoon area for the next several decades, but none appears to have established permanent settlements around Angoon. It was not until 1878, 11 years after the United States purchased Alaska from the Russians, that large-scale permanent non-native settlement took place around Angoon in the form of a Northwest Trading Company trading post on Killisnoo Island. A few years later, the Northwest Trading Company opened a whaling station on the island. The whaling operation provided employment to many of the Tlingit villagers from Angoon, and a large number of Angoon families left the native village and moved to Killisnoo Island, where facilities including a school and church were available. Despite certain mutual benefits to the Northwest Trading Company and the Tlingit villagers from their coexistence, it was an uneasy arrangement at best. Interracial tensions fomented by cultural misunderstanding led to many confrontations, including one of the darkest chapters in Angoon's history. In the late fall of 1882, the accidental death of a Tlingit shaman working on a whaling vessel thrust the cultural ignorance and intolerance to the fore, ultimately culminating in the shelling of the native village of Angoon and a nearby summer subsistence camp by the U.S. Navy. The destruction of the village food stores just before winter left many of the surviving villagers to starve to death.

The attack on the village of Angoon understandably dampened the whaling operation on Killisnoo Island for many years. But there was money to be had, and the Northwest Trading Company began processing herring oil and fish guano at Killisnoo in 1887 under the name of the Alaska Oil and Guano Company. The new operations brought new employment opportunities for Tlingit villagers, and the settlement at Killisnoo once again grew. The processing facilities operated for more than two decades before suspending operations in 1915 and then operating off and on until their final closure in 1931 (de Laguna 1960:197). The loss of monetary employment caused many native villagers to return to the former village at Angoon. The town of Angoon was organized in its present location in 1917, and was organized as a city in 1963.

Substantial archaeological evidence of this period remains in the Angoon area. Though most structural evidence directly associated with the whaling and trading company operations are found on Killisnoo Island (for example site SIT-00014/Killisnoo Ruins on Figure 3), artifacts from the period can be found in archaeological contexts on

the Angoon peninsula and surrounding areas. Several unexploded artillery rounds from the Navy's shelling of Angoon have reportedly been found on land surrounding Favorite Bay.

Admiralty Island's Timber and Mining Heritage

Unlike many other areas of Southeast Alaska, that portion of Admiralty Island around Angoon has seen little in the way of mining and logging over the area's history, although logging most certainly occurred around Angoon, including the Favorite Bay area, during the late 1800s and early 1900s in support of construction and barrel stave manufacture associated with the commercial operations on Killisnoo Island. Shortly after President Theodore Roosevelt created the present-day Tongass National Forest by proclamation in 1907, the USFS began promoting the timber industry on Admiralty Island, but it gained little traction near Favorite Bay. The most recent commercial logging of note near Angoon occurred to the south and east of Favorite Bay in the 1950s and 1960s, prior to the establishment of the Monument–Wilderness Area. Evidence of these activities is relatively abundant in the area and in the form of cut tree stumps, springboard notches in tree stumps, logging cables, and other small artifacts of the logging industry.

As with logging, large-scale and commercial mining activity has also been very limited around Angoon and has focused on coal mining. The most substantial mining activity on Admiralty Island has occurred at the extreme north end of the island, at Funter Bay, where gold mining began in the 1920s. In the mid to late 1800s, steamer ships recovered coal from the Sepphagen Coal Mine in Kootznahoo Inlet. However, the quality of the coal was too poor for use in steamer ship boilers, and development of the coal vein never progressed in a meaningful way. Around 1895, the Admiralty Island Coal and Fuel Company was formed and began extracting coal from the southern end of Admiralty Island at Murder Cove. More than 30 years later, in 1928, the company opened the Hardrader Mine in Kanalku Bay, just east of Angoon. The mine operated for less than a year because of legal troubles and produced less than 1,000 tons of coal (Mobley 1994:31; USFS 2011). Kootznoowoo, Inc., the village native corporation for Angoon, owns a coal lease in the vicinity of the former Hardrader Mine, but it is not currently under development.

The Monument-Wilderness Area

Admiralty Island National Monument, which encompasses the vast majority of Admiralty Island and on which the DOT&PF's proposed airport and one airport location alternative would be located, was set aside for monument purposes in 1978 by a presidential proclamation (43 F.R. 57009) from President Jimmy Carter. The proclamation stated

protection of the entire island [Admiralty Island], exclusive of the Mansfield Peninsula, is necessary to preserve intact the unique scientific and historic objects and sites located there. Designation of a smaller area would not serve the scientific purpose of preserving intact this unique coastal island ecosystem.

The monument was formally established in 1980 as a provision of the Alaska National Interest Lands Conservation Act (ANILCA) (§ 503 (b)). ANILCA § 503(c) defined the purpose for the monument as follows:

Subject to valid existing rights and except as provided in this...section, the [Monument] shall be managed by the Secretary of Agriculture as units of the National Forest System to protect objects of ecological, cultural, geological, historical, prehistorical, and scientific interest.

The Kootznoowoo Wilderness Area was also established by ANILCA in 1980 and was known as the Admiralty Island Wilderness Area at that time (ANILCA § 703(a)(1)). It was established in accordance with the Wilderness Act of 1964, which holds as its core purpose maintaining "an enduring resource of wilderness" (Public Law 88-577 § 2(a)). The Wilderness Act further clarifies the purpose of a wilderness area as a means of administering lands for the "use and enjoyment of the American people in such manner as would leave them unimpaired for

future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness" (Public Law 88-577 § 2(a)).

The monument and wilderness area overlap significantly, with the wilderness area boundary being only slightly smaller than the monument boundary because of certain lands that were excluded from wilderness designation because their development and use does not meet the criteria for wilderness. The USFS has managed the lands of the monument and wilderness area for its intended purposes since they were established. This management has meant severely limiting permanent development and use of motorized vehicles and equipment.

Direct archaeological and historic evidence of monument and wilderness area establishment and management is extremely limited, primarily consisting of the occasional boundary marker. Historic USFS cabins on the island generally pre-date the monument and wilderness area period. None of these cabins are located in the immediate vicinity of any of the airport or access road alternatives; the closest cabin is located at Jims Lake, approximately 12 miles east-northeast of Angoon by air. The most significant archaeological legacy of the monument and wilderness area is the de facto preservation of both Tlingit cultural resource sites and historic logging and cabin sites on Admiralty Island. This is certainly apparent along the east side of Favorite Bay near Angoon, where sites associated with early Tlingit settlement and ethnographic use remain largely intact.

4.2 Environmental Setting

Southeast Alaska has some of the most rugged terrain found in North America. The rainforests of the Monument–Wilderness Area are no exception. The Phase 1 APE is situated 2–5 miles (3–8 kilometers [km]) southeast of Angoon. Dense spruce-hemlock forests with large areas of dense alder (*Alnus viridis* [*crispa*]), devil's club (*Oplopanax horridum*), and blueberry (*Vaccinium* spp.) dominate this area. Field crews found vegetation to be less dense on the east side of Favorite Bay than on the west side, closer to Angoon.

The surrounding area is broken up by a maze of bays, inlets, tidal channels, and smaller islands that are situated in a southwest-northeast orientation. Numerous similarly oriented bedrock ridges were encountered under the forest canopy, suggesting massive glacial scouring with glacial activity likely originating in the nearby Hasselborg Lake area. Soils within the project area are variable, ranging from meters of organic overburden to exposed bedrock to only centimeters of mineral soils overlying bedrock. Within the project area, the topographic landscape is relatively flat when compared to the steep snow-covered peaks of interior Admiralty Island; however, incised drainages are present throughout the area.

The environmental conditions in and around Airport Alternative 3a, the northernmost of the two airport alternatives on the east side of Favorite Bay, were similar to those in and around Airport Alternative 4, though vegetation cover was slightly less dense. Vegetation was most dense toward the head of Favorite Bay and became less dense to the north. The overstory consisted of typical spruce-hemlock forest with trees reaching heights of 100 feet or more. The understory was a mixture of blueberry and alder, with small amounts of devil's club and skunk cabbage (*Lysichiton americanum*) in wetter areas. Numerous areas opened up into sphagnum (*Sphagnum* sp.) meadows with standing or running water in most, creating large areas of hydric soils. Numerous areas of exposed bedrock were observed in the northern half of the Airport Alternative 3a survey area. The survey areas nearest the water were wet and muddy, conditions that provide good habitat for numerous species of clams and sea asparagus (*Ensis macha*).

The survey area encompassing Airport Alternative 4 exhibited similar environmental conditions to Airport Alternative 3a but had a more mature overstory of spruce and hemlock. Large areas of blowdown were observed near the survey area's southwest end and northeast end. Blueberry is the dominant understory vegetation and was extremely dense within many of the blowdown areas. As with Airport Alternative 3a, the

survey area for Airport Alternative 4 had numerous occurrences of sphagnum meadows with standing and running water. The survey area intersects an unnamed lake near its northeastern extent. Numerous bedrock outcrops forming north-south ridges measuring up to 10 meters (m) (33 feet) tall were observed south of the lake. Toward the southwest end of the Airport Alternative 4 survey area, Favorite Creek forms a channel providing fresh water and salmon runs. Chum salmon (*Oncorhynchus keta*) and pink salmon (*O. gorbuscha*) were observed in large numbers heading up Favorite Creek at the time of the field studies.

Airport Alternative 12a had the deepest soils, wettest conditions, and densest understory of all three airport alternatives investigated. The southeastern half of the survey area for this airport alternative had the wettest conditions and thickest vegetation. The northwestern half of the survey area was drier and contained more timber because of its higher elevation. The hydric soils allow for dense wetland vegetation such as devil's club, skunk cabbage, and alder.

5.0 METHODS

A three-pronged approach was used to identify cultural resources that may be impacted by the development of any of the airport and access road alternatives. Initially, two of FAA's consultants, archaeologists Sheri Ellis and Amy Schlenker, conducted preliminary records and files searches at the Tongass National Forest Admiralty Island National Monument office in Juneau, Alaska, on August 19, 2008, and the Alaska Office of History and Archaeology (OHA) in Anchorage on June 22, 2009. Additional sources of information were consulted, including community and university libraries, journals, and books addressing the history, prehistory, and archaeology of the Angoon area. The second component of the research consisted of investigative pedestrian field surveys to look for the presence or absence of previously recorded and previously unidentified cultural resources within the survey area. The third component consisted of tribal consultation and interviews with elders, culture bearers, and residents of Angoon with special knowledge of the location and cultural significance of cultural resources in the Favorite Bay area. The sections below describe each of these lines of inquiry in greater detail.

5.1 Literature Review

As part of the literature review regarding previous environmental, historical, archaeological, and heritage resource investigations and known resource sites within the survey area, the FAA's cultural resource consultant reviewed the OHA citation database, Alaska Heritage Resources Survey (AHRS) records and location editor (GIS site locator maps), Alaska Resources Library and Information Services data archives, and the Tongass National Forest Heritage Resources Survey data. Additionally, the FAA's cultural resource consultant reviewed the works of de Laguna (1960), Erlandson and Moss (1983), Moss and Erlandson (1985), all of whom have conducted extensive work in the Angoon area, as well as the broader regional works of Goldschmidt and Haas (1998) and others. The specific data resources of the OHA and AHRS records were reviewed to identify all relevant documentation and information for past archaeological and ethnographic studies and previously documented archaeological sites within 1-mile of the Phase 1 APE. This literature review area is referred to in this report as the "project area".

The archival review indicated that portions of the survey area have been inventoried for cultural resources as part of previous investigations; however, most of these investigations were associated with academic research rather than project development. The FAA's cultural resource consultant re-inventoried all areas within the current survey area that were inspected during these previous efforts. The data acquired from the literature review are discussed at length in section 6.0.

5.2 Field Inventory

As noted previously, field investigations were conducted in July and August 2009. Crews encountered mixed weather, which ranged from clear skies and 70° temperatures to dark, wet, rain-soaked 40° days. Overall, the weather was favorable for conducting cultural resource surveys. Access to the survey areas was gained by foot, boat, or automobile, depending on the area being investigated. Walking conditions varied from moderately easy to very difficult. A dense understory of mosses and blueberry limited ground visibility. In many areas, plant cover was so dense that all but the most obvious signs of human use, such as aboveground resources, would have been covered and reclaimed by the dense vegetation. Because of this limitation, field investigations included subsurface shovel tests and soil probes.

Most of the previously documented and undocumented but known cultural resource sites in the area are located along the shoreline of Favorite Bay. As such, field crews focused particular effort along shoreline areas within the survey area. Numerous bedrock outcrops forming north-south ridges measuring up to 10 m (33 feet) tall were observed within the survey area for Airport Alternative 4. This area, as well as the shorelines, was given particular scrutiny during field studies due to the known association of such outcrops with cultural resource sites elsewhere in the region. All previously documented cultural resource sites in or immediately adjacent to the survey area were also revisited as part of the studies.

5.2.1 SENSITIVITY ANALYSIS METHODS

Because a portion of the survey area is located on lands administered by the USFS, the FAA's cultural resource consultant incorporated the USFS's sensitivity zone model into the approach to field investigations by tailoring the nature of field investigations to include more intensive methods in areas considered high sensitivity zones under the USFS model. The model was established in the Second Amended Programmatic Agreement (PA) Among the USDA Forest Service Alaska Region, the Advisory Council on Historic Preservation, and the Alaska State Historic Preservation Officer Regarding Heritage Resource Management on National Forests in Alaska (USFS 2002). Appendix E of the PA defines sensitivity zones that guide field crews while performing field inventories. High sensitivity zones are defined as follows:

- Land between mean lower low water and 100 feet in elevation above mean high water, with no consideration of slope
- Areas of former lode and placer mining
- River valleys, lake and river systems providing passes or portages across larger land masses
- Lake and stream systems containing or known to have contained anadromous fish runs, including a focus of barrier falls locations in such systems
- Elevated or fossil marine, river, and lake terrace systems
- Caves and rockshelters, areas of karst landforms, and rock formations known for caves and rockshelters
- Areas associated with myths and legends (e.g., traditional cultural properties or cultural landscapes)
- Known sources of potential raw materials (e.g., obsidian sources, exceptional concentrations of cedar trees)
- Alpine areas, if ethnographic or historic evidence or previous surveys conducted nearby indicate cultural use
- Other areas identified through oral history research or other sources

Lands within the survey area that met any one of the above criteria were afforded additional attention beyond simple surface inspection. Field supervisors, using their professional judgment, also defined areas of high probability on the basis of microenvironments encountered during survey even if these areas did not meet any of the above criteria. Based on the criteria of the USFS model, approximately 33% of the survey area was categorized as high sensitivity for cultural resources. All such areas were subjected to subsurface sampling through shovel probes and soil probes.

5.2.2 SURFACE INVENTORY METHODS

The FAA consultant field personnel consisted of two bear guards (Ryan French and George Weekley), four archaeologists (Brian Durkin, Cyrena Undem, Mary Pearce, and Michael Farrell), and one field archaeology supervisor (Omar Ramirez). This team performed an archaeological inventory of the survey area between July 11 and 25, 2009, and again on August 29, 2009. Sheri Ellis (principal investigator), Myra Gilliam (archaeologist for the Admiralty Island National Monument), and Rachel Myron (seasonal archaeologist for the Admiralty Island National Monument) provided additional assistance at various times throughout the field sessions.

Field crews walked each of the airport alternative and access road alternative survey areas while maintaining regular 20-m (66-foot) transect intervals to the extent permitted by vegetation and landforms. In some situations dense, impenetrable vegetation was encountered, making a complete survey impracticable. The crews made every effort to investigate lands covered in dense vegetation. The presence of such dense vegetation may necessitate implementation of an on-site monitoring program during construction, should an action alternative be selected through the EIS process. During the field inventory archaeologists examined the survey area for artifacts, features, and other evidence of cultural occupation, such as shell middens; charcoal-stained sediments; peeled and blazed trees; historic structures, such as dugout foundations and linear sites (e.g., trails, roads, and canals); and historic camps.

All site features, such as site boundaries, tree lines, and distinctive environmental features, as well as point data, such as the site datum, cultural features, shovel probes, and select individual artifacts (e.g., temporally diagnostic tools) were mapped with a Trimble geographical positioning system (GPS) unit when satellite alignment and tree canopy allowed. When GPS signals were unavailable, field crews drew detailed maps to record information obtained by compass and metric tape. These data were later digitized into ArcMap. Field GPS data for sites was post-processed using Trimble Pathfinder software and projected into Universal Transverse Mercator (UTM), Zone 8 North, North American Datum (NAD) 1983. All GPS data were exported into ArcMap 9.3.1 shapefiles and plotted onto the associated georeferenced U.S. Geological Survey (USGS) quadrangle (Sitka B-2) to ensure accuracy; subsequently the data were used to produce location maps of the resources. In addition to the site mapping, project personnel took overview photographs of each resource recorded, with a minimum of two compass bearings. Associated features and diagnostic artifacts were described, measured, recorded with GPS units, and photographed (where photography was illustrative), as appropriate. All non-digital field data including photograph logs, feature forms, site/isolated occurrence forms, shovel probe forms, and hand-drawn maps were recorded on field forms or in field notebooks.

5.2.3 Subsurface Inventory Methods

As noted previously, dense vegetation and groundcover in the survey area may obscure evidence of cultural resources, and the FAA's cultural resource consultant included subsurface sampling in field inspections to help address this issue. A 1-inch soil core was used to investigate soils for the potential to yield cultural resources. This core was also used to probe subsurface soils, mostly by sound and feel, for unidentified shell middens and other unnatural occurrences of materials. When good soils were encountered on lands identified by the model as high sensitivity for cultural resources, shovel probing was conducted.

Under certain conditions, like those found along the shoreline of Favorite Bay, it is reasonable to anticipate the existence of buried cultural deposits based on the known intensity of past land uses in this area. In areas of high probability/sensitivity for site occurrence and low ground visibility, judgmental shovel probing was conducted with probes ranging between 30 and 40 centimeters (cm) (12–16 inches) in diameter and averaging 50 cm (20 inches) deep. Probes excavated deeper than 50 cm (20 inches) were continued to depths allowable by hand tools (i.e., less than 1 m). Excavated soils were sifted through ¼-inch (0.6-cm) screen to identify cultural material. Shovel probes containing cultural material were terminated after two sterile levels (arbitrary 10-cm [4-inch] levels) had been encountered. Where bedrock, hydric soils, or impenetrable tree roots were encountered during subsurface testing, or where the probe was too deep to continue hand excavation, the shovel probe was terminated. Any artifacts uncovered during subsurface probing were documented, bagged, and returned to the hole from which they came. The locations of all subsurface probes were recorded using handheld GPS units with sub-meter accuracy.

5.2.4 AIRPORT ALTERNATIVE-SPECIFIC FIELD METHODS

The surface and subsurface inventory methods described above outline the overall approach to field identification of cultural resources. Because the microenvironment of each airport and access road alternative differs from the others, field crews tailored the application of the overall approach to specific portions of the survey areas. The following sections discuss the specific approach to each airport alternative.

Airport Alternative 12a

Airport Alternative 12a is situated on a northwest–southeast alignment paralleling the greater Angoon Peninsula (see Figure 3). The road to the village water treatment facility parallels the Airport Alternative 12a to the northeast, and Killisnoo Harbor is located to the southwest. An all-terrain vehicle trail provided clear pedestrian access to the south end of the survey area.

Field crews found the soils along the southwest margin of the airport survey area to be largely hydric and difficult or impossible to screen. The field approach was to look for higher ground above the hydric soils and out of the swampy areas. After walking the entire survey area for this airport alternative, the field archaeologists focused their shovel probing efforts in the northern portion of the survey area, which, based on professional opinion, appeared to have the highest potential for cultural resources.

The extremely wet conditions in the survey area support densely growing vegetation, including thick patches of devil's club, skunk cabbage, and alder. On occasion the field crew was forced to deviate from their parallel transects to avoid dense vegetation or standing water.

Airport Alternative 3a

Airport Alternative 3a is situated in a northeast–southwest orientation with the southwest end of the airport survey area beginning just off the shoreline of Favorite Bay (see Figure 3). Vegetation was densest in the southwestern part of the survey area (i.e., from Favorite Bay upland for 500 m) but thinned out toward the middle of the survey area. Subsurface sampling was carried out in the southwestern portion of the survey area, because this area was categorized as a high sensitivity zone for cultural resources based on the aforementioned criteria. Shovel probing was conducted in locations that field supervisors deemed as having the highest likelihood of buried or obscured cultural resources. Soils in the survey area were mixed evenly between wet hydric soils and drier organic soils overlying bedrock.

Numerous sphagnum meadows with standing and running water were identified in the northeastern portion of the survey area. Soils around the meadows were hydric and were only investigated visually.

Airport Alternative 4

Airport Alternative 4 is situated in a northeast—southwest orientation beginning near the shoreline at the head of Favorite Bay, north of Favorite Creek and south of an unnamed lake (see Figure 3). Vegetation in this survey area is made up of spruce-hemlock overstory and blueberry understory. The blueberry was especially thick in the southwestern half of this survey area. The southwestern third of the survey area was categorized as having high sensitivity for cultural resources based on elevation, proximity to Favorite Creek, and other factors. The area surrounding the unnamed lake near the northeastern extent of the survey area was also categorized as a high sensitivity area. As noted previously, numerous areas of bedrock outcrops were investigated near the lake. All of the high sensitivity areas were subjected to intensive inspection, including subsurface sampling.

5.3 Consultation and Interviews

Consultation was undertaken in advance of this report to identify and evaluate cultural resources within the survey areas for the airport and access road alternatives. This consultation includes federally recognized tribes and Alaska Native organizations, Native corporations, local individuals, and other interested parties. While this technical report marks a milestone in the consultation process, it does not constitute an end to that consultation. The FAA will continue to consult with the agencies, Tribe, and other consulting parties throughout the preparation of the EIS and until the Section 106 process of the NHPA has been completed. Future consultation will specifically address findings of effect from the proposed project; however, FAA will also continue consultation related to identifying historic properties that could be affected by the undertaking.

Among the agencies consulted to date regarding cultural resources and the project APE are the Alaska SHPO and the USFS. This consultation has occurred through a combination of written correspondence, meetings, and informal conversations.

Consultation is also being undertaken by the FAA with the tribal council of the Angoon Community Association (the federally recognized tribal government in Angoon) and the Central Council of the Tlingit and Haida Indian Tribes of Alaska. Consultation is occurring at a government-to-government level to the extent desired by the tribes themselves. The FAA Angoon Airport Project Manager is leading these consultation efforts. Consultation to date has consisted of meetings and written correspondence. Government-to-government consultation will occur throughout the life of the project.

In addition to the government-to-government consultation with federally recognized tribes, the FAA is soliciting the input of the appropriate Native corporations. Sealaska Corporation is the regional corporation for the area, and Kootznoowoo, Inc. is the village corporation. The FAA has contacted these corporations through written correspondence, telephone conversations, and in-person meetings. Throughout the EIS process to date, the FAA has invited, and will continue to invite, representatives of the corporations to participate in project-related group meetings with regulatory agencies and other parties.

The final category of parties engaged by the FAA in discussions about cultural resources in the survey area is individual elders and culture bearers in the Angoon community and the non-governmental organizations Friends of Admiralty Island (FOA) and Southeast Alaska Conservation Council (SEACC). The FAA's cultural resource consultant conducted numerous interviews with individual elders and culture bearers in Angoon. Using maps, aerial photographs, and field visits, consultant staff members requested information on known cultural resources; general land uses in the past; traditional, myth, or legend sites; and current cultural uses of lands and sites that could be affected by any of the airport or access alternatives. Many individuals interviewed expressed concern about divulging such information, citing past instances in which agencies or others have removed artifacts from the area and taken them to curation facilities or museums outside of Angoon and Southeast Alaska. Given this sensitivity, the FAA and its consultant have ensured confidentiality of specific site information to the extent allowable by law but will use the information to thoroughly assess potential project

impacts and refine alternatives as appropriate to avoid or minimize impacts. Interviews and discussions with elders and community members will continue throughout the life of the project.

While not specifically focused on cultural resources, members of FOA and SEACC have a wealth of knowledge about cultural resources in the vicinity of Favorite Bay and general cultural tradition in the area. FOA and SEACC have been engaged by the FAA in general project discussions as part of the public involvement program for the EIS, and several of the discussions have addressed cultural resource issues. The inclusion of these parties in discussion of cultural resources in the Angoon area was focused on identifying known resources rather than evaluating the cultural significance of these resources and was geared at taking advantage of the collective knowledge of NGO members who have spent considerable time in and around of the area of Angoon. Evaluation of the cultural significance of cultural resources identified in the survey area was carried out by FAA in consultation with the USFS, ACA, SHPO, DOT&PF, and other consulting parties having either a designated role in the Section 106 process or ascribing patrimonial affiliation to the resources in question.

6.0 Previous Research and Known and Potential Cultural Resources in and around the Phase 1 APE

The locations of the airport and access alternatives and the surrounding lands have been subject to several previous assessments for historical, architectural, archaeological, and cultural resources potential. Cultural research and archaeological investigations have been formally documented since the 1940s, spurred by academic interest, and more recently, by undertakings requiring compliance with Section 106 or Section 110, or both, of the NHPA (36 CFR 800). Many of these studies have been conducted by the USFS or in conjunction with proposed development. Table 1 summarizes past cultural resource investigations within a 1-mile buffer around the Phase 1 APE, referred to as the file search study area. Following the table are more detailed discussions of these investigations and known and potential cultural resource sites in the Phase 1 APE.

6.1 Academic Research

Academic documentation of traditional lifeways and activities of Alaska Natives (primarily Tlingit) of Admiralty Island began in the mid 1940s with the research of Goldschmidt and Haas (1946; republished 1998). The duo conducted extensive ethnographic work through greater Southeast Alaska, focusing on the Tlingit and Haida peoples. Their early work, published in 1946, documented the geographic locations of distinct clans and moieties, traditional use areas, and subsistence hunting and fishing areas. Goldschmidt and Haas continued to chronicle the historical and contemporary lifeways of the Tlingit peoples for nearly 50 years through the transcription of stories and ethnographic interviews they conducted with Tlingit and Haida tribal members (Goldschmidt and Haas 1998).

De Laguna began her intensive academic studies on Admiralty Island in the mid 1950s (de Laguna 1960). De Laguna's work recorded the traditional use areas of the Tlingit peoples of Angoon. During this research she identified and gathered preliminary documentation on a variety of heritage sites ranging from structures such as forts and fish weirs to archaeological sites such as garden rows and shell middens. Many of the sites identified by de Laguna are located around Favorite Bay. De Laguna documented the oral histories associated with many of the sites and sought to understand their significance to the people of Angoon. Subsequent research at sites identified by de Laguna in the general Angoon area has included limited testing and excavation and has provided invaluable data for understanding the past uses of the area. Sites in the file search study area that de Laguna visited are SIT-00295, SIT-00303, SIT-00305, SIT-00306, SIT-00169, SIT-00177, SIT-00014, and SIT-00015.

Using de Laguna's work as a guide, Moss and Erlandson began their research on Admiralty Island in the early 1980s. Moss, a USFS employee at the time, and Erlandson, an instructor at the University of California, Santa Barbara, used baseline USFS data as a stepping stone to academic research, culminating in Moss's 1989 dissertation, *Archaeology and Cultural Ecology of the Prehistoric Angoon Tlingit*. Moss and Erlandson's work has helped to establish the cultural chronology of Angoon by focusing on archaeological sites and testing carboniferous materials located within features of the sites. Their work has also documented the traditional uses of many of the natural resources located within and around Admiralty Island through analysis of faunal remains at three primary site types: villages, forts, and fishing sites (Moss 1989). Moss and Erlandson conducted archaeological excavations at many site locations around Angoon, and the resulting data complements de Laguna's archaeological research and contributes to a much broader view of traditional lifeways in Angoon (Moss 2004). Moss's work continues today through the University of Oregon. Traditional or heritage sites documented by Moss and Erlandson within the file search study area are SIT-00169, SIT-00262, SIT-00295, SIT-00124, and SIT-00033.

While not entirely academically based, Sealaska Corporation's publication *Native Cemetery and Historic Sites of Southeast Alaska* (Sealaska Corporation 1975) also provides valuable information about cultural resources in the general area of Angoon. Published in 1975, Sealaska's study identifies sites that could be eligible for conveyance as historic or cemetery sites under section 14(h)1 of the Alaska Native Claims Settlement Act.

Table 1. Previous Investigations within the File Search Study Area

Report Title	Author (Year)	Resources Identified within the File Search Study Area
Possessory Rights of the Natives of Southeastern Alaska	Goldschmidt and Haas (1946)	SIT-00302 ¹
The Story of a Tlingit Community: A Problem in the Relationship Between Archaeological, Ethnological, and Historical Methods	de Laguna (1960)	SIT-00295, SIT-00303, SIT-00305, SIT-00306, SIT-00169, SIT-00177, SIT-00014, SIT-00015
Cultural Resource Investigation at Killisonoo [sic] Harbor	Fields and Davidson (1979)	SIT-00015, SIT-00169, SIT-00177, SIT-00680, SIT-00014
Archaeological Reconnaissance of Favorite Bay, Admiralty Island	McAfee et al. (1982)	SIT-00302 ¹
Results of Archaeological Reconnaissance on Admiralty Island National Monument, Southeast Alaska	Erlandson and Moss (1983)	SIT-00169, SIT-00262, SIT-00295
Preliminary Results of Archaeological Investigations on Admiralty Island, Southeast Alaska: 1985 Field Season	Moss and Erlandson (1985)	SIT-00124
1989 Archaeological and Historical Site Monitoring Program for the Chatham Area, Tongass National Forest	Lively and Davis (1989)	SIT-00015
Archaeology and Cultural Ecology of the Prehistoric Angoon Tlingit	Moss (1989)	49SIT124, 49SIT33
The Antiquity of Tlingit Settlement on Admiralty Island, Southeast Alaska.	Moss et al. (1989)	SIT-00124, SIT-00033
A Cultural Resource Management Plan for Admiralty Island National Monument - DRAFT	Mobley (1994)	-

Table 1. Previous Investigations within the File Search Study Area

Report Title	Author (Year)	Resources Identified within the File Search Study Area
Haa Aani Our Land: Tlingit and Haida Land Rights and Use	Goldschmidt and Haas (1998)	SIT-00302 ¹
Cultural Resources Inventory of the Angoon Proposed Airport	Yarborough (2005)	SIT-00169, SIT-00680, SIT-00262, SIT-00033, SIT-00302, SIT-00502, SIT-00034
Archaeological Investigation of Cape Addington Rockshelter: Human Occupation of the Rugged Seacoast on the Outer Prince of Wales Archipelago, Alaska	Moss (2004)	-

Note: Data obtained through USFS Tongass National Forest Heritage Resources Archives, and OHA, Anchorage.

While the sites documented by De Laguna and Moss and Erlandson are located in the general airport and access road file search study area, they are located outside of the Phase 1 APE. However, the information obtained by the work of these researchers is valuable in identifying the types of archaeological, historic, and heritage resources that occur in the area. Since the majority of these studies focused on the immediate shorelines of Favorite Bay, Mitchell Bay, and other bays and inlets in and around Angoon, they are most useful in predicting coastal site locations and types; they provide less information about upland site types and locations. The results of these studies clearly indicate intensive prehistoric and historic use of shorelines in the area and suggest that any airport or access road alternative extending into the immediate shoreline area would have a high probability of encountering archaeological, historic, and traditional resources.

6.2 Federally Mandated Investigations

Proposed development, improvements to existing infrastructure, and resource management needs have triggered nine research investigations in the vicinity of the file search study area under Sections 106 and 110 of the NHPA. The following section describes these efforts.

Most of the land on Admiralty Island is managed by the USFS, and a number of research efforts have been completed by the agency over the last 30 years. The proposed construction of the Killisnoo Harbor Pipeline triggered a cultural resources review of the proposed pipeline route under Section 106. This project and its related investigations were located along the western edge of Admiralty Island (Fields and Davidson 1979). The investigation was conducted by USFS archaeologists and consisted of a pedestrian survey along the shorelines and higher-probability areas. The survey was supplemented with limited excavation of test units. Four sites were identified and addressed during this effort: SIT-00177, SIT-00680, SIT-00169, and SIT-00015.

Efforts to establish hydroelectric facilities on Admiralty Island for the benefit of the community of Angoon began in the 1980s, after provisions for such facilities were included in the Alaska National Interest Lands Conservation Act. In the early 1980s, a hydroelectric facility, along with a fish hatchery and electric powerhouse, were proposed and feasibility studies were begun. The USFS conducted a cultural resource reconnaissance to assess potential impacts to resources resulting from the geotechnical drilling associated with the study (McAfee et al. 1982). The investigation documented sites SIT-00302 and SIT-00034.

The FAA's cultural

resource consultant team revisited this site during the studies for the current undertaking and conducted

¹ Site is in the current survey area.

additional investigations to establish the NRHP eligibility of the site. Section 7.0 of this document provides more information about this site. SIT-00034 is located outside the anticipated disturbance zones of the airport and access road alternatives under consideration in the EIS.

During the 1990s, the USFS began a series of site monitoring projects, which consisted of revisiting known sites to document their current condition and identifying and documenting newly discovered sites. These monitoring activities focused on the Chatham Straight area (Lively and Davis 1989). In 1994 the USFS contracted to Charles Mobley and Associates to prepare a cultural resource management plan for Admiralty Island National Monument (Mobley 1994). The plan, which was never finalized, established a cultural chronology for the island, using a combination of ethnographic interviews and data collected over the years by academic scholars and USFS archaeologists, and set forth the management direction at the time. A key component of the plan was a complete re-inventory of all known cultural resource sites and traditional land use areas located on Admiralty Island National Monument lands, which numbered more than 50. Of the sites identified in the plan by Mobley, none are located within the file search study area. Since the completion of the plan, the USFS has conducted additional monitoring of known archaeological sites, including those around Favorite Bay. Specifically, SIT-00302 has been subject to such monitoring.

In 2003 fieldwork was conducted in and around the community of Angoon by Cultural Resource Consultants (Yarborough 2005) for the proposed Angoon Airport project (which has undergone many phases and investigations during the efforts to move the project forward and reach NEPA compliance). The resulting report from the 2003 investigations indicates that the goal of the fieldwork, which was referred to as a "field reconnaissance", was to identify some, but not all, cultural resources that may be affected by the locations of the proposed project's airport and access alternatives in an effort to identify the archaeological sensitivity of the general area of the airport and access alternatives (Yarborough 2005). Coastal, estuary, and wetland areas were not investigated, and the resulting findings consisted of a handful of cut stumps and culturally modified trees. Previously identified sites SIT-00169, SIT-00680, SIT-00262, SIT-00033, SIT-00302, SIT-00502, and SIT-00034, located in the file search study area, are discussed and further documented in the report.

The most recent known study associated with cultural resources in the vicinity of the file search study area was the documentation by the USFS of a Tlingit legend site,

As with the aforementioned academic research, most of the studies carried out under federal mandate have occurred within the shoreline areas of bays and other waterways around Angoon. These studies further confirm the intensity of prehistoric and historic uses of this landform.

6.3 Known and Potential Sites and Resources in the General Area around the Angoon Peninsula and Favorite Bay

As noted, the various investigations described above resulted in the identification of numerous cultural resource sites in the immediate vicinity of the general area around the Angoon peninsula and Favorite Bay. Additionally, these studies yielded information that suggests other resources may be present although they have not yet been identified or documented. This section further summarizes the known and potential cultural resources in the file search study area. While most of the known resources are located outside of the Phase 1 APE and in portions of the file search study area that are not expected to experience any effects from the proposed undertaking, they provide valuable insight into the array of site types—from maritime subsistence sites to garden sites to legend sites—that are found in the general area.

6.3.1 ALASKA HERITAGE RESOURCES SURVEY SITES AND U.S. FOREST SERVICE HERITAGE RESOURCE SITES

The OHA maintains a database of archaeological and historical resources identified and documented within the state. This information is referred to as the Alaska Heritage Resources Survey. The vast majority of resource information in the database is derived from inventories conducted in advance of federal undertakings or other projects subject to state and federal preservation laws. Other resources have been added to the database as a result of academic studies and other scientific investigations. Similarly, the USFS maintains an internal archive of documented, and undocumented but known, resources. Much of this resource information is a result of USFS archaeologists inventorying the agency's lands in conjunction with planning, management, and maintenance activities. As noted above, the records of the OHA database and the USFS were examined as part of the resource identification efforts associated with this technical report. The OHA and USFS records included information on 19 documented archaeological and heritage sites within the file search study area. These resources are listed in Table 2 and discussed below. Only one of these, SIT-00302, is located wholly or partly within the current cultural resources survey area.

The 19 previously documented sites represent a variety of prehistoric and historic activities and include such resources as buildings and structures, forts, cemeteries, middens, garden rows, fish weirs, village or other occupation sites, and a legend site. Most are affiliated with past Tlingit occupation of the area, although some are associated with the activities of Euro-Americans or others. No NRHP eligibility determinations are on file for any of these previously documented sites. Figure 4 shows the locations of these sites.

As noted, the only previously documented heritage resource located within an area that may be directly affected by any of the airport or access alternatives currently under consideration in the airport EIS is SIT-00302. This site is known as the Favorite Bay Garden Site. It was first documented by Goldschmidt and Haas in 1946, and the USFS also reported on the site (McAfee et al. 1982). The site was formally entered into the OHA site archives as a result of its documentation by Moss and Erlandson in 1985. Since that time, the USFS has periodically monitored the condition of the site, which contains historic Tlingit garden rows, cultivated crabapple trees, and blazed trees. The site may be related to the adjacent fish weir site, SIT-00033, located to the west of site SIT-00302.

Table 2. Documented Cultural Resources	I acated within the	File Search Study Area
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Alaska Heritage Resources Survey Number	Site Type	Site Name	Eligibility
SIT-00302*	Historic Tlingit garden	Favorite Bay Garden Site	Undetermined
SIT-00169	Historic Tlingit occupation site	Ketintci-'an (Killisnoo Harbor Village)	Undetermined
SIT-00033	Prehistoric/historic stake fish weir	Favorite Bay Fish Weir	Undetermined
SIT-00502	Historic Tlingit garden	Garden Site	Undetermined
SIT-00177	Historic Tlingit site/possible fort/cemetery remains	South Killisnoo Village (Dadakatak Nuwu/Dasuqtag- an/Potato Point)	Undetermined
SIT-00262	Prehistoric midden	Dukdeiyukutun As Midden	Undetermined

Table 2. Documented Cultural Resources Located within the File Search Study Area

Alaska Heritage Resources Survey Number	Site Type	Site Name	Eligibility
SIT-00680	Historic Euro-American water system	Water Flume	Undetermined
SIT-00749	Historic Aleut and Russian Orthodox cemetery	Killisnoo Cemetery	Undetermined
SIT-00014	Historic Tlingit village/Euro-American commercialism [graves, village site, cannery remains]	Killisnoo (Killisnoo Ruins/Kenasnow/ KanasNu/Killishoo/ Killisnoo Island Village)	Undetermined
SIT-00056	Historic religious buildings site	St. Andrew Church (Russian Orthodox)	Undetermined
SIT-00015	Prehistoric/historic Tlingit fort/cemetery	Killisnoo Harbor Fort and Cemetery	Undetermined
SIT-00124	Prehistoric Tlingit site	Killisnoo Picnicground Midden	Undetermined
SIT-00305	Historic Tlingit garden site	Kootznahoo Roads Garden	Undetermined
SIT-00306	Historic Tlingit cabins and midden site	Scott's Ranch and Midden	Undetermined
SIT-00307	Historic Tlingit structure, garden, and midden site	Kenasnow Camp and Midden	Undetermined
SIT-00295	Prehistoric/historic Tlingit occupation site [cabins/lithics/middens/cache pits]	Ta Uk Aan Nee Shoo (Takwanicu/End of Winter Village)	Undetermined
SIT-00303	Historic Tlingit site	Xicwan-'ani (Fisherman's Town)	Undetermined
SIT-00034	Prehistoric/historic Tlingit site	Favorite Bay Midden/Garden	Undetermined
SIT-781 [USFS]	Prehistoric/historic legend site	Beaver Tail Rock	Undetermined

^{*} Resource located within current survey area.

6.3.2 SEALASKA CORPORATION AND ANGOON COASTAL MANAGEMENT PLAN SITES

Two other sources of information about known and potential cultural resource sites in the general project area are the aforementioned Sealaska Corporation's 1975 publication *Native Cemetery and Historic Sites of Southeast Alaska* (Sealaska Corporation 1975), and the now void Angoon Coastal Management Plan (City of Angoon 1992). Several of the sites reported by these two sources are also documented in the Alaska Heritage Resources Survey program (see Table 2); these consist of Killisnoo Harbor Fort, Killisnoo Harbor Village, Killisnoo Island Village, South Killisnoo Village, and Sullivan Point Favorite Bay Village. Several others of the sites are located well outside the file search study area and will not be considered further as part of the EIS and related studies. These sites consist of Turn Point Village, Channel Point Village, Danger Point Village, Stillwater Anchorage Fort, and Kootznahoo Roads Petroglyph.

Three other potential sites were identified through the Sealaska and Angoon Coastal Management Plan sources; however, their exact locations are not known. These sites consist of the Angoon Favorite Bay Seasonal Village, Favorite Bay Village Site, and South of Angoon Burial Site. The FAA consultant's cultural resource field crews attempted to identify the locations of these sites through interviews with local elders, but the names of the sites as published were not recognized, and the elders were unsure as to what locations they represented.

6.3.3 BURIALS AND HUMAN REMAINS

Individual burials and historic cemeteries are present in a variety of locations around Angoon and the broader landscape surrounding the village. Table 2 identifies those formally documented sites containing human remains that are within the file search study area. None of these sites are located in areas that would be directly or indirectly affected by development of an airport and associated access road at any of the locations under study in the EIS. However, given the intense history of long-term occupation of the Angoon and Favorite Bay area, it is likely that additional, yet-to-be-identified burials are present in the general area.

Goldschmidt and Haas (1998:14) refer to a burial on an island in Favorite Bay, as does de Laguna (1960:46). De Laguna notes that "a Decitan man is buried on the little island off the north shore of Favorite Bay, near the upper entrance to the lagoon behind Sullivan Point Island." The exact location of the island described by de Laguna is unknown, and no elders interviewed about known and potential cultural resources in the file search study area could or would confirm the location of any burials in the Favorite Bay area. The cultural resource survey area for Airport Alternative 3a encompasses an island in Favorite Bay, and the FAA's cultural resource consultant team thoroughly examined this island and found no evidence of any burials.

7.0 SURVEY RESULTS

No new archaeological, historical, or traditional/heritage sites were identified during the field inventory. The FAA's consultant team documented one new isolated occurrence and revisited and conducted additional investigations at one previously recorded site. In the State of Alaska an isolated find, or isolated occurrence, is defined as consisting of a single artifact, whereas sites are defined as occurrences of two or more artifacts. Field crews revisited one previously documented site to confirm its location relative to the survey area but did not update the site record. Additionally, field crews identified in the survey area numerous culturally modified trees (CMT), which are ubiquitous across Southeast Alaska. Information about all of these resources is provided below. The locations of the CMTs, the newly documented isolated occurrence, and the updated archaeological site are depicted on Figure 5.

The information in this figure is protected by Federal law. It is not for public release.

Figure 4. Locations of previously documented sites.

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The information in this figure is protected by Federal law. It is not for public release.

Figure 5. Locations of CMTs, newly documented isolated occurrence, and updated archaeological site.

7.1 Newly Documented Isolated Occurrence

One new isolated occurrence was identified during field survey, and consists of a historic boring or jackhammer bit.

Field Isolate Number: OR71209-1

Site Type: Historic boring bit or jackhammer bit

Temporal Component(s): Historic mining or logging

Physiographic Province: Admiralty Island/Southeast Alaska

UTMs (NAD83):

Legal Description:

USGS Topographic Quad and Sheet:

City/Village, State: Angoon, Alaska **Landowner:** Kootznoowoo, Inc.

NRHP Eligibility Recommendation: Not Eligible

Description:

The steel bit measures 25 inches long and 0.75 inch thick. It has a slight counterclockwise twist to it (Figure 6). It is octagonal in cross section and pointed on one end where it has four sides that appear to have been hand-forged, as they are rather roughly shaped. The pointed portion of the bit measures approximately 4 inches long (Figure 7). The entire bit is badly rusted, suggesting it has been exposed to the elements for a prolonged period. Artifacts relating to historic mining and logging are common throughout the greater Angoon area. No other artifacts, features, or other cultural materials were found in association with this item.



Figure 6. Isolate OR71209-1, historic boring or jackhammer bit.



Figure 7. Close-up of pointed end of bit.

7.2 Updated Site

No determination of the site's eligibility for the

NRHP had been made as a result of its earlier documentation. Field crews revisited the site to evaluate its current condition and gather additional data necessary to make a recommendation of NRHP eligibility to the FAA and USFS. The relevant information about the site and the consultant team's NRHP evaluation follow.

Field Site Number: SIT-00302

Site Type: Historic garden and pre-contact lithic scatter

Temporal Component(s): Historic garden; unknown prehistoric/historic

Physiographic Province: Admiralty Island/Southeast Alaska

UTMs (NAD83):

Legal Description:

USGS Topographic Quad and Sheet:

City/Village, State: Angoon, Alaska

Landowner: USFS, Tongass National Forest, Admiralty Island National Monument

NRHP Eligibility Recommendation: Eligible under NRHP Criterion D

Period(s) of Significance: Prehistoric (Middle and Late Periods: 5,000 B.P. to A.D. 1741) and Ethnographic

Period

Description:

In 1982 a USFS crew conducting an

archaeological reconnaissance of Favorite Bay recorded and mapped SIT-00302. The site was reported as a historic garden site in 1985 by Moss and Erlandson, and was noted in 1946 by Goldschmidt and Haas.

Upon revisiting the site for the airport project, the FAA's cultural resource consultant team found the site still retained much of what was described in the original site description. However, the collapsed shelters and "shelf," which were identified during previous documentations, could not be found.

The Favorite Bay Garden Site consists of extensive garden plots stretching for 70 –75 m (230 –246 feet) in an L-shaped pattern of elevated rows (Figures 10 and 11), which are oriented perpendicular to the shoreline of Favorite Bay. The garden rows, measuring approximately 5–15 m long (16.4–49.2 feet), are just inside the forest fringe and have spruce trees, some of which are up to 75 cm (29.5 inches) in diameter, growing on top of them. There are 13 furrowed garden rows oriented east–west in the northwest portion of the site and 31 furrowed garden rows oriented north–south in the southern portion of the site. Farther inland from the garden rows is an open 20 × 30–m (65.6 × 98.4–foot) area consisting of a flat natural terrace with crabapple trees on its south end. A major tidal channel of Favorite Creek with a stake fish weir (SIT-00033) is located to the west of the site and may be associated with subsistence activities at SIT-00302 (see Figure 4 for location of SIT-00033). In addition to the garden rows, two other distinct features were identified. Feature 1 is located in the southwest portion of the site, and Feature 2 is located in the northernmost portion of the site



Figure 8. Overview of SIT-00302, view facing south from the northern edge of the site.



Figure 9. Overview of SIT-00302, view facing west and overlooking the datum.

The information in this figure is protected by Federal law. It is not for public release.

Figure 10. Site map of SIT-00302 with locations of shovel probes.

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Figure 11. Raised furrowed garden rows (running from left to right) at SIT-00302, view facing northeast.

Feature 1 (Figure 12) is a stone-ringed hearth made up of seven visible stones. It is slightly oval in shape, measuring roughly 1.1×1.0 m (3.6×3.1 feet). The stones are approximately 50% covered in moss and are almost completely silted in. The hearth is located near the southwestern site boundary, just inside the tree line. A small amount of modern trash was observed in the vicinity of the hearth, suggesting the area is still used as a camping or resting area.

Feature 2 (Figure 13) represents a culturally modified tree with multiple cuts through the bark to remove pieces of wood for fire starter. Pitch wood is a very good source of fire starter and will burn easily in wet conditions. The stripped area of the tree is large, covering approximately one-third of the tree's circumference.

NRHP Eligibility Investigations and Recommendation: During the revisit to the site, there were two main goals: 1) establishing the site's boundary and condition and 2) gathering sufficient information to make a recommendation of eligibility for the NRHP. To these ends, surface evidence of the site was examined and limited subsurface sampling was conducted through soil and shovel probing. Some portions of the site boundary were based on topographic features that form clear limits on the extent of a garden site, such as the waterline of Favorite Bay.

In all, 27 shovel probes measuring 30–40 cm (12–16 inches) in diameter were excavated across the site. Depth of the shovel probes ranged from 28 to 70 cm (11 to 28 inches) below surface (cmbs) depending on the gravel, bedrock, and root content of 10-m (30-foot) intervals. Twelve of the probes were placed north of the site's visible boundary based on features, and eight probes were placed east of the site's previously defined boundary. The site's south and west boundaries are established by tidal waters. Soils were sifted through ¼-inch-mesh screen and inspected for cultural materials. The shovel probes were supplemented by 50 soil probes excavated with a 1-inch auger. See Figure 10 for the location of the shovel probes and Appendix A for a table of relevant information for all shovel probes.



Figure 12. Feature F1, stone-ringed hearth, at SIT-00302, view facing northwest.



Figure 13. Feature F2, a CMT with pitch cuts, at SIT-00302, view facing north.

Seven evenly spaced shovel probes were placed along a north–south line within the previously defined western perimeter of the site. An additional 20 shovel probes were excavated on a north–south grid, spaced at 10-m (30-foot) intervals. Twelve of the probes were placed north of the site's visible boundary based on features, and eight probes were placed east of the site's previously defined boundary. The site's south and west boundaries are defined by tidal waters. Soils were sifted through ¼-inch-mesh screen and inspected for cultural materials. A minimum of two consecutive negative shovel probes beyond the site's previously defined boundary were deemed appropriate to verify the established site boundary. Soil probes using the auger were randomly placed throughout the site.

During shovel probing six lithic artifacts were uncovered. All were found in the seven shovel probes placed within the western perimeter of the previously defined site boundary. No artifacts were found during excavation of the additional 20 shovel probes excavated beyond the boundary defined by surface features.

Of the six artifacts uncovered within the site, one is chert, one is obsidian, and four are silicified sediment. Three of the artifacts are tertiary flakes and three are secondary reduction flakes. One of the artifacts is size class 2 (1–2 cm); three artifacts are size class 3 (2–3 cm); and two artifacts are size class 4 (3–4 cm). Of particular importance is the obsidian artifact, which is an obsidian microblade midsection (Figures 14 and 15). The artifact was found in shovel probe 145. Microblade technology is known to be associated with the early prehistory of Alaska, and this is the first documented microblade known to be found on Admiralty Island. Microblades have also been found roughly 30 miles to the southwest across Chatham Straight, at the Hidden Falls archaeological site. The microblade assemblage at Hidden Falls was dated to approximately 9000 B.P. (Ackerman 2007). Groundhog Bay II Site is another Southeast Alaska microblade site. It is located at the confluence of Chatham Strait and Icy Strait, and its microblade assemblage was dated to around 10,000 B.P. (West 1996). In North America, microblades are primarily found throughout Alaska, Oregon, Washington, and western Canada. The earliest examples of microblades originate in Asia and date from 40,000 to 30,000 B.P. (Yaroslav et al. 2007).

While few of the shovel probes and none of the soil probes yielded subsurface artifacts, the presence of the microblade found in a subsurface context is significant. Shovel and soil probing can, at best, be considered a reconnaissance-level sampling of a site and not a definitive determination of the full presence/absence of cultural materials. The recovery of the microblade and other subsurface artifacts, though limited in number, suggests not only that intact cultural deposits may be present at the site but also that the site may have far greater antiquity than previously believed. The microblade, with appropriate analysis, has the potential to yield information about the obsidian source, possible trade relationships, and/or toolstone procurement strategies. Additionally, the presence of the microblade at SIT-00302 is consistent with speculation that the site may be temporally associated with the 3,000-year-old fish weir (SIT-00033) located just offshore in Favorite Bay. However, further research into site SIT-00302 will be needed to confirm such an association. Regardless of whether site SIT-00302 is indeed associated with the fish weir, it is evident from the recovery of the microblade that the site has yielded information and has the potential to yield additional information to significantly refine existing knowledge regarding the little understood prehistory of the Favorite Bay area. For these reasons, site SIT-00302 is recommended as eligible for the NRHP under Criterion D.

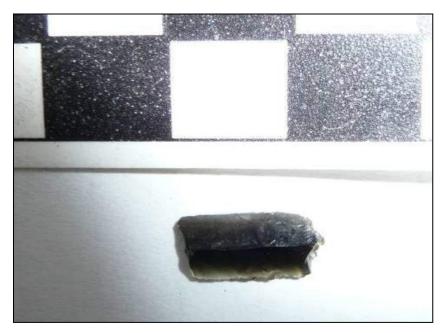


Figure 14. Dorsal view of microblade fragment recovered from shovel probe 145 at SIT-00302.



Figure 15. Ventral view of microblade fragment recovered from shovel probe 145 at SIT-00302.

7.3 Culturally Modified Trees within the Survey Area

Nine CMTs were identified during field surveys (see Figure 5). These trees were documented similarly to isolated occurrences. Three varieties were noted, including blazed trees, springboard trees, and pitch-cut trees. No clusters or stands of CMTs were identified. Rather, the CMTs are distributed randomly across the survey areas.

Blazed trees (Figure 16) were identified as having a small to large scar cut through the bark; they generally appear to mark trails or property boundaries based on their proximity to such features. Many of the blazed trees were found on the boundary line between stands of trees of different age classes, suggesting the blazes were used to mark old timber units.

Springboard trees (Figures 17 and 18) are typically associated with historic logging. Springboard notches are found at about chest height on large trees throughout Southeast Alaska and the Pacific Northwest. A deep notch is cut into a tree and a plank is inserted (end-in) into the notch to provide a place for a logger to stand while swinging an axe or wielding a cross-cut saw to cut the tree at an acceptable location above its base.

Pitch-cut trees are cut through the bark near their base at an angle and allowed to bleed sap or pitch (Figures 19 and 20). Pitch has many uses, including as fire starter, binding agent, glue, and waterproof sealant.

While CMTs can be eligible for the NRHP – typically under Criterion A for associations with historical events or land uses or Criterion D for information potential – the trees need to meet certain criteria. In general, CMTs associated with the early historic period or prehistoric period or those associated with significant events or themes regardless of their time period are more likely to be determined eligible for the NRHP. More recent CMTs or CMTs associated with non-significant land uses or themes are less likely to be considered eligible. Those found in association with other archaeological sites are likely to be considered to be a contributing feature of the site rather than eligible in their own right.

Of the CMTs identified during the survey <u>and</u> not associated with other archaeological sites, nearly all are springboard trees or blazed trees associated with historic logging activity. As noted in section 4.1.3 of this report, logging was never a significant activity in the Angoon area of the Tongass National Forest. Minor logging events did occur but did not play the role in shaping the economy or land use that such logging has played in other areas of Southeast Alaska. For these reasons, the CMTs associated with logging are not considered historically significant or eligible for the NRHP.

Two pitch-cut trees were found during the survey. One is associated with site SIT-00302, and the other was found independent of any other cultural resources. The one present on site SIT-00302 is considered a contributing feature of that site. The isolated pitch-cut tree still retains visible axe cut marks suggesting that while it may be from the historic period, it dates to the more recent part of that period. This conclusion is bolstered by the small, second-growth nature of the tree. Although pitch-cut trees are most commonly associated with Alaska Native land uses and activities, the relatively recent nature of this particular specimen in association with stands of trees logged by Euro-Americans suggests the tree could be associated with other land uses and non-native cultures. This lack of clear association supports a recommendation that this CMT is not eligible for the NRHP.



Figure 16. Close-up of a tree blaze.



Figure 17. A large springboard stump, view facing northwest; note crew member for approximate scale of stump.



Figure 18. Close-up of a springboard notch.



Figure 19. A pitch-cut tree from SIT-00302, view facing northeast.



Figure 20. A pitch-cut tree, view facing southeast.

8.0 Management Summary

The DOT&PF has proposed a land-based airport and associated access road for the community of Angoon in Southeast Alaska. The DOT&PF has requested funding from the FAA for the proposed project. Prior to authorizing any funding or approving the proposed airport layout plan, the FAA is conducting an evaluation of potential environmental impacts through the preparation of an EIS. Through the EIS, the FAA is considering alternatives to the DOT&PF's proposed action to evaluate and compare anticipated impacts to the natural and cultural environment. The FAA is considering three airport location alternatives, including the DOT&PF's proposed location at Airport Alternative 3a, and various access alternatives to reach those locations. Because two of the airport location alternatives are located on Monument–Wilderness Area lands, which are administered by the USFS, the FAA is working closely with the USFS in fulfilling requirements under both NEPA and the Section 106 process of the NHPA.

Among the studies conducted in association with the EIS are those related to archaeological, historical, and cultural resources. The studies conducted to date are reported here and consist of pedestrian inventory with limited subsurface probing in high-sensitivity areas, interviews with local elders, and archival research. While many archaeological sites are known to be present in the general project area, only one (the Favorite Bay Garden Site, SIT-00302) was located *within* the survey area. No determination of eligibility had been made for the site prior to the investigations reported here. Based on the information gathered during these field studies, it is recommended that site SIT-00302 (the Favorite Bay Garden Site) be considered eligible for the NRHP under Criterion D. In addition to this site, several CMTs were documented during the field survey.

The exact areas that will be directly affected, and that could be indirectly affected, by any of the airport and access alternatives are not yet known. Additional refinement of alternatives, including more detailed engineering design, is necessary before the final (Phase 2 APE discussed in section 3.0) APEs for the airport alternatives and their associated access roads will be known. For these reasons, additional field investigations may be necessary prior to the FAA and USFS issuing their findings of effect and requesting comment from the SHPO and other consulting parties. The nature and timing of any additional studies will be discussed with the consulting parties as well. At the present time, the FAA proposes to conduct these studies at such time as the agency has identified its preferred alternative for both the airport and its associated access road. Any additional studies deemed necessary would focus on these alternatives rather than on all alternatives considered in the EIS.

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Acronyms

amsl above mean sea level
APE area of potential effects

ARPA Archaeological Resources Protection Act

B.P. before present

CFR Code of Federal Regulations

cmbs centimeters below ground surface

CMT culturally modified tree

DOT&PF Alaska Department of Transportation and Public Facilities

EIS environmental impact statement
FAA Federal Aviation Administration

FOA Friends of Admiralty Island
GPS global positioning system
NAD North American Datum

NEPA National Environmental Policy Act
NHPA National Historic Preservation Act
NRHP National Register of Historic Places

OHA Alaska Office of History and Archaeology

PA Programmatic Agreement

SHPO State Historic Preservation Office

USFS U.S. Forest Service

USGS U.S. Geological Survey

UTM Universal Transverse Mercator

APPENDIX A. SIT-00302 SHOVEL PROBE DATA

Table A-1. SIT-00302 Shovel Probe Data

Shovel Probe No. ¹	Max. Depth (cmbs)	Stratigraphy	Material Recovered
108	70	0–20 cmbs (level 1): moss/hemlock needles and organic detritus.	Chert angular shatter (n=1)
		20–40 cmbs (level 2): very dark grayish brown silt loam (10YR 3/2) with 50% matrix configuration of organic detritus and roots.	-
		40–70 cmbs (level 3): brown silt loam (10YR 4/3) with approximately 10% bedrock regolith without roots.	_
112	57	0-17 cmbs (level 1): moss, roots, organic detritus with small amount of shell.	Fire-cracked rock (FCR [n=1]) and secondary silicified sediment size class 4
		17–40 cmbs (level 2): very dark brown silt loam (10YR 2/2) with 50% matrix configuration of organic detritus and roots.	debitage (n=1); recovered from approximately 30 cmbs
		40–53 cmbs (level 3): dark brown silt loam (10YR 3/3) with approximately with a small amount of shell present.	_
		53–57 cmbs (level 4): brown silt loam (10YR 4/3) with approximately 15% gravels throughout. Terminated at bedrock.	
113	49	0–10 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		10–40 cmbs (level 2): very dark grayish brown silt loam (10YR 3/2) with roots and 10% gravels.	-
		40–49 cmbs (level 3): residual clay loam (5Y 5/2) olive gray with gravels and residual bedrock.	
114	50	0–5 cmbs (level 1): moss/hemlock needles and organic detritus.	Chert debitage (n=2); recovered from
		5–20 cmbs (level 2): dark yellowish brown silt loam (10YR 3/4) with roots and organic detritus.	approximately 25 cmbs
		26–50 cmbs (level 3): bedrock regolith with small rootlets, light olive brown.	

¹ Shovel probe number not necessarily sequential. This table lists all probes *inside* the final boundary of Site SIT-00302. Other shovel probes (i.e., probes 109-111 and 117-124) were excavated outside the site boundary.

Table A-1. SIT-00302 Shovel Probe Data

115	46	0–7 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		7–23 cmbs (level 2): loosely compacted dark yellowish brown silt loam (10YR 3/4) with roots and organic detritus.	_
		23–25 cmbs (level 3): reddish brown silt loam with organic detritus.	_
		25–46 cmbs (level 4): bedrock regolith without rootlets.	_
116	62	0–12 cmbs (level 1): moss, roots, hemlock needles, organic detritus.	FCR (n=1)
		12–27 cmbs (level 2): loosely compacted very dark brown silt loam (10YR 2/2) with small amount of gravels.	_
		27-40 cmbs (level 3): dark olive brown silt loam (2.5Y 3/3) with gravels.	
		40-55 cmbs (level 4): very dark brown silt loam (10YR 2/2).	_
		55–57 cmbs (level 5): black silt loam (10YR 2/1).	_
		57–62 cmbs (level 6): reddish brown silt loam (2.5YR 4/3).	
125	36	0-10 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		10–33 cmbs (level 2): loosely compacted very dark brown silt loam (10YR 2/2), matrix configuration of roots and organic detritus.	_
		33–36 cmbs (level 3): light olive brown silt loam and degraded bedrock (2.5YR 5/4) with small rootlets.	
126	44	0–10 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		10–17 cmbs (level 2): loosely compacted dark yellowish brown silt loam (10YR 3/4) with roots and organic detritus.	_
		17–40 cmbs (level 3): compacted light olive brown silt loam (10YR 2/3) with small rocks and rootlets throughout.	_
		40–44 cmbs (level 4): degraded bedrock without rootlets. Terminated at root impasse.	

Table A-1. SIT-00302 Shovel Probe Data

127	40	40 0–15 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		15–20 cmbs (level 2): dark yellowish brown silt loam (10YR 3/4) with 40% roots and organic detritus throughout.	-
		20–35 cmbs (level 3): compacted light olive brown silt loam (10YR 2/3) with small rocks and rootlets throughout.	
		35–40 cmbs (level 4): small cobbles without rootlets. Terminated at root impasse at 40 cmbs.	
128	45	0–6 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		6–30 cmbs (level 2): dark yellowish brown silt loam (10YR 3/4) with 30% roots and organic detritus throughout.	Charcoal identified at 40-45 cmbs but not collected (see notes at left)
		30–40 cmbs (level 3): compacted light olive brown silt loam (10YR 2/3) with small rocks, charcoal flecking, and rootlets throughout.	
		40–45 cmbs (level 4): compacted light olive brown silt loam with small amount of bedrock regolith (2.5YR 5/6) without rootlets. Thin lens of gray (10YR 3/2) calcium carbonate at 43 cmbs. Charcoal sample wrapped in aluminum foil and buried in hole. Terminated at root impasse.	
129	43	0–6 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		6–15 cmbs (level 2): dark yellowish brown silt loam (10YR 3/4) with 40% roots and organic detritus throughout.	
		15–35 cmbs (level 3): compacted light olive brown silt loam (10YR 2/3) with small rocks and rootlets throughout.	_
		35–43 cmbs (level 4): compacted light olive brown silt loam with small amount of bedrock regolith (2.5YR 5/6) without rootlets. Thin lens of gray (10YR 3/2) calcium carbonate at 43 cmbs. Terminated at root impasse.	
130	50	0–10 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		10–31 cmbs (level 2): dark yellowish brown silt loam (10YR 3/4) with 20% roots and organic detritus throughout.	_
		31–42 cmbs (level 3): dark yellowish brown silt loam (10YR 3/4) with 20% roots and organic detritus throughout.	_
		42–50 cmbs (level 4): compacted light olive brown silt loam with small amount of bedrock regolith (2.5YR 5/6) without rootlets.	

