

Draft Scenery Resources Report

Blue Lake Hydroelectric Project (FERC No. 2230) Expansion

Prepared by:

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SUMMARY of FINDINGS

The City and Borough of Sitka, Alaska, Electric Department (“City”) is proposing to increase the electrical generation capability of the Blue Lake Hydroelectric Project (“Project”, FERC No. 2230) to meet future increases in electrical load. The City’s proposal (referred to as the “Expansion”) would involve 1) raising the existing Project dam height by as much as 83 feet, from elevation 342 (“El 342” to El 425) and 2) installation of a new powerhouse and new generating turbines. Also, the Expansion would involve in-place modifications to several existing features.

Scenic and aesthetic studies were conducted using the US Department of Agriculture Forest Service (USFS) Visual Management System (“System”, USDA Forest Service, 1974). In this system, scenic attributes within the study area are evaluated according to a number of criteria prescribed by the System and, in this case, the Tongass Land Use Management Plan (Forest Plan).

Generally, prescribed areas in the Expansion Study Area were viewed from specified viewpoints, and effects from those viewpoints were evaluated relative to Land Use Designations (LUDs) from the Forest Plan. All points within the Expansion Study Area were in one of three LUD categories: Municipal Watershed (views of Blue Lake itself and in the dam site and overlook areas); 2) Semi-Remote Recreation (views along Blue Lake road and the Sawmill Creek Campground); and 3) Transmission Corridor.

Analysis according to System criteria showed that, at Blue Lake, because of no change at high water levels and because of a reduction in drawdown after the Expansion, scenic effects due to dam raising would be slightly positive. Due to scenic improvements at the overlook area and to proposed revegetation and restoration measures at a construction staging area near the dam overlook, scenic effects in those areas would be neutral to slightly positive.

Effects at the Sawmill Creek campground and along the Blue Lake Road were difficult to evaluate because of potential changes at these areas. Again, Articles to the 2007 license require the City to prepare a new Campground design. Also, the campground will probably be used as a construction staging area for the Expansion and the Blue Lake Road may have to be modified to allow for equipment mobilization for the Expansion.

The City requests that scenic evaluations in these areas be deferred until final plans for the Expansion are developed.

INTRODUCTION and BACKGROUND

The City and Borough of Sitka, Alaska, Electric Department (“City”) is proposing to increase the electrical generation capability of the Blue Lake Hydroelectric Project (“Project”, FERC No. 2230) to meet future increases in electrical load. The City’s proposal (referred to as the “Expansion”) would involve 1) raising the existing Project dam height by as much as 83 feet, and 2) installation of a new powerhouse and new generating turbines. Also, the Expansion would involve in-place modifications to several existing features.

The Blue Lake Project FERC license was renewed in 2007 after a five year relicensing process. During relicensing, no future modifications were proposed for the Project. Late in the relicensing period, however, based on unexpected recent electrical load growth in Sitka, it was found necessary to evaluate the changes described above.

Beginning in 2007, the City began the process of applying for an amendment to the existing FERC license to authorize the Expansion-related actions. This process has involved consultation with resource agencies, the public and other stakeholders regarding impacts to potentially affected resources, including fish, wildlife, recreation and aesthetic values, among several others. Stakeholders and the City agreed to conduct studies for various resources, to provide a basis for evaluation of Project-related impacts. This report, based on methods approved in consultation with the US Forest Service (USFS) Sitka Ranger District, is the product of that process.

OBJECTIVES

The objectives of the scenery resource studies and report were to 1) describe the existing scenic environment in the Blue Lake Project area and 2) to evaluate effects of the development on those described scenic resources. The report provides description of the methodology, assumptions, and conclusions in preparing the scenery resource assessment.

PROJECT DESCRIPTION

The Blue lake Project is located in Southeast Alaska, 5 miles southeast of Sitka Alaska. The Project generally consists of the dam and intake, the power conduit and powerhouse and switchyard, and the transmission line (Figure 1). The FERC regulatory boundary for the Project extends from the easternmost perimeter of Blue Lake to the Marine Street substation in Sitka.

Of primary interest in this report are the areas around Blue Lake which would be inundated by the 83 foot dam raise. The dam raise would inundate 430 acres of land, primarily in the valley of Blue Lake Creek, Blue Lake's major inflow tributary (Figure 2), and around the Lake margins.

Secondarily, the Expansion would affect the Sawmill Creek Campground, Blue Lake road and the existing powerhouse and switchyard areas.

