

Susitna-Watana Hydroelectric Project Document

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1.1. Wolf and Wolverine Distribution and Abundance

1.2. Requester of Proposed Study

AEA anticipates a resource agency 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 overall goal of this study is to collect preconstruction baseline population data on wolves and wolverines in the greater Project area (reservoir impoundment zone; facilities, laydown, and storage areas, access and transmission-line routes) to enable assessments of the impacts expected to occur from development of the proposed project. This information will be used to estimate the number of wolves and wolverines that may be affected by the Project and to evaluate habitat impacts.

Three specific objectives have been identified for this study:

- 1) Describe distribution of wolves and wolverines;
- 2) Describe habitat use by both species; and
- 3) Estimate current population sizes of both species.

1.3.2. If applicable, explain the relevant resource management goals of the agencies and/or Alaska Native entities 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 wolf and wolverine populations and manages subsistence and sport hunting and trapping on State lands (5 AAC 85.025), 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, the National Park Service, the Bureau of Land Management, the Bureau of Indian Affairs, and the U.S. Forest Service, oversees the Federal Subsistence Management Program (57 FR 22940; 36 CFR 242.1–28; 50 CFR 100.1–28) with responsibility for managing subsistence resources on Federal public lands, including wolves and wolverines, for rural residents of Alaska.

Most of Game Management Unit (GMU) 13 (except Subunit 13D, south of the Glenn Highway), including the upper Susitna River basin, currently is managed by ADF&G under a predator control program instituted in response to the state's intensive management law, passed in 1994. Since 2006, the number of wolves in GMU 13 has been within the current management goal range of 135–165 wolves (3.3–4.1 wolves/1,000 km²) after the end of the hunting and trapping seasons (Schwanke 2009). In neighboring GMU 14, the wolf population was estimated at 100–130 animals in fall 2004 and 145–180 in fall 2007, well above the management objective of a minimum population of 55 wolves (Peltier 2006, 2009). GMU 14 is currently not included in the state's predator control program.

1.3.3. If the requestor 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.

Wolf

The wolf study for the original Susitna Hydroelectric Project (SHP) was conducted during 1981–1983 in the Nelchina Basin and upper Susitna River basin, building on regional studies that began in the 1970s (see ABR 2011 for details). That study provided data on pack size, territory boundaries, den and rendezvous sites, and feeding habits, based on radio-tracking of collared animals. During the study period, 13 different packs and a lone individual used areas in or adjacent to the Devils Canyon and Watana impoundment zones proposed for the SHP. Wolf packs used almost the entire upper Susitna basin, except above 4,000 ft. elevation; elevational use varied seasonally, probably in response to availability of prey species. In each year, 5–6 wolf packs used the areas that would have been inundated by the SHP. Den and rendezvous sites usually were located on well-drained knolls and hillsides with sandy, frost-free soils and mixed, semi-open stands of spruce, aspen and willow. The most important potential impact on wolves from the SHP was predicted to be reduced winter availability of primary prey species (moose and caribou) in the impoundment zones. In addition, habitat loss due to inundation and facilities development would have caused wolves to adjust territory boundaries, potentially resulting in intraspecific strife.

Wolves have been studied extensively in GMU 13 since the mid-1970s and are the subject of ongoing surveys for ADF&G's intensive management program. Nevertheless, the greater Project area involves portions of three GMUs (13, 14, and 16) with different management mandates. The number of wolves and packs using the greater Project area currently is unknown, although it appears to be substantially lower than during the original SHP studies because of current predator control efforts in GMU 13 and 16. Research in recent years has focused on ADF&G's Nelchina study area in GMU Subunit 13A, located south of the proposed reservoir.

Wolverine

ADF&G conducted a mark–recapture study of 22 radio-collared wolverines in the upper Susitna River basin for the original SHP to investigate population density and distribution, habitat selection, home-range size, and seasonal movements from 1980 to 1983 (see details in ABR 2011). A sample of 22 wolverines was equipped with VHF radio-collars between April 1980 and April 1983. Sufficient data to estimate home-range size were obtained for only four males and three females, however. Harvest records, track data, and incidental sightings also were used to help estimate distribution, population size, and food habits of wolverines in the Susitna basin. In addition to collared animals, the carcasses of 136 wolverines that had been harvested in or near the study area were examined. Habitat use by wolverines varied among seasons, with respect to both elevation and vegetation types. Wolverines were located at higher elevations in summer and lower elevations during winter (Whitman et al. 1986). Collared wolverines avoided tundra habitats in winter and forested habitats in summer, probably because of seasonal changes in prey availability, and used other habitats in proportion to their availability. The most notable

potential impact of the original SHP on wolverine was considered to be permanent loss of winter habitat. A decrease in the regional moose population would have reduced the amount of carrion available to wolverines during winter. Whitman and Ballard (1983) estimated that at least 35 wolverines (45% of the estimated population in the Susitna basin) would have been affected to some degree by the reservoir. Improved access and a greater human presence in the region would have increased the potential for higher harvest rates of wolverines.