Table A-1. SIT-00302 Shovel Probe Data

131	40	0–15 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		15–37 cmbs (level 2): dark yellowish brown silt loam (10YR 3/4) with 20% roots and organic detritus throughout.	_
		37–40 cmbs (level 3): dark yellowish brown silt loam (10YR 3/4) with 20% roots and organic detritus throughout. Terminated at root impasse.	
132	40	0–5 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		5–27 cmbs (level 2): loosely compacted very dark grayish brown silt loam (10YR 3/2) with 20% roots and organic detritus throughout.	_
		27–40 cmbs (level 3): compacted dark yellowish brown silt loam (10YR 3/4) with 20% roots and organic detritus throughout. Terminated at bedrock.	
133	47	0–10 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		10–30 cmbs (level 2): loosely compacted very dark grayish brown silt loam (10YR 3/2) with 20% roots and organic detritus throughout.	_
		30–42 cmbs (level 3): compacted dark yellowish brown silt loam (10YR 3/4) with 20% roots and organic detritus throughout.	_
		42–47 cmbs (level 4): compacted light olive brown silt loam with small amount of bedrock regolith (2.5YR 5/6) without rootlets. Terminated at bedrock.	
134	30	0–12 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		12–27 cmbs (level 2): loosely compacted very dark grayish brown silt loam (10YR 3/2) with 20% roots and organic detritus throughout.	_
		27–30 cmbs (level 3): compacted dark yellowish brown silt loam (10YR 3/4) with 20% roots and organic detritus throughout. Terminated at bedrock.	
135	43	0–9 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		9–31 cmbs (level 2): loosely compacted very dark grayish brown silt loam (10YR 3/2) with 20% roots and organic detritus throughout.	_
		31–40 cmbs (level 3): compacted dark yellowish brown silt loam (10YR 3/4) with 20% roots and organic detritus throughout.	_
		40–43 cmbs (level 4): increasing bedrock regolith. Terminated at root impasse.	

Table A-1. SIT-00302 Shovel Probe Data

136	32	0–15 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		15–26 cmbs (level 2): loosely compacted very dark grayish brown silt loam (10YR 3/2) with 20% roots and organic detritus throughout.	_
		26–32 cmbs (level 3): compacted dark yellowish brown silt loam (10YR 3/4) with 20% roots and organic detritus throughout. Terminated at root impasse.	_
137	33	0–10 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		10–28 cmbs (level 2): loosely compacted very dark grayish brown silt loam (10YR 3/2) with 20% roots and organic detritus throughout.	_
		28–32 cmbs (level 3): compacted light olive brown silt loam (10YR 2/3) with small rocks and rootlets throughout.	_
		32–33 cmbs (level 4): compacted light olive brown silt loam (2.5Y 5/6) without rootlets. Terminated at root impasse.	
138	28	0–9 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		9–22 cmbs (level 2): loosely compacted very dark grayish brown silt loam (10YR 3/2) with 20% roots and organic detritus throughout.	_
		22–28 cmbs (level 3): compacted dark yellowish brown silt loam (10YR 3/4) with 20% roots and organic detritus throughout. Terminated at root impasse.	
139	22	0–14 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		14–20 cmbs (level 2): loosely compacted very dark grayish brown silt loam (10YR 3/2) with 20% roots and organic detritus throughout.	
		20–22 cmbs (level 3): compacted dark yellowish brown silt loam (10YR 3/4) with 20% roots and organic detritus throughout. Terminated at root impasse.	
140	44	0-7 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		7–31 cmbs (level 2): loosely compacted very dark grayish brown silt loam (10YR 3/2) with 20% roots and organic detritus throughout.	_
		31–40 cmbs (level 3): compacted light olive brown silt loam (10YR 2/3) with small rocks and rootlets throughout.	_
		40–44 cmbs (level 4): compacted light olive brown silt loam (2.5Y 5/6) without rootlets. Terminated at cobblestone.	

Table A-1. SIT-00302 Shovel Probe Data

141	35	0–17 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		17–28 cmbs (level 2): loosely compacted very dark grayish brown silt loam (10YR 3/2) with 20% roots and organic detritus throughout.	_
		28–32 cmbs (level 3): compacted light olive brown silt loam (10YR 2/3) with small rocks and rootlets throughout.	_
		32–35 cmbs (level 4): compacted light olive brown silt loam (2.5YR 5/6) without rootlets. Terminated at cobblestone.	_
142	48	0–15 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		15–36 cmbs (level 2): loosely compacted very dark grayish brown silt loam (10YR 3/2) with 20% roots and organic detritus throughout.	_
		36–42 cmbs (level 3): compacted light olive brown silt loam (10YR 2/3) with small rocks and rootlets throughout.	
		42–48 cmbs (level 4): compacted light olive brown silt loam (2.5YR 5/6) without rootlets. Terminated at cobblestone.	
143	32	0-15 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		15–20 cmbs (level 2): loosely compacted very dark grayish brown silt loam (10YR 3/2) with 20% roots and organic detritus throughout.	
		20–27 cmbs (level 3): compacted light olive brown silt loam (10YR 2/3) with small rocks and rootlets throughout.	_
		27–32 cmbs (level 4): compacted light olive brown silt loam (2.5YR 5/6) without rootlets. Terminated at root impasse.	
144	41	0–20 cmbs (level 1): moss/hemlock needles and organic detritus.	None
		20–30 cmbs (level 2): loosely compacted very dark grayish brown silt loam (10YR 3/2) with 20% roots and organic detritus throughout.	
		30–38 cmbs (level 3): compacted light olive brown silt loam (10YR 2/3) with small rocks and rootlets throughout.	
		38–41 cmbs (level 4): compacted light olive brown silt loam (2.5YR 5/6) without rootlets. Terminated at root impasse.	

Table A-1. SIT-00302 Shovel Probe Data

145	47	0–6 cmbs (level 1): moss/hemlock needles and organic detritus.	Obsidian microblade (n=1) and chert flake (n=1); recovered between 25–30 cmbs
		6–17 cmbs (level 2): dark yellowish brown silt loam (10YR 3/6) with numerous large roots and organic detritus.	
		17–35 cmbs (level 3): light olive brown silt loam (2.5YR 5/4) with traces of bedrock regolith and small rootlets throughout.	
		35–47 cmbs (level 4): light olive brown silt loam and bedrock regolith (2.5YR 5/6) without rootlets. Terminated at bedrock.	

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APPENDIX B. SHOVEL PROBES

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Table B-1. Shovel Probe Data

Shovel Probe No.	UTM Northing	UTM Easting	cmbs	Sediment Description (no cultural material was found in any of the shovel probes)
1	6371518	525876	0–14	Decomposing duff and wood (O horizon)
			14–20	Black, organic-rich silt with few angular pebbles (A horizon)
2	6371509	525866	0–25	Duff, roots, and other organics (O horizon)
			25–28	Organics, rotted wood
			28–33	Gray sandy silt with charcoal flecks
			33–39	Regolith
3	6371621	525785	0–24	Duff, roots, and wood (O horizon)
			24–29	Light gray silty, fine sand; clear boundaries
			29–34	Black to very dark gray fine sandy silt
			34–39	Reddish brown, silty, gravelly fine to coarse sand (regolith)
4	6371626	525777	0–23	Duff, roots, other organics (O horizon)
			23–37	Gray sandy silt with angular quartzite pebbles; saturated
5	6371665	525767	0–16	Duff, roots, and other organics (O horizon)
			16–24	Organic soil mixed with angular pebbles, one cobble
6	6371650	525773	0–22	Duff, roots, wood (O horizon)
			22–25	Very light gray, slightly silty, fine to medium sand
			25–31	Very dark gray to black, organic-rich, very fine sandy silt, pieces of charcoal
			31–52	Reddish and orangish brown fine to coarse sandy silt, oxidized
7	6371236	527171	0–22	Duff, roots, decaying wood (O horizon)
			22–28	Dark gray silty sand
			28–33	Dark gray organic-rich silt with pebbles and charcoal pieces
			33–45	Orangish brown gravelly, silty, sand
			45–75	Brown coarse sandy gravel
8	6371225	527157	0–11	Duff, roots, and other organics (O horizon)
			11–29	Light reddish brown sandy silt with angular pebbles
9	6371216	527176	0–9	Duff, organic-rich soil (O horizon)
			9–12	Gray silty sand
			12–14	Black silty buried soil horizon
			14–60	Orange red sandy silt, angular pebbles
			60–70	Small, angular pebbles
10	6371264	527171	0–20	Duff, roots, organics (O horizon)
			20–28	Light gray silty sand with angular pebbles
			28–33	Blackish-brown very compact organic-rich silt
			33–84	Light reddish brown silty sand with angular pebbles
11	6369165	528287	0–20	Duff, roots, organics (O horizon)
			20–55	Dark brown silty organic-rich soil, common roots
			55–69	Medium brown silty organic-rich soil

Table B-1. Shovel Probe Data

Shovel Probe No.	UTM Northing	UTM Easting	cmbs	Sediment Description (no cultural material was found in any of the shovel probes)
12	6369161	528301	0–7	Duff, roots, organics (O horizon)
			7–38	Dark brownish-black organic soil; very water saturated
13	6369158	528311	0–20	Dark brown water saturated organic-rich material
			20–75	Light brown organic-rich material with few pebbles, water table at 20 cmbs
14	6369162	528325	0–28	Very dark gray and brown fibrous peat becomes siltier with depth; many roots and rootlets
			28–45	Very dark gray, very silty peat, few angular pebbles
15	6369148	528333	0–15	Very dark grayish-brown, fibrous peat with few angular pebbles
			15–25	Reddish brown decaying wood, discontinuous
			25–55	Very dark brown silty peat, many rootlets
16	6369149	528319	0–5	Duff, roots, organics (O horizon)
			5–38	Dark brown water saturated organic-rich material; few pebbles; water table at 38 cmbs
17	6369163	528278	0–7	Dark brown organic layer (O horizon)
			7–35	Light brown organic-rich soil, very water-saturated
18	6369155	528295	0–19	Duff, dense organics, roots (O horizon)
			19–33	Dark reddish-orange-brown silt, many roots
			33–53	Dark brownish-orange organic-rich silt, decomposing wood; very water saturated
19	6369123	528238	0–10	Recent duff, needles, moss
			10–18	Orangish-brown silty decomposing organic material; many roots and rootlets (O horizon)
			18–45	Light gray silty, sandy, angular small pebbles to cobbles, cobbles increase with depth
20	6369103	528250	0–14	Duff, roots, decaying wood (O horizon)
			14–20	Light gray fine sandy silt with small pebbles
			20–24	Dark gray silt with few pebbles and charcoal
			24–31	Orange-brown gravelly silty sand
			31–50	Brown coarse gravelly sand
21	6369072	528253	0–7	Dark-brown organic-rich soil with roots (O horizon)
			7–12	Dark reddish-brown soil with decomposing wood, roots
			12–19	Dark brown organic-rich silty sand with subangular pebbles
			19–40	Gray coarse sand with subangular pebbles, roots
22	6369044	528247	0–4	Duff, roots, organics (O horizon)
			4–16	Light brown sandy silt with organic material
			16–28	Patches of light gray sandy silt with small pieces of charcoal
			28–61	Reddish-brown silt with angular cobbles, gravels, and pebbles

Table B-1. Shovel Probe Data

Shovel Probe No.	UTM Northing	UTM Easting	cmbs	Sediment Description (no cultural material was found in any of the shovel probes)
23	6369012	528263	0–8	Dark brown organic-rich soil, roots (O horizon)
			8–20	Medium brown silty sand, subangular pebbles, roots, water-logged wood
			20–33	Light brown clayey silt with subangular pebbles
24	6368999	528276	0–12	Moss, pine needles, duff (O horizon)
			12–20	Gray very fine to coarse sandy silty
			20–45	Brown silty gravelly sand with angular pebbles and cobbles
25	6368985	528289	0–9	Duff, roots, organics (O horizon)
			9–16	Light gray silty sand with angular pebbles
			16–18	Grayish/light brown silt
			18–50	Light reddish-brown silt with angular pebbles and cobbles
26	6368955	528290	0–15	Duff, roots, dark brown soil (O horizon)
			15–28	Gray fine sandy silt with small cobbles
			28–57	Light brown/orange sand with angular pebbles
27	6370661	526973	0–24	Dark brown decomposing wood, soil, roots, moss (O horizon)
			24–27	Dark gray fine sandy silt with small pebbles
			27–29	Dark black organic-rich soil
			30–66	Orangish-brown sand with angular pebbles and gravel
28	6370668	526984	0–25	Duff, roots, decaying wood (O horizon)
			25–29	Gray sandy silt, some organics
			29–85	Light reddish-brown silt with organic material and angular pebbles
29	6370660	526992	0–35	Duff and fibrous decayed organics, many roots (O horizon)
			35–41	Black and light gray, beds of charred organics
			41–55	Orangish-brown silty sand with angular gravels
30	6370654	526998	0–13	Very dark brown duff with roots; fine silty sand (O horizon)
			13–19	Gray fine sand with subangular pebbles, roots
			19–38	Orangish-brown silty sand, pebbles and cobbles, roots
			38–42	Light to medium brown fine sandy silt with subangular pebbles and roots
31	6370454	527116	0–20	Very dark brown to black peaty silt (O horizon)
			20–40	Dark reddish-brown fibrous peat; water table at 25 cmbs
32	6370459	527131	0–10	Light brown dense organic material; very water-saturated
			10–24	Dark brown silty soil with organic material; very water-saturated
33	6370467	527158	0–5	Duff, organics, roots (O horizon)
			5–41	Dark brown soil, water-saturated, roots, water table at 41 cmbs
34	6370483	527157	0–3	Duff, organics, roots (O horizon)
			3–85	Dark brownish-black organic-rich soil; very water saturated; water table at 75 cmbs

Table B-1. Shovel Probe Data

Shovel Probe No.	UTM Northing	UTM Easting	cmbs	Sediment Description (no cultural material was found in any of the shovel probes)
35	6369134	527882	0–9	Dark brown silty soil with roots (O horizon)
			9–22	Very dark brown sandy silt; decomposing wood; angular pebbles; roots
			22–32	Gray clayey silt with angular pebbles
			32–47	Dark orangish-red clayey silt with subangular pebbles
36	6369133	527874	0–13	Duff, roots, organics (O horizon)
			13–42	Brown soil, decaying organics, roots
37	6369143	527892	0–25	Dark brown soil, organic-rich with roots (O horizon)
			25–42	Brown silt with decaying wood and roots
			42–46	Light gray silt with pebbles
			46–70	Orangish-brown sand with small angular pebbles
38	6369145	527896	0–35	Duff, moss, decaying organics (O horizon)
			35–44	Light gray fine sandy silt, few pebbles, charcoal
			44–55	Brown, gravelly, silty, fine to coarse sand
39	6369051	527836	0–28	Dark brown soil with roots and decaying wood (O horizon)
			28-82	Dark brownish-black silty clumpy clay-textured wet silt
			82–86	Gray silt
40	6369051	527845	0–14	Darky brown clayey silty sand, many roots; very water-saturated (O horizon)
			14–60	Black clayey silt, clumpy, with many roots; very water-saturated
			60–76	Dark brown organic-rich clayey silt, few small pebbles
			76–80	Gray clayey silt; water table
41	6369046	527845	0–4	Duff, roots (O horizon)
			4-42	Very dark brown organic-rich layer; water saturated
			42–50	Very dark gray clay; water saturated
			50–60	Dark reddish-brown soil with angular gravels; water saturated
42	6369044	527842	0–30	Duff, moss, fibrous peat with large roots (O horizon)
			30–55	Black organic-rich silt; many large roots
			55-62	Gray fine to medium sandy silt
			62–75	Brown to gray fine sandy silt with angular pebbles and small cobbles
43	6369052	527937	0–50	Black silty peat with many rootlets and decaying wood fragments (O horizon)
			50–70	Dark brown fibrous peat
			70–80	Dark gray, slightly silty gravelly sand, angular to subrounded pebbles
44	6369057	527931	0–9	Root mat (O horizon)
			9–51	Dark brown organic-rich silt; water-saturated
			51–60	Gray coarse sand with angular gravels; water-saturated

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Table B-1. Shovel Probe Data

Shovel Probe No.	UTM Northing	UTM Easting	cmbs	Sediment Description (no cultural material was found in any of the shovel probes)
45	6369058	527927	0–19	Dark reddish-brown silty sand with roots and organics (O horizon)
			19–32	Very dark brown clayey silt, decomposing wood, roots; water-saturated
			32–36	Gray clayey silt with sand
			36–62	Dark brownish-black clayey silt
46	6369065	527930	0–20	Dark brown silty with roots and decaying wood (O horizon)
			20–74	Brown/gray silt; water-saturated
			74–79	Light gray silt and sand with small pebbles
47	6368749	528313	8–0	Dark brown root mat, organics (O horizon)
			8–11	Light gray fine sandy silt
			11–17	Dark reddish-brown coarse sandy silt
			17–60	Reddish-brown silt with angular pebbles, gravels, and cobbles
48	6368759	528293	0–21	Dark brown silt with roots and decaying wood; water-saturated (O horizon)
			21–50	Light brown silty soil with angular gravels and cobbles
49	6368777	528279	0–6	Dark brown organic sandy silt with roots (O horizon)
			6–15	Reddish-brown organic-rich sandy silt with roots and decomposing wood
			15–18	Gray silty sand with subrounded pebbles
			18–22	Black clayey silt, roots, pebbles
			22–48	Dark reddish-orange sandy silt with subrounded pebbles and roots
			48–60	Grayish-brown sandy silt with subrounded pebbles and roots
50	6368793	528273	0–18	Duff, moss, fibrous organic debris (O horizon)
			18–28	Orangish brown silty fine sand with angular pebbles
			28–34	Very light gray slightly silty fine sand
			34–52	Brown slightly silty sand with angular to subrounded pebbles to cobbles
51	6368734	528357	0–10	Dark brown organic-rich sandy silt with roots; water-saturated (O horizon)
			10–16	Very dark brown organic-rich silt with roots and subangular pebbles; water-saturated
			16–20	Light brownish-orange clayey silt with subangular pebbles and cobbles
52	6368714	528357	0–21	Dark brown soil with roots (O horizon)
			21–33	Gray leached silt layer with pebbles
			33–63	Orangish-brown silt with angular pebbles
53	6368716	528347	0–12	Brown, organic-rich root mat (O horizon)
			12–17	Light gray silt with coarse sand
			17–40	Light reddish-brown silt with angular gravels and cobbles

Table B-1. Shovel Probe Data

Shovel Probe No.	UTM Northing	UTM Easting	cmbs	Sediment Description (no cultural material was found in any of the shovel probes)
54	6368702	528360	0–15	Duff, moss, and decaying organics (O horizon)
			15–23	Gray, fine to coarse sandy with angular pebbles to cobbles
55	6369368	527549	0–13	Dark brown silt with rootlets, moss, and decaying wood (O horizon)
			13–25	Light brown organic-rich soil with decaying wood and rootlets
			25–30	Light brown silt with few small pebbles; water-saturated
			30–57	Dark brown silt with few pebbles and decaying wood at the bottom; water-saturated
56	6369371	527551	0–32	Duff, moss, and decaying organics (O horizon)
			32-43	Reddish brown, fine sandy silt; bioturbated with worms
			43–80	Gray medium to coarse sand with subrounded to angular pebbles and gravel
57	6369370	527533	0–10	Light brown silty sand with moss and other organics (O horizon)
			10–28	Dark brown organic-rich silty sand, angular pebbles, water-logged wood; water-saturated
			28–57	Dark brown with some gray sand; very water-saturated
58	6369465	527425	0–20	Moss and fibrous peat (O horizon)
			20–36	Black, organic-rich silt with many roots and woody debris
			36–40	Brown, organic-rich silt
			40–50	Slight gray and orange very fine sandy clay with subrounded to angular pebbles
59	6369456	527418	0–15	Moss, dark soil, decaying wood, roots (O horizon)
			15–17	Water-logged wood
			17–63	Dark grayish-brown silt with gravel, pebbles, and few cobbles; water-saturated
60	6369459	527420	0–5	Root mat (O horizon)
			5–35	Very dark brown organic-rich silt with small gravels; water-saturated
			35–37	Light gray clayey silt with gravels, water table
61	6369461	527414	0–6	Light brown organic-rich sandy soil (O horizon)
			6–24	Very dark brown organic-rich silty sand
			24-42	Dark brownish-gray coarse sandy silt with small pebbles
			42–60	Gray coarse pebbly sandy clayey silt; water table
62	6369462	527419	0–16	Duff, moss, and other organics (O horizon)
			16–34	Dark brown organic-rich sandy silt; very water-saturated with water-logged wood
			34–40	Fine sandy clay
63	6369458	527418	0–12	Duff, moss, roots, dark brown silt (O horizon)
			12–32	Dark brown silt; very water-saturated with water-logged wood

Table B-1. Shovel Probe Data

Shovel Probe No.	UTM Northing	UTM Easting	cmbs	Sediment Description (no cultural material was found in any of the shovel probes)
64	6369599	527320	0–19	Light brown silt, duff, moss, roots, decaying wood (O horizon)
			20-34	Dark brown organic-rich silt with roots
			34–80	Very dark brown clayey silt with roots and few small pebbles
			80–124	Gray silty sand with dark brown silt with angular pebbles; water-saturated
65	6369609	527311	0–14	Medium brown organic duff (O horizon)
			14–50	Very dark brownish-black fine clayey silt; water-saturated
			50–80	Dark brown silt; water-saturated with water-logged wood; water table at 50 cmbs
66	6369616	527326	0–9	Moss, organics, roots (O horizon)
			9–78	Dark brown organic-rich silt with roots
67	6369607	527336	0–30	Duff, moss, organics (O horizon)
			30–75	Very dark gray to black organic-rich silt, common roots
			75–85	Brown fine sandy silt
			85–100	Gray gravelly medium to very coarse sand with organics, few decaying shell fragments
68	6369602	527332	0–20	Duff, moss, rootlets and organic debris (O horizon)
			20–80	Very dark brown organic-rich silt; one barnacle at 20-40 cmbs; decaying wood
69	6369607	527337	0–27	Dark brown duff, roots, rootlets, and other organics (O horizon)
			27–48	Dark brown organic-rich soil with rootlets
			48–60	Light orange coarse sandy silt; water-saturated
			60–100	Gray coarse sandy silt with beach-rounded pebbles, gravels, and small cobbles
70	6369615	527342	0–4	Duff, moss, roots, rootlets, decaying wood (O horizon)
			4–42	Dark brownish-black organic-rich silt with few small pebbles; water table at 34 cmbs
71	6369628	527354	0–45	Duff, moss, woody debris (O horizon)
			45–93	Very dark gray and brownish black organic-rich silt with common rootlets
			93–105	Gray, medium to very coarse sand with few subrounded pebbles
72	6369702	527272	0–19	Duff, moss, organic-rich brown silt with decaying wood (O horizon)
			19–30	Organic-rich dark brownish-black silt with rootlets
			30–59	Dark brownish-black silt with pebbles, gravels, and cobbles; water-saturated
73	6369711	527261	0–25	Duff, moss, roots and fibrous organic materials (O horizon)
			25–80	Very dark gray organic-rich silt, wet with many rootlets and one large angular cobble
			80–95	Very dark brown organic-rich, compact silt
			95–102	Gray fine to very coarse sand with angular to subrounded gravels

Table B-1. Shovel Probe Data

Shovel Probe No.	UTM Northing	UTM Easting	cmbs	Sediment Description (no cultural material was found in any of the shovel probes)
74	6369677	527264	0–28	Duff, moss, dark brown loose organics with many roots (O horizon)
			28–58	Very dark brown silt with few subrounded pebbles
			58–87	Dark gray gravelly coarse silty sand, common subrounded pebbles
			87–100	Dark brown silt with subrounded gravels; water-saturated
75			0–25	Moss, root mat, rootlets, and other organics (O horizon)
			25–46	Dark reddish-brown fine sandy silt with moderate organic material and rootlets
			46–58	Coarse gray sand with rounded beach pebbles
			58–95	Medium coarse gray sand with small rounded pebbles; water table at 95 cmbs
76	6369674	527256	0–40	Duff, moss, fibrous organic debris with many roots and rootlets (O horizon)
			40–60	Very dark brown organic-rich silt/silty peat
77	6369681	527257	0–25	Organic-rich dark brown silt, decaying wood, roots, rootlets (O horizon)
			25–65	Dark brownish-black silt with subangular pebbles and gravels; water table at 56 cmbs
78	6369768	527196	0–55	Dark brown silty duff and roots (O horizon)
			55–63	Gray silty gravelly fine sand, subrounded pebbles
			63–85	Very dark brown fine to coarse sand with subrounded pebbles and few pebbles
79	6369775	527185	0–18	Dark brown organic duff with sandy silt and small subrounded pebble
			18–25	Very dark brown silt with subrounded pebbles
			25–60	Dark brown sandy silt with subrounded pebbles
			60–80	Black clayey silt with pebbles
			80–85	Dark brown coarse sandy gravelly; very compact
80	6369786	527178	0–22	Dark silt, duff, moss, decaying wood, roots, rootlets (O horizon)
			22-42	Dark brown silt with gravel, pebbles, and small roots
			42–47	Gray leached soil layer with some small pebbles
			47–70	Dark brown silt, subrounded and rounded pebbles, one large root
81	6369748	527199	0–20	Moss, reddish-brown organic-rich layer with rootlets (O horizon)
			20–24	Light gray silt with small angular gravels
			24–87	Very dark brown very compact fine sandy silt with dense gravels; water-saturated
82	6369928	527442	0–5	Duff, light brown organic-rich sand (O horizon)
			5–16	Dark reddish-brown organic-rich silty sand
			16–57	Very dark brown fine clayey silt
			57–70	Medium brown clayey silt, few subangular pebbles, one cobble
			70–89	Very compact coarse gray sand mottled with orange sand, dense subangular pebbles

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Table B-1. Shovel Probe Data

87 6371001 526460 0-20 Duff, moss, and fibrous organics (O horizon) 20-35 Decaying wood and roots (O horizon) 35-50 Brown, organic-rich silt with many roots 50-56 Bluish-gray, slightly silty fine sand 56-70 Brown, fine sandy silt with angular cobbles and large roots 88 6370976 526511 14-29 Dark black silt with decaying wood and few subangular rocks 29-38 Dark black silt 38-61 Light orangish-brown silt with small pebbles and larger angular piece of regolith 89 6370980 526536 0-25 Duff, moss, decaying organics, roots, and rootlets (O horizon) 25-30 Light gray fine sandy silt with angular gravels 30-45 Reddish-brown compact sandy silt with degrading regolith 90 6370745 527598 0-19 Duff, moss, decaying wood, roots, rootlets, small subangular pebbles 19-30 Light gray silt with gravel and few subangular pebbles 30-71 Light brownish-orange silt with gravel and subangular pebbles and gravel 91 6370765 527627 0-5 Dark brown sandy duff, moss, organics (O horizon) 5-8 </th <th>Shovel Probe No.</th> <th>UTM Northing</th> <th>UTM Easting</th> <th>cmbs</th> <th>Sediment Description (no cultural material was found in any of the shovel probes)</th>	Shovel Probe No.	UTM Northing	UTM Easting	cmbs	Sediment Description (no cultural material was found in any of the shovel probes)
60-70 Brown, fine sandy silt 70-90 Greenish-gray silt, very coarse sand with angular pebbles, gravels, and cobbles 6369935 527464 0-5 Moss 5-21 Dark brown organics with roots and rootlets 21-45 Very dark brown organic layer; water-saturated 45-60 Light brown silt, few angular pebbles; water-saturated Light brown silt, few angular pebbles; water-saturated 45-60 Light brown silt, few angular pebbles; water-saturated 49-60 Orange saturated very fine silt 60-80 Gray silt with angular pebbles, one large subrounded cobble; water table at 80 cmbs 6371018 526499 0-20 Dark brown silt, duff, roots, rootlets (O horizon) 20-90 Orange sand, angular pebbles, crumbly pieces of gravel-size bedroot 70-70 20-90 Dark brown silt, duff, roots, rootlets (O horizon) 20-90 Dark brown silt, duff, roots, rootlets (O horizon) 20-95 Decaying wood and roots (O horizon) 35-50 Brown, organic-rich silt with many roots 50-56 Bluish-gray, slightly silty fine sand 50-56 Bluish-gray, slightly silty fine sand Silty fine Silty fine	83	6369931	527451	0–30	Moss on fibrous organics and roots (O horizon)
Record R				30–60	Black organic-rich silts with rootles and one large rounded cobble
84 6369935 527464 0-5 Moss				60–70	Brown, fine sandy silt
S-21				70–90	
21-45 Very dark brown organic layer; water-saturated 45-60 Light brown silt, few angular pebbles; water-saturated 45-60 Light brown silt, few angular pebbles; water-saturated 45-60 Light brown silt, few angular pebbles; water-saturated 47-60 Cary Dark wilt with decaying wood, dark silt, rootlets and large roots 47-49 Dark wilt with decaying wood and rootlets 49-60 Orange saturated very fine silt 60-80 Gray silt with angular pebbles, one large subrounded cobble; water table at 80 cmbs 20-90 Dark brown silt, duff, roots, rootlets (O horizon) 20-90 Orange sand, angular pebbles, crumbly pieces of gravel-size bedroc 20-30 Decaying wood and roots (O horizon) 20-35 Decaying wood and roots (O horizon) 20-35 Decaying wood and roots (O horizon) 20-35 Brown, organic-rich silt with many roots 50-56 Bluish-gray, slightly silty fine sand S6-70 Brown, fine sandy silt with angular cobbles and large roots 29-38 Dark black silt with decaying wood and few subangular rocks 29-38 Dark black silt with decaying wood and few subangular piece of regolith 38-61 Light orangish-brown silt with small pebbles and larger angular piece of regolith 25-30 Light gray fine sandy silt with angular gravels 30-45 Reddish-brown compact sandy silt with degrading regolith 25-30 Light gray fine sandy silt with gravel and subangular pebbles 30-71 Light brownish-orange silt with gravel and subangular pebbles and gravel 30-71 Light brown sandy duff, moss, organics (O horizon) 5-8 Gray sand with subangular pebbles 20-80 Dark brown fine sand with organics, subangular pebbles 20-80 Dark brown fine sand with organics, subangular pebbles 20-80 Dark brown fine sand with organics, subangular pebbles 20-80 Dark brown fine sand with organics, subangular pebbles 20-80 Dark brown fine sand with organics, subangular pebbles 20-80 Dark brown fine sand with organics, subangular pebbles 20-80 Dark brown fine sand with organics, subangular pebb	84	6369935	527464	0–5	Moss
45-60 Light brown silt, few angular pebbles; water-saturated				5–21	Dark brown organics with roots and rootlets
85 6369966 527467 0-27 Moss, duff, decaying wood, dark silt, rootlets and large roots 27-49 Dark wilt with decaying wood and rootlets 49-60 Orange saturated very fine silt 60-80 Gray silt with angular pebbles, one large subrounded cobble; water table at 80 cmbs 86 6371018 526499 0-20 Dark brown silt, duff, roots, rootlets (O horizon) 87 6371001 526490 0-20 Duff, moss, and fibrous organics (O horizon) 20-90 Orange sand, angular pebbles, crumbly pieces of gravel-size bedroc 87 6371001 526460 0-20 Duff, moss, and fibrous organics (O horizon) 20-35 Decaying wood and roots (O horizon) Decaying wood and roots (O horizon) 35-50 Brown, organic-rich silt with many roots 50-56 Bluish-gray, slightly silty fine sand 50-56 Bluish-gray, slightly silty fine sand 50-56 Brown, fine sandy silt with angular cobbles and large roots 88 6370976 526511 0-14 Dark black silt with decaying wood and few subangular rocks 89 6370980 526565 0-25 Duff, moss,				21–45	Very dark brown organic layer; water-saturated
27-49				45–60	Light brown silt, few angular pebbles; water-saturated
49-60	85	6369966	527467	0–27	Moss, duff, decaying wood, dark silt, rootlets and large roots
60–80 Gray silt with angular pebbles, one large subrounded cobble; water table at 80 cmbs 66 6371018 526499 0–20 Dark brown silt, duff, roots, rootlets (O horizon) 20–90 Orange sand, angular pebbles, crumbly pieces of gravel-size bedroce 87 6371001 526460 0–20 Duff, moss, and fibrous organics (O horizon) 20–35 Decaying wood and roots (O horizon) 35–50 Brown, organic-rich silt with many roots 50–56 Bluish-gray, slightly silty fine sand 56–70 Brown, fine sandy silt with angular cobbles and large roots 88 6370976 526511 0–14 Dark silt, moss, duff, roots, and rootlets 14–29 Dark black silt with decaying wood and few subangular rocks 29–38 Dark black silt 38–61 Light orangish-brown silt with small pebbles and larger angular piece of regolith 89 6370980 526536 0–25 Duff, moss, decaying organics, roots, and rootlets (O horizon) 25–30 Light gray fine sandy silt with angular gravels 30–45 Reddish-brown compact sandy silt with degrading regolith 90 6370745 527598 0–19 Duff, moss, decaying wood, roots, rootlets, small subangular pebbles 19–30 Light gray silt with gravel and few subangular pebbles 30–71 Light brownish-orange silt with gravel and subangular pebbles and gravel 91 6370765 527627 0–5 Dark brown sandy duff, moss, organics (O horizon) 5–8 Gray sand with subangular pebbles 8–12 Dark brown fine sand with organics, subangular pebbles				27–49	Dark wilt with decaying wood and rootlets
table at 80 cmbs				49–60	Orange saturated very fine silt
20–90 Orange sand, angular pebbles, crumbly pieces of gravel-size bedroce 87 6371001 526460 0–20 Duff, moss, and fibrous organics (O horizon) 20–35 Decaying wood and roots (O horizon) 35–50 Brown, organic-rich silt with many roots 50–56 Bluish-gray, slightly silty fine sand 56–70 Brown, fine sandy silt with angular cobbles and large roots 88 6370976 526511 0–14 Dark silt, moss, duff, roots, and rootlets 14–29 Dark black silt with decaying wood and few subangular rocks 29–38 Dark black silt 38–61 Light orangish-brown silt with small pebbles and larger angular piece of regolith 89 6370980 526536 0–25 Duff, moss, decaying organics, roots, and rootlets (O horizon) 25–30 Light gray fine sandy silt with angular gravels 30–45 Reddish-brown compact sandy silt with degrading regolith 90 6370745 527598 0–19 Duff, moss, decaying wood, roots, rootlets, small subangular pebbles 19–30 Light gray silt with gravel and few subangular pebbles 30–71 Light brownish-orange silt with gravel and subangular pebbles and gravel 91 6370765 527627 0–5 Dark brown sandy duff, moss, organics (O horizon) 5–8 Gray sand with subangular pebbles 8–12 Dark brown fine sand with organics, subangular pebbles				60–80	
87 6371001 526460 0-20 Duff, moss, and fibrous organics (O horizon) 20-35 Decaying wood and roots (O horizon) 35-50 Brown, organic-rich silt with many roots 50-56 Bluish-gray, slightly silty fine sand 56-70 Brown, fine sandy silt with angular cobbles and large roots 88 6370976 526511 14-29 Dark black silt with decaying wood and few subangular rocks 29-38 Dark black silt 38-61 Light orangish-brown silt with small pebbles and larger angular piece of regolith 89 6370980 526536 0-25 Duff, moss, decaying organics, roots, and rootlets (O horizon) 25-30 Light gray fine sandy silt with angular gravels 30-45 Reddish-brown compact sandy silt with degrading regolith 90 6370745 527598 0-19 Duff, moss, decaying wood, roots, rootlets, small subangular pebbles 19-30 Light gray silt with gravel and few subangular pebbles 30-71 Light brownish-orange silt with gravel and subangular pebbles and gravel 91 6370765 527627 0-5 Dark brown sandy duff, moss, organics (O horizon) <tr< td=""><td>86</td><td>6371018</td><td>526499</td><td>0–20</td><td>Dark brown silt, duff, roots, rootlets (O horizon)</td></tr<>	86	6371018	526499	0–20	Dark brown silt, duff, roots, rootlets (O horizon)
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90 6370745 527598 0–19 Duff, moss, decaying wood, roots, rootlets, small subangular pebbles 19–30 Light gray silt with gravel and few subangular pebbles 30–71 Light brownish-orange silt with gravel and subangular pebbles and gravel 91 6370765 527627 0–5 Dark brown sandy duff, moss, organics (O horizon) 5–8 Gray sand with subangular pebbles 8–12 Dark brown fine sand with organics, subangular pebbles				25–30	Light gray fine sandy silt with angular gravels
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gravel 91 6370765 527627 0–5 Dark brown sandy duff, moss, organics (O horizon) 5–8 Gray sand with subangular pebbles 8–12 Dark brown fine sand with organics, subangular pebbles				19–30	Light gray silt with gravel and few subangular pebbles
5–8 Gray sand with subangular pebbles 8–12 Dark brown fine sand with organics, subangular pebbles				30–71	
8–12 Dark brown fine sand with organics, subangular pebbles	91	6370765	527627	0–5	Dark brown sandy duff, moss, organics (O horizon)
				5–8	Gray sand with subangular pebbles
12–90 Orange silty sand with subangular pebbles: charcoal spot at 68 cmbs				8–12	Dark brown fine sand with organics, subangular pebbles
				12–90	Orange silty sand with subangular pebbles; charcoal spot at 68 cmbs

October 2015

Table B-1. Shovel Probe Data

Shovel Probe No.	UTM Northing	UTM Easting	cmbs	Sediment Description (no cultural material was found in any of the shovel probes)
92	6370787	527643	0–10	Moss and duff
			10–17	Bluish gray silt with organics, roots, and rootlets
			17–42	Orange-brown silt with some organics and few rootlets; degrading regolith
93	6370810 527662		0–9	Duff, moss, roots, and fibrous organics (O horizon)
			9–15	Bluish-gray silty fine sand with angular to subangular pebbles and roots
			15–38	Dark brown fine sandy wilt with angular to subangular pebbles and small cobbles
94	6370844	527504	0–14	Moss, duff, decaying wood, rootlets, roots (O horizon)
			14–27	Bluish/gray silt with moderate organics, angular pebbles, and few rootlets
			27–35	Grayish-brown sandy silt with angular pebbles
95	6370878	527520	0–18	Dark brown fine silty sand, duff, organics, decomposing wood (O horizon)
			18–81	Orangish-brown silty fine sand with angular pebbles and root
96	6370908 5		0–15	Duff, moss, roots, rootlets, and decaying wood (O horizon)
			15–21	Light gray leached layer; silty sand with some angular pebbles
			21–40	Crumbling bedrock
97	6370895	527540	0–9	Duff, moss and fibrous organics (O horizon)
			9–12	Bluish-gray silty fine sand
			12–15	Dark brown fine sandy silt with few pebbles and organics
			15–49	Brown to yellowish-brown medium sandy silt with subangular gravels
98	6370978	527412	0–18	Duff, moss, roots, and fibrous organics (O horizon)
			18–28	Bluish-gray slightly silty fine sand
			28–55	Dark brown to brown fine sandy silt with few pebbles
			55–68	Reddish-brown very silty fine sand with angular gravels
99	6370959	527425	0–19	Dark brown silt, moss, decaying wood, roots, rootlets, angular pebbles (O horizon)
			19–23	Light gray leached layer of fine silt with dark brown silt layers interspersed
			23–28	Dark brown silt with angular pebbles and a large rock
100	6370953	527404	0–9	Dark brown duff, many rootlets and medium roots (O horizon)
			9–24	Grayish-blue very silty sand with many angular pebbles
			24–88	Orangish-reddish-brown clayey silty sand, angular pebbles, gravels, and cobbles
101	6370938	527419	0–32	Moss, duff, organics, roots, rootlets (O horizon)
			32–45	Dark reddish-brown coarse sandy silt with organics and few angular pebbles
			45–75	Reddish-brown coarse sandy silt with angular pebbles and small cobbles, very compact

Table B-1. Shovel Probe Data

Shovel Probe No.	UTM Northing	UTM Easting	cmbs	 Sediment Description (no cultural material was found in any of the shovel probes) 	
102	6371056	527306	0–18	Duff, roots, rootlets, decaying wood, dark silt, with few gravels (O horizon)	
			18–29	Light gray leached silt with sand and angular pebbles and gravels	
			29–34	Black organic-rich silt with small gravels	
			34–61	Light brownish-orange angular rocks and pebbles (regolith)	
103	6371077	527289	0–15	Duff, moss, roots, and fibrous organics	
			15–25	Brown to black fine sandy silt with few angular regolith pebbles	
104	6371103	527291	0–22	Moss, duff, organics, roots, rootlets (O horizon)	
			22–24	Light gray very fine sandy silt	
			24–30	Black silt, water-saturated, few small pebbles	
			30–40	Reddish-brown coarse sandy silt with angular pebbles; very water-saturated	
			40–55	Grayish-brown fine sandy silt; very water-saturated	
			55–70	Chunks of regolith with water-saturated silt in-between	
105	6371109	527260	0–19	Dark brown sandy duff, moss, rootlets, medium roots, and other organics (O horizon)	
			19–23	Gray fine silty sand with angular pebbles	
			23–30	Dark brown dry soft silty sand, roots, pebbles, one large rock	

Note: Universal Transverse Mercator (UTMs) collected in NAD83 UTM Zone 8N.

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Privilegea	Information -	– INOL TOF	Public	Release

Angoon Airport EIS Cultural Resources Technical Report for the Area of Potential Effects for Airport 12a with Access 12a (Preferred Alternative) v2 October 2015

APPENDIX C. CULTURALLY MODIFIED TREE PHOTOS

Privileged	Information	Not for	Public	Release

Angoon Airport EIS Cultural Resources Technical Report for the Area of Potential Effects for Airport 12a with Access 12a (Preferred Alternative) v2 October 2015



Figure C-1. CMT with blaze (field #CU72109_1).



Figure C-2. CMT with blaze (field #AGN-2).



Figure C-3. Spit-trunk CMT with blaze on each trunk (field #AGN-5B).



Figure C-4. CMT with springboard notch (field #CU72109_1).



Figure C-5. CMT with possible springboard notch (field #AGN-4).



Figure C-6. Field crew member pointing to springboard notch (field #AGN-9).



Figure C-7. CMT with axe marks (field #AGN-5C).



Figure C-8. CMT with axe mark (field #AGN-7).



Figure C-9. CMT with axe and burn marks (field #AGN-5).



Figure C-10. CMT with stripped bark (field #AGN-6).



Figure C-11. CMT with stripped bark (field #AGN-8).



Figure C-12. Pile of cut logs (field #AGN-1).



APPENDIX L VISUAL RESOURCES TECHNICAL REPORT

Note: The Section 508 amendment of the Rehabilitation Act of 1973 requires that the information in federal documents be accessible to individuals with disabilities. The FAA has made every effort to ensure that the information in the *Draft Angoon Airport Environmental Impact Statement* is accessible. However, this appendix is not fully compliant with Section 508, and readers with disabilities are encouraged to contact Leslie Grey at (907) 271-5453 or Leslie.Grey@faa.gov if they would like access to the information.



VISUAL RESOURCES EXISTING CONDITIONS TECHNICAL REPORT FOR ANGOON AIRPORT ENVIRONMENTAL IMPACT STATEMENT ANGOON, ALASKA

Prepared for

Federal Aviation Administration

and

Alaska Department of Transportation and Public Facilities

Prepared by

SWCA Environmental Consultants

September 16, 2011

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1.0 Introduction

The Federal Aviation Administration (FAA) is preparing an environmental impact statement (EIS) in response to a request from the Alaska Department of Transportation and Public Facilities (DOT&PF), the Sponsor, for funding and other approvals for a new land-based airport near the community of Angoon in Southeast Alaska. At present, there is no land-based airport runway in or near Angoon. The DOT&PF prepared the Angoon Airport Master Plan (DOT&PF 2007) for their proposed airport location. The EIS is evaluating two alternative airport locations in addition to the DOT&PF's proposed location and multiple access road alternatives associated with those airport locations.

The proposed land-based airport would be a small, commercial airport typical of other rural airports in the region. The initial construction would include a 3,300-foot-long paved runway, with the ability to extend the runway length to 4,000 feet in the future if air traffic warrants it. The airport would have a short, perpendicular taxiway leading from the runway to a small apron area, which may eventually contain a passenger shelter building. The proposed airport is being designed to accommodate a future full-parallel taxiway, but this taxiway would not be constructed initially and would only be built if air traffic demands are sufficient to warrant this additional safety and efficiency feature. The runway, perpendicular taxiway, and apron would be surrounded by clear areas required for safety. Regardless of the airport location under consideration, an access road would need to be constructed to connect the new airport to the existing Angoon road system. The proposed access road would have a gravel surface and would be two lanes wide (one lane in each direction) with 9-foot-wide lanes and minimal shoulders.

The purpose of this report is to provide a detailed description of the current visual, aesthetic, and scenic resources potentially affected by implementation of the Airport project on lands that are part of Admiralty Island National Monument and Kootznoowoo Wilderness Area (hereafter referred to as the Monument–Wilderness Area) (which is managed by the U.S. Forest Service [USFS]), on lands owned and managed by Kootznoowoo, Inc. (the Alaska Native village corporation) for the City of Angoon, or on the Kootznoowoo Corridor Lands jointly administered by the USFS and Kootznoowoo, Inc. (the Kootznoowoo Corridor Lands are those designated areas that extend 660 feet inland from the Favorite Bay shoreline) (DOT&PF 2007). The information in this report will be used to prepare the Affected Environment section of the EIS and as the baseline condition against which visual impacts from the proposed project will be measured for the Environmental Consequences section of the EIS.

This report includes information on the existing landscape character and scenic integrity in the project area viewshed (hereafter referred to as the visual study area), and information on human-caused alterations of the natural landscape that are visible within the visual study area as seen from USFS-listed travel routes and use areas. Scenic or landscape character (as defined and applied by the USFS) refers to the overall visual impression created by an area's visual attributes (line, form, color, and texture, as seen by the casual viewer; these attributes are described below in section 3.2, Methods). Scenic integrity is the degree to which the landscape character is or appears to be intact, unaltered, and natural-appearing. Human-caused alterations include structures such as houses and docks, timber harvesting clear cuts, roads, trails, and power lines (USFS 1995).

2.0 VISUAL STUDY AREA

Three airport location alternatives and several airport access roads are being considered by the FAA (Figure 1). Two of the airport alternatives are located on the east side of Favorite Bay, east of Angoon, and one is located on the peninsula south of Angoon. The two airport alternatives east of Favorite Bay are located wholly or partially within the boundaries of the Monument–Wilderness Area. The third is located on municipal (City of

Angoon) and private lands and lands owned or managed by Kootznoowoo, Inc. (DOT&PF 2007). The study area for visual resources was determined based on the locations and viewsheds encompassing both the airport alternatives and the associated access road alternatives and on the criteria for selecting visual analysis viewpoints issued by the USFS for the Tongass National Forest. The approach to defining the visual resources study area and selecting viewpoints was discussed with USFS staff prior to any onsite data collection.

As discussed and as directed in Appendix F of the *Tongass National Forest Land and Resource Management Plan* (hereafter referred to as the *Forest Plan*) (USFS 2008b), visual priority routes (VPRs) and use areas should be used as viewpoints to assess existing scenic integrity. Thus, as discussed in the appendix, ship routes, small- and mid-sized-boat routes, roads, hiking trails, saltwater use areas, communities, dispersed recreational areas, and boat anchorages should be the locales of primary consideration when establishing visual analysis viewpoints.

Accordingly, the final visual study area for the Airport project includes the tidal estuary, shoreline, and open water within Favorite Bay; the community of Angoon; the Alaska Marine Highway ferry terminal and water reservoir access roads south of town; and the outlying shoreline and nearshore locations within Chatham Strait to the south and west of Angoon.

The Favorite Bay and Angoon areas were included because intense onshore and offshore use by Angoon residents in these locales could constitute a saltwater use area. These activities (primarily subsistence related) are presently conducted near Airport Alternatives 3a and 4. Also, these areas provide some access for tourists traveling inland for adventure touring (e.g., kayaking, bear watching, hunting). Chatham Strait is a major marine highway and the access route to the Angoon Ferry terminal, and an important commercial and private fishing area. The ferry currently passes the Airport Alternative 12a locale while en route to and from the ferry dock. The Angoon ferry dock and nearby Whalers' Cove Lodge would potentially allow short-distance views of Airport Alternative 12a surface disturbances and visual quality impacts. Thus, Favorite Bay and Chatham Strait, because of their heavy use and proximity to all the Airport alternatives, would potentially provide casual points of view of Airport construction impacts to Angoon residents, tourists, recreational and commercial fishermen, and Alaska Marine Highway travelers.

Potential viewpoints within the Monument–Wilderness Area were also considered, however, undulating terrain and dense forest vegetation obscure the airport and access road alternative locations from view from all but one of these USFS-designated high priority VPRs and use areas. The lone potential VPR from which any component of the proposed airport location, its alternative locations, or the access roads could be seen is an undesignated primitive trail extending from the east shore of Favorite Bay to the lakes east of the bay. This trail is occasionally used by local residents for subsistence resource access or to take visitors up to the lakes for bear watching. Because of the extremely limited use (i.e., low volume of users) of the trail, it was excluded as a formal visual analysis viewpoint.

3.0 VISUAL RESOURCES

This section of the technical report describes the regulatory setting, the visual analysis methodology, and the representative scenic character and integrity in and around the visual study area, which consists of the three airport alternatives, the access alternatives, and the surrounding areas with potential to be affected by construction and long-term use of these facilities.

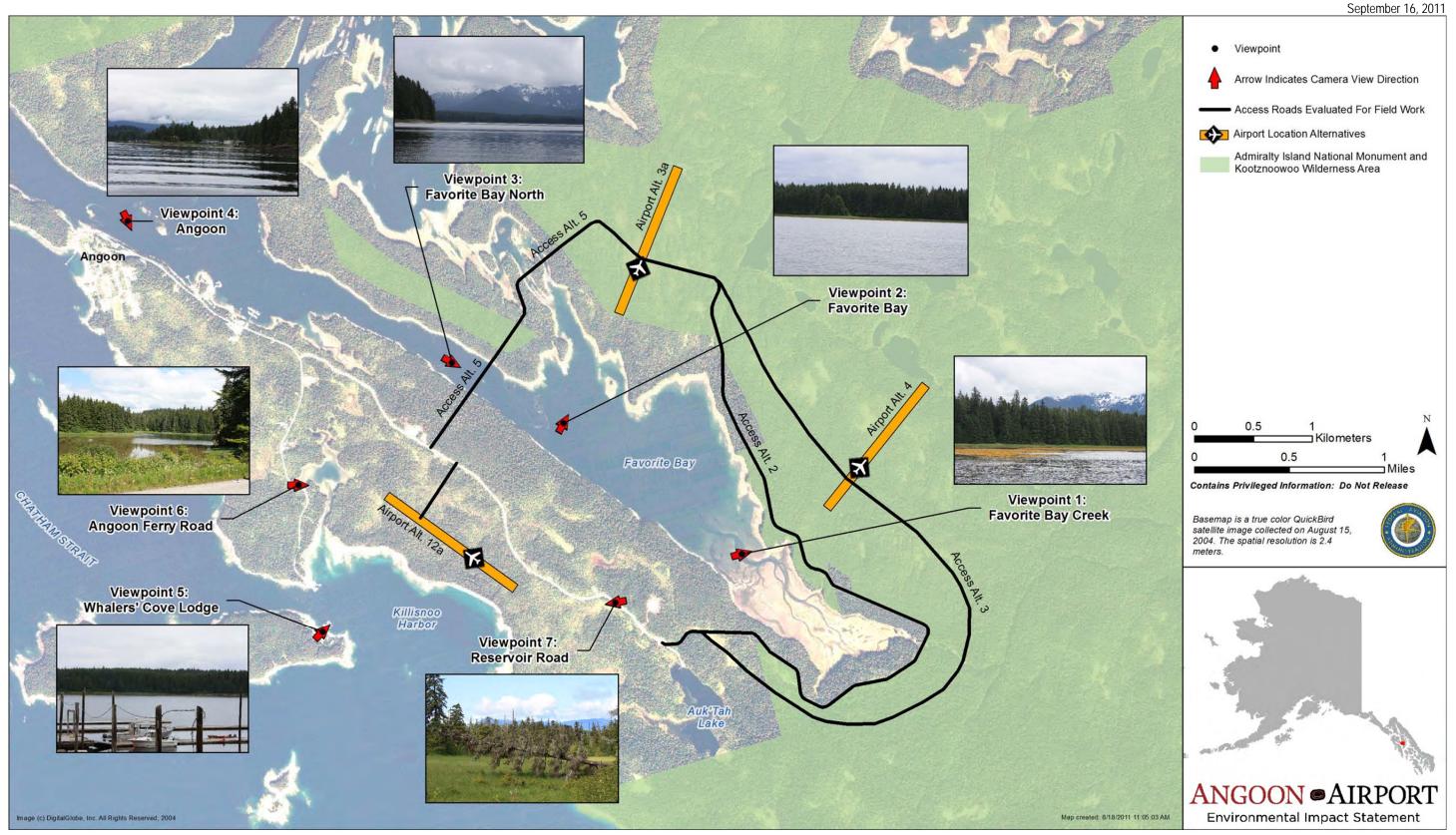


Figure 1. Visual study area viewpoints. Access Alternative 5 was studied but has been dropped from consideration in the EIS. NOTE: Airport alternatives illustrated on this figure represent locations only and do not depict final areas of disturbance.

3.1 Regulatory Setting

3.1.1 FEDERAL AVIATION ADMINISTRATION

FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, requires the consideration of visual resources (i.e., aesthetic or scenic resources) and light emissions in environmental analyses conducted for FAA undertakings. FAA Order 1050.1E (Appendix A.12) states the following with regard to light emission and visual impacts:

- 12.2a. Light Emissions.... The responsible FAA official considers the extent to which any lighting
 associated with an action will create an annoyance among people in the vicinity or interfere with their
 normal activities.
- 12.2b. Visual Impacts.... Aesthetic impacts deal more broadly with the extent that the development contrasts with the existing environment and whether the jurisdictional agency considers this contrast to be objectionable.

The FAA's *Environmental Desk Reference for Airport Actions* (FAA 2007) a supplement to FAA Order 5050.4B, *NEPA [National Environmental Policy Act] Implementing Instructions for Airport Actions*, also provides general guidance for the consideration of visual impacts in FAA NEPA analysis. Specifically, Chapter 16, *Light Emissions and Visual Effects*, sections 1(a) and 1(b) state the following:

- 1.a. Light Emissions.... Airport-related lighting facilities and activities could visually affect surrounding
 residents and other nearby light-sensitive areas such as homes, parks, or recreational areas. If there is
 a potential for airport lighting to disturb these sensitive land uses, the responsible FAA official should
 ensure the environmental document examines those effects.
- 12.2b. Visual Effects.... It is important to determine if a community or a jurisdictional agency considers visual effects from the proposed action objectionable.

3.1.2 U.S. FOREST SERVICE

The *Forest Plan* (USFS 2008b) implements the regulations, policies, and guidance set forth in the overarching National Forest Management Act of 1976. The *Forest Plan*, in compliance with the act, provides specific management goals, directions, management prescriptions, and desired scenic quality conditions for federally administered lands in the Tongass National Forest. These include the following:

- Applying the USFS Scenery Management System (SMS) and its procedures and processes for the inventory and analysis of aesthetic values on national forest lands.
- Minimizing the visibility of timber harvesting and other developments as seen from VPRs and use areas.
- Recognizing the scenic value of Tongass National Forest lands as seen from popular roads, trails, waterways, recreation sites, bays, and anchorages; modifying timber harvest practices when these values are recognized.
- Applying high scenic integrity objectives (SIO) in the foreground, middleground, and background of
 wilderness national monument land use designation (LUD) viewsheds as seen from VPRs and use
 areas. Applying the same high SIO to seldom seen/non-priority travel routes and use areas.
- Performing viewshed analysis in conjunction with project developments to provide directions for retaining or creating scenically attractive landscapes.

- Designing roads and trails to be compatible with the characteristic landscape.
- Managing areas designated wilderness and wilderness national monument so that design activities are not evident to the casual observer; applying USFS standards and guidelines applicable to high or very high SIO.
- Maintaining visual absorption capability (VAC) settings that are compatible with an area's SIO.
- Providing USFS visitors with visually appealing scenery emphasizing areas seen along the Alaska Marine Highway, tour ship and small boat routes, state highways, and major USFS roads, and from popular recreation places.

3.1.3 COASTAL ZONE MANAGEMENT ACT

The Coastal Zone Management Act (Alaska Statute 46 and 44) requires local governments to develop coastal management plans for incorporation into the statewide Alaska Coastal Management Program. The federal law that authorizes the program (15 CFR 923, Subpart E, Section 923.47) states that "coordination with governmental agencies having interests and responsibilities affecting the coastal zone, and involvement of interest groups as well as the general public is essential to the development and administration of State coastal management programs." It also states that agency coordination requirements include "the wise use of coastal land and water resources with full consideration for ecological, cultural, historic, and aesthetic values and needs for compatible economic development" (emphasis added).

3.2 Data Sources

The following data sources were used to characterize the visual resources within the visual study area, and will be used in the subsequent visual resource analyses:

- Geographic information system (GIS) data: Field maps, including GIS coverages of scenic quality management within the visual study area, and VPRs and use areas (e.g., Chatham Strait, Favorite Bay).
- Field survey: A field survey was conducted in June 2009 in the visual study area. It included surveying
 existing roads and trails as well as visual priority and marine travel routes identified in the *Forest Plan*,
 as discussed above. Surveys were also conducted in Favorite Bay, in Chatham Strait, and along the
 Alaska State Ferry Route approach into Angoon. Analysis viewpoints were selected based on the
 results of the survey.
- The Forest Plan (USFS 2008a): This was referenced for its policy and management directions.
- The Mitchell Bay Watershed Landscape Assessment (USFS 2002): This was referenced for its
 descriptions and characterizations of scenic quality within the visual study area.
- The Angoon Hydroelectric Project Final Environmental Impact Statement (USFS 2009): This was referenced for its viewshed and scenic quality characterization, including those portions of the final EIS project area that lie within the Airport visual study area.
- Landscape Aesthetics. A Handbook for Scenery Management (USFS 1995): This definitively describes landscape character, SIO, landscape visibility, distance zones, and the SMS that guides the inventory and analysis of aesthetic values on USFS-managed federal lands.
- National Forest Landscape Management (USFS 1974): This precursor to the SMS management handbook provides useful information on acceptable management activities and allowable disturbances on SIO-designated landscapes.

3.3 Methods

Two of the three Airport alternative locations are located wholly or partially on lands administered by the USFS; the remaining alternative is located on private, municipal, and Alaska Native corporation lands. To provide consistency relative to visual resource considerations, the USFS methods for evaluating scenic quality will be applied to all alternatives.

The USFS developed the SMS as a method to describe landscapes and to analyze project-level impacts to the scenic quality of landscape. The goal of the SMS is to apply a level of objectivity and consistency to the scenic resources inventory and analysis process, and to reduce the subjectivity associated with assessing landscape visual quality. The SMS applies SIOs that provide management direction and objectives for landscapes within USFS LUDs, which can include areas designated as wilderness; wilderness national monument; scenic viewshed; semi-remote recreation; timber production; various corridors for transportation and utility systems; and wild, scenic, or recreational river. The SIOs, as described in the *Forest Plan* (USFS 2008b), refer to the degree of acceptable change or alteration of the landscape caused by project developments.

The concept used by the USFS to assess scenic quality, and to analyze potential impacts to scenic quality, is to compare the degree of visual contrasts potentially created by an activity with the existing landscape or scenery within or surrounding that proposed activity (the visual study area). This comparison is applied within the context of scenic integrity (landscape intactness or wholeness), designated SIO (the levels of change allowed in an area as designated in the *Forest Plan*), visibility to the public from designated use areas (e.g., trails, roads, waterways), and landscape sensitivity (the concern the public may have for the scenic values of an area) (USFS 1995).

3.3.1 LANDSCAPE CHARACTERIZATION

The landscape features used in the comparison are the forms, colors, textures, and lines that compose and characterize the existing and potentially modified landscape. Landscape form refers to the unified masses or shapes of the landscape being analyzed, such as existing structures, topography, and natural objects (e.g., conical peaks, blocky mesas, rolling grassland). Landscape color refers to the colors of structures, vegetation, soil, water, rock, and sky. Landscape texture is the variation, pattern, density, and graininess of the landscape surface (e.g., uneven, sparse, and seemingly random-ordered shrubs in an arid landscape; even, orderly, and dense rows of trees in an orchard), and the dimensions of those surface variations (e.g., tall conifers, short grasses). Linear landscape features are the real or imagined paths that the eye follows when perceiving abrupt changes in form, color, or texture. These are often noticeable as the edge effect created at the boundary of two contrasting areas (e.g., a line of trees along a rocky slope or ledge, the abrupt boundary between forest and grassland, a dark ridgeline silhouetted against a bright sky). It should be noted that all these observable landscape features (line, form, color, and texture) can be affected by environmental factors that include the viewing distance (i.e., the foreground, middleground, and background views mentioned above), the slope and angle of view, atmospheric effects (e.g., haze, fog, dust, smoke), lighting conditions, and time of day.

In general, the project-related landscape changes that repeat the natural features of the landscape or are well integrated with existing landscape features and characteristics are considered to be in harmony with the natural landscape. These changes produce low levels of contrast, and are considered to have a low impact on existing scenic quality or on the aesthetic values of the landscape. Landscape modifications that do not harmonize with the surrounding natural landscape are considered to be in contrast with that landscape. The contrasts appear obvious, they stand out, and they can be scenically displeasing to viewers because they are not well integrated with the existing natural landscape.

For the visual study area, aesthetic or visual analysis involves determining the degree of visual change between the existing landscape and the landscape that would be produced by the development described in the

forthcoming Angoon Airport EIS Chapter 2 project description. The USFS-administered landscape within the visual study area has a LUD of wilderness national monument. *Forest Plan* standards and guidelines for viewsheds in lands designated as wilderness national monument indicate a preference for Very High SIO (USFS 2008) in the foreground, middleground, and background. Under high SIO, the landscape integrity appears intact, and surface disturbances may be present but must repeat the landscape characteristics so that they are not evident to the casual viewer. Design activities and surface disturbances should not be evident to the casual viewer when viewed from VPRs and use areas. Disturbances should not be evident in the foreground, middleground, background, or in seldom seen/non-priority areas (USFS 2008b).

It should be noted that a portion of the visual study area lies on private land and lands managed by Kootznoowoo, Inc. under the Alaska National Interest Lands Conservation Act (ANILCA); see *Land Use Technical Report for Angoon Airport Environmental Impact Statement* (Southeast Strategies 2010). For method and project consistency, and because no analysis methods have been developed for analyzing scenic impacts under ANILCA, the method and concepts described for analyzing impacts to scenic quality on USFS-managed lands would be applied to lands managed by Kootznoowoo Inc., as well.

3.3.2 Scenery Management System and Selecting Viewpoints

The USFS SMS assessment process, which will be used for the Airport EIS and was used to guide the gathering of baseline scenic condition data presented herein, is essentially a comparison of the existing scenic character and contrasts within the visual study area to the contrasts potentially imposed on the visual study area by a project. The SMS considers scenic quality as a combination of the viewshed from the foreground (less than 0.5 miles from selected viewpoints), middleground (0.5–5.0 miles from viewpoints), and background (5–15 miles from viewpoints) and viewer sensitivity, the project area's VAC, potential views from priority routes and use areas, and the designated land use objectives for the area.

