

**Preliminary Issues/Resources Concerns**

**Swan Lake Project**

NOTE: this summary accompanies the following documents

- Background Document
1. Changes, if any, to the baseline flow regime in Falls Creek and potential impacts to aquatic species.
    - The 1998 revised Exhibit S describes this reach as follows “While a short portion of Falls Creek at the outlet of Swan Lake is used by resident rearing fish, a barrier falls just above tidewater prevents access to the system by anadromous fishes. Salmon destined for Carroll Creek at the head of the inlet may school at the outlet of Falls Creek prior to moving up the inlet to spawn. Carroll Creek supports important runs of pink, chum, and coho salmon, steelhead trout and Dolly Varden char”.
    - The current proposal would not appear to impact the existing baseline.
  2. Sport fishing access to the Project .
    - Per the record, KPU and subsequent Project owners made a dock and boat available for access to the Project reservoir for recreational purposes. During subsequent consultation, Project owners requested that for safety reasons coupled with little recreational use of the dock/boat, that they be able to restrict public access to these resources. FERC granted this request. Existing recreation resources are maintained in Carroll inlet (i.e., visitor boat dock, picnic tables, visitor kiosk). In 2004, FERC exempted the licensee from filing future Form 80s.
    - Given the distance of the Project from Ketchikan, the availability of recreational opportunities closer to the city, and the less than desirable fishing opportunities (e.g., small populations of kokanee and Dolly Varden in the lake as opposed to salmon, halibut and crabbing closer), additional facilities to support recreational use is likely not a viable issue.
  3. Impacts to kokanee and Dolly Varden char populations that include the following:
    - a. Access to spawning/rearing areas in tributaries. A key question relates to the barrier falls in Lost Creek that becomes a migration barrier as the reservoir draws down. Access will depend primarily upon Project operations and associated reservoir elevations during the fall spawning period (Sept. – Nov.) and the locations of barriers in tributaries and how decreasing water surface elevations impact passage efficacy.
      - Historically, there has been tremendous variability in Swan Lake reservoir elevation during expected fall spawning periods (Sept.-Nov.).

- The proposed pool raise would be a benefit to Lost Creek by increasing the frequency at which the barrier falls is inundated during the spawning period (fall when the reservoir is typically near full pool). In these years, the barrier would no longer be an upstream fish passage barrier and migratory salmonids could access the available habitat upstream.
  - An analysis of recent operational information to confirm trends during the spawning period coupled with field survey information that identified locations/elevations of barriers (associated with 3c), if any, would allow SEAPA to better describe this potential issue under the proposed action.
  - 2012 Study Approach: Tributary Access Evaluation
- b. Loss of shoreline spawning/rearing habitat; presumably kokanee.
- Existing FERC consultation records suggests that kokanee may utilize areas of the Swan Lake shoreline for spawning. However, little information exists on the level of activity, if any that may be occurring.
  - A pool raise will further inundate and may potentially impact these existing shoreline spawning locations, if they exist. Note, however, that if shoreline spawning does exist, these areas were established after Project construction and original inundation of Swan Lake.
  - Fall surveys (by boat) would be conducted to confirm and evaluate the extent of shoreline spawning in the reservoir (timing, numbers of fish, habitat used, habitat available, locations and elevation). Spawning habitat may be characterized during the summer concurrent with fish sampling activities.
  - It is important to note that visual surveys of shoreline spawning kokanee should be considered a conservative estimate as spawning for this species has also been documented in waters too deep to survey. Deep water areas may serve as appropriate spawning habitat if appropriate substrate is available and groundwater seepages exist (in lieu of wave action, etc.). Note that Hoopes (1978) noted high dissolved oxygen readings at depth which indicate the possibility of upwelling from groundwater springs.
  - 2012 Study Approach
    - Fish Community and Aquatic Habitat Study
    - Spawning Assessment
- c. Additional inundation of tributary spawning and rearing habitat with proposed pool raise.
- Boundary survey information of the new proposed reservoir elevation will set the upper bounds of efforts to address potential impacts to kokanee in four tributaries (Track, Fry, Mint, Lost creeks). The amount and quality of available habitat that may be impacted by the proposed inundation is currently unknown and can be collected in mid-July concurrent with fish species sampling. For

kokanee, spawning habitat is of primary concern since they typically outmigrate in the spring to rear in the lake. For Dolly Varden, lost rearing habitat may need to be characterized.