STUDY AREA and METHODS

STUDY AREA

The scenic and aesthetic evaluation study area was limited to those areas whose visual character might change as a result of Expansion-related actions. The study area, however, also included positions from which those features or areas might be viewed. Some of these areas, as described below, were well away from the potentially-affected features or areas themselves.

Because visual changes were expected only at Blue Lake, at certain areas along Sawmill Creek and in the Powerhouse area, the study area included those areas, and viewing positions associated with them.

STUDY METHODS

Within the study area are lands owned and managed by the USFS and those owned and managed by the City. During study planning, USFS prescribed using standard USFS visual resources analysis methods for resources on their lands and for those not on USFS lands but which might be viewed from specified positions on USFS land.

For the scenic resources evaluation in this report, we used the Forest Service Visual Management System ("System", USDA Forest Service, 1974). Application of the System is directed by USFS Standards and Guidelines (USFS 2008). The System provides: 1) the framework for visual resources inventory and impact analysis; and 2) measurable standards for USFS management prescriptions and allowable levels of impact.



BLUE LAKE EXPANSION INUNDATION AREA
1655 ACRES, 430 ADDITIONAL ACRES

Figure 2. Blue Lake Expansion Inundation Area at El 425

The inventories include Visual Quality Objectives (VQO's), which are established from identified Visual Priority Travel Routes and Use Areas (VPR's), Distance Zones, and Variety Classes. The inventory also includes Existing Visual Condition (EVC) of the landscape within the study area, and Visual Absorption Capability (VAC) used to determine ability of the landscape to absorb change in visual appearance. The degree of acceptable alteration to the landscape is provided by Adopted VQO's from the Forest Plan.

AFFECTED ENVIRONMENT

Visual resources within the Study Area include Blue Lake Reservoir (referred to as "Blue Lake" in this report) and Sawmill Creek, described separately in the following sections.

BLUE LAKE

Blue Lake is the central feature of an expansive viewshed which includes the lake itself, rugged mountains, steep forested slopes and waterfalls entering the lake. Also included, for those who travel to the eastern end of the lake is Blue Lake Creek valley, a lower relief forested area surrounding Blue Lake Creek, the lake's primary source of inflow.

Blue Lake is a reservoir impounded by the 142-foot tall Blue Lake Hydroelectric Project dam, which increased the area of the natural Blue Lake from 490 acres to 1225 acres.

Blue Lake stores water for hydroelectric generation and is used as the primary source of Sitka's drinking water. Because of the very steep terrain around the lakeshore (except in the Blue Lake Creek valley) and dense vegetation, viewing Blue Lake is feasible only from a limited number of overlook or access sites, and from the surface of the lake itself. Blue Lake is drawn down approximately 60 feet each year as a result of hydroelectric power generation and municipal drinking water use. This drawdown leaves a "bathtub ring" of exposed, unvegetated lakebed which contrasts sharply with the forested areas above and the lake below.

Except for the effects of drawdown, Blue Lake offers a largely unimpacted scenic experience, with no habitation or industrialization. Aesthetics effects on Blue Lake would result primarily from the proposed raise in lake level and the "bathtub ring" associated with drawdown.

SAWMILL CREEK

Sawmill Creek begins below the Blue Lake Project dam and flows 2 miles to tidewater in Silver Bay. Almost all of the Sawmill Creek canyon is steep sided and heavily forested, and is viewed primarily from the Blue Lake Road which affords infrequent views from the inside a car or from roadside pull offs.

Downstream from the base of the Blue Lake Project dam is the Sawmill Creek campground, a USFS managed facility near the north bank of Sawmill Creek. Except at the campground, Sawmill Creek is rarely accessed because of its extremely steep surrounding topography and the objective danger of using water craft.

In the lower reaches of Sawmill Creek are features of the Blue Lake hydroelectric project, including the penstock, powerhouse, tailrace and switchyard, and the Sawmill Creek Industrial Park (SCIP). The SCIP is industrialized for a distance of about ¼ mile.