The SMS process includes the following steps to establish the baseline scenic/visual condition of a project area:

- 1) Identifying the designated SIO within the visual study area. For the Airport project, areas designated wilderness national monument have been assigned high SIO; areas managed by Kootznoowoo, Inc. do not have USFS SIO, but are regulated under ANILCA. ANILCA does not specify how scenery would be managed, but does require that federal agencies "cooperate with adjacent landowners and land managers, including Native Corporations" in "protecting the continued viability of all wild renewable resources" (Title VIII, Section 802(3)).
- 2) Selecting representative viewpoints from which the visual study area landscapes are described and the impacts to visual resources will be determined. The following criteria for selecting representative viewpoints are used:
 - Visual sensitivity areas: These are areas with scenic attractiveness or natural beauty.
 - VPRs and use areas: As described in the Forest Plan (USFS 2008a), VPRs include the Alaska Marine Highway, tour ship routes, roads, small and mid-size tour boat routes, and hiking trails; use areas include saltwater use areas, dispersed recreation areas, communities, cabins, developed recreation sites, and boat anchorages. The VPRs and use areas for the visual study area would include the Chatham Straits waterway, the Alaska Marine Highway ferry routes arriving at and departing from Angoon ferry dock, potential views of the alternatives from Angoon, public roads and trails near the alternatives, and the shoreline of Favorite Bay. Non-priority routes and use areas and areas not visible from the VPRs are analyzed as seldom seen. These areas could include trails, cabins, timber sales, roads, logging camps, recreational facilities, fish enhancement structures, and gravel pits. The guidelines for

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- identifying or determining scenic analysis viewpoints are discussed in Appendix F and in Scenery Standards and Guidelines of the *Forest Plan* (USFS 2008a).
- Designated SIO and LUDs: As documented in the Forest Plan (USFS 2008a), and as mentioned above, the designated SIOs are high for all areas designated wilderness national monument.
- Viewing distance and project-area landscape visibility when seen from selected viewpoints: This is a function of the duration of the view by observers; the degree of detail that could potentially be discerned by viewers in the foreground, middleground, and background; and the number of viewers that could potentially see the project area. As mentioned above and as specified in the *Forest Plan* (USFS 2008a), foreground is the visible area within 0.5 miles of the analysis viewpoint, middleground ranges from 0.5 miles to 5 miles, and background is greater than 5 miles and less than 15 miles from the viewpoint.
- 3) Describing the visual study area landscape or scenery characteristics from the selected viewpoints with the landscape elements or attributes of form, line, color, and texture as discussed above. The purpose of characterizing or describing the landscape is to document a baseline of existing scenic values and aesthetic quality. Typically, the visual study area scenery is digitally photo-documented from the selected viewpoints, the precise location of the viewpoint is recorded using global positioning system (GPS) equipment to acquire coordinates, and any relevant field notes are recorded at that time. The digital photographs are then used to prepare the scenery descriptions.

Field data (photo-documentation and GPS points) to be used for scenery characterization and impacts analysis were collected on June 14–16, 2009. Data collection was conducted within the visual study area, which includes the tidal estuary, shoreline, and open water in Favorite Bay; the Chatham Strait and Favorite Bay shoreline near the City of Angoon; the Alaskan Marine Ferry route approaching and departing from the Angoon Ferry Dock; near-shoreline points in Chatham Strait between the community of Angoon and the Ferry Dock; and the Angoon Ferry and Reservoir access roads.

Data collection consisted of first reviewing the locations of the Airport alternatives and Access alternatives, determining the VPRs and use areas by reviewing the USFS *Forest Plan* in relation to the Airport alternatives and Access alternatives, and then documenting the locations or points of view within the visual study area where potential Airport impacts would likely be visible to casual viewers. The USFS principles for designating VPRs were applied to the identification of VPRs for alternatives not located on lands administered by the USFS.

An extensive number of potential visual analysis viewpoints were documented during field data collection. All high priority VPRs and use areas designated by the USFS in the vicinity of the visual resources study area were assessed as to whether any of the airport alternative locations or access road alternatives would be visible from the VPR or use area. Undulating terrain and dense forest vegetation obscure the airport and access road alternative locations from most of the designated high priority VPRs and use areas, which were then eliminated from consideration as representative viewpoints for analysis in the EIS.

Upon completion of fieldwork, all of the potential viewpoints were subjected to additional screening to select a subset of representative viewpoints that include both USFS designated VPRs and use areas and equivalent VPRs and use areas for non-USFS lands. One factor in screening potential viewpoints was the frequency or volume of use of the area in question. Very low volume routes or use areas were eliminated from consideration as representative viewpoints in favor of viewpoints that experience a higher volume of use and from which the viewing experience of a larger number of individuals could be affected.

Based on USFS criteria for selecting scenic analysis viewpoints, seven representative locations (see Figure 1 and Figures 2–8) were selected as the viewpoints for determining the existing viewsheds that will be characterized and for which impacts will be analyzed in the EIS. As noted previously, the FAA EIS Team

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discussed the process by which these viewpoints would be selected with USFS staff members prior to field data collection.

The locations of the landscape characterization and analysis viewpoints are as follows:

- Viewpoint 1: Favorite Bay Creek (Figure 2)
- Viewpoint 2: Favorite Bay (Figure 3)
- Viewpoint 3: Favorite Bay North (Figure 4)
- Viewpoint 4: Angoon (Figure 5)
- Viewpoint 5: Whalers' Cove Lodge (Figure 6)
- Viewpoint 6: Angoon Ferry Road (Figure 7)
- Viewpoint 7: Reservoir Road (Figure 8)

The scenic (visual) character as viewed from each of these locations is described below.

3.4 Scenic Character within the Visual Study Area

3.4.1 VIEWPOINT 1: FAVORITE BAY CREEK

The view from this perspective is from offshore in Favorite Bay Creek and the estuary at the southern end of the Favorite Bay, looking east-northeast and along and down the length of the runway for Airport Alternative 4. This point of view would provide unobstructed, short-distance views of surface disturbances along much of the length of the alternative area. That is, from this viewpoint the viewer would see the greatest disturbance caused by clear-cutting for the runway.

The foreground view is of a topographically flat intertidal estuary; brackish water flowing through Favorite Creek and the estuary; a narrow vegetated shoreline; and a very dense, uniform, and solid-appearing spruce-hemlock forest beyond the shoreline. Landscape forms appear definite and distinct: the shoreline-estuary boundary is clearly defined by changes in vegetation; the forest-shoreline boundary is abrupt and obvious, with a clear transition from low-growing vegetation to tall trees. The rapid transition from flat, horizontal estuary to rising shoreline to vertical dense forest creates strong, bold landscape contrasts. Foreground linear contrasts are strong and simple—the horizontal, straight, and narrow band of shoreline appears distinct between water and forest, and the sharp, horizontal edge of the forest along the shoreline is clear and regular. Tree top lines undulate. Foreground colors are distinct and scenic: dark water intermixes with bright orange-yellow intertidal vegetation near the shoreline; vivid intertidal vegetation colors rapidly change to soft light green; and light green rapidly changes to variegated dark green forest colors. Textures are distinct and contrasting, and internal texture contrasts are created among the trees along the forest edge by changes in lighting and shade. Textures range from smooth water and uneven or stippled gradations of shoreline textures to dense, coarse-textured trees. Middleground views are obscured by the height of the dense forest cover adjacent to the shoreline.

Background views are dominated by high, rugged mountain ranges east of the general Airport project area. It should be noted that the background landscape character is affected by atmospheric conditions, appearing bold and distinct when clear but softened and obscured by mist, rain, and low clouds when overcast. The mountains in the background are diverse and complex in form: vertical and angular slopes are composed of rocky outcrops and peaks, forested lower slopes, and snow fields at middle and upper elevations. Line contrasts are strong because the mountain skyline creates a silhouette with the background sky. Diffuse and scenic edge effects are created by the gradation and intermixing of snowfields with the dark rocky or dark green forested slopes. Background textures appear rough and coarse on the jagged upper slopes, but medium on the smoother lower slopes.



Figure 2. Viewpoint 1: Favorite Bay Creek, in the estuary, facing northeast toward the runway area for Airport Alternative 4.

3.4.2 VIEWPOINT 2: FAVORITE BAY

This northeastern-facing view is from an offshore point near the center of the bay that would provide unobstructed views along the entire length of Airport Alternative 3a. This viewpoint, which is transited primarily by watercraft operated by local residents engaged in subsistence activities, represents the location from which the viewer would see the greatest degree of disturbance caused by clear-cutting for the runway. The foreground view is similar to that described for Favorite Bay Creek (Viewpoint 1) above but without estuary line and color contrasts. The result is a topographically flat landscape with distinct and definite shoreline and forest boundaries. The view is dominated by the dense and unbroken wall of mature spruce-hemlock forest, and this landscape characteristic is typical of the shoreline and foreground around Favorite Bay.

The shoreline appears distinctly narrow from this viewpoint, and its features are obscured by the viewing distance. Landscape linear features are predominantly and distinctly horizontal, composed of edge boundaries between water and shoreline, and shoreline and forest. As described for Viewpoint 1 above, the forest creates a continuous but undulating and irregular silhouette line along the treetops that contrasts with the background sky. Color contrasts are strong between the dark green spruce-hemlock forest and sky, and between the dark water and forest. A moderate color contrast exists between the light green shoreline vegetation, water, and forest, but this contrast is reduced because of the narrowness of the shoreline when viewed from water level. Foreground textures are similar to those described for Viewpoint 1: coarse-textured forest trees contrast strongly with fine-textured water and shoreline. Middleground and background features are entirely obscured by the dense growth of forest in the foreground.



Figure 3. Viewpoint 2: Favorite Bay, near center of bay, facing northeast toward Airport Alternative 3a.

3.4.3 VIEWPOINT 3: FAVORITE BAY NORTH

Located offshore and within the Favorite Bay narrows, the purpose of this viewpoint is to document existing conditions and short-distance views southeast of the potential road and bridge access to Airport Alternative 3a. A south-facing view was chosen because it is assumed that there would be a greater number of viewers in this direction than looking northward (e.g., viewers traveling from Angoon into the straits toward Mitchell Bay as well as those traveling south into Favorite Bay).

From this perspective, the view shows a diversity and contrast of natural landforms and water that is highly scenic. The foreground view is of an open waterway bounded on both sides by tall, dense growths of spruce-hemlock, with water and forest separated by a narrow band of low-growing shoreline vegetation and exposed rock. Strong foreground form contrasts are created by the differences between flat, relatively featureless water and the tall, vertical, highly varied forms of trees along the shoreline. Partially exposed rock outcrops in the center of the foreground water add to the diversity of forms and to scenic quality. Landscape colors range from dark green forest vegetation and lighter green vegetation and tan-colored shoreline rock to dark gray water. It should be noted that cloud cover likely has a direct impact on Favorite Bay water color, and that blue sky and direct sunlight on water would create stronger color contrasts with the surrounding landscape. Moderately strong horizontal linear edge-effect contrasts exist between shoreline and water, between shoreline and treeline, and as a rough and undulating silhouette line along the forest treetops. Textures range from smooth water to coarse trees. Internal texture contrasts are created among the trees visible along the edge of the forest by changes in lighting and shade.

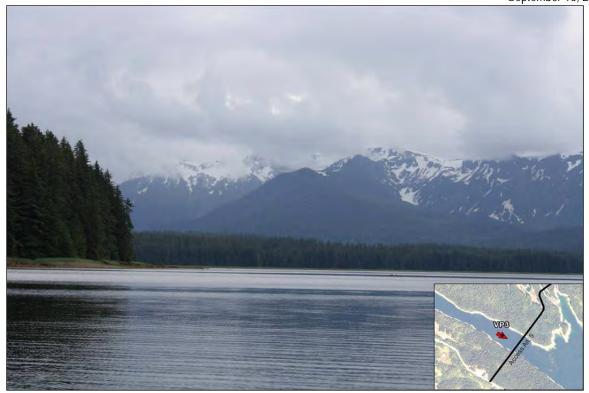


Figure 4. Viewpoint 3: Favorite Bay North, facing southeast toward the potential access road and bridge to Airport Alternative 3a.

Middleground views are of the open water of Favorite Bay, the bay estuary in the far middleground, and the dense and topographically flat forest growing along the bay's shoreline and inland. Middleground scenic characteristics are similar to those described for the Viewpoint 2 foreground above. The uniformly dense, uniformly dark green, and uniformly fine-textured relatively horizontal line of trees along the middleground bay shoreline creates a moderate scenic contrast with the foreground forest and water.

Background views are similar to the background views described for the Viewpoint 1. The rugged peaks, steep rock and snow-covered upper slopes, and forested lower slopes create a strong and highly scenic contrast with the foreground and middleground views. As noted for Viewpoint 1, the atmospheric effects of cloud cover, mist, rain, and fog tend to mute the background contrasts with foreground and middleground. Full sunshine and unobscured sky would likely heighten the background contrasts because of the increased color, line, texture, and form contrasts that would be visible.

3.4.4 VIEWPOINT 4: ANGOON

This point of view is located offshore from Angoon and near the northern end of Favorite Bay. The view is to the southeast, and the viewpoint was chosen to determine if there would be any observable impacts of Airport Alternative 12a construction when viewed from an unobstructed location near the town. The viewpoint was also chosen to determine the impacts to scenic quality from construction of the proposed bridge and access road (Access Alternative 5) across the lake narrows to Airport Alternative 3a. Because of terrain, Airport Alternatives 3a and 4 would not be visible from this location.

The foreground view is of the nearshore waterway leading to Favorite Bay and Mitchell Bay. Dwellings, docks, and other structures lie along the partially developed, rocky shoreline. Tree-covered, gently rising slopes frame

the shoreline and lead up toward the east side of Angoon. Natural landscape forms are typical of the shoreline surrounding Favorite Bay (as described above under Viewpoint 2) except where the shoreline has been widened (near and adjacent to buildings and structures) to accommodate development. Development has increased landscape form contrasts and complexity: numerous vertical and horizontal, rectangular and regular shapes and angles are intermixed with the relatively uniform, regular shapes of trees and shoreline. Foreground line contrasts are strong due to the distinct structural edges seen against a softened and diffuse forest background. A strong line contrast is created by the silhouette edge effect of forest treetops against the background sky. Color contrasts are created by the gray, white, tan, and brown colors of the structures against the muted dark green trees and dark gray water. Foreground textures are fine (within offshore water and along the shoreline), moderate (due to shoreline buildings and structures), and coarse (where tall spruce-hemlock forest trees are visible along the shoreline). Middleground views are obscured by the shoreline trees when the view is toward the Airport Alternative 12a.



Figure 5. Viewpoint 4: Angoon, facing south from offshore near Angoon at the northern end of Favorite Bay toward Airport Alternative 12a.

The background view is of the mountain range described in Viewpoints 1 and 3, and the scenic characteristics would be similar to the description provided for those viewpoints. When fully visible, the background landscape would produce a similarly scenic view as is described under Viewpoint 3. Also, as previously mentioned, it should be noted that atmospheric and weather conditions strongly influence and affect the scenic quality and visual contrasts of the landscape: during periods of low-hanging clouds and/or mist, the scenic background view would not be visible (as shown in the survey photograph below); however, in full sunlight with an unobstructed sky, the scenic contrasts would likely be greater, and scenic quality would be enhanced.

3.4.5 VIEWPOINT 5: WHALERS' COVE LODGE

From this perspective, facing northeast from the lodge toward Airport Alternative 12a would provide short-distance views of potential impacts to scenic quality when viewed by tourists, recreational and commercial fishermen, and Alaska Marine Highway ferry passengers. This viewpoint was chosen based on the relatively large number of people that would have potentially continuous and elevated views of Airport Alternative 12a, most notably from the upper deck of the ferry.

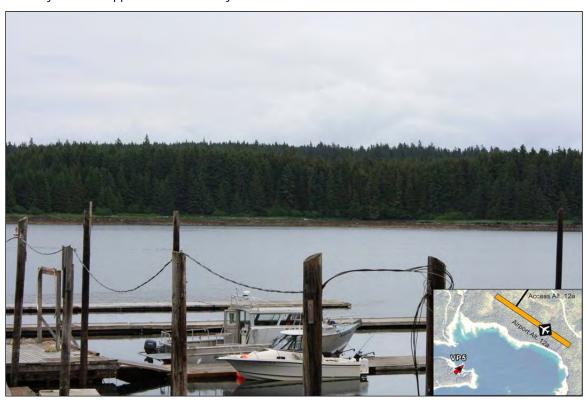


Figure 6. Viewpoint 5: Whalers' Cove Lodge, facing northeast toward Airport Alternative 12a.

The foreground view is dominated by the lodge dock, the ferry terminal, the Chatham Strait inlet, and the dense stand of spruce-hemlock that covers the low ridge and slopes beyond the inlet. Landscape forms are highly varied from this perspective because of shoreline development. The near shoreline is dominated by regular, horizontal, long, and low metal and wooden ramps, docks, piers, and moorings. Tall, vertical pilings, sheds, buildings, and dock support structures are visible. The far shoreline and landscape appear undeveloped (with the exception of minor structures along the shoreline) and present strong form contrasts to the near shore. The undeveloped slope and low ridge are typical of the undeveloped landscape in the visual study area (and as describe above for Viewpoint 2): a low, narrow shoreline bounded by flat water, behind which lies a dense, tall, vertical, and unbroken spruce-hemlock forest. Linear, color, and texture character is also similar to that described under Viewpoint 2: strong horizontal edge-effect line contrasts between water and shoreline, and between shoreline and forest boundary; moderate color contrasts between dark green forest, light green and tan shoreline vegetation and exposed rock/soil, and varying sky and water color contrasts with forest and shoreline. Again, as noted above, atmospheric conditions of cloud cover, mist, and rain tend to mute these color contrasts. but contrasts would likely be enhanced during periods of full sunlight and low cloud cover. Foreground landscape textures are fine at water level and along the far shoreline; fine to medium and uneven variable in areas of shoreline development; and coarse, dense, and uniform in the forest.

The middleground and background are obscured by trees and topography.

3.4.6 VIEWPOINT 6: ANGOON FERRY ROAD

This viewpoint is located along the Angoon ferry access road at a point where Airport Alternative 12a would potentially be visible to the southeast for those driving to and from the ferry docks. This viewpoint was chosen because of the relatively heavy traffic along the road while the ferry is docked, traffic to and from the village and Whalers' Cove Lodge, local traffic to and from the Angoon cemetery, and occasional foot traffic between Angoon and the ferry docks.



Figure 7. Viewpoint 6: Angoon Ferry Road, facing east toward the northern end of Airport Alternative 12a.

The foreground view is of a topographically flat landscape. A curving lagoon shoreline is clearly visible from the road, bounded by low-growing vegetation along the road and by tall conifers on the far shore and on most of the near shore. The narrow strip of curving shoreline creates a minor transitional contrast between tall vertical trees and flat lagoon water. The prominent wall-like edge of the forest and flat, open water are the dominant form characteristics in this view. Prominent line contrasts are visible, creating edge effects between the forest boundary and the shoreline, and between the shoreline and lagoon. Line contrasts are also created between the undulating tree tops and background sky, producing a silhouette-edge effect. Colors include green-brown lake water, light green shoreline vegetation, and variegated or mottled dark green along the forest edge. A mild contrast exists between the shades of green along the shoreline and forest. The reflection of the trees off the lake with the background blue sky produces a scenic effect. Textures range from simple in the lagoon and along the shoreline to a more complex, dense, and coarse texture along and within the surrounding forest. Internal texture contrasts are created among the trees visible along the forest edge by changes in lighting and shade.

The middleground and background are obscured by the foreground trees and by the low angle of view from this location.

3.4.7 VIEWPOINT 7: RESERVOIR ROAD

This viewpoint is located at a high point along the water reservoir maintenance access road where a wetland clearing would potentially allow views of the southern end of Airport Alternative 12a. A viewpoint was chosen along this road because of its relatively heavy use for reservoir and pump station maintenance, and because it is a popular driving route for Angoon citizens. Due to dense evergreen forest along the road, the locations of Airport Alternatives 3a and 4 would not be visible from this or other locations along the road.



Figure 8. Viewpoint 7: Reservoir Road, facing northwest through a clearing from the road edge toward the southern end of Airport Alternative 12a.

From this perspective, the foreground view is dominated by the flat wetland meadow and tall trees that lie along the meadow boundary. Landscape forms consist of a slightly undulated ridgeline and slope, short vegetation within the flat meadow, vertical trees along the edge of a spruce-hemlock forest, and a single downed tree that partially (and temporarily) obscures the foreground view. A linear edge effect is created along the boundary between short meadow vegetation and the forest boundary. Landscape foreground colors range from light-green meadow vegetation to dark-green conifers along meadow edge. Textures are fine within the meadow and coarse within the forest. Middleground views are obscured by tall trees and topography.

The background view is partially obscured by the foreground trees, but a smooth to rough and jagged ridgeline and steep upper-elevation slopes are visible. A strong linear edge-silhouette is visible along the background ridgeline and sky, creating a scenic contrast and scenery-enhancing effect with the foreground view. Background colors are indistinct because of the viewing distance, but appear as muted green and brown on the mountain slopes. Background textures are medium to coarse.

Angoon Airport EIS Visual Resources Technical Report Final September 16, 2011

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- DOT&PF. 2007. Angoon Airport Master Plan. Alaska: Alaska Department of Transportation and Public Facilities.
- FAA. 2007. Environmental Desk Reference for Airport Actions. Federal Aviation Administration.
- Southeast Strategies. 2010. Land Use Technical Report for Angoon Airport Environmental Impact Statement. Douglas, Alaska: Southeast Strategies.



Acronyms

ANILCA Alaska National Interest Lands Conservation Act

DOT&PF Alaska Department of Transportation and Public Facilities

EIS environmental impact statement
FAA Federal Aviation Administration
GIS geographic information system

GPS global positioning system

LUD land use designation

NEPA National Environmental Policy Act

SIO scenic integrity objectives

SMS Scenery Management System VAC visual absorption capability

VPR visual priority route
USFS U.S. Forest Service



APPENDIX M SOCIOECONOMICS TECHNICAL REPORT

Note: The Section 508 amendment of the Rehabilitation Act of 1973 requires that the information in federal documents be accessible to individuals with disabilities. The FAA has made every effort to ensure that the information in the *Draft Angoon Airport Environmental Impact Statement* is accessible. However, this appendix is not fully compliant with Section 508, and readers with disabilities are encouraged to contact Leslie Grey at (907) 271-5453 or Leslie.Grey@faa.gov if they would like access to the information.



SOCIOECONOMIC EXISTING CONDITIONS TECHNICAL REPORT FOR ANGOON AIRPORT ENVIRONMENTAL IMPACT STATEMENT ANGOON, ALASKA

Prepared for

Federal Aviation Administration and Alaska Department of Transportation and Public Facilities

Prepared by

Southeast Strategies and SWCA Environmental Consultants

August 8, 2013

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1.0 Introduction

The Federal Aviation Administration (FAA) is preparing an environmental impact statement (EIS) in response to a request from the Alaska Department of Transportation and Public Facilities (DOT&PF), the Sponsor, for funding and other approvals for a new land-based airport near the community of Angoon in Southeast Alaska. The Angoon Airport project involves the construction and operation of a land-based airport to serve the community of Angoon, a small village located approximately 60 miles south of Juneau and 40 miles northeast of Sitka. Angoon is the only permanent settlement on Admiralty Island and is located on a small peninsula on the western coast of the island (Figure 1). At present, there is no land-based airport runway in or near Angoon.

The land-based airport would be a small, commercial airport typical of other rural airports in the region, such as the airport at Kake. The initial construction would include a 3,300-foot-long paved runway, with the ability to extend the runway length to 4,000 feet in the future if air traffic warrants it. The airport would have a short, perpendicular taxiway leading from the runway to a small apron area, which may eventually contain a small shelter for passengers. The airport layout is being designed to accommodate a future full-parallel taxiway, but this taxiway would not be constructed initially and would only be built if air traffic demands are sufficient to warrant this additional safety and efficiency feature. The runway, perpendicular taxiway, and apron would be surrounded by clear areas required for safety. Regardless of the airport location under consideration, an access road would need to be constructed to connect the new airport to the existing Angoon road system. The access road would have a gravel surface and would be two lanes wide (one lane in each direction), with 9-foot-wide lanes and minimal shoulders.

The EIS is evaluating two alternative airport locations in addition to the DOT&PF's proposed location and multiple access road alternatives associated with those airport locations (Figure 2). In all, the EIS considers three potential airport locations and three potential access roads. Two of the three airport alternatives (Airport Alternatives 3a and 4) and two of the access road alternatives (Access Alternatives 2 and 3) are largely located on lands within the Admiralty Island National Monument and Kootznoowoo Wilderness Area (hereafter referred to as the Monument–Wilderness Area), which is managed by the U.S. Forest Service (USFS). For this reason, the USFS is a cooperating agency for the EIS.

2.0 SOCIOECONOMIC STUDY CONTEXT

The purpose of this report is to compile existing social and economic data to provide a detailed description of the conditions and trends that could be affected by implementation of the proposed airport project. The report considers both conditions in the community of Angoon and, in some circumstances, in the surrounding region. Regional data for Southeast Alaska are also provided in some cases, to provide greater context regarding certain general trends for the area. Although it is not possible to separate most socioeconomic data relative to specific airport or access road alternatives, available data that are related to or would be affected by specific airport and access alternatives (see Figure 2) are used in discussions about subsistence activities and children's environmental health and safety issues in specific geographic locations in the Angoon area.

2.1 Regulatory Setting

Beyond the overarching requirements of the National Environmental Policy Act (NEPA) and its implementing regulations issued by the Council on Environmental Quality (CEQ) at 40 Code of Federal Regulations (CFR) 1500 et seq., the evaluation of socioeconomics and children's environmental health issues related to the Angoon Airport project is guided by Appendix A of FAA Orders 1050.1E, *Environmental Impacts: Policies and Procedures* (FAA 2004), and 5050.4B, *NEPA Implementing Instructions for Airport Actions* (FAA 2006).

In the FAA orders, environmental justice is included with socioeconomics and children's environmental health and safety. Due to the complexity of the environmental justice issue relative to the population that could be affected—both positively and negatively—by the proposed airport project, the FAA is addressing environmental justice under separate cover (that is, in the EIS) rather than in this technical report. For this reason, Table 1 summarizes only those statutes and regulations specific to socioeconomics and children's health and safety as outlined in the aforementioned FAA documents.

Table 1. Statutes and Regulations Pertaining to Analysis of Socioeconomics and Children's Environmental Health Issues as Identified in FAA Orders 1050.1E and 5050.4B

Statute	Regulation	Oversight Agency
Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks (62 CFR 19883, April 23, 1997)	40 CFR 1508.27	All federal agencies
Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. 4601, et seq.) (Public Law [PL] 91-646 amended by Surface Transportation and Uniform Relocation Act Amendments of 1987, Title IV of PL 100-117, and PL 105-117)	FAA Advisory Circular 150/5100-17 49 CFR Part 24 FAA Order 5100.37A, Land Acquisition and Relocation Assistance for Airport Projects	FAA

2.1.1 U.S. Forest Service Considerations

The USFS does not have agency-specific policies related to considerations of socioeconomics or children's health and safety beyond those called for by the general (non-FAA and non-DOT) federal regulations outlined in Table 1, above. The USFS *National Environmental Policy Act Handbook* (Forest Service Handbook [FSH] 1909.15) (USFS 2012a) and the USFS *Forest Service Manual 1900, Planning* (USFS 2012b) acknowledge the need to comply with CEQ regulations regarding the implementation of NEPA, with FSH 1909.15 establishing USFS-specific procedures for implementing NEPA; neither, however, provides additional guidance or policies regarding issues related to socioeconomics, environmental justice, or children's health and safety. However, the USFS *Tongass Land Management Plan* (TLMP) (USFS 2008) provides management objectives for issues broadly subsumed under the topics of socioeconomics and environmental justice.

The TLMP includes Forest-wide standards and guidelines for management of the Tongass National Forest, including those related to rural community assistance and subsistence. The rural community assistance guidelines call for the consideration of "social, cultural, and economic issues in resource management," including "considering local communities" needs in project plans" (USFS 2008). TLMP guidelines include such actions as

- maintaining reasonable access to subsistence resources as required by the Alaska National Interest Lands Conservation Act (ANILCA), discussed in section 2.1.2 below;
- generally managing Forest lands to maintain the health of subsistence resources; and
- locating and managing "...Forest management activities considering impacts upon rural residents who
 depend upon subsistence uses of the resources of [National Forest System] lands."

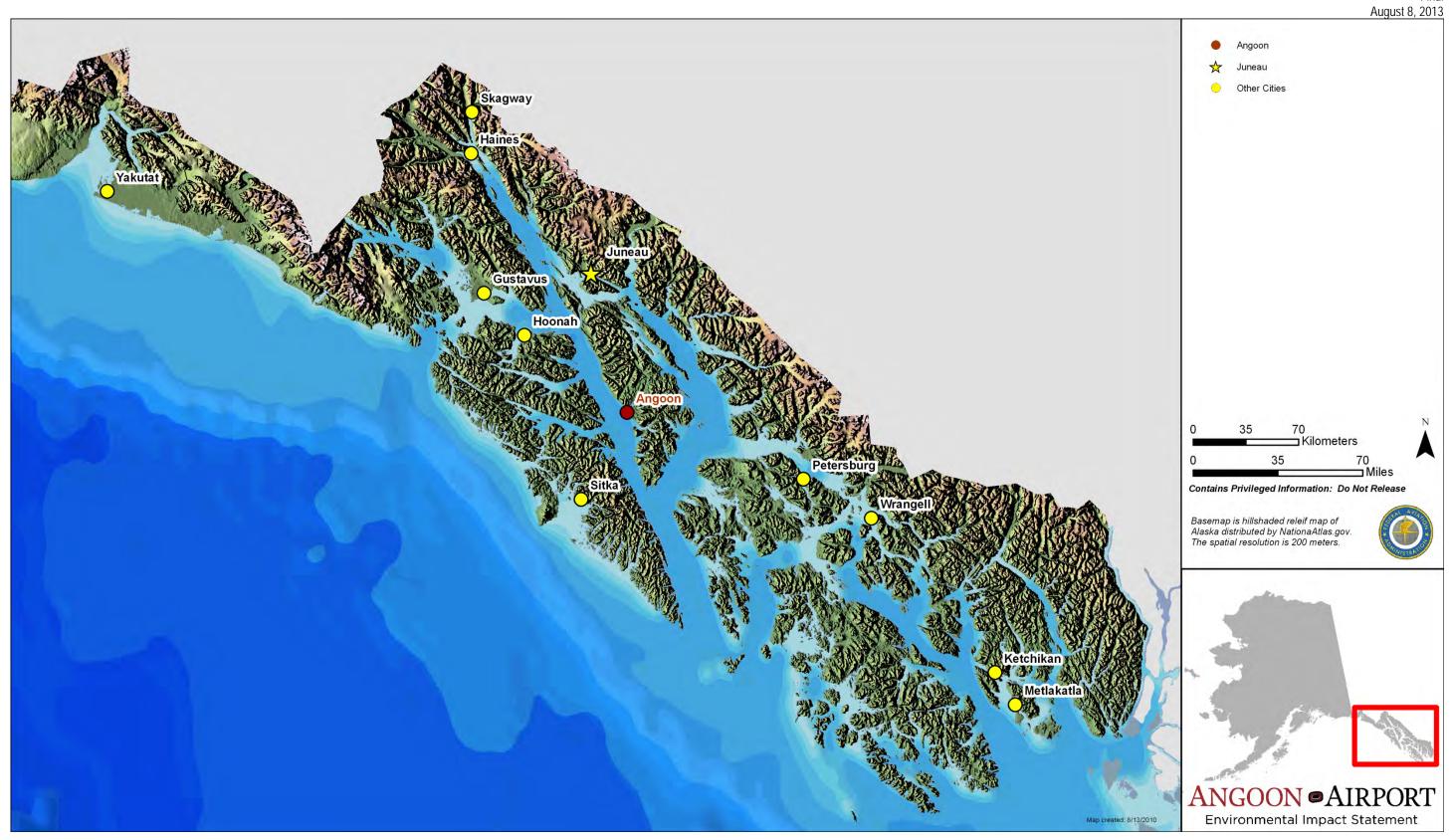


Figure 1. Southeast Alaska regional overview map showing the location of Angoon.

Angoon Airport EIS Socioeconomic Existing Conditions Technical Report Final August 8, 2013

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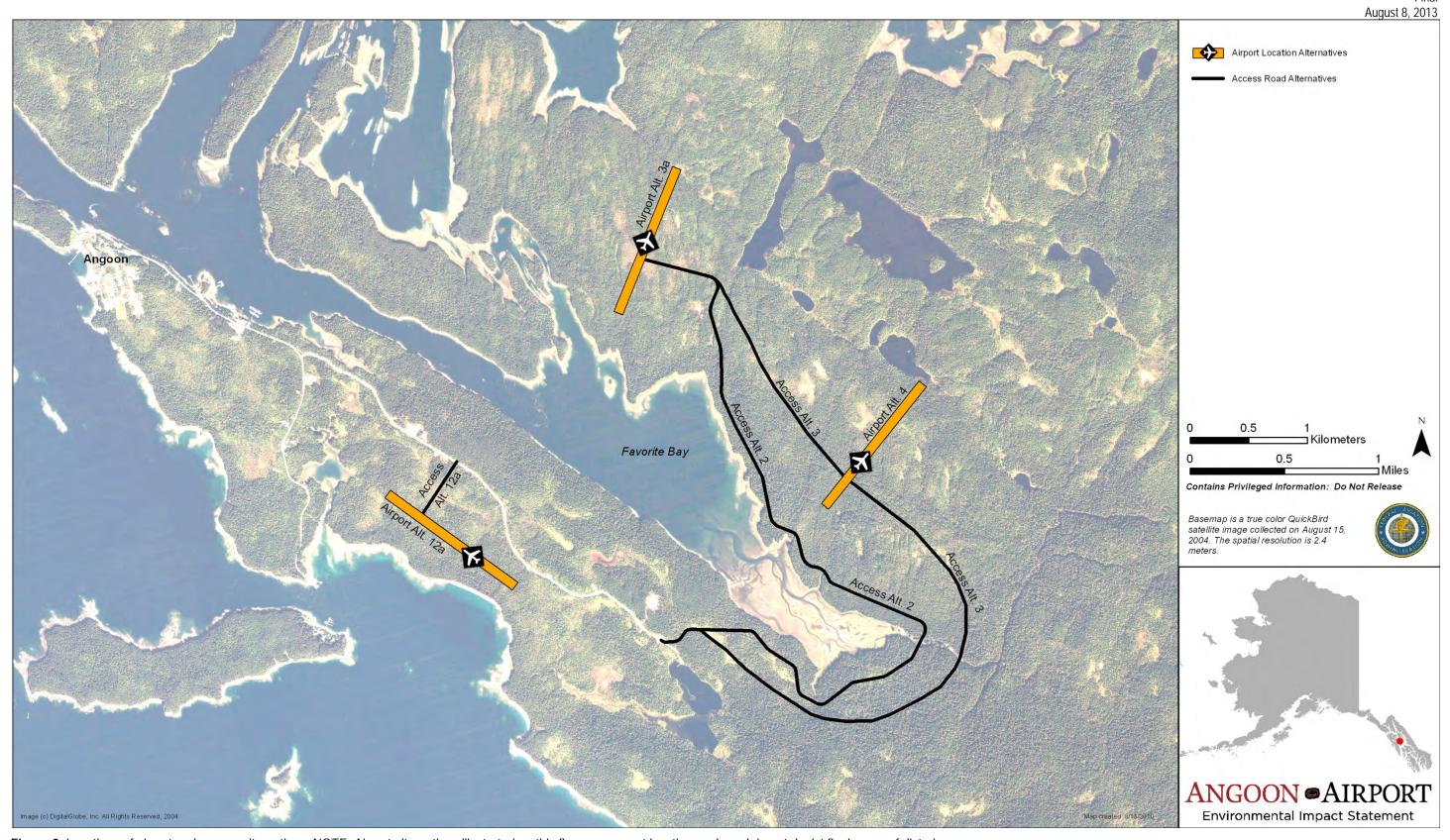


Figure 2. Locations of airport and access alternatives. NOTE: Airport alternatives illustrated on this figure represent locations only and do not depict final areas of disturbance.

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2.1.2 OTHER REGULATORY CONSIDERATIONS

Because two of the potential airport locations and two potential access road locations under consideration in the EIS are located wholly or partially on federal public lands in Alaska, ANILCA (Public Law [PL] 96-487) applies to the Angoon Airport project and must be considered along with the FAA- and USFS-specific regulations and policies. ANILCA (Title VIII) requires consideration of socioeconomic issues specifically as they relate to subsistence. It also requires consideration of compatible land use relative to the development of transportation and utility systems on federal public lands located in specially designated areas known as conservation system units (CSUs) (see Title XI of ANILCA). The two airport and access road alternatives located wholly or partially on federal public lands are located in the Monument–Wilderness Area, a designated CSU. The requirements of Title XI of ANILCA will be addressed in the EIS and are discussed in detail in the *Land Use Resources Existing Conditions Technical Report for the Angoon Airport Environmental Impact Statement, Angoon, Alaska* (Southeast Strategies 2012).

Title VIII of ANILCA directs federal agencies to assess the effects of their undertakings on the subsistence uses of public lands. ANILCA is germane only to Alaska and applies to rural Alaskans regardless of ethnicity. Title VIII requires evaluation of an undertaking's effects on several components of subsistence use, including availability and quality of subsistence resources, the availability of other public lands for project or subsistence use, and access to and competition for subsistence resources. It also requires consideration of the availability of project alternatives that would avoid or minimize effects on subsistence uses of public lands.

2.2 Methods and Data Sources

This report is based on data available in the *Angoon Airport Master Plan* (DOT&PF 2007), verified and updated as appropriate. Other data sources (reports, plans, databases, and agency web pages) are listed in Table 2.

Table 2. Data Sources

Socioeconomic Data	Source
Employment and income	Alaska Department of Labor and Workforce Development (DOL&WD)
Population and demographics (e.g., age, race)	DOL&WD and U.S. Census Bureau
Top employers	DOL&WD
Census block race data near alternatives	DOL&WD
Income data	U.S. Bureau of Economic Analysis
Commercial fisheries harvest by residence	Alaska Department of Fish and Game (ADF&G)
Commercial fisheries permits by residence	ADF&G
Commercial fisheries harvest by catch location	ADF&G and International Pacific Halibut Commission
Sport fish harvest by catch location	ADF&G
Charter vessels by home port	ADF&G
Subsistence harvest by residence and location	ADF&G
Ferry traffic and future plans	DOT&PF
Air traffic	DOT&PF and U.S. Department of Transportation
Development plans	Southeast Conference ¹ and Alaska Department of Commerce, Community, and Economic Development (ADCCED)
Web-based community databases	DOL&WD

Note: Originally compiled by Southeast Strategies in 2009. Data updated by SWCA in 2013.

¹ Southeast Conference is a regional association of municipalities, businesses, agencies, civic organizations, Native corporations and village councils, and individuals interested in economic, transportation, infrastructure, and social issues of Southeast Alaska.

Because the community is small and few community-specific socioeconomic studies have been conducted, some socioeconomic data are not available at the community level. In those cases, data at the larger census-area level are presented. Regional data for Southeast Alaska are also provided in some cases to provide greater context regarding certain general trends for the area. Where data from documented official sources were not available, information was obtained through personal communication or first-hand observation, extrapolated from existing data, or discussed only in general terms. Sources of personal communications, use of best professional judgment, and methods of extrapolation are noted where applicable.

Known data gaps are summarized as follows:

- Lack of annual community-level socioeconomic data. State-reported employment and
 unemployment data, and U.S. Bureau of Economic Analysis income data are not published below the
 census-area level. The U.S. Census Bureau does report income and employment data for individual
 communities, but a thorough count is only available through the decennial census every 10 years. The
 U.S. Census Bureau does some interim sampling of communities between decennial census years
 through the American Communities Survey program; however, in 2008, sample sizes for these surveys
 were significantly reduced, resulting in reduced reliability of estimates produced through that program.
- Census-area composition and boundary changes. Angoon is currently located within the Hoonah-Angoon Census Area. Prior to 2007, the City of Skagway was also included within this area. Because communities such as Skagway and Hoonah differ fairly significantly from Angoon in their demographic and economic makeup, census area-level socioeconomic data and trends may not be wholly applicable to Angoon. Moreover, because the boundary of the Census Area has changed significantly in recent years, comparisons over time are difficult. Broader census-area data are only used where no other data are available or to supplement the general discussion.
- Angoon employment data set overlap. State employment data and self-employment data are collected separately, and there may be overlap in data. For example, commercial fishing is counted as a self-employment activity and is not included in Department of Labor and Workforce Development (DOL&WD) employment data. However, because commercial fishing is a seasonal activity, residents holding commercial fishing permits or commercial fishing crew permits could also be employed in other reported industries part of the year and may be counted in state employment data. Small businesses with only one owner-employee are also not included in DOL&WD data. As a result, a person who has a business license could also be employed by other companies on a part-time basis and be included in DOL&WD employment data. Alaska business license counts are available by industry and by zip code, but do not include information on length of time in business, number of employees, earnings, and other data. As a result, state employment data and self-employment data cannot be combined into one data set, but need to be considered separately, with the possibility of some overlap.
- Lack of local government data. Because Angoon has a small population and is located in a rural, isolated area, the local government does not have as many public resources available as do larger, more accessible communities in the region. As a result, archives, mapping, and record-keeping at the local level are limited in scope, detail, and accessibility.
- Transportation data limitations. Data differentiating traveler status between resident and visitor are
 not collected through government agency programs. Although some special studies are performed to
 determine that breakdown, those studies generally do not include small rural communities.
 Consequently, it is not possible to determine how many travelers to and from Angoon are visitors.
- Confidentiality issues. Kootznoowoo, Inc. and some individual businesses that provided financial and
 otherwise sensitive data for this report requested that this information be kept confidential. For this
 reason, this information was used only as a general guide toward understanding the current
 socioeconomic condition of the community.

It is also important to note that the Tlingit culture's emphasis on subsistence activities and connection to the land are social forces that may not be fully measureable through conventional socioeconomic metrics. For this reason, the breadth of the socioeconomic condition of the Angoon community may not be fully represented in available government data.

3.0 Baseline Conditions in the Angoon Area

3.1 Population

Angoon was incorporated as a fourth-class city in 1963 and upgraded to a second-class city in 1972. The 2010 city population was 459. Figure 3 presents historical population counts for Angoon between 1990 and 2012. Angoon's population has shown an average decline of about 1.4% per year since 1990, resulting in a total loss of 182 residents (–29%) over the last 22 years.

3.1.1 REGIONAL CONTEXT

The Southeast Alaska region lost population during much of the past decade, mainly due to declines in several of its major industries: timber harvest and processing, commercial fish harvest and processing, and mining. While commercial fisheries and mining industries have rebounded recently, the population loss in many small rural communities has continued. Federal laws requiring welfare program recipients to obtain work have spurred rural residents to move to larger communities where more work is available. High costs of living, especially in power and transportation costs, have also made rural living less feasible. Table 3 presents annual population changes in the state, in the Southeast Alaska region, and in selected rural communities with economic and demographic characteristics similar to those of Angoon between 2000 and 2012. While the Southeast Alaska region, in general, had a slight population gain over that time, rural communities experienced slight to moderate population losses.

Table 3. Change in Annual Population in Alaska, Southeast Alaska, and Selected Regional Communities, 2000–2012

	Alaska	SE Alaska	Angoon	Hoonah	Hydaburg	Kake
2000 population	626,932	73,082	572	860	382	710
Percent change in 2001	0.92%	-1.68%	-6.99%	-3.26%	-7.07%	-1.27%
Percent change in 2002	1.42%	0.50%	-2.26%	0.36%	4.23%	-3.00%
Percent change in 2003	1.21%	0.05%	- 7.69%	-4.07%	2.70%	-2.94%
Percent change in 2004	1.57%	-0.97%	-3.33%	0.12%	-2.89%	-0.15%
Percent change in 2005	1.14%	0.23%	3.02%	2.0%	7.32%	-2.28%
Percent change in 2006	1.11%	-0.44%	-2.30%	-3.18%	-3.54%	-2.80%
Percent change in 2007	0.83%	-1.65%	0.21%	2.65%	1.83%	-2.72%
Percent change in 2008	0.98%	0.41%	- 7.91%	-0.62%	-2.57%	-2.79%
Percent change in 2009	1.60%	0.90%	4.41%	-5.69%	1.85%	-2.36%
Percent change in 2010	1.78%	0.74%	2.00%	-0.26%	-2.59%	-3.63%
Percent change in 2011	1.82%	2.86%	3.27%	0.26%	8.78%	3.59%
Percent change in 2012	1.27%	0.96%	-3.80%	1.97%	-10.27%	3.64%
Average annual change, 2000–2012	1.30%	0.16%	-1.78%	-0.81%	-0.19%	-1.39%

Source: (DOL&WD 2013a)

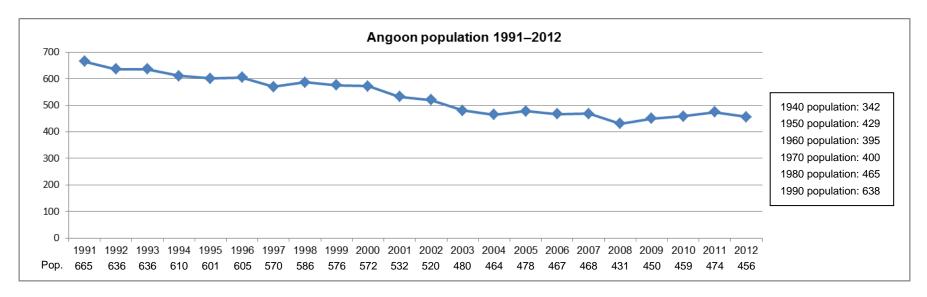


Figure 3. Angoon population counts from 1991 to 2012 (DOL&WD 2013a) and decennial census data from 1940 to 1990 (ADCCED 2012a).

3.1.2 POPULATION FORECASTS

The DOL&WD periodically prepares population projections for Alaska and its component areas. In 2012 DOL&WD completed census-area population forecasts through the out-year of 2035. Angoon is a part of the Hoonah-Angoon Census Area. Estimates of average annual population growth for the Hoonah-Angoon Census Area are presented in Table 4.

Table 4. Population Forecast for the Hoonah-Angoon Census Area, 2010–2035

Time Period	Average Annual Percent Change
2010–2015	−1.57%
2015–2020	- 1.68%
2020–2025	-1.82%
2025–2030	-1.89%
2030–2035	-1.83%

Source: (DOL&WD 2012)

Applying this negative growth rate of the census-area population to Angoon shows that future population counts for the community would be 423 in 2015, 387 in 2020, 352 in 2025, 310 in 2030, and 290 in 2035. In conjunction with existing low levels of economic opportunity, as discussed below, it is clear that Angoon is more economically distressed than some communities in the Hoonah-Angoon Census Area. As such, the community is likely to continue to lose residents at a slightly higher average annual rate than the Census Area as a whole.

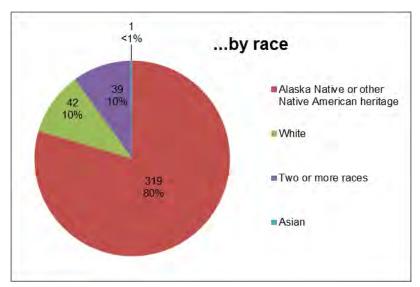
3.2 Demographics

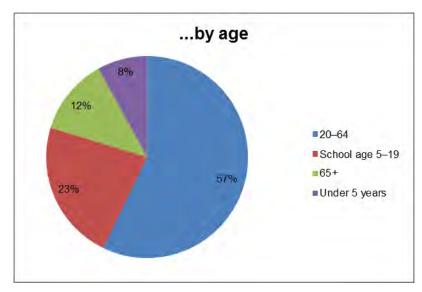
Figure 4 presents demographic characteristics of Angoon from the U.S. Census Bureau. From 2007 to 2011, the median age of Angoon residents was approximately 34 years, and 115 residents (approximately 29%) were younger than 18 years old, the demographic group to which special consideration must be given under regulations regarding children's health and safety. Slightly more than half of the population was male, and more than three-quarters were of Alaska Native or other Native American heritage. The average household size was relatively small, and just under half of Angoon residents occupied homes they owned, as opposed to renting or living in the home of relatives (U.S. Census Bureau 2013).

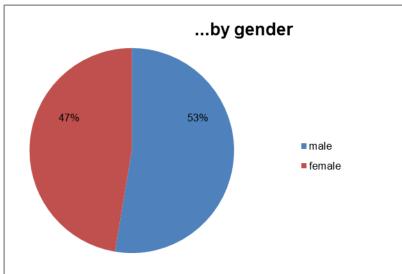
3.3 Economic Activity

This section focuses on employment and industries located in or otherwise affecting the community of Angoon, as well as the cash income to the community's residents from employment and other sources. Although this section presents standard socioeconomic benchmarks, it is important to note that a substantial portion of the community's socioeconomic base extends beyond this conventional economic view into aspects of cultural tradition and practice. The harvest and sharing of local resources for food, clothing, tools, heating, and other uses, which serve as the cornerstone of the local economy and culture, are much harder to measure than nontraditional practices that involve the exchange of money and that are the typical subjects of agency data gathering. Because of the high prices of commercial products in remote Alaska communities, the economic role of subsistence takes on added importance. Angoon's local subsistence economy is discussed later in section 3.3.5 and in greater detail in the *Subsistence Resources Existing Conditions Technical Report for the Angoon Airport Environmental Impact Statement* (SWCA Environmental Consultants 2011).

Angoon population distribution...







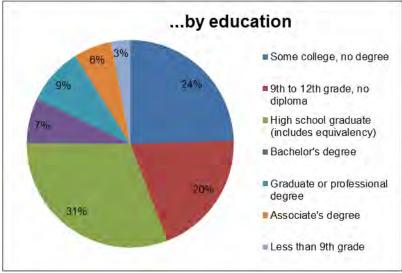


Figure 4. Angoon demographics by race, age, gender, and education (U.S. Census Bureau 2013).

3.3.1 EMPLOYMENT BY INDUSTRY

In terms of the cash economy, the strongest sectors for the Angoon community in the past few decades have been commercial fishing and tourism. However, many jobs related to these sectors are not counted under the U.S. Department of Labor's standard classification of employment by industries. Other possible data limitations include the following:

- Under the U.S. Department of Labor's criteria, commercial fishermen are not counted as "employed" by any industry, but are considered "self-employed." The department does not gather data regarding numbers of individuals self-employed in the fishing industry.
- Small businesses with no employees beyond the owner are also not documented by the U.S.
 Department of Labor. Tourism-related businesses such as bed-and-breakfasts and charter boat
 operations in the Angoon area are often small enough in terms of numbers of employees that they, too,
 are not included in employment data gathered by the department or other agencies. Yet, these types of
 businesses may contribute significantly to the overall employment rates in Angoon because of the small
 size of the community.
- The U.S. Department of Labor's data are reported as full-time equivalents (FTE) and, as such, do not
 capture the seasonal fluctuation in employment that is common in Angoon due to the nature of
 industries such as commercial fishing and tourism.

As a result, available statistical data for Angoon regarding actual employment must be considered taking into account the roles that part-time, seasonal, and one-person business employment may play in the community.

Table 5 presents DOL&WD data for average annual employment of Angoon residents for 2011. As discussed above, this information excludes self-employment categories and represents *average* annual employment (FTE). The data also represent Angoon residents only and do not account for nonresidents, many of whom work seasonal jobs at area fishing lodges.

Table 5. 2011 Average Employment by Industry Sector for Angoon Residents

Industry	Number of People Employed		
Natural resources and mining	16		
Construction	1		
Manufacturing	NA		
Trade, transportation, and utilities	19		
Information	NA		
Financial activities	7		
Professional and business services	1		
Education and health services	30		
Leisure and hospitality	24		
State government	2		
Local government	109		
Other	2		
Total employment	211		

Source: (DOL&WD 2013a)

Note: "NA" indicates that the number is confidential due to the small number of local businesses in that industry sector and nondisclosure laws.

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Under this DOL&WD count, the largest industry sector in Angoon is local government, which includes tribal government and public school employment. In 2011, approximately 109 average annual FTE jobs in local government were held by Angoon residents. An additional 30 FTE jobs in nongovernment educational and health services and 24 FTE jobs in the leisure and hospitality industries were held by Angoon residents in 2011. Often, nonresidents will work seasonal jobs in visitor-related industries at Angoon. Anecdotal evidence suggests that as many as half the seasonal jobs at local lodges may be held by non-Angoon residents (personal communication, Powers 2012).

Table 6 presents employment by occupation for Angoon residents in 2011. Self-employed workers such as commercial fishers and other small-business owners are not represented in this table. Non-Angoon residents working in Angoon are also not counted in this table.

Table 6. Annual Average Employment by Occupation for Angoon Residents, 2011

Occupation	Average Annual Employment
Grounds maintenance workers, all other	13
Construction laborers	36
Extraction workers, all other	11
Teachers and instructors, all other	9
Teacher assistants	7
Home health aides	6
Maids and housekeeping cleaners	6
Office and administrative support workers, all other	6
Cashiers	6
Stock clerks and order fillers	5

Source: (DOL&WD 2013a)

According to the DOL&WD online database (DOL&WD 2013b), top employers of Angoon residents in 2011 included:

- Chatham School District (local government sector)
- Whaler's Cove Lodge (leisure and hospitality sector)
- City of Angoon (local government sector)
- Angoon Community Association (local government sector)
- Angoon Trading Company (trade, transportation, and utilities sector)

3.3.2 OTHER EMPLOYMENT

In 2010, 18 Angoon residents held commercial fishing permits (Alaska Commercial Fisheries Entry Commission [ACFEC] 2013). In 2013, 20 Angoon residents held business licenses (Alaska Department of Commerce, Community, and Economic Development [ADCCED] 2013). Alaska business license counts are available by industry and zip code, but do not include information on length of time in business, number of employees, earnings, and other data. Based on the professional knowledge of the author of this report, it is believed that several of those businesses were large enough to have employees, and their employment is represented in Table 5. However, some licenses are held by self-employed Angoon residents and are not counted as employment in existing employment data. Angoon residents with business licenses or commercial fishing permits or crew licenses could also be employed in another capacity during part of the year, and so would be counted in DOL&WD employment data. Because these different

types of data are collected by different agencies with different criteria, it is not possible to combine employment and self-employment data for a total count of working residents.

3.3.3 EARNINGS AND INCOME

In 2011, Angoon residents earned \$3,772,209 from the jobs outlined in Tables 5 and 6, for an average annual wage of \$17,878 (DOL&WD 2013a). During 2008 (the latest data available), state and local government jobs earned an average of \$18,000 per year; trade, transportation, and utilities jobs earned an average of \$19,100 per year; education and health services jobs earned an average of \$16,069 per year; and all other industries earned an average of \$20,787 per year (personal communication, Biller 2010). These low average annual earnings indicate that many of these jobs may be seasonal or part-time. In 2010, commercial fishermen reported a value-per-permit of \$16,201. In 2009, the average value-per-permit was \$9,495 (ACFEC 2013). Additional information is available on commercial fishing income trends over the last two decades in section 3.6.1. No information is available regarding income of other self-employment activities.

Kootznoowoo, Inc. is the corporation for the community of Angoon created through the Alaska Native Claims Settlement Act (ANCSA). Kootznoowoo, Inc. is charged with managing its land holdings for the benefit of its shareholders. Of the corporation's approximately 1,000 shareholders, roughly 333 lived in Angoon in 2013 (Kootznoowoo, Inc. 2013). In addition to employing a few Angoon residents, Kootznoowoo, Inc. contributes to the local economy through annual cash dividends distributed to its shareholders. Each shareholder received \$2,494 in cash dividends in 2009, for a total of nearly \$631,000 in dividends to Angoon residents. Cash dividends distributed per shareholder in 2007 and 2008 were \$1,853 and \$1,923, respectively (personal communication, Naoroz and Nease 2010).

Per capita income¹ in 2011 for the Hoonah-Angoon Census Area² was \$39,307 (U.S. Bureau of Economic Analysis 2013). From 2007 to 2011, average per capita income for Angoon was \$17,366, and median household income was \$23,971 (U.S. Census Bureau 2013). Angoon's average per capita income was 44% below the same measures for the entire Hoonah-Angoon Census Area in the same year. From 2007 to 2011, approximately 31% of the population was living below the poverty level (U.S. Census Bureau 2013).

The average unemployment rate from 2007 to 2011 for the City of Angoon was 28% (U.S. Census Bureau 2013); however, when one considers that this unemployment rate does not take into account those potential workers who are no longer seeking work because jobs are not available, the rate is likely much higher. Unemployment data from 2011 indicate that of those Angoon residents who are working, only about 55% work year-round (DOL&WD 2013a).

3.3.4 REGIONAL CONTEXT

The U.S. Bureau of Economic Analysis publishes household and per capita income data annually to the census-area level, but not to the community level. The U.S. Census Bureau provides detailed income data to the community level for its decennial census. However, interim-year community-level income data are available only through the American Community Survey, conducted by the U.S. Census Bureau. Table 7 presents comparative annual income data, averaged between the years 2007 to 2011, for Southeast Alaska communities of similar size and racial makeup as Angoon. However, the small sample sizes used to obtain these data result in large margins of error, so these data should be used cautiously.

¹ In addition to wages and salaries, measures of income also include dividend income, such as that received from Kootznoowoo, Inc., as well as rental income, investment income, and transfer payments such as social security income.

² From 2007 to 2008, Skagway was included in the census area.

Table 7. Comparative Demographic Data for Southeast Alaska Communities of Similar Size and Racial Characteristics, Annual Average, 2007–2011

	Angoon	Margin of Error	Hydaburg	Margin of Error	Kake	Margin of Error
Total population	399	±86	420	±74	470	±139
Alaska Native or other Native American	319	±84	357	±77	253	±86
Percent Alaska Native or other Native American	80%		85%		54%	
Per capita income (annual)	\$17,366	±\$5,582	\$20,520	±\$5,242	\$24,413	±\$8,392
Percent of individuals earning income below poverty level	31%		18%		19%	

Source: (U.S. Census Bureau 2013)

Note: Dollar values are reported in 2011 dollar equivalents. These data are from very small samples and should be used with caution.

3.3.5 ECONOMIC ROLE OF SUBSISTENCE

The subsistence lifestyle and the strong cultural beliefs with which it is intertwined set Angoon apart from many other communities in the region. As cultural activities constitute the backbone of Angoon's society, so subsistence harvest and sharing constitute the backbone of its economy. Much of the residents' physical, spiritual, and cultural sustenance comes from subsistence harvest and not from mainstream cash economies. However, the cash economy both supplements and is closely tied with subsistence activity because it provides money for goods and services not available from the surrounding lands and waters and for equipment necessary to engage in subsistence harvest, such as guns, ammunition, and boat engines and fuel.

Subsistence activities are considered in depth in the *Subsistence Resources Existing Conditions Technical Report for the Angoon Airport Environmental Impact Statement* (SWCA Environmental Consultants 2011). However, because the subsistence harvest is of such importance to the local economy, it is discussed in this report as well. For the purposes of this report, the value of the subsistence harvest by Angoon residents is not translated into dollar equivalents, but an attempt is made to show the volume of that harvest.

Items acquired in the subsistence harvest include things used as food or heating fuel or to make tools, clothing, and other items. A subsistence harvest often includes far more than the harvester, or even his or her household, can use. The excess is distributed to other families and individuals within the community, most often to those without the ability to harvest these goods for themselves.

Data on estimated subsistence harvest by Angoon residents in 1996 are presented in Table 8. These data are the most current, comprehensive, and reliable harvest data for the area. Showing per capita harvest of nearly 225 pounds of subsistence goods per year, these sample data reveal that subsistence harvest is economically important to families in the area. Table 8 also illustrates the role of sharing of subsistence resources among residents. Additional information about deer hunting and noncommercial fishing trends is included in section 3.6.6.

Table 8. Subsistence Harvest by Angoon Residents in 1996

Resource	% Using	% Attempting to Harvest	% Harvesting	% Receiving	% Giving	Per Capita Harvest (lbs)
All resources combined	97.3	93.2	93.2	94.6	67.6	224.5
Fish	89.2	70.3	70.3	83.8	50.0	129.5
Salmon	79.7	64.9	64.9	62.2	41.9	81.9
Non-salmon	82.4	60.8	60.8	70.3	29.7	47.6
Land mammals	74.3	51.4	51.4	50.0	27.0	51.3
Large	74.3	51.4	51.4	50.0	27.0	51.3
Small	2.7	2.7	2.7	1.4	0.0	0.0
Marine mammals	32.4	14.9	14.9	28.4	8.1	9.0
Birds and eggs ¹	5.4	5.4	5.4	2.7	1.4	0.2
Marine invertebrates	89.2	78.4	78.4	73.0	41.9	30.1
Vegetation ²	66.2	62.2	56.8	50.0	17.6	4.4

Source: (ADF&G Subsistence Division 2009)

Note: Information is for the most representative reporting year for Angoon: 1996.

3.4 Community Infrastructure

Angoon is a small, isolated, lightly developed community. The City of Angoon operates a diesel generator for electric power, a water treatment plant for potable water, and a piped sewer system. Plans to develop hydroelectric and possibly other types of renewable power generation are being considered; the EIS for the hydroelectric facility, which would be located northeast of Angoon at Thayer Lake, was completed in 2009. However, the City has applied for a Federal Energy Regulatory Commission permit for a potential hydroelectric project in another part of the region. This has resulted in the Thayer Lake project being placed on hold until the funding agencies' concerns about the community's need for two hydroelectric projects are addressed. In addition, there is great potential for tidal power production in the Angoon area, but that technology is still experimental, and development of a tidal power facility is uncertain and likely many years in the future.

The City of Angoon also manages the local landfill, trash collection services, and cable television service. In addition to the roads in town, access roads lead to the landfill, the ferry terminal, and the water treatment plant. The community receives floatplane and ferry service via state-owned docks. The City owns the local boat harbor with approximately 80 boat slips.

The community of Angoon has two schools, an elementary school and a junior/senior high school, that accommodate kindergarten through twelfth grades. The community also has a health clinic staffed by a full-time health practitioner (generally a nurse practitioner or a physician's assistant) and suitable for the treatment of minor illnesses and injuries. Residents must travel to larger regional communities such as Juneau and Sitka for more substantial treatment, including surgery and treatment of severe illness.

Angoon is a dry community, and it is illegal to own or consume alcohol within city limits. Public safety is addressed by a single public safety officer housed at Angoon, and the community supports a volunteer fire department and emergency medical services. The city government is the strong-mayor form of government, in

¹Includes upland birds and waterfowl.

² Includes terrestrial and marine vegetation.

which the mayor also acts as the city administrator or manager. The Tribal Council of the Angoon Community Association, the federally recognized Alaska Native Tribe for Angoon, also has considerable influence in the community, though the municipal government is the recognized governing body for the City.

The community has an Alaska Native Brotherhood hall, a community center, a senior center, a post office, and three churches; there are no banks or restaurants. Private commercial enterprise is limited to four hotels and fishing and hunting lodges, a grocery store, and a gas station. Angoon's store provides groceries and some general hardware and dry goods; other goods may be mail-ordered.

High fuel prices affect communities such as Angoon more than they do larger Southeast Alaska communities such as Juneau. The increased cost of locally available goods is due to fuel-related transportation costs, and also because these communities obtain electric energy through diesel generation. Table 9 presents retail heating fuel and gasoline prices in Southeast Alaska communities in January 2012.

Table 9. Retail Fuel Prices across Southeast Alaska, January 2012

Community	Heating Fuel #1	Difference from Statewide Average	Gasoline	Difference from Statewide Average	
Statewide average	\$5.71		\$5.93		
Angoon	\$5.20	-9%	\$5.09	-14%	
Craig	\$4.03	-29%	\$4.36	-26%	
Gustavus	\$4.85	- 15%	\$4.91	-17%	
Hoonah	\$4.50	-21%	\$4.39	-26%	
Juneau	\$4.31	-25%	\$4.00	-33%	
Kake	\$5.48	-4%	\$5.96	1%	
Pelican	\$4.95	-13%	\$4.92	-17%	
Petersburg	\$4.03	-29%	\$4.36	-26%	
Point Baker	\$5.30	-7%	\$4.95	-17%	
Thorne Bay	\$4.13	-28%	\$4.53	-24%	
Wrangell	\$4.47	-22%	\$4.26	-28%	

Source: (ADCCED 2012b)

Note: Statewide average is weighted by number of communities, not by number of residents.

3.5 Transportation Options

Angoon's relative isolation compounds the importance of transportation access to the community. Residents must travel by air or sea; there are no road connections between Angoon and other communities.

