

# Susitna-Watana Hydroelectric Project Document

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**Susitna-Watana Hydroelectric Project  
(FERC No. 14241)**

**Cultural Resources Study  
Study Plan Section 13.5**

**Initial Study Report  
Part A: Sections 1-6, 8-10**

Prepared for

Alaska Energy Authority



**SUSITNA-WATANA HYDRO**

*Clean, reliable energy for the next 100 years.*

Prepared by

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Gwanshii

June 2014

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## APPENDICES

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June 14, 2013

Appendix D. Summary of Known Cultural Resources

Appendix E. Western Ahtna Land Use 1880 to 2013

## LIST OF ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

Abbreviation	Definition
AEA	Alaska Energy Authority
AHRS	Alaska Heritage Resource Survey
ANCSA	Alaska Native Claims Settlement Act
ANLC	Alaska Native Language Center
APE	Area of Potential Effects
ATV	All-Terrain Vehicle
BIA	Bureau of Indian Affairs
CMT	Culturally Modified Tree(s)
CRNA	Copper river Native Association
FERC	Federal Energy Regulatory Commission
GIS	Geographic Information Systems
GPS	Global Positioning System
HPMP	Historic Preservation Management Plan
ILP	Integrated Licensing Process
ISER	Institute for Social and Economic Research
ISR	Initial Study Report
NRHP	National Register of Historic Places
OHA	[Alaska] Office of History and Archaeology
Project	Susitna-Watana Hydroelectric Project
RPA	Registered Professional Archaeologist
RSP	Revised Study Plan
SDMI	Statewide Digital Mapping Initiative
SPD	study plan determination
TCP	Traditional Cultural Property
TWG	Technical Workgroup
USGS	U.S. Geological Survey
USR	Updated Study Report

## 1. INTRODUCTION

On December 14, 2012, Alaska Energy Authority (AEA) filed with the Federal Energy Regulatory Commission (FERC or Commission) its Revised Study Plan (RSP) for the Susitna-Watana Hydroelectric Project No. 14241 (Project), which included 58 individual study plans (AEA 2012). Included within the RSP was the Cultural Resources Study, Section 13.5. RSP Section 13.5 focuses on systematically inventorying cultural resources within the Area of Potential Effects (APE), evaluating the National Register eligibility of inventoried cultural resources within the APE that may be affected by the Project, and assessing Project-related effects on National Register-eligible historic properties within the APE. RSP Section 13.5 provided goals, objectives, and proposed methods for cultural resources data collection and analysis.

On February 1, 2013, FERC staff issued its study plan determination (February 1 SPD) for 44 of the 58 studies, approving 31 studies as filed and 13 with modifications. RSP Section 13.5 was one of the 13 approved with modifications. In its February 1 SPD, FERC recommended the following:

*We recommend that the study plan be modified to require AEA to consult with CIRI and interview knowledgeable Dena'ina elders, as recommended by CIRI, in order to adequately identify place names, ethnography, history, and culture associated with this culture group. We also recommend that AEA designate specific locations where they would interview knowledgeable Dena'ina elders that are convenient for both AEA and the elders.*

*We also recommend that AEA evaluate cultural resource sites in the indirect APE for eligibility for the National Register. However, when and how this may be accomplished is best left until the initial study results are available and in consultation with BLM [Bureau of Land Management], SHPO [State Historic Preservation Office], and affected tribal representatives.*

In accordance with the February 1 SPD, AEA has adopted the FERC requested modifications.

Following the first study season, FERC's regulations for the Integrated Licensing Process (ILP) require AEA to "prepare and file with the Commission an initial study report describing its overall progress in implementing the study plan and schedule and the data collected, including an explanation of any variance from the study plan and schedule." (18 CFR 5.15(c)(1)) This Initial Study Report (ISR) on the Cultural Resources Study has been prepared in accordance with FERC's ILP regulations and details AEA's status in implementing the study, as set forth in the FERC-approved RSP and as modified by FERC's February 1 SPD (collectively referred to herein as the "Study Plan").

## 2. STUDY OBJECTIVES

The goals of the Study Plan are to systematically inventory cultural resources within the APE (36CFR 800.4(b)), evaluate the National Register eligibility of inventoried cultural resources within the APE that may be affected by the Project (36 CFR § 800.4(c)), and assess Project-related effects on National Register-eligible historic properties within the APE (36 CFR § 800.5).

Specific objectives are to:

- Consult with the SHPO, BLM, and Alaska Native entities during implementation of the cultural resources survey
- Inventory cultural resources within the APE
- Evaluate National Register eligibility of cultural resources within the APE that may be affected by the Project
- Determine the potential Project-related effects on National Register-eligible historic properties within the APE
- Develop information needed to prepare a Historic Properties Management Plan (HPMP) for the Project

The Traditional Cultural Properties (TCP) study will be informed through the ethnogeographic study, which has as its goals the identification, inventory, and evaluation of landscape features and resources within the APE that have been and continue to be important to the Native people. The objective is to use ethnographic landscape and place name data to help identify TCPs according to procedures set forth under 36 CFR Part 800, and determine their significance according to National Register criteria (36 CFR § 60.4).

The ethnogeographic study addresses the following topics, with emphasis on Ahtna tribal practices, supplemented by information on Dena'ina and Lower Tanana tribal practices as appropriate:

- Land use patterns in the study area, including the seasonal migration patterns of the late 19th and early 20th centuries, and how they relate to the system of trails, trap lines, hunting and fishing sites, winter villages, and religious sites
- Types of wild resources harvested and traditional ecological knowledge about historic plant, animal, and fish populations in the area
- Traditional stewardship (i.e., traditional management practices)
- Contemporary values associated with the landscape
- Transcription and translation of language texts that pertain to the Project APE
- Hydrological concepts embedded in place names, directional system, and landscape narratives

### **3. STUDY AREA**

The study area for this study (which is the APE for the Project) is set forth in RSP Section 13.5.3, and is composed of an area of direct effect and an area of indirect effect—the geographic region in which the character or use of historic properties may be affected directly or indirectly by construction and operation of the Project (Figure 3-1). The APE for both direct and indirect effects is identified using several types of information, including Project engineering (transportation corridors and potential visitor infrastructure), known or likely human use patterns, and topographic features that may act as boundaries to visitor travel beyond the project footprint. The total area within the study area is approximately 240,736 acres.

#### **3.1. Area of Potential Direct Effect**

Direct effects to cultural resources are those consequences directly attributable to construction and operation of the Project, including inundation. The APE for direct effects encompasses the Watana Reservoir, a buffer around the reservoir footprint up to the 2,075-foot contour, Watana Dam and Camp Facilities area, three potential access and transmission alignments (Chulitna, Denali, and Gold Creek corridors), and facilities associated with construction and operation of the Project. The proposed direct APE was developed in consultation with the SHPO, federal and municipal agencies, Alaska Native entities, and other interested parties.

#### **3.2. Area of Potential Indirect Effect**

Indirect effects to cultural resources are those that occur beyond the direct effects from implementing the Project, such as looting of archaeological sites and damage from off-road vehicle use after the Project has been completed. As with the direct APE, the proposed indirect APE was developed in consultation with the SHPO, federal and municipal agencies, Alaska Native entities, and other interested parties (Figure 3-1). As proposed, the Project would inundate the middle Susitna upriver of the dam site to the 2,050-foot contour. This would create an approximately 39-mile long lake which will be accessible to the general public. In addition, it is expected that overland use via existing trails by hunters, fisherman, trappers, and recreationists will likely increase as an indirect effect of the proposed Project since access and other developed facilities available for public use will likely be constructed in the immediate Project area. AEA plans to study possible indirect effects that may result from the construction and operation of the proposed Project. The indirect APE is comprised of:

- 1) Areas likely to be affected by induced dispersed recreational activity extending from existing trails, including all-terrain vehicle (ATV) trails and recent campsites observed during the 2012 field investigations;
- 2) Areas near or related to known sites in the statewide Alaska Heritage Resources Survey (AHRS) inventory, Bureau of Indian Affairs (BIA)'s ANCSA (Alaska Native Claims Settlement Act) 14(h)(1) site inventory, and recent use-areas like airstrips, bridges, mines, and cabins that are adjacent to APE mapped trails and recreation use areas, based on the premise that these areas may also be locations where future increased human travel may occur;

- 3) Areas adjacent to APE-mapped trails and recreation areas with known high cultural resource potential as determined by the site locational modeling and 2012 aerial and pedestrian reconnaissance, based on the premise that these areas may also be locations where future increased human travel may occur.

## **4. METHODS AND VARIANCES IN 2013**

### **4.1. Previous Surveys**

In accounting for information from previous surveys to understand the Susitna cultural resource site inventory and make the results more statistically representative, AEA implemented the methods as described in RSP Section 13.5.4.1 with no variances. Developing a modern archaeological survey strategy typically begins with:

- 1) a review of relevant literature and previous archaeological work in the study area, often involving museum and/or archival research; and
- 2) a geographic information system-(GIS)-assisted field examination of topography and other environmental variables.

Cultural resource field studies were performed in the late 1970s and early 1980s as part of the investigations for the earlier Susitna dam project. Investigations conducted within the study area between 1978 and 1985 documented almost 300 cultural properties spanning the last 11,000 years. Site types in the inventory include historic and protohistoric archaeological sites, historic buildings and ruins, and other cultural features. Many of these sites are within, and would be inundated by, the proposed Watana Reservoir. Subsequent archaeological investigations following the initial surveys have located and recorded additional cultural resources and expanded knowledge of known sites (cf. Betts 1987; Blong 2011; Dilley 1988; Wygal 2009; VanderHoek et al. 2007a and b).

The information collected in the late 1970s and early to mid-1980s—the “early 1980s-era” data—forms the bulk of the spatial data within the study area and resulted from two separate projects: the first by Dixon et al. (1980, 1985); and the second by Greiser et al. (1985, 1986). Methods used in the 1979 to 1984 fieldwork (Figure 4.1-1) included the delineation of “survey locales” by close examination of U.S. Geological Survey (USGS) topographic maps in combination with a survey strategy using additional environmental and artifact variables as analytical units. These variables were defined within a framework of research questions addressing the cultural historical sequence of this region. The survey locales were visited and the terrain within them that was judged higher in site potential was examined by pedestrian survey. In some places, shovel tests were placed in areas deemed of higher site potential. If sites were located either by observation of surface artifacts or by subsurface discovery, more concentrated testing then took place. Areas considered of lesser site potential (as determined by maps and on-the-ground judgment) were not surveyed or tested. Concentrated testing meant that the archaeologists set up a grid at a point of site discovery, and then dug shovel tests along transects at specified intervals outward from the discovery point (Figure 4.1-1). Thus systematic grids of shovel tests (round holes approximately 12 inches [in] in diameter) and at least one square 16-in or 36-in test unit was excavated for each artifact discovery. Concentrated testing occurred mainly

within the impoundment and only at already-detected sites; major portions of survey locales were not subjected to concentrated testing and in some cases were not walked because terrain was deemed unsuitable.

Methods used in 1985 in the second of the two projects (Figure 4.1-1) included delineation of survey “units” by a random sampling method that was more explicitly predictive (Greiser et al. 1985). Two major variables, terrain and vegetation—each of which had numerous subgroups—were statistically assessed for associations with known sites across the project area; results were used to stratify areas into lesser or greater degrees of site potential. Then 160-acre survey units were randomly chosen from within a sample of the population of units defined by a grid of the project area. Pedestrian survey across the 160-acre units consisted of linear transects spaced at predetermined intervals that were walked regardless of topography. Though the method was systematic, fewer sites were located using this approach. Topographic features of higher site potential within the project area but outside a randomly selected survey unit were not surveyed.

Both methods described above have merit, and current survey strategies typically use aspects of both. Advanced GIS tools and the cumulative archaeological experience in field survey methods over the last 30 years contribute to today’s methods. GIS-based models provide a more effective means of spatially stratifying the Project area, enabling archaeologists to determine which areas appear to have lower or higher site potential, and this Study Plan calls for both types of areas to be tested to verify the assumptions on which models are based. The 1980s-era work used similar approaches but did not have the benefit of modern GIS or global positioning system (GPS) technology.

The early 1980s-era datasets represent a significant amount of field effort and thought, and they are especially useful for refining expectations about site discovery, artifact preservation, and stratigraphic contexts. Site discovery is one of the more straightforward processes in cultural resource management. In contrast, evaluating a site and determining whether it is eligible for listing in the National Register is often not straightforward, and may require revisiting and reassessing other sites within the APE that may be affected by the Project. Because of major differences in how site locations were recorded and the resulting variations in accuracy (GPS versus a pencil point on a paper map), as well as changes during the nearly 30 years since site discovery, matching site data collected during early 1980s-era work and current field observations can be difficult. The cultural resource investigations for the Project are being accomplished using best practices for modern archaeology. The utility of the early 1980s-era data depends in large part on how accurately the old sites can be matched to current field observations.

The review of previous investigations established a range of field methods appropriate for the work at hand, all of which were taken into account in defining the strategies for carrying out this Study Plan. The strategy employed for the Susitna survey employed randomly defined survey blocks receiving variable levels of field scrutiny depending on microtopography and other factors.



#### **4.1.1. Variances**

In 2013, there were no variances in implementing the method described in RSP Section 13.5.4.1 for reviewing and accounting for prior cultural resources surveys in the APE.

### **4.2. Locational Model and Survey Strategy**

In accounting for information from previous surveys to assemble a site location model and select survey strategies, AEA implemented the methods as described in Section 13.5.4.2 of the RSP with no variances. The 1980s-era archaeological literature helped define expectations about cultural resources within the study area, and also helped dictate survey strategies (Figure 4.2-1). The Study Plan laid out survey options and their advantages and disadvantages, leading to the approach used in 2012 and refined for application in 2013.

The 2012 model used to develop a survey strategy for the Project was based upon several digital datasets of varying spatial and chronological scales that are listed in Table 4.2-1. Datasets in many cases provide multiple variables for creating the model surface. For example, Digital Elevation Model data (elevation) are used to derive slope and aspect within the model area, and precipitation and temperature datasets provide monthly averages useful for creating variables of summer and winter extremes. The Project model has a visualized resolution of 30 m, but some datasets such as temperature and precipitation are based on coarser grids. The Source column in Table 4.2-1 lists agencies mainly responsible for collecting data and producing rasters (shapefiles). An increasing number of excellent websites specifically tailored for the distribution of downloadable data include the Statewide Digital Mapping Initiative (SDMI) based at University of Alaska Fairbanks, the USGS's Alaska Geospatial Data Clearinghouse, and the State of Alaska Department of Natural Resources' own Alaska State Geo-Spatial Data Clearinghouse. Table 4.2-2 lists the variables examined in the modeling process. The modeling process was described in the Study Plan using vocabulary developed for GIS analysis.

In 2013, the modelling process recognized that different key subsistence resources drew prehistoric people to different regions on the landscape during different periods of the year. Four separate seasonal models were created in order to reflect this changing land use. Each model consists of the weighted key resources that were available for exploitation during each particular season. The reiteration is a modelled landscape reflecting generalized seasonal subsistence patterns. A GIS file of unique interest points that are populated in the model are available for download at <http://gis.suhydro.org/reports/isr>.

#### **4.2.1. Variances**

In 2013, there were no variances in implementing the methods described in RSP Section 13.5.4.2 for developing the locational model and survey strategy.

### **4.3. Survey Strategy and Phasing of Field Investigations in the Direct APE**

AEA implemented the methods as described in the Study Plan for survey strategy and phasing of field investigations in the direct APE (RSP Section 13.5.4.5) with no variances, including

methods related to culturally modified trees (CMTs) (RSP Section 13.5.4.3). The direct APE has been described, and includes the camp, corridors, and impoundment area (Figure 4.1-1). The field investigations in the direct APE involve two tasks: inventory – also called identification or Phase I, and evaluation or Phase II. Field investigations in 2013 focused on inventory of cultural resources in the direct APE. The Alaska OHA and SHPO have defined standards and guidelines for these surveys. The Identification Phase is defined as, “*reconnaissance level surveys . . . in the planning stages of a project. They are used to determine if an intensive survey or testing is warranted, but alone cannot normally be used to satisfy complete compliance. These studies entail development of research designs, archival and background research, field survey, analysis, and reporting. All surveys should include pedestrian (walkover) examinations of the ground surface and might include subsurface testing*” (OHA 2003).

This and other direction from prior studies led to a multi-phased plan to inventory and evaluate cultural resources in the direct APE. The previous survey approaches were studied. A short field reconnaissance was conducted in 2012. An aerial survey was conducted prior to full field crew deployment in 2013 to verify proposed survey segments (Figure 4.2-1), identify helicopter landing zones, and provide more detailed planning information. Aerial surveys are conducted by helicopter at low airspeed and altitude across large expanses of land. Areas of high potential within these vast expanses are recorded by GPS and camera and returned to later for pedestrian survey and testing. Aerial surveys are also necessary in areas where geographic boundaries prohibit access by survey crews. Examples in the study area include steep valleys and river crossings, high elevations, and barrier waterfalls.

Pedestrian surveys are conducted in areas that have high potential for cultural resources, and particularly where there is high potential for deep aeolian sediments (especially during the 2013 field season). Methods used to optimally cover large areas of land (e.g., 40 acres) are to space a crew of six people 10 to 15 meters apart in a line. The crew travels in a parallel line across the land inspecting the ground surface, trees, understory vegetation, and micro-topography for cultural resources.

The field investigation in 2013 focused on inventory of properties within the area of direct impact, and only on lands for which access was available (private lands belonging to Cook Inlet Regional Inc. or the village corporations of Chickaloon-Moose Creek Native Association, Inc., Tyonek Native Corporation, or Knikatu, Inc. were not permitted for access; these lands are hereafter referred to as the Cook Inlet Region Working Group or CIRWG).

Phase I survey in the direct APE differs in coverage, intensity, and access in comparison to Phase I surveys in the indirect APE (see subsection 13.5.4.4 for indirect APE survey strategy). Survey in the direct APE consisted of pedestrian transects (described above), which record high potential areas; these areas are tested as conditions and logistics allow (e.g., helicopter access, daylight/weather, size of landform, etc.). The majority of effort in both study seasons will be devoted to the direct APE.

Testing within a designated test area (regardless of whether or not it was identified by helicopter-based survey or pedestrian-based survey) consists of at least six, 50 x 50 centimeter (cm) test pits dug to a maximum of one meter depth below ground surface. Tests are hand-excavated using a shovel and trowel and screened through 1/4 in or 1/8 in mesh. Tests are spaced five to 10 meters

apart based on the size of the landform. Tests are aligned in a systematically oriented, recorded, and replicable grid pattern. Grid size, number of tests, grid spacing, and grid orientation are all dictated by the size and shape of the landform being investigated. If cultural resources are encountered during Phase I they are recorded as AHRS sites; restricted site information is reported in the summary field report.

#### **4.3.1. Variances**

In 2013, there were no variances in implementing the methods described in RSP Sections 13.5.4.3 and 13.5.4.5 for survey strategy and phasing of field investigations in the direct APE, including methods related to CMTs. While land-access permits were not available for CIRWG lands, this was not considered a variance because this study was designed to conduct field investigations within the study area over multiple years.

### **4.4. Survey Strategy and Phasing of Field Investigations in the Indirect APE**

With regard to the survey strategy and phasing of field investigations in the indirect APE (RSP Section 15.5.4.6), AEA implemented the methods as described in the Study Plan with no variances. The indirect APE as defined above and shown on Figure 4.1-1 is the portion that may see increased human access and activity due to Project development.

Phase I survey in the indirect APE was conducted by aerial survey in 2013. Aerial survey by helicopter is conducted at low air speed and altitude. Pedestrian survey will also be necessary in the indirect APE where the Project has been determined to have a potential effect on cultural resources, but the amount will be less than in the direct APE, and that effort is planned for the next field season. Pedestrian survey is conducted by a crew of individuals spread along a line 10 to 15 m apart.

#### **4.4.1. Variances**

In 2013, there were no variances in implementing the methods described in RSP Section 13.5.4.6 for survey strategy and phasing of field investigations in the indirect APE.

### **4.5. Mapping-Related Activities**

With regard to mapping, AEA implemented the methods as described in the Study Plan (RSP Section 13.5.4.7), except for the variance described below. The Study Plan contained a series of bullets addressing the need for highly accurate GPS information for recorded sites, the need for adjusting known site distributions based on the improved information, and incorporation of that new information into revision of the site location model. This is all being done as reflected in the Results, discussed in Section 5 below. The Study Plan also specifically identified the need to create a geodatabase containing all current Ahtna and Dena'ina place names in the study area, which is also reported in Results, below.

#### **4.5.1. Variances**

The Study Plan called for a geodatabase to support TCP-related information throughout the first study season in 2013. To date, however, there has not been sufficient data collected to support such a file. The geodatabase for TCP-related information will be compiled during the next study season as data is obtained, meeting the Study Plan objectives.

#### **4.6. Ethnogeography-Related Activities**

With regard to ethnogeography, AEA implemented the methods as described in the Study Plan (RSP Section 13.5.4.8), except for the variance described below. The ethnogeography investigation assembled data with which to help address specific study objectives. Information was collected to help inventory and evaluate cultural resources documented by the archaeological investigation, as well as to determine whether any TCPs are present within the direct or indirect APE. The HPMP will also incorporate information derived from the ethnogeography study. Archival and oral history sources were relied upon for the ethnogeography investigation; site investigations were not conducted except for an aerial reconnaissance of the study area for general orientation. The method included contemporary interviews with Ahtna Natives whose traditional territory included the Study Area (Figure 4.6-1), archival research focused upon pertinent written and photographic records, and transcription, translation, and analysis of oral history tapes from decades past – some in the Ahtna language, and some in English. Specific tasks identified in the Study Plan and initiated in 2013 are:

- Held a regional elder's conference as a venue to inform communities of the upcoming research work, including information on other AEA sponsored research, such as fisheries and wildlife studies, subsistence studies, etc.
- Identified, inventoried, and compiled archival data sources of the Ahtna language, with particular focus on the Jake Tansy recordings on land use and travel (Tansy 1982), some of which appear in Kari (2010).
- Identified and inventoried additional data from collections of tapes and transcripts recorded in the English language by the BIA, the Institute for Social and Economic research (ISER), Ahtna, Inc., and other researchers, including Frederica de Laguna and Constance West.
- Identified knowledgeable Ahtna individuals to interview for current ethnographic information on potential TCPs in the study area.
- Collected interview data on contemporary land use and the cultural landscape.
- Developed interview protocol with the assistance of knowledgeable Ahtna individuals to guide effective interviewing.
- Interviewed Ahtna persons of different ages.
- Documented the results of interviews, and transcribed tapes.
- Developed data on three types of trails: BLM layer, field observation layer, and historic foot trail layer.

#### **4.6.1. Variances**

In 2013, AEA did not initiate the Dena'ina ethnogeography component recommended by FERC's February 1 SPD did not occur in 2013, including the following:

- Interviews with Dena'ina elders.
- Collection of Dena'ina information on land use and cultural landscape features.
- Documentation of results of Dena'ina interviews and transcribe tapes.

During 2013, AEA began discussions with CIRWG members regarding land access and other licensing matters. As of this writing, these discussions continue, and AEA will meet study objectives by continuing discussions with CIRWG members, reaching out to tribes in the region, and conducting this work during the next study season.

#### **4.7. Synthesis and Analysis Activities**

The ongoing synthesis and analysis of the cultural resource data reflects the fact that AEA implemented the methods as described in the Study Plan (RSP Section 13.5.4.9) with no variances. The Study Plan identified analysis and synthesis of information as a separate task in the Methods subsection, specifically including development of historic context, updating of cultural chronology using specialized techniques if appropriate, adding the new site location numbers to the total sample size to see if the model still has explanatory value, transcribing and translating Native place name terms and narratives, and proofreading and correcting initial and secondary translations by language specialists or Native elders, with a final comprehensive report to be submitted as the Updated Study Report. This data is to be combined with archaeological results; locational model, historic and contemporary land use patterns, Native perspectives on the land and resources, Native-language place names, and narratives about important locations. This is what most of the remainder of this resource study discusses, and these subjects are addressed in the Results chapter (realizing that some of the information will not be fully developed until after the next season results are available).

##### **4.7.1. Variances**

In 2013, there were no variances in implementing the methods described for synthesis and analysis described in the Study Plan (RSP Section 13.5.4.9).

#### **4.8. Unanticipated Discoveries Protocol**

Protocols for the unexpected discovery of human remains, graves, and/or burial items are described in the Study Plan for Unanticipated Discoveries of Cultural Resources and Human Remains (Appendix A), and AEA implemented the methods described in the Study Plan with no variances. That document outlines the methods for confirming field discoveries, communicating discovery information, and contacting state officials, federal agents, and affected Alaska Native entities.

Implementation of the unanticipated discovery protocol in 2013 involved a training program delivered to most Project field personnel – both contractors and AEA officials, to teach them

what to do if they found human remains or other possible cultural resources. A one-page field card with pertinent contact information was prepared and distributed to field workers. Copies of the Protocol were printed and posted in briefing rooms at field camps. All contractors were directed to AEA's website where the Plan and the field card were posted. Senior archaeologists conducted field briefings for contractors stationed at Talkeetna Camp, Stephan Lake Camp, Gold Creek Camp, Curry Camp, Gracious House, and Alpine Creek Lodge. When transportation between camps was impossible an archaeologist conducted the training telephonically. The presentation was also videotaped to provide footage for a training video, to broaden the training delivery media. All contractors in attendance of the training wrote their name on a sign-in sheet to acknowledge that they attended the training.

Where possible, AEA facilitated in-person instruction throughout the 2013 study season. As new study personnel entered the field, archaeologists were dispatched to the camps to conduct the training. Archaeologists stationed at Alpine Creek Lodge and Stephan Lake Camp also conducted new worker training in group meetings, while remote camps were connected telephonically. In addition, AEA produced a video of the training with the intention that future field personnel receive the training online.

#### **4.8.1. Variances**

In 2013, there were no variances in implementing the methods described in the Unanticipated Discoveries Protocol.

