

2012 SUSITNA-WATANA HYDROELECTRIC PROJECT: CULTURAL RESOURCES STUDY PLAN – DRAFT FINAL

INTRODUCTION

The Alaska Energy Authority (AEA) is preparing a License Application that will be submitted to the Federal Energy Regulatory Commission (FERC) for the Susitna-Watana Hydroelectric Project (Project). The application will use the Integrated Licensing Process (ILP); construction and operation of the Project as described in the Pre-application Document (PAD; AEA 2011). The results of this study and of other proposed studies will provide information needed to support FERC's National Environmental Policy Act (NEPA) analysis for the Project license and help determine whether development and operation of the Proposed Project will have adverse effects on historic properties as part of compliance with Section 106 of the National Historic Preservation Act (NHPA).

STUDY OBJECTIVES

The cultural resources study objectives are designed primarily to continue laying the foundation of information to enable the applicant and lead federal agency to meet the requirements of National Historic Preservation Act (NHPA) and its accompanying regulations (36 CFR 800), and other pertinent federal and State laws and regulations (see Regulatory section). The major objectives for 2012 work are as follows:

- Create GIS database to help enable development of predictive models and management of cultural resources information for 2013-2014 studies;
- Develop predictive model, identifying areas of high, medium, and low potential for the occurrence of cultural resources;
- Continue to identify and document cultural resources within the Project study area, building upon work done between 1978-1985; and
- Prepare plans and procedures addressing unanticipated discoveries of cultural resources, human remains, and paleontological resources.

STUDY AREA

The Susitna-Watana Hydroelectric Project, as being planned by the Alaska Energy Authority (AEA) is located in south-central Alaska, approximately midway between Anchorage and Fairbanks in the upper Susitna River basin. The Susitna-Watana reservoir would be approximately 39 miles long and a maximum of 2 miles wide. Project plans also include potential transmission lines and road and/or rail access corridors to the reservoir area (Chulitna, Denali, and Gold Creek corridors), a construction camp, material sources, and other ancillary facilities. The general cultural resources information gathering study area encompasses a large area of south-central Alaska, although later specific field study areas are confined to the areas of direct and indirect impacts.

Nexus Between Project and Resource to be Studied and How the Results will be Used

Construction and operation of the Project may result in damage or loss of cultural resources from construction or increased human activity in upper Susitna River basin. Documentation of currently known cultural resources sites will help to inform the 2013-2014 studies and this information along with a plan for unanticipated cultural resource discoveries will be useful to prevent inadvertent disturbance from other field studies for the Project.

The Project's operations will potentially impact sites of cultural significance along transportation and powerline alignments, as well as in the area to be inundated by the reservoir. It is important that these resources be inventoried and evaluated, so that the Project can identify protection, mitigation and enhancement measures. It is expected that many of these critical cultural resources can be mitigated either via removal (data recovery/ archaeological excavation), or minor changes to project alignments (avoidance).

AGENCY MANAGEMENT GOALS

The term "cultural resources" is often used as a synonym for the legal term "historic properties" defined in the National Historic Preservation Act (NHPA) and its accompanying regulations (36 CFR 800). Historic properties include prehistoric or historic sites, buildings, structures, objects or districts eligible for listing on the National Register of Historic Places (NRHP) (36 CFR 800, 36 CFR 60). These may be resources such as archaeological sites (e.g., open-air campsites, stone chipping localities, game kill sites, and butchering sites), cultural landscapes, traditional cultural properties (TCPs), sacred sites, and paleontological sites. In the study area, the vast majority of cultural resources are prehistoric archaeological sites. A number of laws and regulations apply to the treatment of historic properties in the vicinity of the Susitna-Watana Project.

Section 106 of the National Historic Preservation Act (16 USC § 470), as amended, requires that any federally funded, licensed, or permitted project consider the undertaking's effects on cultural resources. The implementing regulations in 36 CFR 800 require that the lead federal agency consult with the State Historic Preservation Office (SHPO), Native American groups, local governments, and the public. The Section 106 process provides for identification and evaluation of historic properties, determination of effect, and a mechanism for resolution of any adverse effects (mitigation). In the case of prehistoric sites such as those found in the Project area, data recovery (excavation) and avoidance (if feasible) are the most likely approaches to mitigation.