Angoon residents travel to shop, visit family and friends, or attend important cultural, social, or regional athletic events. Lack of many services in Angoon, such as financial, legal, and many medical services, also necessitates travel to other communities. Table 10 presents the results of a survey of Angoon residents 18 years and older performed in 2001 for the 2004 *Angoon Airport Site Reconnaissance Study* (DOT&PF 2004). The table shows the number of individual respondents indicating travel for a particular purpose as well as the percent of total respondents they represent.

More recent information on purpose of travel and travel destinations of Angoon residents is not available. Current travel options are discussed below.

Table 10. Travel Purposes and Destinations for Angoon Residents

Travel Purpose	Juneau	Sitka	Other Southeast Alaska Locales	Other Destinations
Shopping	92 (89.3%)	36 (35.0%)	4 (3.9%)	14 (13.6%)
Visiting friends and family	76 (73.8%)	33 (32.0%)	18 (17.5%)	12 (11.7%)
Recreation or events (Gold Medal, etc.)	56 (54.4%)	6 (5.8%)	3 (2.9%)	3 (2.9%)
Medical reasons	55 (53.4%)	75 (72.8%)	4 (3.9%)	11 (10.7%)
Work or business	43 (41.7%)	26 (25.2%)	10 (9.7%)	7 (6.8%)
Vacation	36 (35.0%)	12 (11.7%)	9 (8.7%)	13 (12.6%)
School	9 (8.7%)	3 (2.9%)	3 (2.9%)	5 (4.9%)
Other	8 (7.8%)	5 (4.9%)	5 (4.9%)	1 (1.0%)

Source: (DOT&PF 2004)

Note: The survey was sent to all Angoon residents 18 years and older. Of 430 surveys, 103 were completed and returned, for a 24% response rate.

3.5.1 AIR TRAVEL

One regional air carrier, Alaska Seaplane Service, currently provides scheduled air service to Angoon. This provider is subsidized to provide service to the community through the FAA's Essential Air Service Subsidy through January 31, 2015 (U.S. Department of Transportation 2010). This carrier has expressed concerns that even with the subsidy, the operations associated with the route cost more than the revenue generated by passenger fares. Scheduled service connects directly to Juneau with an occasional stop at Tenakee Springs and is available, on average, four times daily in summer (May–mid-September) and twice daily in winter (November–April), weather permitting. Table 11 presents the number of passengers departing Angoon on scheduled air carriers from 1998 through 2008. Although the data shown in Table 11 indicate a decline in enplaned passengers, air travel demand forecasts completed for the EIS indicate a latent demand not being met by current air transportation options (Barnard Dunkelberg & Company 2008). Additionally, preliminary data from the 2010 Census show that the population of Angoon has grown slightly for the second year in a row, potentially signaling a reversal of the previous population decline (see Table 3 and Figure 3).

On-demand charter service to Angoon is provided by air taxi services with float-equipped planes. Consolidation and attrition have reduced the number of small air carriers in the region (those that operate under the FAA's Part 135 regulations), and increased fuel, insurance, security, and other costs have driven up fares.

Table 11. Enplaned Passengers at Angoon, Scheduled Service, 1998–2008

Year	Enplaned Passengers
1998	3,321
1999	2,865
2000	3,009
2001	3,274
2002	2,059
2003	2,379
2004	2,408
2005	2,307
2006	2,080
2007	1,896
2008	1,770
·	

Sources: (DOT&PF 2007, 2008; FAA 2009)

3.5.2 MARINE TRAVEL

Angoon is a year-round port of call for the Alaska Marine Highway System (AMHS). This state-operated ferry service is available approximately twice a week for passengers, vehicles, and freight between Juneau and Angoon and approximately once a week between Sitka and Angoon during the summer. During the winter, ferry service is only provided between Juneau and Angoon. Table 12 shows ferry traffic (both passengers and vehicles) into and out of Angoon from 1990 through 2012. The data illustrate the fluctuation in ferry service demand and ferry service frequency available to Angoon residents as well as the increasing travel demand. Although fewer passengers embarked or disembarked in Angoon in 2012 compared with 1990, the relative demand increased. That is, approximately 51% fewer ferry departures were available to Angoon residents in 2012 than in 1990. As a result, the relative passenger traffic per departure increased from 26.6 embarking passengers per departure and 29.2 disembarking passengers per departure in 1990 to 36.0 embarking passengers per departure and 39.9 disembarking passengers per departure in 2012. Additionally, these data, combined with those shown in Table 11, show the overall high travel demand of the relatively small population of Angoon in a given year.

Table 12. State Ferry Traffic to and from Angoon, 1990–2012

Year	Passengers Embarking	Vehicles Embarking	Passengers Disembarking	Vehicles Disembarking	Departures
1990	5,847	760	6,424	797	220
1991	5,735	828	6,260	828	202
1992	5,234	771	6,137	771	244
1993	4,278	661	4,921	678	246
1994	4,107	686	4,706	736	215
1995	3,726	683	4,753	752	235
1996	4,183	817	4,576	851	256
1997	3,647	788	4,307	813	277
1998	3,497	644	3,940	652	265
1999	4,012	716	4,419	769	273
2000	3,754	642	4,273	666	252
2001	3,328	647	3,962	696	227
2002	3,988	774	4,398	833	252
2003	3,564	624	3,949	661	246
2004	3,296	479	3,554	532	187
2005	3,077	567	3,720	595	281
2006	3,410	539	3,775	583	239
2007	3,297	742	3,664	761	105
2008	4,160	893	4,584	948	109
2009	4,287	829	4,655	852	138
2010	4,360	960	4,849	994	118
2011	4,172	1,040	4,519	1,070	108
2012	4,028	1,023	4,472	1,061	112

Sources: (AMHS 2000, 2008, 2012)

Catamaran service for charter passengers only is provided to and from Juneau by Allen Marine. One of the local lodges routinely charters catamaran service to transport about half of its clients between Angoon and Juneau in

the summer (personal communication, Powers 2009). Barge service is available in the summer, although most of the goods shipped to Angoon travel via ferry.

For large parties, passenger-only service is available via charter ferry by Allen Marine fast catamarans. These boats hold 120 passengers and charter for about \$1,000 per hour. Round-trip travel (Angoon-Juneau-Angoon) takes six hours, but is effectively only a one-way trip, as the boats are based in Juneau. If the boat were full both ways, a round-trip (which would entail two trips) would cost each passenger \$100 (Gorsuch 2011). Charter ferry service has been used in the past to transport Angoon residents to and from special events and to transport visitors to and from Angoon area lodges. In past years, an Angoon lodge chartered a ferry every Saturday for seven weeks in summer, but that traffic has dropped off recently (Gorsuch 2011).

3.5.3 TRAVEL COSTS

High fuel prices have resulted in fare increases, and both disproportionately affect residents of isolated communities such as Angoon because of the need to travel to obtain goods and services not present locally. Table 13 provides the comparative costs of round-trip travel to Juneau by various modes of travel. Once in Juneau, travelers can make travel connections to anywhere in the world. This table compares costs for one adult as well as a family of four made up of two adults and two children between the ages of six and 12 years. It does not include transportation of a vehicle. Round-trip costs (Angoon-Juneau-Angoon) for a small vehicle (up to 15 feet long) would be \$140.00 (AMHS 2013).

Table 13. Comparative Costs for Round-trip Travel Angoon-Juneau-Angoon

Mode of Travel	Per Adult	Per Family of Four ¹	Travel Time ²
State ferry service, slow ferry ³	\$74	\$222	11.5 hours
Scheduled air service	\$270	\$1,080	2.6 hours
Charter air service	\$237 to 371	\$1,123 to \$2,226	2.6 hours

Sources: (AMHS 2013; Alaska Seaplane Services 2013a, 2013b)

3.6 Social and Economic Trends and Forecasts

The regional economy of Southeast Alaska was in decline long before the worldwide economic recession began in 2008. A steep decline in the timber harvest and processing industries, a slower decline (amid ups and downs) in the commercial fishing harvest and processing industries, and a lack of new development in the mining industry have been major components of this decline. Overall, the region saw a 5.1% decline in population between 2000 and 2009. The visitor industry in the region was robust and growing until recent fuel price spikes and the worldwide recession reversed this trend.

The commercial fishing, tourism, and local government sectors are major contributors to jobs and income in Angoon. Commercial fishing and tourism are defined as basic industries (industries that obtain most of their revenue from outside the community), whereas local government is mostly a support industry (an industry that obtains revenue from within the community). Of these major industries, government is the only one not completely seasonal in nature. However, many Alaska communities are struggling with decreases in state revenue—sharing grants due to past declining state revenues. Consequently, many municipal and village governments in Southeast Alaska are decreasing services and, in some cases, reducing staff sizes.

¹ Round-trip Angoon-Juneau-Angoon for two adults and two children between six and 12 years of age, no vehicle.

² Travel time is figured as twice the one-way travel time plus one hour waiting time.

³ Fast ferry, when available, is estimated to be about \$10 more per person and would reduce travel time to less than 3 hours one way.

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It has been many years since Angoon has had a strong basic industry within its economy. Although the commercial fishing sector contributed to a healthy economy in past years, Angoon residents' participation in that industry has dwindled. The recent decline in the visitor industry in response to the weak economy and an apparent lack of active economic development plans within the community creates a somewhat bleak outlook for the future economic condition of Angoon. Without growth in basic industries to bring in outside money and create job opportunities, the local economy will continue to stagnate, and even support sector businesses will slow. One local support business owner has put development plans on hold because of the discouraging outlook for Angoon's economy (personal communication, Thompson 2010). Discussions with community and business leaders indicate that local children often leave for education elsewhere, including high school and higher education, and do not return.

Because of the poor economic trends of Angoon in recent years, much attention is being focused on future economic opportunity provided by the City of Angoon, Kootznoowoo, Inc., and others. Specifically, these parties have been exploring options for the development of lower-cost and renewable energy as a key to future growth; reductions in energy costs would not only reduce the cost of living for individual residents but would allow business owners to invest more money in expanding their operations and hiring more employees. The viability and breadth of economic impact such affordable energy developments would have on the community remain to be seen; while planning is underway for new hydroelectric facilities to serve the community, no construction has begun, and completion of any such projects is many years away.

Additional economic opportunity for residents of Angoon may come from private-sector businesses located outside the community. For example, Coeur Alaska, Inc. opened the Kensington Gold Mine north of Juneau for production on July 3, 2010 and employed 250 full time employees during its first full year of operations in 2011 (Coeur Alaska 2012; Coeur Mining 2013). It is not uncommon for Alaska residents to work shifts of several days or weeks at mines and in the oil and gas industry at locations that are some distance from their homes. Between shifts they may return home, and their earnings also support family members at home. Remote employment is one way that Angoon residents support themselves and their families, and so private-sector opportunities throughout Alaska can be seen as beneficial for Angoon residents.

3.6.1 Role of Commercial Fishing

Historically, commercial fishing has been one of Angoon's economic mainstays. Prior to the mid-1990s, the community hosted a fleet of 15 to 20 seine boats, and residents held more than 100 limited-entry fishing permits (ACFEC 2013). A fish-buying station was located in Angoon from the mid-1970s to the mid-1990s. With changes in fishing patterns and harvest seasons; loss of locally owned, limited-entry fishing permits; and fluctuating fish prices, commercial fishery in Angoon has become less of an economic factor in the community (personal communication, McDowell 2010). The number of Angoon residents engaging in commercial fishery work and the earnings of that work have declined steadily since 1990 (Table 14). The decline for Angoon residents has been faster and more substantial than for other commercial fishers using the broader Chatham Strait area by Angoon (Tables 15 and 16). Although participation and total earnings have decreased, the value per permit has increased, likely because of rising fish prices and possibly due to a shift in catch toward higher value fish.

Table 14. Commercial Fishing Effort and Earnings by Angoon Residents, All State-managed Species in All State-managed Fishing Regions in Alaska, 1990–2010

Year	Permits Fished ¹	Lbs Harvested	Gross Value	Lbs per Permit	Value per Permit
1990	119	1,409,059	\$1,115,853	11,841	\$9,377
1991	118	2,161,298	\$1,144,210	18,316	\$9,697
1992	130	1,523,696	\$1,006,888	11,721	\$7,745
1993	109	2,199,887	\$974,377	20,182	\$8,939
1994	94	2,055,056	\$1,370,909	21,862	\$14,584
1995	77	1,416,152	\$1,026,090	18,392	\$13,326
1996	75	1,690,699	\$926,522	22,543	\$12,354
1997	59	470,150	\$383,458	7,969	\$6,499
1998	36	NA	NA	NA	NA
1999	48	589,662	\$340,632	12,285	\$7,097
2000	46	307,359	\$290,900	6,682	\$6,324
2001	41	489,125	\$270,106	11,930	\$6,588
2002	28	144,422	\$200,228	5,158	\$7,151
2003	25	118,237	\$223,452	4,729	\$8,938
2004	21	136,532	\$285,428	6,502	\$13,592
2005	22	124,560	\$256,017	5,662	\$11,637
2006	25	146,726	\$370,833	5,869	\$14,833
2007	20	85,436	\$286,546	4,272	\$14,327
2008	15	66,227	\$222,904	4,415	\$14,860
2009	8	37,007	\$75,957	4,626	\$9,495
2010	6	37,578	\$97,208	6,263	\$16,201

Source: (ACFEC 2013)

Note: NA = data not available to preserve confidentiality per Alaska Statute 16.05.815.

¹ In general, more permits are held than are actually fished. For example, 26 permits were held by Angoon residents in 2010 but only 6 were fished.

Table 15. Commercial Fish Catch in Chatham Strait near Angoon under State Management by All Fishers, 1999–2008

Year	Salmon (lbs)	Groundfish (lbs)	Shellfish (lbs)	Total (lbs)
1999	1,650,797	1,164,657	0	2,815,454
2000	2,418,140	1,068,862	0	3,487,002
2001	1,946	820,103	38,139	860,188
2002	363,725	782,433	36,029	1,182,187
2003	1,446,656	701,720	53,015	2,201,391
2004	1,882,017	714,506	21,277	2,617,800
2005	2,233,555	752,014	6,393	2,991,962
2006	282,992	835,657	22,279	1,140,928
2007	1,258,875	705,297	0 ¹	1,964,172
2008	0 ²	878,644	0 ¹	878,644

Source: (Plotnick 2009)

Note: This shows catch by all commercial fishers with permits to harvest fish in the area, regardless of where they reside. Some of these fish may have been harvested by Angoon residents.

Table 16. Commercial Halibut Catch under Federal Management in Chatham Strait by All Fishers, 1999–2008 (in lbs)

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
579,918	397,966	285,879	259,640	269,611	385,104	402,435	419,612	364,307	260,700

Source: (International Pacific Halibut Commission 2009)

Note: Some of this catch may have occurred in Kootznahoo Inlet, but no smaller catch areas were available from the source.

The decline in fishing effort by Angoon residents occurred for several reasons, including loss of fishing permits and the inability of local fishers to fund their commercial fishing operations. The early part of this decline resulted in the closure of the local fish-buying station, and that closure, in turn, contributed to the further decline in fishing efforts by Angoon residents, because the cost of getting the fish to willing buyers increased due to the high transportation costs. Additional factors in the closure of the buying station included increased operating costs and consolidation of the processing industry (personal communication, McDowell 2010). Attempts to attract another fish-buying station have occurred over the years. Angoon is far from the major commercial fishing activity in Chatham Strait, and it may be difficult to attract fishers to travel that far to land their fish. With less local commercial fishing participation, it becomes less cost-effective for a processor to have a station so far away from the primary commercial centers of the region.

There is currently no fish-processing operation in Angoon; however, the city government is working to upgrade local dock and float facilities and to provide ice and fish totes for use by local fishers at Killisnoo Harbor. Electricity has recently been extended to the dock, and waterlines for the facilities are planned for the near future.

Angoon is one of the communities eligible for the Community Quota Entity program, a new federal program that allows local nonprofit entities to purchase halibut and sablefish quota shares and lease those shares to local resident fishers. Similar programs (Community Development Quota programs) in southwest and western Alaska

¹Data were not reported by ADF&G.

²The salmon fishery in Chatham Strait was closed in 2008 due to a poor run of pink salmon.

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have proven to be economically beneficial to the communities involved and may contribute to future growth in the Angoon commercial fishing industry.

3.6.2 ROLE OF TOURISM

Prior to the spikes in oil prices and the global economic recession, tourism in Southeast Alaska was thriving. The 2009 tourism season saw a slight decline in visitors to the region, and a slightly larger decline in spending by those visitors. The tourism industry in Southeast Alaska is heavily influenced by charter fishing regulations, and a recent regulatory reduction in catch limits of charter-caught halibut to one fish per day served to decrease activity in the charter fishing sector. Additional regulation of charter fishers is being considered by the National Marine Fisheries Service and will likely reduce the number of charter fishing licenses available in the region. Anecdotal information indicates that many of the sport-fishing lodges and charter fishing boats in the region had a disappointing 2010 season, but that bookings for the 2011 and 2012 season were encouraging³ (personal communication, Powers 2009; personal communication, Powers 2012).

The cruise industry is another significant component of the broader Southeast Alaska economy. Cruise ships do not stop at Angoon, and because of the limited transportation options to reach the area, independent travelers rarely visit. Annually, an indeterminate number of visitors travel to Angoon to access the Monument–Wilderness Area for canoeing, kayaking, camping, and other recreational activities. No agency or other party tracks data relative to these visitors. As such, the number of tourists of this nature is unclear; tourists of this type are estimated to be fewer than 350 per year (Neary 2009).

Angoon supported four sport-fishing operations in 2008, and most of the tourist activity centers around these businesses. These operations provide charter fishing excursions as well as kayaking and other sorts of tours. In 2009, 18 boats were licensed to operate fishing charters from Angoon, down from 35 charter fishing vessels operating in 1999. Many of the charter fishing boats are associated with lodges. Because of the recent business climate, bookings at lodges in Angoon were down approximately 20% in 2009, and several of the lodges closed earlier than in previous years. The owner of the largest lodge in Angoon had considered ceasing operations after the 2010 season; however, bookings for the 2011 and 2012 seasons picked up, and they will continue operations (personal communication, Powers 2009; personal communication, Powers 2012).

For data tracking purposes, charter fishing is categorized as sport fishing. Table 17 presents data on sport-fishing activity by boat in the Angoon area. This count includes sport fishing from both private and charter fishing boats. This table shows that both sport-fishing effort and total catch generally decreased through 2009, except for minor increases since 2006 in harvest of specific fish species (for example, halibut and rockfish).

³ Accommodation tax data is often used as an indicator of hotel occupancy and changes in visitor activity. The City of Angoon is required by state agencies to assess accommodation (or bed) taxes on local lodging establishments; however, the City has not reported the revenue from that tax to the state since 2005 and was unable to produce that data for this report.

Table 17. Sport-fish Catch in the Angoon Area by Boat, 2001–2011

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Anglers	1,598	1,271	1,500	1,100	1,719	1,123	895	1,019	946	825	771
Days fished	6,109	4,606	5,863	3,550	8,789	3,100	3,582	3,810	4,517	2,558	2,103
Species caught (# of fi	sh):										
Chinook salmon	1,367	707	977	546	1,178	613	244	205	520	354	233
Coho salmon	7,669	8,720	10,247	5,549	7,894	2,424	3,482	2,802	2,071	3,275	2,103
Sockeye salmon	449	151	251	11	36	0	32	252	347	0	110
Pink salmon	1,758	652	3,447	832	2,102	99	728	956	1,127	732	1,041
Chum salmon	1,057	194	466	374	274	114	114	141	338	132	87
Dolly Varden	108	104	169	128	258	0	94	45	22	0	0
Cutthroat trout	0	8	68	0	0	0	9	0	0	67	0
Smelt/capelin	0	0	1,593	0	0	0	757	337	167	0	381
Pacific halibut	3,299	3,645	5,099	2,649	4,070	1,478	2,926	3,385	2,624	1,217	641
Rockfish	1,908	1,333	1,388	1,544	1,169	340	1,054	1,426	2,514	956	447
Lingcod	120	216	198	114	11	157	33	13	102	25	0
Sablefish/black cod	NA	NA	NA	NA	NA	NA	NA	NA	NA	83	57
Other	0	8	148	81	0	0	0	0	0	0	0

Source: (ADF&G Sport Fish Division 2013)

NA = Data not available.

In addition to sport fishing, sport hunting, mostly for Sitka black-tailed deer, also contributes modestly to the Angoon economy through bookings at lodges in Angoon. Because the ADF&G requires only one type of deer hunting license, the data in Table 20 include both sport and subsistence hunting activities. As shown in Table 20 (in section 3.6.6, below), deer hunting appears to have decreased over the 10-year period depicted.

3.6.3 GOVERNMENT

The local government industry category in Angoon includes the City of Angoon, the Chatham School District, and tribal governments such as the Angoon Community Association and the Central Council of the Tlingit and Haida Indian Tribes of Alaska. This industry category is the largest employer of all industries in Angoon, and it provided 109 FTE local jobs in 2011 (DOL&WD 2013a). A large component of local government is support of the local population; however, the Chatham School District offices are located in Angoon and represent a basic industry business because they support schools outside of Angoon. Recent state budget cuts and reductions in municipal assistance resulted in a reduction in local government jobs in Angoon. This trend will likely continue over the next few years as the broader regional and state economy recovers from the national economic downturn.

3.6.4 KOOTZNOOWOO, INC. DEVELOPMENT

Kootznoowoo, Inc. is considering tourism-related development in the Angoon area, but such efforts are only conceptual at this point, and no details are available from which to make projections of future effects on the local economy. The corporation has been in discussions with Natural Currents Energy Services (the company that holds a Federal Energy Regulatory Commission permit for tidal power in the Angoon area) about creating a tidal research institute in the Angoon area to study tidal energy resources and associated technology. In addition, the corporation has considered natural resource development in the Angoon area, including timber harvest and development of a mine for coal and methane gas (personal communication, Naoroz and Nease 2010).

Kootznoowoo, Inc. has distributed 629 private lots in 10 subdivisions through a corporation shareholder homesite program authorized under ANILCA, and titles to these lots were conveyed to the private owners from the corporation in early 2010 (personal communication, Naoroz 2012). Although these lands have some economic value, their use is governed by restrictive covenants that state that the lands may be used only for single-family residential development for 10 years after the deeds are issued. In addition, no residential structures may be built or occupied until a legal wastewater disposal system has been installed on the lot. The covenants also give timber development rights of these homesite lots to the City of Angoon (Kootznoowoo, Inc. 2009).

3.6.5 Cost of Living

Rising fuel and other prices have strongly impacted communities in Southeast Alaska, raising the cost of living while employment rates continue to decline. High fuel prices will continue to disproportionately affect rural Alaska communities such as Angoon because of their diesel-fueled electricity generation and because of increased fuel costs associated with transportation. While many rural communities are seeking to develop lower-cost renewable energy sources, the actual construction of facilities would be years into the future. As discussed previously, there are several potential developments being studied in the Angoon area, including a tidal energy facility and two hydroelectric facilities.

3.6.6 Subsistence Activity

As discussed in section 3.3.5, Angoon households participate heavily in subsistence activities, with an average per capita harvest of nearly 225 pounds of subsistence goods per year. Subsistence harvest will likely continue to provide necessities for many Angoon families for the foreseeable future. However, subsistence harvest alone does not fulfill every physical need, and some cash income, whether earned income or government subsidy, is needed for residents to outfit themselves to perform subsistence activities.

Among subsistence resources harvested by Angoon residents, fish are the most abundant, and among fish, salmon is the cornerstone of the subsistence harvest. Table 18 presents numbers of salmon caught by Angoon residents under subsistence fishing permits from 1999 to 2008, regardless of where the fish were caught. Sockeye salmon is the most prevalent catch, followed by coho salmon.

Halibut is also an important component of the subsistence economy. Table 19 presents the halibut catch by Angoon residents for subsistence use from 2003 to 2007. As of November 2009, 36 Angoon residents had been issued a subsistence halibut registration certificate (SHARC) by the National Marine Fisheries Service, and 13 of those certificates were current (National Oceanic and Atmospheric Administration Fisheries Service 2009).

Table 18. Subsistence Salmon Catch by Angoon Residents, Numbers of Fish Caught, 1999–2008

Year	Permits Issued	Permits Fished	Chinook	Sockeye	Coho	Pink	Chum
1999	110	54	0	1,620	291	32	3
2000	115	46	0	1,344	147	19	50
2001	117	38	1	1,147	213	133	83
2002	91	34	0	751	40	67	21
2003	102	39	0	1,496	36	6	2
2004	106	42	0	1,479	107	107	58
2005	90	14	0	261	12	25	0
2006	96	20	0	658	20	9	0
2007	86	14	1	56	47	62	0
2008	87	38	0	637	120	0	15

Source: (ADF&G Commercial Fisheries Division 2009)

Table 19. Estimated Subsistence Halibut Catch by Angoon Residents, SHARC Holders in Area 2C Using All Gear, 2003–2007

Year	Number of Fish	Lbs of Fish
2003	1,142	20,283
2004	1,435	32,009
2005	1,231	25,166
2006	954	16,875
2007	836	16,429

Sources: (Fall and Koster 2008; Fall et al. 2004, 2005, 2006, 2007).

Note: Area 2C encompasses all of Southeast Alaska south of Glacier Bay.

Deer, abundant on Admiralty Island, is another widely used subsistence resource. Table 20 summarizes deer harvest in the Angoon area from 2004 to 2010. Because the ADF&G does not differentiate between sport and subsistence deer harvest, some of this harvest could represent guided hunting, which is part of the tourism industry. However, based on general discussions with local residents and land managers, the vast majority of the activity illustrated by Table 20 is estimated to be related to subsistence hunting. As shown below, the deer hunting effort has fluctuated over time. Some of the yearly fluctuations are likely the result of changes in environmental conditions.

It should be remembered that data regarding subsistence harvest by Angoon residents are limited and noncomprehensive. For example, harvest data tracked by the ADF&G and other agencies typically do not focus on individual local water bodies but on larger geographic areas. Additionally, harvest data gathered by such agencies focus on specific, common resources, such as certain types of fish; the agencies only nominally track harvest of less common resources, such as shellfish. No statistics for subsistence or personal-use shellfish caught in Favorite Bay, adjacent to Angoon, are available; however, anecdotal evidence suggests that Favorite Bay is an important location for the harvest of a number of types of marine invertebrates by Angoon residents.

Table 20. Subsistence Deer Harvest in Angoon Area, 2004–2010

	2004	2005	2006	2007	2008	2009	2010
Total hunters	37	23	38	51	59	59	53
Total days hunted	330	79	203	294	448	252	179
Total deer harvested	132	45	89	111	186	193	168

Source: (Mooney 2013)

3.7 Children's Environmental Health and Safety Risks

Executive Order 13045, the Protection of Children from Environmental Health Risks, directs federal agencies to prioritize the identification and assessment of environmental health risks and safety risks that may disproportionately affect children. Risks can include such things as effects from increased noise on children's learning or sleep, or increased pollutants or reductions in air quality in areas frequented by children (for instance, playgrounds). Agencies are encouraged, but not required, to participate in implementation of the order by ensuring that their policies, programs, activities, and standards address disproportionate risks to children resulting from environmental health risks or safety risks.

There are two schools and one Head Start building within the Angoon area, both near the city center. None of the airport alternatives are closer than 1.5 miles to the schools; however, the approach and departure path for one of the airport alternatives would likely pass directly over the community. Noise and air quality analyses are being conducted as part of studies for the airport project and will be reported in the EIS.

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Acronyms

ACFEC Alaska Commercial Fisheries Entry Commission

ADCCED Alaska Department of Commerce, Community, and Economic Development

ADF&G Alaska Department of Fish and Game

AMHS Alaska Marine Highway System

ANCSA Alaska Native Claims Settlement Act

ANILCA Alaska National Interest Lands Conservation Act

CEQ Council on Environmental Quality

CFR Code of Federal Regulations

CSU conservation system unit

DOL&WD Alaska Department of Labor and Workforce Development

DOT&PF Alaska Department of Transportation and Public Facilities

EIS environmental impact statement

FAA Federal Aviation Administration

FSH Forest Service Handbook

FTE full-time equivalent

Monument– Wilderness Area Admiralty Island National Monument and Kootznoowoo Wilderness Area

NEPA National Environmental Policy Act

PL Public Law

SHARC subsistence halibut registration certificate

TLMP Tongass Land and Resource Management Plan

U.S.C. United States Code

USFS United States Forest Service



APPENDIX N ALASKA NATIONAL INTEREST LANDS CONSERVATION ACT (ANILCA) SECTION 810 EVALUATION

Note: The Section 508 amendment of the Rehabilitation Act of 1973 requires that the information in federal documents be accessible to individuals with disabilities. The FAA has made every effort to ensure that the information in the *Draft Angoon Airport Environmental Impact Statement* is accessible. However, this appendix is not fully compliant with Section 508, and readers with disabilities are encouraged to contact Leslie Grey at (907) 271-5453 or Leslie.Grey@faa.gov if they would like access to the information.



ALASKA NATIONAL INTEREST LANDS CONSERVATION ACT Section 810 Evaluation of Effects to Subsistence Resources and Uses

Prepared for

Federal Aviation Administration and Alaska Department of Transportation and Public Facilities

Prepared by

SWCA Environmental Consultants

April 29, 2014

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1.0 Introduction

The Federal Aviation Administration (FAA) is preparing an environmental impact statement (EIS) in response to a request from the Alaska Department of Transportation and Public Facilities (DOT&PF), the Sponsor, for funding and other approvals for a new land-based airport near the community of Angoon in Southeast Alaska. At present, there is no land-based airport runway in or near Angoon. The DOT&PF prepared the *Angoon Airport Master Plan* (DOT&PF 2007) for their proposed airport location. The FAA is evaluating five alternatives, including the proposed action, in the draft environmental impact statement (draft EIS). These alternatives consist of three airport locations and their associated access roads. As shown in Figure 1, two of the airport alternatives (Airport 3a and Airport 4) and portions of their associated access roads are located on lands administered by the U.S. Forest Service (USFS) within the Admiralty Island National Monument and Kootznoowoo Wilderness Area (hereafter referred to as the Monument–Wilderness Area). Airport 12a is the FAA's preferred alternative, and it is located on lands owned or managed by private landowners, Kootznoowoo Inc., or the City of Angoon. See Figure 1 for the location of each alternative relative to landownership.

The proposed land-based airport would be a small, commercial airport typical of other rural airports in the region. The initial construction would include a 3,300-foot-long, 75-foot-wide paved runway, and the runway length could be extended to 4,000 feet in the future if air traffic warrants it. The airport would have a short perpendicular taxiway leading from the runway to a small apron area. The proposed airport is being designed to accommodate a future full-parallel taxiway, but this taxiway would not be constructed initially and would only be built if air traffic demands are sufficient to warrant this additional safety and efficiency feature. The runway, perpendicular taxiway, and apron would be surrounded by clear areas required for safety. Regardless of the airport location under consideration, an access road would need to be constructed to connect the new airport to the existing Angoon road system. The proposed access road for the two alternatives in the Monument–Wilderness Area would include two paved 9-foot-wide lanes with 1-foot shoulders, and the right-of-way would be sized for future expansion to two 10-foot-wide lanes with 5-foot shoulders. The access road for Airport 12a would immediately be built to two 10-foot lanes with 5-foot shoulders.

In the draft EIS, section 4.13 Subsistence Resources and Uses provides a detailed description of the existing conditions of subsistence resources and uses in the area of the alternatives, and the potential effects to those resources and uses from the alternatives. For the purposes of the EIS, a study area was established based on the extent of a map shown during interviews with Angoon-based subsistence users. The areas of subsistence use identified during these interviews are hereafter referred to as "subsistence use areas" or simply "use areas." Combined, these use areas and the study area (Figure 2) form the area analyzed for effects in this evaluation. Angoon residents occasionally use a broader area for harvest of certain species, and this is described where applicable. This appendix uses the detailed information presented in the EIS to evaluate the potential effects to subsistence pursuant to Section 810(a) of the Alaska National Interest Land Conservation Act (ANILCA) (Public Law [PL] 96-487).

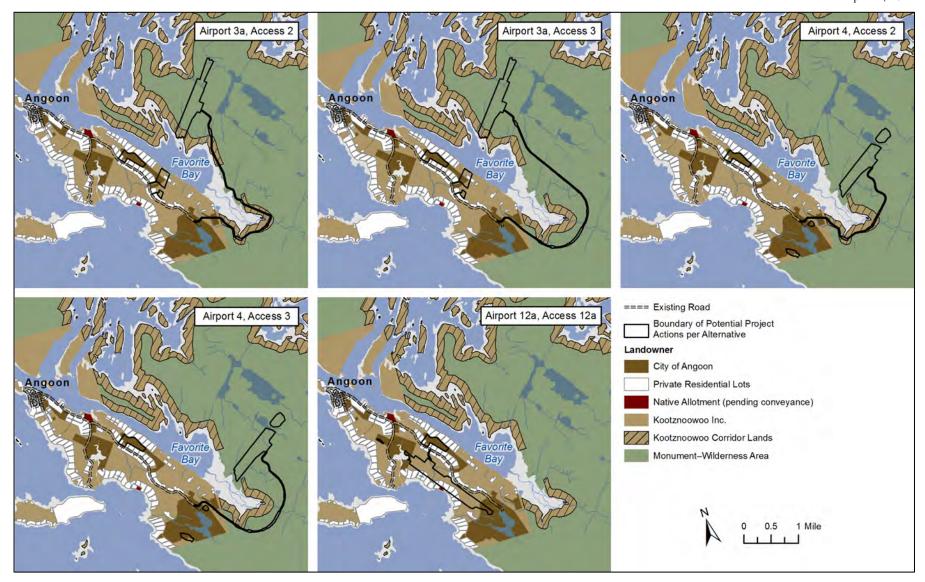


Figure 1. Location of action alternatives relative to landownership.

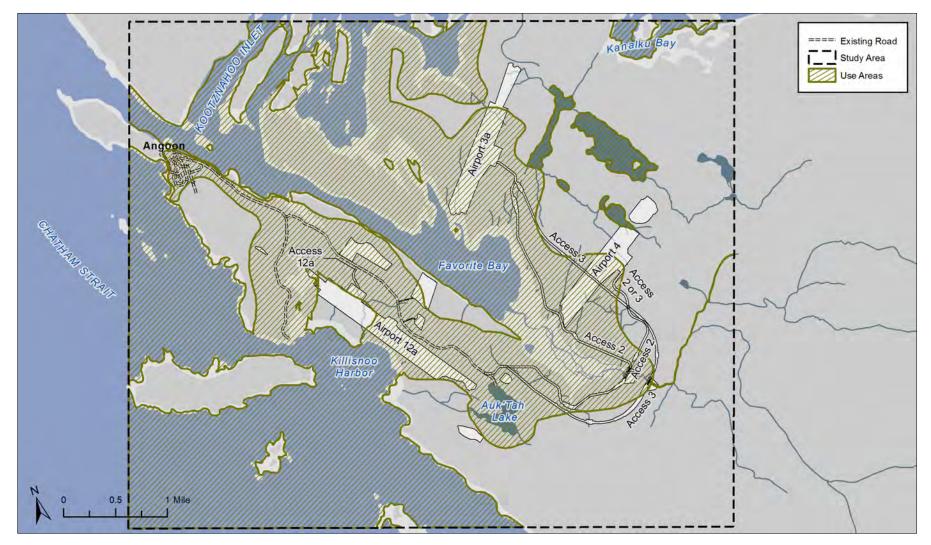


Figure 2. Study area initially assessed for subsistence resources and uses, and the combined use areas that Angoon residents use.

2.0 Section 810 Evaluation Process

Section 810(a) of ANILCA states the following:

In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands...the head of the Federal agency...over such lands...shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease, permit, or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be effected until the head of such Federal agency -- (1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to §805; (2) gives notice of, and holds, a hearing in the vicinity of the area involved; and (3) determines that -- (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

3.0 Definitions and Legal Context

Although there are many popular cultural and sociological definitions and interpretations of subsistence, in 1980 Congress provided a legal description of subsistence in Title VIII of ANILCA (PL 96-487). Section 803 of ANILCA defines "subsistence use" as

the customary and traditional uses by rural Alaska residents of wild renewable resources for direct, personal, or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade.

Under Alaska state law, "subsistence uses" are defined as

the noncommercial, customary and traditional uses of wild, renewable resources by a resident domiciled in a rural area of the state for direct personal or family consumption, such as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; and for customary trade, barter, or sharing for personal or family consumption. (Alaska Statute [AS] 16.05.940[32])

ANILCA does not distinguish between native and non-native populations. In ANILCA, Section 801 provides for

- (1) the continuation of the opportunity for subsistence uses by rural residents of Alaska, including both Natives and non-Natives, on the public lands and by Alaska Natives on Native lands is essential to Native physical, economic, traditional, and cultural existence and to non-Native physical, economic, traditional, and social existence...
- (4) in order to fulfill the policies and purposes of the Alaska Native Claims Settlement Act and as a matter of equity, it is necessary for the Congress to invoke its constitutional authority over Native affairs and its constitutional authority under the property clause and the commerce clause to protect and provide the <u>opportunity</u> for continued subsistence uses on the public lands by Native and non-Native rural residents;

ANILCA Section 802 states that

- (1) consistent with sound management principles, and the conservation of healthy populations of fish and wildlife, the utilization of the public lands in Alaska is to cause the least adverse impact possible on rural residents who depend upon subsistence uses of the resources of such lands; consistent with management of fish and wildlife in accordance with recognized scientific principles and the purposes for each unit established, designated, or expanded by or pursuant to Titles II through VII of this Act, the purpose of this title is to provide the opportunity for rural residents engaged in a subsistence way of life to do so;
- (2) nonwasteful subsistence uses of fish and wildlife and other renewable resources shall be the priority consumptive uses of all such resources on the public lands of Alaska when it is necessary to restrict taking in order to assure the continued viability of a fish and wildlife population or the continuation of subsistence uses of such population, the taking of such population for nonwasteful subsistence uses shall be given preference on the public lands over other consumptive uses....

ANILCA Section 102 defines public lands as

land situated in Alaska which, after the date of enactment of this Act, are Federal lands except-

- (A) land selections of the State of Alaska which have been tentatively approved or validly selected under the Alaska Statehood Act and lands which have been confirmed to, validly selected by, or granted to the Territory of Alaska or the State under any other provision of Federal law;
- (B) land selections of a Native Corporation made under the Alaska Native Claims Settlement Act which have not been conveyed to a Native Corporation, unless any such selection is determined to be invalid or is relinquished; and
- (C) lands referred to in §19(b) of the Alaska Native Claims Settlement Act.

In regard to consumptive uses, provisions in ANILCA state

[t]he taking on public lands of fish and wildlife for nonwasteful subsistence uses shall be accorded priority over the taking on such lands of fish and wildlife for other purposes. Whenever it is necessary to restrict the taking of populations of fish and wildlife on such lands for subsistence uses in order to protect the continued viability of such populations, or to continue such uses, such priority shall be implemented through appropriate limitations based on the application of the following criteria:

- 1. customary and direct dependence upon the populations as a mainstay of livelihood;
- 2. local residency; and
- 3. the availability of alternative resources." (ANILCA Section 804)

Finally, ANILCA Section 811(a) states that

(a) the Secretary shall ensure that rural residents engaged in subsistence uses shall have reasonable access to subsistence resources on the public lands.

3.1 Additional Applicable Requirements

Executive Order 13175: Consultation and Coordination with Indian Tribal Governments (November 6, 2000). This executive order establishes principles and standards for government-to-government consultation with tribal governments on "policies that have tribal implications." Consultation with tribal governments on subsistence, along with other issues, is an integral part of the public involvement process for an EIS. Although Section 810 does not establish separate or additional requirements concerning consultation with tribal governments, the Section 810 review benefits from outreach to the tribal governments through the EIS. FAA Order 1210.20, American Indian and Alaska Native Tribal Consultation Policy and Procedures, contains the FAA's policy on consultation with tribal governments. The USFS has additional guidance on government-to-government relations with Alaska Native tribes in Section 1563 of the USFS Manual on American Indian and Alaska Native Relations.

Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations (February 11, 1994) calls for an analysis of the effects of federal actions on environmental justice, specifically on minority populations with regard to subsistence. As defined by the Environmental Protection Agency, environmental justice is

the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Fair treatment means that no group of people, including any racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

Meaningful involvement means that: (1) potentially affected community residents have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health; (2) the public's contribution can influence the regulatory agency's decision; (3) the concerns of all participants involved will be considered in the decision making process; and (4) the decision makers seek out and facilitate the involvement of those potentially affected. (EPA 2012)

<u>Executive Order 12898 Section 4-4 Subsistence Consumption of Fish and Wildlife</u> requires federal agencies to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence, and to communicate to the public any risks associated with the consumption patterns.

The subsistence analyses for all alternatives evaluated in the draft EIS were prepared to comply with Executive Order 12898.

The FAA's Order 1050.1E, Chg 1. Policies and Procedures for Considering Environmental Impacts (FAA 2006a). Appendix A, Section 16, Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks, requires "disclosure of the effects on subsistence patterns and consumption of fish, vegetation, or wildlife, and effective public participation and access to this information" as part of the evaluations related to environmental justice.

The FAA's *Order 5050.4B,National Environmental Policy Act Implementing Instructions for Airport Actions* (FAA 2006b). Although FAA Order 5050.4B does not specifically address subsistence practices or resources, it reiterates the FAA's policies contained in Order 1050.1E.

3.2 Subsistence Evaluation Factors

Section 810(a) of ANILCA requires that the federal land management agency complete an evaluation of subsistence resources and uses for any federal determination to "withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands." Therefore, an evaluation of potential effects to subsistence under ANILCA Section 810(a) must be completed for the actions proposed in the EIS. ANILCA requires that this evaluation include findings on three specific issues:

- The effects of use, occupancy, or disposition on subsistence resources and uses
- The availability of other lands for the purpose sought to be achieved
- Other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes (16 United States Code [USC] 3120)

The evaluation and findings required by ANILCA Section 810(a) are set out for each of the action alternatives considered in the EIS. If it is determined that there are alternatives that may significantly restrict subsistence uses, additional requirements would be imposed, including provisions for notices to the State of Alaska and

appropriate regional and local subsistence committees, a hearing in the vicinity of the area involved, and the making of the findings listed below, as required by Section 810(a)(3).

- Such a significant restriction of subsistence uses is necessary, and consistent with sound management principles for the utilization of the public lands;
- The proposed activity would involve the minimal amount of public lands necessary to accomplish the purposes of use, occupancy, or other disposition; and
- Reasonable steps would be taken to minimize adverse effects upon subsistence uses and resources resulting from such actions.

The Alaska Land Use Council clarified the definition of a "significant restriction of subsistence use" as follows:

A proposed action shall be considered to significantly restrict subsistence uses, if after any modification warranted by consideration of alternatives, conditions, or stipulations, it can be expected to result in a substantial reduction in the opportunity to continue subsistence uses of renewable resources.

(Note: The Alaska Land Use Council was originally established by federal law (16 USC 3181) to study land and resource uses in Alaska and to advise federal and state decision-makers on those uses. It has been terminated because Congress declined to reauthorize it.)

The Bureau of Land Management provided additional clarification, which was affirmed in the U.S. District Court decision of record in *Kunaknana v. Clark*, 742 F.2d 1145 (9th Cir. 1984). In part, it states that

...restrictions for subsistence uses would be significant if there were large reductions in abundance or major redistribution of these resources, substantial interference with harvestable access to active subsistence sites, or major increases in non-rural resident hunting.

This description of significant restrictions is used as the baseline for establishing effects evaluation criteria for the EIS. To determine if a significant restriction of subsistence resources and uses may result from any one of the alternatives discussed in the EIS, including their cumulative effects, the following four factors are considered:

- Reductions in the abundance of subsistence resources caused by a decline in the population or amount of harvestable resources
- Reductions in the availability of subsistence resources caused by redistributions of the resources (i.e., alteration of normal locations and distribution patterns)
- Limitations on access to subsistence resources, including both physical access and legal access
- Increases in competition for subsistence resources from non-rural users

The *Kunaknana v. Clark* opinion does not provide a definition or interpretation of what constitutes a "large reduction," "major redistribution," "substantial interference," or "major increase." For the purpose of this EIS, and taking into consideration the nature of subsistence use and local environmental conditions in the Angoon area, the FAA is using these terms as follows:

Large reductions in abundance or a major redistribution of the resources: Noticeable and recognizable
declines in subsistence resource populations or distributions (in other words, the "availability" of the
resource) and, subsequently, reductions in subsistence resource harvests caused by project actions. A
reduction of more than 16% in the total harvest of a resource would be considered large, because it
would be greater than the average annual variability in total harvest for a representative terrestrial
species—deer—that has fluctuated annually by an average of 16% in total harvest from 2004 to 2010

(Alaska Department of Fish and Game 2013). This threshold conservatively assumes that project-related terrestrial wildlife subsistence use area changes will directly correlate to changes in total subsistence harvest.

- Substantial interference with access to subsistence use areas.
- Major increases in use by non-rural persons: Increases in non-rural use beyond existing levels that
 would cause local subsistence users to either quit using certain subsistence use areas or find alternate
 locations.

This evaluation focuses on subsistence resources most likely to be affected by habitat degradation associated with construction and operation activities at the proposed Angoon Airport. The definition provided above specifically identifies four potential effects for determinations of significance related to subsistence uses: 1) resource abundance, 2) resource availability, 3) access to resources, and 4) competition for the use of resources.

Section 4.13 of the EIS, Subsistence Resources and Uses, provides information on resources important for subsistence use within the study area, and provides data on the levels of reduction and limitation under each alternative that were used to determine whether the action would cause a significant restriction to subsistence. The information contained in the EIS is the primary data used in this analysis.

A subsistence evaluation and findings under ANILCA Section 810 must also include a cumulative effects analysis. This appendix evaluates the FAA's preferred alternative as part of the cumulative case (see section 8.7). This approach helps the reader separate the subsistence restrictions caused by activities proposed under the preferred alternative from those caused by past, present, and future activities that could occur, or have already occurred, in the surrounding area.

3.3 Subsistence Resource Management

Different legal frameworks regulate subsistence on lands of different status. The State of Alaska administers the harvest of fish and wildlife on all lands in Alaska, including for subsistence purposes, except as specifically superseded by federal law. When it is necessary to implement a federal subsistence priority under the terms of Title VIII of ANILCA, the Federal Subsistence Board regulates subsistence hunting on federally administered uplands and fishing on waters where there is a federal reserved water right. State, private, and Native-selected or -owned lands are generally not within the jurisdiction of the federal subsistence management program and are regulated by the State of Alaska.

The land in and around the study area is owned or managed by the USFS, State of Alaska, private landowners, Kootznoowoo Inc., and the City of Angoon. The federal lands in the study area are within the Monument–Wilderness Area. Favorite Bay and most other submerged lands and tidelands below mean high water (approximately 15 feet above mean sea level) are owned and managed by the State of Alaska.

Kootznoowoo, Inc. is the local village Alaska Native Corporation established under the Alaska Native Claims Settlement Act (ANCSA). Kootznoowoo, Inc. holds title to lands in and around Angoon under ANCSA. Portions of the lands on the peninsula south of Angoon disbursed to Kootznoowoo, Inc. under ANCSA have been divested to Kootznoowoo, Inc. shareholders. These lands are considered private lands.

In addition, under Section 506 of ANILCA, Kootznoowoo, Inc. holds title to any rocks, pinnacles, islands, islets, and lands from the mean high tide mark to a point 660 feet inland; in and adjacent to the inland waters from Kootznahoo Inlet to the rangeline separating Range 68 East and Range 69 East, Copper River Base and Meridian, and those parts of Mitchell, Kanalku, and Favorite bays west of that line. These lands are called the Kootznoowoo Corridor Lands (see Figure 1). The U.S. government reserves the following rights to these lands:

- All timber rights are reserved subject to subsistence uses consistent with Title VIII of ANILCA.
- The right of public access and use within such area, subject to regulation by the Secretary of
 Agriculture to insure protection of the resources, and to protect the rights of quiet enjoyment of
 Kootznoowoo, Inc., granted by law, including subsistence uses consistent with Title VIII of ANILCA.
- The subsurface estate.
- The development rights, except that the Secretary of Agriculture is authorized to permit construction, maintenance, and use of structures and facilities on said land which he [or she] determines to be consistent with the management of the Admiralty Island National Monument: *Provided* that all structures and facilities so permitted shall be constructed of materials which blend and are compatible with the immediate and surrounding landscape.

The City of Angoon also owns land on the Angoon peninsula within the study area (see Figure 1).

Subsistence activities occurring in offshore federal waters (more than 3 miles from the coast) are not subject to ANILCA. However, offshore waters and all lands in Alaska are subject to the Marine Mammal Protection Act (16 USC 1361–1407), the Endangered Species Act (16 USC 1531 et seq.), the Migratory Bird Treaty Act (16 USC 703–712), and the Migratory Waterfowl Hunting and Conservation Stamp Act (16 USC 718–718h). The Marine Mammal Protection Act and the Endangered Species Act forbid the harvest of marine mammals and endangered species except by Native Americans for non-wasteful subsistence purposes.

4.0 Study Area Description and History

The study area is located around the community of Angoon, a second-class city in Southeast Alaska with a population of around 450 residents. Angoon is the only permanent settlement on Admiralty Island, and is located approximately 55 miles south of Juneau and 41 miles northeast of Sitka. Angoon has no road links to any other developed areas, and its residents are completely dependent upon seaplane or boat transportation throughout the year (ADCCED 2013).

The major habitats found in the study area include the spruce-hemlock forest, freshwater streams and wetlands, coastal marshes and estuarine tidal flats, alpine tundra, muskeg, coastal shorelines, and open ocean.

The spruce-hemlock forest is habitat for Sitka black-tailed deer, brown bear, smaller furbearing mammals such as marten, several species of songbirds, and many edible plants. Freshwater streams are habitat for many species of fish, including all five species of Pacific salmon found in Alaska, Dolly Varden, steelhead/rainbow trout, and cutthroat trout. Freshwater wetlands support minks, river otters, and waterbirds. Coastal marshes and estuarine tidal flats are among the richest ecosystems in the study area. The marshes and estuarine areas provide habitat for waterbirds, shorebirds, juvenile fishes, invertebrates such as clams and mussels, minks, edible plants and seaweed, and other wildlife such as brown bears at certain times of the year. The alpine tundra ecosystem is habitat for primarily Sitka black-tailed deer and brown bears. Muskeg habitats are home to many edible plants and berries, deer, brown bears, and many birds. Finally, coastal shorelines and open ocean habitat support several species of edible seaweed, invertebrates (such as scallops, shrimp, crabs, and abalone), many species of fish, and marine mammals such as seals, porpoises, sea otters, and whales.

Archaeological sites at Groundhog Bay, Hidden Falls, Thorne River, and Chuck Lake indicate that Southeast Alaska has been inhabited by Alaska Natives for at least the last 11,000 years (Ackerman 1968; Ackerman et al. 1985; Davis 1989, 1990; Holmes 1987). The study area is located within the traditional territory of the Kootznoowoo Tlingit tribe (ADCCED 2013; de Laguna 1960:204; Goldschmidt and Haas 1998:67–72). Direct and indirect contact with European explorers and fur traders after the mid- to late-1700s had a devastating effect on the Native population throughout Alaska—the spread of Western diseases; adoption of a cash economy; and introduction of foreign languages, religions, and social customs dramatically affected Native populations and cultures. By the mid-1800s, the Tlingit population in the Angoon area was estimated at between approximately 300 and 700 individuals (Emmons 1991:Tables 4-6). Systematic collection of ethnographic data began in the early 1880s when a German geographer named Aurel Krause spent the winter of 1881–1882 with the Tlingit at the village of Chilkat, and continued with the work of military officers George Thornton Emmons and Albert Parker Niblack. Emmons was stationed in Tlingit territory in 1882 when he began documenting Tlingit culture. Niblack was a naval officer sent to study the Tlingit in the summers from 1885 through 1887. Although their ethnographic accounts document aspects of Tlingit culture at the time, considerable change had already occurred in Tlingit communities during the 100 years following indirect and direct contact with European and American explorers and fur traders. Tlingit communities decimated by disease and conflict with other groups consolidated their settlements and altered their seasonal movements to take advantage of jobs and trade opportunities that allowed them access to Russian and later American goods.

When the Russians sold Alaska to the United States in 1867, sea otter fur harvesting was in decline as a major commercial enterprise. The territory was placed under the control of U.S. military garrisons, and other resource extraction industries were encouraged to establish trading posts and resource extraction and processing stations throughout the state. In 1878 the Northwest Trading Company established a trading post on Killisnoo Island. Over the next two years they expanded, adding a herring reduction factory and a whaling station. At this time, some of the inhabitants of Angoon were employed to hunt whales. Following an accident where a Tlingit crewmember was killed, the family of the deceased and other villagers demanded that payment be made to the man's family and took two white men hostage; fearing a threat from the community, the Northwest Trading

Company sought assistance from the U.S. Navy. The revenue steamer *Corwin* and the tugboat *Favorite* responded by firing on the village at Angoon and raiding the village at Neltushkin, destroying community houses and canoes, and killing as many as six children. The loss of the canoes severely restricted the mobility of the Angoon community and their ability to provision themselves for the winter. Ultimately, this conflict was one of the events leading to the establishment of a civil government in Alaska in 1884 (de Laguna 1960:162), and it undoubtedly played a role in the self-organization of local government institutions in Angoon.

The town of Angoon was organized in 1917 under the Territorial laws of 1915, and an Alaska Native Service school was established in 1920. The Alaska Native Brotherhood (ANB), originally founded in Sitka in 1912 to boycott discrimination of Native peoples, established Camp No. 7 in Angoon in the early 1920s. At the time of its founding, more than half the population of Angoon joined the organization, and by the 1960s many community members had held leadership positions in the ANB or its sister organization, the Alaska Native Sisterhood (ANS) (de Laguna 1960:195). The ANB and ANS were influential in electing Alaska Native members to the Territorial Legislature, in coordination with the American Federation of Labor, for negotiating fair pay for fishers and cannery workers. By 1925, the community had acquired a diesel electric plant to provide power to many houses and to light the boardwalk; the maintenance of this plant was funded by an annual tax that the local government collected from each household. In 1936, the Angoon Community Association incorporated under the provisions of the Indian Reorganization Act of 1934. The bylaws and constitution of the Angoon Community Association—which enabled the organization to buy, own, and manage community property and borrow money from the federal government for community business development and investments—was ratified in 1939. In 1948, the community association established a law and order code, the Angoon Native Village Court, and the Village Police Force (de Laguna 1960).

Prior to its incorporation, the Angoon cash economy was dominated by outside interests such as the National Fish and Salting Company, which operated a herring processing plant on Killisnoo Island and employed many community members until the facility and settlement burned in 1928. The ability to procure federal loans allowed the community to acquire commercial fishing vessels and purchase the salmon cannery at Hood Bay in 1947. The community took over direct management of the cannery in 1949, and for many years community members worked on fishing vessels, occupied management positions, or worked on the cannery line. The cannery burned in 1961.

A city government was adopted in 1963.

The current Angoon economy is largely based on natural resource extraction, transportation and trade, educational and health services, leisure and hospitality, and local government (Alaska Department of Labor and Workforce Development 2013). Fewer than 18 individuals hold commercial fishing permits (Alaska Commercial Fisheries Entry Commission 2013). The Southeast Alaska Health Consortium clinic and city government also rank among the top employers.

5.0 IMPORTANCE OF SUBSISTENCE

For many Alaskans, subsistence is more than the harvesting, processing, sharing, and trading of natural resources; subsistence embodies cultural, social, and spiritual values at the core of Alaska Native and rural Alaskan culture. Subsistence in Alaska comprises a diverse set of localized systems of food production and distribution, representing unique combinations of ecology, community, culture, and economics (Wolfe 2004).

Nearly all rural Alaska communities depend on subsistence resources to meet at least part of their nutritional needs. The reasons for participating in subsistence are many and varied. Some individuals participate in subsistence activities to supplement personal income and provide needed food. Others pursue subsistence activities to continue cultural customs and traditions. Many others participate in subsistence activities for personal reasons related to deeply held attitudes, values, and beliefs about where their food comes from, as well as the ability to supply their family directly through their own work.

Subsistence resources are highly valued and central to the customs and traditions of many cultural groups in Alaska. These customs and traditions encompass sharing and distribution networks as well as cooperative hunting, fishing, gathering, and ceremonial activities. Sharing of subsistence foods is common in rural Alaska. Subsistence fishing, hunting, and gathering are important sources of nutrition in most rural communities. In general, statewide Alaskan subsistence harvests by rural residents consist primarily of fish (60%), followed by land mammals (20%), marine mammals (14%), birds (2%), shellfish (2%), and plants (2%) (Wolfe 2000).

In the context of the community of Angoon's seasonal and cyclical employment, subsistence harvest of fish and wildlife resources takes on special importance. Subsistence in Alaska is part of a rural economic system referred to as a mixed subsistence-market economy. Under this market system, families invest money in small-scale, efficient technologies to harvest wild foods. Fishing, hunting, and gathering subsistence resources provides a reliable economic base for many rural communities. Families and in some cases communities have invested in gill nets, motorized skiffs, and other equipment to harvest important resources. Subsistence is not oriented toward sales, profits, or commercial production; it is focused on meeting the needs of families and the community. Participants in this mixed economy in rural Alaska often augment their subsistence production with cash employment. Cash from employment provides the means to purchase equipment, supplies, and fuel used in subsistence activities. The combination of subsistence and commercial-wage activities provides the economic basis for the way of life in Alaska's rural communities (Wolfe and Walker 1987). Because of the high prices of commercial products in remote Alaska communities, the economic role of locally available fish and game takes on added importance.

Generally, subsistence harvest levels vary widely from one community to another and from year to year. Rural communities have high subsistence participation rates and rely heavily on wild foods, with approximately 86% of rural Alaska households using wild game and 95% using fish (Wolfe 2000). Wolfe's 2000 study estimated that the annual wild food harvest in Southeast Alaska was approximately 5,064,509 pounds, or 178 pounds per person per year. Participation in subsistence activities supports a variety of cultural and related values in rural communities. For example, the distribution of harvested fish and wildlife contributes to community stability through the sharing of resources. Subsistence resources also provide the foundation for native culture in Angoon and are deeply connected to traditional respect for the earth and its resources.

6.0 Angoon Harvest Data

Much of the information in this analysis comes from the Alaska Department of Fish and Game (ADF&G) Community Subsistence Information System (ADF&G 2013) regarding a study of Angoon subsistence harvest in 1996, and from ADF&G Division of Subsistence technical reports (George and Kookesh 1983; George and Bosworth 1988), which highlight subsistence resources used by Angoon residents and methods of use in the community.

The 1996 harvest study is the most representative data on broad scale subsistence use for the community of Angoon to date. For it, data were collected on subsistence harvest from some households in the population so that statistical inferences could be made for the entire population. Since that study, data gathered by the ADF&G, the USFS, and the FAA's EIS team show that there have been no major changes in subsistence effort, harvest of most species, and use. More recent harvest information beyond the 1996 study was also used to characterize existing subsistence uses when those data were gathered in such a way as to constitute a representative sample of the community. Information from non-representative sampling, such as with an extremely small sample size, was reviewed and used as general subsistence resource information, but could not be applied to the entire Angoon population regarding their subsistence practices.

In addition, information was gathered from local residents to ground-truth recent subsistence harvest efforts in and near the study area. The FAA's EIS team conducted site visits and interviews with Angoon subsistence users to supplement existing information on subsistence use areas that might be affected by the project. Interviews included the use of subsistence mapping, wherein the interviewer asked Angoon residents to identify locations they or others in their household use as sources of subsistence resources. Eighteen formal interviews were conducted. These were supplemented by informal conversations with residents about their subsistence practices. Interviewees represented a cross-section of the Angoon community, and included individuals ranging from 18 to 75 years old. The methods used to prepare this report and to assess effects on subsistence resources were developed in consultation with the FAA, USFS, ADF&G, and State of Alaska ANILCA program.

Resource collection for fishes, land and marine mammals, birds, marine invertebrates, and plants occurs throughout the year in the study area, with summer being the most intense collection period. The resources harvested are shown in Table 1. Springtime harvest often involves collecting shoots of edible plants, herring, herring eggs, seaweed, clams, and other intertidal resources. Residents primarily harvest fish resources in the summer and early fall, either under subsistence, commercial, or sport-fishing regulations. Fish harvest involves mostly salmon and halibut, with the greatest amount of harvest reserved for halibut, coho salmon, and sockeye salmon. Fall harvest is primarily hunting, with many residents hunting for Sitka black-tailed deer. Some fishing also occurs in the fall, primarily for coho salmon. Winter is usually the lowest harvest period. Winter harvest often includes trolling for king salmon, trapping, and some collecting of intertidal resources. Residents harvest some resources year-round including halibut, Chinook salmon, herring, chitons, rockfish, devil's club, and harbor seals (George and Bosworth 1988).

Angoon residents harvested an estimated 224 pounds of subsistence resources per capita in 1996 (ADF&G 2013). Subsistence resources used by residents consist of fish, land mammals, marine mammals, birds and eggs, marine invertebrates, and vegetation (Table 2). In general, the pattern of use is similar to that of rural residents statewide, as discussed above: most harvested resources are fish, followed by land mammals, marine invertebrates, plants, birds, and eggs.

Angoon households participate in subsistence use in many ways: direct use, harvest attempts, actual harvest, and giving and receiving subsistence resources (see Table 2). The ADF&G Community Profile Database indicates that 97% of Angoon households use subsistence resources (ADF&G 2013). There is a strong emphasis on sharing subsistence resources, as indicated by the number of households that have given and/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 Angoon. Some resources harvested outside the study area may be reported as being used locally, although the resource may not be harvested in or around the study area.

Table 1. Angoon Subsistence Resources Harvested in 1996

Resource category	Common name	Scientific name	
Fish	Chinook salmon	Oncorhynchus tshawytscha	
	Chum salmon	Oncorhynchus keta	
	Coho salmon	Oncorhynchus kisutch	
	Pink salmon	Oncorhynchus gorbuscha	
	Sockeye salmon	Oncorhynchus nerka	
	Herring	Clupea spp.	
	Pacific cod (gray)	Gadus macrocephalus	
	Flounder	Various spp.	
	Lingcod	Ophiodon elongatus	
	Halibut	Hippoglossus stenolepis	
	Black rockfish	Sebastes melanops	
	Yelloweye rockfish (red snapper)	Sebastes ruberrimus	
	Sablefish (black cod)	Anoplopoma fimbria	
	Dolly Varden	Salvelinus malma Walbaum	
	Rainbow trout	Oncorhynchus mykiss	
	Steelhead	Oncorhynchus mykiss	
Terrestrial mammals	Brown bear	Ursus arctos	
	Sitka black-tailed deer	Odocoileus hemionus sitkensis	
	Land (river) otter	Lutra canadensis	
	Marten	Martes martes	
	Mink	Neovision vision	
Marine mammals	Harbor seal	Phoca vitulina	
Birds and bird eggs	Bufflehead	Bucephala albeola	
	Harlequin	Histrionicus histrionicus	
	Mallard	Anas platyrhynchos	
	Northern pintail	Anas acuta	
	Long-tailed duck (old squaw)	Clangula hyemalis	
	Green-winged teal	Anas carolinensis	
	American widgeon	Anas americana	
	Vancouver Canada geese	Branta canadensis	
	Blue grouse	Dendragapus obscurus	
	Bird eggs	Various spp.	
Marine invertebrates	Black (small) chitons	Katharina tunicata	

 Table 1. Angoon Subsistence Resources Harvested in 1996

Resource category	Common name	Scientific name		
	Gumboot chiton	Cryptochiton stelleri		
	Butter clams	Saxidomus giganteus Protothaca staminea		
	Pacific littleneck clams (steamers)			
	Basket cockles	Clinocardium nutta		
	Heart cockles	Clinocardium nuttallii		
	Dungeness crab	Cancer magister		
	Red king crab	Paralithodes platypus		
	King crab sub-species	Paralithodes camtschaticus		
	Tanner crab sub-species	Chionoecetes spp.		
	Limpets	Various spp. Octopus dolfeini Parastichopus californicus		
	Octopus			
	Sea cucumber			
	Green sea urchin	Strongylocentrotus droebachiensis		
	Coonstripe shrimp	Pandalus danae		
	Humpback shrimp	Pandalus hypsinotus		
	Pacific prawn	Pandalus platyceros		
Vegetation	Plants/greens/mushrooms	Various spp.		
	Berries	Various spp.		
	Seaweed/kelp	Various spp.		
	Wood	Various spp.		