Visual Priority Routes and Use Areas

The Forest Plan specifies inventory of 8 locations: Blue Lake, the Blue Lake Access Road, the Blue Lake Dam Site & Overlook, Sawmill Creek Campground, the Power House Site, the Tunnel & Surge Chamber Site, and the Blue Lake Road (Table 1)

Land Use Designations (LUD’s) of VPRs

All analysis locations for the Blue Lake Expansion are within three LUD’s: Municipal Watershed, Semi-Remote Recreation and Transmission Line Corridor. VPR’s with potential views of the study area include: Blue Lake, Blue Lake Access Road, Blue Lake Dam Site and Overlook, Blue Lake Road, Sawmill Creek Campground, Beaver Lake Trail, Silver Bay, Sawmill Creek Road

SCENIC and AESTHETIC EFFECTS of the EXPANSION

For each location impacted by the Expansion, the following information was determined;

1. Acres
2. Impact to the location
3. Land owner of the location
4. LUD of the location if federally owned, or LUD of adjacent federal property
5. VPR used as a perspective for evaluation

Each location was then evaluated based on the above conditions.

Table 1. Locations and Related Scenic Evaluation Characteristics, Blue Lake Expansion

| Location | Acres | Impact | Land Owner | LUD or Adjacent LUD | VPR |
|-----------------------|--------------|---------------------------|-------------------|----------------------------|-------------------------------|
| Blue Lake | 1669 | Portion will be Inundated | USFS | Municipal Watershed | Blue Lake Overlook, Blue Lake |
| Blue Lake Access Road | 1 | Portion will be Inundated | City of Sitka | Municipal Watershed | Blue Lake |

| | | | | | |
|--|----|---|---------------|--|---|
| Blue Lake Dam Site & Overlook (Parcel G) | 16 | Staging/ Work Area during construction, Installation of intake gate | City of Sitka | Semi-Remote Recreation, Municipal Watershed | Blue Lake Road #7577, Blue Lake |
| Blue Lake Road | 52 | Used for access during construction | USFS | Semi-Remote Recreation | Blue Lake Road #7577 |
| Sawmill Creek Campground | 11 | Staging/ Work Area during construction | USFS | Semi-Remote Recreation | Sawmill Creek Campground, Campground Road #7569, Beaver Lake Trail #522 |
| Power House Site | 5 | Construction of power house, penstock, and tailrace | City of Sitka | Semi-Remote Recreation, Road & Transmission Line Corridors | Sawmill Creek Road, FH#11, Silver Bay |
| Tunnel & Surge Chamber Site | 4 | Primarily Subsurface Construction | City of Sitka | Semi-Remote Recreation, Road & Transmission Line Corridors | Sawmill Creek Road, FH#11, Silver Bay |

Blue Lake

The Forest Plan specifies Blue Lake VPRs from Blue Lake Overlook and from Blue Lake itself. All land within this viewshed is owned by USFS. The Blue Lake Overlook is on land owned by the City. The LUD for this VPR is Municipal Watershed and visual resources objectives are secondary to the objectives of the municipal watershed uses.

Blue Lake Overlook VPR

To evaluate the viewshed from the Blue Lake Overlook, photos of Blue Lake were taken from the Blue Lake Overlook when the lake was at full pool (El 342) and again when the lake level was near maximum drawdown (El 262), displaying the annual “bathtub ring”. Using Photoshop these photos were modified to simulate the Expansion-related viewshed with water levels at full pool (El 425) and at maximum drawdown (El 365), (Figures 3 through 6). Comparisons of these photos indicate that there would be little visual difference between existing conditions and those resulting from the Expansion. One consequence of raising the dam would be to decrease the annual maximum drawdown



Figure 3. View from Blue Lake Overlook, El 342 Dam Height, Water at El 342



Figure 4. View from Overlook, El 342 Dam Height, Water at El 270



Figure 5. Simulated View From Blue Lake Overlook, El 425 Dam Height, Water at El 425



Figure 6. Simulated View from Blue Lake Overlook, El 425 Dam Height, Water at El 365

from about 80 feet to about 60 feet, thereby decreasing the visual effect of the “bathtub ring”. From the Blue Lake Overlook, therefore, visual effects of raising the dam would be slightly positive relative to existing conditions.

Surface of Blue Lake VPR

Views from the lake itself would afford essentially the same visual effects, relative to both spill and drawn down conditions, as would views from the Blue Lake Overlook, especially in the more westerly areas of Blue Lake. At full pool, views for both the existing and Expansion-related conditions would be about the same in the westerly areas of Blue Lake. At maximum drawdown, the “bathtub ring” noted at Blue Lake Overlook, would also be visible but would be slightly less evident than under present conditions because of reduced drawdown extent.

