

Cascade Creek LLC



February 1, 2011

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
Mail Code: DHAC, PJ-12.3
888 First Street, N.E.
Washington, D.C. 20426

SUB: Application for Preliminary Permit
REF: Cascade Creek Hydroelectric Project, Alaska.
FERC Project No. 12495-002

Dear Ms. Bose:

Pleased find attached an Application for Preliminary Permit for the above referenced project. The application has been prepared according to FERC regulations, and is being filed electronically through FERC's "eFiling" link.

If you have questions regarding the Application, or if we can provide additional information, please do not hesitate to contact me at (360) 738-9999 ext. 136, (phone), (360) 733-3056 (fax), or cspens@thomasbayhydro.com (e-mail). Thank you for your attention to this Application.

Sincerely,



Chris Spens,
Environmental Manager
Agent for Cascade Creek, LLC

encl: as stated

3633 ALDERWOOD AVENUE BELLINGHAM, WA 98225
(360)738-9999 ph (360)733-3056 fax

**APPLICATION FOR PRELIMINARY PERMIT
BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION**

For The

**Cascade Creek
Hydroelectric Project**

Petersburg, Alaska

Submitted by:

**Cascade Creek, LLC
3633 Alderwood Avenue
Bellingham, Washington 98225**

February 1, 2011

INITIAL STATEMENT

Before the FEDERAL ENERGY REGULATORY COMMISSION *Application for Preliminary Permit*

(1) Name of Applicant.

Cascade Creek, LLC (“Applicant”) applies to the Federal Energy Regulatory Commission (“FERC”) for a preliminary permit for the proposed Cascade Creek Hydroelectric Project ("Project"), as described in the attached Exhibits. This application is made in order that the Applicant may secure and maintain priority of application for a license for the Project under Part 1 of the Federal Power Act while obtaining the data and performing the acts required to determine the feasibility of the Project and to support an application for a FERC license.

The Applicant was issued a preliminary permit for the Project by the FERC on October 8, 2004 (FERC No. 12495), and the permit expired on October 1, 2007. The Applicant completed substantial work during the term of the permit by obtaining data and performing the acts required to determine the feasibility of the Project to support a development application for a FERC license.

The Applicant was issued a second preliminary permit for the Project by the FERC on February 14, 2008 (FERC No 12495-002) and the permit expired on January 31, 2011. The Applicant completed significant and substantial work during the term of the permit by obtaining data, and performing acts required to determine the feasibility of the Project to support a development application for a FERC license.

The Applicant is submitting this application for a preliminary permit in order to maintain priority of application while completing the remaining work required to finalize and submit a development application for a FERC license.

(2) The location of the proposed Project is:

State: Alaska

County: Located in an unorganized borough

Nearby Town: Petersburg, Alaska

Stream or other body of water: Cascade Creek, Swan Lake and Falls Lake. Cascade Creek passes through both lakes.

(3) The exact name, business address, and telephone number of the Applicant are:

Cascade Creek, LLC
3633 Alderwood Avenue
Bellingham, WA 98225
Phone: (360) 738-9999
FAX: (360) 733-3056

The exact name, business address and phone of each person authorized to act as agent for the Applicant in this application are:

Mr. Chris Spens, Environmental Manager
Cascade Creek, LLC
3633 Alderwood Avenue
Bellingham, WA 98225
Phone: (360) 738-9999
FAX: (360) 733-3056
Email: cspens@thomasbayhydro.com

(4) Cascade Creek, LLC, is a domestic corporation organized and existing in the State of Alaska, and is not claiming preference under section 7(a) of the Federal Power Act.

(5) The proposed term of the requested Preliminary Permit is 36 months.

(6) There are no existing dams, or other existing Project facilities.

THE FOLLOWING EXHIBITS ARE FILED HERewith AND ARE HEREBY MADE A PART OF THIS APPLICATION:

- | | |
|------------------|-----------------------------------|
| EXHIBIT 1 | DESCRIPTION OF THE PROJECT |
| EXHIBIT 2 | DESCRIPTION OF STUDIES |
| EXHIBIT 3 | COSTS AND FINANCING |
| EXHIBIT 4 | PROJECT MAPS |

VERIFICATION STATEMENT

This application for a preliminary permit for the Cascade Creek Hydroelectric Project is executed in the State of Washington, County of Whatcom, by Cascade Creek, LLC, 3633 Alderwood Avenue, Bellingham, WA 98225, being duly sworn, Chris Spens, Environmental Manager and Agent for Cascade Creek, LLC deposes and says that the contents of this application are true to the best of his knowledge or belief. The undersigned applicant has signed the application this 31st day of Jan, 2011.