Source: ADF&G (2013)

Table 2. Angoon Resource Harvest by Major Resource Category

		, ,		0)		
		Percenta	Dor conito horvest			
Resource	Using	Attempting to harvest	Harvesting	Receiving	Giving	Per capita harvest (pounds)
All resources combined	97.3	93.2	93.2	94.6	67.6	224.45
Fish	89.2	70.3	70.3	83.8	50.0	129.51
Salmon	79.7	64.9	64.9	62.2	41.9	81.92
Non-salmon	82.4	60.8	60.8	70.3	29.7	47.58
Land mammals	74.3	51.4	51.4	50.0	27.0	51.32
Large	74.3	51.4	51.4	50.0	27.0	51.32
Small	2.7	2.7	2.7	1.4	0.0	0.00*
Marine mammals	32.4	14.9	14.9	28.4	8.1	9.02
Birds and eggs	5.4	5.4	5.4	2.7	1.4	0.17
Marine invertebrates	89.2	78.4	78.4	73.0	41.9	30.09
Vegetation	66.2	62.2	56.8	50.0	17.6	4.35

Source: ADF&G (2013)

^{*} Per capita harvest does not assess pounds of harvest for fur-bearing animals

7.0 Subsistence Resources and Uses

7.1 Fisheries

Fish are an extremely important subsistence resource for Angoon residents. Centrally located in the Alexander Archipelago, Angoon residents have access to many saltwater and freshwater fishing grounds throughout Southeast Alaska.

In Alaska, state and federal regulations define three types of fishing: 1) fishing for profit (commercial fishing), 2) fishing for sport by hook and line (sport fishing), and 3) taking fish resources for personal use (subsistence) with prescribed gear (usually by permit). However, in many cases, the lines between commercial, sport, and personal use fishing are not quite clear. For example, commercial fishers may keep a portion of their catch for personal consumption, and sport anglers often consider filling the freezer just as important as the pleasure they derive from catching fish (Gmelch et al. 1985).

In the 1996 ADF&G study (ADF&G 2013), approximately 70% of all households in Angoon attempted to fish during that year, with approximately 70% harvesting fish (see Table 2). However, the importance of fishing is shown by the statistic that 89% of all households used fish resources in 1996. Based on interviews with Angoon residents conducted in 2008 and 2009, the 1996 use rate is still considered an accurate representation of subsistence fish use in Angoon. The importance of subsistence in the community's culture also is shown by the following statistic: 84% of residents receive fish from others, and 50% give fish to others (ADF&G 2013).

7.1.1 **SALMON**

In Angoon, as in most of coastal Alaska, salmon is the foundation of the subsistence way of life. In addition to sustenance for individuals and families in Angoon throughout the year, salmon provide job opportunities through commercial fishing, fish processing, sport-fish guiding, and other ancillary activities associated with fishing, such as the service industry. The salt and fresh waters around Angoon are home to all five species of Pacific salmon found in Alaska: Chinook (or king) salmon, sockeye (or red) salmon, pink (or humpy) salmon, coho (or silver) salmon, and chum (or dog) salmon.

According to interviews in 2008, Angoon residents fish for salmon in many locations. Many people fish locally along most of Chatham Strait and the Mitchell Bay area for all species of salmon found in Alaska. In Favorite Bay and its freshwater tributaries (including Favorite Creek), coho, chum, and pink salmon are all harvested by Angoon residents. Angoon residents also harvest sockeye and Chinook salmon in the marine waters of Favorite Bay, although those species do not spawn in the freshwater sources of Favorite Bay. Angoon residents indicate that chum and pink salmon are harvested in the greatest quantities in this area, followed by coho, Chinook, and sockeye salmon. Figure 3 shows the study area locations used by Angoon residents for fish.

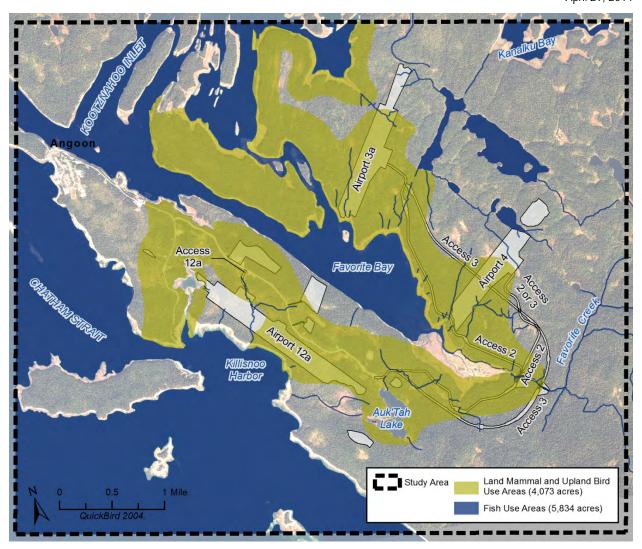


Figure 3. Land mammal, upland bird, and fish use areas commonly used by Angoon residents.

According to the ADF&G Community Subsistence Information System, the most common salmon species harvested by Angoon residents is coho (30 pounds per capita), followed by sockeye salmon (21 pounds per capita). Chinook salmon are third in harvest (20 pounds per capita), with chum salmon (9 pounds per capita) and pink salmon (2 pounds per capita) being fourth and fifth, respectively (ADF&G 2013).

Under sport-fishing licenses using rod and reel, Angoon residents often catch coho, Chinook, and pink salmon; most sockeye and chum salmon are primarily caught with nets under a subsistence harvest permit administered by the ADF&G. Table 3 shows the harvest of Pacific salmon under the ADF&G subsistence harvest permits from 2003 to 2012.

Table 3. Saltwater and Freshwater Salmon Subsistence Harvest by Angoon Residents under ADF&G Permits

Year	Permits issued	Permits fished	Number of Chinook	Number of sockeye	Number of coho	Number of pink	Number of chum
2003	102	55	0	1,496	36	6	2
2004	106	86	0	1,479	107	107	58
2005	90	35	0	261	12	25	0
2006	96	44	0	658	20	9	0
2007	86	73	1	56	47	62	0
2008	86	83	0	637	120	0	15
2009	115	96	0	942	70	55	5
2010	109	102	0	1,332	155	112	29
2011	102	60	8	997	186	10	11
2012*	98	34	0	728	40	40	0

^{*2012} data are preliminary data

Source: Harris 2013

Once harvested, salmon are either eaten fresh or preserved so the meat can be eaten throughout the year. Angoon residents use several different methods to preserve caught fish. Some are traditional, having been passed down through the generations; others are recent and coincide with improved technology. One of the most traditional methods of preserving fish is by smoking. In this method, residents filet the fish and either cut it into strips or chunks. The meat is usually hung in a small building called a smokehouse. A fire is built inside the smokehouse using a slow-burning wood, usually alderwood, and the fish is left to smoke for a period of time. The process can take between one and six days, depending on the level of dryness preferred.

Another method of preserving is canning. Many residents of Angoon will can salmon using a pressure cooker and glass jars. The use of canning to preserve salmon probably stems from the salmon canneries that were in operation around Angoon between the late 1800s and early 1900s. Today, residents often can both fresh salmon and smoked salmon to have different flavors throughout the year. Another method of preserving, which is only used by a few residents, involves fermentation. Some Angoon residents preserve salmon parts, usually the heads, by placing them in a burlap sack and burying them in wet sand for several months. The heads are then dug up and eaten. In many places in rural Alaska, this method is used to create what are known as "stinkheads."

The most common method of preserving fish is freezing. Many households in Angoon have a large freezer where they can preserve salmon, halibut, deer, and berries for a long period of time. Salmon are usually filleted and either wrapped in freezer paper or vacuum sealed to protect the meat. Freezing meat is common because it is the least time- and labor-intensive method of preserving and because it retains the original flavor of the meat better than any other method.

7.1.2 Non-Salmon Fisheries

Of equal importance to Angoon residents are non-salmon fish, primarily species such as halibut, lingcod, rockfish, herring, rainbow trout, cutthroat trout, Dolly Varden, and eulachon. The vast majority of non-salmon fish harvest is halibut, followed by herring roe, rockfish, herring, Dolly Varden, Pacific cod (gray cod), and sablefish (black cod) respectively. Commercial fishing involves species such as halibut, rockfish, and black cod. Fish such as halibut, rockfish, and Dolly Varden are also sport fished by community. In terms of economic importance, non-salmon fishes are just as important as salmon to the economic well-being of the community. Locations for fishing non-salmon fish are similar to salmon fishing areas and shown as fish use areas in Figure 3 above. In most cases, Angoon residents fish for multiple species in a single outing, particularly for deepwater fishes such as halibut, rockfish, and cod.

Halibut is an especially important non-salmon fish resource for Angoon residents. The ADF&G 1996 study (ADF&G 2013) documented approximately 40.5 pounds of per capita harvest by Angoon residents. Most halibut harvested by Angoon residents is filleted and frozen, although some residents may smoke or can the meat.

Subsistence fishers are required to obtain a subsistence halibut registration certificate (SHARC) from the National Marine Fisheries Service prior to fishing. A SHARC permit allows the use of rod and reel or one longline with up to 30 hooks and a bag limit of 20 fish per day. In 2010, approximately 180 Angoon residents were SHARC permit holders. The estimates provided in Table 4 reflect only fishing by SHARC fishers in the community of Angoon. All subsistence gear types (setline and hand-operated gear) are included in the harvest estimates.

In addition to the SHARC permits, some Angoon residents harvest halibut under their sport-fishing license. In 2007, SHARC permit holders reported harvesting 36 halibut (approximately 653 pounds) under the sport-fishing license. ADF&G Statewide Harvest Surveys for 2011 show 641 halibut harvested, although much of the harvest is from non-residents and non-local residents from other Alaskan communities (Harris 2013). In addition, the reported harvest represents a harvest area larger than the study area. Angoon residents interviewed for this project have indicated that all halibut harvest occurs outside the study area, but there are several identified locations for halibut harvest outside of this area.

Table 4. Estimated Halibut Subsistence Harvest by Angoon SHARC Holders Using All Gear Types within Regulatory Area 2c, 2003–2010

Year	Estimated number harvested	Estimated pounds harvested
2003	1,142	20,283
2004	1,435	32,009
2005	1,231	25,166
2006	954	16,875
2007	836	16,429
2008	715	13,148
2009	716	16,148
2010	894	14,688

Sources: Fall et al. (2004, 2005, 2006, and 2007); Fall and Koster (2008, 2010, 2011, and 2012). **Note**: Estimated pounds given as net (dressed) weight, which is equal to 75% of round weight.

Herring and herring eggs are an important resource in Angoon, for both subsistence and commercial uses. In mid to late winter, herring begin to congregate in saltwater bays in preparation for spawning. During this time, some Angoon residents travel to the bays to fish for herring, usually by jigging. The 1996 ADF&G survey

(ADF&G 2013) shows that Angoon residents harvest approximately 1.4 pounds of herring per capita. Residents often freeze the herring and use it for salmon or non-salmon fish bait. Angoon residents identified several locations in the study area as places where herring harvest occurs.

In early spring, usually in late March and April, herring begin to spawn in the waters around Southeast Alaska. The male fish emit their milt (semen) into the water. The females then deposit their roe in the milt, completing the fertilization process. The developing eggs fasten to kelp, seaweed, rocks, or any object placed in the water.

Angoon residents harvest herring eggs for personal use in two ways: 1) by placing hemlock branches into the intertidal zone and 2) by collecting the eggs that have formed naturally on seaweed or kelp. Hemlock branches or entire trees are cut, attached to a buoy or line from the beach, and lowered into the water. Collectors leave the branches or trees in the water to collect eggs, then recover eggs from the branches. Residents also harvest herring eggs from kelp and seaweed. Most people travel by boat to kelp beds and pull up the egg-laden kelp with hooks. A few people dive into kelp or seaweed and pull it up by hand. Still others bring kelp or seaweed into an area prior to the spawn, and then collect it as they would hemlock branches. Residents collect the seaweed at low tide where the eggs show up as a large white ball or spot in the water.

Historically, Angoon residents often harvested herring eggs in Favorite Bay. However, in the early 1980s, the local herring population decreased significantly, and the community placed a voluntary moratorium on herring egg collection until the population rebounded. As of 2009, the population had not rebounded enough for any herring egg harvest to occur. To offset the loss of herring egg harvest close to the community, Angoon residents rely on the subsistence herring fishery in Sitka for their supply. Some Angoon residents either boat to Sitka in the spring to harvest herring eggs, trade goods and/or services for herring eggs collected by Sitka residents, or receive herring eggs from relatives living in Sitka. In 1996, Angoon residents harvested approximately 2.0 pounds of herring roe per capita, with half of the harvest occurring on kelp and the other half coming from hemlock branches placed in the water (ADF&G 2013). Because of the voluntary moratorium on herring egg harvest, it is assumed that all herring egg harvest by Angoon residents occurred in Sitka.

Rockfish are another important non-salmon fish harvested by Angoon residents. Rockfish typically prefer steep rocky habitats, such as those found in the marine waters around Chatham Strait. Because rockfish have a swim bladder to maintain buoyancy in various depths, rapid changes in depth can cause mortality among many rockfish species. Rapid changes in depth can be caused by being caught by sport or commercial anglers. This factor, along with late sexual maturity and slow reproductive rates, can cause rapid population declines in many rockfish species. The 1996 ADF&G study (ADF&G 2013) found that red rockfish is the most common rockfish species caught by Angoon residents at approximately 1.4 pounds per capita, followed by the black rockfish at less than 1 pound per capita. Interviews with local residents indicate that no rockfish are harvested in Favorite Bay, but the fish are commonly found in the waters of Chatham Strait.

Pacific cod (gray cod) and sablefish (black cod) are typically harvested in deeper waters in the Gulf of Alaska. Most Pacific cod and sablefish harvest comes from commercial fishing, but occasionally Angoon residents will catch Pacific cod and sablefish while targeting other marine fish species. In addition, a few commercial fishers based in Angoon keep some of their catch for personal consumption. Some Pacific cod are harvested in Chatham Strait and lower Favorite and Mitchell bays, but both species typically are not found in the shallower waters in upper Favorite Bay. Less than 1 pound per capita of both Pacific cod and sablefish are harvested by Angoon residents (ADF&G 2013).

Dolly Varden are found in the study area and are used by Angoon residents. The 1996 ADF&G study (ADF&G 2013) found that approximately 1.0 pound of Dolly Varden was harvested per capita by Angoon residents in that representative year. Most Dolly Varden in this region are anadromous, meaning that they migrate between freshwater and saltwater, although there may be a few resident Dolly Varden in isolated watersheds. Angoon residents harvest Dolly Varden year-round and often catch Dolly Varden when targeting salmon in marine and

freshwater environments. However, historically, Dolly Varden were primarily harvested in the spring, where they would congregate at the mouths of streams to eat out-migrating pink and chum salmon. The ADF&G Statewide Harvest Survey found that 96 Dolly Varden were harvested in 2011, although some of that harvest is from non-residents and non-local residents of other Alaskan communities, and the reported harvest represents a harvest area larger than the study area (Harris 2013). Within the study area, Dolly Varden are located in marine waters all around Favorite Bay, and outside the study area in Mitchell Bay. In freshwater, Favorite Creek and many of the freshwater lakes between Favorite and Kanalku bays contain Dolly Varden.

Angoon residents also harvested cutthroat trout in the study area, albeit in very small numbers. The 1996 ADF&G study found that less than 1 pound of cutthroat trout was harvested during that representative year (ADF&G 2013). Like Dolly Varden, cutthroat trout in the area are anadromous. Angoon residents harvest cutthroat trout year-round and often catch them when targeting salmon in both marine and freshwater environments. The ADF&G Statewide Harvest Survey found that no cutthroat trout were harvested in the Angoon area in 2011. Within the study area, cutthroat trout are located in marine waters all around Favorite Bay, and outside the study area in Mitchell Bay. In freshwater, Favorite Creek and many of the freshwater lakes between Favorite and Kanalku bays contain cutthroat trout.

7.2 Land Mammals

Hunting is an important activity to the residents of Angoon. For many people, hunting is an important source of nutritious food, and a highly valued outdoor pursuit. It is also a significant part of the community's social network, as many hunters bond over experiences and share the products of their success. Figure 3 above shows areas commonly used for terrestrial mammal subsistence harvest in the study area. Sitka black-tailed deer represent the vast majority of terrestrial mammals harvested by Angoon residents. Approximately 74% of households used deer for subsistence, and 50% of all households attempted to harvest deer in 1996. Every Angoon resident who went hunting for deer that year also harvested at least one deer. Approximately 51 pounds of deer were harvested by Angoon residents in 1996 (ADF&G 2013). Table 5 shows the number of hunters, the amount of effort, and the amount of deer harvest from data collected by ADF&G surveys from 2004 to 2010.

The ADF&G conducted a study of Angoon residents' deer hunting methods and activities in 1982 (George and Kookesh 1983). The study documented three main methods for hunting deer in the Angoon area. The first method is referred to as the alpine hunt. In that method, Angoon residents go to higher ground where deer often occupy open alpine areas to feed on succulent vegetation before it dies with the first frost. Usually, these hunts are overnight trips where the hunters boat to an area with relatively easy access to higher alpine areas. Because of the travel, this method typically involves camping, and often entire families will head up to hunt. The hunters glass or scope for deer in the open areas, and once one is spotted, they stalk within range for an open shot. Outside the study area, the upper portions of Hood Bay Mountain are popular locations for this type of hunting.

The second method is called the muskeg and forest hunt. This hunt usually occurs after the first frost and continues until the end of the hunting season. In this method, hunters set up in small clearings or muskegs at the edge of densely forested areas. The hunters will either wait for the deer to enter the clearings or use a deer call to lure the deer into the open areas. The study area has many locations where residents employ this method of hunting, especially when the weather makes travel to other locations around Chatham Strait difficult or impossible. Most hunters access locations for the muskeg and forest deer hunt by a combination of boat travel and walking.

The third method is the beach hunt. The beach hunt can occur throughout the season, but many Angoon hunters intensify their efforts in November and December, when deer use the beach fringe to get away from deep and heavy snow. Angoon residents will often travel up and down the coastline in boats looking for deer.

When a deer is spotted, the boat is driven to shore and the hunter then stalks the deer to get within range. A similar form of this type of hunting also occurs at muskeg areas along the Angoon road system. Residents who do not have access to boats often use a motor vehicle and travel the Angoon road system, glassing open areas for deer.

Very few residents hunt for small game, with land (river) otters being the only known harvest of small game documented in 1996. Only 3% of Angoon residents either used or harvested land otters in 1996 (ADF&G 2013). No per capita pounds of meat were documented from that harvest, meaning that the residents likely sold the fur or used it for ceremonial items. Several residents indicated in interviews that although they have trapped in the past, they have stopped the practice because of declining fur prices.

Year	Number of hunters	Total number of days hunted	Total number of deer harvested
2004	23	64	14
2005	36	74	55
2006	20	44	32
2007	19	20	15
2008	38	203	89
2009	23	79	45
2010	37	330	132

Source: Mooney 2013c

7.3 Birds and Eggs

Angoon residents harvest a number of upland birds and waterbirds, including grouse and migratory waterbirds. In 1996, approximately 5% of Angoon residents harvested birds (less than 1 pound per capita), mostly migratory waterbirds (ADF&G 2013). The most frequently harvested type are migratory waterbirds at less than 1 pound per capita, with mallards being the most common species harvested. Other migratory waterbird species harvested by Angoon residents include Vancouver Canada geese, buffleheads, Harlequin ducks, long-tailed ducks (old squaw), northern pintails, Green-winged Teal, and American Widgeon. Migratory waterbirds are typically harvested in the fall and spring, as birds are migrating to and from warmer climates. Under the Migratory Bird Treaty Act, migratory birds must be harvested using shotguns and nontoxic shot. The freshwater, marine, and near-shore tidal environments in the study area were identified by Angoon residents as common harvesting locations for waterbirds (see Figure 3 above).

The only non-migratory bird harvested by Angoon residents is blue grouse, with less than 1 pound per capita of annual harvest (ADF&G 2013). As with migratory birds, blue grouse (also known as "hooters") are typically harvested in the fall or spring, particularly the spring, when they can be heard "hooting" from the forest. Blue grouse are harvested in many locations in the study area.

In the 1996 study, none of the households surveyed had harvested eggs from migratory birds (ADF&G 2013). Harvest of gull eggs is allowed in some communities in Alaska under federal migratory bird subsistence harvest regulations (50 CFR 92.5). In Southeast Alaska specifically, regulations allow only the harvest of glaucouswinged gull eggs and only by residents of Hoonah, Craig, Hydaburg, and Yakutat. In those communities, gull eggs have been historically harvested by residents. Gull eggs are large, about twice the size of chicken eggs,

and residents used them in the same ways as chicken eggs. During interviews, no Angoon residents provided any documentation of egg collection in the study area.

7.4 Marine Mammals

Under the Marine Mammal Protection Act of 1972, only Alaska Natives are permitted to harvest marine mammals. In the 1996 ADF&G study, approximately 15% of all Angoon households had harvested marine mammals, with 32% of the community using marine mammals and 28% receiving marine mammal products from others in the community (ADF&G 2013).

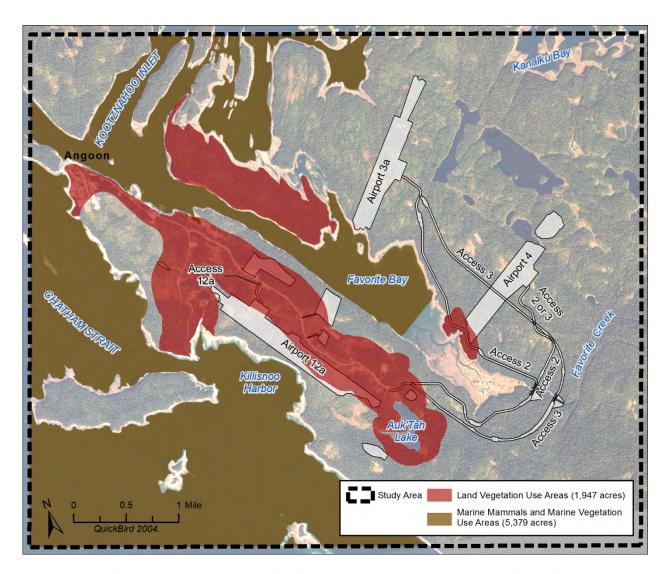


Figure 4. Land vegetation, marine mammal, and marine vegetation use areas commonly used by Angoon.

All marine mammals harvested in the study area are harbor seals. The average weight of an adult harbor seal is about 180 pounds, and average length is 5 to 6 feet (ADF&G 1994). There is no bag limit, harvest is expected to be limited to what can be reasonably used and not be wasted. Seals are generally hunted from late fall through

early spring. During the cold weather season, the seals are fatter, so fewer seals will sink when shot. In addition, many Alaska Natives believe the hide is better quality during this period than in summer. Within the study area, upper Favorite Bay is the favored location for seal harvest. Outside the study area, portions of Mitchell, Kanalku, and Pea Hen bays are all favored locations for seal harvest. Figure 4 above shows the marine mammal use areas in the study area.

7.5 Marine Invertebrates

Living in a coastal community, residents of Angoon heavily utilize marine invertebrates. Angoon residents harvest many types of marine invertebrates, including crabs, clams, cockles, abalone, gumboots (chitons), sea cucumbers, sea urchins, scallops, mussels, and octopus. Some of these resources, such as cockles and gumboots, are traditional Alaska Native foods that remain popular among Native people (Gmelch et al. 1985). Others, such as crabs and shrimp, are popular among all residents. Based on the marine invertebrate species targeted for harvest by Angoon residents and the percentage of Angoon households that harvested them in 1996, clams, chitons, cockles, crab, and shrimp are the favored resources for harvest (Table 6).

Table 6. Angoon Marine Invertebrates Resource Harvest by Angoon Households, 1996

Resource	% Using	% Attempting to harvest	% Harvesting	% Receiving	% Giving	Per capita harvest (pounds)
All marine invertebrates	89.20	78.40	78.40	73.00	41.90	30.0
Chitons	58.10	47.30	47.30	39.20	21.60	9.4
Clams	64.90	51.40	51.40	36.50	17.60	10.0
Cockles	68.90	54.10	54.10	45.90	16.20	6.32
Crab	48.60	32.40	31.10	35.10	20.30	2.77
Shrimp	8.10	5.40	5.40	2.70	1.40	1.05
Sea urchins	2.70	2.70	2.70	0.00	0.00	0.01
Octopus	6.80	6.80	6.80	0.00	2.70	0.41
Sea cucumbers	1.40	1.40	1.40	0.00	0.00	0.15
Limpets	1.40	1.40	1.40	0.00	0.00	0.01

Source: (ADF&G 2013)

Clams are the most commonly harvested intertidal resource and the second-most-common marine invertebrate used in Angoon: 51% of survey households had harvested them in 1996 (ADF&G 2013). Several species are found in Angoon, but only two species are harvested. These include the butter (or hardshell) clam and steamers (or the Pacific littleneck clam).

Residents can find clams throughout the year, but only collect them during certain months due to the threat of paralytic shellfish poisoning (PSP), which happens during the warm summer months and early autumn, when phytoplankton inundates the waters of many coastal areas. Some of the phytoplankton produces neurotoxins that mollusks ingest during feeding and concentrate in their tissues. The principal neurotoxin is saxitoxin, which is a strong natural poison. Of all marine invertebrates, clams and mussels are the most dangerous to consumers.

The butter or hardshell clam, also known as the northern quahog, is the most abundant species in the Angoon region in terms of its both availability and actual harvest levels. Adults average about 4 inches in diameter. Residents can easily find butter clams at low tide in the numerous gravel and rock beaches in the study area. Many people, especially those without a boat, dig clams close to town. Those with boats travel to locations in Favorite Bay, and outside of the study area in Mitchell, and Pea Hen bays. Some individuals gather clams along the salt lagoon, directly adjacent to the ferry terminal. Within the study area, several locations in Favorite Bay and on beaches along the Angoon peninsula are known locations for harvesting butter clams.

The steamer or Pacific littleneck clam is smaller than the butter clam, averaging 2 inches in diameter, but it occupies the same habitat. Residents harvest Pacific littleneck clams in the same locations as butter clams. The per capita harvest of butter and littleneck clams in 1996 was approximately 10 pounds and less than 1 pound respectively (ADF&G 2013).

Angoon residents harvest two species of chitons: the giant Pacific chiton and the lined chiton. All chitons are edible, and people often use the term "gumboot" to describe both species. Chitons are not susceptible to PSP like clams and mussels. Approximately 9% of Angoon households collect gumboots, according to the 1996 study (ADF&G 2013). Per capita harvest is over 1.0 pound. Gumboots occupy boulder-strewn, wave-beaten, or intertidal beaches, not gravel, sand, or mud habitats like most other mollusks. Residents harvest gumboots using a knife or some other thin, sharp object to pry them from the rocks. In the study area, the predominant location for harvest of gumboots is a series of rocky channels between Favorite and Pea Hen bays, where there is a massive tidal exchange of water.

Cockles are hard-shelled bivalves that are slightly larger than butter clams. Like clams, cockles are also susceptible to PSP. Therefore, most Angoon residents wait until fall or spring to harvest them. Cockles are typically found in finer sand or mud beaches than clam species. Most residents either smoke and dry the meat for later use or use them immediately by pounding the flesh to tenderize them and then fry the meat. Within the study area, much of Favorite Bay is a preferred location for harvest of cockles.

Crab is another important subsistence species, with approximately 31% of Angoon residents harvesting crabs in 1996 (ADF&G 2013). Angoon residents harvest crab by primarily using crab pots. Crab pots are typically baited with fish parts, attached to a line and buoy, and set in protected bays and coves. Crabs then enter the pot to get the bait and cannot escape because of the pot's one-way entrance. Once caught, crabs are kept alive until they are ready for consumption. Then the crabs are placed into a pot of boiling water until cooked. Once cooked, the shell is cracked and the white meat inside is consumed.

Dungeness crab accounts for the highest amount of crab harvest by Angoon residents. In 1996, approximately 2.1 pounds per capita of Dungeness crab were harvested by Angoon residents (ADF&G 2013). The most popular location for harvesting Dungeness crab in the study area is upper Favorite Bay. In the summertime, it is common to see multiple crab and shrimp pot buoys floating in the bay.

Other crab species harvested by Angoon residents include red king crab and tanner crab. In 1996, less than 1.0 pound per capita of each species was harvested by Angoon residents (ADF&G 2013). These species are typically harvested in deeper waters than Dungeness crab, although occasionally both king and tanner crabs are caught in the study area.

Like crab, shrimp are an important subsistence species for Angoon residents, with approximately 5% of households harvesting shrimp in 1996 (ADF&G 2013). Most Angoon residents harvest shrimp using shrimp pots, which work in a similar fashion as crab pots by capturing shrimp as they enter the pot to feed on bait. In the study area, there are several different species of shrimp, but only three species are actively sought after by Angoon residents for subsistence harvest: the Pacific prawn (or spot shrimp), the humpback (or humpy) shrimp, and the coonstripe shrimp. Angoon residents harvested approximately 1.0 pound per capita of shrimp in 1996.

As with Dungeness crab, one of the most important harvest locations for shrimp is upper Favorite Bay in the study area.

7.6 Vegetation

Plant gathering is a very popular resource use activity in Angoon when measured by the number of households that engage in it. Approximately 62% of Angoon households had gathered berries, greens, roots, wood, or mushrooms in 1996 (ADF&G 2013). Edible plants are abundant in the study area. The main habitats where residents find edible plants in the region include bogs (muskeg), the upper beach rocks and meadows, old growth forest edges, open areas, sub-alpine areas, and disturbed areas (Figure 4 above). Typically, Angoon residents do not have to travel far to collect vegetation resources, as many can gather plants along the roadside or in the forests surrounding the community. Substantial travel is only necessary to find resources like cranberries, strawberries, and certain mushrooms, which may be unavailable or scarce near Angoon. When this is the case, residents often gather plants and berries coincidentally to other activities such as boating, beachcombing, fishing, camping, or exploring.

Plant gathering is the easiest of the harvest activities, especially for the majority of gatherers, who only harvest berries. As mentioned above, it can be done close to home, equipment is minimal, and little experience is required. Other types of plant collection, however, often demand substantial knowledge. Making full use of the plants requires a familiarity with edible plant identification, productive locales, harvest times, preparation and preservation methods, and non-food uses (such as medicine or dyes).

In traditional times, native Tlingits used a wide assortment of plants. Modern residents of Angoon do not use as many plants as historical residents did for subsistence. However, some residents still use an impressive range of plants, including a wide variety of berries, greens, roots, mushrooms, and wood.

Approximately 35% of Angoon households harvest berries during the summer and early fall, with the prime months being July and August (ADF&G 2013). Residents use berries in a variety of ways. The most common use of berries is to eat them raw. Many people, however, bring back large quantities to freeze, make into pies, sauces, or preserve as jams and jellies.

The berries most commonly picked in the study area are blueberries, huckleberries, cloudberries, nagoonberries, salmonberries, and thimbleberries. Other berries collected in the study area include currants, cranberries, red elderberries, and strawberries. Residents collect blueberries, huckleberries, cloudberries, and salmonberries in the study area. Blueberries and huckleberries are located in dense, woody thickets in mixed-open forest areas through the study area. Cloudberries and nagoonberries are small yellow or red berries that grow in muskeg areas. Salmonberries and thimbleberries are orange and red berries that ripen in late June through July on large shrubs that form dense thickets in open areas such as roadsides, shorelines, and forest clearings.

The study area contains many edible wild greens. Interviews with local residents indicate that around 15 different species of greens can be harvested in the study area. However, the percentage of households harvesting the various greens is substantially less than the number harvesting berries; only 18% of households harvest greens (ADF&G 2013). The most commonly harvested greens in the study area are goosetongue, devil's club, beach asparagus, and Labrador tea.

Goosetongue is abundant in the study area, growing in the cracks of rocks just above the high-tide line. It is popular because of its good taste and long edible season. Angoon residents harvest goosetongue from spring until August, although some residents claim that June is the best month for harvest.

Labrador tea is a commonly used "green" in the study area. It grows abundantly in muskegs and wetland alpine meadows that are found through the study area. Residents can harvest the leaves year round. Once picked, they are dried and then boiled to make a tea.

Devil's club is a member of the ginseng family. It grows abundantly in the moist, well-drained soils of forests around Angoon. The stalks are covered with sharp spines and grow up to 1.5 inches in diameter. Angoon residents collect both stalks and roots, primarily for medicinal use. The most common use is as an all-purpose elixir, usually made by heating the dried roots or bark in water just below the boiling point for several hours. It is also commonly used as a wound sealant and protectant by pulverizing the bark into a poultice and heating it up in a small pot with spruce pitch. The sticky substance is then spread over the wound and left to dry and harden, both sealing and protecting the wound.

Angoon residents also harvest beach asparagus, which grows in thick bunches or mats on tidal flats in the study area. This delicious vegetable tastes like asparagus, and residents commonly eat it raw as a salad green.

7.6.1 SEAWEED

Many Angoon households harvest marine vegetation, especially seaweeds (see Figure 4 above). The most popular species collected by the survey households in the 1996 study were black seaweed (30% of households), sea ribbons (4%), and alaria (1%). The per capita harvest of black seaweed collected was 6.8 quarts; sea ribbons less than 0.1 quart; and alaria was less than 0.1 quart (ADF&G 2013). All three types are found and harvested in rocky near-shore marine habitats in both the study area.

Residents harvest black seaweed at two times of the year: spring and winter. Households harvest the spring growth during a two-week period beginning in late April or early May. A second spring growth is ready a month later, and residents harvest that growth for a two- or three-week period only. Seaweeds come into season at slightly different times in different locations around Angoon, apparently depending on water temperature. Many residents consider May the best time to gather black seaweed. Winter seaweed, the third growth, is available in February. It is more tedious to harvest because it is shorter and harder to pull off the rocks.

Black seaweed acquires a washed-out look when it is old and no longer growing and edible. Residents often pick black seaweed on a minus tide by pulling it off the rocks. There is access to black seaweed from several locations in Favorite Bay within the study area. Many Alaska Natives consider seaweed a delicacy or prestige food. Black seaweed is very expensive to buy if a household cannot collect its own supply. Sea ribbons (or ribbon seaweed or dulse) are another alga harvested by Angoon residents. Sea ribbons are thin, elastic purple or red fronds varying in length from a few inches to 1 foot. They are typically found attached to rocks. Like black seaweed, sea ribbons are often harvested in the spring, when the growth is fresh.

Alaria is a brown alga also known as wing kelp. It is found in rocky, intertidal zones and is a rich source of protein, iodine, and vitamin A. Alaria can grow to considerable length, but, like other seaweeds, it is mostly harvested when it is younger and less tough. Most alaria is dried and then later reconstituted with fresh water for use in soups or as a salad.

7.6.2 Wood

Approximately 26% of Angoon households collect wood for use in handicrafts, home heating, or smoking fish or venison (ADF&G 2013). The use of wood for handicrafts ranged from gathering small pieces of driftwood for use in dried flower arrangements and natural sculptures to special woods cut for crafts and carvings, such as totems. A small number of residents harvest spruce roots to make the traditional, finely woven Tlingit baskets. Many Angoon residents collect alder for smoking meat and fish.

Wood used for handicrafts or smoking meat and fish is often gathered along beaches or along the Angoon road system. Spruce roots are gathered throughout the region. For home heating, most Angoon residents gather logs from locations along the Angoon road system, with a common spot being near the community water supply.

8.0 ANILCA Section 810(a) Evaluations and Findings for All Alternatives and the Cumulative Case

The following evaluations are based on information relating to the environmental and subsistence consequences of all alternatives as presented in Chapter 4: Existing Conditions and Project Effects and the cumulative case as presented in Chapter 8: Cumulative Effects of the EIS. This evaluation focuses on subsistence uses only on federal public lands, as defined by ANILCA Section 102. As discussed in section 3.0 above, federal public lands are defined as follows:

"land situated in Alaska which, after the date of enactment of this Act, are Federal lands except--

- (A) land selections of the State of Alaska which have been tentatively approved or validly selected under the Alaska Statehood Act and lands which have been confirmed to, validly selected by, or granted to the Territory of Alaska or the State under any other provision of Federal law:
- (B) land selections of a Native Corporation made under the Alaska Native Claims Settlement Act which have not been conveyed to a Native Corporation, unless any such selection is determined to be invalid or is relinquished; and
- (C) lands referred to in §19(b) of the Alaska Native Claims Settlement Act."

Based on this definition, federal public lands in the study area are the Monument–Wilderness Area lands managed by the USFS. Although the EIS evaluates effects to subsistence resources and uses on all lands, not just federal lands, this evaluation focuses on effects to the subsistence resources and uses on just federal lands, namely the Monument–Wilderness Area.

The assessment of effects on subsistence resources and uses includes two factors:

- Assessment of effects to biological resources identified as being subsistence resources
- Assessment of whether effects to biological resources would cause a subsequent effect on the ability of Angoon residents to gather those resources

The FAA does not have its own significance threshold criteria for subsistence and will not establish one for this evaluation. However, the U.S. Forest Service commonly uses the thresholds of significance established for ANILCA Section 810 evaluations in the *Kunaknana v. Clark* case, as described in section 3.2, above, specifically the following four factors:

- Large reductions in abundance: Noticeable and recognizable declines in subsistence resource populations in a given area and reduced subsistence resource harvests as a result of project actions. This includes reduced per capita harvest of subsistence resources.
- Major redistribution resulting in reduction in availability: Noticeable and recognizable declines in subsistence resource distributions across the landscape, and reduced subsistence resource harvests as a result of project actions. This includes reduced per capita harvest of subsistence resources.
- Substantial interference with harvestable access: Local subsistence user access to active subsistence
 harvesting locations becomes so inconvenient that a substantial portion of those users shift to alternate
 locations.
- Major increases in non-rural use: Increases in non-rural use that would cause local subsistence users to either forgo or find alternate subsistence harvesting locations

The level of effect was developed using acres of available habitat for all subsistence resources affected by the action alternatives.

8.1 No Action Alternative: Evaluation and Findings

The no action alternative would make no changes in Angoon's existing air transportation options. There would be no new construction of a land-based airport or access road. The existing air transportation options would remain as they exist today, and the Angoon Seaplane Base would continue to operate as it currently does. Under this alternative, there would be no effects to subsistence on federal public lands and waters, and existing conditions would remain as they are.

8.1.1 No Action Alternative: Evaluation of Effect of Use, Occupancy, or Disposition on Subsistence Resources and Uses

The no action alternative would make no changes in Angoon's existing air transportation system, and no federal public lands used for subsistence would be affected. Therefore, this alternative would not affect the abundance or availability of, access to, and competition for subsistence resources.

8.1.2 No Action Alternative: Evaluation of the Availability of Other Lands for Airport Construction

Under the no action alternative, no airport would be built and therefore no federal public lands would be used.

8.1.3 No Action Alternative: Evaluation of Other Alternatives That Would Reduce or Eliminate the Use, Occupancy, or Disposition of Public Lands Needed for Subsistence Purposes

The no action alternative would not remove federal public lands used for subsistence purposes because it would not change the existing Angoon air transportation system. Of all the alternatives, only the no action alternative and Airport 12a with Access 12a would use no federal public lands used for subsistence purposes.

8.1.4 No Action Alternative: Findings

The no action alternative would not significantly affect the abundance or availability of, access to, or competition for subsistence resources on federal public lands because no action would be taken.

8.2 Airport 3a with Access 2 (Proposed Action): Evaluation and Findings

Airport 3a with Access 2 (Figure 5) is the proposed action. This alternative would be located on lands owned or managed by the U.S. Forest Service; Kootznoowoo, Inc. (the local village Alaska Native corporation); and the City of Angoon. The airport would be located on the north side of Favorite Bay within the boundaries of the Monument–Wilderness Area. Access 2 would begin at the existing Bureau of Indian Affairs (BIA) Road, and travel around the southeastern end of Favorite Bay within 1,000 feet of the shoreline. This access road would be 20 feet wide and consist of two 9-foot lanes with 1-foot shoulders. It would require the construction of a bridge across Favorite Creek.

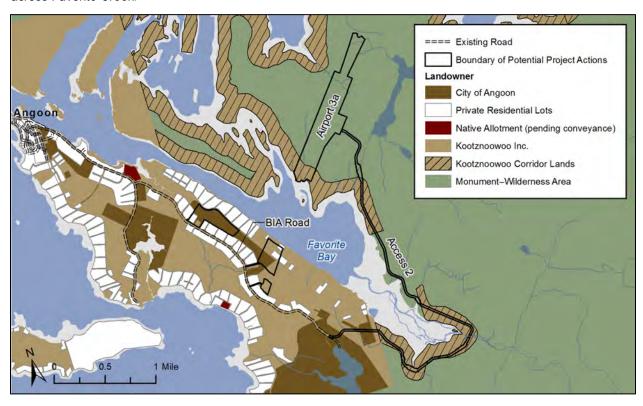


Figure 5. Location of Airport 3a with Access 2 relative to landownership.

8.2.1 AIRPORT 3A WITH ACCESS 2: EVALUATION OF EFFECT OF USE, OCCUPANCY, OR DISPOSITION ON SUBSISTENCE RESOURCES AND USES

Resource Abundance and Availability

Vegetation clearing would result in long-term direct effects to abundance and availability in land-based use areas. Animals would also likely avoid the 321-acre construction zone during vegetation clearing and while vehicles and workers were present. Construction is estimated to last for up to three seasons. See Table 7 for acreages and percentages of each type of use area affected.

Table 7. Effects to Abundance and Availability from Airport 3a with Access 2

	Acres of use	Acres of fish use		
Acres of land affected by construction	Land mammals and upland birds	I and vegetation		areas affected by bridge construction
321	262 acres (7% of the land mammal and upland bird use areas)	68 acres (4% of the land vegetation use areas)	0 acres	0.6 acres (<0.01% of the fish use areas)

In addition, the distribution of local wildlife populations may change in response to long-term increases in human activity and habitat changes. For instance, deer populations may exhibit short-term increases in abundance and local availability following construction because deer prefer cleared margins along dense forest habitats (Turek et al. 1998). For upland bird species and other land mammals, this habitat loss could slightly reduce long-term abundance and availability as some animals move to more suitable habitat for breeding, forage, and cover. The combined affected acreage would be relatively small when compared to total use areas in the study area.

Other than barging, no actions related to airport and access road construction and operation for the Airport 3a with Access 2 alternative would affect marine resources. Therefore, the Airport 3a with Access 2 alternative would not directly affect abundance and availability of marine invertebrates, marine vegetation, or waterbirds. Although unlikely, marine mammal collisions with barges hauling materials could occur during the construction period. The potential for ship strikes on marine mammals would be minimized or avoided by adhering to a general marine mammal "code of conduct" such as vigilantly scanning the water's surface and remaining at least 100 yards from marine mammals (Neilson et al. 2012). Therefore, the effects of ship strikes to marine mammals as a result of the airport project would be very low, and are not expected to affect marine mammal abundance and availability.

Less than 0.01% of fish use areas would be affected by bridge construction along Favorite Creek (see Table 7). Fish passage would be maintained along Favorite Creek throughout construction, and best management practices would be implemented to protect water quality. Consequently, bridge construction direct effects to fish abundance and availability would be negligible.

Indirect effects to subsistence resources would come from changes in harvest as a result of reductions in or displacement of subsistence resources by improved access for subsistence users. Improved access afforded by the Airport 3a with Access 2 alternative could affect the abundance and availability of some land-based subsistence resources in areas such as the northern and eastern sides of Favorite Bay where local-resident access had previously been limited. Increased harvest pressure could contribute to long-term declines in some subsistence resource populations as well as changes in their distribution patterns. Based on the estimated 7% loss of land mammal and upland bird use areas, as compared to current conditions, this EIS assumes that total annual harvest of terrestrial resources could also decrease by as much as 7%. This change would be within the annual harvest variability for a representative terrestrial species—deer—that has fluctuated by an average of 16% in total harvest from 2004 to 2010 (Alaska Department of Fish and Game 2013).

Improved and new human access to areas along the Access 2 route and construction of a bridge across Favorite Creek could result in long-term increases in fish harvests from Favorite Creek, particularly in pink and coho salmon, as well as increases in waterbird, marine invertebrate, and marine vegetation (seaweed and kelp) harvests from parts of Favorite Bay. Assuming that irregular terrain and thick vegetation would restrict

subsistence users from traveling more than 0.5 mile from improved access corridors, it is anticipated that the increase in harvest pressure would minimally affect abundance and availability of these subsistence resources.

Access to Resources

The Airport 3a with Access 2 alternative would restrict subsistence users' access to 321 acres of land for up to three construction seasons. Following construction, the airport perimeter fence would exclude 98 acres from public access for the duration of airport operation (considered permanent removal of federal public lands used for subsistence purposes). As a result of road and bridge construction, however, this alternative would improve access to 2,021 acres (11%) of current use areas, and would create new access to 726 acres of potential subsistence use areas north of Favorite Bay, around the north end of the proposed airport. Compared to the no action alternative, this alternative would result in a net access increase of 628 acres (4%) during airport and access road operation, based on the assumed 0.5-mile travel limitations due to irregular terrain and thick vegetation. Access to the waterbird use area as well as land mammal / upland bird use area would be increased by 46% and 32%, respectively, whereas marine vegetation and fish use areas would see improvements in access of 1% and 3%, respectively. There would be no indirect effects to access from this alternative.

Competition for the Use of Resources

Competition would not be directly affected by the Airport 3a with Access 2 alternative; however, implementation of this alternative could indirectly affect competition among local subsistence users by improving access to previously inaccessible or remote use areas. Improved access to the east and north sides of Favorite Bay could reduce competition for subsistence harvest areas around Angoon as existing subsistence users spread out into more remote areas. However, competition could increase in some areas, such as the eastern side of Favorite Bay, where highly desirable resources are located.

The Airport 3a with Access 2 alternative would not increase competition between locals and non-locals for collection of land and marine vegetation or hunted wildlife, but could increase competition for fish and marine invertebrates. Visiting hunters are rare, and access to subsistence lands for hunting by locals and non-locals is currently sufficient to meet demand. It is unlikely that a land-based airport would encourage more non-local deer hunting in known subsistence use areas immediately surrounding Angoon. Local interviews indicate that no other land-based resources or marine vegetation would likely be collected or harvested by non-locals following construction of a land-based airport. However, increased air service could expand the existing sports fishing industry in Angoon, bringing in more recreational fishers and thereby increasing competition for fish—in particular for non-sockeye salmonids, halibut, and marine invertebrates—throughout the area. Although reported visitor levels have been relatively low over the past several years, assuming visitor projections increase at the 10.5% rate of anticipated growth for enplanement by 2029 (see discussion in Chapter 2: Purpose and Need for a Land-Based Airport at Angoon), this would represent an increase of approximately 50 non-local recreational fishers in total over current levels by 2029. To minimize conflicts with local subsistence users, charter fishing operators already avoid taking recreational fishers to Kanalku Bay, an important subsistence fishing area (Powers 2013). The growth of self-guided sport fishing operations in other parts of Southeast Alaska suggests that additional efforts by lodge owners or other businesses may be necessary to steer selfguided, non-local recreational fishers away from areas frequented by local subsistence users.

For all use areas in the study area, analysis of the Airport 3a with Access 2 alternative indicates that this alternative would result in few short- and long-term effects on the abundance or availability of, access to, and competition for subsistence resources.

8.2.2 AIRPORT 3A WITH ACCESS 2: EVALUATION OF THE AVAILABILITY OF OTHER LANDS FOR AIRPORT CONSTRUCTION

This alternative would be located in the Monument–Wilderness Area (i.e., federal public lands). Of the action alternatives, only Airport 12a with Access 12a would be located on lands other than federal public lands. Airport 12a with Access 12a would be located entirely on lands owned or managed by private landowners, Kootznoowoo Inc., or the City of Angoon.

8.2.3 AIRPORT 3A WITH ACCESS 2: EVALUATION OF OTHER ALTERNATIVES THAT WOULD REDUCE OR ELIMINATE THE USE, OCCUPANCY, OR DISPOSITION OF PUBLIC LANDS NEEDED FOR SUBSISTENCE PURPOSES

The Airport 3a and Airport 4 alternatives would use federal public lands owned or managed by the USFS. If implemented, the Airport 3a with Access 2 alternative would remove 98 acres of federal public lands from subsistence use. This is less than Airport 4 with either access, which would use the largest amount of federal public lands needed for subsistence purposes. Of all alternatives, only the no action alternative and Airport 12a with Access 12a would use no federal public lands used for subsistence purposes.

8.2.4 AIRPORT 3A WITH ACCESS 2: FINDINGS

The Airport 3a with Access 2 alternative would not significantly affect the abundance or availability of, access to, or competition for subsistence resources on federal public lands, and therefore it would not significantly restrict subsistence use. Approximately 4% of land vegetation use areas would be cleared during airport, road and bridge construction, and the airport perimeter fence would exclude 98 acres from public access for the duration of airport operation (considered permanent removal of federal public lands used for subsistence purposes). This alternative, however, would improve access to 2,021 acres (11%) of current use areas, and would improve access to 726 acres of new potential subsistence use areas north of Favorite Bay, resulting in a potential net increase of 628 acres (4%) accessible for subsistence use during airport and access road operations.

Although proposed vegetation clearing, road and bridge construction, and other activities that would permanently disrupt subsistence harvesting locations would require some individuals to use new harvesting locations, this alternative would not result in substantial interference in harvestable access or major increases in competition. Rather, implementation of this alternative would likely increase accessibility and expand areas available for Angoon subsistence users.

8.3 Airport 3a with Access 3: Evaluation and Findings

The Airport 3a with Access 3 alternative (Figure 6) would involve new airport construction on the north side of Favorite Bay and development of an access road. As with Access 2, Access 3 would begin at the existing BIA Road; however, the route would extend farther inland from the Favorite Bay shoreline and would require the construction of a shorter bridge across Favorite Creek at a site upstream from the potential location of the Access 2 bridge site. The airport and most of the access road would be located in the Monument–Wilderness Area; a small portion of the access road would be located on lands owned or managed by the USFS, Kootznoowoo, Inc., and the City of Angoon.

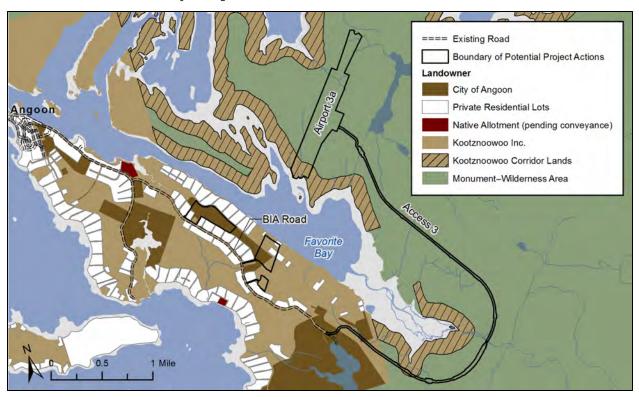


Figure 6. Location of Airport 3a with Access 3 relative to landownership.

8.3.1 AIRPORT 3A WITH ACCESS 3: EVALUATION OF EFFECT OF USE, OCCUPANCY, OR DISPOSITION ON SUBSISTENCE RESOURCES AND USES

Resource Abundance and Availability

Vegetation clearing would result in long-term direct effects to abundance and availability in land-based use areas. Animals would also likely avoid the 349-acre construction zone during vegetation clearing and while vehicles and workers were present. Construction is estimated to last for up to three seasons. See Table 8 for acreages and percentages of each type of use area affected.

Table 8. Effects to Abundance and Availability from Airport 3a with Access 3

	Acres of use	Acres of fish use			
Acres of land affected by construction	Land mammals and upland birds	Land vegetation	Marine mammals, vegetation and invertebrates, and fish	areas affected by bridge construction	
349 acres	246 acres (6% of the land mammal and upland bird use areas)	64 acres (4% of the land vegetation use areas)	0 acres	0.3 acres (<0.01% of the fish use areas))	

In addition, the distribution of local wildlife populations could change in response to long-term increases in human activity and habitat changes. For instance, deer populations could exhibit short-term increases in abundance and local availability following construction because deer prefer cleared margins along dense forest habitats (Turek et al. 1998). For upland bird species and other land mammals, this habitat loss could slightly reduce long-term abundance and availability as some animals move to more suitable habitat for breeding, forage, and cover. The combined affected acreage would be relatively small when compared to total use areas in the study area.

As with the Airport 3a with Access 2 alternative, the Airport 3a with Access 3 alternative would not directly affect abundance and availability of marine invertebrates, marine mammals, marine vegetation, or waterbirds. Less than 0.01% of fish use areas would be affected by bridge construction along Favorite Creek (see Table 8). Fish passage would be maintained along Favorite Creek throughout construction, and best management practices would be implemented to protect water quality. Consequently, bridge construction effects to fish abundance and availability would be negligible.

Improved access afforded by the Airport 3a with Access 3 alternative could indirectly affect the abundance and availability of some land-based subsistence resources in areas such as the northern and eastern sides of Favorite Bay where local-resident access had previously been limited. Increased harvest pressure could contribute to long-term declines in some subsistence resource populations, and changes in their distribution patterns. Based on the estimated 6% loss of land mammal and upland bird use areas, total annual harvest of terrestrial resources could also decrease by as much as 6%. This change would be within the annual harvest variability for a representative terrestrial species—deer.

Improved and new human access to areas along the Access 3 route, and construction of a bridge across Favorite Creek could also result in long-term increases in fish harvests from Favorite Creek, particularly in pink and coho salmon, as well as increases in waterbird, marine invertebrate, and marine vegetation (seaweed and kelp) harvests from parts of Favorite Bay. Assuming that irregular terrain and thick vegetation would restrict subsistence users from traveling more than 0.5 mile from improved access corridors, it is anticipated that the increase in harvest pressure would minimally affect the abundance and availability of these subsistence resources.

Access to Resources

The Airport 3a with Access 3 alternative would restrict subsistence users' access to 349 acres of land for up to three construction seasons. Following construction, the airport perimeter fence would exclude 98 acres from public access for the duration of airport operation (considered permanent removal of federal public lands used for subsistence purposes). As a result of road and bridge construction, however, Access 3 would improve access to 2,116 acres (12%) of current use areas, and would create new access to 1,416 acres of potential

subsistence use areas north of Favorite Bay, around the north end of the proposed airport. Compared to the no action alternative, this alternative would result in a net access increase of 1,318 acres (7%) during airport and access road operation, based on the assumed 0.5-mile travel limitations due to irregular terrain and thick vegetation. Access to waterbird, land mammal, and upland bird use areas would be increased by 46% and 34%, respectively, whereas marine vegetation and fish use areas would see improvements in access of 1% and 3%, respectively. There would be no indirect effects to access from this alternative.

Competition for the Use of Resources

Competition would not be directly affected by the Airport 3a with Access 3 alternative; however, implementation of this alternative could indirectly affect competition among local subsistence users by improving access to previously inaccessible or remote use areas. Improved access to the east and north sides of Favorite Bay could reduce competition for subsistence harvest areas around Angoon as existing subsistence users spread out into more remote areas. However, competition could increase in some areas, such as the eastern side of Favorite Bay, where highly desirable resources are located.

The Airport 3a with Access 3 alternative would not increase competition between locals and non-locals for collection of land and marine vegetation or hunted wildlife, but could increase competition for fish and marine invertebrates. Visiting hunters are rare, and access to subsistence lands for hunting by locals and non-locals is currently sufficient to meet demand. It is unlikely that a land-based airport would encourage more non-local deer hunting in known subsistence use areas immediately surrounding Angoon. Local interviews indicate that no other land-based resources or marine vegetation would likely be collected or harvested by non-locals following construction of a land-based airport. However, increased air service could expand the existing sports fishing industry in Angoon, bringing in more recreational fishers and thereby increasing competition for fish—in particular for non-sockeye salmonids, halibut, and marine invertebrates—throughout the area. Although reported visitor levels have been relatively low over the past several years, assuming visitor projections increase at the 10.5% rate of anticipated growth for enplanement by 2029 (see discussion in Chapter 2: Purpose and Need for a Land-Based Airport at Angoon), this would represent an increase of approximately 50 non-local recreational fishers in total over current levels by 2029. To minimize conflicts with local subsistence users, charter fishing operators already avoid taking recreational fishers to Kanalku Bay, an important subsistence fishing area (Powers 2013). The growth of self-quided sport fishing operations in other parts of Southeast Alaska suggests that additional efforts by lodge owners or other businesses may be necessary to steer visiting self-quided, non-local recreational fishers away from areas frequented by local subsistence users.

For all lands in the study area, analysis of the Airport 3a with Access 3 alternative indicates that this alternative would have few short- and long-term effects on the abundance or availability of, access to, and competition for subsistence resources.

8.3.2 AIRPORT 3A WITH ACCESS 3: EVALUATION OF THE AVAILABILITY OF OTHER LANDS FOR AIRPORT CONSTRUCTION

This alternative would be located in the Monument–Wilderness Area (i.e., federal public lands). Of the action alternatives, only Airport 12a with Access 12a would be located on lands other than federal public lands. Airport 12a with Access 12a would be located entirely on lands owned or managed by private landowners, Kootznoowoo Inc., or the City of Angoon.

8.3.3 AIRPORT 3A WITH ACCESS 3: EVALUATION OF OTHER ALTERNATIVES THAT WOULD REDUCE OR ELIMINATE THE USE, OCCUPANCY, OR DISPOSITION OF PUBLIC LANDS NEEDED FOR SUBSISTENCE PURPOSES

The Airport 3a and Airport 4 alternatives would use federal public lands owned or managed by the USFS. If implemented, the Airport 3a with Access 3 alternative would remove 98 acres of federal public lands from subsistence use. This is less than Airport 4 with either access, which would use the largest amount of federal public lands needed for subsistence purposes. Of all alternatives, only the no action alternative and Airport 12a with Access 12a would use no federal public lands used for subsistence purposes.

8.3.4 AIRPORT 3A WITH ACCESS 3: FINDINGS

The Airport 3a with Access 3 alternative would not significantly affect the abundance or availability of, access to, or competition for subsistence resources on federal public lands, and therefore would not significantly restrict subsistence use. Approximately 4% of land vegetation use areas would be cleared during airport, road, and bridge construction, and the airport perimeter fence would exclude 98 acres from public access for the duration of airport operation (considered permanent removal of federal public lands used for subsistence purposes). This alternative, however, would improve access to 2,116 acres (12%) of current use areas and would improve access to 11,416 acres of new potential subsistence use areas north of Favorite Bay, resulting in a potential net increase of 1,318 acres (7%) accessible for subsistence use during airport and access road operations.

Although proposed vegetation clearing, road and bridge construction, and other activities that would permanently disrupt subsistence harvesting locations would require some individuals to use new harvesting locations, this alternative would not result in substantial interference in harvestable access or major increases in competition. Rather, implementation of this alternative would likely increase accessibility and expand areas available for Angoon subsistence users.

8.4 Airport 4 with Access 2: Evaluation and Findings

The Airport 4 with Access 2 alternative would involve new airport construction on the east side of Favorite Bay and development of an access road. Access 2 would begin at the existing BIA Road, would continue around the southeastern end of Favorite Bay within 1,000 feet of the shoreline, and would require the construction of a bridge across Favorite Creek (at the same location as for the Airport 3a with Access 2 alternative). The airport and most of the access road would be located in the Monument–Wilderness Area; a small portion of the access road would be located on lands owned or managed by the USFS, Kootznoowoo, Inc., and the City of Angoon.

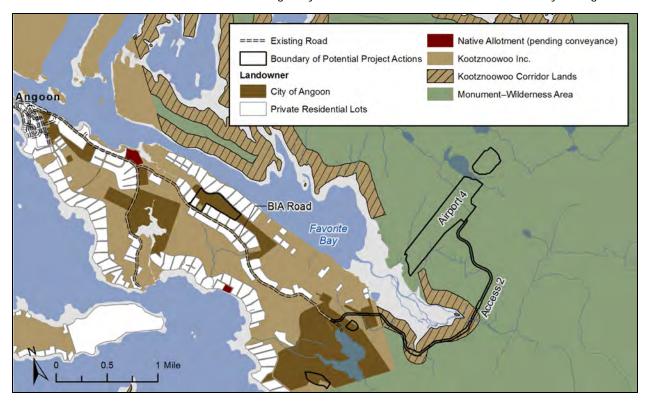


Figure 7. Location of Airport 4 with Access 2 relative to landownership.

8.4.1 AIRPORT 4 WITH ACCESS 2: EVALUATION OF EFFECT OF USE, OCCUPANCY, OR DISPOSITION ON SUBSISTENCE RESOURCES AND USES

Resource Abundance and Availability

Vegetation clearing would result in long-term direct effects to abundance and availability in land-based use areas. Animals would also likely avoid the 290-acre construction zone during vegetation clearing and while vehicles and workers were present. Construction is estimated to last for up to three seasons. See Table 9 for acreages and percentages of each type of use area affected.

Table 9. Effects to Abundance and Availability from Airport 4 with Access 2

	Acres of use	Acres of fish use			
Acres of land affected by construction	Land mammals and upland birds	Land vegetation	Marine mammals, vegetation and invertebrates, and fish	areas affected by bridge construction	
290 acres	189 acres (5% of the land mammal and upland bird use areas)	58 acres (3% of the land vegetation use areas)	0 acres	0.6 acres (<0.01% of the fish use areas)	

In addition, the distribution of local wildlife populations could change in response to long-term increases in human activity and habitat changes. For instance, deer populations could exhibit short-term increases in abundance and local availability following construction because deer prefer cleared margins along dense forest habitats (Turek et al. 1998). For upland bird species and other land mammals, this habitat loss could slightly reduce long-term abundance and availability as some animals move to more suitable habitat for breeding, forage, and cover. The combined affected acreage would be relatively small when compared to total use areas in the study area.

The Airport 4 with Access 2 alternative would not directly affect abundance and availability of marine invertebrates, marine mammals, marine vegetation, or waterbirds. Less than 0.01% of fish use areas would be affected by bridge construction along Favorite Creek (see Table 9). Fish passage would be maintained along Favorite Creek throughout construction, and best management practices would be implemented to protect water quality. Consequently, bridge construction effects to fish abundance and availability would be negligible.

Improved access afforded by the Airport 4 with Access 2 alternative could indirectly affect the abundance and availability of some land-based subsistence resources in the area around the east side of Favorite Bay where local-resident access had previously been limited. Increased harvest pressure could contribute to long-term declines in some subsistence resource populations and changes in their distribution patterns. Based on the estimated 5% loss of land mammal and upland bird use areas, total annual harvest of terrestrial resources could also decrease by as much as 5%. This change would be within the annual harvest variability for a representative terrestrial species—deer.

Improved and new human access to areas along the Access 2 route and construction of a bridge across Favorite Creek could result in long-term increases in fish harvests from Favorite Creek, particularly in pink and coho salmon, as well as increases in waterbird, marine invertebrate, and marine vegetation (seaweed and kelp) harvests from parts of Favorite Bay. Assuming that irregular terrain and thick vegetation would restrict subsistence users from traveling more than 0.5 mile from improved access corridors, it is anticipated that the increase in harvest pressure would minimally affect abundance and availability of these subsistence resources.

Access to Resources

The Airport 4 with Access 2 alternative would restrict subsistence users' access to 290 acres of land for up to three construction seasons. Following construction, the airport perimeter fence would exclude 100 acres from public access for the duration of airport operation (considered permanent removal of federal public lands used for subsistence purposes). As a result of road and bridge construction, however, this alternative would improve access to 1,425 acres (8%) of current use areas, and would improve access to 896 acres of new potential subsistence use areas east of Favorite Bay. Compared to the no action alternative, this alternative would result in a net access increase of 796 acres (5%) during airport and access road operation, based on the assumed 0.5-mile travel

limitations due to irregular terrain and thick vegetation. Although access to waterbird, land mammal, and upland bird use areas would be increased, the land mammal and upland bird increase would be roughly half (18%) that estimated under the Airport 3a with Access 2 alternative. There would be no indirect effects to access from this alternative.

