

Susitna-Watana Hydroelectric Project Document

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1.1. Dall's Sheep Distribution, Abundance, and Habitat Use

1.2. Requester of Proposed Study

AEA anticipates resource agencies will request this study.

1.3. Responses to Study Request Criteria (18 CFR 5.9(b))

1.3.1. Describe the goals and objectives of each study proposal and the information to be obtained.

The goal of the study is to obtain sufficient population information on Dall's sheep, an important species of big game in the region, to use in evaluating Project-related effects and identifying any necessary measures to avoid, minimize, or otherwise mitigate those effects.

The study area will encompass the Project facilities, access roads, transmission-line corridors, and the inundation zone for the reservoir, as well as adjacent ranges of Dall's sheep in the middle and upper Susitna River basin, referred to herein as the greater Project area, most of which is located within Game Management Unit (GMU) subunits 13E and 13A.

Four primary objectives have been identified for this study:

- 1) Estimate the current population size of Dall's sheep in the greater Project area;
- 2) Delineate summer range of Dall's sheep in the Project area;
- 3) Evaluate the current condition and use of mineral licks in the greater Project area; and
- 4) Analyze and synthesize data from historical and current studies of Dall's sheep in the greater Project area as a continuation of the Dall's sheep task of 2012 study W-S1 (AEA 2012).

Data collected through standard aerial surveys and ground-based monitoring of sheep habitat will document currently used areas which may be used to develop appropriate protection, mitigation, and enhancement measures in support of the Alaska Department of Fish and Game (ADF&G) management objective for Dall's sheep in GMU 13.

1.3.2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied. [Please include any regulatory citations and references that will assist in understanding the management goals.]

ADF&G is responsible for the management, protection, maintenance, and improvement of Alaska's fish and game resources in the interest of the economy and general well-being of the state (AS 16.05.020). ADF&G monitors Dall's sheep populations and manages subsistence and sport hunting for Dall's sheep on State lands (5 AAC 85.055) through regulations set by the Board of Game (AS 16.05.255). The Federal Subsistence Board, which comprises representatives from the U.S. Fish and Wildlife Service, National Park Service, Bureau of Land Management, Bureau of Indian Affairs, and U.S. Forest Service, oversees the Federal Subsistence Management Program (57 FR 22940; 36 CFR Parts 242.1–28; 50 CFR Parts 100.1–28) with responsibility for managing subsistence resources on Federal public lands, including Dall's sheep, for rural residents of Alaska.

The management objectives for the Talkeetna Mountains and Chulitna–Watana Hills in GMU subunits 13A, 13E, 14A, and 14B are to maintain sheep populations that will sustain an annual harvest of 75 rams (Peltier 2008).

1.3.3. If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

Wildlife resources are owned by the State of Alaska, and the Project could potentially affect these public interest resources.

1.3.4. Describe existing information concerning the subject of the study proposal, and the need for additional information.

Dall's sheep were studied in the region during the early 1980s. Aerial surveys of the Watana Creek Hills counted 130–220 animals (Tankersley 1984). Later surveys of the Watana Hills counted 97 and 50 sheep (Peltier 2008). The sheep population in the larger management area has declined overall following a steep decline after the winter of 1999–2000 and additional declines during 2004–2007 (Peltier 2008). No sheep use of areas on Mount Watana (directly south of the proposed Watana impoundment) or near the Denali Highway access corridor was documented in the 1980s (Tankersley 1984).

During the 1980s research, mineral licks were identified on lower Jay Creek and upper Watana Creek (Tankersley 1984). Sheep used those licks mainly between mid-May and mid-June and at least 31% of the sheep population observed in the Watana Creek Hills in 1983 traveled 8 kilometers or more to the Jay Creek lick. The two reservoirs proposed in the 1980s would not have inundated the licks but may have resulted in the loss of lower areas of the Jay Creek lick and associated resting areas due to accelerated erosion, and may have inhibited sheep travel along and across Jay Creek to well-used lick sites (Tankersley 1984).

New information is needed for a current enumeration of sheep abundance in the greater Project area, especially the Watana Creek Hills, and to evaluate the current extent of seasonal use of the Jay Creek and Watana Creek mineral licks by sheep.

1.3.5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.

The Project will result in wildlife habitat loss and alteration, blockage of movements of mammals, wildlife disturbance, and changes in human activity due to construction and operation.

The Dall's sheep study addresses the following direct, indirect, and cumulative effects (AEA 2011):

- W1: Potential direct loss and alteration of wildlife habitats, including key habitat features such as mineral licks, from Project construction and operation.
- W2: Potential direct physical and behavioral blockage and alteration of movements due to reservoir water and ice conditions; access and transmission corridors; and new patterns of human activities.