No recent estimate of the wolverine population is available for the Project area. The relative inaccessibility of much of the Project area may make it a refugium (population source area) for the GMU 13 wolverine population (ADF&G memorandum to AEA, 22 November 2011).

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, disturbance, and changes in human activity due to construction and operation of the Project. The Project may result in habitat loss, reduced access, or displacement from seasonally used sensitive habitats in the middle and upper Susitna River basin such as denning areas, or prey calving and wintering areas caused by increased human activity.

The wolf and wolverine study would provide data to assess the following direct, indirect, and cumulative effects of the Project:

- Direct and indirect loss and alteration of wildlife habitats from Project construction and operation;
- Potential physical and/or behavioral blockage and alteration of movements due to reservoir water and ice conditions, access and transmission corridors, and new patterns of human activities and related indirect effects, including habitat connectivity and genetic isolation;
- Potential direct mortality due to Project-related fluctuations in water and ice conditions in the reservoir and downstream river reaches;
- Potential direct, indirect, and cumulative impacts on predator and prey abundance and distribution related to increased human activities and habitat changes resulting from Project development;
- Potential direct behavioral impacts to wildlife, such as attraction or avoidance, resulting from vehicular use, noise, and increased human presence associated with Project construction or operation;
- Potential indirect behavioral impacts to wildlife, such as attraction or avoidance, resulting from changes in hunting, vehicular use, noise, and increased human presence associated with increased subsistence or recreational access that may be facilitated by Project development;
- Potential direct mortality due to vehicle strikes, exposure to contaminants, attraction to garbage and human activity, and protection of life and property; and
- Potential changes in wildlife mortality rates due to increased subsistence and sport harvest facilitated by Project development.

The wolf and wolverine study would provide baseline data for the Project area, including winter habitat use data for development of habitat evaluation criteria and predator-prey relationships.

The study would provide a basis for impact assessments; for developing any necessary

protection, mitigation, and enhancement (PME) measures; and for 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.

An aerial survey using snow-tracking in winter and a sample-unit probability estimator (SUPE; Becker et al. 2004, Golden et al. 2007) would be used to estimate the number and density of wolverines in the Project area. Golden et al. (2007) used a sample-unit probability estimator (SUPE) to estimate wolverine density. With this method, the survey area is stratified based on predicted density and is divided into sample units (e.g., 25-km² for wolverines; Golden et al. 2007). Sample units are selected at random from each stratum and are surveyed soon after a significant snowfall, until all tracks are located. Tracks are then followed in both directions to map the entire movement path since the last snowfall and the number of animals in the group is estimated. Data are analyzed using program SUPEPOP and formulas from Becker et al. (1998). Surveys sampling 65–70% of high-density sample units and 45–50% of medium- and low-density sample units should result in a density estimate with a coefficient of variation (CV) of <10%.

Historical data from the original SHP study will be reviewed and synthesized, where possible, with data from other recent and current monitoring by ADF&G of wolves in GMU subunits 13A, 13B, 13E, 14B, 16A and 20A, as a continuation of wildlife study W-S1 (AEA 2012), which began in 2012. Mapping of wolf pack territories and movements from existing ADF&G telemetry datasets would provide useful background information, although delineation of current pack territories will not be possible without tracking of collared individuals, and the applicability of the available data to the greater Project area need to be evaluated. Although the findings of the wolf and wolverine studies conducted for the original SHP program remain relevant and can be used current Project analyses, the original telemetry data for wolves and wolverines are no longer available (R. Strauch, ADF&G, 2012 pers. comm.), so cannot be reanalyzed using newer geospatial techniques.

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.

A single aerial survey in late winter (February/March 2013) would be adequate to provide a population estimate of wolverines in the Project area. Multiple pilot/observer teams would be used to cover as much of the Project area as possible within as short a time period as possible once suitable survey conditions are achieved following a fresh snowfall. It is estimated that 35–55 hours of flight time would be required, using small aircraft (preferably Piper PA-18 Super Cub or similar tandem fixed-wing airplanes).

With regard to wolves, ADF&G's Division of Wildlife Conservation has expressed the opinion that ongoing monitoring work would be sufficient (ADF&G memorandum to AEA, 22 November 2011), so no additional field surveys are deemed necessary for the Project. Hence, desktop analyses of existing ADF&G data would be used to meet the study objectives.

At this time, no alternative studies have been proposed for wolves or wolverines.

1.3.8. Literature Cited

- ABR. 2011. Wildlife data-gap analysis for the proposed Susitna-Watana Hydroelectric Project. Draft report, August 16, 2011, prepared for the Alaska Energy Authority by ABR, Inc.— Environmental Research & Services, Fairbanks, Alaska. 114 pp.
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