Competition for the Use of Resources

Competition would not be directly affected by the Airport 4 with Access 2 alternative; however, implementation of this alternative could indirectly affect competition among local subsistence users by improving access to previously inaccessible or remote use areas. Implementation of this alternative would likely reduce local competition for subsistence harvest areas around Angoon; however, competition for highly desirable resources among local subsistence users could increase in areas, such as along the Favorite Creek drainage.

Although the Airport 4 with Access 2 alternative would not directly increase competition among locals and nonlocals for collection of land and marine vegetation or hunted wildlife, this alternative could ultimately lead to increased competition for fish and marine invertebrates. Visiting hunters are rare, and access to subsistence lands for hunting by locals and non-locals is currently sufficient to meet demand. It is unlikely that a land-based airport would encourage more non-local deer hunting in known subsistence use areas immediately surrounding Angoon. Local interviews indicate that no other land-based resources or marine vegetation would likely be collected or harvested by non-locals following construction of a land-based airport. Increased air service, however, could allow for expansion of the existing sports fishing industry in Angoon, bringing in more recreational fishers and thereby increasing competition for fish—in particular for non-sockeye salmonids, halibut, and marine invertebrates—throughout the area. Although reported visitor levels have been relatively low over the past several years, assuming visitor projections increase at the 10.5% rate of anticipated growth for enplanement by 2029 (see discussion in Chapter 2: Purpose and Need for a Land-Based Airport at Angoon), this would represent an increase of approximately 50 non-local recreational fishers in total over current levels by 2029. To minimize conflicts with local subsistence users, charter fishing operators already avoid taking recreational fishers to Kanalku Bay, an important subsistence fishing area (Powers 2013). The growth of selfquided sport fishing operations in other parts of Southeast Alaska suggests that additional efforts by lodge owners or other businesses may be necessary to steer visiting self-quided, non-local recreational fishers away from areas frequented by local subsistence users.

For all lands in the study area, analysis of the Airport 4 with Access 2 alternative indicates that this alternative would result in few short- and long-term effects on the abundance or availability of, access to, and competition for subsistence resources.

8.4.2 AIRPORT 4 WITH ACCESS 2: EVALUATION OF THE AVAILABILITY OF OTHER LANDS FOR AIRPORT CONSTRUCTION

This alternative would be located in the Monument–Wilderness Area (i.e., on federal public lands). Of the action alternatives, only Airport 12a with Access 12a would be located on lands other than federal public lands. Airport 12a with Access 12a would be located entirely on lands owned or managed by private landowners, Kootznoowoo Inc., or the City of Angoon.

8.4.3 AIRPORT 4 WITH ACCESS 2: EVALUATION OF OTHER ALTERNATIVES THAT WOULD REDUCE OR ELIMINATE THE USE, OCCUPANCY, OR DISPOSITION OF PUBLIC LANDS NEEDED FOR SUBSISTENCE PURPOSES

The Airport 3a and Airport 4 alternatives would use federal public lands owned or managed by the USFS. If implemented, Airport 4 with either access would remove 100 acres of federal public lands from subsistence use, the largest amount of federal public lands needed for subsistence purposes. Of all alternatives, only the no action alternative and Airport 12a with Access 12a would use no federal public lands used for subsistence purposes.

8.4.4 AIRPORT 4 WITH ACCESS 2: FINDINGS

The Airport 4 with Access 2 alternative would not significantly affect the abundance or availability of, access to, or competition for subsistence resources on federal public lands, and therefore not significantly restrict subsistence use. Approximately 3% of land vegetation use areas would be cleared during airport, road and bridge construction, and the airport perimeter fence would exclude 100 acres from public access for the duration of airport operation (considered permanent removal of federal public lands used for subsistence purposes). This alternative, however, would improve access to 1,425 acres (8%) of current use areas and access to 896 acres of new potential subsistence use areas east of Favorite Bay, resulting in a potential net increase of 796 acres (5%) accessible for subsistence use during airport and access road operations.

Although proposed vegetation clearing, road and bridge construction, and other activities that would permanently disrupt subsistence harvesting locations would require some individuals to use new harvesting locations, this alternative would not result in substantial interference in harvestable access or major increases in competition. Rather, implementation of this alternative would likely increase accessibility and expand areas available for Angoon subsistence users.

8.5 Airport 4 with Access 3: Evaluation and Findings

The Airport 4 with Access 3 alternative would involve new airport construction on the east side of Favorite Bay and development of an access road. As with Access 2, Access 3 would begin at the existing BIA Road; however, the route would extend farther inland from the Favorite Bay shoreline and would require the construction of a shorter bridge across Favorite Creek at a site upstream from the potential location of the Access 2 bridge site. From the bridge, the road would continue northwest to the proposed Airport 4 location. The airport and most of the access road would be located in the Monument–Wilderness Area; a small portion of the access road would be located on lands owned or managed by the USFS;Kootznoowoo, Inc.; and the City of Angoon.

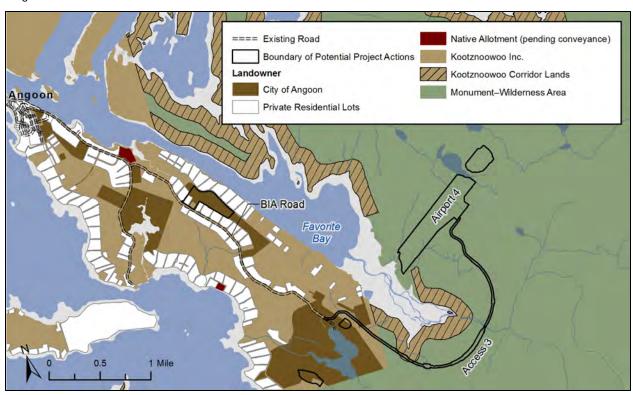


Figure 8. Location of Airport 4 with Access 3 relative to landownership.

8.5.1 AIRPORT 4 WITH ACCESS 3: EVALUATION OF EFFECT OF USE, OCCUPANCY, OR DISPOSITION ON SUBSISTENCE RESOURCES AND USES

Resource Abundance and Availability

Vegetation clearing would result in long-term direct effects to abundance and availability in land-based use areas. Animals would also likely avoid the 295-acre construction zone during vegetation clearing and while vehicles and workers were present. Construction is estimated to last for up to three seasons. See Table 10 for acreages and percentages of each type of use area affected.

Table 10. Effects to Abundance and Availability from Airport 4 with Access 3

	Acres of use	Acres of fish use		
Acres of land affected by construction	Land mammals and upland birds	Land vegetation	Marine mammals, vegetation and invertebrates, and fish	areas affected by bridge construction
295 acres	170 acres (5% of the land mammal and upland bird use areas)	59 acres (3% of the land vegetation use areas)	0 acres	0.3 acres (<0.01% of the fish use areas)

In addition, the distribution of local wildlife populations could change in response to long-term increases in human activity and habitat changes. For instance, deer populations could exhibit short-term increases in abundance and local availability following construction because deer prefer cleared margins along dense forest habitats (Turek et al. 1998). For upland bird species and other land mammals, this habitat loss could slightly reduce long-term abundance and availability as some animals move to more suitable habitat for breeding, forage, and cover. The combined affected acreage would be relatively small when compared to total use areas in the study area.

As with the Airport 3a with Access 2 or 3 alternatives, the Airport 4 with Access 3 alternative would not directly affect abundance and availability of marine invertebrates, marine mammals, marine vegetation, or waterbirds. Less than 0.01% of fish use areas would be affected by bridge construction along Favorite Creek (see Table 10). Fish passage would be maintained along Favorite Creek throughout construction, and best management practices would be implemented to protect water quality. Consequently, bridge construction effects to fish abundance and availability would be negligible.

Improved access afforded by the Airport 4 with Access 3 alternative could indirectly affect the abundance and availability of some land-based subsistence resources in the area around the east side of Favorite Bay where local resident access had previously been limited. Increased harvest pressure could contribute to long-term declines in some subsistence resource populations and changes in their distribution patterns. Based on the estimated 5% loss of land mammal and upland bird use areas, total annual harvest of terrestrial resources could also decrease by as much as 5%. This change would be within the annual harvest variability for a representative terrestrial species—deer.

Improved and new human access to areas along the Access 3 route, and construction of a bridge across Favorite Creek could also result in long-term increases in fish harvests from Favorite Creek, particularly in pink and coho salmon, as well as increases in waterbird, marine invertebrate, and marine vegetation (seaweed and kelp) harvests from parts of Favorite Bay. Assuming that irregular terrain and thick vegetation would restrict subsistence users from traveling more than 0.5 mile from improved access corridors, it is anticipated that the increase in harvest pressure would minimally affect abundance and availability of these subsistence resources.

Access to Resources

The Airport 4 with Access 3 alternative would restrict subsistence users' access to 295 acres of land for up to three construction seasons. Following construction, the airport perimeter fence would exclude 100 acres from public access for the duration of airport operation (considered permanent removal of federal public lands used for subsistence purposes). As a result of road and bridge construction, however, this alternative would improve access to 1,442 acres (8%) of current use areas, and would create new access to 1,182 acres of potential subsistence use areas east of Favorite Bay. Compared to the no action alternative, this alternative would result

in a net access increase of 1,082 acres (6%) during airport and access road operation, based on the assumed 0.5-mile travel limitations due to irregular terrain and thick vegetation. Although access to waterbird, land mammal, and upland bird use areas would be increased, the land mammal and upland bird increase would be roughly half (18%) that estimated under the Airport 3a with Access 2 alternative. There would be no indirect effects to access from this alternative.

Competition for the Use of Resources

Competition would not be directly affected by the Airport 4 with Access 3 alternative; however, implementation of this alternative could indirectly affect competition among local subsistence users by improving access to previously inaccessible or remote locations. Implementation of this alternative would likely reduce local competition for subsistence harvest areas around Angoon; however, competition for highly desirable resources among local subsistence users could increase in areas such as along the Favorite Creek drainage.

Although the Airport 4 with Access 3 alternative would not directly increase competition between locals and nonlocals for collection of land and marine vegetation or hunted wildlife, this alternative could ultimately lead to increased competition for fish and marine invertebrates. Visiting hunters are rare, and access to subsistence lands for hunting by locals and non-locals is currently sufficient to meet demand. It is unlikely that a land-based airport would encourage more non-local deer hunting in known subsistence use areas immediately surrounding Angoon. Local interviews indicate that no other land-based resources or marine vegetation would likely be collected or harvested by non-locals following construction of a land-based airport. Increased air service, however, could allow for expansion of the existing sports fishing industry in Angoon, bringing in more recreational fishers and thereby increasing competition for fish—in particular for non-sockeye salmonids, halibut, and marine invertebrates—throughout the area. Although reported visitor levels have been relatively low over the past several years, assuming visitor projections increase at the 10.5% rate of anticipated growth for enplanement by 2029 (see discussion in Chapter 2: Purpose and Need for a Land-Based Airport at Angoon), this would represent an increase of approximately 50 non-local recreational fishers in total over current levels by 2029. To minimize conflicts with local subsistence users, charter fishing operators already avoid taking recreational fishers to Kanalku Bay, an important subsistence fishing area (Powers 2013). The growth of selfguided sport fishing operations in other parts of Southeast Alaska suggests that additional efforts by lodge owners or other businesses may be necessary to steer visiting self-quided, non-local recreational fishers away from areas frequented by local subsistence users.

For all lands in the study area, analysis of the Airport 4 with Access 3 alternative indicates that this alternative would result in few short- and long-term effects on the abundance or availability of, access to, and competition for subsistence resources.

8.5.2 AIRPORT 4 WITH ACCESS 3: EVALUATION OF THE AVAILABILITY OF OTHER LANDS FOR AIRPORT CONSTRUCTION

This alternative would be located in the Monument–Wilderness Area (i.e., on federal public lands). Of the three airport alternatives, only Airport 12a with Access 12a would be located on lands other than federal public lands. Airport 12a with Access 12a would be located entirely on lands owned or managed by private landowners, Kootznoowoo Inc., or the City of Angoon.

8.5.3 AIRPORT 4 WITH ACCESS 3: EVALUATION OF OTHER ALTERNATIVES THAT WOULD REDUCE OR ELIMINATE THE USE, OCCUPANCY, OR DISPOSITION OF PUBLIC LANDS NEEDED FOR SUBSISTENCE PURPOSES

The Airport 3a and Airport 4 alternatives would use federal public lands owned or managed by the USFS. If implemented, Airport 4 with either access would remove 100 acres of federal public lands from subsistence use, the largest amount of federal public lands needed for subsistence purposes. Of all alternatives, only the no action alternative and Airport 12a with Access 12a would use no federal public lands used for subsistence purposes.

8.5.4 AIRPORT 4 WITH ACCESS 3: FINDINGS

The Airport 4 with Access 3 alternative would not significantly affect the abundance or availability of, access to, or competition for subsistence resources on federal public lands, and therefore would not significantly restrict subsistence use. Approximately 3% of land vegetation use areas would be cleared during airport, road and bridge construction, and the airport perimeter fence would exclude 100 acres from public access for the duration of airport operation (considered permanent removal of federal public lands used for subsistence purposes). This alternative, however, would improve access to 1,442 acres (8%) of current use areas and access to 1,182 acres of new potential subsistence use areas east of Favorite Bay, resulting in a potential net increase of 1,082 acres (6%) accessible for subsistence use during airport and access road operations.

Although proposed vegetation clearing, road and bridge construction, and other activities that would permanently disrupt subsistence harvesting locations would require some individuals to use new harvesting locations, this alternative would not result in substantial interference in harvestable access or major increases in competition. Rather, implementation of this alternative would likely increase accessibility and expand areas available for Angoon subsistence users.

8.6 Airport 12a with Access 12a (Preferred Alternative): Evaluation and Findings

The Airport 12a with Access 12a alternative would be located on the Angoon peninsula southeast of the community of Angoon on lands owned and managed by private landowners, Kootznoowoo Inc., or the City of Angoon. Access 12a would begin at the existing BIA Road and travel south to the proposed airport location. No part of this alternative would be located on Monument–Wilderness Area lands.

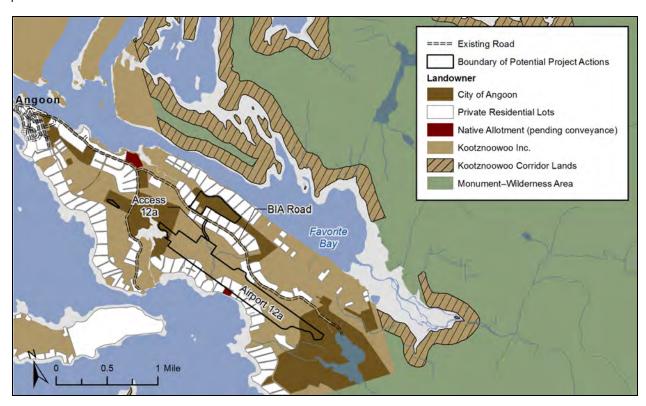


Figure 9. Location of Airport 12a with Access 12a relative to landownership.

8.6.1 AIRPORT 12A WITH ACCESS 12A: EVALUATION OF EFFECT OF USE, OCCUPANCY, OR DISPOSITION ON SUBSISTENCE RESOURCES AND USES

Although this alternative would affect subsistence resources and uses, those effects would not be on federal public lands. Information on effects to subsistence resources and uses can be found section 4.13.3.4 of Subsistence Resources and Uses in the EIS.

8.6.2 AIRPORT 12A WITH ACCESS 12A: EVALUATION OF THE AVAILABILITY OF OTHER LANDS FOR AIRPORT CONSTRUCTION

The Airport 12a with Access 12a alternative would wholly occupy non-federal lands and affect no Monument–Wilderness Area lands. Because this alternative does not affect federal public lands, there is no need to evaluate the availability of other lands for airport construction.

8.6.3 AIRPORT 12A WITH ACCESS 12A: EVALUATION OF OTHER ALTERNATIVES THAT WOULD REDUCE OR ELIMINATE THE USE, OCCUPANCY, OR DISPOSITION OF PUBLIC LANDS NEEDED FOR SUBSISTENCE PURPOSES

The Airport 12a with Access 12a alternative would not remove federal public lands used for subsistence purposes. Of all alternatives, only the no action alternative and the Airport 12a with Access 12a alternative would use no federal public lands used for subsistence purposes. As shown in Table 11, Airport 3a and Airport 4 with either access would result in the permanent removal of between 98 and 100 acres of federal public lands from subsistence use.

Table 11. Acres of Federal Public Lands Permanently Removed from Subsistence Use Compared to the Airport 12a with Access 12a Alternative

No Action Alternative	Airport 3a with Access 2	Airport 3a with Access 3	Airport 4 with Access 2	Airport 4 with Access 3	Airport 12a with Access 12a
No use of federal public lands	98 acres	98 acres	100 acres	100 acres	No use of federal public lands

8.6.4 AIRPORT 12A WITH ACCESS 12A: FINDINGS

Because the Airport 12a with Access 12a alternative would be located wholly on non-federal lands, it would not significantly restrict subsistence resources and uses on federal public lands.

8.7 Cumulative Case: Evaluation and Findings

The goal of the cumulative effects analysis is to evaluate the incremental effect of the preferred alternative, Airport 12a with Access 12a, in conjunction with all past, present, and reasonably foreseeable future actions in or near the study area.

Various projects have been completed or are planned in the study area that may affect subsistence resources and uses. Only projects with potential direct effects are listed in Table 12 and shown in Figure 10.

Table 12. Current and Reasonably Foreseeable Projects

Project	Description
Angoon barge landing improvements	Development of an upland staging area and installation of a trestle or causeway leading to a heavy loadout dock with mooring dolphins on each side.
Angoon Hydroelectric Project	Transmission line to deliver power to Angoon from a hydroelectric dam to be constructed on Thayer Creek.
Angoon helipad	Helicopter landing pad for health and safety emergencies when seaplanes are not available.
Angoon ferry terminal passenger facility	Replacement of the existing passenger terminal facility for Alaska Marine Highway System passengers at Angoon. Design to include the new building and parking area.

Source: (City of Angoon 2012; CRW and Golder 2010; DOT&PF 2013; USFS 2002, 2009, 2012).

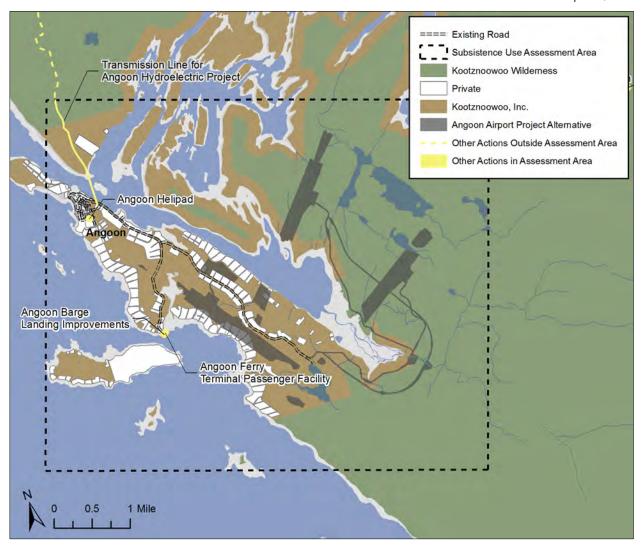


Figure 10. Current and reasonably foreseeable projects within the subsistence study area.

8.7.1 Cumulative Case: Evaluation of the Effect of Use, Occupancy, or Disposition on Subsistence Resources and Uses

Past actions in the Angoon area that may have affected subsistence resources through reduction in habitat for subsistence resources include timber harvest, landfill improvements, seaplane base improvements, and ferry terminal improvements.

Future actions could affect subsistence resources and uses in several ways. The installation of the underwater cable for the hydroelectric project would result in a short-term reduction of abundance and availability in the immediate vicinity of the cable in Favorite Bay. The construction of the barge landing area and ferry terminal passenger facility would result in a short-term reduction of abundance and availability in a high-use area for clamming by the Angoon community. There would be no cumulative effects to access or competition in the long term. Short-term displacement of subsistence users would occur during construction of any of the reasonably foreseeable future actions, but access would be restored after construction. This displacement could have

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minimal effects on competition as users move to other areas, but users would be able to return to these areas once construction was complete. In summary, because the effects from future actions are anticipated to be short-term and minimal, these future actions combined with the preferred alternative would not result in significant cumulative effects.

8.7.2 CUMULATIVE CASE: EVALUATION OF THE AVAILABILITY OF OTHER LANDS FOR AIRPORT CONSTRUCTION

Four of the five action alternatives would use federal public lands. Only the preferred alternative, Airport 12a with Access 12a, would use no federal public lands.

8.7.3 CUMULATIVE CASE: EVALUATION OF OTHER ALTERNATIVES THAT WOULD REDUCE OR ELIMINATE THE USE, OCCUPANCY, OR DISPOSITION OF PUBLIC LANDS NEEDED FOR SUBSISTENCE PURPOSES

Four of the five action alternatives would use federal public lands. Of all the alternatives, only the no action alternative and the preferred alternative (Airport 12a with Access 12a) would use no federal public lands needed for subsistence purposes. Airport 4 with either access would permanently remove the greatest amount of federal public land needed for subsistence purposes.

8.7.4 CUMULATIVE CASE: FINDINGS

When considered in combination with past, present, and reasonably foreseeable future actions, implementation of the preferred alternative would have minor short-term and long-term effects on abundance and availability of subsistence resources; however, the preferred alternative would not be constructed on federal public lands. Further, there would be no known significant change in access to subsistence resources, nor would there be increases in competition from non-rural use. Implementation of the preferred alternative, in combination with past, present, and reasonably foreseeable future actions, would not result in a significant effect as measured against the established significance criteria of large reductions in abundance, major redistribution resulting in reduced availability, substantial interference with harvestable access, or major increases in non-rural use. Therefore, implementation of the preferred alternative would not significantly restrict subsistence resources and uses.

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Acronyms

ADF&G Alaska Department of Fish and Game

ANCSA Alaska Native Claims Settlement Act

ANILCA Alaska National Interest Conservation Lands Act

DOT&PF Alaska Department of Transportation and Public Facilities

EIS environmental impact statement

FAA Federal Aviation Administration

PSP paralytic shellfish poisoning

SHARC subsistence halibut registration certificate

USC U.S. Code

USFS U.S. Forest Service

USFWS U.S. Fish and Wildlife Service



APPENDIX O SUBSISTENCE RESOURCES TECHNICAL REPORT

Note: The Section 508 amendment of the Rehabilitation Act of 1973 requires that the information in federal documents be accessible to individuals with disabilities. The FAA has made every effort to ensure that the information in the *Draft Angoon Airport Environmental Impact Statement* is accessible. However, this appendix is not fully compliant with Section 508, and readers with disabilities are encouraged to contact Leslie Grey at (907) 271-5453 or Leslie.Grey@faa.gov if they would like access to the information.



Subsistence Resources Existing Conditions Technical Report for Angoon Airport Environmental Impact Statement Angoon, Alaska

Prepared for

Federal Aviation Administration

and

Alaska Department of Transportation and Public Facilities

Prepared by

SWCA Environmental Consultants

September 16, 2011

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1.0 Introduction

The Federal Aviation Administration (FAA) is preparing an environmental impact statement (EIS) in response to a request from the Alaska Department of Transportation and Public Facilities (DOT&PF), the Sponsor, for funding and other approvals for a new land-based airport near the community of Angoon in Southeast Alaska. At present, there is no land-based airport runway in or near Angoon. The DOT&PF prepared the Angoon Airport Master Plan (DOT&PF 2007) or their proposed airport location. The EIS is evaluating two alternative airport locations in addition to the DOT&PF's proposed location and multiple access road alternatives associated with those airport locations. (Note: Access Alternative 5 was studied and is shown on maps throughout this report, but it was subsequently dropped from consideration in the EIS.) Two of the airport alternatives and portions of their associated access roads are located on lands administered by the U.S. Forest Service (USFS) within the Admiralty Island National Monument and Kootznoowoo Wilderness Area (hereafter referred to as the Monument–Wilderness Area).

The proposed land-based airport would be a small, commercial airport typical of other rural airports in the region. The initial construction would include a 3,300-foot-long paved runway, with the ability to extend the runway length to 4,000 feet in the future if air traffic warrants it. The airport would have a short, perpendicular taxiway leading from the runway to a small apron area, which may eventually contain a passenger shelter building. The proposed airport is being designed to accommodate a future full-parallel taxiway, but this taxiway would not be constructed initially and would only be built if air traffic demands are sufficient to warrant this additional safety and efficiency feature. The runway, perpendicular taxiway, and apron would be surrounded by clear areas required for safety. Regardless of the airport location under consideration, an access road would need to be constructed to connect the new airport to the existing Angoon road system. The proposed access road would have a gravel surface and would be two lanes wide (one lane in each direction) with 9-foot-wide lanes and minimal shoulders.

This report provides a detailed description of the subsistence resources and uses potentially affected by implementation of the proposed airport. It includes information on subsistence resources and uses known to occur or with potential to occur in the vicinity of the airport location alternatives and access alternatives under consideration at the time subsistence studies were conducted. Data collected during the various field studies described below are available for agency review. Information in this report will be used to prepare the Affected Environment section of the EIS and the Alaska National Interest Conservation Lands Act (ANILCA) Section 810 evaluation, as well as to facilitate coordination between the FAA, USFS, and other agencies during the preparation of the EIS and to verify information about existing subsistence uses with the public.

2.0 Analysis Areas

The analysis areas for this Angoon Airport EIS technical report consist of a local study area and a landscape study area. The local study area is that area analyzed as the existing affected environment within and surrounding the airport and access road alternatives; it encompasses the existing resources in areas of direct disturbance and the immediately adjacent area. The landscape study area is a larger area that establishes the context of the project impacts on the landscape scale. This scale is determined by the extent of the habitat that could be impacted by both the proposed airport project as well as other unrelated projects that are affecting the same resource. The landscape study area represents a broader area of similar resources and uses within which the relative scale of impacts from construction of an airport and its associated access road at any given alternative location can be understood.

2.1 Subsistence Local Study Area

The local study area is located near Angoon, a community of approximately 430 residents (2008 data Department of Labor and Workforce Statistics [DOL&WD] 2009) in Southeast Alaska. Angoon is located on Admiralty Island in the Alexander Archipelago approximately 60 miles southwest of Juneau and 45 miles east of Sitka, the closest major communities. It has no road links to any other developed areas and is completely dependent upon plane and boat transportation for access throughout the year.

For the purpose of analyzing subsistence resources, the local study area consists of all of upper Favorite Bay, the lower Favorite Creek watershed, uplands between Favorite Bay and Kanalku Bay, and uplands along the Angoon peninsula south of the community of Angoon (Figure 1). These areas include Airport Alternatives 3a, 4, and 12a. The local study area also includes all of the access alternatives. Approximately 11,078 acres of uplands and 7,091 acres of water are located within the local study area.

2.2 Subsistence Landscape Study Area

The landscape study area for subsistence resources consists of the area identified in the *Mitchell Bay Watershed Landscape Assessment* (USFS 2002). This area is identified as encompassing the entire watershed that drains into Kootznahoo Inlet, including Mitchell, Pea Hen, Kanalku, and Favorite bays. The landscape study area comprises the entire local study area, all of the community of Angoon, and a large portion of southern Admiralty Island (Figure 2). The landscape study area was chosen because it represents a large portion of the subsistence use area used by Angoon residents on Admiralty Island. Approximately 68,989 acres of uplands and 27,085 acres of water are located within the landscape study area.

3.0 Subsistence Resources

This section of the technical report describes the subsistence resources in and around the local study area (Figure 1). Within the local study area, the most likely subsistence resources to be present are terrestrial, intertidal, and riverine species, including anadromous fish.

3.1 Regulatory Setting

3.1.1 ALASKA NATIONAL INTEREST LANDS CONSERVATION ACT

Although there are many popular cultural and sociological definitions and interpretations of subsistence, in 1980, the U.S. Congress provided a legal description of subsistence in Title VIII of ANILCA (Public Law 96-487). Section 803 of ANILCA defines *subsistence use* as:

the customary and traditional uses by rural Alaska residents of wild renewable resources for direct, personal, or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade.

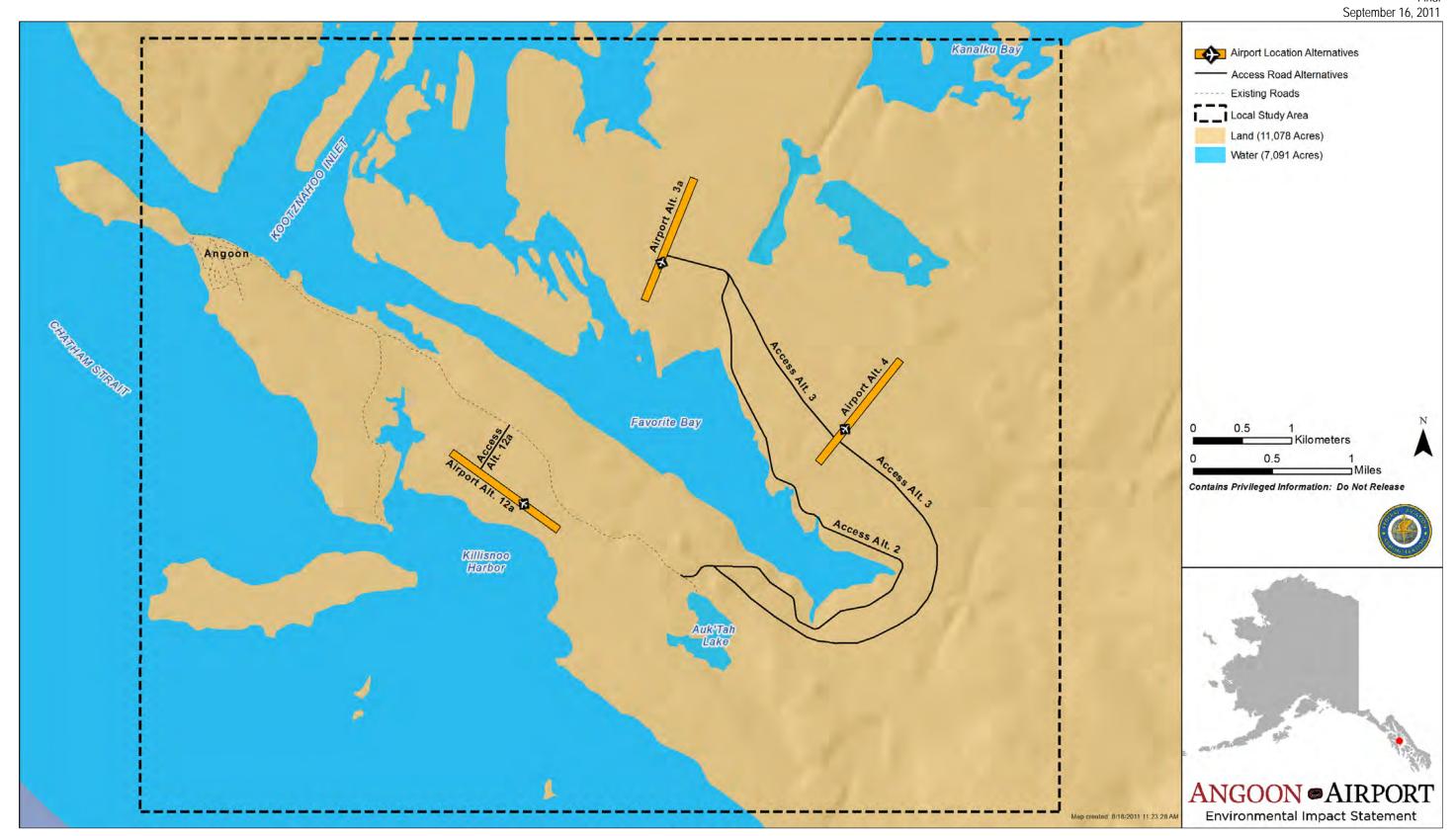


Figure 1. Subsistence local study area. Note: Airport alternatives illustrated on figures in this report represent locations only and do not depict final areas of disturbance.

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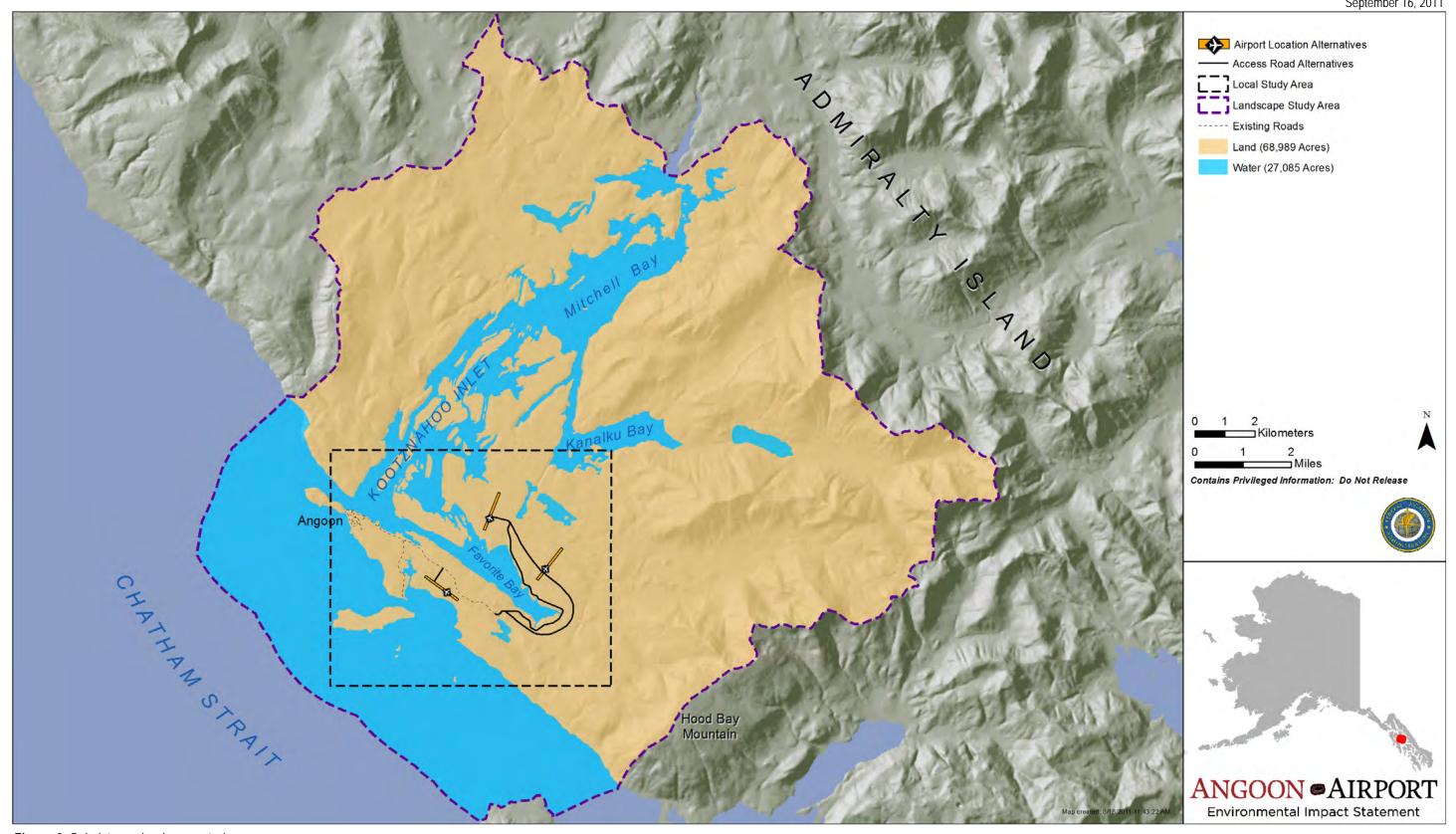


Figure 2. Subsistence landscape study area.

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Under Alaska state law, subsistence uses are defined as:

the noncommercial, customary and traditional uses of wild, renewable resources by a resident domiciled in a rural area of the state for direct personal or family consumption, such as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; and for customary trade, barter, or sharing for personal or family consumption. (Alaska Statute 16.05.940[33])

ANILCA provides for "the continuation of the opportunity for subsistence uses by rural residents of Alaska, including both Natives and non-Natives, on the public lands." ANILCA defines public lands as:

land situated in Alaska which, after the date of enactment of this Act, are Federal lands except—

- (A) land selections of the State of Alaska which have been tentatively approved or validly selected under the Alaska Statehood Act and lands which have been confirmed to be validly selected by, or granted to the Territory of Alaska or the State under any other provision of Federal law:
- (B) land selections of a Native Corporation made under the Alaska Native Claims Settlement Act [ANCSA] which have not been conveyed to a Native Corporation, unless any such selection is determined to be invalid or is relinquished; and
- (C) lands referred to in §19(b) of [ANCSA].

In regard to consumptive uses, the provisions in ANILCA state:

[t]he taking on public lands of fish and wildlife for non-wasteful subsistence uses shall be accorded priority over the taking on such lands of fish and wildlife for other purposes. Whenever it is necessary to restrict the taking of populations of fish and wildlife on such lands for subsistence uses in order to protect the continued viability of such populations, or to continue such uses, such priority shall be implemented through appropriate limitations based on the application of the following criteria:

- 1. customary and direct dependence upon the populations as the mainstay of livelihood;
- 2. local residency; and
- 3. the availability of alternative resources (ANILCA Section 804)

Different legal frameworks regulate subsistence on lands of different status. The State of Alaska administers the harvest of fish and wildlife on all lands in Alaska, including for subsistence purposes, except as specifically superseded by federal law. When it is necessary to implement a federal subsistence priority under the terms of Title VIII of ANILCA, the Federal Subsistence Board regulates subsistence hunting on federally administered uplands and fishing on waters where there is a federal reserved water right. State, private, and Native-selected or -owned lands are generally not within the jurisdiction of the federal subsistence management program and are regulated by the State of Alaska.

The land in and around the local study area and landscape study area consists of federal, state, local government, and private lands. The study area includes federal land within the Admiralty Island National Monument and Kootznoowoo Wilderness Area. These lands are managed by the USFS. Favorite Bay and other marine submerged lands and waters within the local study area are owned and managed by the State of Alaska.

Kootznoowoo, Inc. is the Angoon village corporation established under ANCSA. Kootznoowoo, Inc. holds title to lands in and around Angoon under Kootznoowoo's village entitlement under ANCSA. Portions of the lands on the peninsula south of Angoon disbursed to Kootznoowoo, Inc. under ANCSA have been divested to Kootznoowoo, Inc. shareholders. These lands are considered private lands. In addition, under Section 506 of ANILCA, Kootznoowoo, Inc. holds title to any rocks, pinnacles, islands, islets, and lands from the mean high tide mark to a point 660 feet inland; in and adjacent to the inland waters from Kootznahoo Inlet to the rangeline separating Range 68 east and Range 69 east, Copper River Base and Meridian, and including those parts of Mitchell, Kanalku, and Favorite bays west of that line. However, the U.S. government reserves the following rights to these lands:

- All timber rights are reserved subject to subsistence uses consistent with Title VIII of this Act.
- The right of public access and use within such area, subject to regulation by the Secretary of
 Agriculture to insure protection of the resources, and to protect the rights of quiet enjoyment of
 Kootznoowoo, Incorporated, granted by law, including subsistence uses consistent with Title VIII of this
 Act.
- The subsurface estate.
- The development rights, except that the Secretary of Agriculture is authorized to permit construction, maintenance, and use of structures and facilities on said land which he determines to be consistent with the management of the Admiralty Island National Monument: *Provided* that all structures and facilities so permitted shall be constructed of materials which blend and are compatible with the immediate and surrounding landscape.

The City of Angoon also owns land within and adjacent to the community of Angoon. City lands are located on the Angoon peninsula within the local study area.

Subsistence activities occurring in offshore federal waters (greater than 3 miles from the coast) are not subject to ANILCA. However, offshore waters and all lands in Alaska are subject to the Marine Mammal Protection Act (16 U.S. Code [U.S.C.] 1361–1407), the Endangered Species Act (16 U.S.C. 1531 et seq.), the Migratory Bird Treaty Act (16 U.S.C. 703–712), and the Migratory Waterfowl Hunting and Conservation Stamp Act (16 U.S.C. 718–718h). The Marine Mammal Protection Act and the Endangered Species Act forbid the harvest of marine mammals and endangered species except by Native Americans for non-wasteful subsistence purposes.

3.1.2 OTHER APPLICABLE LAWS, REGULATIONS, AND POLICIES

Executive Order 13175: Consultation and Coordination with Indian Tribal Governments (November 6, 2000). Executive Order 13175 establishes principles and standards for government-to-government consultation with tribal governments on "policies that have tribal implications." Consultation with tribal governments on subsistence, along with other issues, is an integral part of the public involvement process for an EIS. Although Section 810 of ANILCA does not establish separate or additional requirements concerning consultation with tribal governments, the Section 810 review benefits from outreach to the tribal governments through the EIS. FAA Order 1210.20, American Indian and Alaska Native Tribal Consultation Policy and Procedures, contains the FAA's policy on consultation with tribal governments. In addition, the Forest Service Handbook Section 1509.13, American Indian and Alaska Native Relations, and the Forest Service Manual Section 1563, American Indian and Alaska Native Relations, contain USFS policies and procedures for consultation with tribal governments, including subsistence rights and uses in Alaska.

Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations. In addition to ANILCA, environmental justice, as defined in Executive Order 12898,

also calls for an analysis of the effects of federal actions on minority populations with regard to subsistence. Specifically, environmental justice is:

The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

Section 4-4 of Executive Order 12898, regarding the subsistence consumption of fish and wildlife, requires federal agencies to collect, maintain, and analyze information on the consumption patterns of populations that principally rely on fish and/or wildlife for subsistence, and to communicate to the public any risks associated with the consumption patterns.

FAA Order 1050.1E, Environmental Impacts: Policies and Procedures, does not specifically address subsistence practices or subsistence resources as a stand-alone topic. However, Appendix A, Section 16, Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks, specifically requires "disclosure of the effects on subsistence patterns and consumption of fish, vegetation, or wildlife, and effective public participation and access to this information" as part of the evaluations related to Environmental Justice.

FAA Order 5050.4B NEPA [National Environmental Policy Act] Implementing Instructions for Airport Actions. While FAA Order 5050.4B does not specifically address subsistence practices or resources, it reiterates the FAA's policies contained in Order 1050.1E, Appendix A. Chapter 10, *Environmental Justice*, of FAA's Environmental Desk Reference supplement to FAA Order 5050.4B provides guidance regarding FAA's consideration of subsistence practices and resources during the NEPA process. The Desk Reference outlines FAA's policy for determining impacts, determining significance of impacts, and considering mitigation measures.

3.2 Methods

The following pages discuss subsistence resources and use in the local study area. Much of the information was derived from the Alaska Department of Fish and Game (ADF&G) Community Subsistence Information System (ADF&G 2009a) regarding a study of Angoon subsistence harvest in 1996 and from ADF&G Division of Subsistence technical reports (George and Kookesh 1983, George and Bosworth 1988), which highlight subsistence resources used by Angoon residents and methods of utilization within the community.

The 1996 harvest study is the most representative data on broad scale subsistence use for the community of Angoon to date. Appendix A of this technical report contains a list of all species harvested as subsistence resources in 1996. For the 1996 study, data were collected on subsistence harvest from some households in the population so that statistical inferences can be made on the entire population. Since that study, data gathered by the ADF&G, the USFS, and the FAA's EIS Team show that there have been no major changes in subsistence effort, harvest of most species, and use. More recent harvest information beyond the 1996 study was also used to characterize existing subsistence uses when that data was gathered in such a way as to constitute a representative sample of the community. Information from non-representative sampling, such as with an extremely small sample size, was reviewed and used as general subsistence resource information but could not be used to extrapolate to the entire Angoon population regarding their subsistence practices.

In addition, information was gathered from local residents to ground-truth recent subsistence harvest efforts within the local study area and landscape study area. The FAA's EIS Team conducted site visits and qualitative interviews with Angoon subsistence users to supplement existing information on subsistence use areas that might be affected by the project. Qualitative interviews included the use of subsistence mapping wherein the interviewer asked Angoon

residents to identify locations they or others in their household use as sources of subsistence resources. Identification of those areas was focused on locations within the local study area and helped provide localized information on subsistence resources and uses within the community. A total of 18 formal interviews were conducted. These were supplemented by informal conversations with residents about their subsistence practices. Interviewees represented a cross-section of the Angoon community and included individuals ranging in age from 18 to 75 years old. The methods used to prepare this report and that will be used to assess impacts on subsistence resources were developed in consultation with the FAA, USFS, ADF&G, and State of Alaska ANILCA program.

3.3 Subsistence Resources and Uses in Local and Landscape Study Areas

For Alaskans, subsistence is more than the harvesting, processing, sharing, and trading of natural resources. For many, subsistence embodies cultural, social, and spiritual values at the core of Alaska Native and rural Alaskan culture. Subsistence in Alaska comprises a diverse set of localized systems of food production and distribution representing unique combinations of ecology, community, culture, and economics (Wolfe 2004).

Nearly all rural Alaska communities depend on subsistence resources to meet at least part of their nutritional needs. The reasons for participating in subsistence are many and varied. Some individuals participate in subsistence activities to supplement personal income and provide needed food. Others pursue subsistence activities to continue cultural customs and traditions. Many others participate in subsistence activities for personal reasons related to deeply held attitudes, values, and beliefs about where their food comes from, as well as the ability to supply their family directly through their own work.

Subsistence resources are highly valued and central to the customs and traditions of many cultural groups in Alaska. These customs and traditions encompass sharing and distribution networks, as well as cooperative hunting, fishing, gathering, and ceremonial activities. Sharing of subsistence foods is common in rural Alaska. Subsistence fishing, hunting, and gathering are important sources of nutrition in most rural communities. In general, statewide Alaskan subsistence harvests by rural residents consist primarily of fish (60%), followed by land mammals (20%), marine mammals (14%), birds (2%), shellfish (2%), and plants (2%) (Wolfe 2000).

Within the context of Admiralty Island's and specifically the community of Angoon's seasonal and cyclical employment, subsistence harvest of fish and wildlife resources takes on special importance. Subsistence in Alaska is part of a rural economic system referred to as a mixed subsistence-market economy. Under this market system, families invest money in small-scale, efficient technologies to harvest wild foods. Fishing, hunting, and gathering subsistence resources provide a reliable economic base for many rural communities. Families and, in some cases, communities have invested in gill nets, motorized skiffs, and other equipment to harvest important resources. Subsistence is not oriented toward sales, profits, or commercial production; it is focused toward meeting the needs of families and the community. Participants in this mixed economy in rural Alaska often augment their subsistence production with cash employment. Cash from employment provides the means to purchase equipment, supplies, and fuel used in subsistence activities. The combination of subsistence and commercial-wage activities provides the economic basis for the way of life in Alaska's rural communities (Wolfe and Walker 1987). Because of the high prices of commercial products in remote Alaska communities, the economic role of locally available fish and game takes on added importance.

Resource collection for fish, land and marine mammals, birds, marine invertebrates, and plants occurs throughout the year in the Angoon area, with summer harvest being the most intense collection period. Springtime harvest in the Angoon area often involves collecting shoots of edible plants, herring harvest, and collection of herring eggs, seaweed, clams, and other intertidal resources. Residents primarily harvest fish resources in the summer and early fall, either under subsistence, commercial, or sport-fishing regulations. Fish harvest involves salmon and halibut, with the greatest amount of harvest reserved for halibut, coho salmon, and sockeye salmon. Fall harvest is primarily hunting, with many residents hunting for Sitka black-tailed deer. Some fishing also occurs in the fall, primarily for coho

salmon. Winter is usually the lowest harvest period during the year. Winter harvest often includes trolling for king salmon, trapping, and some collecting of intertidal resources. Residents harvest some resources year-round including halibut, Chinook salmon, herring, chitons, rockfish, devil's club, and harbor seals (George and Bosworth 1988).

Generally, subsistence harvest levels vary widely from one community to another and from year to year. Rural communities have high subsistence participation rates and rely heavily on wild foods, with approximately 86% of rural Alaska households using wild game and 95% using fish (Wolfe 2000). Wolfe's 2000 study estimated that the annual wild food harvest in Southeast Alaska was approximately 5,064,509 pounds, or 178 pounds per person per year. The opportunity to participate in subsistence activities supports a variety of cultural and related values in rural communities. For example, the distribution of harvested fish and wildlife contributes to community stability through the sharing of resources. Subsistence resources also provide the foundation for native culture in Angoon and are deeply connected to traditional respect for the earth and its resources.

Angoon residents harvested an estimated 224 pounds of subsistence resources per capita in 1996 (ADF&G 2009a). Subsistence resources used by residents consist of fish, land mammals, marine mammals, birds and eggs, marine invertebrates, and vegetation (Table 1). In general, the pattern of use is similar to that of the subsistence harvests by rural residents statewide, as discussed above: the majority of harvested resources are fish, followed by land mammals, marine invertebrates, plants, and birds/eggs.

Households in Angoon use, attempt to harvest, harvest, receive, and give subsistence resources (see Table 1). The ADF&G Community Profile Database indicates that 97% of Angoon households use subsistence resources (ADF&G 2009a). There is a strong relationship of sharing subsistence resources indicated by the number of households who have either given and/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 Angoon. Some resources harvested outside the local study area or landscape study area may be reported as being used locally though the resource may not be harvested within the local study area or landscape study area.

Table 1. Subsistence Resource Categories and Pounds of Harvest by Angoon Households in 1996

Resource	% Using	% Attempting to Harvest	% Harvesting	% Receiving	% Giving	Per Capita Harvest (lbs.)
All resources combined	97.3	93.2	93.2	94.6	67.6	224.5
Fish	89.2	70.3	70.3	83.8	50.0	129.5
Salmon	79.7	64.9	64.9	62.2	41.9	81.9
Non-salmon	82.4	60.8	60.8	70.3	29.7	47.6
Land mammals	74.3	51.4	51.4	50.0	27.0	51.3
Large	74.3	51.4	51.4	50.0	27.0	51.3
Small	2.7	2.7	2.7	1.4	0.0	0.0
Marine mammals	32.4	14.9	14.9	28.4	8.1	9.0
Birds and eggs ¹	5.4	5.4	5.4	2.7	1.4	0.2
Marine invertebrates	89.2	78.4	78.4	73.0	41.9	30.1
Vegetation ²	66.2	62.2	56.8	50.0	17.6	4.4

Source: (ADF&G 2009a)

Note: Information is for the most representative reporting year for Angoon (1996).

¹Includes upland birds and waterfowl.

² Includes terrestrial and marine vegetation.

3.3.1 FISHERIES

Fish are an extremely important subsistence resource for Angoon residents. Centrally located in the Alexander Archipelago, Angoon residents have access to many salt and freshwater fishing grounds throughout Southeast Alaska.

In Alaska, state and federal regulations define three distinct types of fishing: 1) fishing for profit (commercial fishing), 2) fishing for sport by hook and line (sport fishing), and 3) taking fish resources for personal use (subsistence) with prescribed gear (usually by permit). However, in many cases, the lines between commercial, sport, and personal use fishing are not quite as clearly defined. For example, commercial fishermen may keep a portion of their catch for personal consumption, and sport anglers often consider filling the freezer just as important as the pleasure of catching fish (Gmelch et al. 1985).

In the 1996 ADF&G study (ADF&G 2009a), approximately 70% of all households in Angoon attempted to fish during that year, with approximately 70% harvesting fish (see Table 1). However, the importance of fishing is shown by the statistic that 89% of all households utilized fish resources in 1996. Based on interviews with Angoon residents conducted in 2008 and 2009, this use rate appears to have changed little since 1996 and is still considered an accurate representation of subsistence fish use in Angoon. The importance of subsistence in the community's culture also is shown by the following statistic: 84% of residents receive fish from others and 50% give fish to others (ADF&G 2009a).

Salmon

In Angoon, as in most of coastal Alaska, salmon is the foundation of the subsistence lifeway. In addition to sustenance for individuals and families in Angoon throughout the year, salmon provide job opportunities through commercial fishing, fish processing, sport-fish guiding, and other ancillary jobs associated with fishing, such as the service industry. The salt and fresh waters around Angoon are home to all five species of Pacific salmon found in Alaska: Chinook (or king) salmon, sockeye (or red) salmon, pink (or humpy) salmon, coho (or silver) salmon, and chum (or dog) salmon.

According to interviews in 2008, Angoon residents fish for salmon in many locations. Many people fish locally along most of Chatham Strait and the Mitchell Bay area for all species of salmon found in Alaska. Within Favorite Bay and its freshwater tributaries (including Favorite Creek), coho, chum, and pink salmon are all harvested by Angoon residents. Angoon residents also harvest sockeye and Chinook salmon in the marine waters of Favorite Bay, although those species do not spawn in the freshwater sources of Favorite Bay. Angoon residents indicate that chum and pink salmon are harvested in the greatest quantities in this area, followed by coho, Chinook, and sockeye salmon (Figure 3).

According to the ADF&G Community Subsistence Information System, the most common salmon species harvested by Angoon residents are coho salmon (30 pounds per capita), followed by sockeye salmon (21 pounds per capita). Chinook salmon are third in harvest (20 pounds per capita), with chum salmon (9 pounds per capita) and pink salmon (2 pounds per capita) being fourth and fifth, respectively (ADF&G 2009a).

Under sport-fishing licenses using rod and reel, Angoon residents often catch coho, Chinook, and pink salmon; whereas most sockeye and chum salmon are primarily caught using nets under a subsistence harvest permit administered by the ADF&G. Table 2 shows the harvest of Pacific salmon under the ADF&G subsistence harvest permits from 2003 to 2008.

Table 2. Salt and Freshwater Salmon Subsistence Harvest by Angoon Residents under ADF&G Permits

Year	Permits Issued	Permits Fished	Number of Chinook	Number of Sockeye	Number of Coho	Number of Pink	Number of Chum
2003	102	39	0	1,496	36	6	2
2004	106	42	0	1,479	107	107	58
2005	90	14	0	261	12	25	0
2006	96	20	0	658	20	9	0
2007	86	14	1	56	47	62	0
2008	87	38	0	637	120	0	15

Once harvested, salmon are either eaten fresh or preserved so the meat can be eaten throughout the year. Angoon residents use several different methods to preserve caught fish. Some of these methods are traditional, having been passed down through the generations, while others are recent methods to coincide with improved technology. One of the most traditional methods of preserving fish is by smoking. In this method, residents will filet the fish and either cut them into strips or chunks of meat. The meat is usually hung in a small building called a smokehouse. A fire is built inside the smokehouse using a slow-burning wood, usually alderwood, and left to smoke for a period of time. Smoking fish can be completed anywhere between one and six days, depending on the level of dryness preferred.

Another method of preserving is canning. Many residents of Angoon will can salmon using a pressure cooker and glass jars. The use of canning to preserve salmon probably stems from the salmon canneries that were in operation around Angoon between the late 1800s and early 1900s. Residents often can both fresh salmon and smoked salmon to have different flavors throughout the year. Another method of preserving that is only used by a few residents is fermenting. Some Angoon residents will preserve salmon parts, usually the heads, by placing them in a burlap sack and burying them in wet sand for several months. The heads are then dug up and eaten. In many places in rural Alaska, this method is used to create what are known as *stinkheads*.

Finally, the most common method of preserving fish is freezing. Many households in Angoon have a large freezer where they can preserve salmon, halibut, deer, and berries for a long period of time. Salmon are usually filleted and either wrapped in freezer paper or vacuum sealed to protect the meat. Freezing meat is common because it is the least time and labor intensive method of preserving and because it retains the original flavor of the meat better than any other method.

Non-salmon Fish

Of equal importance to Angoon residents are non-salmon fish, primarily species such as halibut, lingcod, rockfish, herring, rainbow trout, cutthroat trout, Dolly Varden, and eulachon. The vast majority of non-salmon fish harvest is halibut, followed by herring roe, rockfish, herring, Dolly Varden, Pacific cod (gray cod), and sablefish (black cod) respectively. Commercial fishing includes species such as halibut, rockfish, and black cod in the Angoon area. Fish such as halibut, rockfish, and Dolly Varden are also sport fished in the community. In terms of economic importance, non-salmon fishes are just as important as salmon to the economic well-being of the community. Locations for fishing non-salmon fish are similar to salmon fishing areas. In most cases, Angoon residents fish for multiple species in a single outing, particularly for deepwater fishes such as halibut, rockfish, and cod.

Halibut is an especially important non-salmon fish resource for Angoon residents. The ADF&G 1996 study (ADF&G 2009a) documented approximately 40.5 pounds of per capita harvest by Angoon residents. Most halibut harvested by Angoon residents are filleted and frozen, although some residents may smoke or can the meat.

Subsistence fishers are required to obtain a subsistence halibut registration certificate (SHARC) from the National Marine Fisheries Service prior to fishing. A SHARC permit allows the use of rod and reel or one longline with up to 30 hooks and a bag limit of 20 fish per day. In 2007, approximately 180 residents of Angoon were SHARC permit holders. These estimates provided in Table 3 reflect only fishing by SHARC fishers in the community of Angoon. All subsistence gear types (setline and hand-operated gear) are included in the harvest estimates.

In addition to the SHARC permits, some Angoon residents harvest halibut under their sport-fishing license. In 2007, SHARC permit holders reported harvesting 36 halibut (approximately 653 pounds) under the sport-fishing license. ADF&G Statewide Harvest Surveys for 2007 showed 2,926 halibut harvested in the Angoon area, although much of the harvest is from nonresidents and non-local residents from other Alaskan communities (ADF&G 2009b). In addition, the reported harvest represents a harvest area larger than the local study area or landscape study area. Angoon residents interviewed for this project have indicated that all halibut harvest occurs outside the local study area, but there are several identified locations for halibut harvest within the landscape study area.

Table 3. Estimated Halibut Subsistence Harvest by Angoon SHARC Holders Using All Gear Types within Regulatory Area 2C, 2003–2007

Year	Estimated Number Harvested	Estimated Pounds Harvested
2003	1,142	20,283
2004	1,435	32,009
2005	1,231	25,166
2006	954	16,875
2007	836	16,429

Sources: (Fall et al. 2004); (Fall et al. 2005); (Fall et al. 2006); (Fall et al. 2007); (Fall and Koster 2008)

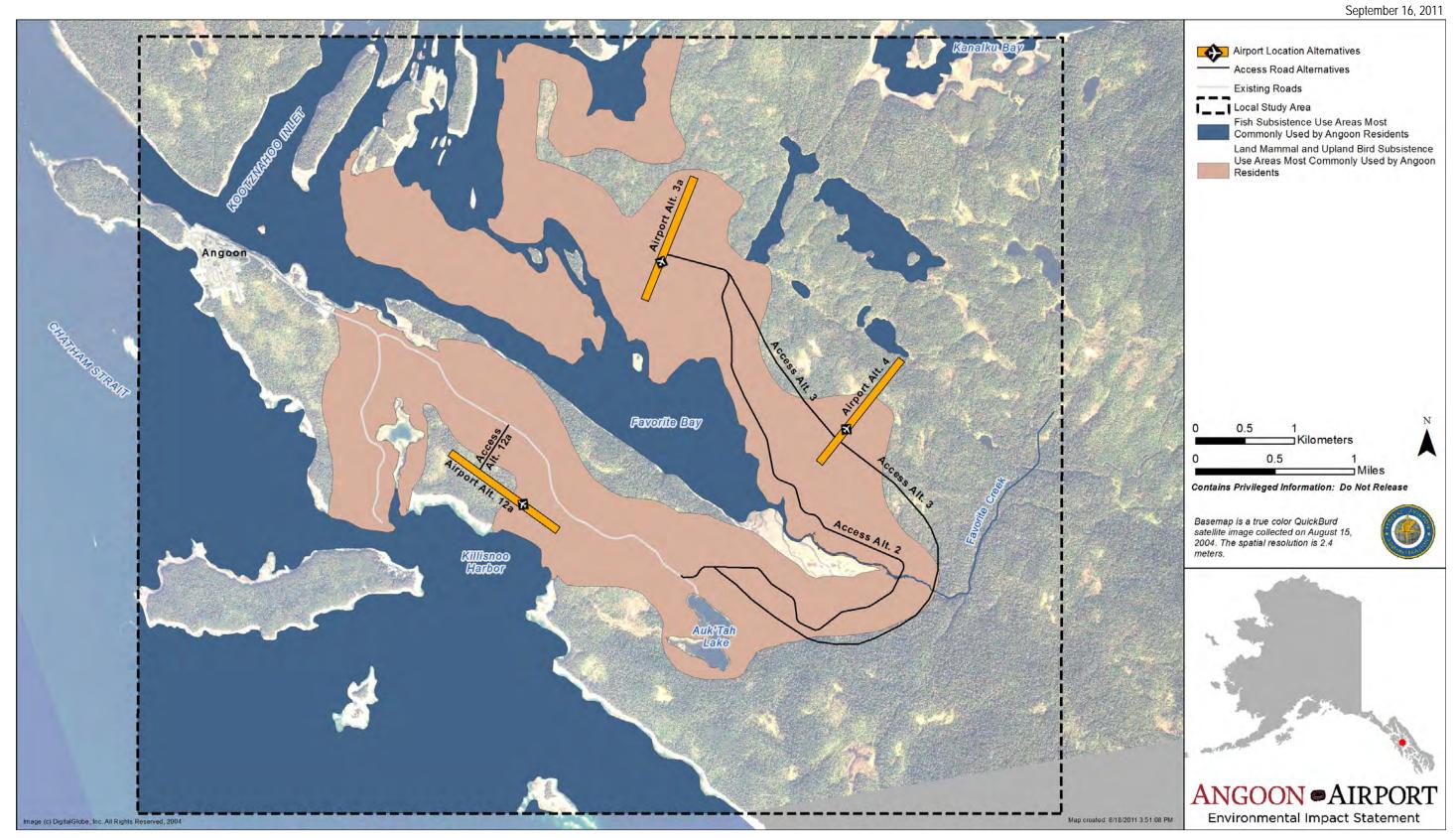


Figure 3. Fish, land mammal, and upland bird subsistence harvest areas.

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Herring and herring eggs are an important resource in Angoon, both for subsistence and commercial uses. In mid to late winter, herring begin to congregate in saltwater bays in preparation for spawning. During this time, Angoon residents will often head into the bays and fish for herring, usually by jigging. The 1996 ADF&G survey (ADF&G 2009a) showed that Angoon residents harvest approximately 1.4 pounds of herring per capita. Residents will often freeze the herring and use them for salmon or non-salmon fish bait. Within the local study area, there are several locations that Angoon residents identified in interviews as being places where herring harvest occurs.

In early spring, usually in late March and April, herring begin to spawn in the waters around Southeast Alaska. The male fish emit their milt (semen) into the water. The females then deposit their roe in the milt, completing the fertilization process. The developing eggs fasten to kelp, seaweed, rocks, or any object placed in the water.

Angoon residents harvest herring eggs for personal use in two ways: 1) by placing hemlock branches into the intertidal zone and 2) by collecting the eggs that have formed naturally on seaweed or kelp. Hemlock branches or entire trees are cut, attached to a buoy or line from the beach, and lowered into the water. Collectors leave the branches or trees in the water to collect eggs and then recover eggs from the branches. Residents also harvest herring eggs from kelp and seaweed. Most people go by boat to kelp beds and pull up the egg-laden kelp with hooks. A few people dive into kelp or seaweed and pull it up by hand. Still others bring kelp or seaweed into an area prior to the spawn and then collect it as they would hemlock branches. Residents collect the seaweed at low tide where the eggs show up as a large white ball or spot in the water.

Historically, Angoon residents often harvested herring eggs in Favorite Bay. However, in the early 1980s, the local herring population decreased significantly and the community placed a voluntary moratorium on herring egg collection until the population rebounded. As of 2009, the population has not rebounded enough for any herring egg harvest to occur. To offset the loss of herring egg harvest close to the community, Angoon residents rely on the subsistence herring fishery in Sitka for their supply. Some Angoon residents will either take a boat to Sitka in the spring to harvest herring eggs, trade goods and/or services for herring eggs collected by Sitka residents, or receive herring eggs from relatives living in Sitka. In 1996, Angoon residents harvested approximately 2.0 pounds of herring roe per capita, with half of the harvest occurring on kelp and the other half coming from hemlock branches placed in the water (ADF&G 2009a). Because of the voluntary moratorium on herring egg harvest, it is assumed that all herring egg harvest by Angoon residents occurred in Sitka.