Cascade Creek, LLC

By: Chris Spens
Chris Spens, Environmental Manager
Agent for Cascade Creek, LLC

STATE OF WASHINGTON,
County of Whatcom

Subscribed and sworn to before me this 31st day of January, 2011.



By: Diana C Challenger
Notary Public in and for the State of WA
My Commission expires on 9/15/2014
Recorded in Whatcom County

EXHIBIT 1 - DESCRIPTION OF THE PROJECT

(1) PROJECT FEATURES

The proposed Cascade Creek Hydroelectric Project (“Project”) is located on Swan Lake, Cascade Creek, and Thomas Bay, approximately 15 miles northeast of Petersburg, Alaska in the Tongass National Forest (“Tongass”), administered by the United States Forest Service (“USFS”). Cascade Creek, LLC (“Applicant”) proposes to construct a lake siphon at Swan Lake, with a gatehouse and valve entry to an approximately three mile long power conduit including a tunnel complex of horizontal and vertical shafts, and a buried penstock. The power conduit leads to a powerhouse near tidewater on Thomas Bay, which will accommodate three turbine generator units for a total capacity of approximately 70 megawatts (MW). A 138-kilovolt (kV) transmission line, comprised of overland and undersea cable, would extend approximately 18.7 miles from the powerhouse to an interconnection point near Petersburg.

Dam.

No dam is anticipated as part of this proposal.

Spillway.

An outlet control structure would consist of a very small, low-head weir approximately 6-ft-high above the lowest elevation of the lake outlet. The weir would include a 3-ft high by 50-ft wide crest gate that could be lowered during extreme high flows to maintain lake levels at or below the natural high level. An outlet control building would house the mechanical and electrical equipment required to remotely control the crest gate and bypass valve. The weir would serve several purposes: minimize outflow leakage through the shallow substrata, provide for minimum in-stream flow contribution if required; facilitate lake level management by adding the ability to store or release water as necessary in drought or flood conditions to help maintain the desired lake level; and allow for emergency overflow discharge to the stream outlet of Swan Lake.

Penstock/Power Conduit.

Water would be delivered to the powerhouse from the lake siphon via a tunnel and penstock power conduit. An unlined 12-ft-diameter low pressure tunnel would originate at a tunnel invert elevation of 1,419-ft near the gatehouse, and would extend 12,700-ft at a slope of

0.75 percent. From this point, it would drop into an unlined 1,320-ft-long 14-ft-diameter vertical shaft/vent. The shaft would be connected at the bottom end to a 14-ft diameter by 1,980-ft-long tunnel at a slope of 1 percent that would terminate at the lower tunnel portal at El 265-ft. A 9-ft-diameter steel penstock would be installed within the entire length of the lower tunnel segment. A 9-ft-diameter buried steel penstock would extend approximately 780-ft from the lower tunnel portal to the powerhouse at El 46-ft (turbine centerline) near tidewater on Thomas Bay.

Powerhouse.

The powerhouse, located at tidewater on Thomas Bay, would consist of a concrete and metal building, approximately 140-ft-long by 80-ft-wide, embanked by rock fill on the east side. Its foundation would be cast-in-place concrete, founded on bedrock. The superstructure would be reinforced pre-cast concrete tilt-up with a sloped metal roof. Applicant proposes to site the structure at least 200-ft off the shoreline to provide an aesthetic vegetative buffer and avoid effect to the coastal zone. Inside the powerhouse, an overhead service crane would provide access to place and maintain the turbine generating equipment. The turbine housings would be cast in the concrete substructure. It would house three generating units, and water would drop vertically from the units to the tailrace below.

Tailrace.

The tailrace is proposed as a low gradient open stream riprap-armored trapezoidal channel approximately 450-ft-long and 40-ft-wide, discharging as a new outlet to Thomas Bay. It would exit the powerhouse in a southern direction for approximately 300-ft and then turn west to Thomas Bay for approximately 150-ft in order to maintain a tree screen to visually hide the powerhouse from Thomas Bay. The tailrace would be designed to deter use by anadromous fish.

Dock.

There will be no road access to the proposed hydroelectric facility location as the site is isolated from the nearest town of Petersburg. Access for both construction and long-term operation and maintenance of the Project will be by boat, barge, or aircraft. Applicant proposes to construct a new marine access facility on Thomas Bay, immediately adjacent to the powerhouse site. A new dock would be approximately 290-ft-long on a fixed pier with a 60-ft-long ramp down to a 60-ft by 30-ft float stationed to piling. The dock and adjacent barge landing

ramp would provide direct access to the site during construction and operations. Applicant intends to make the new dock available to the public after the Project begins commercial operation, barring any legal obstacles or stipulations from the USFS, as it has the potential to provide the public safe landing access for any upland use purposes.