As the viewer moves toward the eastern end of the lake, however, inundation of Blue Lake Creek valley would become more apparent. At high lake levels, views in this area would remain essentially the same as at present, with the lakeshore views of lower gradient topography as the viewer travels up the valley. At maximum drawdown, however, views would include the devegetated inundated area in Blue Lake valley (Figures 7 and 8). This area would add to those of the existing devegetated area, but the overall effect would be about the same as at present, given the reduced drawdown after the dam raise.

Summary of Effects on Blue Lake VPRs

Overall effects of the dam raise from the two Blue Lake VPRs would be neutral or positive, considering slightly increased exposed area in the Blue Lake Creek valley, balanced by overall reduction in visual effects of the annual “bathtub ring”. Based on Blue Lake’s classification under the Municipal Watershed LUD in which visual effects are secondary to Municipal Watershed uses, the dam raise would be consistent with Forest Plan prescriptions.

Blue Lake Access Road

The Blue Lake Access Road is the short road from the Blue Lake overlook to the lakeshore (Figure 9). This road is entirely on City property but is visible from the lake surface and the Overlook and therefore included in the visual analysis. All adjacent federal land is owned by USFS and is designated as Municipal Watershed.

Under the proposed dam raise, the Blue Lake Access Road would be about 75 percent inundated when Blue Lake was at El 425. The portion of the access road that is above El 365 (lake level at maximum drawdown) would need to be widened and protected with riprap to prevent washout and erosion due to wave action. The existing winch house located at the end of the access road would be decommissioned and inundated.