Rockfish are another important non-salmon fish found in the Angoon area. Rockfish typically prefer steep rocky habitats, such as those found in the marine waters around Chatham Strait. Because rockfish have a swim bladder to maintain buoyancy in various depths, rapid changes in depth can cause mortality among many rockfish species. Rapid changes in depth can be caused by being caught by sport or commercial anglers. This factor, along with late sexual maturity and slow reproductive rates, can quickly cause rapid population declines with many rockfish species. The 1996 ADF&G study (ADF&G 2009a) found that red rockfish is the most common rockfish species caught by Angoon residents at approximately 1.4 pounds per capita, followed by the black rockfish at less than 1 pound per capita. Interviews with local residents indicate that no rockfish are harvested within the local study area or landscape study area.

Pacific cod (gray cod) and sablefish (black cod) are typically harvested in deeper waters in the Gulf of Alaska. Most Pacific cod and sablefish harvest is from commercial fishing, but occasionally residents will catch Pacific cod and sablefish while targeting other marine fish species. In addition, a few commercial fishermen based in Angoon keep some of their catch for personal consumption. Some Pacific cod are harvested in Chatham Strait and lower Favorite and Mitchell bays, but both species typically are not found in the shallower waters in upper Favorite Bay. Less than 1 pound per capita of both Pacific cod and sablefish are harvested by Angoon residents (ADF&G 2009a).

Dolly Varden are another subsistence resource found in the local study area and landscape study area that are used by Angoon residents. A study completed by ADF&G in 1996 (ADF&G 2009a) found that approximately 1 pound of Dolly Varden was harvested per capita by Angoon residents in that representative year. Most Dolly Varden in the Angoon area are anadromous, meaning they migrate between fresh and salt water, although there may be a few resident Dolly Varden in isolated watersheds. Angoon residents harvest Dolly Varden year-round and often catch Dolly Varden when targeting salmon in both marine and freshwater environments. However, historically, Dolly Varden were primarily harvested in the spring, where they would congregate at the mouths of streams to eat out-migrating pink and chum salmon. The ADF&G Statewide Harvest Survey found that 94 Dolly Varden were harvested in the Angoon area in 2007, although some of that harvest is from nonresidents and non-local residents of other Alaskan communities and the reported harvest represents a harvest area larger than the local study area or landscape study area (ADF&G 2009b). Within the local study area and landscape study area, Dolly Varden are located in marine waters all around Mitchell and Favorite bays. In fresh water, Favorite Creek and many of the freshwater lakes between Favorite and Kanalku bays contain Dolly Varden.

Angoon residents also harvested cutthroat trout in the Angoon area, albeit in very small numbers. The 1996 ADF&G study found less than 1 pound of cutthroat trout was harvested during that representative year (ADF&G 2009a). Like Dolly Varden, cutthroat trout in the area are anadromous, meaning they migrate between fresh and salt water. Angoon residents harvest cutthroat trout year-round and often catch cutthroat trout when targeting salmon in both marine and freshwater environments. The ADF&G Statewide Harvest Survey found that nine cutthroat trout were harvested in the Angoon area in 2007, although some of that harvest is from nonresidents and non-local residents of other Alaskan communities and the reported harvest represents a harvest area larger than the local study area or landscape study area (ADF&G 2009b). Within the local study area and landscape study area, cutthroat trout are located in marine waters all around Mitchell and Favorite bays. In fresh water, Favorite Creek and many of the freshwater lakes between Favorite and Kanalku bays contain cutthroat trout.

3.3.2 TERRESTRIAL MAMMALS

Hunting is an important activity to the residents of Angoon. For many people, hunting is an important source of nutritious food and a highly valued outdoor pursuit. It is also a significant part of the community's social network, as many hunters bond over experiences and share the products of their success. Figure 3 above shows areas commonly used for terrestrial mammal subsistence harvest. The Sitka black-tailed deer represents the vast majority of terrestrial mammal harvest by Angoon residents. Approximately 74% of households used deer for subsistence, and 50% of all households attempted to harvest deer in 1996. Every Angoon resident who went hunting for deer that year also harvested at least one deer. Approximately 51 pounds per capita of deer were harvested by Angoon residents in 1996 (ADF&G 2009a). Table 4 shows the number of hunters, the amount of effort, and the amount of deer harvest in the Angoon area collected by ADF&G surveys from 1997 to 2007.

The ADF&G conducted a study of Angoon residents' deer hunting methods and activities in 1982 (George and Kookesh 1983). The study documented three main methods for hunting deer in the Angoon area. The first method is referred to as the alpine hunt. In that method, Angoon residents go to higher ground where deer often occupy open alpine areas to feed on succulent vegetation before the vegetation dies with the first frost. Usually, these hunts are overnight trips where the hunters take a boat to an area with relatively easy access to higher alpine areas. Because of the travel, this method typically involves camping and often entire families will head up to hunt. The hunters will glass or scope for deer in the open areas and once one is spotted, they stalk within range for an open shot. Within the local study area and landscape study area, the upper portions of Hood Bay Mountain are popular locations for this type of hunting (see Figure 2 for location of Hood Bay Mountain).

The second method is called the muskeg and forest hunt. This hunt usually occurs after the first frost and continues until the end of the hunting season. In this method, hunters will set up in small clearings or muskegs

at the edge of densely forested areas. The hunters will either wait for the deer to enter the clearings or use a deer call to lure the deer into the open areas. The local study area and landscape study area have many locations where residents employ this method of hunting, especially when the weather makes travel to other locations around Chatham Strait difficult or impossible. Most hunters access locations for the muskeg and forest deer hunt by a combination of boat travel and walking.

The third method is the beach hunt. The beach hunt can occur throughout the season, but many Angoon hunters intensify their efforts in November and December, when the deer use the beach fringe to get away from deep and heavy snow. Angoon residents will often travel up and down the coastline in boats looking for deer. When a deer is spotted, the boat is driven to shore and the hunter then stalks the deer to get within range. A similar form of this type of hunting also occurs at muskeg areas along the Angoon road system. Residents who do not have access to boats will often use a motor vehicle and travel the Angoon road system, glassing open areas for deer.

Very few residents hunt for small game, with land (river) otters as the only known harvest of small game documented in 1996. Only 3% of Angoon residents either used or harvested land otters in 1996 (ADF&G 2009a). No per capita pounds of meat were documented from that harvest, meaning that the residents likely sold the fur or used it for ceremonial items. Several residents have indicated in interviews that they have trapped in the past, but because of declining fur prices, they no longer do any trapping.

Table 4. Deer Harvest in the Angoon Area, 1997–2007

Year	Number of Hunters	Total Number of Days Hunted	Total Number of Deer Harvested
1997	54	246	63
1998	10	83	62
1999	66	195	63
2000	19	54	59
2001	23	67	56
2002	31	144	44
2003	16	35	16
2004	23	64	14
2005	36	74	55
2006	20	44	32
2007	19	20	15

3.3.3 BIRDS AND BIRD EGGS

Angoon residents harvest a number of upland birds (see Figure 3) and waterfowl (Figure 5), including grouse and migratory waterfowl. In 1996, approximately 5% of Angoon residents harvested birds (less than 1 pound per

capita), mostly migratory waterfowl (ADF&G 2009a). The most frequently harvested type of birds is migratory waterfowl at less than 1 pound per capita, with Mallards being the most common species harvested. Other migratory waterfowl species harvested by Angoon residents include Vancouver Canada Geese, Buffleheads, Harlequin Ducks, Long-tailed Ducks (Old Squaw), Northern Pintails, Green-winged Teal, and American Widgeon. Migratory waterfowl are typically harvested in the fall and spring, as birds are migrating to and from warmer climates. Under the Migratory Bird Treaty Act, migratory birds must be harvested using shotguns and nontoxic shot. The freshwater, marine, and nearshore tidal environments in the local study area were identified by Angoon residents as common harvesting locations for waterfowl (Figure 5).

The only nonmigratory bird harvested by Angoon residents is Blue Grouse, with less than 1 pound per capita of annual harvest (ADF&G 2009a). As with migratory birds, Blue Grouse (also known as Hooters) are typically harvested in the fall or spring, particularly the spring, when they can be heard "hooting" from the forest. Blue Grouse are harvested in many locations within the local study area.

In the 1996 study, none of the households surveyed had harvested eggs from migratory birds (ADF&G 2009a). Harvest of gull eggs is allowed in some communities in Alaska under federal migratory bird subsistence harvest regulations (50 CFR 92.5). In Southeast Alaska specifically, regulations allow only the harvest of glaucouswinged gull eggs and only by residents of Hoonah, Craig, Hydaburg, and Yakutat. In those communities, gull eggs have been historically harvested by residents. Gull eggs are large, about twice the size of chicken eggs, and residents used them in the same ways as chicken eggs. During interviews, no Angoon residents provided any documentation of egg collection in the local study area.

3.3.4 MARINE MAMMALS

Under the Marine Mammal Protection Act of 1972, only Alaska Natives are permitted to harvest marine mammals. In the 1996 ADF&G community study, approximately 15% of all Angoon households had harvested marine mammals, with 32% of the community using marine mammals and 28% receiving marine mammal products from others in the community (ADF&G 2009a).

All marine mammals harvested in the Angoon area are harbor seals. The average weight of an adult harbor seal is about 180 pounds, and average length is 5 to 6 feet (ADF&G 1994). There is no bag limit, harvest is expected to be limited to what can be reasonably used and not be wasted. Seals are generally hunted from late fall through early spring. During the cold weather season, the seals are fatter, so fewer seals will sink when shot. In addition, many Alaska Natives believe the hide is better quality during this period than in summer. Within the local study area and landscape study area, upper Favorite Bay, and portions of Mitchell, Kanalku, and Pea Hen bays are all favored locations for seal harvest (Figure 4).

3.3.5 Land Vegetation and Marine Vegetation

Plant gathering is a very popular resource use activity in Angoon when measured by the number of households that engage in it. Approximately 62% of Angoon households had gathered berries, greens, roots, wood, or mushrooms in 1996 (ADF&G 2009a). Edible plants are abundant in the Angoon area. The main habitats where residents find edible plants in the region include bogs (muskeg), the upper beach rocks and meadows, old growth forest edges, open areas, sub-alpine areas, and disturbed areas (Figure 4). Typically, Angoon residents do not have to travel far to collect vegetation resources, as many can gather plants along the roadside or in the forests surrounding the community. Substantial travel is only necessary to find resources like cranberries, strawberries, and certain mushrooms, which may be unavailable or scarce near Angoon. When this is the case, residents often gather plants and berries coincidentally to other activities such as boating, beachcombing, fishing, camping, or exploring.

Plant gathering is the easiest of the harvest activities, especially for the majority of gatherers, who only harvest berries. As mentioned above, it can be done close to home, equipment is minimal, and little experience is required. Other types of plant collection, however, often demand substantial knowledge. Making full use of the plants requires a familiarity with edible plant identification, productive locales, harvest times, preparation and preservation methods, and non-food uses (such as medicine or dyes).

In traditional times, Native Tlingits used a wide assortment of plants. Modern residents of Angoon do not use as many plants as historical residents did for subsistence. However, some residents still use an impressive range of plants, including a wide variety of berries, greens, roots, mushrooms, and wood.

Approximately 35% of Angoon households harvest berries during the summer and early fall, with the prime months being July and August (ADF&G 2009a). Residents use berries in a variety of ways. The most common use of berries is to eat them raw. Many people, however, bring back large quantities to freeze, make into pies, sauces, or preserve as jams and jellies.

The berries most commonly picked in the Angoon area are blueberries, huckleberries, cloudberries, nagoonberries, salmonberries, and thimbleberries. Other berries collected in the Angoon area include currants, cranberries, red elderberries, and strawberries. Residents collect blueberries, huckleberries, cloudberries, and salmonberries within the local study area. Blueberries and huckleberries are located in dense, woody thickets in mixed-open forest areas through the region. Cloudberries and nagoonberries are small yellow or red berries that grow in muskeg areas. Salmonberries and thimbleberries are orange and red berries that ripen in late June through July on large shrubs that form dense thickets in open areas such as roadsides, shorelines, and forest clearings.

The Angoon area contains many edible wild greens. Interviews with local residents indicate that around 15 different species of greens can be harvested in the Angoon area. However, the percentage of households harvesting the various greens is substantially less than the number harvesting berries; only 18% of households harvest greens (ADF&G 2009a). The most commonly harvested greens in the local study area are goosetongue, devil's club, beach asparagus, and Labrador tea.

Goosetongue is a plantain that is abundant around Angoon, growing in the cracks of rocks just above the high tide line. It is popular because of its good taste and long edible season. Angoon residents harvest goosetongue from spring until August, although some residents claim that June is the best month for harvest.

Labrador tea is a commonly used "green" in the Angoon area. It grows abundantly in muskegs and wetland alpine meadows that are found through the local study area and landscape study area. Residents can harvest the leaves year round. Once picked, they are dried and then boiled to make a tea.

Devil's club is a member of the ginseng family. It grows abundantly in the moist, well-drained soils of forests around Angoon. The stalks are covered with sharp spines and grow up to 1.5 inches in diameter. Angoon residents collect both stalks and roots, primarily for medicinal use. The most common use is as an all-purpose elixir, usually made by heating the dried roots or bark in water just below the boiling point for several hours. It is also commonly used as a wound sealant and protectant by pulverizing the bark into a poultice and heating it up in a small pot with spruce pitch. The sticky substance is then spread over the wound and left to dry and harden, both sealing and protecting the wound.

Angoon residents also harvest beach asparagus, which grows in thick bunches or mats on tidal flats in the local study area and landscape study area. This delicious vegetable tastes like asparagus, and residents commonly eat it raw as a salad green.

Wood

Approximately 26% of Angoon households had collected wood for use in handicrafts, home heating, or smoking fish or venison (ADF&G 2009a). The use of wood for handicrafts ranged from gathering small pieces of driftwood for use in dried flower arrangements and natural sculptures to special woods cut for crafts and carvings, such as totems. A small number of residents harvest spruce roots to make the traditional, finely woven Tlingit baskets. Many Angoon residents collect alder for smoking meat and fish.

Wood used for handicrafts or smoking meat and fish is often gathered along beaches or along the Angoon road system. Spruce roots are gathered throughout the region. For home heating, most Angoon residents gather logs from locations along the Angoon road system, with a common spot being near the community water supply.

Seaweed

Many Angoon households harvest marine vegetation, especially seaweeds (Figure 4). The most popular species collected by the survey households in the 1996 study were black seaweed (30% of households); sea ribbons (4%); and alaria (1%). The per capita harvest of black seaweed collected was 6.8 quarts; sea ribbons less than 0.1 quart; and alaria was less than 0.1 quart (ADF&G 2009a). All three types are found and harvested in rocky nearshore marine habitats in both the local study area and landscape study area.

Residents harvest black seaweed at two times of the year: spring and winter. Households harvest the spring growth during a two-week period beginning in late April or early May. A second spring growth is ready a month later and residents harvest that growth for a two- or three-week period only. Seaweeds come into season at slightly different times in different locations around Angoon, apparently depending on water temperature. Many residents consider May the best time to gather black seaweed. Winter seaweed, the third growth, is available in February. It is more tedious to harvest because it is shorter and harder to pull off the rocks.

Black seaweed acquires a washed-out look when it is old and no longer growing and edible. Residents often pick black seaweed on a minus tide by pulling it off the rocks. There is access to black seaweed from several locations in Favorite Bay within the local study area. Many Alaska Natives consider seaweed a delicacy or prestige food. Black seaweed is very expensive to buy if a household cannot collect its own supply.

Sea ribbons (or ribbon seaweed or dulse) are another alga harvested by Angoon residents. Sea ribbons are thin, elastic purple or red fronds varying in length from a few inches to one foot. They are typically found attached to rocks. Like black seaweed, sea ribbons are often harvested in the spring, when the growth is fresh.

Alaria is a brown alga also known as wing kelp. It is found in rocky, intertidal zones and is a rich source of protein, iodine, and vitamin A. Alaria can grow to considerable length, but, like other seaweeds, it is mostly harvested when it is younger and less tough. Most alaria is dried and then later reconstituted with fresh water for use in soups or as a salad.

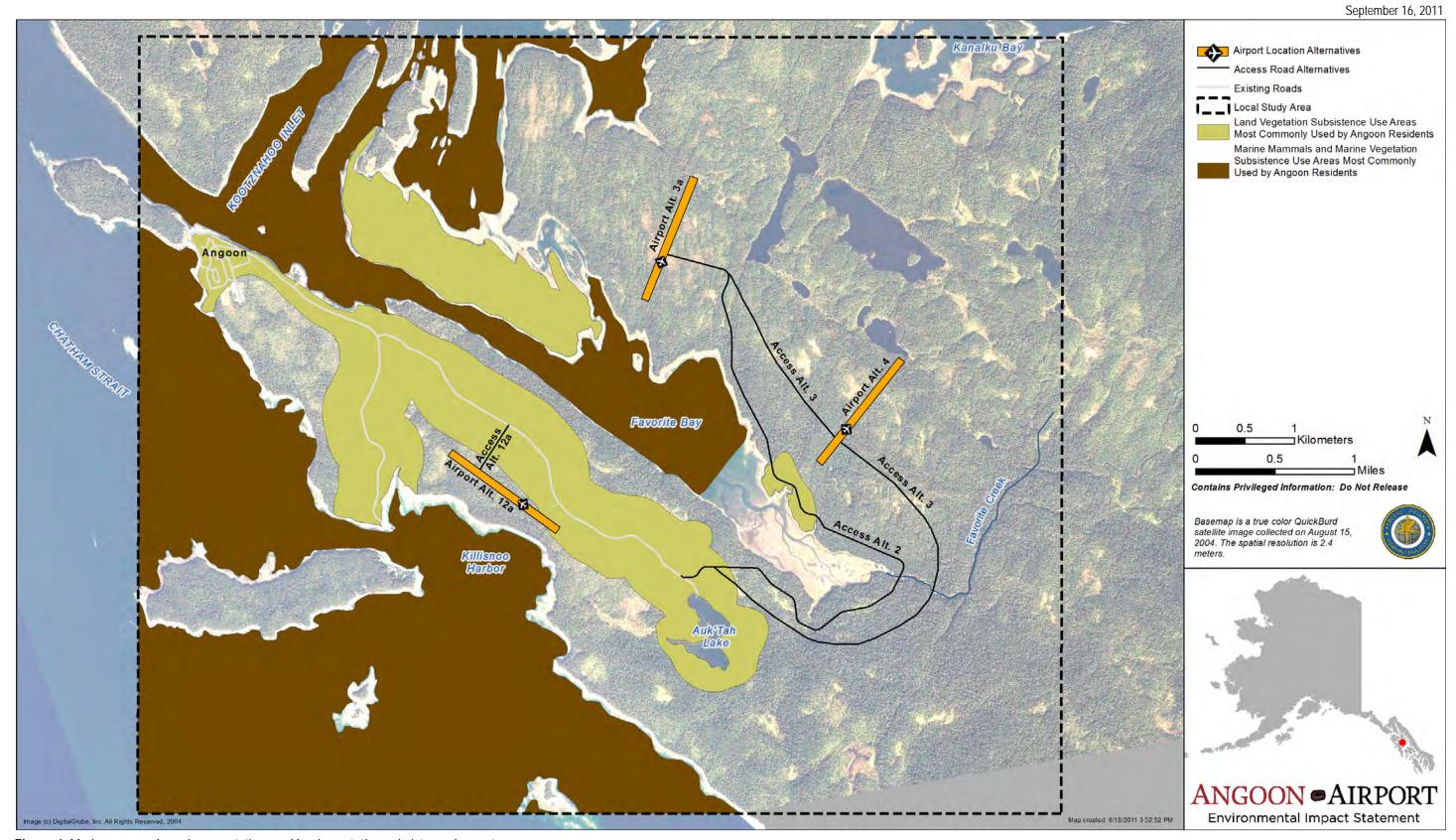


Figure 4. Marine mammal, marine vegetation, and land vegetation subsistence harvest areas.

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3.3.6 Marine Invertebrates

Living in a coastal community, residents of Angoon heavily utilize marine invertebrates. Angoon residents harvest many types of marine invertebrates, including crabs, clams, cockles, abalone, gumboots (chitons), sea cucumbers, sea urchins, scallops, mussels, and octopus. Some of these resources, such as cockles and gumboots, are traditional Alaska Native foods that remain popular among Native people (Gmelch et al. 1985). Others, such as crabs and shrimp, are popular among all residents. Based on the marine invertebrate species targeted for harvest by Angoon residents and the percentage of Angoon households that harvested them in 1996, clams, chitons, cockles, crab, and shrimp are the favored resources for harvest (Table 5).

Table 5. Angoon Marine Invertebrates Resource Harvest by Angoon Households

Resource	%Using	% Attempting to Harvest	% Harvesting	% Receiving	% Giving	Per Capita Harvest (lbs.)
All marine invertebrates	89.20	78.40	78.40	73.00	41.90	30.0
Chitons	58.10	47.30	47.30	39.20	21.60	9.4
Clams	64.90	51.40	51.40	36.50	17.60	10.0
Cockles	68.90	54.10	54.10	45.90	16.20	6.32
Crab	48.60	32.40	31.10	35.10	20.30	2.77
Shrimp	8.10	5.40	5.40	2.70	1.40	1.05
Sea urchins	2.70	2.70	2.70	0.00	0.00	0.01
Octopus	6.80	6.80	6.80	0.00	2.70	0.41
Sea cucumbers	1.40	1.40	1.40	0.00	0.00	0.15
Limpets	1.40	1.40	1.40	0.00	0.00	0.01

Source: (ADF&G 2009a)

Clams are the most commonly harvested intertidal resource and the second most common marine invertebrate in Angoon: 51% of survey households had harvested them in 1996 (ADF&G 2009a). Several species are found in Angoon, but only two species are harvested. These include the butter (or hardshell) clam and steamers (or the Pacific littleneck clam).

Residents can find clams throughout the year, but only collect them during certain months due to the threat of paralytic shellfish poisoning (PSP). PSP happens during the warm summer months and early autumn, when phytoplankton inundates the waters of many coastal areas. Some of the phytoplankton produces neurotoxins that mollusks ingest during feeding and concentrate in their tissues. The principal neurotoxin is saxitoxin, which is a strong natural poison. Of all marine invertebrates, clams and mussels are the most dangerous to consumers.

The butter or hardshell clam, also known as the northern quahog, is the most abundant species in the Angoon region in terms of its both availability and actual harvest levels. Adults average about 4 inches in diameter. Residents can easily find butter clams at low tide in the numerous gravel and rock beaches around Angoon. Many people, especially those without a boat, dig clams close to town. Those with boats travel to locations in Favorite, Mitchell, and Pea Hen bays. Some individuals gather clams along the salt lagoon, directly adjacent to the ferry terminal. Within the local study area, several locations in Favorite Bay and on beaches along the Angoon peninsula are known locations for harvesting butter clams (Figure 5).

The steamer or Pacific littleneck clam is smaller than the butter clam, averaging 2 inches in diameter, but it occupies the same habitat. Residents harvest Pacific littleneck clams in the same locations as butter clams. The per capita harvest of butter and littleneck clams in 1996 was approximately 10 pounds and less than 1 pound respectively (ADF&G 2009a).

Residents also find chitons or gumboots in the Angoon area. Angoon residents harvest two species of chitons; the giant Pacific chiton or gumboot, and the lined chiton. All are edible, and people often use the term *gumboot* to describe both species. Chitons are not susceptible to PSP like clams and mussels. Approximately 9% of Angoon households collect gumboots, according to the 1996 study (ADF&G 2009a). Per capita harvest is over 1 pound. Gumboots occupy boulder-strewn, wave-beaten, or intertidal beaches, not gravel, sand, or mud habitats like most other mollusks. Residents harvest gumboots by using a knife or some other thin, sharp object to pry the chiton from the rocks. Within the local study area, the predominant location for harvest of gumboots is a series of rocky channels between Favorite and Pea Hen bays, where there is a massive tidal exchange of water.

Cockles are hardshelled bivalves that are slightly larger than butter clams. Like clams, cockles are also susceptible to PSP. Therefore, most Angoon residents will wait until fall or spring to harvest them. Cockles are typically found in finer sand or mud beaches than clam species. Most residents either smoke and dry the meat for later use or use them immediately by pounding the flesh to tenderize them and then fry the meat. Within the local study area, much of Favorite Bay is a preferred location for harvest of cockles.

Crab is another important subsistence species in the Angoon area, with approximately 31% of Angoon residents harvesting crabs in 1996 (ADF&G 2009a). Angoon residents harvest crab by primarily using crab pots. Crab pots are typically baited with fish parts, attached to a line and buoy, and set in protected bays and coves. Crabs then enter the pot to get the bait and cannot escape because of the pot's one-way entrance. Once caught, crabs are kept alive until they are ready for consumption. Then the crabs are placed into a pot of boiling water until cooked. Once cooked, the shell is cracked and the white meat inside is consumed.

Dungeness crab accounts for the highest amount of crab harvest by Angoon residents. In 1996, approximately 2.1 pounds per capita of Dungeness crab were harvested by Angoon residents (ADF&G 2009a). The most popular location for harvesting Dungeness crab in the Angoon area is upper Favorite Bay, which is located in the local study area. In the summertime, it is common to see multiple crab and shrimp pot buoys floating in the bay.

Other crab species harvested by Angoon residents include red king crab and tanner crab. In 1996, less than 1 pound per capita of each species was harvested by Angoon residents (ADF&G 2009a). These species are typically harvested in deeper waters than Dungeness crab, although occasionally both king and tanner crabs are caught in the local study area.

Like crab, shrimp are an important subsistence species for Angoon residents with approximately 5% of households harvesting shrimp in 1996 (ADF&G 2009a). Most Angoon residents harvest shrimp using shrimp pots, which work in a similar fashion as crab pots by capturing shrimp as they enter the pot to feed on bait. In the Angoon area, there are several different species of shrimp, but only three species are actively sought after by Angoon residents for subsistence harvest: the Pacific prawn (or spot shrimp), the humpback (or humpy) shrimp, and the coonstripe shrimp. Angoon residents harvested approximately 1 pound per capita of shrimp in 1996. As with Dungeness crab, one of the most important harvest locations for shrimp is upper Favorite Bay in the local study area.

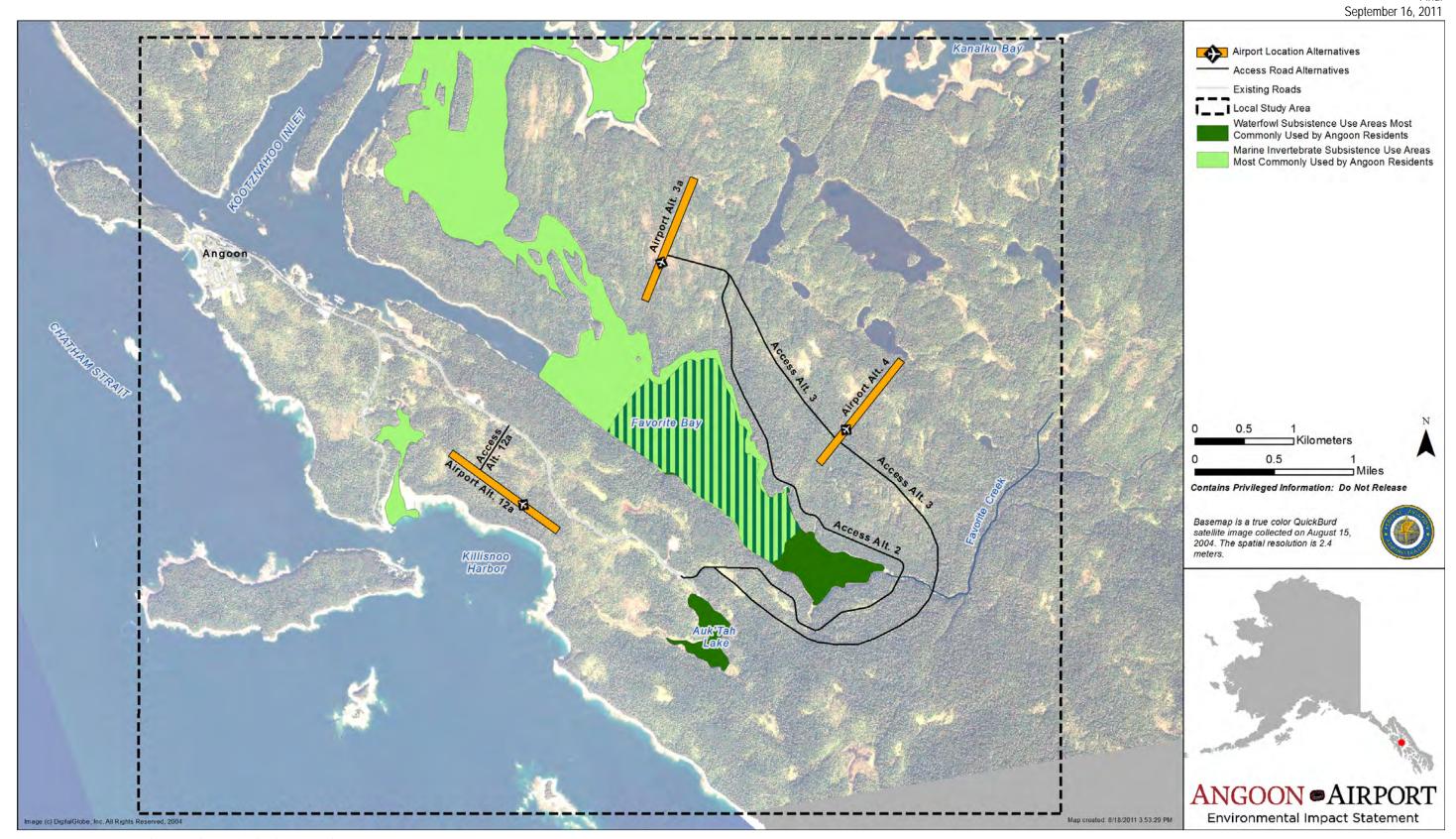


Figure 5. Marine invertebrate and waterfowl subsistence harvest areas

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Approximately 3% of Angoon households harvested sea urchins in the 1996 study (ADF&G 2009a). Several species occur in the local study area, including the purple urchin, red urchin, and green urchin, but only green sea urchin is harvested by Angoon residents. Sea urchins require considerable effort to obtain and process for a small amount of food, and they are highly perishable. Furthermore, the prime season for eating urchins, when the gonads mature, is approximately one month in duration. However, because the resource is abundant in rocky intertidal pools around the local study area and landscape study area, it is commonly used by local residents.

Octopuses are also gathered by Angoon residents. In 1996, approximately 7% of households harvested octopus (ADF&G 2009a). Octopuses are usually harvested either by hook or by placing a stick in front of the octopus to get the animal to grab it. Octopuses are primarily used in several ways. One use is as food. Octopuses are typically fried or boiled. A large octopus may require pounding to tenderize the meat before cooking. The other way octopus is used is as bait, primarily for halibut. Octopuses are highly prized because they are a major food source for halibut and they can stay on the hook without falling off. Angoon residents did not identify any harvesting locations within the local study area, but there are several locations within the landscape study area.

Residents can find several species of sea cucumbers in the Angoon area, but only eat one, the Yein sea cucumber. Like sea urchins, sea cucumbers present challenges for subsistence use as they require considerable effort to obtain and process for a small amount of food, and they are highly perishable. The sea cucumber is an echinoderm that resembles a bumpy cucumber. Those in the Angoon area average about 4 inches in length and residents can collect them in the intertidal zone. Approximately 1% of Angoon households harvested sea cucumbers in 1996 (ADF&G 2009a). Sea cucumbers can be found throughout marine waters in the local study and landscape study areas, but most harvest occurs closer to the community.

While collecting other intertidal marine invertebrates, some Angoon residents will also harvest limpets. Limpets are small, cone-shaped invertebrates that lives in rocky, intertidal terrain and feed on algae that collect on rock surfaces. There are many species of limpets that are found in the Angoon area, all of which are edible. Like gumboots, limpets also are not susceptible to PSP. Within the local study area, Angoon residents harvest limpets in a series of rocky channels between Favorite and Pea Hen bays, where there is a massive tidal exchange of water. The rocky channels between Favorite and Pea Hen bays are also popular locations for Angoon residents to harvest marine invertebrates.

4.0 SUMMARY

As demonstrated in this technical report, Angoon residents use many subsistence resources within the local study area. Fish, Sitka black-tailed deer, marine invertebrates, and plants are the most harvested resources in both the local study area and landscape study area. However, other resources, such as migratory birds and marine mammals, are also harvested by Angoon residents in the local study area and landscape study area. Subsistence is an important part of Angoon's economy and culture.

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Acronyms

ADF&G Alaska Department of Fish and Game
ANCSA Alaska Native Claims Settlement Act

ANILCA Alaska National Interest Conservation Lands Act

DOT&PF Alaska Department of Transportation and Public Facilities

EIS environmental impact statement
FAA Federal Aviation Administration
NEPA National Environmental Policy Act

PSP paralytic shellfish poisoning

SHARC subsistence halibut registration certificate

U.S.C. U.S. Code

USFS U.S. Forest Service

APPENDIX A. ANGOON SUBSISTENCE RESOURCES HARVESTED IN 1996

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 Table A-1. Subsistence Resources Harvested by Angoon Residents in 1996

Resource Category	Common Name	Scientific Name
Fish	Chinook salmon	Oncorhynchus tshawytscha
	Chum salmon	Oncorhynchus keta
	Coho salmon	Oncorhynchus kisutch
	Pink salmon	Oncorhynchus gorbuscha
	Sockeye salmon	Oncorhynchus nerka
	Herring	Clupea spp.
	Pacific cod (gray)	Gadus macrocephalus
	Flounder	Various spp.
	Lingcod	Ophiodon elongatus
	Halibut	Hippoglossus stenolepis
	Black rockfish	Sebastes melanops
	Red snapper (yelloweye rockfish)	Sebastes ruberrimus
	Sablefish (black cod)	Anoplopoma fimbria
	Dolly Varden	Salvelinus malma Walbaum
	Rainbow trout	Oncorhynchus mykiss
	Steelhead	Oncorhynchus mykiss
Terrestrial mammals	Brown bear	Ursus arctos
	Sitka black-tailed deer	Odocoileus hemionus sitkensis
	Land (river) otter	Lutra canadensis
Marine mammals	Harbor seal	Phoca vitulina
Birds and bird eggs	Bufflehead	Bucephala albeola
	Harlequin	Histrionicus histrionicus
	Mallard	Anas platyrhynchos
	Northern Pintail	Anas acuta

Table A-1. Subsistence Resources Harvested by Angoon Residents in 1996

Resource Category	Common Name	Scientific Name
	Long-tailed Duck (Old Squaw)	Clangula hyemalis
	Green-winged Teal	Anas carolinensis
	American Widgeon	Anas americana
	Vancouver Canada Geese	Branta canadensis
	Blue Grouse	Dendragapus obscurus
	Bird eggs	Various spp.
Marine invertebrates	Black (small) chitons	Katharina tunicata
	Gumboot chiton	Cryptochiton stelleri
	Butter clams	Saxidomus giganteus
	Pacific littleneck clams (steamers)	Protothaca staminea
	Basket cockles	Clinocardium nutta
	Heart cockles	Clinocardium nuttallii
	Dungeness crab	Cancer magister
	Red king crab	Paralithodes platypus
	King crab sub-species	Paralithodes camtschaticus
	Tanner crab sub-species	Chionoecetes spp.
	Limpets	Various spp.
	Octopus	Octopus dolfeini
	Sea cucumber	Parastichopus californicus
	Green sea urchin	Strongylocentrotus droebachiensis
	Coonstripe shrimp	Pandalus danae
	Humpback shrimp	Pandalus hypsinotus
	Pacific prawn	Pandalus platyceros

Table A-1. Subsistence Resources Harvested by Angoon Residents in 1996

Resource Category	Common Name	Scientific Name
Vegetation	Plants/greens/mushrooms	Various spp.
	Berries	Various spp.
	Seaweed/kelp	Various spp.
	Wood	Various spp.

Source: (ADF&G 2009a)



APPENDIX P PUBLIC INVOLVEMENT PLAN

Note: The Section 508 amendment of the Rehabilitation Act of 1973 requires that the information in federal documents be accessible to individuals with disabilities. The FAA has made every effort to ensure that the information in the *Draft Angoon Airport Environmental Impact Statement* is accessible. However, this appendix is not fully compliant with Section 508, and readers with disabilities are encouraged to contact Leslie Grey at (907) 271-5453 or Leslie.Grey@faa.gov if they would like access to the information.



PUBLIC INVOLVEMENT PLAN

SUBMITTED TO:

FEDERAL AVIATION ADMINISTRATION ALASKAN REGION, AIRPORTS DIVISION

SUBMITTED BY:

SWCA Environmental Consultants

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APRIL **25**, **2008**

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ANGOON AIRPORT EIS PROJECT PUBLIC INVOLVEMENT PLAN

1.0 Introduction

Client: Federal Aviation Administration (FAA)

Project Sponsor: Alaska Department of Transportation and Public Facilities (ADOT&PF)

Project Type: Environmental Impact Statement (EIS)

Project ID & Title: Angoon Airport EIS Project

An EIS is being prepared to analyze the potential effects of constructing a land-based airport near the City of Angoon located on Admiralty Island in the southeast portion of Alaska. The proposed airport is of considerable interest to citizens (local, regional, statewide, and nationwide); organizations; local, state, and regional government entities; businesses; and other bodies with a stake in the outcome of the EIS process and other decisions related to the proposed airport. These groups, collectively, make up the Angoon Airport EIS Project stakeholders (hereafter referred to simply as stakeholders). Due to the high level of public interest in this project it is important to construct a thorough, well-reasoned, and well-crafted plan to facilitate public involvement throughout the process. This Public Involvement Plan (PIP) outlines a detailed approach designed to:

- reach a diverse group of stakeholders with different communication abilities and interests;
- address key public concerns;
- strengthen relationships with stakeholders;
- provide ongoing project information; and
- minimize potential conflicts surrounding project development and implementation.

The PIP addresses the need to communicate with and gain input from a variety of audiences, each of which may communicate differently. In the spirit of the National Environmental Policy Act (NEPA) the public involvement approach detailed in this PIP uses innovative and creative concepts within the framework of collaboration to meet the needs of the various project stakeholders to have a voice in the process. This PIP would also meet the compliance and regulatory requirements for public involvement set forth by the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508) for implementing NEPA, the Alaska National Interest Lands Conservation Act (ANILCA), and the FAA NEPA Implementing Procedures for Airport Actions (FAA Order 50504b).

2.0 Goals and Objectives

The Contractor, SWCA Environmental Consultants (SWCA), formed a Public Involvement Team (PI Team) to assist the FAA in all aspects of the public involvement process. This team has identified four main goals for successful public outreach and the actions necessary to accomplish

these goals. SWCA sees value in incorporating the following strategies as discussed further in the Public Involvement Approach Section below. The four public involvement goals are:

Goal 1: Ensure that the public is well informed about the process and project.

Actions:

- Inform and educate community citizens with clear, easily understood, factual and timely
 information regarding NEPA, the Angoon Airport project and its impacts, the opportunities
 for public input, and any related regulatory processes;
- Develop an effective process for project updates throughout the EIS process;
- Develop a unified theme (via consistent graphics and other elements) that will be carried throughout the EIS process; and
- Clearly communicate milestones and decision dates to the public and inform the public at each stage.

Goal 2: Facilitate effective communication and cooperation between Lead Agency (FAA) and project Sponsor (ADOT &PF) throughout the life of the project.

Actions:

- Inform and educate Sponsor through regular project status updates;
- Encourage Sponsor participation at public meetings;
- Develop opportunities for Sponsor involvement though invitations to interagency project meetings and review of project materials, as appropriate within the confines of a neutral NEPA process;
- Communicate regularly with the Sponsor including: 1) invitations to meetings, 2) consistent project updates, 3) meaningful and timely responses to comments and questions, and 4) demonstrated consideration of input throughout the entire NEPA process; and
- Provide opportunities to review materials, as appropriate within the confines of a neutral NEPA process.

Goal 3: Convey the importance and value of public, agency, and stakeholder input throughout the NEPA process and ensure stakeholders have opportunities to contribute to identifying issues, alternatives, and potential impacts.

Actions:

- Develop a process that generates interest in and provides equal opportunities for input into the analysis and decision-making process and
- Involve and obtain substantive input from all stakeholder groups via meetings, mailings and other correspondence.

Goal 4: Create a comfortable communication environment where stakeholders can freely discuss issues and ideas.

Actions:

- Appropriately address/interface with all the different stakeholders and interested members
 of the public in a culturally appropriate manner;
- Help give stakeholders project "ownership" by providing a range of opportunities for
 participation throughout the life of the project. This includes obtaining stakeholder "buy in"
 by 1) consistent project updates, 2) meaningful and timely responses to comments and
 questions, 3) consideration of input throughout the entire NEPA process; and 4) modifying
 PI outreach techniques or meeting formats as needed based upon public feedback;
- Provide reasonable opportunity for public review of information and for commenting.

3.0 TARGET AUDIENCES

To accomplish the goals described above, the PI Team will take a proactive approach to involve potentially interested parties directly throughout the Angoon Airport EIS Project. In the spirit of NEPA, the PI Team will use both traditional and non-traditional means to involve all target audiences in the process. The following sections outline the general target audiences that need to be included:

- 1. Local Angoon tribal and non-tribal community members;
- 2. Southeast Alaska regional community (Juneau, Sitka and other communities, groups and governments);
- 3. State of Alaska (individuals, groups, and government throughout the state); and
- 4. Other interested parties throughout the U.S., anticipated to be located largely in the Pacific Northwest and Washington, D.C. (hereafter referred to as Lower 48).

3.1 Angoon

The Angoon community includes both Alaska Natives and non-natives (see Table 1 for a list of key stakeholders for the Angoon community). Communication with Alaska Natives will need to be respectful and adhere to identified cultural practices. Based on a preliminary site visit and conversation with key community members, it is anticipated that a variety of outreach techniques, including one-on-one discussions, door-to-door visits, and meetings at the senior center can be combined with hardcopy newsletters and postings on the community, website-based bulletin board (www.myangoon.org) to ensure that information is effectively disseminated. Use of several techniques will be more effective in developing relationships and obtaining substantive input from this stakeholder group than using just one or two conventional NEPA outreach techniques.

Members of the Angoon EIS project team visited Juneau and Angoon in March 2008 for kickoff meetings with the Elders, mayor, tribal president, and the community. The following suggestions

and notes summarize the information gathered regarding communication with Angoon stakeholders:

- When scheduling a series of meetings, Angoon's meeting should be scheduled last, so
 that they feel that they have had the "final say".
- It is important to spend time in the community: Team members should stay for more than a
 day, visit the key locations and community members, buy something at the trading
 company, and eat at the senior center. Team members should not arrive immediately
 before and leave immediately after meetings.
- Open house meetings may not work well in Angoon. There should be a presentation of some sort. Formal tribal meetings will start and end with a prayer; less formal meetings are more flexible, but having a respected community member such as the mayor open the meeting is recommended.
- Team members should always provide food for meetings. Coffee and pastries or some food item that they cannot purchase in Angoon are recommended.
- Meeting times are approximate; if a meeting is scheduled for 7 PM, it may not start until 8 PM. The person opening the meeting will begin when it is culturally appropriate. If no one from the community is opening the meeting, the audience itself, by unspoken consensus, will make it known when they are ready to begin. The Team members need to be respectful of this community-based process, remain flexible, and wait until that happens before beginning the meeting.
- The rate and flow of communication will be very different for this community.
 Conversations are slower and may touch on a wide variety of topics, not just the issue at hand. Team members need to allow the speaker to express the full range of their thoughts without interruption and wait until they are certain the speaker is finished before acknowledging the comment. Team members may also need to talk more slowly.
- Side conversations during meeting presentations are to be expected.
- The relationship of the EIS process to the Angoon Airport Master Plan (2006) process will need to be explained at each meeting. A flow chart showing the progress of the project would be very helpful in outlining the distinction between the Master Plan and the NEPA processes.
- Although informal "informational" meetings have been identified as a very useful tool for
 establishing relationships, there may be confusion between the informal meetings, during
 which community members have, in fact, expressed their opinions, and the formal scoping
 or DEIS comment periods, during which those comments are collected. Community
 members may think they have already commented on the project and do not need to
 comment again during the formal comment periods. Education on the NEPA process and
 the legal necessity of those steps will be helpful.

- There may be anger from community members about the length of the process, the fact
 that the Proposed Site (selected by the community) may change, or that non-Angoon
 stakeholders will be involved in the process. Team members must be prepared for those
 sentiments, but it is important to note that while community members may express anger
 in their comments; this does not necessarily constitute non-support of the project.
- Community members may feel that stakeholders outside of the Angoon community should not be contacted, nor should meetings be held in cities like Sitka, Juneau, or Anchorage. It will be helpful to provide some education on the legalities of the NEPA process and why the Team would or should include those parties in the process, stressing that NEPA is not a "vote", and thus comments from stakeholders outside of Angoon would not receive more weight than comments from Angoon residents.
- Some community members may feel that previous public involvement processes did not
 make much of an effort in terms of "responding" to comments. Team members should
 verbally acknowledge comments during meetings. If suggestions to improve the process
 are given, the Team should act upon those suggestions whenever reasonable and within
 the confines of a neutral NEPA process.
- Although the Tlingit tribe is matriarchal, it is possible that the team may find that certain members of the community direct questions and comments more to the male Team members, regardless of their position.
- CB radios are used regularly around the community to quickly relay information. This
 medium can be used for announcing upcoming meetings, but should not be the only
 means for advertising meetings.

To facilitate better communication, refine the EIS Team's understanding about the effectiveness of outreach techniques, and to address issues such as potential distrust of non-locals and cultural differences, the PI Team strongly suggests a second pre-scoping visit, held in advance of the actual scoping period, during which the PI Team could introduce themselves to local stakeholders and begin to establish the relationships that would result in more involvement by these stakeholders. This pre-scoping visit would also provide a chance to test the effectiveness of outreach techniques and retool the PIP well before the public scoping meetings if changes are warranted based on information gathered during the visit.

3.2 Southeast Alaska

The general public in Southeast Alaska will be varied and have diverse opinions regarding the proposed project and its impacts. Groups will likely run the gamut from fishing and hunting guides, tourists, and recreationists to conservation groups and Native populations. This area will also include the bulk of interested agency representatives. Agency representatives, involved public individuals, and representatives from environmental groups, are likely going to have knowledge of the NEPA process and be comfortable with the use of websites, e-mail commenting, postcard mailings and other less personal means of communication. Native populations in the region, including Tlingit entities in Juneau and Sitka, may be more responsive to a more personal approach. The PI Team suggests a pre-scoping visit to Sitka and/or Juneau to include meetings

targeted to these Native populations. The PI Team has currently identified the following Southeast Alaska categories of potential stakeholders that should be included as part of the PI process:

- Culturally or regionally associated communities (e.g., Kake)
- Tlingit representatives/Native Alaskan cultural organizations
- Regional Native corporations
- Conservation groups
- Federal agencies
- State agencies
- Subsistence users
- Recreationists
- Hunting and Fishing Guides
- Commercial pilots/airlines

Table 1 includes a list of specific groups or stakeholders from Southeast Alaska.

3.3 Greater Alaska

It is anticipated that conservation organizations, government agencies, commercial guides, recreationists, Native Alaskans and other stakeholders listed in the section above will likely be interested in participating in the project, as well as members of the Greater Alaska area general public. This stakeholder group will likely comprise government and environmental groups familiar with the NEPA process and comfortable with the use of websites, postcard mailings, and other less personal means of communication more typical to NEPA processes in general. There may also be individuals in the Greater Alaska area that are interested in the project for a variety of reasons (access to hunting and fishing grounds, etc.). Additionally, members of Congress and the Executive Branch of the Federal Government representing the State of Alaska will need to be briefed as part of the ANILCA Title XI process. This requirement of ANILCA will likely evoke interest from these entities even before the briefing is presented. Table 1 includes a list of key stakeholders for Greater Alaska.

3.4 Lower 48

The U.S. Fish and Wildlife Service (USFWS) is expected to be a stakeholder on the project and some national organizations such as the Sierra Club, The Nature Conservancy (TNC) and other environmental Non-governmental Organizations (NGOs) may also be interested in providing input on the project, given the location of the proposed airport is in a wilderness area. The FAA will also need to provide updates to their headquarters in Washington, D.C. As with the Greater Alaska area, interested parties in the Lower 48 states are likely to be easily contacted through the website, postcard mailings, the Notice of Intent (NOI), and other commonly used methods of advertising and communication. Table 1 includes a list of key stakeholders for the Lower 48.

Table 1 Key Stakeholders for the Angeon Airport EIS Project

Angoon	SE Alaska	State of AK	Lower 48 ¹		
General population of Angoon, (pop=~500, 86% Tlingit)	Agencies located in SE AK:	FAA Regional Administrator (Anchorage office)	FAA Headquarters (Washington, DC office)		
City of Angoon (Mayor, City Council, City Clerk and other key	ADOT&PF (Juneau office)	USEPA Alaska Operations Office (Anchorage office)	USEPA, Region 10 (Seattle office)		
personnel)	USEPA Alaska Operations Office (Juneau offices)	USFWS, Region 7 (Anchorage office)	USFWS (Washington, DC office)		
Village Council (ACA)	USFWS, Region 7 (Juneau office)	DNR (Anchorage office)	Greenpeace (Washington, DC and/or San Francisco office)		
Village Corporation (Kootznoowoo, Inc.)	NOAA/ NMFS Alaska Regional office (Juneau office)	NOAA/NMFS-Protected Resources Division and Habitat	Sierra Club (Washington, DC and/or San Francisco office)		
Health Clinic/Health care workers	USFS Tongass NF (Sitka and Juneau offices)	Conservation Division (Anchorage office)	TNC (Arlington, VA office)		
Town businesses/major employers: Post Office	USFS Admiralty Island National Monument (Juneau office)	Alaska State Historic Preservation Officer (SHPO) (Anchorage office)	The Wilderness Society (Washington, DC office and/or Durango, CO wilderness support center)		
Angoon Trading Company	ADNR OPMP(Juneau office)	AK National Congressional Delegation (Senators Ted Stevens	Alaska Wilderness League (Washington, DC office)		
Lumber Mills (2)	ADF&G (Subsistence Division; Division of Wildlife	and Lisa Murkowski, Congressman Don Young)	National Audubon Society (NY or Washington, DC office)		
B&B (Favorite Bay Inn)	Conservation/Stan Price State Wildlife Sanctuary-Juneau	The Wilderness Society (Anchorage office)			
Chatham School District	offices)	Alaska Conservation Alliance (Anchorage office)			
Business Center	ACMP (Juneau and Anchorage offices)	Alaska Wilderness League (Anchorage office)			
Fitness Center at High School	Alaska Department of Commerce, Community and Economic Development (Juneau office)				
Angoon Oil and Gas	Native Alaskan interest groups:				
Commercial fishermen (44 individual commercial fishing permits)	Tlingit-Haida Regional House Authority (native housing authority, located in Juneau)				
Commercial outfitters and lodges and tourists (e.g., Whaler's Cove)	Southeast Alaska Regional Health Consortium (regional native health corporation, located in Juneau)				
Residents or others commuting for seasonal work Angoon Fish and Game Advisory Council (citizen advisory	Central Council Regional Tlingit-Haida (regional native non-profit, located in Juneau)				
council)	Alaska Native Brotherhood/Alaska Native Sisterhood				
	Sealaska (Regional Native Corporation located in Juneau)				
	Community organizations:				
	Southeast Conference (regional development, Juneau office)				
	Southeast Regional Advisory Council (subsistence citizen advisory council)				
	Other citizen groups and community groups on the ADOT&PF, Tongass NF, and Admiralty Island National Monument mailing lists				
	State legislature representatives for the region (Senator Al Kookesh and Representative Bill Thomas)				
	Commercial and Governmental Transportation Providers:				
	AK Seaplane Services (only scheduled carrier, Summer 4 trips/day; winter 2 trips/day)				
	Alaska Marine Highway system (a state run service, 1 trip/wk or more in winter; more in summer)				
	Charter air services, such as Harris Aircraft Service, Ward Air or other carrier services				

¹ It is anticipated that the national level of some organizations will choose to be updated through their local or regional chapter.

Table 1. Key Stakeholders for the Angoon Airport EIS Project, continued

Angoon	1	SE Alaska	State of AK	Lower 48 ²
	Bu	siness and people dependent upon transportation:		
		Suppliers that transport goods or services to Angoon (e.g., mail, food, or other products)		
		Health care facilities in other cities (e.g., Mt. Edgecombe Hospital in Sitka) to which Angoon might transport patients		
	En	vironmental NGOs:		
		Friends of Admiralty Island (Juneau office)		
		Sierra Club Juneau group of the Alaska Chapter		
		TNC (Juneau office)		
		SEACC (Coalition of 16 volunteer citizen organizations based in 13 SE AK communities; Juneau office)		
		Tongass Futures Roundtable (collaborative stakeholder group, in Juneau)		
		Territorial Sportsmen (Juneau office)		
		SEAL Trust, (Juneau office)		
		Juneau Audubon (Juneau office)		
		Sitka Conservation Society (Sitka office)		
		Alaska Conservation Alliance (Juneau office)		
	Gre	eens Creek Mine		

² It is anticipated that the national level of some organizations will choose to be updated through their local or regional chapter.

4.0 Public Involvement Approach

To fulfill the participation needs of the community and to achieve the identified Angoon Airport EIS Project PI goals, the PI Team will tailor its PI approach to include opportunities for project education, collaboration, and community outreach. The following sections outline the PI Team's proposed approach for public involvement with cooperating agencies and the variety of stakeholder audiences we expect will be interested in the project.

4.1 Outreach Techniques

The PI Team will advertise the Angoon Airport EIS project through both traditional and non-traditional means to ensure high publicity and community involvement. As outlined above, each of the four categories of stakeholder audiences (see Table 1) may communicate differently and require different approaches to solicit useful public input throughout preparation of the Angoon Airport EIS. The following table outlines a variety of possible outreach methods, the expected audience for each type of technique, and the anticipated effectiveness of each method.

Table 2. Potential Outreach Techniques by Target Group and Effectiveness¹

	Angoon	SE Region	State of AK	Lower 48
Display Advertisements in news media (Juneau, Sitka newspapers, radio, TV)	2	1	1	1
Updates at city and tribal council meetings	1	NA	NA	NA
Door-to-door	1	NA	NA	NA
Extend formal invitations to key stakeholders to attend (or even participate in) scoping meetings	1	1	1	1
Email to stakeholders, based on list created from client, research, interviews, etc	2	1	1	1
Federal Register Notice	2	1	1	1
Flyers posted in key locations as identified by key community individuals	1	2	NA	NA
Individual meetings with specific groups	1	1	NA	NA
Informal meeting/discussions such as lunches at senior center	1	NA	NA	NA
Information Booths	1	NA	NA	NA
Inserts in utility bills and/or other standard mailings	1	NA	NA	NA
Meeting announcement on CB	1	NA	NA	NA
Mail or hand deliver comment cards	2	2	2	2
Mailed postcards	2	1	1	1
Newsletters	2	1	1	1
Open house (formal scoping meeting)	2	1	1	1
Project presentation/update/Q&A, and comment meeting	1	2	NA	NA

Table 2. Potential Outreach Techniques by Target Group and Effectiveness¹

	Angoon	SE Region	State of AK	Lower 48
Phone calls	2	1	1	1
Media notices to newspapers	2	1	1	1
Media notices to radio and TV stations	2	1	1	1
Put project information and/or weblink on stakeholder websites, newsletters or other forms of publicity (cooperating agencies in particular) for dissemination to other offices or constituents	2	1	1	1
Postings on myangoon.org website	1	2	2	2
Surveys	1	NA	NA	NA
Project webpage to announce project, give key information, provide updates and contact information. During comment period, stakeholders could comment on the project through the web page. Automatic email notifications about changes or additions to website will be issued.	2	1	1	2
Briefings to legislators, national delegates, etc.	2	2	1	1

¹ 1=most effective; 2=secondary outreach technique, NA=will not be used with that audience

4.2 Pre-Scoping Meeting(s) in Angoon and SE Alaska

There are currently a number of unknowns about how best to communicate effectively with stakeholders in the City of Angoon. As discussed in Section 3.1, the PI Team proposes an additional visit to SE Alaska (Juneau/Sitka) and Angoon well before the scoping meetings, spending one to three days at each location. This time would be spent meeting representatives of stakeholder groups, gathering information on public sentiment, determining best formats and venues for meetings, and assessing the most effective ways to disseminate project information. The Team could also schedule an informal meeting in the City of Angoon to introduce the rest of the team members and as a means to reevaluate the effectiveness of an open house meeting format in this traditional Native Alaskan community. Other informal social events such as a "fish-fry" might also be effective in assessing community interest and the most appropriate communication techniques.

The additional pre-scoping visit would:

- <u>Identify potential disagreements in the community</u>, or cultural differences not previously identified that need to be addressed to maximize communication;
- Provide an opportunity to evaluate the effectiveness of planned outreach techniques. The team received some additional information during the March visit that has resulted in some changes to the planned outreach and communication protocols. A second visit would allow the team another opportunity to expand upon that information--learn more about where community members primarily get their information and what format is most effective (e.g.,

TV, radio, newspaper, phone calls)---and develop more effective project advertising and update procedures in advance of scoping meetings.

- Provide an opportunity to continue to build relationships and trust levels well before the scoping meetings. A second visit allows the community to comment directly to team members on the project and the public outreach to date, and allows the Team to demonstrate its responsiveness to community needs by altering outreach techniques or providing additional project information, helping to convey the importance and value of community input to the process.
- <u>Gauge the effectiveness of the proposed scoping meeting format</u> (currently mixed open house/presentation) to allow for redesign of the PIP well before the public scoping meetings if changes are warranted based on information gathered during the visit.
- Present another project update opportunity. An additional pre-scoping visit will allow the Team to demonstrate progress on the project; expand upon the Team's understanding of residents' perceptions of the project and correct any misperceptions; educate community members on the NEPA process and in particular, the role of the scoping meetings; and provide updates on activities to date.

4.3 Scoping Meetings

The PI Team proposes three formal scoping meetings: one in Angoon, one in either Sitka or Juneau, and one in Anchorage.

The general design of scoping meetings would be a presentation/open house format where community members would: 1) be given information packets; 2) hear a brief presentation; 3) view information stations that provide project information on project purpose and need, alternatives development and the resources that may be discussed in the EIS; and 4) provide scoping comments. The potential meeting format would be as follows:

- 15-30 minutes Welcome, Introductions, distribute information packets
- 30 minutes Brief Project Presentation / Question and Answer session
- 75-90 minutes Open House with resource and comment stations (refreshments provided)

The format would use information packets and information stations to educate participants about the project, NEPA regulatory process, and resource issues. The presentation and the information stations would highlight opportunities and avenues for public input such as commenting at the scoping meetings, sending in written comments, or commenting on the project web page. Resource specialists would be available to answer questions one-on-one during the open house portion of the meeting. The PI Team would help guide attendees through the displays, direct them to appropriate resource specialists, and solicit comments.

It is important to stress that the PI Team sees this format as being most effective for the Anchorage and Juneau/Sitka meetings. The PI Team feels that in Angoon non-traditional outreach techniques such as information booths placed in key locations such as the Angoon Trading Company, Community Center/Senior Center, or door-to-door visits may result in more useful feedback than

an open house. Based on the results of the pre-scoping visit, the PI Team may employ some of these techniques in conjunction with the scheduled scoping meeting.

4.4 Project Updates

To keep stakeholders involved and interested in the project, a project mailing list will be developed from information provided by the client, as well as through the pre-scoping and scoping meetings. As the PI Team identifies other interested parties throughout the NEPA process, we will add them to the mailing list. The PI Team will develop informational material and progress notifications to be distributed (throughout the project at key milestones and in advance of important meeting dates) to participants and stakeholders through a combination of e-mail, community e-bulletin board postings, newsletters, media releases, utility bill or other regular mailing inserts, or postcards. Interested parties will also receive automatic e-mail notifications as information is posted to the project website. Interested parties preferring hard-copy correspondence will be mailed newsletter updates and informational postcards regarding project status and milestones.

Specific project update protocols have been identified as follows for different stakeholder groups:

Sponsor (ADOT&PF)

Keeping the Sponsor informed of project progress and decisions, and involving them in appropriate project processes will help the Lead Agency in developing project purpose and need and formulating an effective range of alternatives to meet that purpose and need. Additionally, it will prevent any potential miscommunications that could significantly extend the EIS schedule.

To ensure the Sponsor is kept informed of activities occurring under the FAA's direction, the FAA and the EIS Contractor Team will invite the ADOT&PF Angoon Airport EIS Project Manager to participate in monthly teleconferences. These teleconferences will be held the second Wednesday of every month, at approximately 8:30 AM (Alaska). The EIS Contractor Team will provide an FAA-approved agenda and any other required materials for the call to the Sponsor the Monday before each call. Additionally, if there are any changes in the call schedule, that information will also be provided to the Sponsor by the Monday before the call. In addition to the teleconferences, the ADOT&PF Angoon Airport EIS Project Manager will receive an FAA-approved e-mailed progress report from the EIS Contractor Team on the last Wednesday of each month.

Cooperating Agencies, Contributing Agencies, and Stakeholders

Numerous government agencies and non-governmental organizations (NGOs) will be involved in the Angoon Airport EIS process as cooperating agencies, contributing agencies, or stakeholders. The involvement of these agencies and groups throughout the NEPA process is important for identifying key resource concerns, ensuring compliance with regulatory requirements, and providing opportunities for well-informed input at specific points in the process. Communication protocols for cooperating agencies may be mandated by Memoranda of Understanding (MOU) between the FAA and those agencies. However, for those groups who do not enter into MOUs with the FAA, the following communication protocol will be followed throughout the project.

The FAA and the EIS Contractor Team will hold periodic meetings and/or teleconferences with agencies and NGOs at pertinent project milestones. These milestones will typically be associated with the issuance of draft deliverables, development of relevant portions of the EIS, or periods when substantive information is available. Accompanying e-mailed updates and agendas will precede these meetings by two to three days to allow agencies and groups to prepare for meetings/teleconferences. The frequency of e-mail updates may increase to bi-monthly or monthly for key cooperating agencies during periods of increased activity such as scoping, field work, or impact analysis. Email updates will describe progress made since the previous update, descriptions of important decisions or findings, updates to the project schedule, next steps, and notification of upcoming meetings or other activities requiring agency involvement.

City of Angoon, Angoon Community Association, and Citizens of Angoon

The City of Angoon, the Angoon Community Association (ACA; Tribal Government), and the citizens of Angoon are key stakeholders in the NEPA process for the Angoon Airport EIS. These groups represent the members of the public that would be most affected by the decision to build or not to build an airport in or near Angoon. The groups in Angoon have witnessed many years of study related to a potential land-based airport for their community. Because of the long-term nature of the process, they need to be kept informed of the continued project progress, as well as the opportunities for them to provide input regarding project needs, alternatives, and impacts. The EIS Contractor Team will submit monthly project updates to the "myangoon.org" website, as well as issuing hard copy newsletters for posting at the city offices, ACA offices, Angoon Business Center, and individuals (e.g., Maxine Thompson) who have volunteered to distribute these newsletters to the community. The website postings and newsletters will provide project updates, schedules, next steps, and educational information on the NEPA and airport planning processes.

Legislators

State legislators representing Southeast Alaska have expressed considerable interest the Angoon Airport EIS process. These legislators represent the interested public and are an excellent avenue for distributing information to the public and coordinating with key stakeholders or agencies. Keeping legislators wellinformed allows them to respond to constituent concerns with accurate and up-to-date information and ensures that their opinions regarding project benefits and impacts are based on accurate and independent analysis.

The FAA's EIS Contractor Team will keep interested state legislators informed of project status through written email updates at key milestones throughout the process. These updates, which will be sent to legislative staffers rather than the legislators themselves, will include information on activities since the last update, upcoming activities, schedules, comment periods, and other opportunities for public input.

4.5 Post-Scoping Meetings

The PI Team is prepared for the possibility that the FAA may request additional public meetings after the scoping period, but prior to the DEIS public meeting phase of the project. Examples of this

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might be accommodating requests made during scoping for additional meetings in another city or with key stakeholder groups, requests from key stakeholders for a forum in which they could provide information to the Angoon Airport EIS project team, update meetings to explain any unanticipated changes in the project, or informal meetings held periodically with stakeholders as part of the ongoing and open communication plan.