The National Register of Historic Places is the nation's inventory of historic properties that meet specific criteria of local, state, or national importance. In order for a property to be eligible for the National Register, it must possess integrity of location, design, setting, materials, workmanship, feeling, and association, and significance under one or more criteria:

- A. be associated with events that have made a significant contribution to the broad patterns of our history; or
- B. be associated with the lives of persons significant in our past; or
- C. embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. have yielded, or may be likely to yield, information important in prehistory or history.

There are some exceptions to these four criteria such as properties achieving significance in the last fifty years, certain cemeteries or religious properties and other property types. Traditional Cultural Properties (TCPs) are places that are eligible for inclusion on the NHRP because of their association with the cultural practices and beliefs that are (1) rooted in the history of a community, and (2) are important for maintaining the continuity of that community's traditional beliefs and practices (Parker and King 1990; Parker 1993).

Federal legislation includes:

- Historic Sites Act of 1935 (16 U.S.C. § 1982)
- National Historic Preservation Act of 1966 (as amended in 2006) (16 U.S.C. § 470)
- National Environmental Policy Act of 1969 (42 U.S.C. § 4321-4347)
- Archaeological Data Preservation Act of 1974 (16 U.S.C. § 469)
- American Indian Religious Freedom Act of 1978 (42 U.S.C. § 1996)
- Archaeological Resources Protection Act of 1979 (16 U.S.C. § 470aa-470ll)
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. § 3001 et seq.)
- Paleontological Resources Preservation Act of 2009 (16 U.S.C. § 470aaa)

Federal regulations include:

- 18 CFR 4: FERC Licensing, Permits, Exemptions, and Determination of Project Costs
- 18 CFR 380: Regulations Implementing the National Environmental Policy Act
- 36 CFR 60: National Register of Historic Places
- 36 CFR 79: Curation of Federally Owned and Administered Archaeological Collections
- 36 CFR 800: Protection of Historic Properties
- 43 CFR 7: Protection of Archaeological Resources
- 43 CFR 10: Native American Graves and Repatriation Act

Federal Executive Orders (E.O.) include:

- E.O. 11593: Protection and Enhancement of the Cultural Environment (1971)
- E.O. 12898: Environmental Justice
- E.O. 13007: Indian Sacred Sites (1996)

Alaska State legislation includes:

- Alaska Historic Preservation Act (Alaska Statute 41.35)

A number of ordinances, resolutions, and preservation plans may affect cultural resources at the local level, including Matanuska-Susitna Borough Ordinance 87-007 and Historic Preservation Plan (adopted 1987) and the State's Cultural Resource Management Plan for the Denali Highway Lands (VanderHoek 2011). This review does not include individual tribal or village council resolutions that may exist in the records of various Native organizations. Private lands are directly affected by federal cultural resources legislation, especially the National Historic Preservation Act and implementing regulations (36 CFR 800), as long as any aspect of the proposed action has federal involvement. Thus the Susitna-Watana Project will fall under the Section 106 review process regardless of land status within the Project area (federal, state, municipal, or private). If any aspect of a project is affected by a federal undertaking (permit, license, or funding), then the federal review process applies to the entire Project area.

EXISTING INFORMATION

Between 1978 and 1985, archaeologists conducted cultural resources surveys, testing, and site excavations for the proposed Susitna Hydroelectric project and ancillary facilities (construction camps, transmission lines, access roads). Annual and summary reports described over 270 sites which required some form of analysis and curation of associated artifacts (e.g., Dixon 1985; Dixon et al. 1985; Greiser et al. 1985, 1986). Another 22 previously-known sites were revisited and documented. Of the sites found, 111 were located through subsurface testing (resulting from ~ 28,000 shovel tests). Some 99% of the known cultural resources have not been evaluated for their eligibility for listing on the National Register of Historic Places, a necessary step in the Section 106 process required by the National Historic Preservation Act

(36 CFR 800). Of the known sites, 87% have prehistoric remains, 2% have protohistoric remains, 10% have historic and modern remains and one site has paleontological remains. Advances in our understanding of the geoarchaeology of the region's stratigraphy, especially tephra deposits, requires a re-examination of the conclusions reached in the 1980s regarding site locations and distributions in time and space, and of the project area's cultural chronology from a predictive modeling perspective.