### **4.9. Archaeological Internship and Additional Workforce**

AEA implemented the methods as described in the Study Plan (RSP Section 13.5.4.11), with the exception of variances explained below. The cultural resources study included an internship program to provide the opportunity for Alaska Native students, community members, and/or others with an interest in anthropology to participate in the fieldwork and work alongside Registered Professional Archaeologists (RPA). Duties, desired experience, and preferred educational background for field personnel are outlined below.

The Study Plan also provided for professional archaeologists and agency staff to be invited to participate in the field investigations. Agencies such as the OHA and the Matanuska-Susitna Borough that granted land access permits to AEA stipulated that field trips within the study area be arranged. Precedent was established in 2012 when AEA invited Matanuska-Susitna Borough and OHA archaeologists to work with the archaeological crews in the field. Identical stipulations and invitations were made in 2013.

#### **4.9.1. Variances**

The Study Plan stated the intention of creating an internship program and inviting MatSu Borough archaeologists to participate in the fieldwork. Technically this was accomplished, but the internship program attracted no respondents, and the MatSu Borough archaeologist's scheduled field trip did not take place.

A flyer advertising the internship was distributed during the March 2013 Ahtna Elders Conference at the Cantwell Community Center, to develop interest in the archaeology

component of the study and inform possible applicants of a paid internship position. This elicited no response. Inquiries were also made at the Alaska Native Heritage Center in Anchorage for possible applicants, with the same result. A third attempt was made to generate potential interns from the Alaska Native Language Center in Fairbanks, but by then the summer was well underway and potentially interested individuals at the Center had already secured positions elsewhere.

The internship position is still open and available through the duration of the Cultural Resources Study. An expansion of the internship to include potential duties such as office assistance, laboratory assistance, and research assistance is planned for the next study season to encourage participation of Alaska Natives and others who may not desire to do fieldwork.

In 2013, OHA and Matanuska-Susitna Borough staff were again invited to participate in the project. The participation of OHA staff was not explicitly required in the Study Plan, but the opportunity to participate is a stipulation in the permit to work on State lands. The State Archaeologist took part in aerial and pedestrian survey as well as subsurface testing and sample collection during the 2013 field season. A borough staff member was similarly scheduled to participate in 2013, but the fieldwork was canceled due to flooding in the study area and—because of the lateness of the season—another trip could not be scheduled. AEA plans to continue arranging field trips for agency personnel during the next study season.

## **5. RESULTS**

The results of the cultural resource investigation—both ethnological and archaeological—will be combined with those from the next study season to produce a comprehensive inventory of cultural resources. The ethnogeography analysis of 2013 is sufficiently advanced to revise the cultural context needed to understand the ongoing resource inventory. Summarized in this subsection are the results of the ethnogeography and archaeology investigations, as well as a survey done specifically for a seismic station as part of ongoing Section 106 compliance.

### **5.1. Ethnogeography Investigation**

The ethnogeography investigation followed the Study Plan, although the Dena'ina component will be initiated in the next study season. The nine specified tasks identified in the Study Plan (see Section 13.5.4.6) were all addressed by work in 2013, and can be subsumed into the subsections described below. During the 2013 field season the study team collected data on Alaska Native culture and history in the study area, with the interviews and transcripts collected, translated, and transcribed primarily between February and August of 2013. Interviewees were asked questions to elicit information about past and present land use, cultural sites and their history, and in particular TCPs. Much of the resulting data is in the Ahtna language, including a place name analysis, and the ethnogeography study was much influenced by the fact that there are Ahtna elders still living who speak the Ahtna language. The ethnogeography investigation involved: a regional elders conference, analysis of archived Ahtna language interviews, analysis of archived English language interviews, contemporary English language interviews, place name mapping and ethnogeographic analysis, and trail mapping.

### 5.1.1. Regional Elders Conference

A regional elder's conference was held in the *Hwtsaay Hwt'aene* community of Cantwell on March 26, 2013. Ahtna Inc., in consultation with the Ahtna Heritage Foundation, organized the meeting and decided to host it in Cantwell since the proposed project is in the traditional territory of the Cantwell people. Twenty-nine people attended the meeting.

Five presentations were made at the Cantwell elder's conference. The Project Manager described the project generally, an anthropologist with Stephen Braund and Associates described the local and traditional knowledge study conducted as part of the Subsistence investigation, the Program Lead introduced the cultural and paleontological resources studies, a researcher from Ahtna Inc. provided an overview of the ethnogeography investigation, and four decades of research on Ahtna place names and geography were discussed and compared to the current work.

### 5.1.2. Archived Ahtna Language Interviews

Audio collections identified as pertinent to the Susitna project were those of the Alaska Native Language Center Archive (ANLC) at the University of Alaska, Fairbanks, and those at the Ahtna Heritage Foundation's *C'ek'aedi Hwnax* archives in Copper Center. The inventory began by first identifying audio recordings by individuals well-informed about Western Ahtna history and culture—such as Jake Tansy, Henry Peters, Morrie Secondchief, Fred Ewan, and Jim Tyone. Tables 5.1-1 and 5.1-2 list audio recordings from each collection that pertain to the Western Ahtna.

Audio recordings were then grouped by content or genre: place names, land use, history and events, and mythic stories (Table 5.1-1). Often a single recording had a number of different segments—each concerning a separate genre.

The third step was to categorize each recording according to its relevance. Recordings were ranked A, B, C, and D (Table 5.1-3) with the “A-List narratives” being those that focus on Western Ahtna place names and travel and provide intensive and objective documentation of *Hwtsaay Hwt'aene* territory. The “A-List recordings” were made by expert speakers of the Ahtna language such as Jake Tansy (1907-2003); as a renowned traveler and hunter his narratives provide the most detailed portrait of an “ethnographic landscape” documented from a single-band territory for any Alaska Native language.

Recorded stories pertinent to the upper Susitna River from Ahtna narrators Jim Tyone, Jack Tyone, John Shaginoff, Henry Peters (Peters and Peters 1977), Jake Tansy, Morrie Secondchief, Fred Ewan, and Fred John were evaluated, along with the few known Shem Pete recordings and narrative segments that pertain to the Talkeetna Mountains and the upper Susitna River. Audio recordings by Dena'ina elders Shem Pete, John Shaginoff, and others that relate to traditional Dena'ina territory have been identified but not translated or transcribed (Table 5.1-1).

### 5.1.3. Archived English Language Interviews

Oral history tapes and transcripts pertaining to the project area, in English but spoken by Ahtna elders, were sought and reviewed for their pertinence to the project area. Most of the material is from well-known bodies of work (Section 5.1.2). The fieldwork of Frederica de Laguna and



Catherine McClellan in the 1950s and 1960s (de Laguna 1969-70, 1970; McClellan 1970, 1975; de Laguna and McClellan (1981) formed a foundation for the Susitna data collection. Reckord (1983a, 1983b) and West (1973) were closely consulted. All reports, tape recordings, interview transcripts, and field notes produced by BIA investigators were reviewed for the Susitna ethnogeography investigation.

Peter Dessauer and David Harvey's (1980) investigation of the Valdez Creek mining district produced a collection of 18 audiotapes that includes interviews with several Ahtna elders who grew up at Valdez Creek. These tapes were inventoried and selected portions were transcribed by the ethnogeography team.

In the 1990s the Institute for Social and Economic Research (ISER), in conjunction with the Copper River Native Association (CRNA), recorded interviews with individuals discussing Ahtna subsistence patterns. The study team inventoried these recordings and transcribed those relating to the project.

#### **5.1.4. Contemporary English Language Interviews**

The ethnogeography investigation included interviews with living Ahtna elders and soon-to-be-elders to help identify potential TCPs in the study area, and to help inventory and evaluate cultural sites addressed by the archaeological investigation. The process required the development of an interview protocol, identification of individuals to be interviewed, and then interviews with those individuals about contemporary land use and the cultural landscape.

The Ahtna Lands Committee, the director of the Ahtna Heritage Foundation, and the Ahtna Tribal Conservation District were contacted for assistance in developing the interview protocol and selecting interviewees. The protocol was designed to record Ahtna perspectives on the significance of activity sites, burials, sacred or spiritual sites, avoidance sites, and traditional use areas of contemporary, historic, or prehistoric age. The interview format was semi-structured, meaning the same open-ended questions were asked of each respondent. This helped standardize the description of Ahtna traditions, customs, and practices, and contributed to the development of a regional overview of Ahtna land and activities from the late 19th century through the present. It was understood that answers to some of the questions could involve privileged cultural property. The final protocol had 20 questions (Appendix B).

The Ahtna Lands Committee represents the various tribes in the region. A June 14, 2013 letter (Appendix C) to the Committee asking for assistance with interview protocol and identification of interviewees did not elicit a formal response, but individual committee members provided feedback and suggested individuals to interview. Neither the Committee nor the committee members suggested changes to the protocol circulated for their review.

The selection of knowledgeable Ahtna individuals to be interviewed was aided by the professional backgrounds of the principal researchers, who have over 30 years of experience working with Ahtna elders. Individuals were selected based on their knowledge of the area and their ability to speak the Ahtna language.

The interviews were conducted in both Ahtna and English by the Ethnogeography Project Lead and a specialist from Ahtna Incorporated. Thirteen interviews were conducted during July and

August of 2013, primarily in Cantwell (Table 5.1-4). In Cantwell the interviews took place at respondents' homes, local restaurants, or at the Native Village of Cantwell office. Respondents were encouraged to answer each question and provide additional information as they desired, and were also informed that they were free to leave questions unanswered. Each interview took approximately one to two hours. Interviewees described a variety of different types of sites that can be roughly categorized as:

- Subsistence sites used for hunting, fishing, gathering, and trapping
- Villages, hunting camps, fish camps, trapping cabins, and stop overs
- Trails or routes
- Sites that have to do with supernatural phenomena such as giant fish
- Geographic features, and areas
- Historical sites

All of these sites have place names – most in the Ahtna Language. In the text of this ISR, Ahtna words are in italics and Ahtna place names are labeled with a number corresponding to the Ahtna Place Names List (Kari 2008a) to be updated and presented in the USR (Updated Study Report).

If agreed to by the respondent, a digital recording in a standard Wave or MP3 format was made of the interview. Research assistants at the Ahtna Heritage Foundation transcribed the interviews, coded them, and prepared summaries (Table 5.1-5). Original documents and audio recordings are catalogued and stored at Ahtna Heritage Foundation *C'ek'aedi Hwnax* archives in Copper Center.

The interviews for the Susitna ethnogeography investigation were conducted in accordance with the National Academy of Science's Principles for the Conduct of Research in the Arctic. Research guidelines adhere to principles of informed consent, confidentiality of personal information, community review of draft findings, and the provision of copies of research products including audio recordings and project reports to studied communities.

#### **5.1.5. Place Name Mapping and Ethnogeography**

The *Ahtna Place Names Lists* assembled as a draft in the 1980s by Jim Kari (2008a) was revised and updated (including map locations) by the study team in 2013, resulting in a total of 2,476 records for the entire Ahtna region. The number of records was increased by 21% for three sections relevant to the Project: the Nenana River (19 additional records), Susitna River (20 additional records) and Gulkana River (10 additional records). Currently there are 721 records pertaining to the study area. These records are available for download at <http://gis.suhydro.org/reports/isr>

In addition to place names in the Ahtna language, current records include locally used English names not officially on maps such as “Glacier Stream,” “Four Mile Lake,” “Moose Meadows,” and “Wolf Point.” While the geographic coverage of such unofficial place names is uneven, these locally used terms afford a sense of how functional place-naming continues on the current landscape, especially in the hands of Cantwell Ahtna people.

### 5.1.6. Trail Mapping

The study plan identified three data sets to be developed for trails: one based on BLM trail data, one based on field observations of the archaeological crews, and one (expected to be a foot-trail map) based on the ethnogeography investigation.

As part of the ethnogeography investigation, “routes” by four or five Ahtna speakers are being mapped. A route is an ordered sequence of places on trails (usually by foot, at times by boat). Details about how trails are named and embedded in the Ahtna place names system are being discriminated. For example, Ahtna “stream-trails” are the most significant and are generally referred to simply by stream name. Investigations to date have noted 192 trails. The trail inventory is being assembled as a table and as maps, and will include plots of routes used by the last three generations of Cantwell Ahtna people.

## 5.2. Archaeological Investigation

### 5.2.1. Inventory

The 2013 archaeological investigation involved pedestrian and aerial inspection of selected survey polygons in conjunction with re-visitation of known AHRS sites in the direct APE. The field work began June 24 and lasted until August 30, 2013. The six crews – each comprised of six archaeologists and technicians—took two breaks during the summer roughly every three weeks. Arrivals and departures of crews were staggered depending on available transportation, lodge/camp space, and weather. Crews were deployed from Stephan Lake Lodge, Gracious House, and Alpine Creek Lodge. Initially all crews were stationed at Stephan Lake Lodge, and consequently they focused on the impoundment area and inspected high-potential survey polygons while recording clusters of nearby AHRS sites in the direct APE. A few sites were found to be mislabeled or poorly plotted, and a few sites in the indirect APE were re-recorded (Appendix D). Later in the season the field work included the access corridors.

Logistical challenges and a shortened field season resulted in reduced testing in 2013. In addition to postponing the evaluation phase of the Study until the next study season, the lack of testing meant that most newly found sites are as-yet known only from their surface manifestations, and the number of undiscovered subsurface cultural resources remaining to be found is thus likely higher than it would be otherwise. It is expected that many of the known surface sites as well as yet-to-be-surveyed high-potential areas identified by the model will be found to contain buried cultural resources.

The AHRS site inventory as developed by the end of 2013 is presented in Appendix D. A total of 68 known AHRS sites were re-recorded, and an additional 82 new sites were recorded. Together with the three new sites found in 2012, the site inventory in the portion of the direct APE surveyed thus far (omitting CIRWG land) currently totals 167 AHRS sites. Engineering components that define the direct APE are also convenient units within which to discuss the archaeological results: (1) a proposed impoundment; (2) a dam and camp facility; and (3) three access corridor alternatives with transmission lines (Figure 3-1).

#### 5.2.1.1. *Impoundment*

The Susitna-Watana dam will impound an area of approximately 23,528 acres, or about 37 square miles. The reservoir will be roughly 39 miles long and up to 3 miles wide. There were 61 known AHRS sites within the proposed impoundment, of which 38 were found and re-recorded. Within the impoundment the model produced 118 high-potential survey polygons to be investigated using pedestrian methods. An additional 13 high-potential polygons were selected for survey by air. The survey methods and locational modeling are described in the previous section of this report, while the subsurface testing results appear in a subsequent section. The total pedestrian survey coverage in 2013 was 3,248 acres, and an additional 4,953 acres were surveyed by air (Figure 5.2-1). The field teams surveyed 100% of the selected pedestrian polygons and 65% of the aerial polygons. Ten new discoveries worthy of AHRS numbers (mostly surface scatters of prehistoric stone flakes) were found in the impoundment area.

#### 5.2.1.2. *Dam and Camp*

The dam and camp facility form an irregular boundary around the proposed dam site encompassing 9,573 acres. This component was intensively surveyed early in the summer due to its proximity to the Stephan Lake field camp. There were 20 known AHRS sites in the dam and camp facility component, of which 15 were found and re-recorded. Of the 120 pedestrian survey polygons, the survey teams completed 100% (Figure 5.2-2). The model selected no aerial survey polygons for this part of the study area. Three new discoveries worthy of AHRS numbers were found in the dam and camp facilities component, making a total of 18 sites in the current sample; two from the 1980s-era work that have not yet been found.

#### 5.2.1.3. *Denali Corridor*

The three proposed access routes are of various lengths and widths, and thus each differs in area. The Denali corridor is 70 miles (113 km) long and 25,919 acres in area, and is relatively linear. The proposed corridor extends from the dam and camp facilities area north up the Deadman Creek watershed and into the headwaters of the Brushkana Creek and Seattle Creek watersheds. The corridor then bends west to meet the Denali Highway and continues to Cantwell at the Parks Highway junction. Of the 12 known AHRS sites in the Denali corridor, seven were found and re-recorded. The model identified 45 pedestrian survey polygons and five aerial polygons to be investigated within the corridor. The total area of the survey polygons is 8,141 acres and 4,102 acres respectively. The field crews covered 100% of the pedestrian polygons and 47.2% of the aerial polygons (Figure 5.2-3). A total of 52 previously unknown sites were found and assigned AHRS numbers, making a current inventory of 59 sites; another five previously recorded ones have not yet been found.

#### 5.2.1.4. *Chulitna Corridor*

The Chulitna corridor is 43 miles (69 km) long and 19,679 acres in area. It extends west from the dam and camp facility area along and north of the main stem of the middle Susitna River, and onward to the Parks Highway. Of seven known AHRS sites, all were found and re-recorded. Another known site originally mapped in the indirect APE was found to be actually in the direct APE and was re-recorded. The model selected 43 pedestrian survey polygons and three aerial

polygons to be inspected within the corridor. The total areas of the survey polygons are 3,757 acres and 6,943 acres, respectively. The field teams covered 100% of the pedestrian polygons and 100% of the aerial polygons (Figure 5.2-4). Sixteen previously unknown sites were found and recorded, creating a current inventory of 24 sites within the Chulitna corridor.

#### **5.2.1.5. Gold Creek Corridor**

The Gold Creek corridor is 41 miles (66 km) long and 18,490 acres in area. It extends west from the dam and camp facilities, travels south of the main stem of the middle Susitna River, and eventually joins Gold Creek and continues west to the Parks Highway. The one known AHRS site in the Chulitna corridor is on CIRWG lands and was not inspected in 2013. The model identified nine pedestrian survey polygons and zero aerial polygons for inspection within the corridor. With a total area of 1,676 acres in the nine survey polygons, and an area of 911 acres surveyed, 54% of the pedestrian polygons were completed in 2013 (Figure 5.2-5). One previously unknown site was recorded, for a total current inventory of two sites in the Gold Creek corridor.

### **5.2.2. Locational Modeling**

An explanatory model recognizing statistical correlations among prehistoric site locations was desired to aid archaeological inventory of the study area. Four geospatial models were created characterizing generalized game habitat ranges for winter, spring, summer, and autumn. Each key species was given a value of 1 if present or -1 if absent, and the resulting index is assumed to correlate with the intensity of human activity within a specific area. Increased effort exploiting game and other resources would be expected within areas having a high index, while areas less suitable for game and other resources have a lower index and would be expected to receive less harvesting. Because site formation and preservation are also dependent on variables such as surface geology, landscape stability, visibility, and slope, these variables were also coded and incorporated into the model.

The locational model was applied to the APE to stratify the study area into areas of higher and lower potential for sites. Survey focused on areas with higher potential for sites, though areas judged of lower potential were also sampled. Operationalization of the model suggests that it is most effective for finding buried protohistoric or prehistoric sites because: a) land use patterns subsequently shifted after Euro-American contact, and b) historic resources such as collapsed cabins and mines are often more readily identifiable through aerial survey or historic records.

### **5.2.3. Testing**

The locational model identified 262 high-potential areas for prehistoric cultural resources, of which 26 were archaeologically tested for surface and subsurface cultural resources in 2013. Two previously unknown archaeological sites—each consisting of prehistoric stone artifacts—were found. None of the 26 polygons tested in 2013 are considered to be completely investigated. As mentioned in Section 5.2.1, testing was limited in 2013 because of logistical challenges, and consequently the sample size of sites to be evaluated in the direct and indirect APEs has yet to be determined.

#### **5.2.4. Laboratory Analyses**

Limited subsurface testing took place in 2013, but 44 surface sites had artifacts that were collected in the study area. Complete artifacts such as bifaces, scrapers, and microblades were collected in the field, as were diagnostic artifacts such as side-notched points or obsidian flakes. Fossils that appeared culturally modified were also collected.

Buried organic soil samples were collected from three test areas and one known AHRS site (Table 5.2-1). The radiocarbon results help refine the tephra chronology within the study area and provide a baseline for assigning prehistoric cultural occupations to their proper time period.

Obsidian artifacts collected from the study area were analyzed using the x-ray florescence technique to measure trace elements and impurities (Table 5.2-2). Generally, different obsidian sources have different geochemical signatures, so when compared with the geological sources' known composition obsidian artifacts can be traced to their place of origin. Preliminary results indicate that prehistoric peoples in the study area may have been collecting obsidian from an as-yet undiscovered geological source, since the specimens' trace element configuration differs from that of known sources (Figure 5.2-6).

#### **5.2.5. Synthesis**

The ethnogeography component of the cultural resource investigations contributed considerable information to develop the traditional Native context for the study area and surrounding region. Three main Athabascan linguistic groups, represented by small semi-nomadic bands, inhabited and controlled large parts of this territory: the Dena'ina, Ahtna, and Lower Tanana. Current archaeological and linguistic evidence suggests the Dena'ina have inhabited the southern foothills of the south-central and southwestern Alaska range for perhaps the past 4000 years, likely migrating from the Copper river drainage or Kuskokwim river drainage areas. Speakers of the Ahtna and Lower Tanana dialects appear to have inhabited their respective regions since prior to the Dena'ina migration (Kari and Fall 2003; Kari 2010).

The Study Team used oral histories and other ethnogeographic information to incorporate place names, routes, trails, and other traditionally recognized features into a GIS geodatabase, allowing correlation of ethnohistoric datasets with prehistoric archaeology datasets. The ethnographic record indicates that indigenous groups migrated in annual, repetitive patterns across the landscape, and that these patterns were dependent on game location and proximity to enemy territory. Despite oral histories about hostilities, the archaeological record reflects similar artifacts, houses, and subsistence strategies among the three groups.

### **5.3. Facilities Survey**

A request was received to conduct an archaeological survey prior to installation of aseismic station on BLM land, on Deadman Mountain. Archaeologists completed the survey on July 7 as a Phase I or "Site Identification" survey, to determine whether cultural resources would be affected by the activity. Archaeological fieldwork included pedestrian and aerial survey of the APE – defined as an arbitrary polygon based on a map supplied by AEA (Figure 5.3-1). An area

of approximately 240 acres was inspected around the associated landform with the boundary defined by land contour.

No cultural features, artifacts, human remains, or other cultural resources were encountered in the survey area surrounding the proposed seismic station location, or in associated helicopter landing zones. Previous investigators reported no cultural materials in this immediate area (Dixon et al. 1985). Poor weather – low visibility, driving sleet/rain, and very strong winds – hampered the archaeological survey. It was apparent that the summit of the mountain is exposed to regular ice movement, slope-wash, and water/wind erosion, resulting in poor preservation conditions for cultural resources. The report of investigations submitted to BLM concluded that likely no historic properties would be affected by the project.

## **6. DISCUSSION**

Only the ethnogeography and archaeology data sets were developed in 2013; as provided in the Study Plan, the lake-coring effort will take place in the next study season.

### **6.1. Ethnogeography Investigation**

The ethnogeography investigation is on schedule in developing the Ahtna information. The ongoing analyses of Ahtna oral history tapes and transcripts—along with the contemporary interviews—will yield a data set with which to develop cultural context for the cultural resource inventory and to determine in particular whether any TCPs are present in the study area. The Dena'ina component of the ethnogeography study has not yet been defined, pending commencement of this work in the next study season.

Information of mutual value to the ethnogeography investigation and the Traditional Knowledge component under the Subsistence Study has been shared between the two teams. This has consisted primarily of lists of names and contact information for interviewees and potential interviewees.

There is little comparison between the ethnogeographic investigations being undertaken as part of the current Susitna studies and the early 1980s-era work. Ethnographic observations made during the earlier studies were mostly incidental to the archaeological inventory, and the term “Traditional Cultural Property” as a formal concept in historic preservation law and regulation did not yet exist. The Ahtna place name inventory was not nearly as extensive and complete as it is now, thanks to continued scholarly work over the ensuing decades. Long term Ahtna presence in the study area is established through the over 350 places names (Figure 6.1-1).

One important finding is that contemporary Ahtna continue to recognize traditional territorial boundaries. During the contemporary interviews many Ahtna in discussing the project deferred to their kinsmen living in Cantwell. Acknowledging traditional boundaries is one way that contemporary Western Ahtna individuals continue their ancestral connection to the land—the places where their ancestors came from, and where they made their living. This attachment to place is demonstrated through subsistence activities that continue the actions of their ancestors on the same land, in the same locations (Figure 6.1-2; Appendix E).

## 6.2. Archaeological Investigation

The archaeological investigation is on schedule to date. The total number of sites newly recorded or re-recorded in the direct APE is 150. These exclude 33 more known sites with AHRS numbers which either could not be found or were on lands for which the Study Team did not have permission to access. In 2012, 14 known AHRS sites were re-recorded and another three new sites were found, so that in 2012-2013 the Susitna cultural resource investigations have developed field observations on an inventory of 167 sites.

The discovery of 85 new sites in the study area demonstrates the incompleteness of the early 1980s-era surveys, and it is anticipated that additional new sites will be discovered in the next study season. Preliminary analysis indicates the site types are similar from the earlier sample to the new, except that rock cairns have been added as a previously unrecognized site type.

The locational model has been a useful tool for increasing new site discoveries. Division into four seasonal models should provide finer-grained results for site discovery in the next study season and improve the field teams' efficiency in surveying the indirect APE.

Collaboration with other studies such as 13.6 Paleontology and 4.5 Geology is ongoing. Archaeological field teams found four previously unknown fossil sites in the direct APE, and they have been reported to the paleontological resource team. Archaeological survey and testing will occur simultaneously with the paleontology field work in the next study season. Many survey areas overlap and thus increase the chances of one resource team finding new sites of interest to the other resource investigators. The Study Team has also compared notes with the Geology Study Team, and the exchange of information about subsurface sediments and bedrock geology will help refine the tephra chronology for the study area. The tephra chronology in turn bears directly on the paleoenvironmental reconstruction associated with the Cultural Resources Study, for which field work is to take place in the next study season, promising further benefit from continued information-sharing with the Geology Team.

## 7. COMPLETING THE STUDY

[Section 7 appears in the Part C section of this ISR.]