- In his evaluation report prior to Project construction, Hoopes (1978) noted the following:
  - In Mint Creek, the best spawning areas is between 400-800 meters upstream from the outlet (this would now be inundated and is part of the current Project baseline). The stream has very limited potential for spawning beyond this area.
  - Fry Creek had a small amount of spawning gravel near the stream mouth (this area would not be inundated and is part of the current Project baseline).
  - No fish were observed in Track Creek and the stream is believed to be of little value as a spawning area.
  - Spawning areas in Swan Lake tributaries will be greatly reduced or lost entirely with the construction of the Project. Presumably these impacts are now part of the project baseline.
- 2012 Study Approach
  - Fish Community and Aquatic Habitat Study
  - Spawning Assessment

d. Impacts to overall fish populations

- A fish community study in the reservoir and associated tributaries would be valuable in establishing an environmental baseline on fish species composition, relative abundance, and size distribution of fish in the project. Additional quantitative information could be extrapolated from these survey data such as population estimates and CPUE.
- Gill netting, minnow traps and angling are likely the most appropriate methods in the reservoir while backpack electrofishing could be used in tributaries. The study could occur in the summer to confirm the need for subsequent impact assessment surveys in the fall (i.e., in support of potential impacts to kokanee spawning habitat).
- 2012 Study Approach:
  - Fish Community and Aquatic Habitat Study

4. Loss of littoral habitat caused by inundation

- The two components of information necessary to answer this question can be collected from the species assemblage information (3d) and qualitative littoral habitat data that could be collected as part of shoreline spawning surveys.
- 2012 Study Approach:

- Fish Community and Aquatic Habitat Study

5. Ownership composition relative to changes with new FERC boundary

- Preliminary indications are that current FERC boundary will be sufficient to accommodate the new normal maximum surface area at 350 feet MSL.
- Changes to the boundary may be necessary in localized areas to accommodate resource concerns, based on field evaluation in 2012
- 2012 Study Approach: Land Verification Survey

6. Wildlife:

- Impacts to wildlife and wildlife habitat (Forest Service Sensitive and MIS)
- Determine if baseline surveys are needed to address various wildlife species present or likely to occur within and adjacent to the Project area. Conduct an initial meeting with agency stakeholders to determine whether specific wildlife concerns exist from the proposed Swan Lake Expansion project.
- If surveys are needed, they could occur in mid-July concurrent with other field efforts. Goshawk surveys would require an additional mobilization in June.
- Determine whether the FS would require protocol-level surveys of the surrounding suitable habitat for Goshawk or if general wildlife surveys is all that is needed as proposed in 7a.
- 2012 Study Approach:
  - 2012 Wildlife Study

7. Soils:

- There may be a need to conduct an evaluation of potential impacts to soil productivity, erosion potential, and mass movement associated with the proposed increase in pool elevation. Soil resource investigations, in conjunction with other field surveys, will determine if the proposed activities has the potential to affect lands adjacent to the reservoir.
- Field work, if needed, would include a geomorphic investigation along the perimeter of the reservoir and tributary mouths to evaluate existing conditions and potential effects of the proposed expansion of the Project on soil productivity, erosion potential, and mass movement.
- Information collected would consist of soil types, distribution, acres of slopes greater than 72 percent, and their abundance within the Project area. A study would also conduct an analysis to identify total acres of very high mass movement index soils and to document mass wasting or unstable features identified during the field surveys.
- Field effort could occur in mid-July concurrent with other field activities.
- 2012 Study Approach :

- 2012 Soils Study

8. Botanical:

- Determine if baseline surveys are needed to address various plant species present or likely to occur within and adjacent to the Project area.
- If needed, the following baseline data collection within and adjacent to the current FERC boundary have been identified for survey:
  - Sensitive Plant surveys within/adjacent to the current FERC boundary
    - Review and summarize existing rare, invasive, and sensitive plant survey data and research in the Project area.
    - Rare and invasive plant surveys will be conducted in locations where the likelihood of occurrence is highest.
  - Survey to include RTEs, Forest Service Sensitive listed, noxious/invasive weeds
    - The Project area will be divided into areas of high, medium, and low probability habitat for sensitive species, and most of the survey effort will be focused on high probability areas.
    - Daily Sensitive Plant Survey Forms will be completed.
  - Wetland delineations
- 2012 Study Approach:
  - 2012 Vegetation Study

9. Cultural resources –

- Determine whether additional Heritage Resource work is needed (i.e., conduct a site inventory) which may require authorization/permit from SHPO and/or FS.
- Conduct background research for information on previously recorded cultural resource sites and previous cultural resource inventories in or near the Project.
- If inventory is needed, prepare a Project research design or inventory plan will define high and low sensitivity zones and the intensity of cultural resource inventory required.
- Cultural resources inventory would be conducted in mid-July concurrent with other field activity.
- Work would be coordinated with USFS and Alaska SHPO as necessary.
- 2012 Study Approach:
  - 2012 Cultural Resources Study