More than a quarter century of modern archaeological research, aided by new methods and technology in Global Positioning Systems (GPS) and Geographic Information Systems (GIS), geoarchaeology, geochronology, stratigraphic analysis, lithic and faunal analysis, and ice patch research, have taken place in Alaska since the original Susitna work. Research in Southcentral and Interior Alaskan river drainages has demonstrated that the prehistoric cultural chronology and dynamics are far more complex than was believed (Dixon 1985). Of major pertinence, modern advances in radiometric dating techniques require a review of the radiocarbon dates from the Project area.

A cultural resources data gap report (Bowers et al. 2011) summarizes the available literature about cultural resources in the project area, and reviews the cultural resources reports prepared during the 1978 to 1985 environmental studies. Data gaps identified include inadequacies in the location information of sites due largely to improvements in field and mapping methods since the 1980s (GIS, portable GPS units, better topographic maps), and advances with survey methodologies compared to those employed during the earlier research. The cultural chronology of the project area needs re-examination due to more modern dating techniques (e.g., AMS radiocarbon [^{14}C], optically stimulated luminescence [OSL]) and newer geoarchaeology (tephra) studies. Our understanding of prehistoric land use patterns has advanced through development of more sophisticated predictive models, which can be deployed for Susitna-Watana cultural resources field studies. Research documenting Native Alaskan place names now exists, which was not generally available during the "legacy" studies of 1978-1985, and can be incorporated into predictive models and field survey strategies. Traditional Cultural Places (TCPs) were not identified in the earlier studies, but are now considered a required element of any cultural resources research program. Some paleontological resources are legally afforded the same protection as cultural resources. In addition, recommendations for the development of a research program for cultural resources includes consultation with agencies, tribes, and interested parties, the development of protocols for unanticipated discoveries of cultural resources and/or human remains, paleontological resources, and artifact and records preservation, curation, and public education.

METHODS

Data gaps include inadequacies in the location information of sites due largely to improvements in field and mapping methods since the 1980s (GIS, portable GPS units, better topographic maps), and advances with survey methodologies compared to those employed during the earlier research. The following section describes the methods to be used to fill some data gaps and advance the quality of information needed to help move ahead the Section 106 process for permitting of the Project.

2012 Activities

- *Synthesis of existing location data for known sites:* Gathering available cultural resource point data (as x-y coordinates) can be done by accessing the Alaska Heritage Resource Survey (AHRs) files, by examining existing legacy reports, and original project files at the University of Alaska Museum of the North (UAM).