## 8. LITERATURE CITED

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## 9. TABLES

**Table 4.2-1. Datasets Used in Project Model 1**

Dataset	Source	Access
Archaeological site type and location	Alaska Heritage Resources Survey (AHRs)- Alaska Office of History and Archaeology	Permit
Revised Statute 2477 Historic Trails	Alaska Dept. of Natural Resources	Public
Digital elevation models (DEM)	United States Geological Survey	Public
Surface geology, lode deposits, sediment basins	United States Geological Survey, Alaska Dept. of Natural Resources	Public
Ecoregion	United States Geological Survey	Public
Hydrography	United States Geological Survey, Alaska Dept. of Natural Resources	Public
Vegetation	U of California, Berkeley, Ducks Unlimited	Public
Wetlands	United States Fish and Wildlife Service	Public
Wildlife (fowl, fish, mammals)	Alaska Department of Fish and Game & Alaska Department of Natural Resources	Public
Permafrost	National Snow and Ice Data Center	Public
Temperature and Precipitation	National Snow and Ice Data Center	Public

**Table 4.2-2. Classified Variables Examined in Project Locational Modeling**

Variables	Classes
Site type	classes 1 through 4 (Random, Prehistoric, Native Historic, Euro-American Historic)
DEM	classes 1 through 23 (100-meter increments)
Slope	classes 1 through 9 (5-degree increments)
Aspect	classes 1 through 9 (45-degree increments)
Surficial geology	16 classes (dataset codes)
Possible tool-stone location	presence/absence (1, 0)
Coal deposits	presence/absence (1, 0)
Metalliferous-lode deposits	presence/absence (1, 0)
Vegetation	classes 0 through 23 (dataset codes)
Distance to lake	classes 1 through 4 (within 100, 500, 1000 meters, & > 1000 meters)
Distance to stream	classes 1 through 4 (within 100, 500, 1000 meters, & > 1000 meters)
Distance to anadromous waters	classes 1 through 4 (within 100, 500, 1000 meters, & > 1000 meters)
Caribou ranges	presence/absence (1, 0 - summer, winter, calving, migration routes)
Moose ranges	presence/absence (1, 0 - summer, winter, calving, rutting)
Dall's sheep ranges	presence/absence (1, 0 - summer, winter)
Dall's sheep licks	presence/absence (1, 0)
Duck & geese ranges	presence/absence (1, 0 - nesting, molting, summer, winter, migration routes)
Swan ranges	presence/absence (1, 0 - nesting, molting, summer, winter, migration routes)
Seabird colonies	presence/absence (1, 0)
Eagle/raptor concentrations	presence/absence (1, 0)
Precipitation	classes 1 through 6, January (20 millimeter increments) & July (30 millimeter increments)
Temperature	classes 1 through 5, January (3-degree C increments) & July (1 degree C increments)
Permafrost	classes 1 through 8 (dataset codes)

**Table 5.1-1. Selected Western Ahtna Recordings from the Alaska Native Language Center**

ANLC#	Old #	Interviewee	Topic	Date of Recording
<b>Recordings related to Place Names and Routes</b>				
ANLC5006	AT21.2	Tansy, Jake	3 travel routes	11/6/1980
ANLC7011	AT21.2	Tansy, Jake	Western Ahtna place names	11/6/1982
ANLC7024	AT 100	Tansy, Jake	Western Ahtna place names	8/28/1998
ANLC5055	AT 101	Tansy, Jake	Western Ahtna place names	11/30/1998
ANLC0809	AT28	Tyone, Jim	Gulkana Geography	6/26/1981
ANLC5009a	AT33	Tyone, Jim	Western Ahtna place names	2/15/1982
ANLC5009b	AT 33 1st	Tyone, Jim	Tyone Lake to K'aasi	
ANLC5011	34 2nd	Tyone, Jim and Pete Ewan	Western Ahtna place names	3/22/1982
ANLC7012	36 3rd	Tyone, Jim and Pete Ewan	Western Ahtna place names	3/22/1982
ANLC5013	38	Ewan, Fred and Jim Tyone	Charley Lake, Tyone Lake	7/13/1982
<b>Recordings related to Land Use and Harvest</b>				
ANLC5006	AT23b/24b	Tansy, Jake	Valdez Creek activities	1/20/1981
ANLC5015b	AT40	Tansy, Jake	Tyone River Village	10/10/1984
5055-last		Tansy, Jake	anecdotes	
ANLC7031	AT106	Tansy, Jake	training, noise, wood, crafts, fishing,	3/1/2000
ANLC7033	AT127	Tansy, Jake	Fishing Crafts, baet, ciilhwya	1/21/2003
ANLC5043		Tansy, Jake	Betts interview	
ANLC5011	34 2nd	Tyone, Jim	Western Ahtna use areas	3/22/1982
BIA MS-9-23-88		Secondchief, Morrie	Tyone River Village	
ANLC3828		Peters, Henry	Western Ahtna use areas	2/19/1981
<b>Recordings related to History, Events, People and Songs</b>				
ANLC0816	AT4	Henry and Jennie Peters,	Nenana War Story	9/4/1976
ANLC5030	AT86	John, Fred	Naltsiin at Tyone L	
5009b		Tyone, Jim	Tyone L Ni'ilyaas	
ANLC5015b	AT40	Tansy, Jake	Tsusena Lake fish	10/10/1984
ANLC5015b	AT40	Tansy, Jake	noko'en (2)	
ANLC5015b	AT40	Tansy, Jake	Ewan lake Aleuts	8/26/1985
new2013-1	new2013-1	Ewan, Fred	War with Aleuts	3/12/2013
<b>Recordings related to Yenida'a, Sukdu (mythic narratives)</b>				
ANLC7031	AT106	Tansy, Jake	sucker, raven-gull-eagle, woodpecker	3/1/2000
ANLC7010	21.1	Tansy, Jake	1982 texts + 2	11/1/1980
ANLC7011	21.2	Tansy, Jake	1982 texts, place seg	11/6/1980
ANLC5015a	AT40	Tansy, Jake	duck woman, salmon	3/8/1983
ANLC5015	AT40	Tansy, Jake	ling cod	
ANLC5028	35	Tyone, Jim	Raven brings light	3/23/1982
ANLC7033	AT127	Tansy, Jake	baet, ciilhwya	1/21/2003

ANLC#	Old #	Interviewee	Topic	Date of Recording
Recordings related to Educational, Linguistic				
ANLC5058		Mayo, Louise, Nicholas Jane	Cantwell Ahtna Language Lessons	6/24/1905
Dena'ina recordings to be translated and transcribed in 2014				
ANLC4311	AT88	Shaginoff, John	West Ahtna/Dena'ina	3/4/1985
ANLC1270		Pete, Shem	updenpeo	
ANLC3709		Pete, Shem	tiduhuk'	
ANLC3708		Pete, Shem	tiduhuk'	
ANLC3682		Pete, Shem	1906 Kroto pottlatch	
ANLC3681		Pete, Shem	Sghaytu	
ANLC1275		Pete, Shem	Ch'anqet'	
ANLC1391		Pete, Shem	2nd Ch'anqet'	
ANLC3700a	TI87	Pete, Shem	qusamt.seg	
ANLC3700b	87ab	Pete, Shem	Wrangell map seg	2/7/85

**Table 5.1-2. Selected Western Ahtna Recordings from archives of the Ahtna Heritage Foundation**

Tape Number	Interviewee	Date of Recording	Access	Description	Status
14H1-0006-01	Henry Peters	7/25/1992			Completed
OTHB01-0018-01		10/13/1988			Completed
OTHB02-0021-01	Henry Peters	4/19/1988			Completed
OTHB01-0025-01	Henry Peters	10/13/1988	restricted	OTHB project	Completed
AI05-0003-01	J&M Secondchief/Jim & John Tyone	08/23-24/1977	standard		Completed
AI05-0007-01	Henry Peters	7/8/1977	standard	blm - Valdez Creek project	Completed
AI05-0006-01	Nicklie&Herman/Hpeters	7/9/1977 & 7/28/1977	standard	blm - Valdez Creek project	Completed
AI05-0002-01	Nome Stickivan	11/15/1977	standard	blm - Valdez Creek project	Completed
AI05-0001-01	A. Norton/Moliver+H. Peters			blm - Valdez Creek project	Completed
CRNA01-0072-01	MorrieSecondchief	4/19/1994		tyoneLk, Valdez Ck, Old Man Lk	Completed
14H1-0002-01	M.Secondchief	8/25/1993			Completed
14H1-0007-01	MorrieSecondchief	04/30/1993	restricted	Subsistence/Medicinal Plants	Completed
14H1-0005-01	M.Secondchief	7/15/1992			Completed
14H1-0010-01	M.Secondchief	8/30/1987			Completed
14H1-0011-01	M.Secondchief	8/30/1987		Continuation of above interview	Completed
14H1-0016-01	M.Secondchief	7/22/1988			Completed
14H1-0021-01	M.Secondchief	9/30/1980			Completed
FDL04-0024	Jennie Peters	4/19/1968	Ahtna_only	Nay'nade/I; Big chief; kinship of chief & relation to Neeleys	Completed
FDL04-0025	Jennie Peters; Jake & Lily Tansy	4/19/1968	Ahtna_only	Kinship; Tsunga/ hst'aene + Gulkana people	Completed
ANLC01-5118B-01	ANDY TYONE	4/10/2003	standard	Interview Andy	Completed



Tape Number	Interviewee	Date of Recording	Access	Description	Status
				Tyoneplacenames Mostly Lake Louise	
14H1-0002-01	Morrie Secondchief	08/25/1993	restricted		Completed
AHF05-0002-01	Atyone & Jmaxim	3/13/2013		Sites and use areas in Tyone Lake area	Completed
CRNA01-0058-01	F. Secondchief, Henry Peters, Lingo Nicklie Sr.?	4/20/1995	Educational	Recording very bad to 11:00	Completed
AHF05-0011-01	Jeanie Maxim	4/29/2013		Jeanie listens to & interprets FDL04-0052-01	Completed
AHF05-0012-01	Jeanie Maxim	4/29/2013		Jeanie listens to & interprets FDL04-0053-01	Completed
AHF05-0010-01	Andy Tyone	5/10/2013		Place names and use areas in Tyone country.	Completed
ANLC01-5091-01	Andy Tyone, Ben Neely, Fred Ewan, Johnny Goodlataw	01/28/2003	standard	FISHING (NON-SALMON)	Completed
ANLC01-5081-01	Jake Tansy	02/20/2001	standard	FISHING	Completed
ANLC01-0809-01	Jim Tyone		standard	Geography, trail TyoneLk to Knik 170 mi long	Completed
ANLC01-5009-01	Side B Jim Tyone	3/22/1982	standard	Tyone Lake country	Completed
CRNA01-0049-01	Ben Neeley, Fred Ewan	7/18/2000	Educational	Interview: Places	Completed
AI05-0003-01	Bud Carlson	3/26/2013		Interpreting/translating Naynade/i story	
AHF05-0006-01	Jnicholas	3/27/2013		#ANLC 7024 [?]; Switch to B-jt-5015 Woodsman story	
AHF05-0007-01	Jnicholas	3/28/2013		Kinship. Jake Tansy's Nay'nade/i story ANLC0816. Switch to ANLC5015.	Completed
AI05-0009-01	Bcarlson/Moliver			blm - Valdez Creek project	
AHF05-0003-01	Bud Carlson	3/26/2013		Nenana War Story and sites and uses of land around Valdez Creek area.	Completed

Tape Number	Interviewee	Date of Recording	Access	Description	Status
AHF05-0005-01	Bud Carlson	3/27/2013		Interview about Valdez Creek area	Completed
AHF05-0004-01	Louise Mayo	3/27/2013			
OTHB01-0040-01	Louise Mayo	10/18/1988	standard		
AHF05-0020-01	Charlie Hubbard	07/23/2013			in-progress
AHF05-0021-01	Charlie Hubbard	07/24/2013			in-progress
AHF05-0022-01	Charlie Hubbard	07/25/2013			
OTHB01-0002-01	Ben Neeley Interview	12/09/1987	ahtna_only	4:35 - 19:11 Tom Neeley from Tyone; sold meat to VC	Completed

**Table 5.1-3. Sample of Recordings Ordered as A, B, and C Texts**

Order	Edit Status	SUWaID No.	Date Recorded	Speaker	Length	Area of Segment
A1.1-4	5	5015 (seg)	10/10/1984	Jake Tansy	15 minutes	1 Banazdleni vista
		5006 (seg)	11/6/1980			2 Brushkana to Yanert to Valdez Creek
		7011(seg)	11/6/1980			3 Brushkana to mid Susitna
						4 Watana R-Jay Ck loop & sketch map
						5 JT synopsis & sketch map
A2	5	7024 (all)	8/28/1998	Jake Tansy	28 minutes	6 Valdez Ck-Tyone L-mid Su R
						7 Valdez Ck- Deadman L-mid Su
						8 Brushkana-Cantwell- Y anert
A3	4	5055 (part)	11/30/1998	Jake Tansy	59 minutes	JT drive and descriptions, 5 routes
A4	5	809 (all)	6/26/1981	Jim Tyone	28 minutes	1) Tyone L to Knik
						2) west from tyone L
						3) Tyone Lake to Tangle L
						4) Tyone L to Gulkana
						5) Tyone L to Gulkana winter
A5	5	5009b (seg)	3/22/1982	Jim Tyone	9 minutes	1) Tyone L west to TalkeetnaMts, Tyone R. mouth village
		7012 (seg)	3/23/1982			2) Hogan Hill vista
B1	5	5006 (seg)	11/6/1980	Jake Tansy	6 minutes	Valdez Creek activities
B2	5	5015 (seg)	10/10/1984	Jake Tansy	4 minutes	Tyone River mouth village life
B8	5	7031	3/1/2000	Jake Tansy	5 minutes	Mining at Valdez Creek, dynamiting and noise effect on animals
B11	5	7031	3/1/2000	Jake Tansy	7 minutes	Whitefish harvests in 3 or 4 places
C1	5	5015a (seg)	3/8/1983	Jake Tansy	3 minutes	Nts'ezibene', Creature in Tsusena Lake
C5	3	816	9/4/1976	Jenny and Henry Peters	10 minutes	the war at Nay'nadeli

**Table 5.1-4. Interviews on Contemporary Land Use in 2013**

Task	Contractor	Town	Type of Contact	Date
Ethnogeography	URS	Cantwell	Interview	7/10/2013
Ethnogeography	URS	Cantwell	Interview	7/11/2013
Ethnogeography	URS	Cantwell	Interview	7/11/2013
Ethnogeography	URS	Cantwell	Interview	7/15/2013
Ethnogeography	URS	Anchorage	Interview	7/16/2013
Ethnogeography	URS	Gulkana	Interview	7/18/2013
Ethnogeography	URS	Gulkana	Interview	7/19/2013
Ethnogeography	URS	Cantwell	Interview	7/29/2013
Ethnogeography	URS	Cantwell	Interview	7/29/2013
Ethnogeography	URS	Cantwell	Interview	7/29/2013
Ethnogeography	URS	Anchorage	Interview	8/9/2013

**Table 5.1-5. Interviews and Proofreading Sessions in 2013**

Task	Contractor	Town	Type of Contact	Date
Ethnogeography	URS	Gulkana	Interview/proofreading	3/12/2013
Ethnogeography	URS	Gulkana	Interview/proofreading	3/13/2013
Ethnogeography	URS	Cantwell	Interview/proofreading	3/26-27/3
Ethnogeography	URS	Cantwell	Interview/proofreading	3/27/2013
Ethnogeography	URS	Cantwell	Interview/proofreading	3/26-27/3
Ethnogeography	URS	Gulkana	Interview/proofreading	4/29/2013
Ethnogeography	URS	Gulkana	Interview/proofreading	4/30/2013
Ethnogeography	URS	Gulkana	Interview/proofreading	5/8/2013
Ethnogeography	URS	Gulkana	Interview/proofreading	5/9/2013
Ethnogeography	URS	Gulkana	Interview/proofreading	5/10/2013
Ethnogeography	URS	Gulkana	Interview/proofreading	5/29/2013
Ethnogeography	URS	Cantwell	Interview/proofreading	6/18/2013
Ethnogeography	URS	Cantwell	Interview/proofreading	6/18/2013
Ethnogeography	URS	Cantwell	Interview/proofreading	6/19/2013
Ethnogeography	URS	Cantwell	Interview/proofreading	6/19/2013
Ethnogeography	URS	Cantwell	Interview/proofreading	6/20/2013
Ethnogeography	URS	Cantwell	Interview	6/31/13
Ethnogeography	URS	Cantwell	Interview	6/31/13
Ethnogeography	URS	Fairbanks	Interview/proofreading	7/1/2013
Ethnogeography	URS	Cantwell	Interview	7/12/2013
Ethnogeography	URS	Fairbanks	Interview/proofreading	7/23-25/13
Ethnogeography	URS	Fairbanks	Interview/proofreading	8/20/2013

**Table 5.2-1. Radiocarbon Results (table 12/13/13)**

Location	Test Area	Cal B.P. (2-sigma)*	Radiocarbon Association with Tephra	Associated Tephra Depth	Field Tephra Description
Impoundment	IM-VAF-025	5316 to 5470 cal BP (3521 to 3367 cal BC)	N/A	Unknown	Unknown
Impoundment	IM-VAF-025	5276 to 5322 cal BP (3218 to 3175 cal BC)	N/A	Unknown	Unknown
Impoundment	IM-MRS-011	3984 to 4157 cal BP (2208 to 2035 cal BC)	Below	20-25 cmbs	Possible Tephra from Strat VI
Impoundment	IM-MRS-011	4078 to 4164 cal BP (2215 to 2129 cal BC)	Below	20-25 cmbs	Possible Tephra from Strat VI
Impoundment	IM-MRS-011	4138 to 4295 cal BP (2346 to 2189 cal BC)	Below	20-25 cmbs	Possible Tephra from Strat VI
Impoundment	IM-MRS-011	4220 to 4358 cal BP (2409 to 2271 cal BC)	Below	20-25 cmbs	Possible Tephra from Strat VI
Indirect APE	Geo-Pit	1352 to 1446 cal BP (504 to 598 cal AD)	Below	3-4 cmbs	Devil Tephra
Indirect APE	Geo-Pit	1318 to 1402 cal BP (548 to 632 cal AD)	Below	3-4 cmbs	Devil Tephra
Indirect APE	Geo-Pit	2953 to 3083 cal BP (1134 to 1004 cal BC)	Within	26-29 cmbs	Watana Tephra
Indirect APE	Geo-Pit	2924 to 3076 cal BP (1127 to 975 cal BC)	Within	26-29 cmbs	Watana Tephra
Indirect APE	Geo-Pit	5053 to 5189 cal BP (3240 to 3104 cal BC)	Above	35-38 cmbs	Oshetna?
Indirect APE	Geo-Pit	7435 to 7519 cal BP (5570 to 5486 cal BC)	Below	35-38 cmbs	Oshetna?
Impoundment	TLM-00226	1538 to 1629 cal BP (321 to 412 cal AD)	N/A	Unknown	Unknown

\*Calibrated age was calculated using 2-sigma CALIB 2.0 (INTCAL13) software.

**Table 5.2-2. X-ray Florescence Results on Obsidian Artifacts (table 11/6/13)**

Obsidian ID	Test Area	Artifact Type	K	Mn	Fe	Zn	Ga	Th	Rb	Sr	Y	Zr	Nb	Provisional Source
AOD-50584	DEMHH100	Possible Scraper	37131	165	8421	171	20	25	321	12	112	131	37	Unknown
AOD-50585	DEMHH100	Source material	37142	155	8155	171	20	27	307	10	114	130	37	Unknown
AOD-50586	DEMHH100	Source material	37079	170	7756	159	22	26	303	7	114	142	37	Unknown
AOD-50587	DEMHH100	Source material	37212	151	8148	173	20	23	311	10	117	129	37	Unknown
AOD-50588	DEMHH100	Source material	37150	176	7885	171	20	24	301	5	118	129	39	Unknown
AOD-50589	DEMHH100	Source material	37344	46	8478	194	19	20	327	6	111	116	35	Unknown

## 10. FIGURES

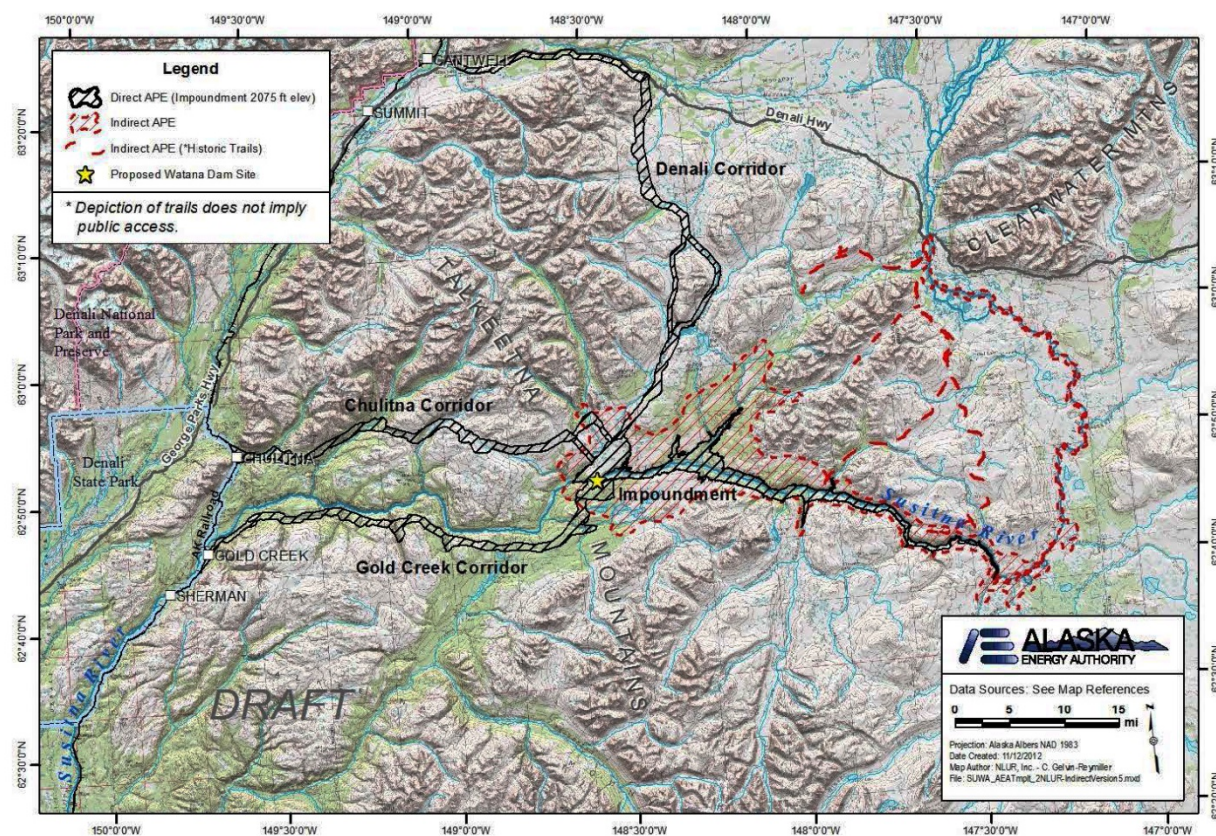


Figure 3-1. Map of Study Area for Cultural Resources.



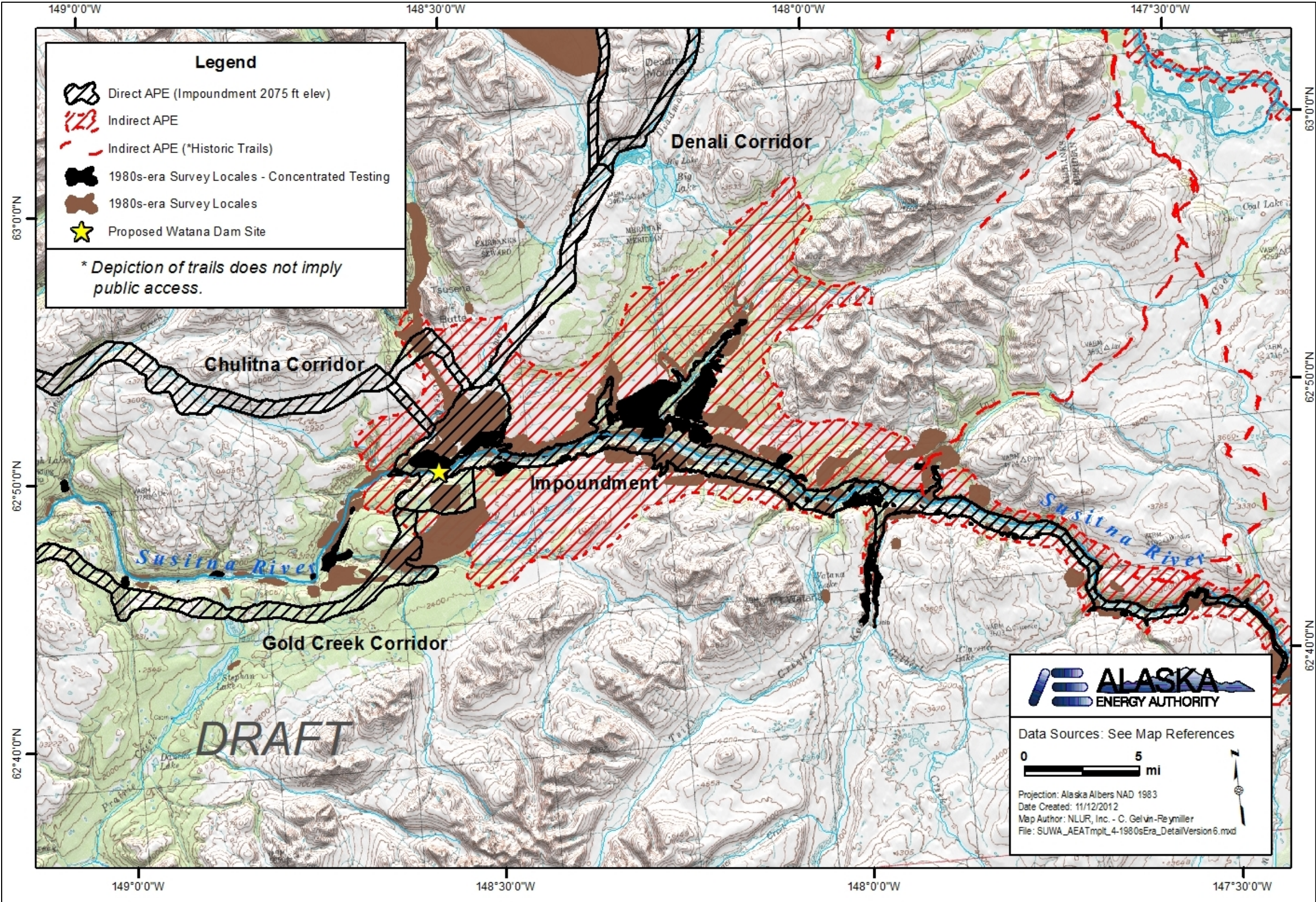


Figure 4.1-1. Map of Testing from the Early 1980s-era Investigations.



