

Susitna-Watana Hydroelectric Project Document

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1.1. Aquatic Furbearer Abundance and Habitat Use

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 goal of the aquatic furbearer study is to collect preconstruction baseline data on aquatic furbearers in the Susitna-Watana Hydroelectric Project (Project) area to enable assessment of Project-related impacts and develop appropriate mitigation measures (AEA 2011). The beaver is the most prominent aquatic furbearer statewide in terms of ecological and economic importance. Other aquatic furbearers in the Project area include river otter, mink, and muskrat.

Four specific objectives have been identified for the aquatic furbearer study:

- 1) Delineate the distribution and estimate the current population size of beavers;
- 2) Describe the distribution and relative abundance of river otter, mink, and muskrat;
- 3) Document habitat use by aquatic furbearers;
- 4) Review available information to characterize food habits and diets of piscivorous furbearers (river otter and mink) as background for the separate mercury risk assessment study.

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.]

The Alaska Department of Fish and Game (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 manages subsistence and sport hunting and trapping for fur animals on State lands (5 AAC 85.060), 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 for rural residents of Alaska.

ADF&G's management goals for furbearers are to provide for an optimal harvest of furbearers and the greatest opportunity for citizens to participate in hunting and trapping of furbearers. ADF&G management objectives are to maintain accurate annual harvest records based on sealing documents, for those species that require sealing of hides, and to develop specific population and harvest objectives. ADF&G requires that the pelts of river otters taken anywhere inside or outside the state be sealed by an authorized ADF&G representative. Beaver pelts taken in Game Management Units (GMUs) 13 and 14 also must be sealed, but not those taken in the other GMUs (16 and 20) bordering the Project area.

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.

Studies of aquatic furbearers for the original Alaska Power Authority Susitna Hydroelectric Project (SHP) in the 1980s focused primarily on beaver and secondarily on muskrats. Beavers, which were selected to predict downstream impacts of the SHP on furbearers, were studied primarily downstream of the proposed dam site (Gipson et al 1982, 1984; Woolington et al. 1984, 1985; Woolington 1986). Aerial surveys were used to identify locations of lodges and caches and to estimate population levels and overwinter survival, and boat surveys in summer were used to detect beaver sign. Surveys were conducted using boats and airplanes between Devils Canyon and Cook Inlet during summer 1980 and 1982; in general, beaver sign increased substantially with distance downriver from Devils Canyon (Gipson et al. 1982, 1984). Side channels and sloughs were the habitat types used most often. Caches, lodges, and dens were found most often in habitats that had silty banks, willows, and poplars. Little or no sign of beaver activity was found in the mainstem Susitna River during summer surveys (Gipson et al. 1984). Away from the Susitna River, beaver sign was found along slow-flowing sections of most tributaries, including Portage Creek, Indian River (especially along a tributary flowing out of Chulitna Pass), streams along the access-road route alternative between Gold Creek and Devils Canyon, and Prairie Creek (Gipson et al. 1984).

Spring and fall counts of beaver lodges and food caches were conducted between Devils Canyon and Talkeetna (Gipson et al. 1984; Woolington et al. 1984, 1985; Woolington 1986). Fall counts were conducted annually during 1982–1985 and spring counts were conducted in 1984 and 1985. Between 1982 and 1985, the population in that area was estimated at 70–220 beavers. Aerial surveys for beavers (and muskrats) were conducted in the upstream study area during spring and summer 1980 (Gipson et al. 1982). Beaver colonies in the SHP impoundment zones occurred mostly in lakes between 610 and 730 m (2,000 and 2,400 ft) elevation. Colonies also were present in slow-moving sections of most of the larger tributaries, particularly Deadman Creek. No active beaver lodges or bank dens were found on the Susitna River upstream of Devils Canyon (Gipson et al. 1982), however.

Aerial surveys for muskrat pushups were flown upstream from Gold Creek during spring 1980 (Gipson et al. 1982). Muskrat sign was observed most often in lakes on plateaus above the river valley, at 610–730 m (2,001–2,395 feet) elevation. Muskrats in the upstream area appeared to depend on fairly small, isolated areas of wetland habitats. Muskrats also were seen along slow-moving sections of creeks and at locations where creeks drained into larger streams, particularly near the Stephan Lake–Prairie Creek and Deadman Lake–Deadman Creek drainages.

A large body of research demonstrates that the beaver is a keystone species that exerts profound ecological effects on hydrology, geomorphology, vegetation, nutrient cycling, the productivity of aquatic and riparian habitats, and the distribution and abundance of fishes and other aquatic organisms (Butler 1995, Collen and Gibson 2001, Müller–Schwarze and Sun 2003, Rosell et al. 2005). Little current research has been conducted in GMU 13 on aquatic furbearers, however. Updated information is needed because of the ecological importance of

beavers in freshwater aquatic systems. Data on distribution, population densities, and movements of aquatic furbearers is limited to that collected for the SHP, and that information is now 25–30 years old. Furbearer reports produced by ADF&G contain general abundance information obtained from trapper questionnaires (Schumacher 2010), but reports do not include drainage-specific population data.

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.

For aquatic furbearers, the Project will result in habitat loss and alteration, habitat fragmentation, disturbance, and direct and indirect mortality due to development activities (AEA 2011). The aquatic furbearers study will provide data to assess the following direct and indirect impacts and cumulative effects:

- 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;
- Potential direct mortality due to Project-related fluctuating 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.

This aquatic furbearer study would provide baseline data for the Project area, including habitat use data for development of habitat evaluation criteria, and would provide a basis for impact assessment; developing [any necessary](#) 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.

Aerial surveys of beaver lodges and food caches would be conducted in a small piston helicopter (Robinson R44®, Robinson Helicopter Company, Torrance, California) to assess the

abundance and distribution of beaver in the middle reach of the Susitna River below the proposed dam site (downstream extent to be informed by instream flow modeling), the reservoir impoundment zone in the upper basin, the proposed facilities and laydown/storage areas, and access road and transmission-line corridors. Surveys would be flown in fall shortly before freeze-up to document the distribution and abundance of active colonies, as indicated by lodges and food caches (Hay 1958, Payne 1981).

Aerial surveys in winter would focus on snow-tracking of river otters (e.g., Reid et al. 1987, Sulkava and Liukko 2007) and, if feasible, mink, in the same areas surveyed for beavers. Aerial surveys of ponds and lakes in winter would be used to enumerate muskrat pushups in the portions of the Project area in the upper basin that would be affected directly by Project infrastructure and activities. All sightings of aquatic furbearers would be recorded with Global Positioning System (GPS) receivers for entry into a geospatial database for use in the wildlife habitat evaluation for the Project.

Additional data on aquatic furbearers (primarily river otter and mink) would be collected during winter track surveys of terrestrial furbearers being conducted for that separate study. In addition, historical and current data on harvest of aquatic furbearers in GMU subunits 13A, 13B, 13E, 14B, 16A and 20A would be synthesized for the separate wildlife harvest study, beginning in 2012 (AEA 2012). Details of incidental sightings of aquatic furbearers would be requested from other Project researchers working on fish and aquatic resources studies.

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 using a small piston helicopter would be conducted in fall and winter of both 2013 and 2014 to assess the relative abundance and habitat use of aquatic furbearers in the Project area. Beaver surveys would require up to a week of survey effort in October. Winter track surveys, requiring approximately 3–5 days each, would be conducted monthly in mid- to late winter (February to April). Muskrat pushup surveys would be conducted in late winter (April).

1.3.8. Literature Cited

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