Figure 7. Blue Lake Creek Valley with water at El 375

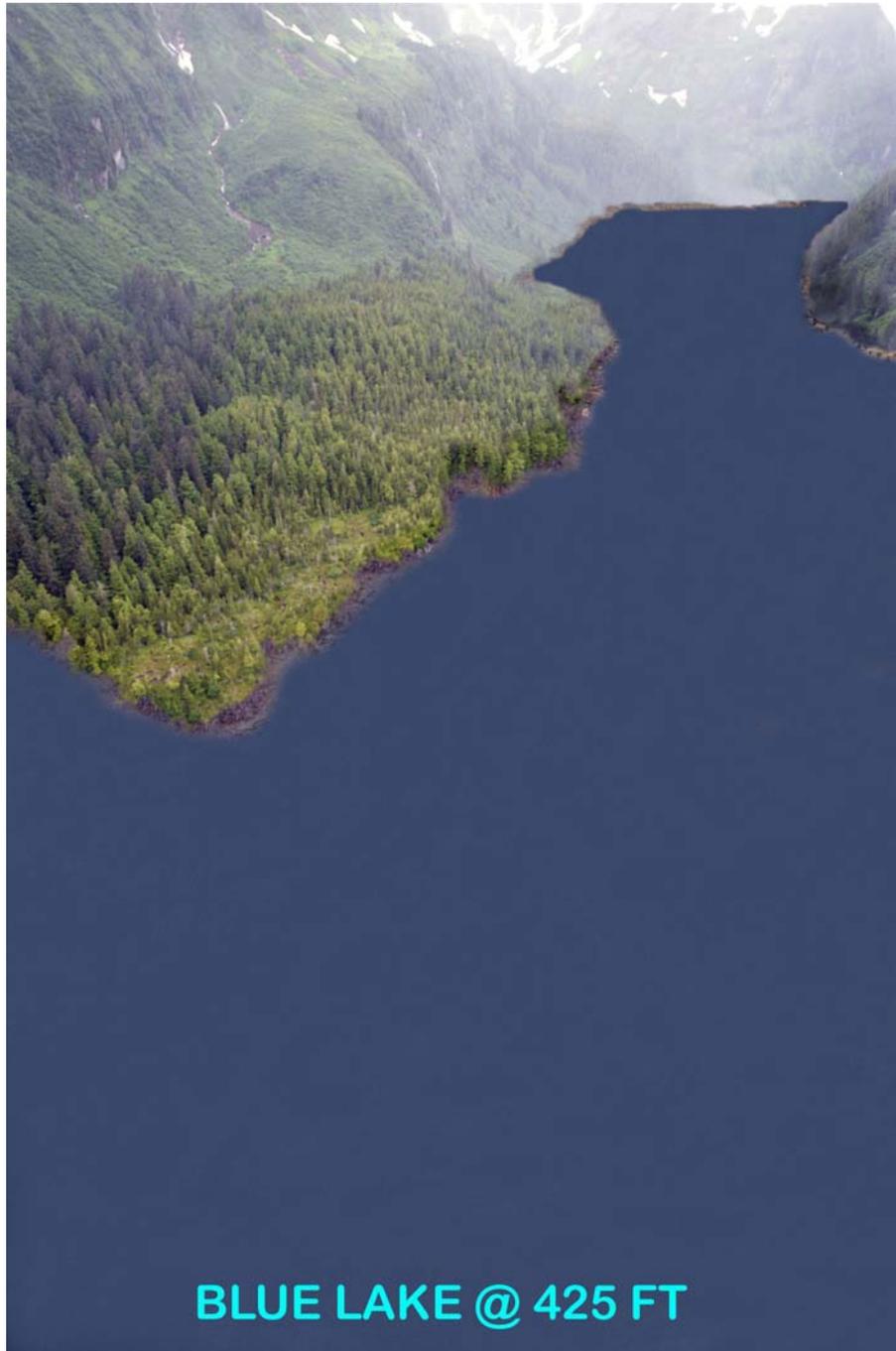


Figure 8. Blue Lake Creek Valley with water at El 425

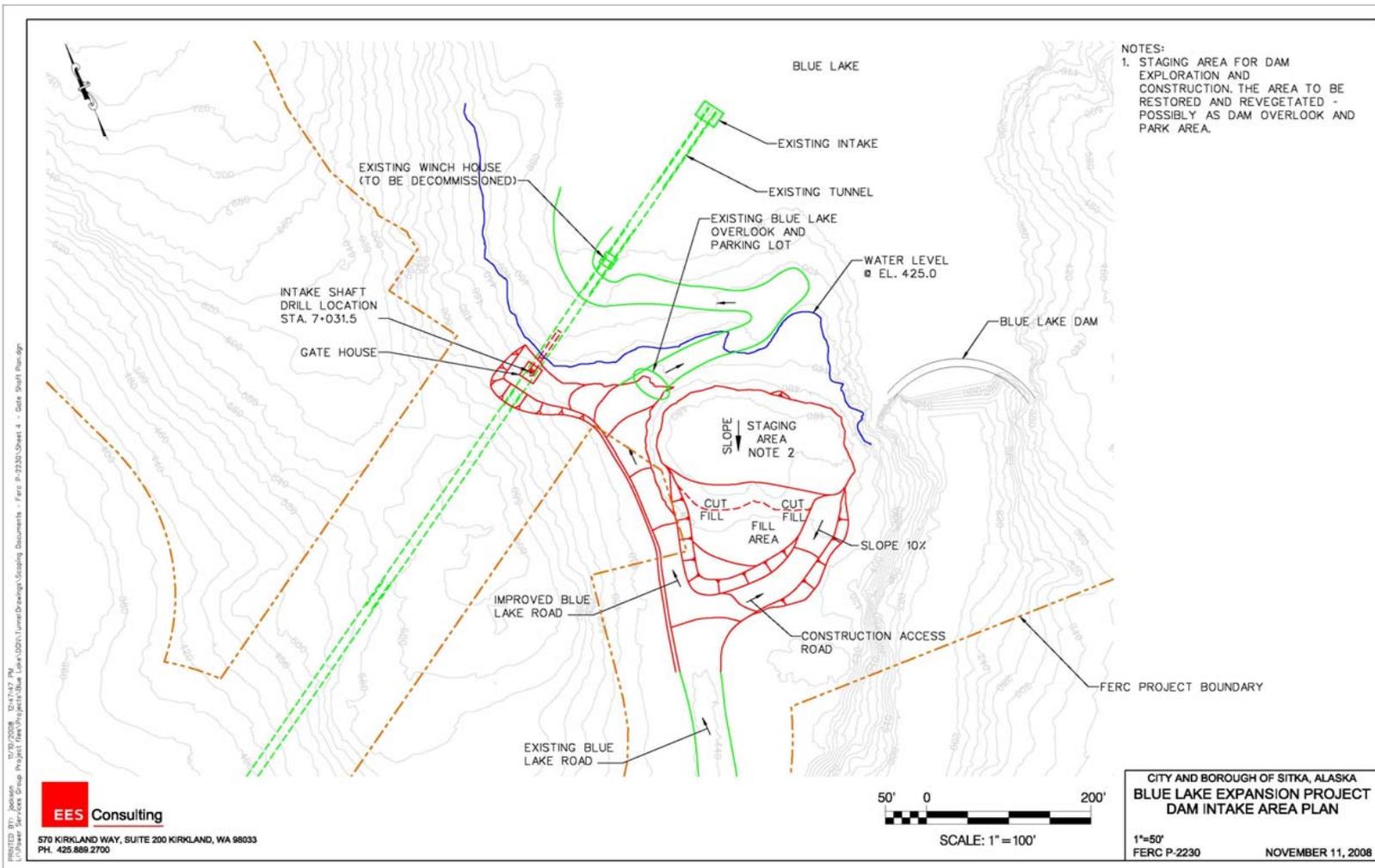


Figure 9. Dam and Intake Area

Under Municipal Watershed visual criteria, dam raise effects on the Blue Lake Access Road would be consistent with Forest Plan prescriptions.

Blue Lake Dam Site and Dam Overlook

The Blue Lake Dam Site and Dam Overlook is the area immediately south of the Blue Lake Overlook and consists of a vegetated knob, a short trail to the Dam Overlook (See Figure 9). All visual features within this area are on City property, and all adjacent federal land is owned by USFS. The applicable LUD are Municipal Watershed and Semi-Remote Recreation.

This area was substantially altered during original Project construction and has naturally revegetated in the following years. Expansion-related modifications would involve clearing and lowering the rock knob between the Dam Site and Dam Overlook to create a staging and construction area for the dam construction (See Figure 10). The Overlook is scheduled to be improved in accordance with the article 301 of the FERC license issued in 2007. It may be appropriate to relocate the overlook on the knob between the dam and intake tower when the construction of the dam is complete.

In addition to the modifications at the dam site and overlook, a new intake tower would be located just west of the Overlook as indicated in Figure 9.

The Visual priority routes and land use area applicable to this location are the Blue Lake Road and Blue Lake. Following construction and modification to the overlook area required by Article 301 the view shed of this location will be improved.

Blue Lake Road

The Blue Lake Road is primarily on USFS land with a LUD of Semi-Remote Recreation. The road was originally constructed to facilitate construction of the dam. During the Blue Lake Expansion construction phase, it may be necessary to upgrade the road surface to facilitate movement of construction equipment to the dam site and campground. The road is scheduled to be improved following the expansion project as outlined by article 301 of the FERC license issued in 2008. The Blue Lake road would be resurfaced following construction of the Blue Lake expansion. The Blue Lake Road has a VPR of the Blue Lake road itself. The view shed from the road will not change significantly, and there will be no impact under the Semi-Remote Recreation LUD.