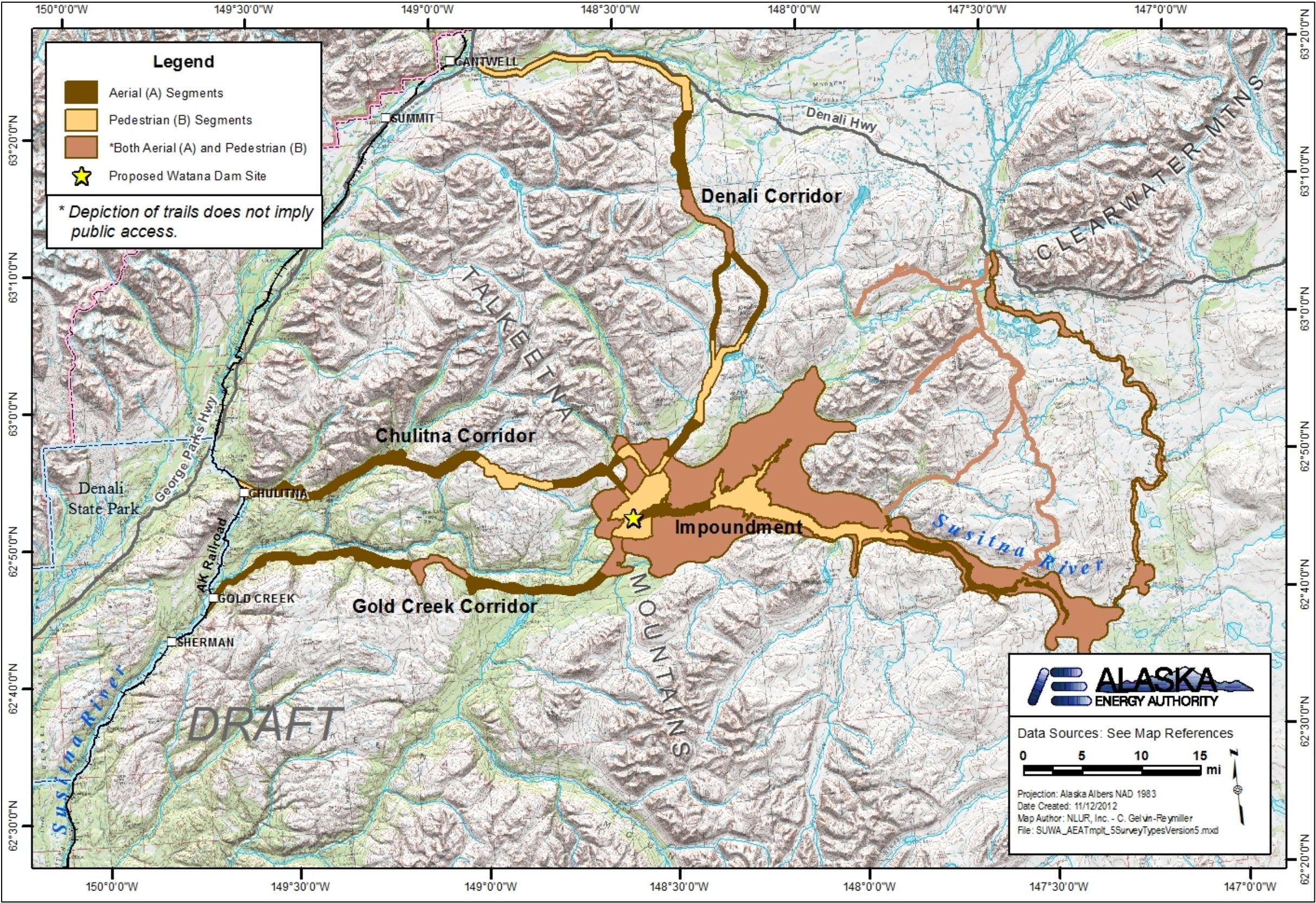


Figure 4.2-1. Map of Survey Methods in the Direct and Indirect APEs.



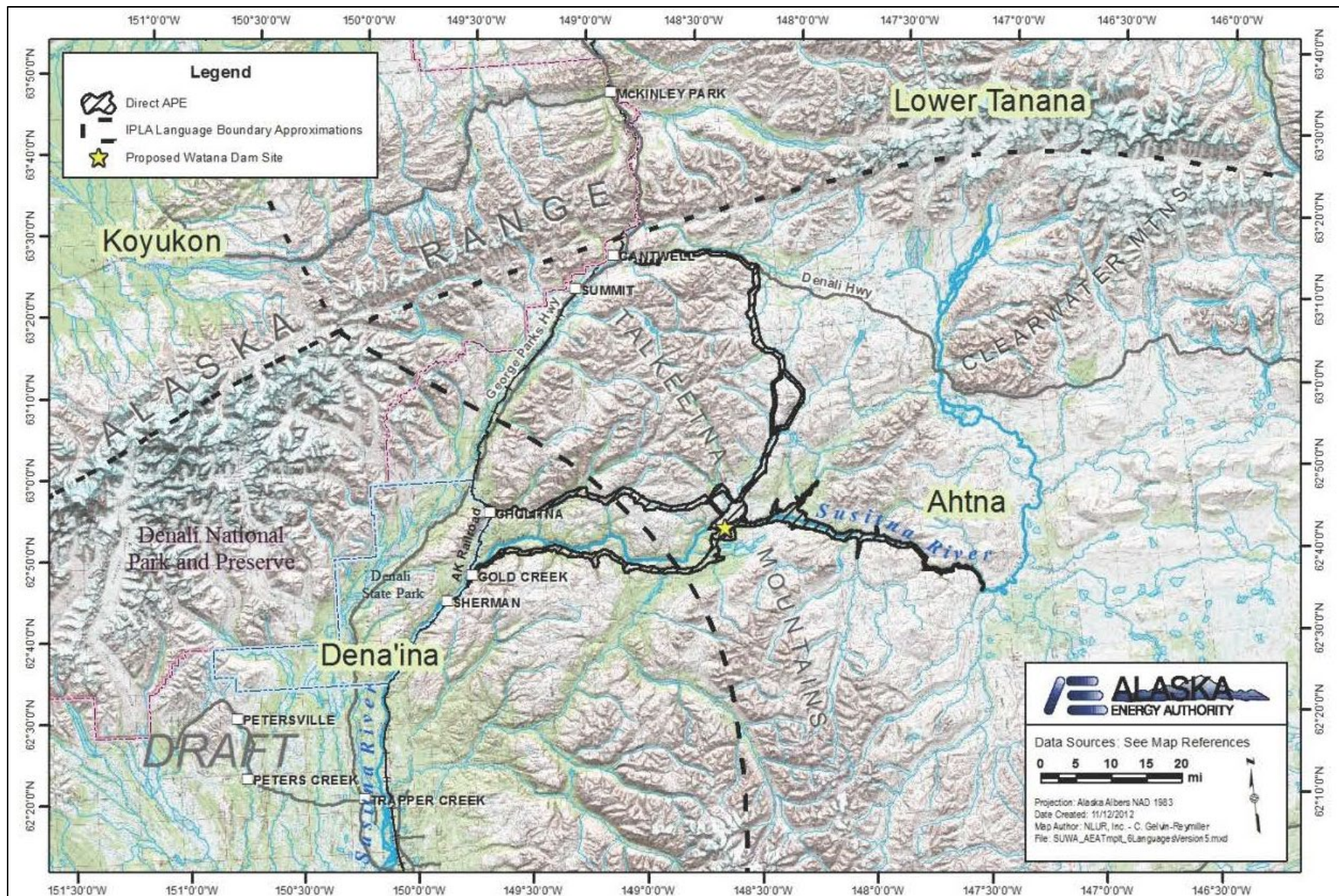


Figure 4.6-1. Map of Athabascan Groups Within and Peripheral to the Study Area.



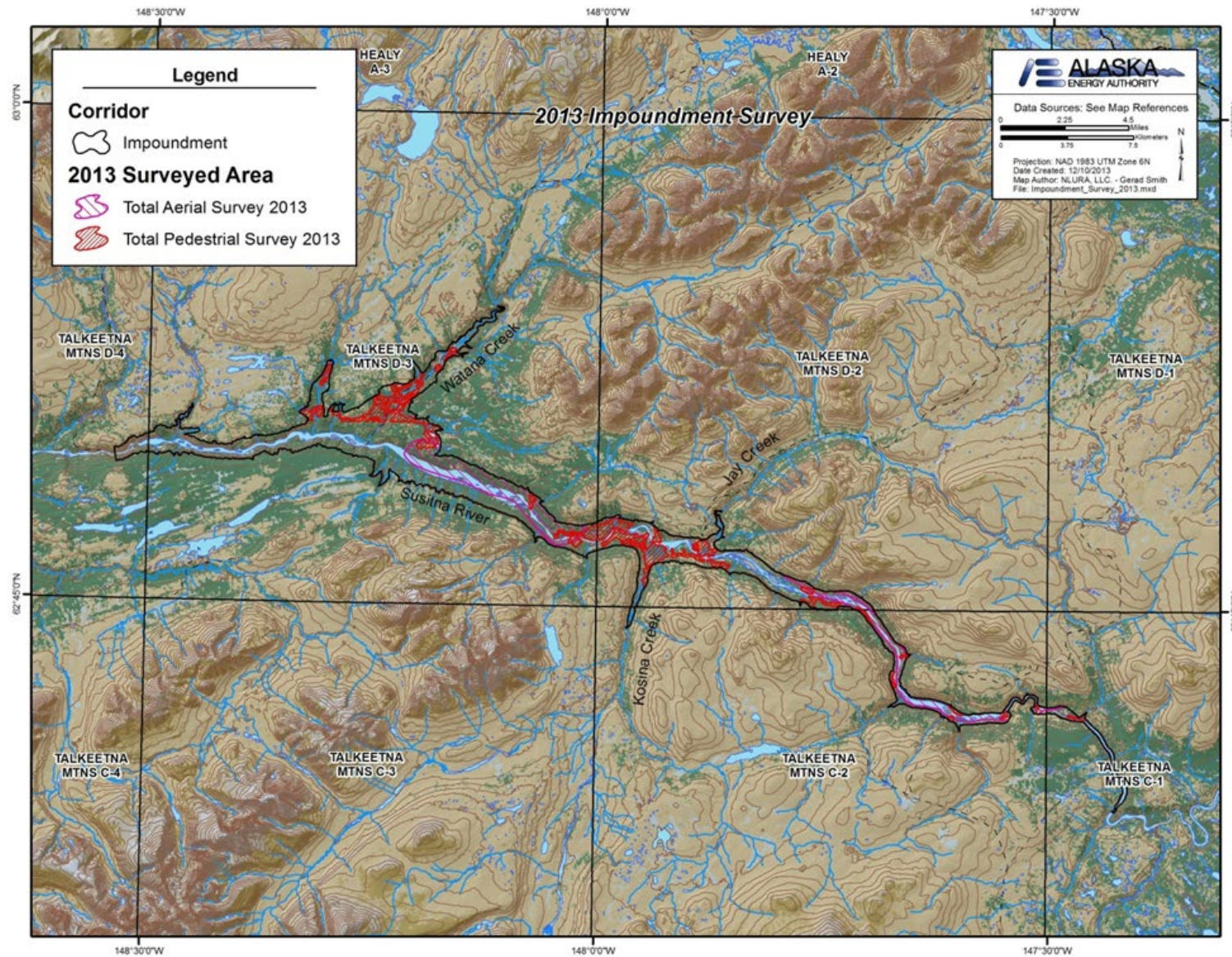


Figure 5.2-1. Map of the Impoundment Showing Survey Type and Coverage. (map 12/9/13)



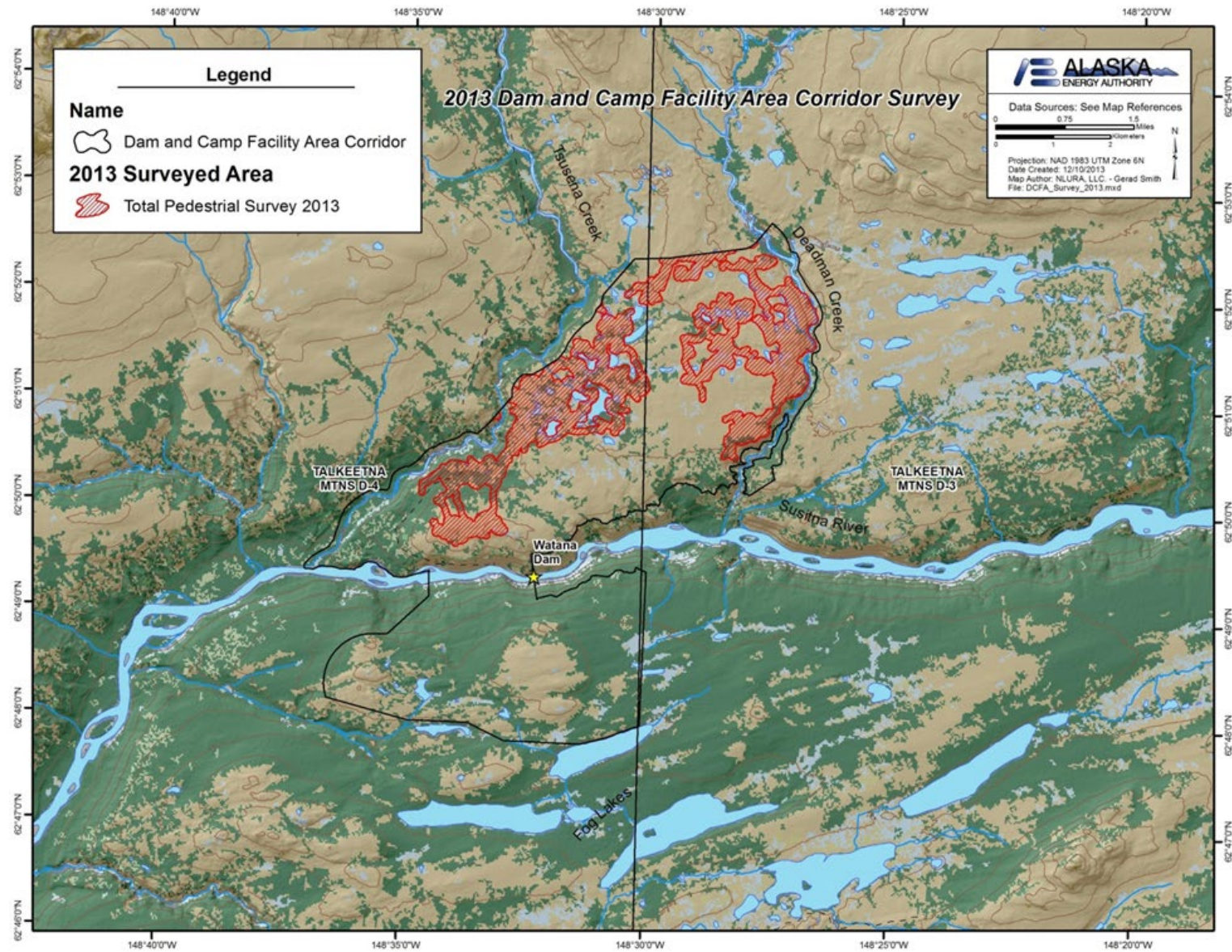


Figure 5.2-2. Map of the Dam and Camp Facilities Showing Survey Type and Coverage. (map 12/9/13)



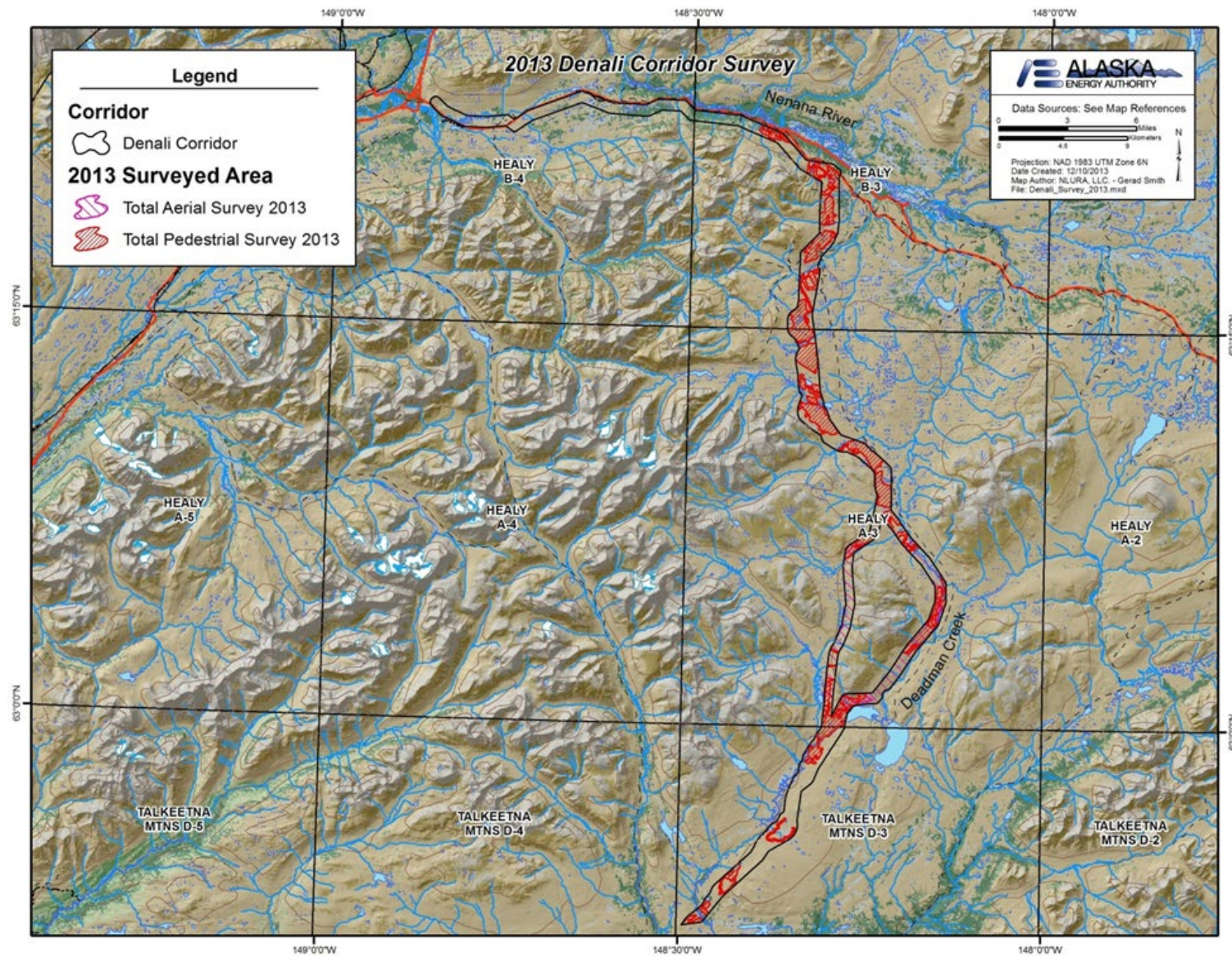


Figure 5.2-3. Map of the Denali Corridor Showing Survey Type and Coverage. (map 12/9/13)



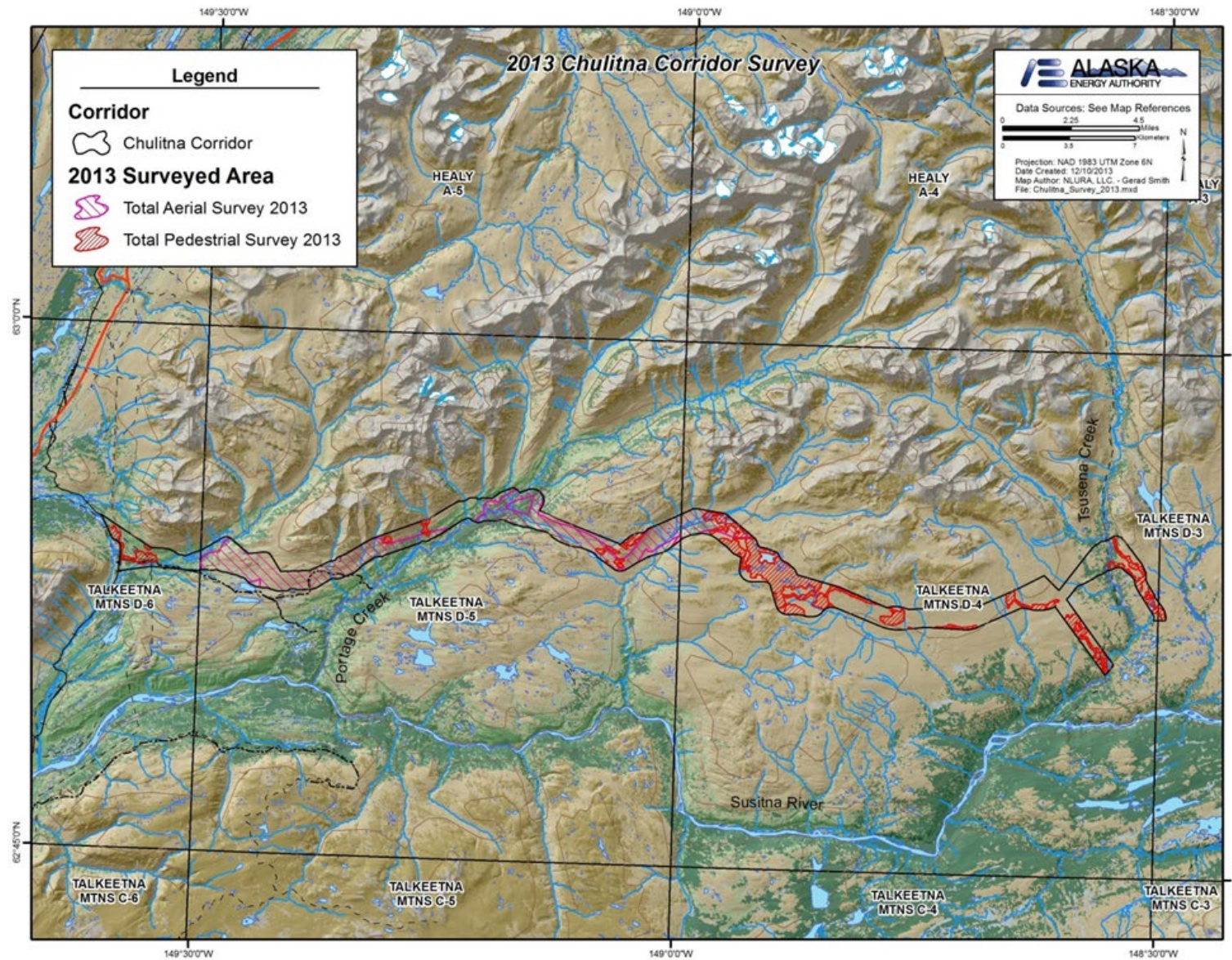


Figure 5.2-4. Map of the Chulitna Corridor Showing Survey Type and Coverage. (map 12/9/13)