- *Map site locations and environmental variables:* Mapping site locations can be completed once the x-y dataset is obtained. Issues might exist related to confirmation of site locations and field work, but mapping can begin without all existing site location data; field confirmed data should be added or alterations made to the dataset before they are used in the final modeling process. The second part of this step involves locating, downloading, scanning and rasterizing numerous applicable environmental datasets such as surface geology, topographic variables based on digital elevation models (DEMs) such as slope or aspect. DEMs for the regions are mainly rasters at 30 x 30 m resolution, which will direct the resolution of the model. Some datasets frequently change, vary in quality and therefore need close examination prior to implementation as layers, and require reclassification. Environmental variables can be prepared for use in the model prior to a having the complete and field confirmed site location dataset.
- *Identify previous survey coverage:* Polygons can be created, based on 1980s sketch maps or USGS maps or other existing maps from previous reports, and, especially, primary records at the UAM in Fairbanks. This information will assist in determining where there may be holes in survey coverage, especially after the model surface has been completed and areas of site location potential can be compared to the intensity of past survey coverage.
- *Add existing and baseline place names:* This is also a straightforward process assuming x-y coordinates can be found for the data. Alaska geographic place names are available in several downloadable datasets with coordinates attached, and local names can be added to this list from visible map locations or other documents with coordinates noted.
- *Identify and map prehistoric resource locations (settlement patterns, historic land use):* This task is designed to explore patterns of traditional use by the mapping of known sites and known resources to show spatial proximities, for example, between sites and lithic sources or salt licks (point data), salmon spawning streams or trails (linear data), or other resource concentrations (polygon data). Protohistoric or historic land use may be very different from prehistoric land use. Spatial associations reflecting settlement patterns which are less clear are better explored within the modeling process by statistically assessing associations between all variables and site locations. These resource location maps referred to here can be generated from the same datasets that are used to create raster layers of variables; trails or other land uses not in state or other datasets must have spatial data attached in order to generate a point, line or polygon or be in a visual form. At minimum, they need to be clearly described relative to known geographic features, which can then be geo-referenced or transferred to a map surface.
- *Update and retrieve legacy records:* This task is a logical continuation of the data review and compilation already undertaken by NLUR as part of the data gap studies. The vast majority of these records are housed at the UAM in Fairbanks. It is essential that these records be retrieved and analyzed to further the planning efforts for Project fieldwork; to do otherwise will duplicate efforts and waste Project funds.
- *Summarize paleontological records and develop site location model:* Thomas Bundtzen and Pacific Rim Geological Consulting (Fairbanks) will perform a geologic literature review of the Project area, relying as much as possible on the legacy records from the 1980s. From this, combined with knowledge of regional rock formations and geochronology, he will develop a model for the likely location of significant fossils.
- *Develop plan for unanticipated discoveries:* We propose to develop this plan as early as possible, and before any summer field studies occur. This will guide AEA's emergency response in the event that cultural resources or human remains are encountered by any contractor performing fieldwork. It will also provide Native Alaskan contacts in the event of unanticipated discoveries, following NAGPRA protocols.

- **Field Reconnaissance:** We plan to conduct limited fieldwork in 2012, designed mainly to test aspects of the predictive model and methodologies necessary to guide the more extensive 2013-14 field seasons. The 2013-14 seasons will focus on inventory and evaluation of sites in the APE (36 CFR 800).

STUDY PRODUCTS

Study products to be delivered in 2012 will include:

Plan for Unanticipated Discoveries. This document will be completed before major summer field studies occur. This will guide AEA's emergency response in the event that cultural resources or human remains are encountered by any contractor performing fieldwork. It will also provide Native Alaskan contacts in the event of unanticipated discoveries, following NAGPRA protocols.

Interim Reports. Interim reports will be prepared and presented to the Work Group to provide study progress. Reports will include up-to-date compilation and analysis of the data and ArcGIS spatial data products.

ArcGIS Spatial Products. Shapefiles of the 1980s and current cultural resources data will be created for the study area. All map and spatial data products will be delivered in the two-dimensional Alaska Albers Conical Equal Area projection, and North American Datum of 1983 (NAD 83) horizontal datum consistent with ADNR standards. Naming conventions of files and data fields, spatial resolution, and metadata descriptions must meet the ADNR standards established for the Susitna-Watana Hydroelectric Project.

Annual Report. A technical memorandum summarizing the 2012 results will be prepared and presented to resource agency personnel and other licensing participants, along with spatial data products. This will include recommendations regarding additional study needs to be addressed in 2013 and 2014.

SCHEDULE

The following schedule identifies key milestones and start / end dates for cultural resource subtasks:

Table 1. Susitna Cultural Resources Program Schedule - DRAFT

Subtask	Milestone Description	Date
Prefield	Final study plan - 2012	4/27/12
	Draft Plan for Unanticipated Discoveries	5/1/12
	Information retrieval, field permit acquisition	
	Digitize previous survey coverage and other UAMN activities	
	Final Plan for Unanticipated Discoveries	6/1/12
Field	Fieldwork	July 2012
Postfield	Analysis and Report, including final predictive model	12/15/12

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