The PI Team will work with the client to develop a suitable meeting format based upon meeting attendees and goals, and would create any necessary graphics, advertisements, or other meeting materials.

4.6 Public Meetings on the Draft EIS (DEIS)

Subsequent to release of the DEIS, the PI Team will plan four public meetings to answer questions and gather public input on the DEIS. These meetings would be held in Angoon, Juneau, Sitka, and Washington D.C. (as required by the Title XI ANILCA process) and would likely use the same presentation/open-house format described above. However, the EIS Team may adjust this format based on feedback obtained during the scoping process and post-scoping meetings. For example, if there is substantial controversy, a more structured format, such as a formal public hearing, would be more appropriate. Regardless of the general format of the meetings, they would be designed and scheduled to meet the public involvement requirements of both the project's parallel NEPA and ANILCA processes.

4.7 Public Meetings on the Final EIS (FEIS)

If deemed necessary by the FAA, the PI Team will plan three formal hearings after publication of the FEIS. These hearings would be held in Angoon, Juneau or Sitka, and Anchorage and would allow interested parties to provide final comments on the document.

4.8 Project Website

The PI Team will create an Angoon Airport EIS project website that will provide information to stakeholders about the Angoon Airport EIS planning effort. The design of the website would be linked with the design of all other public involvement materials, so that one unified, easily recognizable and positive visual theme is carried through all phases of the project. The website would be designed to provide for easy navigation and document downloading, and would be accessed through an easily remembered domain name such as www.angoon-eis.com.

The website will be updated regularly to provide the most current information regarding the project alternatives, the NEPA process and timeline, as well as upcoming opportunities for public input. The website will also host a Frequently Asked Questions (FAQs) section, designed to inform stakeholders on topics anticipated to be of general interest, and would provide stakeholders with access to technical reports and published EIS documents as they become available. Visitors to the website will be given the opportunity to subscribe to a project list-serve that would provide project

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status updates and announcements of upcoming events. Visitors will also be able to submit questions through the website. During scoping and comment periods, the website will also provide an opportunity for stakeholders to submit comments, and would be linked with the comment database to assist in comment analysis.

The website will also provide stakeholders with an opportunity for submitting optional and confidential information designed to help track stakeholder participation, geographic representation, and trends. This information would provide a feedback loop to evaluate the success of PI techniques employed.

The website features outlined above are based upon the reference website provided by the client (http://www.vhb.com/pvd/eis/contact.aspx). The PI Team will research other websites for additional features that could be added to facilitate more effective public outreach for the project.

4.9 Follow-Up Surveys

It is often productive to conduct an evaluation of public involvement activities following the completion of key phases of the project and again at project completion. Evaluation results would highlight how future projects might be better approached, and would also act to strengthen relations among organizations, agencies and community members. The PI Team suggests the following steps subsequent to key public involvement activities (i.e., scoping, DEIS meetings, etc.).

- Interview key stakeholders (both internal and external) regarding project details, and public involvement activities. Request suggestions for improved community involvement.
- Conduct follow-up surveys (in person)

This information can be used to refine the public involvement efforts of the Angoon Airport EIS project, as well as subsequent FAA or ADOT&PF projects in the area. Depending upon the controversy of the project, role of the public involvement process, or need for future guidance, a results report could further FAA's understanding of effective public involvement strategies for future projects in the area.

4.10 Other Strategies to Consider

If FAA determines necessary through the scoping process or such conditions arise where it would facilitate the NEPA process, key stakeholder representatives could be invited to participate in an Angoon Airport EIS Community Forum or Technical Advisory Committee (TAC). The purpose of the forum would be to involve key stakeholders at key points throughout the NEPA process. Forum members would act as a sounding board to give suggestions and help brainstorm alternatives that address greater community concerns and could also provide input on resource impacts (providing quantitative data, qualitative descriptions of possible impacts, etc.). Their role would be to provide focused input and to serve as liaisons to their respective stakeholder groups. As an advisory group, they would not have decision-making authority. All roles and responsibilities of this group would be documented in a Memorandum of Understanding (MOU) between the group and the FAA.

5.0 Media Relations

Involvement of the media during the NEPA process contributes to positive community messages. SWCA will assist the FAA as needed in contacting and providing information to community reporters, popular radio stations and community calendar advisories. SWCA recommends that media notices be distributed at key points during project initiation and throughout the duration of the project. Media contact would focus on outlets in the Angoon/Juneau/Sitka/Anchorage area, unless information gathered indicates that key stakeholder groups are best reached by a media outlet outside the area. A summary of media strategies includes:

- Publishing newspaper notices or display ads;
- Contacting and provide media notices to reporters and radio stations covering the Angoon area at key points during the process;
- Contacting community calendar advisories and provide information packets regarding project overview and schedule;
- Inviting media representatives to public scoping meetings; and
- FAA/ADOT&PF representatives providing structured interviews at public meetings.

The following table lists potential media contacts located in the Juneau/Sitka/Anchorage area. The PI team will augment this table as additional useful media outlets are identified.

Table 3. Potential Media Contacts

Media Outlet	Media Type
Newspapers	
Juneau Empire	Juneau, AK daily newspaper
http://www.juneauempire.com	
Daily Sitka Sentinel	Sitka, AK daily newspaper
http://www.sitkasentinel.net	
Capital City Weekly	Juneau, AK weekly paper
http://www.capitalcityweekly.com	
Anchorage Daily News	Anchorage, AK daily newspaper
http://www.adn.com	
Radio Stations	
KCAW (104.7 FM / 90.1 FM; 105.5 in Angoon)	Sitka, AK locally owned and operated public radio station. Can be picked up in Angoon.
http://kcaw.org/	
KIFW (1230 AM)	Sitka, AK. Not a public radio station, but airs a popular
http://www.kifw.com	"Problem Corner" show where listeners call concerning local issues. Can be picked up in Angoon.
KTOO (104.3 FM)	Juneau, AK. NPR member radio station, affiliated with the
http://vwww.ktoo.com	Coast Alaska network.
Alaska Public Radio Network http://aprn.org/	Consortium of public radio stations to which KSKA, KNBA, KTOO, KCAW belong. The website has a number

Table 3. Potential Media Contacts

Media Outlet	Media Type
	of news and community calendar sections.
KNBA (90.3 FM)	Anchorage, AK public radio station; community news as
http://www.knba.org/	well as a Native American radio show.
KSKA (91.1 FM)	Anchorage, AK public radio station with community forum
http://www.kska.org/	and events calendar for KSKA as well as KAKM (see TV section below) and APRN (see above) websites.
KINY (800 AM; 103.9 FM in Angoon)	Juneau, AK. Not a public radio station, but airs local "news of the north". Can be picked up in Angoon
KJNO (630 AM)	Juneau, AK. Talk radio station with local news updates. Can be picked up in Angoon.
Television Stations	
KTOO-TV (Alaska One):	Juneau, AK public television station with website.
	(TV channel varies with location: Downtown Juneau - Channel 3; Lemon/Switzer Creek - Channel 10; Mendenhall Valley - Channel 6; Angoon - Channel 9; Sitka - Channel 10; GCI Cable in Juneau - Channel 10)
KSKA/KAKM Channel 7	Anchorage, AK public television station with website.
http://www.kakm.org/	
KTNL-TV, channel 13	Sitka, AK CBS affiliate, seen in Juneau on KTNL-LP
http://www.ktnl.tov	channel 24. Website has community calendar.

6.0 Ensuring Success

Contingency planning is a necessary part of any PIP to better prepare for unforeseen circumstances. There are a variety of issues that can affect the outcome of public involvement efforts, including previous PI history, unexpected scheduling issues, and information gaps that were not addressed in advance. The following sections outline some possible issues associated with the Angoon Airport EIS project and ways in which the PI Team can address those potential issues in a proactive manner.

6.1 Project History and Previous Public Involvement Approaches

This EIS process is just beginning; however, public involvement has been conducted in multiple previous studies for airport siting near Angoon (see Angoon Airport Master Plan [2006]; 14 possible airport locations have been identified dating back to 1982). Information gathered from previous approaches can be valuable in learning which approaches worked best in certain situations. For example, it is helpful to understand ADOT&PF's long-term relationship with the citizens of Angoon vis-à-vis the proposed airport, as well as the successes and failures of previous PI approaches.

The past public outreach efforts described in the Master Plan include:

- 1. Distribution of a project newsletter in November 2004 to inform residents and those on project mailing list about the results of the Reconnaissance Study (2004) and about brushing and surveying of two possible runaway centerlines;
- Advertisement and hosting of a Public Information Meeting in Angoon in July 2005 to introduce the Airport Master Plan project, describe ongoing environmental field studies, and answer questions about the project. Display ads for the meeting were posted in the Capital City Weekly and Juneau Empire, flyers were posted in Angoon. Postcards were sent to agencies and the project mailing list;
- 3. Advertisement and hosting of a Public Meeting in Angoon in June 2006 coincident with release of the public review draft Angoon Airport Master Plan. Purpose of the meeting was to present the plan and answer questions to assist individuals who wished to submit comments on the draft. Display ads for the meeting were posted in the Capital City Weekly and Juneau Empire, flyers were posted in Angoon. Post cards were sent to agencies and the project mailing list; and
- 4. Issuance of the Angoon Airport Master Plan, and Background Report, in August 2006.

In addition to the actions listed above, the following information was provided by Verne Skagerberg (ADOT&PF) and Linda Snow (Southeast Strategies) regarding successful public involvement strategies in Angoon. Based on previous experience, there are several other steps in the public involvement process deemed crucial to the success of public outreach efforts. These include:

- Introductions and visits to tribal elders, tribal members, and other key individuals and organizations by the PI Team, in advance of the formal public meeting(s);
- Eating meals with locals (tribal elders) at the Senior Center; and
- Establishing a presence in the area early on in the process to build relationships.

The PI Team has incorporated these recommendations and previous successful approaches into our public involvement outreach efforts.

6.2 Funding, Planning and Legal Background, and Changes that Have Affected the Process to Date

The PI Team will consider other past, present, and planned future projects in the area during implementation of the PIP. The Angoon Airport Master Plan (2006) provides valuable information on public input on these previous planning efforts. Additionally, the area has experienced a number of capital improvement projects, as well as federal actions involving EISs. These include the Angoon Hydroelectric EIS; Green's Creek Silver Mine on the north side of the island; Kootznoowoo Wilderness designation; National Monument designation; upgrading the harbor; extension of water lines to the harbor; new infrastructure and affordable housing; and other proposals for new business investment. Some of these projects have been completed, but their public involvement experience will be useful in refining our public involvement approaches. The PI Team will determine if ongoing projects have public involvement processes and will plan our public involvement so it does not conflict with them.

6.3 Public Perception and Expectations of the Project and the Agency

The perception of the project and agency may vary by stakeholder group. Public involvement conducted for the Reconnaissance Study (2004) and Angoon Airport Master Plan (2006) indicates general support for the project locally. Angoon municipal election voters passed a measure in 1998 supporting development of a local land-based airport, resulting in ADOT&PF initiating the Reconnaissance Study. The City of Angoon also passed resolution 04-08 adopting the Angoon Airport Reconnaissance Study and encouraging ADOT&PF to proceed with development of an Angoon Airport Master Plan for the proposed site. Currently, it appears that most community members generally see some benefit to them personally. However, there may be some mixed feelings about the project among members of the local community since it would also open up the local community to outsiders. Prior to the 1998 election, the Angoon community turned down a proposal for an airport because it would increase access to fish and game by non locals. Some community members may still feel this way. Local and regional business interests are likely to be in support of the project since it would increase business and make it easier to obtain supplies. It is anticipated that some local, regional, and national environmental groups may have opposition to the Master Plan proposed airport site because of wilderness or wildlife issues. The EIS Team met with representatives of two environmental groups, Southeast Alaska Conservation Council (SEACC) and The Nature Conservancy (TNC), during their preliminary pre-scoping visit in March 2008. While both of those groups indicated they would prefer a site location away from wilderness lands, they also indicated they understood the need for the project and hoped that all groups could work cooperatively to meet those needs and protect wilderness values to the extent possible.

SWCA will continue to proactively identify parties interested in stalling or stopping the project and bring them into the process. One option for engaging these parties would be the use of a Community Forum or Technical Advisory Committee as appropriate to engage important stakeholders, as discussed in Section 4.8.

Stakeholder expectations may include the belief that public input does not matter. As noted in Section 3.1, some Angoon community members may feel that their comments have not been important to past processes. The Contractor understands the value in empowering the public by demonstrating that their input is a valued part of the process. The PI Team will incorporate previous successful approaches and create an environment that provides opportunities for input and equal access for stakeholders in decision-making through outreach techniques outlined in Table 2.

6.4 Potential Issues/Challenges and Proposed Solution/Contingency Plans

The following table outlines other potential issues pertaining to the Angoon Airport EIS project and provides proactive solutions to ensure the success of the PI effort.

Table 4. Potential Issue/Challenge and Proposed Solution/Contingency Plan

Potential Issue/Challenge	Proposed Solution/Contingency Plan
The right people are not contacted.	Develop list with help of locals, client, etc. and update list as needed.
Decisions were made prior to public involvement.	Early and ongoing public involvement would help avoid this scenario. However, if decisions were made by the agency, PI Team would clearly convey to stakeholders the rationale behind those decisions.
Changes in public values or public expectations are not considered.	Visible presence in the community, variety of outreach techniques, and creation of comfortable environment would allow the public to freely communicate with the PI Team regarding any changes in their values or expectations.
Trying to please everyone.	Open and honest communication about the project and decision-making process.
Starting public involvement too late or not having sufficient time/resources.	Addressed in schedule section.
Meeting communications are not effective: 1) Meeting format inappropriate for audience; 2) Responses too technical for audience; 3) Responses caught up in ego or emotion; 4) Answering questions where the answer is not yet known; 5) Not being prepared for meetings.	Pre-scoping visits will help inform the team regarding the best meeting format and level of technical detail needed.
	Advance preparation for meetings and media. Anticipate questions and prepare Q&A materials in advance; rehearse if necessary. Be prepared to defer questions if necessary.
	Identify which resource specialists will address which topics.
	Consider use of Community Forum or Technical Advisory Committee in addition to informal Open House as appropriate.
Time of year may affect PI opportunities (winter travel difficult, hunting/fishing/subsistence harvesting seasons may affect who can participate, etc).	Research schedule appropriately. Provide opportunity for long-distance involvement through a variety of outreach techniques as discussed in Table 2.
Seasonal residents may not be able to participate easily.	
Cultural issues may prevent people from giving input.	Pre-scoping visits will help inform the team regarding appropriate meeting format to accommodate the social environment of Angoon; PI Team will coordinate with Sheri Ellis regarding all involvement activities with Native Alaskans; PI Team will change format as needed based upon any new information received, incorporate informal meeting strategies as outlined in Table 2.
Language barriers may prevent people from giving input.	Provide translator if necessary.
Information seen as a commodity; stakeholders unwilling to share unless they receive something in return.	Pre-scoping visits will help inform the team regarding appropriate meeting format to accommodate the social environment of Angoon.
	Team will structure meeting formats so that stakeholders feel that they have received something of value in return for their participation. (e.g., food, beverages, raffle prize, or other items as appropriate).

Table 4. Potential Issue/Challenge and Proposed Solution/Contingency Plan

Potential Issue/Challenge	Proposed Solution/Contingency Plan
The true issue, problem, purpose or need is not clearly identified (or incorrectly identified – trying to solve the wrong problem).	Clearly convey to the client and stakeholders what input the team would like regarding the process, the proposed project, alternatives, impacts, and other issues that may be important to them. Project purpose and need and constraints will be clearly communicated to public, as will rationale for any alternative or analysis decisions.
	Summarize what the team has learned from previous PI efforts.

6.5 Information Gaps

The following section outlines current known gaps in information that will need to be answered in subsequent trips to the affected communities and meetings with stakeholders, preferably during an additional pre-scoping visit, in order to refine the PIP prior to the scoping period:

- Where do people spend time? (Which demographic groups and where?)
- How widespread is internet use in Angoon? The www.myangoon.org website has been presented as a useful place in which to post project information, but we do not yet know how much of the community uses it, or if that usage varies by seasons (e.g., a lot in winter when there is not much to do, not much in summer when they are out hunting and fishing)
- Has public sentiment changed since the time of the 1998 resolution? Is there potential for change, especially with new leadership? What percentage of the community in Angoon is for, wavering, against, or doesn't care about the project?
- The tribal council and the city have relatively new leaders, who may still be figuring out their respective roles and positions. Are they all still in agreement that they support this project? Do City Leaders still speak for the Council?
- What times of the year should be avoided for meetings because of subsistence activities or other community events, such as potlatches in the fall? Are there any local events with which we can coordinate public involvement efforts? This is key to demonstrating that our public involvement efforts are sensitive to the local residents and that we value their input. Are there any non-traditional stakeholders not addressed in the above section (freight providers, disabled, etc)?

7.0 COOPERATING AGENCY INVOLVEMENT

Because interagency involvement and communication is an important aspect of any project, FAA will initiate cooperating agency involvement to foster education, understanding and two-way exchange of information. Federal, state and local governmental agencies with jurisdictional responsibility over a potentially-impacted resource will be invited and encouraged to participate

throughout this NEPA process. Tribal governments will be invited to participate at the same level as the cooperating agencies through government-to-government consultation.

The PI Team will participate in scoping and resource agency coordination meetings as directed by the FAA. The PI Team will provide necessary graphics and visual aids for these meetings as well as assistance in responding to questions and requests for information. The PI Team will submit times, locations and agendas for agency meetings for review and approval by the FAA and will then reserve meeting spaces, facilitate meetings, record notes, and provide meeting logistics. It is anticipated that general agency coordination with Federal, State, and local Agencies can be accomplished through formalized meetings held at appropriate points throughout the project. Additional coordination can be accomplished through conference calls and informal telephone communication. As with the previously described coordination efforts, the goal is to implement MOUs outlining disclosure roles and responsibilities between the cooperating agencies and the FAA. Anticipated cooperating agencies are the U.S. Forest Service-Tongass National Forest-Admiralty Island National Monument (USFS), Kootznoowoo, Inc., National Marine Fisheries Service (NMFS), and the Army Corp of Engineers (USACE).

The Alaska Department of Natural Resources Office of Project Management and Permitting (OPMP) will not be a cooperating agency for the project. However, the OPMP will coordinate formal responses from state agencies relative to distribution of project documents, document reviews, and submission of agency comments. The FAA will establish protocols with the OPMP to identify points of contact, outline methods of communication, clarify types of data requests that may be issued, and establish what documents they or the state agencies will review and the timeframes for those reviews. The Contractor will continue to facilitate as needed between the FAA and the OPMP.

7.1 The US Forest Service as a Cooperator

The USFS will have a substantial role in the NEPA and ANILCA Title XI processes for the Angoon Airport. Their role in the ANILCA process is described in more detail in Section 8.0 of this document. Their role in the NEPA Process is described here.

Lands managed by the USFS as part of the Admiralty Island National Monument and Kootznoowoo Wilderness were identified by ADOT&PF as the location of their 2007 Master Plan preferred airport location (Site 3). USFS managed lands would also be used for portions of the ADOT&PF's proposed access road leading to Site 3.

Assuming the ADOT&PF's Master Plan preferred site or any potential alternative site on lands managed by the USFS are included in the FAA's EIS, the USFS would be required to engage in some form of NEPA analysis and disclosure and issue a NEPA decision prior to granting a permit for use of those lands. In order to streamline the NEPA process for the project, the FAA intends to prepare its EIS for the proposed airport in such a fashion that the USFS will be able to adopt the FAA's EIS and NEPA process for its own NEPA purposes. The USFS would issue its own Record of Decision for the EIS, independent of the FAA's decision. Based upon discussions to date between the FAA and the USFS, the USFS has agreed with this approach. As such, the FAA must

ensure that the EIS addresses the issues required by USFS NEPA guidelines and is consistent with the USFS land use plan for the Monument and Wilderness area. Doing so will require close and sustained coordination between the FAA and USFS. This coordination will take place through formal meetings, teleconferences, and informal discussion between the FAA, the Contractor, and USFS project staff. (Note: All communications between the Contract and USFS will follow the protocols outlined in the *Angoon Airport EIS Team Communication Plan* and will be approved by the FAA prior to any such communication.)

8.0 ANILCA COORDINATION

The Angoon project will include coordination with the USFS; the OPMP; Kootznoowoo, Inc.; Sealaska, Inc.; the Alaska Department of Fish and Game (ADF&G), the USFWS, and the City of Angoon on ANILCA Title XI and Title VIII (subsistence).

8.1 ANILCA Title VIII

ANILCA Title VIII mandates special consideration of subsistence for undertakings on publicly owned lands in Alaska. Title VIII requires an analysis of potential project impacts on subsistence users, resources, and access and a public disclosure of the determination as to whether impacts, if any, would be significant. Completion of the relevant ANILCA Title VIII evaluations will require close coordination with those agencies having jurisdiction over subsistence resources and access within the affected area(s). These agencies include the ADF&G, the USFS, and the USFWS.

To initiate the Title VIII process during Phase 1 of the EIS process, the Contractor will communicate with subsistence resource managers in the area. During Phase 2 of the EIS process, the Contractor's subsistence specialist will conduct focus group interviews with local residents to gather more current information on subsistence uses in the project area. It is assumed that this will involve one trip to the City of Angoon. Additional information about subsistence uses may be gathered during discussions with local resource users during public meetings or other gatherings throughout the project and from discussions with landowners such as Kootznoowoo, Inc., Sealaska, and the City of Angoon. All communications will be approved by the FAA prior to their occurrence and all will follow the protocols of the *Angoon Airport EIS Team Communication Plan*.

8.2 ANILCA Title XI

Since the Angoon project is potentially the first large-scale test of the Title XI process laid out by Congress and each agency is required to make a determination on whether to approve or disapprove the project, it is imperative that FAA and the USFS agree on the process. It is also important to include the State OPMP to help facilitate buy-in from State entities and provide context regarding the ANILCA process for the project.

The PI Team will plan early coordination between the FAA, the OPMP, and the USFS to reach consensus on process goals and requirements. This coordination will serve three purposes: 1)

provide consistent information and direction regarding the Title XI process; 2) draft a strategy for addressing Title XI requirements; and 3) finalize an MOU between the FAA and USFS regarding each agency's specific needs, roles, key review timelines, and responsibilities to complete the Title XI process. The OPMP has no formal role in the ANILCA Title XI process other than providing technical support when asked and reviewing ANILCA documents as part of monitoring decisions related to the State's interests and interpretations of ANILCA. The USFS, on the other hand, will have a substantial role in the ANILCA process, culminating in an independent agency decision to approve or disapprove any Title XI application(s) submitted to them.

8.2.1 The Role of the US Forest Service in the ANILCA Title XI Process

As noted, the USFS not only has a role as a cooperating agency in the NEPA process but is also an integral part of the ANILCA Title XI process. The USFS receives a Title XI application from the airport Sponsor and must evaluate whether the application contains enough information for the USFS to make a decision. During the NEPA process, Title XI requires the USFS to assist FAA in development of the EIS and evaluating comments from other agencies and the public. Once the Final EIS is complete, the USFS must (independently of the FAA) evaluate the project on whether to approve the Title XI application and then forward their decision and supporting documents to the President of the United States. Finally, if the project is approved by the President and both houses of Congress, the USFS, as the primary landowner, must approve all permits and set up any terms and conditions for the airport.

9.0 Section 7 and Section 106 Consultation

Agency coordination also includes specifically required agency consultation under Section 106 of the National Historic Preservation Act and Section 7 of the Endangered Species Act. The Contractor will assist the FAA in preparing a formal request for Section 106 consultation with the Alaska State Historic Preservation Officer (SHPO) and will work with the FAA and the SHPO to define the area(s) of potential effects for cultural resources. After initiation of formal consultation, the Contractor will request the SHPO's input throughout the Scoping process. Additionally, the Contractor will assist the FAA in obtaining information regarding federally listed species that could be impacted by the proposed project and will continue to solicit USFWS input as needed throughout the Section 7 consultation process.

10.0 Deliverables and Schedule

10.1 Public Involvement Documentation and Deliverables

<u>Pre-Scoping Findings Report</u>: Following each pre-scoping visit, a report will be prepared to summarize the information gathered during of the visit. This report will include a list of individuals contacted, meeting notes, general reactions to the project, and any recommendations for changes or additions to the final PIP.

Scoping Report: A scoping report summary and database will be prepared to adequately document all public scoping activities. The scoping report will outline all public involvement activities, how comments were recorded, content analysis approach, and content of public input. The PI Team will categorize all comments received during scoping. Comments will be coded and cross-referenced to the individuals who made them. The scoping report will summarize those comments into the main issues to be addressed during the NEPA process and will include a suggested disposition for the comments. Comments will likely fall into four categories: 1) those that will be addressed through impact analysis, 2) those that will be addressed through alternatives formulation and consideration, 3) those that will be addressed by holding additional meetings; and 4) those that are out of the scope of this EIS decision-making process. The Scoping Report will be provided to the FAA for review, after which, the PI Team will finalize and distribute it to the Contractor Team. The Scoping Report will serve as the basis for alternatives development and impact analysis in the EIS. In addition, a summary of community and stakeholder's views of the public involvement process and the project initiation phase will be provided with the Scoping Report.

Response to Comments: The purpose of responding to comments is to address all substantive comments on the DEIS and use that to develop the FEIS. The scrutiny is usually two-fold; first, a commenter wants to see if a comment was missed or ignored; second, they want to see if the comment has an adequate response. The PI Team will develop a database system to easily manage and account for large numbers of comments. The purpose of this database is to account for every comment and allow the FAA to demonstrate that they have responded to every comment regardless of how many are received.

In responding to comments, the PI Team will use a systematic, easily-documented, and defensible strategy. Comments can basically be broken down into the following categories and responses consistent with Order 5050.4B §1201: 1) the comment was already addressed in the DEIS; 2) the comment is out of the scope of the EIS process; 3) the comment is not substantive (merely expresses opinions); and 4) the comment is substantive and requires a change in the FEIS. All comments and their responses will be included in a Response To Comments report. This will be included as either an appendix or separate volume with the FEIS as per CEQ regulations.

<u>FEIS Comment Summary Report</u>: If deemed necessary by the FAA, the PI Team will provide a report on the comments received after publication of the FEIS. These comments will be documented, categorized, and responded to as described above for the Response To Comments on the DEIS.

10.2 Target & Milestone Public Involvement Dates

For successful public involvement, it is important to clearly communicate milestones and decision dates to the public, provide reasonable opportunity for review and comment, inform the public at each stage, and to identify the schedule for specific communication tasks for each audience, and who is responsible for completing them.

It is also important to allow time for changes in goals, tactics or messages if necessary. The following schedule outlines the major tasks and milestones through the various public involvement periods, including reviews and updates of the plan if needed.

Table 5. Public Involvement Tasks and Milestones

Task	Date	Responsible	
Draft Final PIP	March 21, 2008	PI Team	
Pre-scoping Trips	March 2008; May/June, 2008 (Exact date TBD)	PI Team	
ANILCA Coordination	March 2008 (Exact dates TBD)	SWCA	
Final PIP	April 2008 (timing based on receipt of FAA comments)	PI Team	
Findings Report	June 30, 2008	PI Team	
Publishing of the NOI	September, 2008 (Exact dates TBD)	FAA	
Public Scoping Meetings	October, 2008 (Exact dates TBD)	SWCA	
Public Scoping Report	December 30, 2008	PI Team	
Scoping Phase Follow-up Survey Results	December 30, 2008	PI Team	
Subsistence Interviews	TBD Phase II	SWCA	
Public Comment Period (draft document)	TBD Phase II	PI Team	
Project Completion Follow-up Survey Results	TBD Phase III	PI Team	



PUBLIC INVOLVEMENT PLAN UPDATF #1

SUBMITTED TO:

FEDERAL AVIATION ADMINISTRATION ALASKAN REGION, AIRPORTS DIVISION

SUBMITTED BY:

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April 22, 2009

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ANGOON AIRPORT EIS PROJECT PUBLIC INVOLVEMENT PLAN UPDATE #1

1.0 Introduction

Client: Federal Aviation Administration (FAA)

Project Sponsor: Alaska Department of Transportation and Public Facilities (ADOT&PF)

Project Type: Environmental Impact Statement (EIS)
Project Identification/Title: Angoon Airport EIS Project

The FAA is preparing an EIS to analyze the potential effects of constructing a land-based airport near the City of Angoon, Alaska, located in the southeast portion of the state on Admiralty Island. Anticipating that the proposed airport will be of considerable interest to a variety of local, state, and regional stakeholders, the EIS public involvement (PI) team prepared a public involvement plan (PIP) in April 2008 that identified general public involvement goals, outreach techniques, and anticipated stakeholders. The plan included a recommendation that the PIP be updated as needed to reflect lessons learned regarding effective outreach techniques and other elements of a successful PI approach.

This PIP update includes 1) revisions to the PIP's outreach techniques to facilitate public involvement for both internet and non-internet users, 2) a suggested schedule for website updates, and 3) updated media contact information.

2.0 OUTREACH TECHNIQUES

To keep potential stakeholders involved and interested in the project, a project mailing list was developed from information provided in the original PIP. This list has been updated through prescoping and scoping meeting sign-in sheets, information provided by the FAA and U.S. Forest Service (USFS), and internet users who have subscribed to the project mailing list using the project website. To date, stakeholders on the list have received a project postcard, e-mails containing project materials, and one notification of website updates; they have also been invited to attend a number pre-scoping and scoping meetings in Anchorage, Juneau, and Angoon. Agencies were also invited to participate in a teleconference recap of the scoping materials. Additionally, members of EIS team (the FAA project manager and the FAA's consultants) have met informally with many Angoon residents during their visits to the area.

The EIS team has confirmed through these outreach efforts that project stakeholders include not only citizens who rely on electronic media for their information but also a more traditional population that prefers in-person project updates. Additionally, many stakeholders prefer hardcopy updates to electronic updates. The table below outlines this project's general stakeholder types and the PI team's understanding of the most effective outreach techniques for each.

Table 1. Outreach Techniques by General Stakeholder Type

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Audience	PI Technique (in order of effectiveness)	
General Angoon community	1) In-person updates	
	2) Town flyers	
	3) U.S. Postal Service-mailed updates	
	4) Electronic notification/website and/or www.myangoon.org updates	
Mayor/ Angoon Community	1) In-person/teleconference updates	
Association (ACA)/ Kootznoowoo,	2) Hard copies of documents	
Inc.	3) Electronic notification/website	
Other agencies and non- governmental organizations	Electronic notification (e-mail)/website	

Because this is a multiyear and many-phased project, there will be periods when no public meetings are scheduled and when project progress is less obvious to the public. Updates provided to the public and other stakeholders during those times will need to identify the project phases and accomplishments that have taken place, such as field work, technical report completion, and alternatives development. Additionally, periods when there are fewer milestones to report can provide opportunities for the EIS team to develop and disseminate ancillary educational materials that help stakeholders learn more about the area's natural and cultural resources and, it is hoped, that create excitement about and interest in the project.

By providing an ongoing variety of website, media, and hardcopy project updates, the PI team will help ensure that stakeholders always have up-to-date project information and that the project stays fresh in their minds.

2.1 Engaging the Internet User

As part of project outreach, the PI team created an Angoon Airport EIS website (www.angoonairporteis.com). As the project has progressed, the website has become increasingly important as a primary means of providing up-to-date information to many of the stakeholders on the project mailing list. The PI team plans to notify those stakeholders who have provided e-mail addresses about website updates through an automatic e-mail notification system that provides a brief description of the update and a link to the website.

2.1.1 Changes to Existing Website Sections

The current website organizational structure was based on the reference websites provided by the FAA (Figure 1). The EIS team will continue to enhance and refine the website throughout the project. The website will be used to provide information in a variety of fashions, including text, streaming video, streaming audio, and graphics. Because members of the interested public may be novice website users, the PI team will ensure that the website will be easy to navigate as well as informative.

Websection 1. Home Page

Websection 2. Angoon Airport EIS Plan

- Proposed action/improvements
- Process diagram
- Google Earth interactive map of project site

Websection 3. Documents

- Master plan documents
- Angoon Airport EIS technical studies

Websection 4. Community

- Public outreach
- Alaska National Interest Lands Conservation Act

Websection 5. Other Resources

- Frequently asked questions
- Submit comments
- Web links
- Project contact information

Websection 6. Subscribe

Websection 7. Search Function

Figure 1. Current website structure.

The PI team researched other websites for additional features or navigational changes that would facilitate more effective public outreach for the project. The following sections outline suggested improvements to the existing website, as well as a proposed implementation schedule.

Websection 1. Home Page

Issue:

The current home page design, while very clean and visually attractive, provides minimal information to stimulate user interest in exploring embedded pages within the website.

Suggestions:

Additions for the home page would include

- a **searchable calendar** of upcoming events and/or relevant milestones;
- a link to a quick "fun fact" or trivia quiz regarding the Angoon area, its residents, or even the NEPA process;
- links to a news/action updates page (see Section 2.2 below on suggested new pages), frequently asked questions, and contact information; and
- a message at the page footer highlighting interesting pages that visitors might want to check out (see example website footer below).



Check out the FAA web camera's latest photographs of Angoon on the Project Description page!



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Websection 2. Angoon Airport EIS Plan

Issue:

Upon entering the website, the viewer is auto-directed to the Angoon Airport EIS Plan "Welcome!" page. This section provides a very brief text overview of the project and what is on the website.

- There is no background information to put this project into any context or to catch the reader's interest; no discussion of where Angoon and Admiralty Island actually are; no mention of a national monument; no mention of tribes affected. Detailed information about proposed alternatives is only available via downloaded scoping documents several layers deep within the website. Without understanding first why this project is interesting or should matter to them, visitors may not choose to investigate those links. Novice website users may not be able to find the information.
- All information on the welcome page is text-based. The text discusses key information
 provided on the website but provides no hyperlinks to those items. There is nothing to
 capture the user's attention.
- Without more introductory project information, the process diagram and map pages lack context: It is hard to tell from the map where in Alaska the project is, for example, and the process diagram does not show which stages have been completed. Moreover, none of the text accessed while navigating to those two pages has provided that information.
- The navigation bar for the "Angoon Airport EIS Plan" section is confusing: it contains
 additional subsections, but the actual Welcome page is not one of them, thus there is no
 link back to that page, only to the front page, whereupon the viewer must re-enter the
 site.

Suggestions:

Provide additional information *in a variety of media formats* to engage visitors and educate them about the project location and process. Possible additions for this section include the following:

- A new page in this section outlining the project Purpose and Need, including
 - video, text, and/or audio interviews with community leaders such as the mayor, city council members, or ACA president, and/or agency representatives such as FAA Project Manager Leslie Grey or ADOT&PF Project Manager Verne Skagerberg discussing current and past airport planning efforts and results;
 - o video, text, and/or audio interviews with community leaders and/or agency representatives discussing project Purpose and Need; and
 - o sidebars (see example at left) to text/audio/video links to public and stakeholder comments on the project.
- A new page in this section outlining Angoon's location and history, including
 - o a brief general history of Angoon (possibly including audio or photographs by instructors Alan Zuboff and Daniel Johnson; see www.myangoon.org);
 - pictures of current key locations within the project area, such as Favorite Bay (although photographs are available on the interactive map, this location may not be intuitive for all visitors); and

Mr. X of Angoon, AK shares his medical evacuation story and why he wants an airport in Angoon... (click here)

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- o aerial or historic photographs and maps of the region (example maps can be accessed at http://www.commerce.state.ak.us/dca/profiles/profile-maps.htm).
- A new Proposed (or Preliminary) Alternatives page in this section, including
 - downloadable .pdf maps and brief text descriptions of the alternatives;
 - embedded lower-resolution flyover videos (that would not require downloading prior to use) of the project area (visitors could still be given the option of downloading a higher-resolution video, if they so desired); and
 - o Google Earth tours (separate from the interactive map) comparing the alternatives' potential impacts on key resources (see example website sidebar to right).
- Time and weather reports, including a link to the FAA Angoon webcam at (http://akweathercams.faa.gov/sitelist.php).
- Sidebars (see example sidebar below, right) highlighting interesting cultural or natural features of the project area. These sidebars would have links to a new *Resources* section (described in Section 2.1.2 of this plan) for more information.
- Updates to the NEPA process flow chart by color or arrow to note the project's current position; this would have links to full documents (master plan and working papers) and other related material (such as the scoping meeting handouts) in the appropriate boxes.
- An inset on the map page that shows Southeast Alaska in relation to the state;
- A brief text or audio explanation (by the EIS team) of why an EIS is needed and the
 information that an EIS contains. This is currently addressed under the frequently asked
 questions section but may be more useful as a stand-alone page.
- A new Glossary/Definitions page that defines key words and terms used throughout the website.

Websection 3. Documents

Issue:

The Documents section currently contains links to only Airport Planning materials, although many other documents are currently located elsewhere on the website. This may make site navigation frustrating for website visitors. Additionally, this does not reflect the true scope and progress of the project.

Suggestions:

This section could be improved by including downloadable .pdfs of all public reports, outreach materials, and other relevant documents for the project, such as

- the review of existing research reports;
- past meeting agendas and summaries;
- media releases, printed project interviews, or meeting advertisements;
- resource technical reports; or
- the notice of intent and notice of availability.

Click here for a Google Earth tour of the coastlines potentially affected by proposed sites 3/3a, 4, and 12a!

DID YOU KNOW?

TAKU
WINDS can
blow at over
100 miles
per hour!
Learn more
about these
winds and
their impact
on airport
safety here.

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As an alternative to including full .pdfs, a flow chart or table could be developed to show the history of document development for the project. The PI team also recommends developing an archive page for older materials to keep the main document page fresh with links to only the most recent documents.

Websection 4. Community

Issue:

The Community section provides a section on public outreach (currently just a text summary of subsistence interviews and public scoping meetings) and a discussion on ANILCA. The title of this section, "Community," is misleading: There is no information about the actual community of Angoon nor is there a discussion of the culture. Description of past stakeholder involvement in the project is also limited, encompassing only attendance at scoping meetings.

Suggestions:

To further engage the viewer, this section could be improved by the addition of a variety of media forms providing information that ties this project to the community of Angoon and shows active engagement by the project team. Suggestions include the following:

- Providing a searchable calendar of events for public involvement activities (also possibly placed on the front page)
- Inviting website visitors to contact the PI team if they have an upcoming event (for example, the recent sports tournament) for which they would like a project update or handout materials
- Incorporating photographs and captions, as appropriate, to show the PI team in action during public meetings and other public outreach opportunities
- Soliciting feedback from visitors regarding public involvement activities using a webbased survey (described in more detail later in this plan)
- Providing text/audio/video links to Angoon resident testimonies regarding the need for an airport in the area
- Posting videos or transcripts of oral history interviews, if conducted and appropriate
- Providing a blog or audio description (by the PI team) that discusses how public comments are used in the EIS process and that thanks visitors for their involvement
- Developing a scoping comment search function to enable visitors to search comments online by subject and view letters (e.g., http://windeis.anl.gov/comments/index.cfm)
- Developing a **table of outreach opportunities** provided to targeted stakeholders (Table 2).

Table 2. Sample Table of Outreach Opportunities to Date

Audience	Public Involvement
General Angoon community	Three meetings
ADOT&PF (Juneau office)	Four meetings
	Bimonthly teleconferences
Kootznoowoo, Inc.	One meeting
U.S. Fish and Wildlife Service, Region 7	Four meetings
(Anchorage office)	Two teleconferences
Friends of Admiralty Island (Juneau office)	Two meetings

Note: Example table only; does not include all stakeholders or stakeholder meetings held to date.

- Developing a journal-entry blog page, where EIS team members could share stories and photographs from their recent trips to Angoon (for example, entries about lunch at the senior center or a Favorite Bay boat tour)
- Placing links or downloadable .pdfs of radio, newspaper, or television reports related to the Angoon community or the EIS project (currently limited to media releases and scoping advertising)
- Highlighting local cultural events and activities through community-posted photographs or videos and a community calendar of events (or via links to www.myangoon.org)

Websection 5. Other Resources

Issue:

This section currently contains frequently asked questions (FAQ) as well as links to pages where visitors can obtain contact information, submit comments, and see other website resources. The FAQ page contains the most user-friendly and explicit project information, yet it is buried several pages deep into the website. Contact information is also somewhat hidden, and it is unclear which persons should be contacted for which reasons. The comment form is located here—separately from the Subscribe page—and the relationship between the two is not explained. (For example, is a person necessarily registered when they submit a comment?). Additionally, there is no mention of the formal comment periods.

Suggestions:

- Move the FAQ page to the Angoon Airport EIS Plan section, where those seeking an overview of the project can easily access it.
- Augment the current contact page by
 - o linking audio or video to each member of the EIS team that explains their roles and responsibilities as part of the NEPA process;
 - o scheduling webinars that visitors can use to get an interactive project update from the FAA project manager or the EIS team at key milestones (e.g., fieldwork kick-off, release of preliminary results for the affected environment, and completion of preliminary impact analysis); and

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- adding an instant messaging function to allow for direct online communication between the FAA project manager or EIS team and website visitors at specified dates and times.
- Move the comment form to the "Subscribe" section and perhaps rename it "Subscribe
 and Comment." Provide clear posting of formal comment period dates and additional
 information regarding consideration of comments during non-formal time periods.
- Add a "Tell a Friend" link, a simple form tool that allows visitors to send a link to the Angoon Airport EIS website to enter e-mail addresses.

There are no additional issues or suggestions identified for Websections 6 and 7.

2.1.2 New Website Pages and Sections

Based on a review of other websites, several other features might be of interest to the visitors of the Angoon Airport EIS website, including a survey section, a resource section, an action item section, and an Angoon Airport EIS user section. Each is described below.

NEW Websection: Website Surveys

Developing a website survey section and including a link on the home page (see sample below, left) would allow the EIS team to receive feedback regarding recent public involvement events and to receive suggestions for future improvements. This could be developed as a page within the website, or it could be a link to other online survey tools, such as SurveyMonkey.com (http://www.surveymonkey.com/). Survey topics could include:

- meeting format, presentation, and timing;
- perceived inclusion of all relevant stakeholders;
- perceived inclusion of all public values;
- appropriate cultural context;
- perceived level of involvement; and
- best ways to distribute information.

HELP US IMPROVE!

<u>Click here</u> to give us your feedback regarding our recent scoping meetings. This survey will be open until May 1, 2009. If you'd like a hardcopy to fill out and mail back to us, <u>contact us</u>.

The incorporation of a survey section into the website would provide the public with an opportunity to stay actively involved in the project and would provide valuable information during those times when there is no formal comment period.

This section could also be used to post previous survey results and to advertise upcoming survey opportunities.

NEW Websection: Action Items

Providing a distinct action item or project update section, either as a new page within the Angoon Airport EIS Plan section or as a stand-alone section, could allow visitors to have a better understanding of the project's current status, and could serve as a supplement to the overall process flow chart. Information that could be placed on this page includes the following:

- Action item updates or a check-off sheet.
- Notices of upcoming activities.
- An overall task and milestones calendar.
- Monthly blogs by EIS team members, which might consist of
 - o reflections by the FAA on the project's successes over the last 12 months:
 - commentary by a team member in conjunction with a media release (such as for an upcoming meeting), giving a personal message about what the meeting means to the EIS team; and
 - o commentary by a team member about what ANILCA Title XI (or other) legislation may mean for the project.

ACTION ITEM UPDATES: What's new this month?

- Kootznoowoo, Inc. signed their MOU with the FAA.
- The Phase 2 budget and scope of work is currently under review.
- Fieldwork season to start this summer. Look for us in Angoon!

This section would change each month and would provide an area to show behind-the-scenes progress not normally apparent to the public, as well as other informational pieces during slower times. Webinars or instant messaging times could also be posted in this section.

NEW Websection: Resources

Currently, the Angoon Airport EIS website does not have a section discussing key resources that will be analyzed as part of the EIS process. The PI team suggests developing such a page, which could include the following:

- A list of key resources with brief text descriptions, as necessary, and photographs
- An upcoming fieldwork schedule and photographs or videos of fieldwork in progress or completed, including audio or video discussion of fieldwork techniques and methodologies
- Resource-related "fun facts" or trivia (see example below).

FUN NATURE FACTS Did you know...

<u>Click here</u> to learn more about our recent natural resources fieldwork!

- ❖ Admiralty Island has the highest density of brown bears in the world?!
- Kootznoowoo Wilderness receives 4 feet of rain annually?!
- Links to other relevant websites, such as the Admiralty Island National Monument page on the Tongass National Forest website (http://www.fs.fed.us/r10/tongass/districts/admiralty/);
- A resource topic highlighted each month. Possibilities include the following:
 - Pictures of the coastline with an audio or video discussion of visual impacts analysis or a video of immersive video imagery being taken

- Wind-monitoring photographs and/or links to wind-related stories, songs, or videos (e.g., http://dwb.adn.com/life/story/8331652p-8227671c.html, Can You Hear the Taku Wind by Shoowee ka' & the Ravens)
- Descriptions and/or photographs of the Kootznoowoo Wilderness, with an audio or video description of managing wilderness areas and implications for airport construction
- Photographs, art, or stories about cultural resources and an audio or video description of the Section 106 consultation process
- o A discussion of general subsistence resources, uses, and practices, with links to the interactive map, oral histories, or other related material
- Links to a site addressing the effects of noise on wildlife or human health (e.g., the website for the Federal Interagency Committee on Aviation Noise) and a discussion of aircraft decibels with a supplemental reading list
- Links to Angoon census data and a discussion of community economic, social, and environmental justice issues (http://quickfacts.census.gov/qfd/states/02/02232.html)
- o GIS natural resource map layers, when available (separate from the interactive map), and a discussion of GIS and mapping applications in natural resources planning
- o Photographs of threatened and endangered species, with an audio or video description of the Endangered Species Act Section 7 consultation process
- o Interviews with resource specialists discussing topics of interest, such as wildlife behavior or Tlingit culture

Many of these resource topics could be easily developed from the references obtained by specialists during the literature review stage of the EIS development.

NEW Websection: Angoon Airport EIS Website User

A fourth possible new section for the Angoon website could focus on fun, social, and/or educational activities for website visitors. Possible activities include the following:

- A select list of fictional or fact-based reading materials containing topics related to the Angoon area, culture, natural resources, and EIS project
- A link to learning activities for children (e.g., http://www.fs.fed.us/r10/tongass/education/education.shtml)
- A phrasebook or vocabulary of the Tlingit language, as provided by local elders or by a source such as Yahoo Widget (see Table 3 and http://www.alaskool.org/language/dictionaries/akn/dictionary.asp for an example)

Table 3. Sample Table of Tlingit Phrases

Word	Meaning
ch'aak'	eagle
du tlaa	mother
eesh	father
gooch	wolf
heen	water
Ixsixan	I love you
neil si goot	welcome
Klumu Gutta	Spirits' Home, the Tlingit name for Taku Glacier
Khutz-n-hu	Bear Fort, on Admiralty Island
xaat	salmon or fish
s'eek	black bear

- Space for visitors to post blogs or other materials (such as photographs or videos).
 (Tongass National Forest's forest plan amendment of 2008 allowed visitors to officially participate by commenting in their blog)
- Use of a social connections utility (e.g., LinkedIn) to allow visitors to identify and respond to other interested Angoon website visitors

Because some of the suggested activities involve unsolicited public feedback, this section would most likely need an explicit statement clarifying that participation in this section is not part of the legal NEPA process and any opinions or information shared there would be for entertainment purposes only, and that offensive, derogatory, or foul language would not be tolerated. A moderator would be required to screen comments for language and appropriateness.

2.1.3 Proposed Schedule for Implementing Website Changes

A prioritization and timeline of projected completion dates for suggested website changes is provided in Table 4. Task priorities and the timeline are contingent upon FAA approval and may be updated periodically to include additional tasks or changes in FAA-preferred timing.

Table 4. Prioritization and Time Line for Proposed Website Changes

High Priority Tasks			
Time Frame for Completion: June 2009			
Website, Home Page	Add links to news/action updates, FAQs, and contact information		
 Website, Angoon Airport EIS Plan 	Add map insert and Angoon project history/location introduction material		
 Website, Community 	Create web-based PI survey; add event request option		
Website, Other Resources	Move FAQ page		
New website sections	Create action items update page		

Table 4. Prioritization and Time Line for Proposed Website Changes

Moderate Priority			
Time Frame for Completion: September 2009			
Website, Home Page	Add link to searchable event calendar		
 Website, Angoon Airport EIS Plan 	 Add Angoon project history/location and alternatives pages, flow chart update EIS explanation 		
• Website, Documents	Create .pdfs or flow chart of project documents		
Website, Community	 Implement scoping comment search function, searchable calendar of events, outreach table 		
• Website, Other Resources	Augment contact information with photographs and audio		
 New website sections 	Create Resources page		
Low Priority			
Time Frame for Comple	tion: December 2009		
Website, Home Page	Add page footer "fun fact" or trivia quiz link		
Website, Angoon Airport EIS Plan	Add time/weather reports links, cultural/natural resource sidebars, and glossary		
Website, Documents	Add Archive page		
Website, Community	Add blogs, videos, links, and photographs		
Website, Other Resources	Add Tell a Friend link		
New website sections	Create Angoon user page.		

2.2 Engaging the Non-Internet User

Issue:

Although the EIS team is continuing to refine the website, project stakeholders will always include individuals who are unable or choose not to utilize website or e-mail resources. The EIS team will continue to develop easy-to-read and informative materials and progress notifications to be distributed through an ongoing combination of newsletters, media releases, utility bill or other regular mail inserts, or postcard mailings.

Suggestions:

- The EIS team will develop hardcopy newsletters or update bulletins providing project updates, schedules, next steps, and educational information on the NEPA and airport planning processes at key project milestones. The updates will be sent to all individuals on the current mailing list and to the city offices, ACA offices, the Angoon Business Center, and individuals (e.g., Maxine Thompson) who have volunteered to distribute/post these newsletters to the community. (The EIS team will also submit quarterly project updates to the www.myangoon.org website).
- The PI team will work with the ACA, the USFS, and other organizations to identify upcoming open houses, meetings, or events in Angoon, Juneau, or other nearby areas where project information can be distributed to local residents as appropriate and as requested. (See also "Community" section of this document regarding submitting events online).

- Anyone attending an open house, meeting, or community event where a project information sign-up sheet is used will be sent a postcard thanking them for their interest, and their contact information will be added to the project mailing list.
- An information repository will be established at the Angoon Business Center to provide local residents with access to hardcopies of EIS documents and technical reports as they become available.
- Radio, television, and newspaper media releases will be disseminated using media stations accessible to the Angoon community to inform local residents about upcoming public involvement opportunities. Radio interview requests to the same stations will be made as appropriate so that the PI team can share "newsworthy" project updates and activities. Additional discussion of media use is provided in Section 3.0 of this report.
- CB radios could also be utilized as a means of information dissemination to Angoon
 residents as appropriate, particularly in regard to the advertising of meetings, availability
 of published documents, and EIS team presence for fieldwork and other visits to
 Angoon. (Angoon resident Maxine Thompson has volunteered to disseminate
 information using her CB radio; alternatively, the PI team could contact the mayor or
 other key local figures to request assistance with this.)
- EIS team visits to Angoon for fieldwork, project coordination, or public involvement will
 include a courtesy visit to the Mayor of Angoon (and/or other key personnel) and the
 ACA by a senior EIS team member to provide a project status update and to respond to
 questions.
- All EIS team visits to Angoon for fieldwork, project coordination, or public involvement will include a publicized luncheon at the senior center. A senior EIS team member will be available during the luncheon to respond to questions and comments by local residents. This informal meeting would be advertised via posting on www.myangoon.org, as well as by posted flyer or CB announcement whenever possible.

3.0 Media Relations

Table 5 provides updated media contact information for Angoon, the general Southeast Alaska region, and the Anchorage area, where some agency stakeholders and other interested parties are located. The PI team will continue to augment this table with additional information as useful media outlets are identified.

Media outlets will be used to disseminate project findings and upcoming public involvement activities at the following key milestones:

- Fieldwork kick-off
- Affected environment results
- Resource impacts analysis completion
- Draft EIS release and public comment period
- Summary of comment period results
- Final EIS release and public comment period
- Record of Decision (ROD)

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Media releases will be distributed to radio, television, and newspaper stations at each milestone. Selection of appropriate media outlet will be based on desired target audience. General information will be sent to all listed stations (see below). For information or events targeting the Angoon community, only sources available to local residents would be used. Similarly, for news or events targeting the Southeast Alaska or Anchorage area, only those sources targeting those areas will be used. When deemed appropriate to enhance stakeholder interest and awareness, radio interviews will also be requested for designated talk radio shows (see Media Contacts in Table 5 for a description of available shows). All requested interviews would be contingent on radio host interest and perceived relevance to their audience base. The PI team will work with talk show hosts to identify topics of interest, set up interview times, and provide other planning or logistical needs for interviewees.

Table 5. Media Contacts

Media Outlet	Address	Phone	Contacts
Newspapers			
Juneau Empire http://www.juneauempire.com Juneau, AK daily newspaper	3100 Channel Dr. Juneau, AK 99801	Phone: 907.586.3740 Circulation Phone: 907.523.2222 Newsroom Fax: 907.586.3028 Business Fax: 907.586.9097	News Editor: Ken Lewis ken.lewis@juneauempire.com Community Editor, Obituaries, and Public Service Announcements: Kim Andree nrclerk@juneauempire.com
Daily Sitka Sentinel http://www.sitkasentinel.net Sitka, AK daily newspaper	112 Barracks St. Sitka, AK 99835	Main Office: 907.747.3219 Fax: 907.747.8898	Editor: Thad Poulson thad@sitkasentinel.com
Capital City Weekly http://www.capitalcityweekly.com Juneau, AK weekly paper	134 North Franklin Juneau, AK 99801	Phone: 907.789.4144 Fax: 907.789.0987	Managing Editor: Charles Westmoreland charles.westmoreland@capweek.com
Anchorage Daily News http:// <u>www.adn.com</u> Anchorage, AK daily newspaper	P.O. Box 149001 Anchorage, AK 99514- 9001	Main phone: 907.257.4200 Newsroom main phone: 907.257.4300 Toll-free in Alaska: 800.478.4200 City desk: 907.257.4301 Copy desks 907.257.4356 (News)	Rural Affairs Reporter: Kyle Hopkins khopkins@adn.com News: Mike Jakiemiec mjakiemiec@adn.com Native corporations, tourism, mining, timber, environment: Elizabeth Bluemink ebluemink@adn.com
Radio Stations	<u> </u>		
KCAW (104.7 FM / 90.1 FM; 105.5 in Angoon) http://kcaw.org/ Sitka, AK locally owned and operated public radio station. Can be picked up in Angoon.	2 Lincoln St. Suite B Sitka, AK 99835	907.747.5877 KCAW offices 907.747.5879 KCAW News Department 800.478.5877 Toll-Free Fax: 907.747.5977	Contact Info Link: http://kcaw.org/modules/contact_form Robert Woolsey – morning news interviews M– F 8:18
KIFW (1230 AM) http://www.kifw.com Sitka, AK. Not a public radio station, but airs a popular "Problem Corner" show where listeners call concerning local issues. Can be picked up in Angoon.	611 Lake Street Sitka AK, 99835	Monday Through Saturday 907.747.6626 For the Business Office call 907.747.KIFW(5439)	For Public Service Announcements, please e-mail kifw@abcstations.com Valerie See – radio interviews during Problem Corner. 2-3 days notification unless flying in, then 1 week required. Mondays generally not available. Cell: 907.441.6169

Table 5. Media Contacts

Media Outlet	Address	Phone	Contacts
KTOO (104.3 FM) http://vwww.ktoo.com Juneau, AK. NPR-member radio station, affiliated with the Coast Alaska network.	360 Egan Drive Juneau, AK 99801-1748	907.586.1670 Connecting all departments 907.586.1212 KTOO News and Rain Country Fax: 907.586.2561	Contact Info Link: http://www.ktoo.org/contact.cfm Jeff Brown – afternoon show M–F 3–4 jeff@ktoo.org 907.463.6425 Radio interviews for activities with Juneau connection 1–2 weeks notice
Alaska Public Radio Network http://aprn.org/ Consortium of public radio stations to which KSKA, KNBA, KTOO, KCAW belong. The website has a number of news and community calendar sections.	3877 University Dr Anchorage, AK 99508	907.550.8400 general business 907.550.8444 news room Fax: 907.550.8401 general business 907.550.8402 press releases / news	Press Releases/News: news@aprn.org Contact Info Link: http://aprn.org/about/contact/
KNBA (90.3 FM) http://www.knba.org/ Anchorage, AK public radio station; community news as well as a Native American radio show.	3600 San Jeronimo Drive, Suite 480 Anchorage, AK 99508	Office: 907.793.3500 Toll Free: 888.278.KNBA (5622) Office Fax: 907.793.3536 Newsroom Fax: 907.793.3536	E-mail: feedback@knba.org Contact Info Link: http://www.knba.org/ Radio interviews not available.
KSKA (91.1 FM) http://www.kska.org/ Anchorage, AK public radio station with community forum and events calendar for KSKA as well as KAKM and APRN websites.	3877 University Dr Anchorage, AK 99508- 4676	907.550.8400 general business Fax: 907.550.8401 general business 907.550.8403 PSAs and press releases	Community Forum E-mail: communityforum@kska.org Contact Info Link: http://kska.org/about/contact/ Ellen Lapier – Community Forum Steve Heimel – Talk of Alaska Will accept radio interviews if deemed "newsworthy" to audience
KINY (800 AM; 103.9 FM in Angoon) Juneau, AK. Not a public radio station, but airs local "news of the north." Can be picked up in Angoon.	1107 West 8th, Suite 2 Juneau, AK 99801	Main: 907.586.1800 Problem Corner: 907.586.1800 Fax: 907.586.3266 News Line: 907.586.6397	News room: kinynews@eagle.ptialaska.net Contact Info Link: http://www.kinyradio.com/statinfo.html

Table 5. Media Contacts

Media Outlet	Address	Phone	Contacts
KJNO (630 AM) Juneau, AK. Talk radio station with local news updates. Can be picked up in Angoon.	3161 Channel Drive Juneau AK, 99801	Office and Studio: 907.586.3630 Community Notice Board: 907.586.3630 Fax: 907.463.3685	noticeboard@kjno.com Contact Info Link: http://kjno.com/cms/kjnopages?id=25 Program Director – radio interviews unknown
Television Stations			
KTOO-TV (Alaska One): Juneau, AK public television station with website.	Same as KTOO Radio		
KSKA/KAKM Channel 7 http://www.kakm.org/ Anchorage, AK public television station with website.	3877 University Dr Anchorage, AK 99508- 4676	907.550.8400 general business Fax: 907.550.8401 general business	Contact Info Link: http://kakm.org/about/contact/
KTNL-TV, channel 13 http://www.ktnl.tv Sitka, AK CBS affiliate, seen in Juneau on KTNL-LP channel 24. Website has community calendar.	520 Lake Street Sitka, AK 99835	Phone: 907.747.5749 Fax: 907.747.8440	E-mail: ktnltv@alaska.com Contact Info Link: http://www.ktnl.tv/contact.htm



PUBLIC INVOLVEMENT PLAN UPDATE #2

Prepared for

Federal Aviation Administration and Alaska Department of Transportation and Public Facilities

Prepared by

SWCA Environmental Consultants

October 15, 2013

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1.0 Introduction

The Federal Aviation Administration (FAA) is preparing an environmental impact statement (EIS) in response to a request from the Alaska Department of Transportation and Public Facilities (DOT&PF), the Sponsor, for funding and other approvals for a new land-based airport near the community of Angoon in Southeast Alaska. The Angoon Airport project involves the construction and operation of a land-based airport to serve the community of Angoon, a small village located approximately 60 miles south of Juneau and 40 miles northeast of Sitka. Angoon is the only permanent settlement on Admiralty Island and is located on a small peninsula on the western coast of the island. At present, there is no land-based airport runway in or near Angoon.

Anticipating that the proposed airport will be of considerable interest to a variety of local, state, and regional stakeholders, the EIS public involvement (PI) team prepared a public involvement plan (PIP) in April 2008 that identified general public involvement goals, outreach techniques, and anticipated stakeholders. The PIP was updated in April 2009 to include 1) suggested website changes and 2) revisions made to outreach techniques for both internet and non-internet users.

This second plan revision provides a summary of key public involvement efforts completed-to-date, as well as describes outreach activities conducted by the FAA that were not included in either the 2008 PIP or 2009 update.

2.0 SUMMARY OF PUBLIC INVOLVEMENT

Since the start of the Angoon Airport EIS project, the FAA has completed or is continuing the following key public involvement steps, as laid out in the 2008 and 2009 PIP:

•	Pre-scoping meetings, public notification, and report	Completed 2008
•	Scoping meetings, public notification, and report	Completed 2008
•	Mailing list updates	Ongoing
•	Development and updates to website	Ongoing
•	Project updates posted to website (notification of update sent via e-mail)	Monthly, or as applicable based on project activity
•	Newsletters (sent via e-mail and postal service)	Quarterly, or as applicable based on project activity
•	Progress report to DOT	Ongoing
•	Agency/NGO meetings	Ongoing
•	Monthly project updates to the "myangoon.org" website	Website closed
•	CB announcement and posted flyers to advertise local, informal meetings and visits	Ongoing

 Courtesy visits to the Mayor of Angoon (and/or other key personnel), the ACA, and attendees at the senior center by EIS team members to provide a project status update and to respond to questions.

The 2009 PIP update #1 also contained specific suggestions for project website updates. These updates were reviewed and have been incorporated into the latest version of the website, as appropriate. In particular, the front page has been revised to include FAA contact information and links to what's new on the site. A new section was added to provide information on area resources. More generally, all pages have been revamped to be more user friendly, through the addition of pictures, maps, and links, as well as to improve reader navigation.

Ongoing

Several 2009 PIP suggestions were not implemented due to lack of public interest or time constraints. For example, the FAA initiated a website survey in 2009 to solicit feedback on the scoping process but did not receive any feedback from the community. As such, additional surveys have not been conducted or made available on the website. The FAA has also not been able to identify or attend open houses, meetings, or events in Angoon, Juneau, or other nearby areas where project information can be distributed to local residents as appropriate and as requested. However, the FAA has continued to provide regular, informal visits to the community of Angoon to provide information and answer resident questions (see Section 3.0, below).

Because the Angoon Business Center closed, an information repository was not established at that site to provide local residents with access to hardcopies of technical reports or the Draft EIS (when it becomes available). Hard copy technical reports were provided to the ACA. The FAA will provide hard copies of the EIS to the ACA and City government.

3.0 New Public Involvement Activities

The FAA has also initiated the following new public involvement activities for the Angoon Airport EIS since the last plan update:

- Postings on the Angoon Airport EIS Facebook page. The Angoon Airport EIS now has a Facebook site, where updates on project activities and local, relevant news are posted on a regular basis.
- Focus on plain language EIS. The FAA has developed a plain language EIS and supporting documents to improve the readability and navigability of the document for the public.
- Additional informal community visits. The FAA has conducted on-going visits to the community of Angoon over the past several years to provide project updates and answer resident questions and concerns.

4.0 Fair and Meaningful Involvement

Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations (February 11, 1994) requires that federal agencies, to the greatest extent practical and required by law, identify and address adverse effects to environmental justice populations. This order includes ensuring that affected individuals do not bear a disproportionate share of potential negative project effects (a.k.a. "fair treatment") and that they have "meaningful involvement" opportunities to participate in decisions about a proposed action that may affect their environment or health.

Since the onset of the planning process for the Angoon Airport EIS, the FAA has actively worked to fully engage the Angoon community, tribe, and local government through varied outreach activities (see Sections 2.0 and

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3.0, above). These approaches were developed to establish a positive relationship with the community and solicit public input. For example, all public meetings have been held in an open house format, some with presentations, so the public could talk with members of the project team in a one-on-one setting. Comment cards were available for the attending public to complete. Project team members were also available to take comments verbally if members of the public were unable to fill out their own comment cards. Meeting facilities were selected based on their familiarity to the community and proximity to town. All meeting facilities were Americans with Disabilities Act (ADA) accessible. To increase awareness of public meetings about the project, posters were placed in local businesses and community centers. The FAA also continues to provide project information through newsletters and emails.