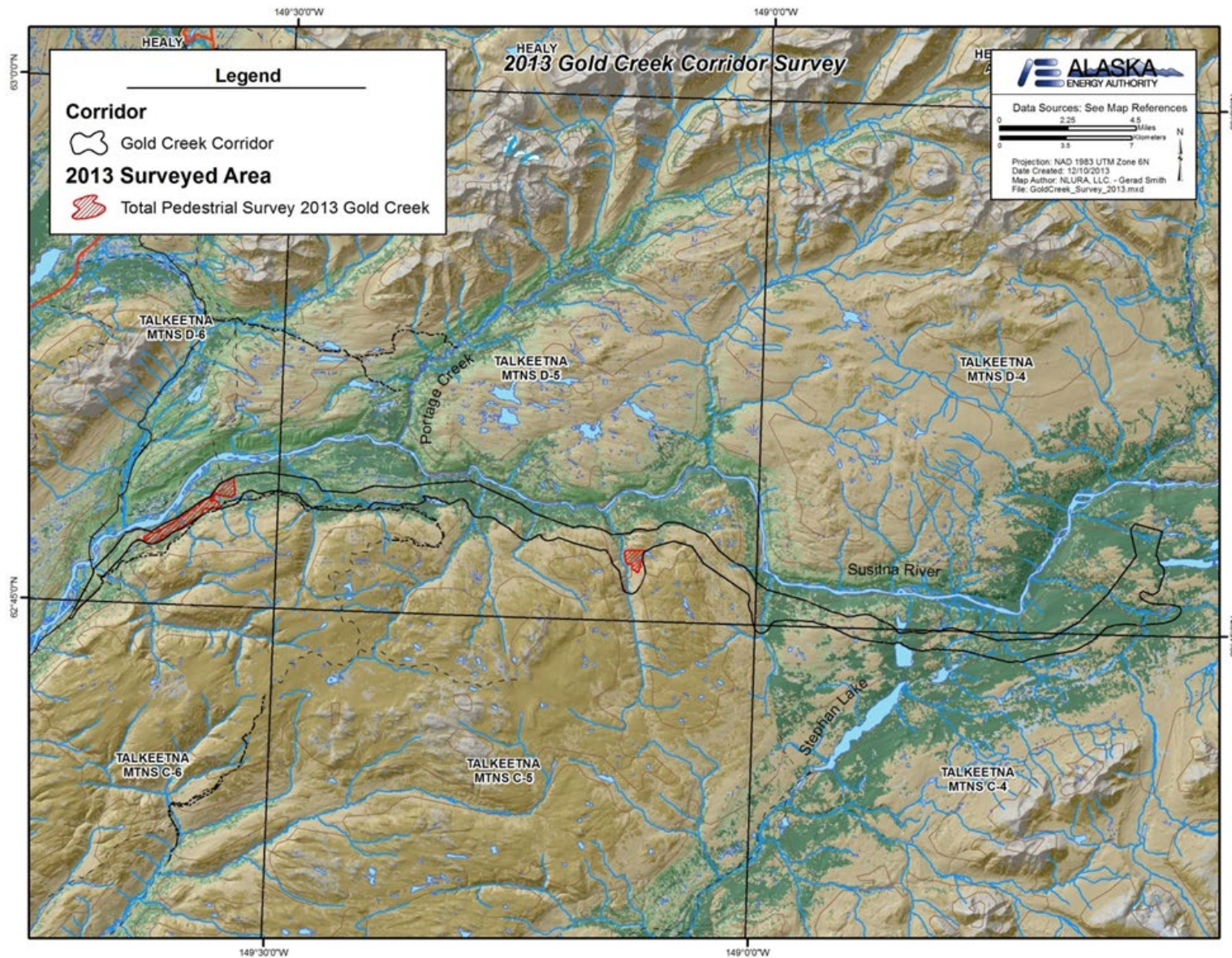


Figure 5.2-5. Map of the Gold Creek Corridor Showing Survey Type and Coverage. (map 12/9/13)

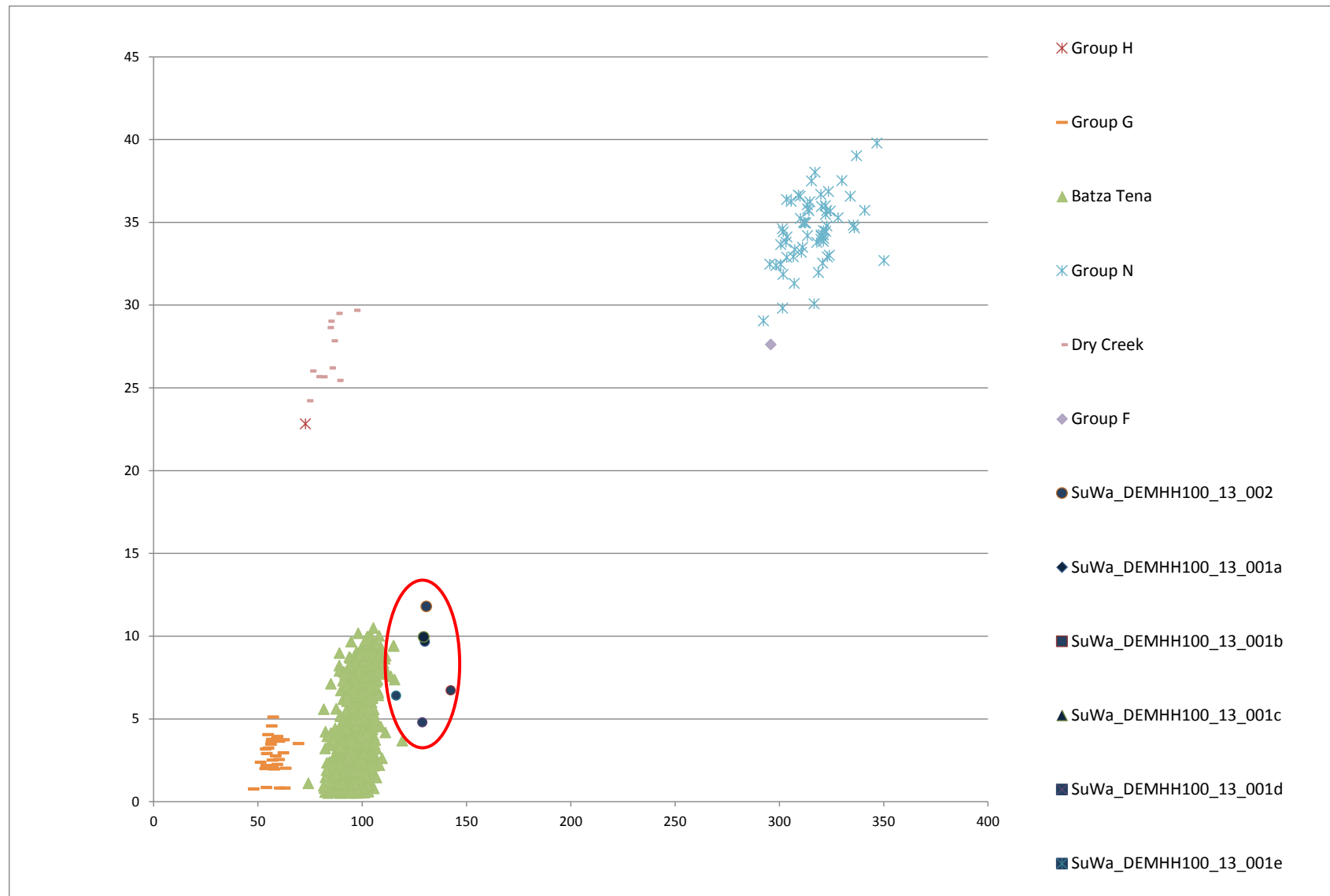


Figure 5.2-6. Grouping (in red ellipse) of Trace Elements in Obsidian Artifacts. (graph 11/6/13)



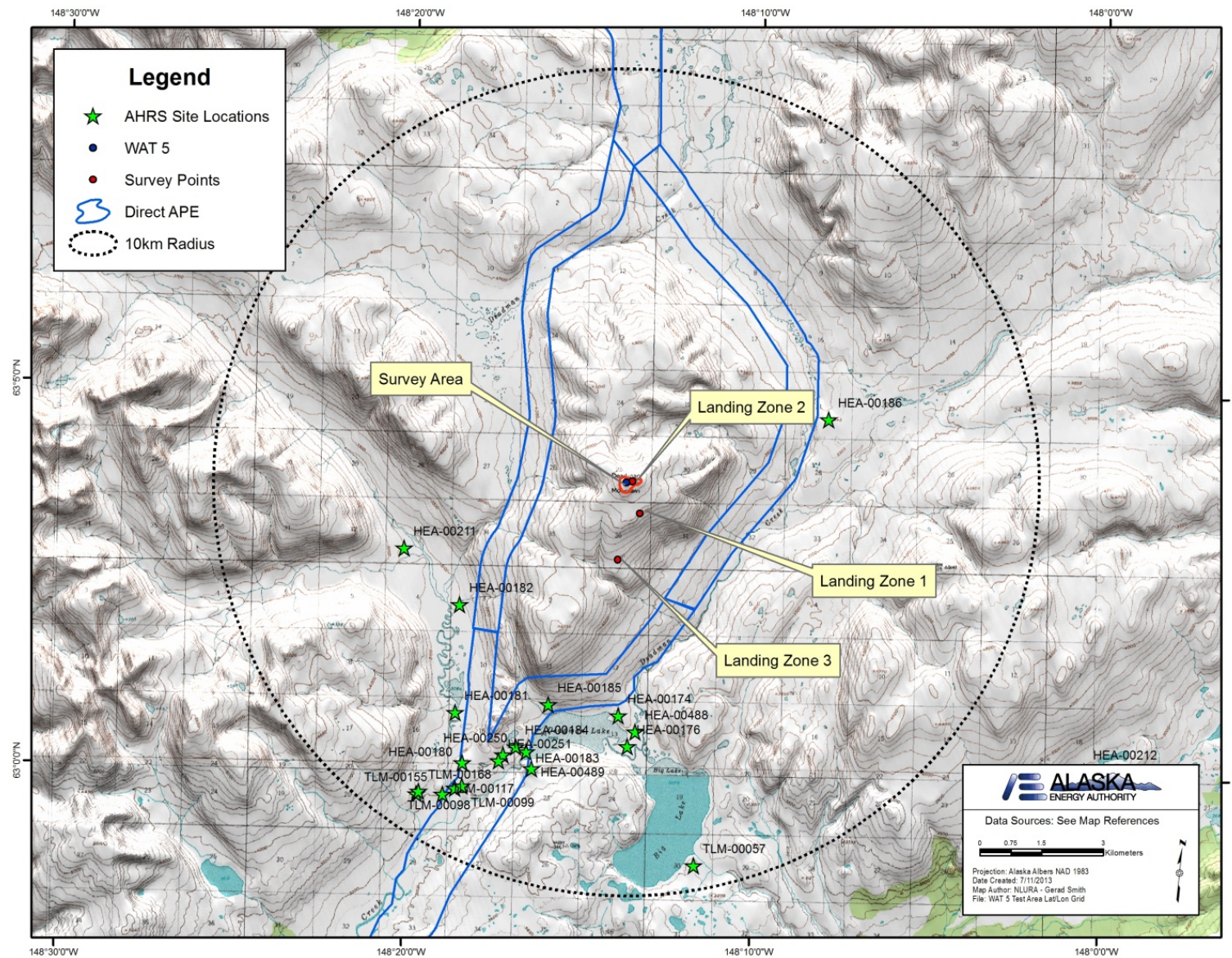


Figure 5.3-1. Map of Deadman Mountain Seismic Station and Vicinity.



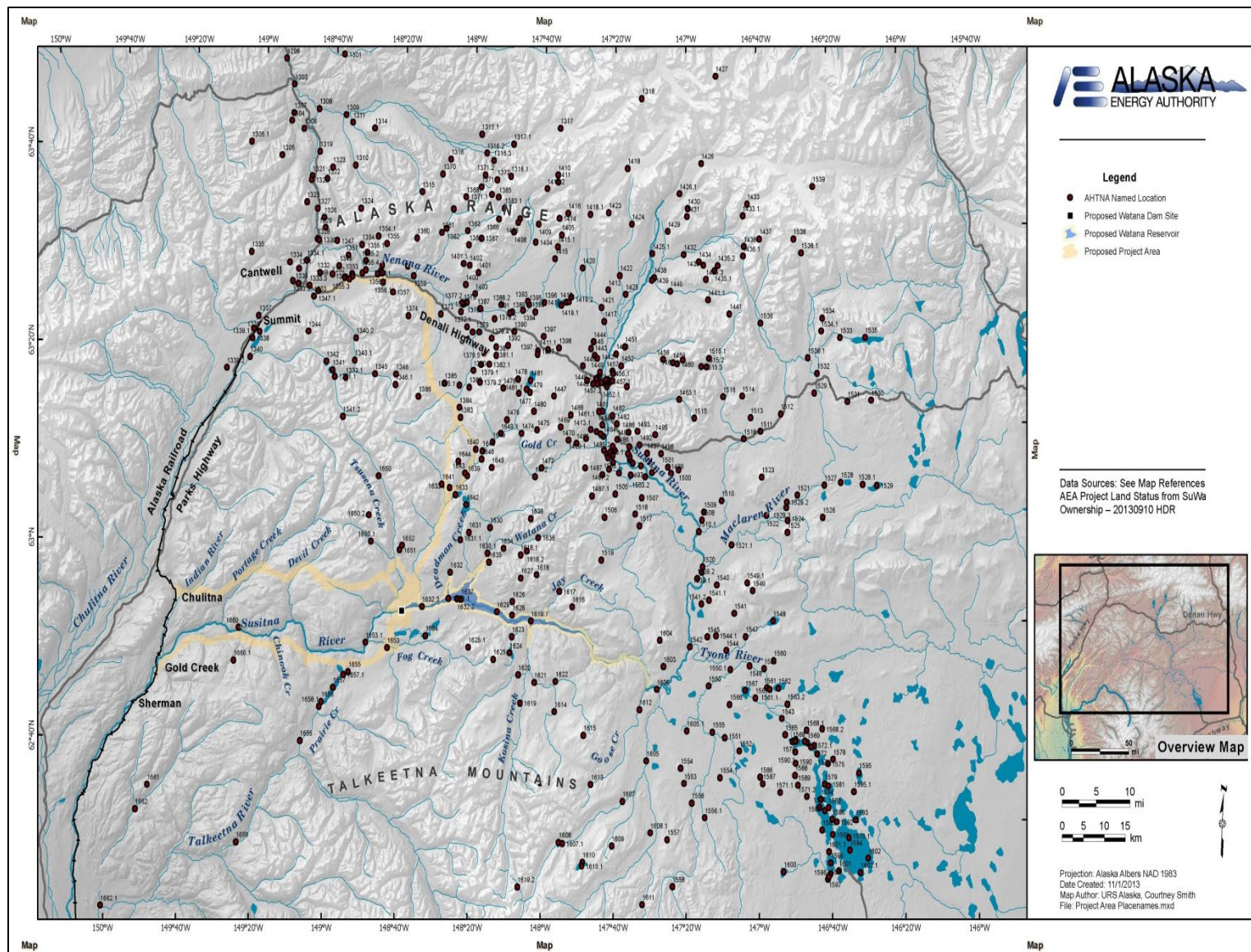


Figure 6.1-1. Map of Ahtna Place Names Included for Analysis.



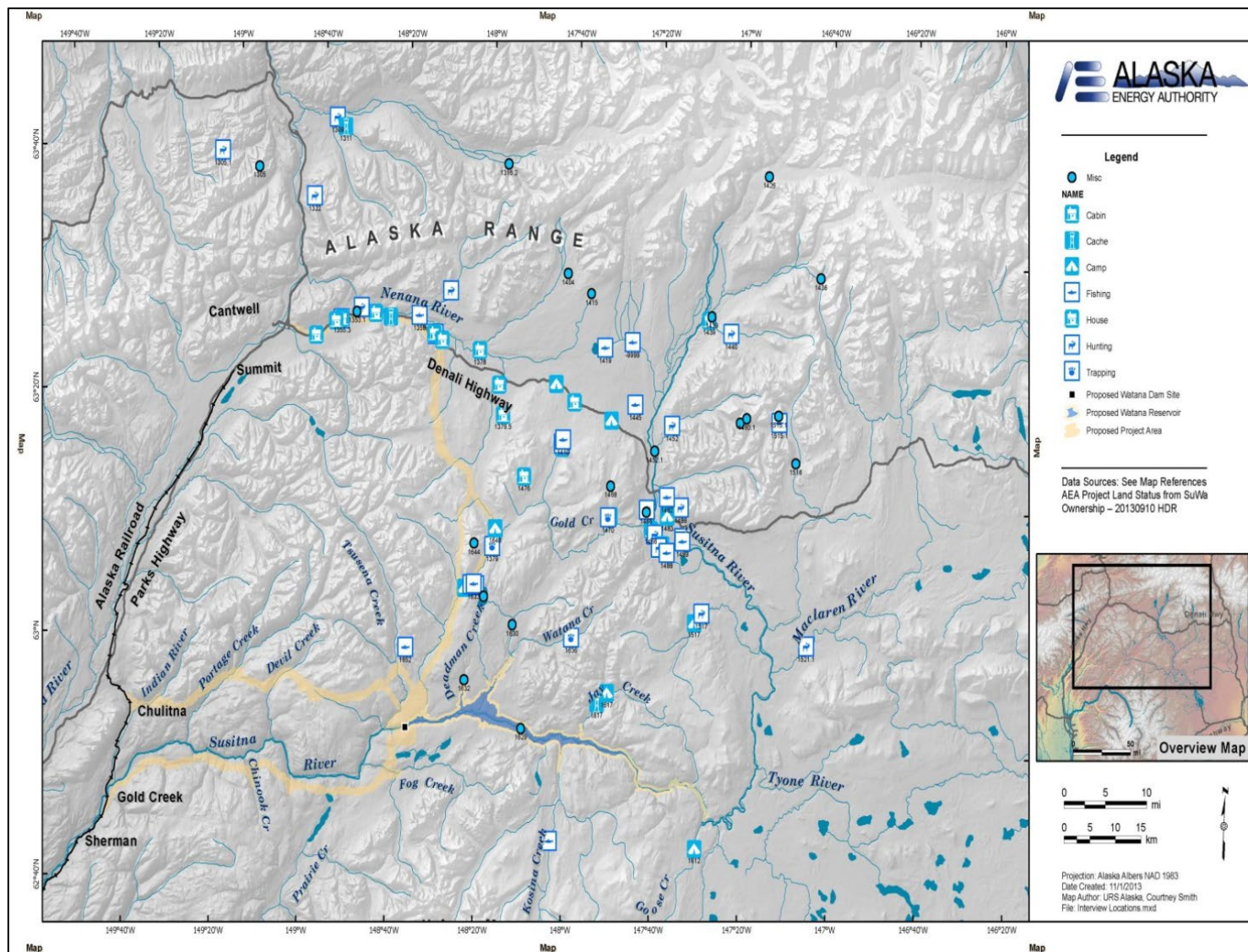


Figure 6.1-2. Map of Ahtna Land Use Types, 1900-2013.

Source: URS interview data, Oral History Narratives.

## PART A - APPENDIX A: PLAN FOR UNANTICIPATED DISCOVERIES

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# Plan for Unanticipated Discovery of Cultural Resources and Human Remains

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*Susitna-Watana Hydroelectric Project*

*FERC No. 14241*



**Alaska Energy Authority**



**[Review Draft: 6/20/12]**

**PLAN FOR UNANTICIPATED DISCOVERY OF CULTURAL RESOURCES AND HUMAN  
REMAINS DURING THE 2012 SUSITNA-WATANA HYDROELECTRIC PROJECT  
FIELD INVESTIGATIONS  
(Provisional – June 20, 2012)**

The first part of this plan (pages 1-3) is addressed to non-cultural resource contractors and other personnel involved with the Susitna-Watana Hydroelectric Project and establishes procedures in the event that unreported or unanticipated cultural resources and/or human remains are found in the field. The field reporting procedures differ depending on: a) whether cultural materials or human remains are encountered; and b) whether the discoverers are involved in a non-destructive effort or whether ground disturbance is involved. Reports of finds will then be forwarded by the Cultural Resources Program or Study Lead as per the remainder of this plan according to c) whether the finds are on federal, state, or private land<sup>1</sup>. Prior to fieldwork, AEA and contracted personnel will receive environmental training including the following guidance for identifying and reporting cultural resources or human remains discovered in the field. This plan briefly describes cultural resources in the study area, how to distinguish them from insignificant items and trash, and what to do if you find them during your fieldwork (all “ifs” are underlined).

### **Cultural Resources in the Study Area**

The general study area contains historic and prehistoric remains going back as much as 10,000 years, and over 250 sites are known from previous studies. Of those, about 90% had stone tools and other prehistoric artifacts, about 10% were historic sites consisting of building ruins or scatters of commercially manufactured items (metal cans, bottles, etc.), and only a couple were fossil discoveries (animal or plant remains). The more recent prehistoric sites are from the Athabaskan Indians who inhabited the area historically and hold the majority of the area’s Native place names in their linguistic dialect -- Ahtna, while the older sites fade into a more generalized adaptation shared by most of Alaska’s ancient interior peoples. Historic sites in the Susitna-Watana area reflect remote land use like mining, prospecting, hunting, trapping, and recreational pursuits, in addition to simple homesteading.

### **How to Distinguish Cultural Resources**

Prehistoric sites most commonly contain stone tools, which are the main indicator for field personnel. Rocks free of flaws that fracture easily and predictably (like flint or obsidian) were typically struck and pressured into form, resulting in tools and discarded flakes with distinctively faceted surfaces – shallow concave scars on tools as well as the corresponding positive bulbs on removed flakes (imagine the rippled conical chunk of glass your son, daughter, – or you – once popped out of a plate glass window with a BB gun). This is the major diagnostic you need to have in mind for prehistoric sites. Discriminating between an artifact and a naturally shattered rock relies a lot on context. A few suspicious stone shards among a rocky talus slope of identical mineralogy are probably not cause for concern. An interesting multi-flaked sharp stone plus a few others nearby (perhaps with detachment bulbs) on a flat overlook would more likely be a cultural

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<sup>1</sup> As set forth by the National Historic Preservation Act (NHPA), as amended (16 USC 470) and implementing regulations (36 CFR 800), Archaeological Resources Protection Act (ARPA), Native American Graves Protection and Repatriation Act (NAGPRA) and Alaska Statutes 11.46.482 (a)(3), 12.65.5, 18.50.250, and 41.35.200.

occurrence. Many of these locales have already been found and recorded as formal archaeological sites; likely more remain to be discovered.

Historic sites can have more variability than prehistoric sites in terms of surface and subsurface features and their degree of preservation. Building ruins ranging from roofed examples to those fast entering the archaeological record are part of the cultural resource inventory. Scatters of metal cans and glass bottles legally can be cultural resources, too, if they are 50 or more years old (using that criterion, hypothetically, archaeologist Ivar Skarland's field camp from his 1953 investigations of the then-proposed Devils Canyon dam impoundment could be historically significant). Unvegetated deposits of loose rock at the base of mineralized outcrops – often reddish or yellowish, may indicate historic prospecting, as might the remains of water diversion systems. As with the prehistoric inventory, many of these sites have already been discovered, and likely more remain to be found.

### **What to Do if You Find Cultural Features or Artifacts**

Regardless of whether you are involved in a non-destructive field program or one involving ground disturbance, stop work immediately in the vicinity and don't disturb the features or artifacts further. If you are involved in a ground-disturbing activity then contact immediately either Cultural Resource Program Lead Charles M. Mobley or Study Lead Justin Hays (below). Information you will be requested to provide is primarily description of the finds and location including GPS coordinates. If you are involved in a non-destructive field program, then you are requested to report the description and location of the suspected cultural resource including GPS coordinates to Mobley or Hays within five days. Digital photographs accompanying the report are especially recommended but no photographs or site-specific location information should be released to the press or other individuals other than the Cultural Resource Program or Study Leads. Contact either:

Charles M. Mobley  
Cultural Resources Program Lead  
(907) 653-1937 office  
(907) 632-1933 cell  
mobley@alaska.net  
Charles M. Mobley & Associates  
200 W. 34<sup>th</sup> Avenue #534  
Anchorage, Alaska 99503

**OR**

Justin Hays  
Cultural Resources Study Lead  
(907) 474-9684 office  
(907) 750-9857 cell  
jmh@northernlanduse.com  
Northern Land Use Research, Inc.  
234 Front Street  
Fairbanks, Alaska 99709

### **How to Distinguish Human Remains**

Animal bones are statistically more common than human remains by far, so probabilities favor your find not being human. Ask the biologist or hunter on your crew for an opinion. If the bones are cut or sawn then let's assume they're not human. Human skulls and our all-one-piece jaws are relatively unique and easily identified. For the other bones, try to imagine each one in your body where you think it should fit – does it? If not, it's less likely human.

Context is important. If the bones are scattered around a not-too-old fire ring, for example, then they're likely animal. If they're tumbling out of a rock cairn, they're more likely human.

## What to Do if You Find Human Remains

Regardless of whether you are involved in a non-destructive field program or one involving ground disturbance, stop work immediately in the vicinity and don't disturb the bones further. Contact immediately either Cultural Resource Program Lead Charles M. Mobley or Study Lead Justin Hays, by telephone or email (below). Information you will be requested to provide is primarily description of the bones and location including GPS coordinates. Digital photographs accompanying the report are especially recommended but no photographs or site-specific location information should be released to the press or other individuals other than the Cultural Resource Program or Study Leads. Contact either:

Charles M. Mobley  
Cultural Resources Program Lead  
(907) 653-1937 office  
(907) 632-1933 cell  
mobley@alaska.net  
Charles M. Mobley & Associates  
200 W. 34<sup>th</sup> Avenue #534  
Anchorage, Alaska 99503

**OR**

Justin Hays  
Cultural Resources Study Lead  
(907) 474-9684 office  
(907) 750-9857 cell  
jmh@northernlanduse.com  
Northern Land Use Research, Inc.  
234 Front Street  
Fairbanks, Alaska 99709

## Forwarding Reports of Discoveries from the Field

After the field report has been made to Mobley or Hays the field finders' responsibilities are over other than to be available for further consultation if necessary. The following steps will then be set in motion:

1. The Cultural Resources Program or Study Lead will compare the find's GPS coordinates and description with the known site inventory to determine if it actually reflects a new discovery or an already-recorded site.
2. If the discovery involves human remains or is determined to be an unrecorded cultural property, the Cultural Resources Program or Study Lead will immediately notify AEA's Environmental Manager of the find and its potential significance.

Betsy McGregor, AEA Environmental Manager  
(907) 771-3957 office  
(503) 312-2217 cell  
BMcGregor@aidea.org  
411 W. 4<sup>th</sup> Avenue, Ste. 1  
Anchorage, Alaska 99501

3. AEA's Environmental Manager will coordinate with a cultural resources consultant who will travel to the location and evaluate the find as warranted to determine if indeed human bones have been discovered, or if a new cultural site has been found.



4. If the materials found are human remains, then the protocols outlined in the subsequent two sections entitled **Protection of Human Remains** (distinguished according to land ownership) will be followed. If a cultural site is at imminent risk from a proposed ground-disturbing activity, the procedures specified in the following two sections entitled **Protection of Cultural Remains** (again distinguished according to land ownership) below will be followed. If the materials are already recorded cultural sites and not in jeopardy, no further action will be taken.