- W3: Potential changes in wildlife mortality rates due to Project-related fluctuating water and ice conditions in the reservoir and downstream river reaches.
- W4: Potential cumulative impact of changes in predator and prey abundance and distribution related to increased human activities and habitat changes resulting from Project development.
- W5: Potential indirect impacts to wildlife from changes in hunting, vehicular use, noise, and other disturbance due to increased human presence resulting from Project development.

The primary concerns for Dall's sheep are alteration of movement patterns, changes in the use of nearby mineral licks, disturbance, and changes in harvest patterns due to increased human access. Current data on seasonal distribution, population size, and use of the Jay Creek and Watana Creek mineral licks will be important for assessing potential impacts on the local sheep population. The results will be used to inform licensing requirements by providing baseline data for the Project area, including habitat use data for development of habitat evaluation criteria. This study would provide a basis for impact assessment; developing protection, mitigation, and enhancement (PME) measures; and developing resource management and monitoring plans.

1.3.6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

The proposed Dall's sheep study would consist of three components:

- Aerial survey for summer distribution and population estimation;
- Ground monitoring and photographic monitoring of mineral lick use; and
- Analysis of historical (1980s) data and synthesis with current ADF&G monitoring results.

Aerial distribution and population estimate surveys can be conducted for sheep habitat in the greater Project area following ADF&G protocols in summer after lambing (late June–early July). Ground-based surveys of the Jay Creek and Watana Creek mineral licks will be conducted by observers using spotting scopes in the mid-May to mid-June period when lick use is generally at its peak. Time-lapse cameras will also be placed at strategic locations to record the number of sheep using both licks. Results will be compared with those from ground-based surveys of mineral licks conducted in the 1980s (Tankersley 1984). The use of wildlife monitoring cameras will substantially enhance the volume of data that can be collected at a relatively low cost.

Study Activity	Schedule
Aerial surveys	One week annually: June/July 2013 and 2014
Mineral lick survey	Ground observations and camera setup/maintenance: early May, late May, early June, late June, July, August, 2013 (2–3 days per visit, with potentially less effort in 2014, depending on 2013 results)
Data analysis and synthesis	Incrementally, following each stage of data acquisition

1.3.7. Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

Aerial surveys will provide the best indication of the population of sheep in the Project area and therefore potentially impacted by the Project. Monitoring the Jay Creek and Watana Creek mineral licks with a combination of ground-based observations and time-lapse photography will provide a cost-effective method of collecting data on the seasonal timing and number of sheep using the licks during the summer.

Aerial surveys will require one observer and one pilot in a small fixed-wing airplane (Piper® PA-18 Super Cub, Piper Aircraft, Inc., Vero Beach, Florida), flying daily for up to one week per summer to survey the sheep habitat in the greater Project area. The final size of the area to be surveyed will be determined in consultation with ADF&G. Observations of mineral licks and setup and maintenance of time-lapse cameras will be completed by two observers on four field visits during May and June and two shorter trips by one observer later in the summer to check cameras. Analysis of time-lapse camera images will include enumeration of the number of sheep (including lambs) visible by date and time of day; if image quality allows, other data on sex and age composition will be recorded. Conducting surveys in both 2013 and 2014 will provide information on annual variability, and the 2013 effort will be used to modify the 2014 field effort, if necessary.

1.3.8. Literature Cited

- AEA (Alaska Energy Authority). 2011. Pre-Application Document: Susitna-Watana Hydroelectric Project FERC Project No. 14241. December 2011. Prepared for the Federal Energy Regulatory Commission, Washington, DC.
- AEA (Alaska Energy Authority). 2012. W-S1: Big-game movement and habitat use study for the Susitna–Watana Hydroelectric Project, FERC Project No. 14241. Draft final version (March 21, 2012). Alaska Energy Authority, Anchorage.
- Peltier, T. C. 2008. Units 13A, 13E, 14A (North) and 14B, Dall sheep management report. Pages 90–97 *in* P. Harper, editor. Dall sheep management report of survey-inventory activities. 1 July 2004–30 June 2007. Alaska Department of Fish and Game. Project 6.0. Juneau, Alaska.
- Tankersley, N. 1984. Susitna Hydroelectric Project, final report, big game studies, Vol. VIII—Dall sheep. Report by Alaska Department of Fish and Game, Anchorage, for the Alaska Power Authority, Anchorage. 91 pp.