



# City and Borough of Sitka

100 Lincoln Street • Sitka, Alaska 99835

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## MEMORANDUM

To: Mayor Paxton and Assembly Members  
From: Hugh Bevan, Interim Municipal Administrator *AB 2-13-20*  
Date: February 13, 2020  
Subject: Green Lake Hydroelectric Rehabilitation Phase 1

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### Background Information

(A formal decision memo and Resolution will be included on your February 25, 2020 regular meeting agenda)

The Green Lake hydro facility has been in operation since 1982 without any comprehensive maintenance upgrades. This facility generates just over half of Sitka's electricity.

In the fall of 2019 the Electric Department completed a three-phase plan to upgrade the facility at a total budget cost of \$13 million. This is not a new-construction project. It is a major maintenance project.

Phase 1 will address the most urgent repairs related to the dam's intake structure, tunnel and penstock. The scope of work and schedule for Phase 1 is attached. The budget cost estimate for Phase 1 is \$5 million.

Phases 2 and 3 will come later and consist of overhauls of the two generation units.

### Analysis

Besides completing essential maintenance upgrades Phase 1 work includes internal inspections of the two generation units that is needed to plan for Phases 2 and 3.

The Phase 1 work must be completed during a shut down of the entire power plant. It must also be completed at the lowest lake level of the year to facilitate dewatering of the penstock. The result is a large portion of the work must be completed in the May to June time frame.

It is possible Sitka will have to run diesel generators to supplement Blue Lake power generation during the project, but it is the lowest time of year for electric demand so diesel generation costs should be as low as possible.

The Phase 1 design had been put on hold, but last October I asked our Electric Working Group to re-activate the project and the design is now complete and ready for bidding.

We are very fortunate that former City Electric Department mechanical engineer Dean Orbison is willing to step out of retirement and manage the project. Dean is very familiar with the situation.

Fiscal Note

Funding for Phase 1 will come from two areas: \$2 million from a restructuring of the currently funded projects in the Electric Fund and \$3 million from a US Department of Agriculture, Rural Utility Services loan.

The interest rate for the loan will be around 2 percent, the final rate will be determined when the loan package is accepted by both the Assembly and the USDA. Lately the interest rate has been falling slightly.

Payments on the loan amount to about \$185,000 per year for 20 years.

At the present time we plan to include the loan in the Electric Fund portfolio and make the payments with a direct subsidy from the General Fund in the amount of \$185,000.

The loan application is an extensive process and we have identified an experienced person who we can retain as a consultant to help with the paperwork.

The Assembly will have the option to accept the loan when the package is complete and all details are known.

Attachment

Summary Work Plan for the project

1-17-20

## Summary Work Plan Green Lake Hydroelectric Project Rehabilitation – Phase 1

### Overview

This document summarizes the City and Borough of Sitka's (CBS) intended plan for the Phase 1 rehabilitation of the Green Lake hydroelectric project, located near Sitka, Alaska. The Green Lake Project has been in operation since 1982 with no comprehensive repairs to date.

The rehabilitation will proceed in three phases, with Phase 1 addressing the most urgent repair needs related to the Project's dam intake structure, tunnel and penstock. Rehabilitation of the two generating units at the project is less urgent and would be completed later in Phases 2 and 3. However turbine and generator inspections will be included in phase 1 to help define the scope of work for phases 2 and 3.

Work at the dam and intake requires low lake levels and therefore must be scheduled in the spring. Consequently, the proposed major work tasks are planned as follows:

### Milestone Schedule

January 2020 – Finalize design of the Phase 1 Construction Contract (complete December 2019)

Summer 2020 – Advertise for construction contract bids

Fall 2020 – Award construction contract

Winter 2020 – Contractor prepares shop drawings, purchases materials. CBS manages reservoirs in preparation for the work

March - April 2021 – Contractor mobilizes to the Green Lake project site

April 1, 2021 – Start of reservoir trash clearing and construction

April 16, 2021 – Shutdown of powerhouse operation, drain tunnel, start major construction effort

April – August 2021 – Site construction at dam, intake, tunnel, penstock and powerhouse

June 26 2021 – Substantial completion of work, power generation resumes

September 2021 – Final completion of Phase 1 contract.

### Major Work Tasks

Painting of the project intake gate, intake trashrack, steel penstocks and related equipment is possibly the largest single task in the Phase 1 project. Painting of the penstocks will be carried out in place. The gates and trashrack will be removed to a temporary painting structure for blast cleaning and painting, before being re-installed.

Renewals of gates, valves, and piping is the second major task of the project. This includes removal, disassembly, cleaning, painting of the equipment, along with replacement of seals, bearings, gaskets and broken or inoperable components. The tunnel intake gate, gate hoist, trashrack, and turbine inlet valves will be rehabilitated in this manner. Much of the service water piping and valves in the powerhouse will be replaced. New penstock lift-out sections will be added in the powerhouse at each turbine unit. These new removable sections will allow future single-unit repairs of the turbine-generators without a complete shutdown of the powerplant.

Details of the technical work scope are provided in the attached specification section for the Phase 1 construction contract, Section 01 10 00 – Summary of Work.