#### **Protection of At-Risk Cultural Materials on Private and State-Managed Land**

a) AEA's Environmental Manager will promptly notify the Environmental Inspector to flag the at-risk site with a 20-meter buffer as appropriate. This buffer may be larger if there is the possibility of more resources in the area or in the case of slopes or cut-banks where ongoing construction may impact the site.

b) AEA's Environmental Manager will direct the cultural resources consultant to begin a more detailed assessment of the find's significance and the potential effect of construction.

c) AEA's Environmental Manager will promptly notify the Alaska State Historic Preservation Officer (SHPO) or State Archaeologist of the find. Contact either:

Judith Bittner, SHPO  
(907) 269-8721  
[judy.bittner@alaska.gov](mailto:judy.bittner@alaska.gov)  
Alaska Dept. of Natural Resources  
Office of History and Archaeology  
550 West 7<sup>th</sup> Avenue Ste. 1310  
Anchorage, Alaska 99501-3565

OR

David McMahan, State Archaeologist  
(907) 269-8723  
[dave.mcmahan@alaska.gov](mailto:dave.mcmahan@alaska.gov)  
Alaska Dept. of Natural Resources  
Office of History and Archaeology  
550 West 7<sup>th</sup> Avenue Ste. 1310  
Anchorage, Alaska 99501-3565

d) The landowner will be promptly notified.

e) The cultural resources consultant will document the site circumstances, potential significance, and risk of harm. If the cultural resources consultant assesses the find as not significant or lacking integrity, then the consultant will notify the AEA Environmental Manager who will then inform the SHPO. Upon SHPO agreement of a finding of no effect, AEA will request approval to resume construction. A brief report of the find will be provided to the SHPO within one week of its recording. If the archaeological consultant recommends that the find may be significant, then the following steps will be implemented.

f) AEA's Environmental Manager will notify other parties, such as appropriate Alaska Native organizations, as directed by the SHPO.

Alaska Native Regional Corporations:

- Ahtna, Incorporated (Ahtna)  
**Michelle Anderson, President**  
PO BOX 649, Glennallen, Alaska 99588

Glennallen Office: (907) 822-3476

Fax: (907) 822-3495

Anchorage Office: (907) 868-8250

Fax: (907) 868-8285

Email: manderson@ahtna.net

- Cook Inlet Region Incorporated (CIRI)  
2525 C Street Suite 500, Anchorage, Alaska 99503  
P.O. Box 93330, Anchorage, Alaska 99509-3330  
(907) 274-8638  
Fax: (907) 279-8836
- Doyon, Ltd. (Doyon)  
1 Doyon Place, Suite 300  
Fairbanks, Alaska 99701-2941  
(907) 459-2000  
(888) 478-4755 (toll-free)  
(907) 459-2060 (fax)
- Doyon, **Limited - Anchorage Office**  
11500 C Street, Suite 250  
Anchorage, Alaska 99515-2692  
(907) 563-5530 or (907) 375-4220  
(907) 375-4205 (fax)

A more complete contact list is attached as Appendix A.

g) If the find is significant and continuing work may damage more of the site, then AEA's Environmental Manager will request recommendations from the SHPO and other parties regarding appropriate measures for site treatment. These measures may include: formal archaeological evaluation of the site; visits to the site by the SHPO and other parties; preparation of a mitigation plan by AEA for approval by the SHPO; implementation of the mitigation plan; and/or approval to resume construction following completion of the fieldwork component of the mitigation plan.

h) If further analysis indicates that the find lacks significance, then AEA's Environmental Manager will consult with the SHPO and other appropriate parties to request approval for resumption of construction.

i) AEA's Environmental Manager will notify the on-site Field Coordinator who will grant clearance to the Contractor to start construction.

### **Protection of At-Risk Cultural Materials on Federal Lands**

a) AEA's Environmental Manager will promptly notify the Environmental Inspector to flag the at-risk site with a 20-meter buffer as appropriate. This buffer may be larger if there is the possibility

of more resources in the area or in the case of slopes or cut-banks where ongoing construction may impact the site.

b) AEA's Environmental Manager will direct the cultural resources consultant to begin a more detailed assessment of the find's significance and the potential effect of construction.

c) AEA's Environmental Manager will promptly notify the appropriate federal land managing agency and Alaska State Historic Preservation Officer (SHPO) of the find. Contact both:

John Jangala, Archaeologist  
(907) 822-7303  
jjangala@blm.gov  
Glennallen Field Office  
Bureau of Land Management  
P.O. Box 147  
Glennallen, Alaska 99588-0147

Judith Bittner, SHPO  
(907) 269-8721  
judy.bittner@alaska.gov  
Alaska Dept. of Natural Resources  
Office of History and Archaeology  
550 West 7<sup>th</sup> Avenue Ste. 1310  
Anchorage, Alaska 99501-3565

d) The cultural resources consultant will document the site circumstances, potential significance, and risk of harm, and then notify the AEA Environmental Manager who will in turn then inform the Bureau of Land Management (BLM) archaeologist and the SHPO. If the cultural resources consultant assesses the find as not significant or lacking integrity, and the BLM and SHPO agree on a finding of *no effect*, then AEA will request approval to resume construction. A brief report of the find and an AHRs site form will be provided to the BLM and SHPO within two weeks of its recording. If the archaeological consultant recommends that the find may be significant, then the following steps will be implemented.

e) AEA's Environmental Manager will notify other parties, such as appropriate Alaska Native organizations, as directed by the SHPO.

Alaska Native Regional Corporations:

- Ahtna, Incorporated (Ahtna)  
**Michelle Anderson, President**  
PO BOX 649, Glennallen, Alaska 99588  
Glennallen Office: (907) 822-3476  
Fax: (907) 822-3495  
Anchorage Office: (907) 868-8250  
Fax: (907) 868-8285  
Email: manderson@ahtna.net
- Cook Inlet Region Incorporated (CIRI)  
2525 C Street Suite 500, Anchorage, Alaska 99503  
P.O. Box 93330, Anchorage, Alaska 99509-3330  
(907) 274-8638

- Doyon, Ltd. (Doyon)  
1 Doyon Place, Suite 300  
Fairbanks, Alaska 99701-2941  
(907) 459-2000  
(888) 478-4755 (toll-free)  
(907) 459-2060 (fax)
- Doyon, **Limited - Anchorage Office**  
11500 C Street, Suite 250  
Anchorage, Alaska 99515-2692  
(907) 563-5530 or (907) 375-4220  
(907) 375-4205 (fax)

A more complete contact list is attached as Appendix A.

f) If the find is assessed as significant and continuing work may damage more of the site, then AEA's Environmental Manager will request recommendations from the appropriate federal land managing agency, SHPO, and other parties regarding appropriate measures for site treatment. These measures may include: formal archaeological evaluation of the site; visits to the site by the SHPO and other parties; preparation of a mitigation plan by AEA for approval by the appropriate federal land managing agency and SHPO; implementation of the mitigation plan; and/or approval to resume construction following completion of the fieldwork component of the mitigation plan.

g) If further analysis indicates that the find lacks significance, then AEA's Environmental Manager will consult with the federal land managing agency, SHPO and other appropriate parties to request approval for resumption of construction.

h) AEA's Environmental Manager will notify the on-site Field Coordinator who will grant clearance to the contractor to start construction.

### **Protection of Human Remains on Private and State-Managed Land**

a) AEA's Environmental Manager will promptly notify the Environmental Inspector to flag the at-risk site with a 20-meter buffer as appropriate. This buffer may be larger if there is the possibility of more resources in the area or in the case of slopes or cut-banks where ongoing construction may impact the site.

b) AEA's Environmental Manager will notify a peace officer of the state (police, Village Public Safety Officer, or Alaska State Trooper [AST]) and the Alaska State Medical Examiner (SME) immediately of the discovery, as stipulated in Alaska Statute 12.65.5. In addition to a local peace officer (if in a local jurisdiction), notification should include the AST Criminal Investigation Bureau. If the human remains appear recent (less than 50 years old) in the judgment of the archaeologists, the AST and SME will determine whether the remains are of a forensic nature and/or subject to criminal investigation. The AST and SME contacts are:

Sgt. Kid Chan  
(800) 478-9333  
(907) 269-5058  
[choong.chan@alaska.gov](mailto:choong.chan@alaska.gov)  
(cc: Stephanie Johnson at [steph.johnson@alaska.gov](mailto:steph.johnson@alaska.gov))  
Alaska State Troopers  
Missing Persons Bureau  
5700 East Tudor Road  
Anchorage, AK 99507

Talkeetna Post - Alaska State Troopers  
(907) 733-2256  
HC89 Box 8576  
Talkeetna, AK 99676

Dr. Gary Zientek, Deputy Medical Examiner  
(907) 334-2200  
[gary.zientek@alaska.gov](mailto:gary.zientek@alaska.gov)  
Alaska State Medical Examiner  
5455 Dr. Martin Luther King Jr. Ave  
Anchorage, Alaska 99507

c) The landowner will be promptly notified.

d) The Alaska SHPO will also be notified of any discovery unless circumstances indicate that the death or burial is less than 50 years old and that there is need for a criminal investigation or legal inquiry by the coroner.

Judith Bittner, State Historic Preservation Officer  
(907) 269-8721  
[judy.bittner@alaska.gov](mailto:judy.bittner@alaska.gov)  
Alaska Dept. of Natural Resources  
Office of History and Archaeology  
550 West 7<sup>th</sup> Avenue Ste. 1310  
Anchorage, AK 99501-3565

e) Written authorization in the form of a Burial Transit Permit from the Alaska State Bureau of Vital Statistics (BVS) shall be obtained prior to any excavation or re-interment of any human remains. In addition, clearance from the appropriate Alaska Native organization must be obtained prior to excavation or re-interment of Alaska Native remains. The BVS contact is:

Phillip Mitchell, Section Chief  
(907) 465-3391  
BVSResearch@alaska.gov  
Phillip.mitchell@alaska.gov  
Alaska Bureau of Vital Statistics  
5441 Commercial Boulevard  
P.O. Box 110675  
Juneau, AK 99801

f) If the human remains are found to be historic in nature, a qualified professional physical anthropologist with experience in the analysis of human remains will examine them in situ to determine racial identity. The physical anthropologist shall document, analyze, and photograph the remains so that an independent assessment of racial identity can be made. The physical anthropologist shall be afforded no more than 30 days time to conduct his or her analysis.

g) If the unanticipated discovery consists of Alaska Native human remains, AEA will consult with the Alaska SHPO, FERC, and appropriate Alaska Native organizations regarding the appropriate measures to respectfully handle such a discovery. If it can be determined adequately that the identified human remains have affinity to any federally recognized tribe(s), a reasonable effort will be made by AEA to identify, locate, and notify these tribes. The appropriate Alaska Native Regional Corporations also will be contacted by AEA. A comprehensive contact list is attached as Appendix A.

h) AEA's Environmental Manager will notify other parties, as directed by the SHPO.

i) If the human remains are not Native American, and a determination has been made by the AST and Alaska SME that a death investigation is not warranted, then AEA, in consultation with the Alaska SME, will identify, locate and inform descendants of the deceased.

j) After permission to resume construction has been issued by the SHPO, AEA's Environmental Manager will notify the on-site Field Coordinator who will grant clearance to the contractor to restart construction.

### **Protection of Human Remains on Federal Land**

a) AEA's Environmental Manager will promptly notify the Environmental Inspector to flag the at-risk site with a 20-meter buffer as appropriate. This buffer may be larger if there is the possibility of more resources in the area or in the case of slopes or cut-banks where ongoing construction may impact the site.

b) AEA's Environmental Manager will notify a peace officer of the state (police, Village Public Safety Officer, or Alaska State Trooper [AST]) and the Alaska State Medical Examiner (SME) immediately of the discovery, as stipulated in Alaska Statute 12.65.5. In addition to a local peace officer (if in a local jurisdiction), notification should include the AST Criminal Investigation Bureau. If the human remains appear recent (less than 50 years old) in the judgment of the archaeologists, the AST and SME will determine whether the remains are of a forensic nature

and/or subject to criminal investigation. The appropriate federal land managing agency will also be contacted in case the human remains are related to a crime scene. The contact of the AST and SME are:

Sgt. Kid Chan  
(800) 478-9333  
(907) 269-5058  
[choong.chan@alaska.gov](mailto:choong.chan@alaska.gov)  
(cc: Stephanie Johnson at [steph.johnson@alaska.gov](mailto:steph.johnson@alaska.gov))  
Alaska State Troopers  
Missing Persons Bureau  
5700 East Tudor Road  
Anchorage, AK 99507

Talkeetna Post - Alaska State Troopers  
(907) 733-2256  
HC89 Box 8576  
Talkeetna, AK 99676

Dr. Gary Zientek, Deputy Medical Examiner  
(907) 334-2200  
[gary.zientek@alaska.gov](mailto:gary.zientek@alaska.gov)  
Alaska State Medical Examiner  
5455 Dr. Martin Luther King Jr. Ave  
Anchorage, Alaska 99507

John Jangala, Archaeologist  
(907) 822-7303  
[jjangala@blm.gov](mailto:jjangala@blm.gov)  
Glennallen Field Office  
Bureau of Land Management  
P.O. Box 147  
Glennallen, Alaska 99588-0147

c) The Alaska SHPO will also be notified of any discovery unless circumstances indicate that the death or burial is less than 50 years old and that there is need for a criminal investigation or legal inquiry by the coroner. The SHPO contact is:

Judith Bittner, State Historic Preservation Officer  
(907) 269-8721  
[judy.bittner@alaska.gov](mailto:judy.bittner@alaska.gov)  
Alaska Dept. of Natural Resources  
Office of History and Archaeology  
550 West 7<sup>th</sup> Avenue Ste. 1310  
Anchorage, AK 99501-3565

d) Written authorization in the form of a Burial Transit Permit from the Alaska State Bureau of Vital Statistics shall be obtained prior to any excavation or re-interment of any human remains. In addition, clearance from the appropriate Alaska Native organization must be obtained prior to excavation or re-interment of Alaska Native remains. The BVS contact is:

Phillip Mitchell, Section Chief  
(907) 465-3391  
BVSResearch@alaska.gov  
phillip.mitchell@alaska.gov  
Alaska Bureau of Vital Statistics  
5441 Commercial Boulevard  
P.O. Box 110675  
Juneau, AK 99801

e) If the human remains are found to be historic in nature, AEA, as directed by the appropriate federal land managing agency, will determine the origin of the human remains. A qualified professional physical anthropologist with experience in the analysis of human remains will examine them in situ to determine racial identity. The physical anthropologist shall document, analyze, and photograph the remains so that an independent assessment of racial identity can be made. The physical anthropologist shall be afforded no more than 30 days to conduct his or her analysis. The appropriate federal land managing agency will follow NAGPRA and the implementing regulations set forth in 43 CFR 10, for Alaska Native remains.

f) For Alaska Native remains, the appropriate federal land managing agency will retain the responsibility for determining and contacting the appropriate Alaska Native groups. In this case, NAGPRA dictates that work in the immediate vicinity of the remains cannot proceed until 30 days after the reply from the federal agency in charge or appropriate Alaska Native group that the documents regarding the finding were received, unless a written and binding agreement is issued from the federal agency in charge and the affiliated Native American group(s) (NAGPRA 25 USC 3002 Sec 3(d)). The remains will then be assessed and treated based on the guidance of the federal agency in charge and the appropriate Alaska Native group as defined by NAGPRA.

g) If the human remains are not Native American, and a determination has been made by the AST and Alaska SME that a death investigation is not warranted, then AEA, as directed by the appropriate federal land managing agency in consultation with the Alaska SME, will identify, locate, and inform descendants of the deceased.

h) AEA's Environmental Manager will notify other parties, as directed by the appropriate federal land managing agency.

i) After permission to resume construction has been issued by the appropriate federal land managing agency, AEA's Environmental Manager will notify the on-site Field Coordinator who will grant clearance to the Contractor to restart construction.

Contacts for AEA's Cultural Resource Program



Charles M. Mobley  
Cultural Resources Program Lead  
(907) 653-1937 office  
(907) 632-1933 cell  
mobley@alaska.net  
Charles M. Mobley & Associates  
200 W. 34<sup>th</sup> Avenue #534  
Anchorage, Alaska 99503

**OR**

Justin Hays  
Cultural Resources Study Lead  
(907) 474-9684 office  
(907) 750-9857 cell  
jmh@northernlanduse.com  
Northern Land Use Research, Inc.  
234 Front Street  
Fairbanks, Alaska 99709

## APPENDIX A: CONTACTS FOR ALASKA NATIVE ENTITIES

Though communities potentially affected by the Project have different histories and cultures, they are characterized by strong past and present ties to the land and its resources. The successful completion of the Consultation and Coordination phase of the National Historic Preservation Act (NHPA) Section 106 process requires an efficient and effective consultation process that addresses the laws and regulations within the context of local custom and practice. Several Alaska tribal entities recognized by the U.S. Department of Interior and established through the Alaska Native Claims Settlement Act (ANCSA) of 1971, are broadly located near the study area. In Alaska, consultation typically occurs with the 229 federally-recognized tribes, the 13 Alaska Native Regional Corporations, and some 200 Alaska Native Village Corporations created by the ANCSA (the Regional and Village Corporations are recognized as “Indians tribes” for NHPA purposes).

There are four Regional Native Alaskan corporations that have interests within or near the Project area (see Table 1). In addition, twenty-two tribes recognized by the Bureau of Indian Affairs under 25 CFR 83.6(b) are located within or near the Project area, including those indicated in Table 2. Table 3 includes a list of recognized and non-recognized ANCSA village; group and urban corporations; and village organizations that also have interests.

Table 1. List of Regional Native Corporations with interests within the vicinity of the Susitna-Watana Hydroelectric Project.

Ahtna, Incorporated (Ahtna) Michelle Anderson, President PO BOX 649, Glennallen, Alaska 99588 Glennallen Office: (907) 822-3476 Fax: (907) 822-3495 Anchorage Office: (907) 868-8250 Fax: (907) 868-8285 Email: manderson@ahtna.net	Doyon, Ltd. (Doyon) 1 Doyon Place, Suite 300 Fairbanks, Alaska 99701-2941 (907) 459-2000 (888) 478-4755 (toll-free) (907) 459-2060 (fax)
Cook Inlet Region Incorporated (CIRI) 2525 C Street Suite 500, Anchorage, Alaska 99503 P.O. Box 93330, Anchorage, Alaska 99509-3330 (907) 274-8638	Doyon, Limited - Anchorage Office 11500 C Street, Suite 250 Anchorage, Alaska 99515-2692 (907) 563-5530 or (907) 375-4220 (907) 375-4205 (fax)

Table 2. List of Tribes recognized by the Bureau of Indian Affairs under 25 CFR 83.6(b) within the vicinity of the Susitna-Watana Hydroelectric Project.

Cheesh-Na Tribal Council/Mount Sanford Tribal Consortium P.O. Box 357 Gakona, Alaska 99586 907-822-5399 Fax 907-822-5810	Knik Tribe P.O. Box 871565 Wasilla, AK 99687 907-373-7991 Fax 907-373-2161 kniktribe@mtaonline.net
Chickaloon Native Village P.O. Box 1105 Chickaloon, AK 99674-1105 907-745-0707 Fax 907-745-7154 cvadmin@chickaloon.org <a href="http://www.chickaloon.org">http://www.chickaloon.org</a>	Mentasta Traditional Council P.O. Box 6019 Mentasta Lake, AK 99780-6019 907-291-2319 Fax 907-291-2305 kmartin@tribalnet.com
Native Village of Chitina P.O. Box 31 Chitina, AK 99566-0031 907-823-2215 Fax 907-823-2233 <a href="mailto:aceak2000@yahoo.com">aceak2000@yahoo.com</a>	Native Village of Cantwell P.O. Box 94 Cantwell, AK 99729 907-768-2591 Fax 907-768-1111 hallvc@yahoo.com
Gulkana Village P.O. Box 254 Gakona, AK 99586 907-822-3746 Fax 907-822-3976 lclaw@gulkanacouncil.org <a href="http://gulkanacouncil.org/">http://gulkanacouncil.org/</a>	Eklutna Native Village 26339 Eklutna Village Road Chugiak, AK 99567-6339 907-688-6020 Fax 907-688-6021 nve@eklutna-nsn.gov <a href="http://www.eklutna-nsn.gov">http://www.eklutna-nsn.gov</a>
Healy Lake Village P.O. Box 74090 Fairbanks, AK 99706-0300 907-876-0638 Fax 907-876-0639 jpolstonhitc@live.com	Native Village of Gakona P.O. Box 102 Gakona, AK 99586 907-822-5777 Fax 907-822-5997 gakonavc@cvinternet.net <a href="http://www.nvgakona.com">www.nvgakona.com</a>
Kenaitze Indian Tribe P.O. Box 988 Kenai, AK 99611-0988 907-283-3633 Fax 907-283-3052 kenaitze@alaska.net <a href="http://www.kenaitze.org/">http://www.kenaitze.org/</a>	Native Village of Kluti-Kaah P.O. Box 68 Copper Center, AK 99573-0068 907-822-5541 Fax 907-822-5130 <a href="mailto:nvkktops@cvinternet.net">nvkktops@cvinternet.net</a>

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Table 2. List of Tribes recognized by the Bureau of Indian Affairs under 25 CFR 83.6(b) within the vicinity of the Susitna-Watana Hydroelectric Project (continued).

<p>Native Village of Tazlina P.O. Box 87 Glennallen, AK 99588-0087 907-822-4375 Fax 907-822-5865 tazlinajulie@cvinternet.net ■</p>	<p>Northway Village P.O. Box 516 Northway, AK 99764 907-778-2287 Fax 907-778-2220 dnnvc@yahoo.com</p>
<p>Native Village of Tetlin P.O. Box 797 Tetlin, AK 99779 907-883-2021 tetlin@earthlink.net ■</p>	<p>Seldovia Village Tribe P.O. Drawer L Seldovia, AK 99663 907-234-7898 Fax 907-234-7865 svt@svt.org <a href="http://www.svt.org/">http://www.svt.org/</a></p>
<p>Native Village of Tyonek P.O. Box 82009 Tyonek, AK 99682-0009 Phone 907-583-2271 Fax 907-583-2442 E-mail tyonek@aitc.org ■</p>	<p>Native Village of Tanacross P.O. Box 76009 Tanacross, AK 99776 907-883-5024 Fax 907-883-4497 jerry_isaac@hotmail.com</p>
<p>Nenana Native Association P.O. Box 369 Nenana, AK 99760 907-832-5461 Fax 907-832-1077 nibor652004@yahoo.com ■</p>	<p>Village of Dot Lake P.O. Box 2279 Dot Lake, AK 99737-2279 907-882-2695 or 907-322-2694 Fax 907-882-5558 dotlake@aitc.org ■</p>
<p>Ninilchik Village P.O. Box 39070 Ninilchik, AK 99639 907-567-3313 Fax 907-567-3308 ntc@ninilchiktribe-nsn.gov/ <a href="http://www.ninilchiktribe-nsn.gov/">http://www.ninilchiktribe-nsn.gov/</a> ■</p>	<p>Village of Salamatoff P.O. Box 2682 Kenai, AK 99611 907-283-7864 Fax 907-283-6470 ■</p>

Table 3. List of recognized and non-recognized ANCSA village; group and urban corporations; and village organizations that have interests within the vicinity of the Susitna-Watana Hydroelectric Project.

Alexander Creek, Incorporated 8128 Cranberry Anchorage, AK 99502 (907) 243-5428	Knikatu, Incorporated P.O. Box 872130 Wasilla, AK 99687-2130 907-376-2845 Fax 907-376-2847 <a href="mailto:knikcorp@gci.net">knikcorp@gci.net</a>
Caswell Native Association HC 89, Box 83 Willow, AK 99688 (907) 495-1263	Little Lake Louise Corporation (907) 250-2098
Chitina Native Corporation P.O. Box 3 Chitina, AK 99566-0031 907-823-2223 Fax 907-823-2202 <a href="mailto:chitina_native@cvinternet.net">chitina_native@cvinternet.net</a> <a href="http://www.chitinanative.com">http://www.chitinanative.com</a>	Lower Tonsina Corporation Unavailable
Chickaloon-Moose Creek Native Association, Incorporated P.O. Box 875046 Wasilla, AK 99687 907-373-1145 Fax 907-373-1142 <a href="mailto:cmena@alaska.net">cmena@alaska.net</a> <a href="http://www.chickaloon.org">http://www.chickaloon.org</a>	Kenai Natives Association, Inc. 215 Fidalgo Ave. #101 Kenai, AK 99611-7776 907-283-4851 Fax 907-283-4854
Dot Lake Native Corporation 3500 Wolf Run Fairbanks, AK 99709 907-882-2755 Fax 907-882-2775	Nabesna Native Group, Inc. Unavailable
Eklutna, Incorporated 16515 Centerfield Dr. #201 Eagle River, AK 99577 907-696-2828 Fax 907-696-2845 <a href="mailto:receptionist@eklutnainc.com">receptionist@eklutnainc.com</a> <a href="http://www.eklutnainc.com">http://www.eklutnainc.com</a>	Mendas Cha-ag Native Corporation Gary Lee, President 457 Cindy Dr. Fairbanks, AK 99701

Table 3. List of recognized and non-recognized ANCSA village; group and urban corporations; and village organizations that have interests within the vicinity of the Susitna-Watana Hydroelectric Project (continued).