Sawmill Creek Campground

The Sawmill Creek Campground is on USFS land with a LUD of Semi-Remote Recreation. The campground area was originally constructed during construction of the dam, tunnels and penstock. During the Blue Lake Expansion construction phase, it may be necessary to use this area as a staging and construction area. The campground is

scheduled to be upgraded following the expansion project as outlined by article 301 of the FERC license issued in 2007. This upgrade will repair the impacts made during construction as well as improve the campground as outlined in article 301. The Sawmill Creek Campground has a visual priority route and use area of the Beaver Lake Trail, Campground Road and campground itself. The view shed from the campground, Campground Road and the Beaver lake trail will not change significantly but be improved following the upgrade of the Campground.

Power house Site

The powerhouse site is entirely on city property. The adjacent land not owned by the city is owned by the USFS or the State of Alaska with LUDs of Semi-Remote Recreation and Road and Transmission corridor, respectively. This area is classified as SCENE1,3 SCENE2 I,II(A,B,E). The powerhouse site was originally constructed during the construction of the existing powerhouse. During the expansion, it is planned to increase the existing powerhouse site area and construct a new powerhouse, tailrace, and penstock. The switch yard will remain essentially the same and the existing power house will be decommissioned but used for other purposes. The proposed changes are shown in Figure 10. The VPR applied to this location is Sawmill Creek Road. The view shed from Sawmill Creek Road is consistent with SCENE1.

Tunnel and Surge Chamber Site

The tunnel and surge chamber site are entirely on City property. The adjacent land not owned by the City is owned by the USFS or the State of Alaska with LUDs of Semi-remote recreation and Road and Transmission corridor respectively. This area is classified as SCENE1,3 SCENE2 I,II(A,B,E). The tunnel and surge chamber will be constructed within the bedrock adjacent to the power house site (See Figure 10).

The VPR applied to this location is Sawmill Creek Road. The effect on the view shed from Sawmill Creek Road will be minimal because the surge chamber will daylight in a small area at El 480. There will be a 200-ft diameter clearing in the trees at the top of the surge chamber. But, the clearing or surge chamber will not be visible to a casual observer from any visual priority route.

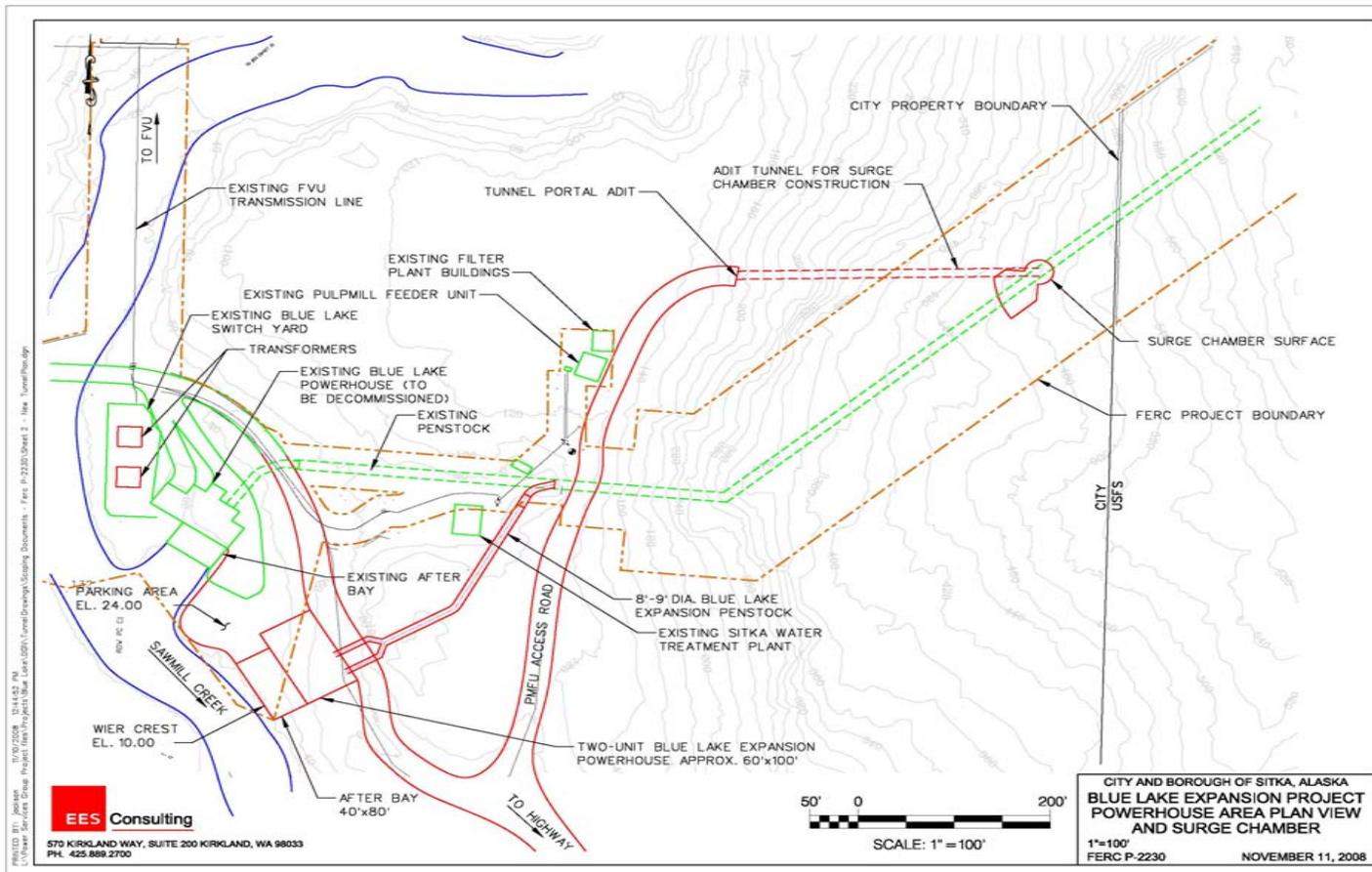


Figure 10. Powerhouse, Tunnel and Surge Chamber Area