Gold Creek-Susitna NCI P.O. Box 847 Talkeetna, AK 99676-0847 (907) 733-2329	Seldovia Native Association, Incorporated P.O. Drawer L Seldovia, AK 99663-0250 907-234-7625 Fax 907-234-7637 info@snai.com <a href="http://www.snai.com">http://www.snai.com</a>
Montana Creek Native Association P.O. Box 100379 Anchorage, AK 99510	Tanacross, Incorporated P.O. Box 76029 Tanacross, AK 99776 907-883-4130 Fax 907-883-4129 <a href="http://www.tanacrossinc.com">http://www.tanacrossinc.com</a>
Ninilchik Natives Association, Incorporated P.O. Box 39130 Ninilchik, AK 99639 907-567-3866 Fax 907-567-3867 nnai@nnai.net <a href="http://www.nnai.net">http://www.nnai.net</a>	Tetlin Native Corporation Gary David Sr., President P.O. Box 657 Tok, AK (907) 883-6652 (907) 505-0253
Northway Natives, Incorporated P.O. Box 401 Northway, AK 99764 907-778-2298 Fax 907-778-2266	Toghotthele Corporation P.O. Box 249 Nenana, AK 99760 907-832-5832 Fax 907-832-5834 <a href="mailto:Toghotthele@hotmail.com">Toghotthele@hotmail.com</a>
Point Possession, Incorporated Feodoria Pennington, President 1321 Oxford Dr. Anchorage, AK 99503 (907) 563-1848	Twin Lake Native Group, Incorporated Unavailable
Salamatkof Native Association, Incorporated 100 N. Willow Street Kenai, AK 99611 907-283-3745 Fax 907-283-6470 info@salamatof.com <a href="http://www.salamatof.com/">http://www.salamatof.com/</a>	Tyonek Native Corporation 1689 C Street, Suite 219 Anchorage, AK 99501 907-272-0707 Fax 907-274-7125 <a href="http://www.tyonek.com/">http://www.tyonek.com/</a>
Slana Native Corporation - Unavailable	

## PART A - APPENDIX B: SUSITNA-WATANA HYDROELECTRIC PROJECT INTERVIEW QUESTIONS PROTOCOL



**Susitna-Watana Hydroelectric Project Interview Questions****Respondent ID #** \_\_\_\_\_ **Date** \_\_\_\_\_**Interviewer** \_\_\_\_\_**Location of interview (i.e. Cantwell, Gakona):** \_\_\_\_\_

**Personal background:** To get an idea of the ages and backgrounds of people that we're talking to for this project, I would like to ask you a couple of questions about your background.

1. Age:
2. Clan affiliation:
3. Who were your parents?
4. Where were they born?
5. Where were you born?
6. Can you show me where your parents hunted, fished and trapped? Can you point out places where they lived ?
7. Are there certain families or clans that come from or have a connection to this area?
8. Is this area important to you today? Can you explain why?
9. Do you use this area now?
10. Would you show me on the map areas that you used in the past and that you currently use?
11. Do you have a cabin, or trap line in this area?
12. Are there other things that make this area important?
13. Do you know of any important places or landmarks in the area?
14. Do you know their names?
15. Do you know of any graves in the area that would be important to protect?
16. Is it possible for you to tell us where they are? If so, reference and mark on map.
17. Do you know who is buried in the grave, or who might know?
18. Who were some of the important people in the history of the Ahtna people? Why do you believe these people were important?

19. Are there any areas that are special to Cantwell people? Where are those areas? Why are these areas special?

20. Are there any areas you were told by elders to stay away from? If so, why were you told to stay away? Can you tell me where those areas are?

**Closing the interview:** This is the end of the interview.

- Do you have anything else you'd like to add?
- Do you have any questions for me?

PART A - APPENDIX C: LETTER FROM AHTNA, INC. TO THE  
MEMBERS OF THE AHTNA LANDS COMMITTEE, JUNE 14, 2013



To Members of the Ahtna Lands Committee

June 14, 2013

Ahtna Incorporated has a contract with URS Corporation to participate in an investigation of the cultural resources in the area of the proposed Susitna-Watana Hydroelectric Project. This cultural resource study includes an archaeological survey, archival research, and collecting oral histories that will be assembled into a report used by the Alaska Energy Authority (AEA) to develop a license application for the construction and operation of the Project. One part of the cultural resources investigation is to provide a historical and cultural context for the identification of potential properties of traditional religious and cultural importance (often referred to as traditional cultural properties, or TCPs).

A TCP is a property or piece of land eligible for inclusion in the federal National Register of Historic Places because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. TCPs can be, but are not limited to: religious areas; sacred areas; resource gathering areas (plants, animals, fish and minerals); places associated with stories or legends; archaeological and ethnographic sites; habitation sites; rock images; special use sites; places with Alaska Native names.

This summer we will work with folks in the Ahtna region to identify and evaluate potential TCPs. To do so we need to:

- 1) Identify possible TCPs;
- 2) Establish whether the site or landscape under consideration is a property;
- 3) Assess the property's integrity in terms of its relationship to traditional cultural practices and beliefs;
- 4) Evaluate the property with reference to criteria in the National Register; and
- 5) Determine whether the property meets the National Register criteria.

As we start this study, we would like the Ahtna Land's Committee to help us to determine who to interview about traditional cultural properties in the study area and the APE or Area of Potential Effect (see accompanying map). We would also like the committee to assist us in developing a list of questions or interview protocol that could be used in the interviews.

Over the course of the next couple of weeks, we would like to contact members of the committee for individual interviews and to make a presentation to the Ahtna Land's Committee. Since time is of the essence, we would like to start this process as soon as possible by making a presentation to the Ahtna Lands Committee.

Sincerely,

Bruce Cain, Special Projects Coordinator, Ahtna Incorporated

P.O. Box 649 – Glennallen, Alaska 99588  
Phone: (907) 822-3476 – Fax: (907) 822-3495



Bill Simeone, Project Lead, URS Corporation



Erica McCall Valentine, Project Lead, Ahtna Incorporated

## PART A - APPENDIX D: SUMMARY OF KNOWN CULTURAL RESOURCES

Appendix D. Cultural Resources Recorded or Re-Recorded as of 2013 Within the Direct APE (AHRs sites in **bold** were newly recorded in 2013). 12/13/13

AHRs Number	Landowner	Direct Ape Area	AHRs Site Description or 2013 Field Description	Inventory Complete or Incomplete
HEA-00180	Federal Land	Denali Corridor	Two lithic debitage scatters were located on a deflated surface on a prominent knoll top that is located near Deadman Lake.	Complete
HEA-00184	Federal Land	Denali Corridor	Two modified flakes (that refit with one another) were located on a deflated area of the eastern shore of a small lake located northwest of the outlet stream which drains Deadman Lake.	Complete
HEA-00185	Federal Land	Denali Corridor	Several flakes, a retouched flake, a thumbnail scraper, and a flake core fragment were located on a deflated surface of a ridge that overlooks Deadman Lake.	Complete
HEA-00250	Federal Land	Denali Corridor	Five flakes were located on the deflated surface of a low-rising terrace above Deadman Creek.	Complete
HEA-00251	Federal Land	Denali Corridor	A surface scatter of 14 gray-blue chert flakes was located at the base of a low knoll situated on a terrace off of the west bank of Deadman Creek.	Complete
HEA-00523	Federal Land	Denali Corridor	<b>Approximately 100 waste flakes and one utilized flake, comprising a single surface scatter, were located on a south-facing slope overlooking Deadman Creek.</b>	Complete
HEA-00524	Federal Land	Denali Corridor	<b>A single surface lithic scatter composed of two waste flakes was located on a deflated surface of a linear glacial landform.</b>	Complete
HEA-00525	State Land	Denali Corridor	<b>A single flake fragment was located on a deflated surface of knoll overlooking Lily Creek.</b>	Complete
HEA-00526	State Land	Denali Corridor	<b>A single argillite flake located on the deflated surface of an east-facing terrace overlooking Lily Creek.</b>	Complete
HEA-00527	Federal Land	Denali Corridor	<b>A utilized basalt flake and possible waste flake were found on a deflated surface of a glacial feature that is located southwest of Brushkana Creek.</b>	Complete
HEA-00528	State Land	Denali Corridor	<b>A single church key opened sanitary can with a lapped seam was identified on the surface of a vegetated terrace.</b>	Complete
HEA-00529	State Land	Denali Corridor	<b>A banded gray rhyolite flake core was found on a deflated surface of a glacial feature.</b>	Complete
HEA-00530	State Land	Denali Corridor	<b>Eight lithic flakes, a flake core, and a possible hammerstone were found on a deflated surface of a large knoll.</b>	Complete

AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
HEA-00533	State Land	Denali Corridor	An isolated lap-seamed can was located on an established ATV trail on a sloping foothill.	Complete
HEA-00534	Federal Land	Denali Corridor	A surface scatter consisting of 9 pieces of rhyolite and banded chert debitage and an expended flake core were located on knob 200 m (656 ft) southeast of Deadman Lake.	Complete
HEA-00535	Federal Land	Denali Corridor	Two surface scatters, consisting of 9 pieces of debitage, were noted on a relatively flat and deflated surface located near the center of a terrace that leads to Deadman Lake.	Complete
HEA-00536	Federal Land	Denali Corridor	A single gray basalt point base and a gray argillite flake were located on a deflated surface of a knoll northwest of Deadman Lake.	Complete
HEA-00537	Federal Land	Denali Corridor	A notched gray basalt projectile point base, a basalt biface fragment, and three pieces of basalt debitage were located on a deflated surface of a low-lying knoll that is situated north-northwest of Deadman Lake.	Complete
HEA-00538	Federal Land	Denali Corridor	Seventy pieces of debitage and three edge modified flakes were located on a deflated surface of a gravelly bench situated at the base of Deadman Mountain.	Complete
HEA-00539	Federal Land	Denali Corridor	A single light gray basalt projectile point base was located on a deflated surface on top of an elevated drumlin that overlooks Deadman Lake.	Complete
HEA-00540	State Land	Denali Corridor	Four argillite flakes and an early stage biface were located on a deflated surface of a kame overlooking Deadman Lake.	Complete
HEA-00541	State Land	Denali Corridor	A small lithic concentration of 29 flakes, an edge-modified rhyolite flake, and an argillite biface were located on a kame overlooking Deadman Creek.	Complete
HEA-00542	State Land	Denali Corridor	A large surface scatter consisting of 53 pieces of debitage, two end scrapers, and one flake end scraper were located on a large kame within the Deadman Creek valley.	Complete
HEA-00543	State Land	Denali Corridor	A single flake was located on the deflated surface of a small sloping kame within the Deadman Creek valley.	Complete



AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
HEA-00544	Federal Land	Denali Corridor	Two distinct surface scatters consisting of 77 pieces of debitage, a gray argillite biface fragment, and two argillite distal point fragments identified on a deflated surface northwest of Deadman Lake.	Complete
HEA-00545	Federal Land	Denali Corridor	A surface scatter of 11 pieces of rhyolite debitage was located on the deflated surface of a linear kame ridge located within the Deadman Creek valley.	Complete
HEA-00546	Federal Land	Denali Corridor	Two biface fragments and a few rhyolite flakes were identified on a deflated surface of kame that overlooks a kettle lake situated within the Deadman Creek valley.	Complete
HEA-00548	Federal Land	Denali Corridor	One basalt flake was located on a small knoll overlooking the outlet of Deadman Lake.	Complete
HEA-00549	State Land	Denali Corridor	Two rhyolite flakes were located on a prominent knob rising from the surrounding Nenana River valley.	Complete
HEA-00550	State Land	Denali Corridor	A surface lithic scatter of 5 flakes and one utilized flake were located on a knob overlooking the Nenana River.	Complete
HEA-00552	Federal Land	Denali Corridor	A white chert biface was collected from a deflated surface of a long linear kame that is situated south of Brushkana Creek.	Complete
HEA-00553	State Land	Denali Corridor	A small cluster of 13 surface flakes were located on a long ridgeline overlooking a drainage valley.	Complete
HEA-00556	Federal Land	Denali Corridor	Three waste flakes and a black basalt scraper were located on a deflated surface of a low-lying kame near Deadman Lake.	Complete
HEA-00557	Federal Land	Denali Corridor	Three waste flakes and a basalt uniface were located on a deflated surface of a low-lying kame near Deadman Lake.	Complete
HEA-00558	Federal Land	Denali Corridor	Six flakes and a biface were located on a deflated surface of a low-lying kame near Deadman Lake.	Complete
HEA-00561	State Land	Denali Corridor	A single argillite flake was located on the deflated surface of a partially vegetated terrace near Deadman Creek.	Complete
HEA-00562	State Land	Denali Corridor	Two flakes and a possible flake core were identified on a deflated surface of an alluvial bench in the Susitna River valley.	Complete
HEA-00563	State Land	Denali Corridor	Nine flakes are located on a deflated surface of an elongated knob that is located south of the Denali Highway.	Complete
HEA-00567	Federal Land	Denali Corridor	A single brown chert flake was identified on a deflated surface of a bench located south of Brushkana Creek.	Complete

AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
HEA-00568	Federal Land	Denali Corridor	Three flakes and a piece of basalt shatter identified on a deflated surface of a kame located south of Brushkana Creek.	Complete
HEA-00569	Federal Land	Denali Corridor	Two biface fragments and 13 pieces of lithic debitage were identified on a deflated surface of a linear kame that is located south of Brushkana Creek.	Complete
HEA-00570	State Land	Denali Corridor	One flake, one core, and one possible core identified on a deflated surface of two knobs connected by a saddle located north of Lily Creek.	Complete
HEA-00571	State Land	Denali Corridor	A surface lithic scatter consisting of one chert core and one chert flake were located on a large elongated knob overlooking Lily Creek and a broad swath of the Nenana River Valley.	Complete
HEA-00572	State Land	Denali Corridor	A surface scatter of four rhyolite flakes, a chert core, and four chert flakes were located on a knob overlooking Lily Creek and the Nenana River valley.	Complete
HEA-00573	State Land	Denali Corridor	A banded chert core was located on a deflated surface of a kame ridge overlooking the Nenana River valley.	Complete
HEA-00574	Federal Land	Denali Corridor	Three basalt flakes were located on a deflated surface of a glacial-lacustrine terrace	Complete
HEA-00575	Federal Land	Denali Corridor	A single rhyolite biface fragment was collected from a deflated surface on an elevated ridge that is situated above the Deadman Lake valley.	Complete
HEA-00576	Federal Land	Denali Corridor	A single argillite flake was located on the deflated surface of a long linear ridge situated in the floodplain of a clearwater creek.	Complete
HEA-00578	Federal Land	Denali Corridor	A large gray flake was located on the surface among heavy vegetation of a slope near Brushkana Creek.	Complete
HEA-00586	State Land	Denali Corridor	An isolated metal can that is pressed flat (with lithography that reads "Good Food") was located near a terrace edge situated near Seattle Creek.	Complete
HEA-00587	State Land	Denali Corridor	A chert scraper was found eroding from a hill slope in addition to a lithic scatter (16 flakes and a core) located at the top of the hill slope on a deflated surface.	Complete
TLM-00286	State Land	Chulitna Corridor	A single flake was recovered from a plateau overlooking several small kettle lakes.	Complete

AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
TLM-00287	State Land	Chulitna Corridor	A large knoll with boulder outcroppings where 82 basalt artifacts (including one utilized flake) were located on a deflated surface.	Complete
TLM-00288	State Land	Chulitna Corridor	A single flake was identified on a game trail located on a deflated surface of a glacial feature adjacent to a small tributary, whose name is not known.	Complete
TLM-00289	Federal Land	Chulitna Corridor	A single flake was recovered from a subsurface test 10-20 cm (4-8 in) below the surface on an L-shaped peninsula located on the southeast shore of Swimming Bear Lake.	Complete
TLM-00290	Federal Land	Chulitna Corridor	Two blades and one flake were Located on a deflated surface located in a U-shaped valley near Swimming Bear Lake. Lithic materials include rhyolite and chert.	Complete
TLM-00291	State Land	Chulitna Corridor	Two basalt flakes were located on a deflated surface of a very small and discrete knoll.	Complete
TLM-00292	Federal Land	Chulitna Corridor	A small lithic scatter of approximately 8 flakes and 1 utilized flake were Located on a deflated area of a small knoll situated off the eastern shore of Swimming Bear Lake.	Complete
TLM-00293	Federal Land	Chulitna Corridor	A projectile point tip was discovered on a deflated surface of a prominent landform consisting of two knobs that are separated by a saddle.	Complete
TLM-00294	State Land	Chulitna Corridor	A several small, mostly chert, waste flakes were located in a single shovel test placed on a narrow vegetated terrace.	Complete
TLM-00295	Private Land	Chulitna Corridor	An abandoned WWII era track vehicle was located less than a kilometer east of the Indian-Portage Creek Trail.	Complete
TLM-00296	Private Land	Chulitna Corridor	A collapsed stacked log structure, and 3 circular pit features, were located within the Indian River flood plain.	Complete
TLM-00297	Alaska Railroad Corporation Land	Chulitna Corridor	Five glass insulators and the sawn top of a telephone pole were located on a steep disturbed embankment that is situated between the modern AK railroad tracks and a modern ATV frontage road.	Complete
TLM-00298	State Land	Chulitna Corridor	Two flakes (one rhyolite, one basalt) where located in two loci on deflated areas of a terrace that extends from a creek that is locally known as No Name Creek.	Complete

AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
TLM-00299	State Land	Chulitna Corridor	One large basalt flake was located on a deflated surface of a knob 150 m (492 ft) west of a creek that is locally known as No Name Creek.	Complete
TLM-00300	State Land	Chulitna Corridor	A rhyolite flake and a basalt flake were located on a bench that extends off of a terrace that is west of the creek that is locally known as No Name Creek.	Complete
TLM-00301	State Land	Chulitna Corridor	A shelter frame (possible dog house) was located at the base of a large white spruce. A depression was also located on a north facing slope situated on the western side of the Tsusena River valley.	Complete
TLM-00302	State Land	Dam and Camp Facilities	An extensive site consisting of ten semi-subterranean structures, two hearths, and a single basalt flake were identified in two loci. The site is located on a kame between Deadman and Tsusena Creeks.	Complete
TLM-00303	State Land	Dam and Camp Facilities	A multicomponent site consisting of a modern, temporary campsite, a cluster of tree trunks, and a prehistoric semi-subterranean rectangular structure with a circular hearth feature were located on a flat-topped kame that rises out of a lowland area characterized by kettle lake topography.	Complete
TLM-00304	State Land	Dam and Camp Facilities	A subsurface site was located on a kame ridge 100 m (328 ft) southeast of Deadman Creek. A single rhyolite flake was recovered 10-15 cm (4-6 in) below the surface.	Complete
TLM-00305	State Land	Denali Corridor	Two loci consisting of seven pieces of lithic debitage were found on a deflated surface of a bench overlooking Deadman Creek.	Complete
TLM-00306	State Land	Denali Corridor	A cluster of 9 pieces of debitage were identified on a deflated surface of a kame that is adjacent to Deadman Creek.	Complete
TLM-00307	State Land	Denali Corridor	A cluster of 11 flakes were located on a deflated surface of a glacial feature that was cut by an unnamed tributary of Deadman Creek.	Complete
TLM-00309	State Land	Denali Corridor	A possible modified bone fragment, with a hole in the center, was located on a deflated surface of an east facing slope situated near Deadman Creek.	Complete
TLM-00310	State Land	Denali Corridor	A single chert flake was located on a deflated surface of a rocky knoll overlooking Tsusena Butte.	Complete

AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
TLM-00311	State Land	Denali Corridor	A single lithic scatter of approximately 5 flakes and a biface fragment, along with several possible cultural surface depressions were located on a knoll that slopes down towards Tsusena Butte.	Complete
TLM-00312	State Land	Gold Creek Corridor	A collapsed cabin is located in a clearing off of a trail that is situated in a relatively flat area of the central portion of a hill.	Complete
TLM-00314	Federal Land	Impoundment	A single flake was identified on a deflated surface of a knob located on a lake terrace that surrounds Duck Embryo Lake.	Complete
TLM-00315	Federal Land	Impoundment	A cluster of three small basalt flakes were located on the surface of a game trail located on a small knoll near a stream whose name it not currently known.	Complete
TLM-00316	Federal Land	Impoundment	A chert biface base was located on a deflated surface of a narrow ridge that is situated on a vegetated terrace that parallels the Susitna River.	Complete
TLM-00317	State Land	Impoundment	A single granite boulder spall scraper was located on a game trail that is situated on a high ridge that overlooks a meandering drainage.	Complete
TLM-00318	State Land	Impoundment	A rectangular surface feature, in addition to five pieces of thermally altered rock, a split cobble tool, a cobble spall, and a basalt flake were identified on a deflated surface of a low rise near Duck Embryo Lake.	Complete
TLM-00319	Federal Land	Impoundment	A retouched basalt flake and a white chert flake were identified on a deflated surface of a narrow bench located on the north side of the Susitna River.	Complete
TLM-00320	Federal Land	Impoundment	A white chert lanceolate point with a missing tip was identified on a deflated surface of a ridge located on the southwest shore of Duck Embryo Lake.	Complete
TLM-00321	Federal Land	Impoundment	A small basalt flake and a rectangular surface depression were located on and near a deflated surface of a knob located southwest of the confluence of Jay Creek and the Susitna River.	Complete
TLM-00322	Federal Land	Impoundment	A single granite boulder spall was located on the deflated surface of a ridgeline that overlooks the Susitna River to the southeast.	Complete
TLM-00323	Federal Land	Impoundment	A chalcedony flake fragment was located in a game trail on vegetated terrace that parallels the Susitna River.	Complete

AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
TLM-00002	Private Land	Chulitna Corridor	This is a construction camp from 1920 or 1921. A roadhouse was reported nearby as early as 1918. According to Orth (1971) this station was named in 1916 for nearby Chulitna River and has been in use since the opening of the line.	Complete
TLM-00015	State Land	Dam and Camp Facility	A small chipping station consisting of two flakes that were collected from within a paleosol on top of a kame knoll located east of Tsusena Creek.	Complete
TLM-00016	State Land	Dam and Camp Facility	This is a hearth and flaking station, partially destroyed by a blowout. Approximately 341 bone fragments, 126 flakes, bifacially and unifacially retouched flakes, a chert end scraper, a modified argillite piece, and four basalt cobble fragments, all associated with a charcoal and charcoal stained matrix that is possible natural in origin. <sup>14</sup> C dates reported are: 3,220 and 4,950 BP. Cultural material was identified between the Watana and Oshetna tephra.	Complete
TLM-00017	State Land	Dam and Camp Facility	This is a flaking station where 372 basalt flakes were recovered at the base of a large boulder located east of Tsusena Creek.	Complete
TLM-00033	Federal Land	Impoundment	A single modified flake/biface fragment was recovered during subsurface tests on a flat terrace near the confluence of a lake outlet stream with the Susitna River	Complete
TLM-00039	Federal Land	Impoundment	Several waste flakes, microblades and microblade fragments, a burin spall, thermally altered rock, and an ochre piece were recovered during subsurface testing on top of a knoll on the southwest end of an 18ha lake known locally as Duck Embryo Lake and also Sally Lake.	Complete
TLM-00048	Federal Land	Impoundment	Several waste flakes, a flake core, a retouched flake, a microblade fragments, a biface, thermally altered rock, and bone fragments were recovered from subsurface tests on top of a knoll located east of the north end of Duck Embryo Lake also known as Sally Lake. Two components, one with a hearth, were defined.	Complete

AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
TLM-00050	Federal Land	Impoundment	Several waste flakes, a retouched flake, thermally altered rock, and burned bone and bone fragments were recovered from two components on a bench on the east bank at the mouth of a small creek, whose name is not currently known. <sup>14</sup> C dates of 280 +/-110 BP and 280 +/-246 BP were obtained from two hearth features in the upper component, the lower component was not dated.	Complete
TLM-00051	State Land	Dam and Camp Facility	Four waste flakes and a retouched flake were recovered during subsurface testing of a bench situated off of a knoll west of Tsusena Creek.	Complete
TLM-00061	Federal Land	Impoundment	Multiple waste flakes, a biface, ochre pieces, burned bone fragments, thermally altered rock, and charcoal were recovered from two subsurface components on a high kame knoll.	Complete
TLM-00062	Federal Land	Impoundment	Multiple waste flakes, retouched flakes, two fragments of an end scraper, a biface fragment, a flake core, and numerous calcined bone fragments were recovered from two subsurface components located on a terrace. A single <sup>14</sup> C date of 1,380 +/-155 was reported in association with the upper component.	Complete
TLM-00072	Federal Land	Impoundment	A large circular depression measuring 4.5 x 4.2 x 0.9 m deep (14.7 x 13.7 x 2.9 ft), with a 2.2 x 2 x 0.5m deep (7.2 x 6.5 x 1.6 ft) rectangular depression within the larger depression is situated on a ridge that is located along the north wall of the Susitna Canyon. Subsurface tests produced burned wood, charcoal, birch bark, and moose bone.	Complete
TLM-00075	Federal Land	Impoundment	Three waste flakes and a rejuvenation flake were recovered from subsurface tests of two loci, spaced 38 m (125 ft) apart on a discrete knoll and ridge system south of the Susitna River.	Complete
TLM-00079	Federal Land	Impoundment	This is a trapper's line cabin complex that consists of a 13' x 19' log cabin, an outhouse, shed, dog kennel, tree cache, and garbage dump. It was built in the mid-1930s by Elmer Simco as his line camp number 3.	Complete
TLM-00098	State Land	Denali Corridor	Two argillite flakes were located on a deflated surface of an elongate kame located east of a major tributary of Deadman Creek.	Complete



AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
TLM-00099	State Land	Denali Corridor	Fourteen argillite flakes, 1 argillite modified flake, and 1 basalt flake were identified on a blown out surface of two site loci that are situated on two adjacent knolls southwest of Deadman Lake.	Complete
TLM-00102	Federal Land	Impoundment	Six basalt flakes, 1 chert flake, and 2 modified chert flakes were recovered from subsurface tests on an east-west trending terrace that overlooks the Susitna River to the south.	Complete
TLM-00107	State Land	Chulitna Corridor	Waste flakes, retouched flakes, biface fragments, and a lanceolate point base were collected from the edge of a terrace approximately 8.9 km (5.5 mi) northwest of the confluence of Tsusena Creek with the Susitna River.	Complete
TLM-00108	State Land	Chulitna Corridor	Over 100 waste flakes and 2 retouched flakes were noted within a deflated area of a knoll located on a prominent terrace 2.5 km (1.5 mi) southeast of Swimming Bear Lake.	Complete
TLM-00109	Federal Land	Chulitna Corridor	Four waste flakes and a retouched flake were located in two surface exposures and one subsurface test on a lake terrace. A 5 m (16 ft) in diameter and 50 cm (1.6 ft) high rise approximately 70 m (230 ft) to the southwest was thought to be a house, however subsurface tests did not reveal any evidence of cultural activity.	Complete
TLM-00110	State Land	Chulitna Corridor	Waste flakes and two biface fragments were collected from a deflated surface and in subsurface tests. The site is located on the crest of a ridge situated north of the west end of a large lake.	Complete
TLM-00111	Federal Land	Chulitna Corridor	A rectangular 1.3 x 1.5 x .45 m deep (4.2 x 4.9 x 1.4 ft) depression was located on a slight peninsula. Subsurface tests inside and out of the depression were inconclusive in determining cultural activities.	Complete
TLM-00115	Federal Land	Impoundment	A single basalt lanceolate point was collected from within the Oshetna tephra in a shovel test placed on a flat bench near the Susitna River.	Complete
TLM-00137	State Land	Dam and Camp Facility	One basalt and 1 chert flake were collected were recovered from a subsurface test placed on a kame northeast of the confluence of Tsusena Creek with the Susitna River.	Complete
TLM-00160	State Land	Dam and Camp Facility	Three heavily weathered waste flakes were recovered from a subsurface test at the west end of a discrete knoll located between Tsusena Creek and the Susitna River	Complete



AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
TLM-00166	State Land	Dam and Camp Facility	Basalt and argillite flakes, a basalt modified flake, and a basalt preform fragment were recovered from subsurface tests placed on a knoll within the Tsusena drainage.	Complete
TLM-00167	State Land	Dam and Camp Facility	A single retouched flake were recovered from one shovel test on top of a small knoll north of the Susitna River.	Complete
TLM-00170	State Land	Dam and Camp Facility	Twenty-five waste flakes (five material types) and two flake core fragments (one argillite one rhyolite) were collected from a 5 x 4 m (16 x 13 ft) surface on a slope of a kame ridge knoll overlooking Deadman Creek.	Complete
TLM-00172	State Land	Dam and Camp Facility	Five waste flakes and a retouched flake were recovered from a test pit on a level bench on the west slope of a ridge east of Tsusena Creek.	Complete
TLM-00175	Federal Land	Impoundment	Several waste flakes (of four material types), thermally altered rock, a quartzite biface, an argillite lanceolate point, and an argillite flake core were recovered from subsurface tests on a discrete knoll that overlooks the northwest end of Duck Embryo Lake, also known as Sally Lake. Two subsurface components were defined.	Complete
TLM-00181	State Land	Dam and Camp Facility	One argillite flake was recovered from a subsurface test placed on a slope of a knoll above Deadman Creek.	Complete
TLM-00184	Federal Land	Impoundment	Numerous waste flakes, retouched flakes, flake cores, scrapers, blades, rejuvenation flakes, bifaces, an adze preform, a notched point fragment, a hammerstone, thermally altered rock, ochre pieces, and numerous bones and bone fragment were recovered from three subsurface components. A possible tent ring, and two possible hearth features were noted.	Complete
TLM-00191	State Land	Dam and Camp Facility	An argillite flake was recovered from a subsurface test placed on a ridge that parallels Deadman Creek.	Complete
TLM-00193	State Land	Dam and Camp Facility	Two chert fragments were identified on a deflated surface of an exposed slope west of Deadman Creek, northeast of its confluence with the Susitna River.	Complete
TLM-00194	Federal Land	Impoundment	Eighteen basalt flakes and argillite waste flakes were recovered from subsurface tests on a relatively flat kame terrace located south of the Susitna River.	Complete
TLM-00197	State Land	Dam and Camp Facility	A single chert flake core was located on a deflated surface of a ridge located west of Deadman Creek.	Complete

AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
TLM-00204	Federal Land	Impoundment	This is an historic site that was occupied during the late 1950s in association with Corp of Engineer studies for the Susitna Hydroelectric Project. The site is estimated to be 4,900 square meters (16, 076 square ft) and is located south of the Susitna River.	Complete
TLM-00214	State Land	Chulitna Corridor	This site consists of two loci situated on a flat plateau located southeast of the confluence between Clark Creek and Tsusena Creek. Two separate surface exposures revealed multiple waste flakes, a retouched flake. Raw materials include basalt, chert, and argillite.	Complete
TLM-00215	Federal Land	Impoundment	Fifty-six waste flakes (of basalt, argillite, and chalcedony), a retouched flake, thermally altered rock, and calcined bone fragments were recovered from subsurface tests of a 2.6 x 2 m (8.5 x 6.6 ft) oval shaped depression that is situated on a 5 m (16 ft) high knoll west of Watana Creek.	Complete
TLM-00216	Federal Land	Impoundment	Two retouched flakes, 552 waste flakes (of multiple material types), and numerous calcined bone fragments were recovered from subsurface tests on a small knoll west of Watana Creek. A single component was identified. <sup>14</sup> C dates from a single piece of wood revealed three different dates: 1,880 +/-50, 1,670 +/-50, and 1,530+/-80 were obtained.	Complete
TLM-00220	Federal Land	Impoundment	Retouched flakes, a tci tho, modified antler and bone fragments, bone point fragments, beamer fragments, waste flakes, and numerous tooth and bone fragments and a cache pit feature were recovered from subsurface deposits associated with two components. The upper component is early historic, and the lower component is prehistoric.	Complete
TLM-00221	Federal Land	Impoundment	Multiple thermally altered rock fragments (one of which was ground), a basalt waste flake, two glass trade beads, and numerous burned and calcined bone fragments were recovered in association with a circular hearth from subsurface tests placed on a kame west of Watana Creek.	Complete

AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
TLM-00222	Federal Land	Impoundment	Five loci (A-E) were identified in the 1980s spread out over a 250 m (820 ft) area on a set of kames west of Watana Creek. A rectangular depression, a small circular depression, and a possible hearth feature were identified. Cultural material recovered includes a glass seed bead, a piece of hammered copper, a waste flake, thermally altered rock, and numerous burned and unburned tooth, bone, and antler fragments. A new locus (locus F) was identified in 2013 that include two rings line by white small to medium sized granite boulders.	Complete
TLM-00223	Federal Land	Impoundment	Thirty-two chert and rhyolite waste flakes, a chert biface fragment, and calcined bone fragments were recovered during subsurface testing in and around a 70 x 30 cm (2.29 x 0.98 ft) rectangular depression located on a flat-topped knoll located west of Watana Creek.	Complete
TLM-00224	Federal Land	Impoundment	Two waste flakes of rhyolite and chert were recovered from subsurface tests placed in the vicinity of two small depressions on the northeast end of an elongate knoll located west of Watana Creek.	Complete
TLM-00225	Federal Land	Impoundment	Sixty-six waste flakes of a variety of material types, a retouched flake, two ochre pieces, and calcined bone fragments were recovered in association with two subsurface components located in an elongate kame west of Watana Creek. A possible hearth or firepit was noted in association with the lower component.	Complete
TLM-00226	Federal Land	Impoundment	Six loci within a 75 x 40 m (246 x 131 ft) area revealed waste flakes, a retouched flake, a tci-tho, a trade bead, bone fragments, and a 4.1 x 3.75 m (13.1 x 12.3 ft) rectangular depression and hearth feature were identified in association with two possible components west of Watana Creek.	Complete
TLM-00227	Federal Land	Impoundment	Two hundred and thirty-six calcined bone fragments were recovered from a subsurface test placed on the southern end of a large knoll west of Watana Creek. Possible thermally altered rock was also found 50 m (164 ft) to the southwest in possible association with a 1 x 0.4 m (3.2 x 1.3 ft) rectangular concavity.	Complete

AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
TLM-00231	Federal Land	Impoundment	A chert flake, a cobble fragment, thermally altered rocks, and numerous bones and bone fragments were recovered from subsurface tests on the northeastern point of a discrete ridge west of Watana Creek. An indistinct depression feature was also noted.	Complete
TLM-00232	Federal Land	Impoundment	Two loci were identified on a river terrace near the Susitna and Jay Creek. Items and features noted from surface survey and subsurface testing include 5 depressions, a dense scatter of bone and thermally altered rock, waste flakes, several tci thos, a hammerstone, a modified cobble, bone and awl fragments, worked bone, and leather moccasin fragments.	Complete
TLM-00234	Federal Land	Impoundment	Two loci were identified on a flat bench west of Watana Creek. Site loci produced bone fragments, thermally altered rock, and nine glass trade beads from subsurface tests. Locus A has two depressions that are both approximately 1 m (3.2 ft) in diameter and 15-30 cm (6-12 in) deep.	Complete
TLM-00235	Federal Land	Impoundment	This site consists of three loci that are situated on a razorback ridge west of Watana Creek. Subsurface tests placed within the site loci produced waste flakes, thermally altered rock fragments, and a single basalt biface fragment. Five surface depressions were also noted at the site.	Complete
TLM-00236	Federal Land	Impoundment	A total of 33 waste flakes, of argillite and basalt, were recovered from subsurface tests placed in the center of a crescent-shaped ridge west of Watana Creek.	Complete
TLM-00238	Federal Land	Impoundment	A semi rectangular 3.5 x 2.4 x .6 m deep (11.4 x 7.8 x 1.9 ft) depression was noted on the southern portion of a 400 m (1,312 ft) north-south trending terrace located east of the confluence of Kosina Creek with the Susitna River.	Complete
TLM-00239	Federal Land	Impoundment	Twelve basalt waste flakes, obsidian retouched flake, a basalt retouched flake, and three calcined bone fragments were recovered from subsurface tests placed on the northern point of a terrace located east of the confluence between Kosina Creek and the Susitna River.	Complete

AHRS Number	Landowner	Direct Ape Area	AHRS Site Description or 2013 Field Description	Inventory Complete or Incomplete
TLM-00240	Federal Land	Impoundment	A large rectangular house feature was located near the edge of a terrace on the east bank of Jay Creek. Subsurface tests of the depression revealed remnants of a collapsed wood frame and earth roof and charcoal and bone fragments. Subsurface tests of a second rectangular depression and the area between the depressions produced a number of trade beads (tubular, Cornaline d'Aleppo, and seed), ceramic fragments, thermally altered rock, and bone. Old axe-cut (girdled) stumps were also noted on at the site and surrounding area. The site is estimated to date form the middle 1800s.	Complete
TLM-00241	Federal Land	Impoundment	Thirty-two waste flakes, mostly basalt, were recovered from a subsurface test on the south-end of a narrow relict terrace of Kosina Creek.	Complete
TLM-00243	Federal Land	Impoundment	A single waste flake was recovered form a shovel test placed in the central area of a linear ridge west of Watana Creek.	Complete
TLM-00245	State Land	Dam and Camp Facility	Four argillite flakes were recovered from a subsurface tests placed on a prominent kame that overlooks Deadman Creek to the east.	Complete
TLM-00246	Federal Land	Impoundment	Eleven argillite waste flakes and five calcined bone fragments were recovered from a subsurface test on the southern end of a small ridge located near Jay Creek.	Complete
TLM-00247	Federal Land	Impoundment	This site consists of three loci that are located on a terrace west of Jay Creek. Sixteen depression features were noted on the surface. Subsurface tests revealed waste flakes a retouched flake, a hammerstone, thermally altered rock, and bone.	Complete
TLM-00256	Federal Land	Impoundment	Burned and unburned bone and bone fragments (including caribou) were recovered from a depth of 35 cm (1.1 ft) of a forested point bar on the Susitna River.	Complete
TLM-00275	Federal Land	Chulitna Corridor	A light surface scatter of lithics was noted in a deflated area at the crest of a prominent knoll northwest of Devil Creek. Artifacts noted include three flakes, a retouched basalt flake, and a green argillite biface.	Complete

## PART A - APPENDIX E: WESTERN AHTNA LAND USE 1880 TO 2013

## Appendix E - Western Ahtna Land Use 1880-2013

The data represented in these maps was collected using different methods so is only illustrative of Ahtna land use over time. Figure 5.2 shows the Western Ahtna hunting areas from about 1880 to 1930 as described in oral history narratives collected, translated, and transcribed in 2013. Data for figures 5.3 and 5.4 were compiled during household surveys conducted by the Alaska Department of Fish and Game (ADF&G). During the survey each informant was asked to draw a line around areas in which they harvested specific resources. Figure 5.3 shows hunting areas used by Cantwell residents between 1964 and 1984 based on a large sample of Cantwell household surveys conducted in 1984. Figure 5.4 represents data collected in 1999 and shows lifetime hunting areas for seven Cantwell households. Map 5.5 was compiled in 2013 from information collected from four families in Cantwell. Respondents were asked to be as geographically precise as possible. Eventually this information will be overlaid with data collected by ADF&G in 2013 to increase the reliability of any perceived patterns.

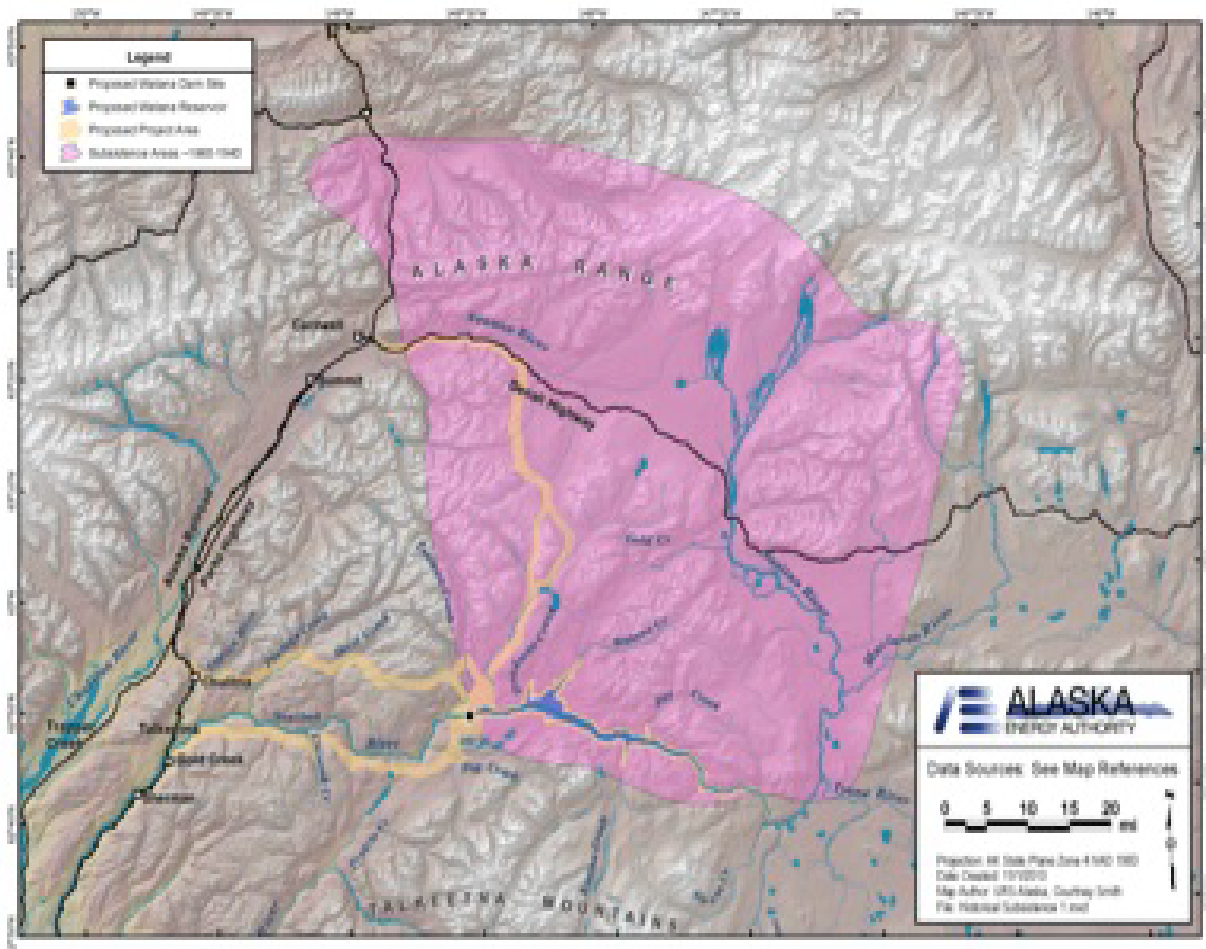


Figure 5.1 Land Use Area, 1880-1930. Source: Oral History Narratives.



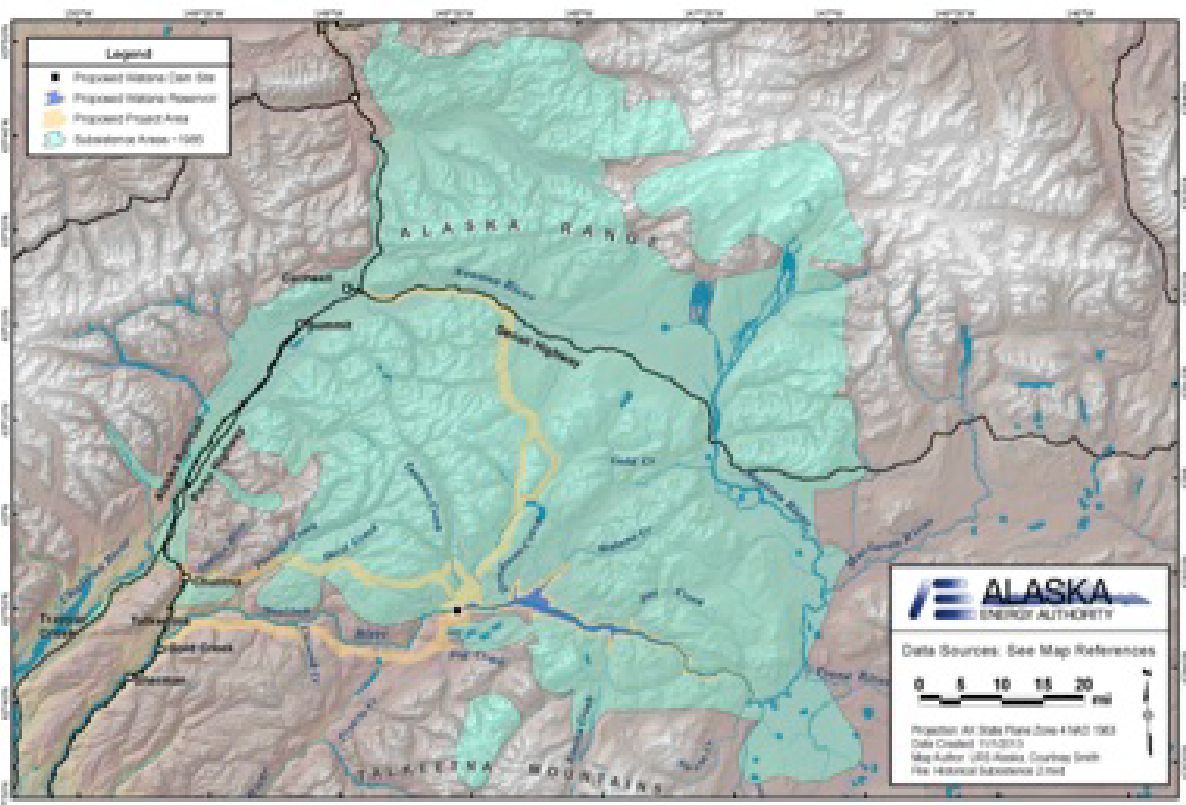


Figure 5.2 Land Use Area 1964-1984 . Source: ADF&G Division of Subsistence

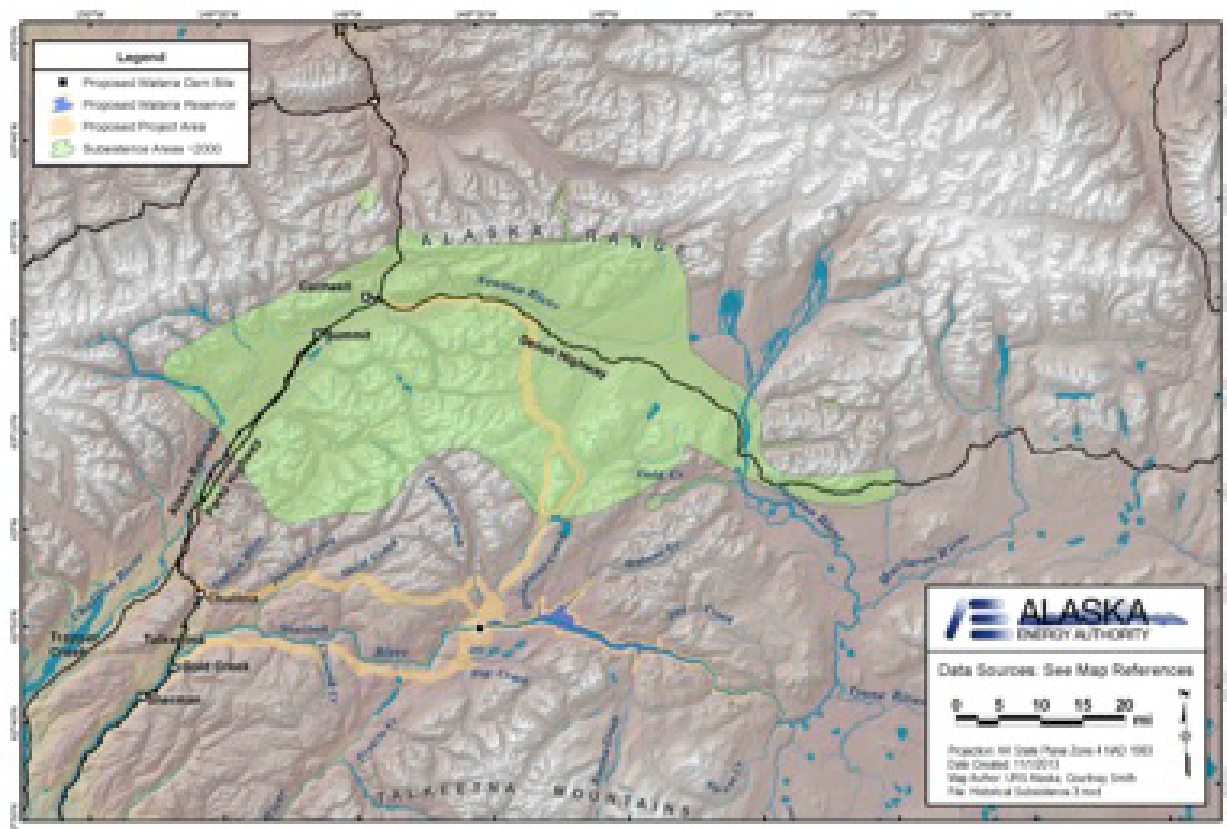


Figure 5.3 Land Use Area, Lifetime for 7 households. Source: ADF&G Division of Subsistence

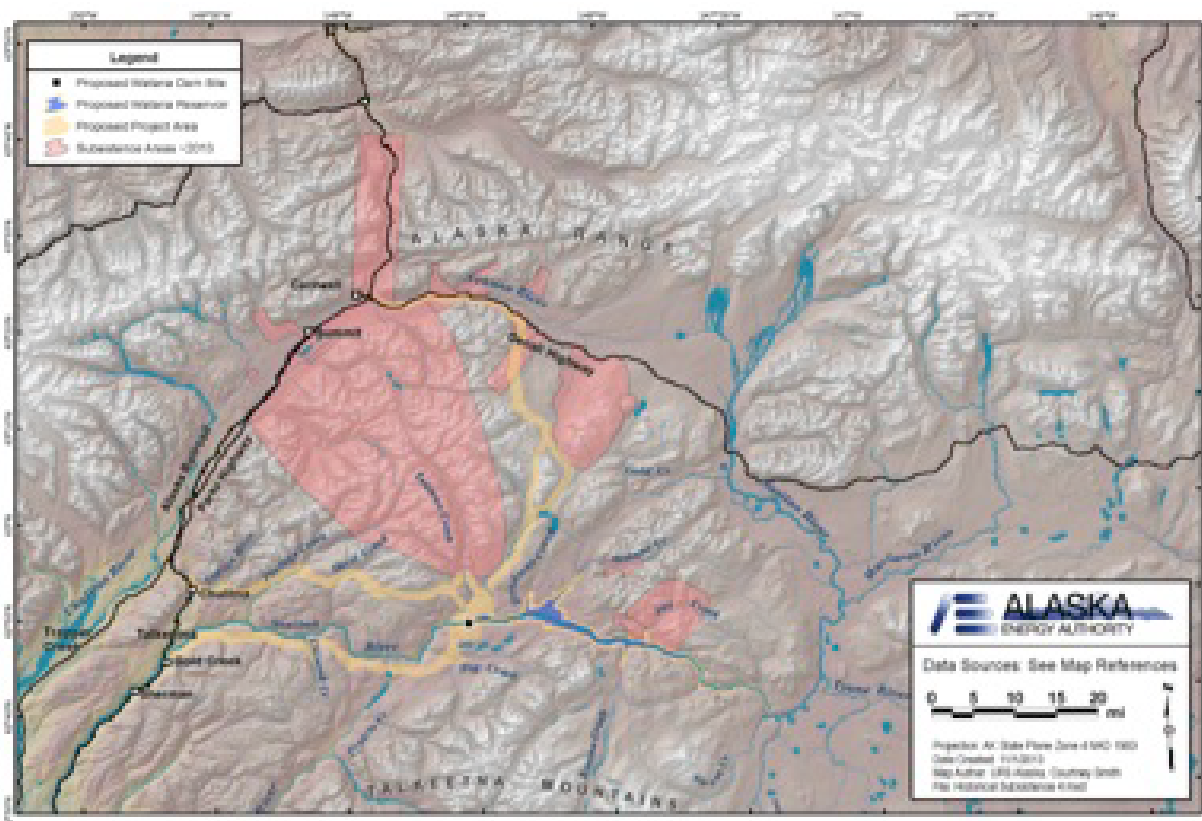


Figure 5.4 Land Use Area, Current use areas for 4 households, 2013. Source: URS interview data.