Access Roads.

The Project is separated from the nearest town of Petersburg by Frederick Sound. This gives no opportunity for road access to the Project from a nearby town. There will be no road access to the proposed hydroelectric facility location. The only access for both construction and long-term operation and maintenance of the Project would be via boat or aircraft. Access for both construction and long term operation and maintenance of the Project will be by boat, barge or aircraft.

Other Structures.

Flow to the powerhouse would be drawn from Swan Lake through a lake siphon. The submerged lake siphon inlet, equipped with intake screens, would be placed at an approximate depth of 40-ft. A 58-ft-long, 49-ft-wide, and 25-ft-high underground gatehouse would be constructed near the shore of Swan Lake and would house the vacuum pump, vacuum receiver tank, and valve system to control water flow to the power conduit. A 26-ft by 26-ft by 98-ft deep concrete lined vertical shaft below the gatehouse would house the vertical portion of the 10-ft diameter siphon piping and siphon shutoff valve. The intake structure is located at latitude 57° 01' 41", longitude 132° 44' 11".

Two proposed housing units would be located north of the powerhouse to house workers during construction of the Project. The houses would remain after construction for use by plant operators and maintenance crews. Water, wastewater, and waste management will be compliant with Alaska Department of Environmental Conservation standards. Systems will be closed tank/containers if onsite development is not feasible. The proposed housing buildings would be separate from other structures and would be surrounded by proposed and existing vegetative screening. Localized transportation from the housing units to the powerhouse site would be by vehicle or by foot.

(2) RESERVOIR

The Project would utilize the natural impoundment of Swan Lake, a high alpine, glacially-fed water body with a surface area of approximately 579 acres and an approximate usable stored capacity of 3,474 acre-ft (af), assuming a 6-ft operational drawdown. The water surface elevation of Swan Lake naturally fluctuates within an approximate maximum 8-ft range, and an annual natural fluctuation within an average 6-ft range. Applicant does not propose to impound Swan Lake above its natural ordinary high water elevation and will not operate outside the standard, natural drawdown of the lake. The Project will withdraw lake water for power generation in a manner that remains within the pre-development lake level fluctuation based on historical discharge records correlated to lake elevation stage.

(3) TRANSMISSION LINE

A 138-kV transmission line would extend underground approximately 560-ft from the powerhouse substation to tide water near the marine access facility, then cross Thomas Bay as a 2.8-mile-long undersea cable. The cable would be “jettied in,” or buried in the near-shore areas. The transmission line would then transition to an overhead vertical design on single wood poles, and extend overland approximately 4.5-miles from the shoreline of Thomas Bay across the Patterson Delta to the shoreline of Frederick Sound. It would then transition back to an undersea cable and continue 7.7-miles to the shoreline of Mitkof Island. The cable would be “jettied in,” or buried in the near-shore areas. From here, the line would transition back to an overhead design and continue overland 3.7-miles to the interconnection point at the existing Scow Bay substation near Petersburg.

There would be a switchyard/transformer/circuit breaker on site at the powerhouse; however, Applicant is not proposing to construct new interconnect facilities and/or substations at the point of interconnection. Applicant anticipates working through existing system upgrade requirements prior to and during interconnection discussions, which will occur post-licensing.

(4) INSTALLED CAPACITY AND ENERGY PRODUCTION.

Average Annual Energy Production.

The average annual energy production is estimated to be 205 gigawatt hours (GWh), depending on installed capacity and final design.

Installed Capacity.

The total proposed installed capacity would be 70 megawatts (MW).

Hydraulic Head.

The gross hydraulic head for estimating capacity would be 1,471-ft.

Turbines and Generators.

Three 23.3 MW vertical shaft, 5 jet impulse (Pelton) type turbines will be used, for a combined power plant capacity of 70 MW. Each turbine will produce 31,246 hp at a gross head of 1,471-ft and a rated flow of 223 cfs. The turbine rotational speed will be 600 rpm. The generators will be a synchronous type rated at approximately 26,000 kVA at a .9 power factor, 4,160 volt, 3 phase, 60 Hz, and will be provided with a brushless excitation system. Generating equipment specifications are subject to change based on detailed engineering design and consultation with equipment suppliers.

(5) AFFECTED LANDS OF THE U. S. GOVERNMENT

The Project boundary, less the land occupied by the transmission line, is located entirely within the Tongass. The Tongass is owned by the United States of America and administration of these lands is delegated to the USFS. As such, these National Forest System lands are managed according to the USFS's land use plans and other directives. The total acreage of U.S. lands within the Project boundary is estimated at 721.2 acres as shown in Table A-1.

There is a Power Withdrawal P.S.C. # 9 Swan Lake dated August 20, 1921 encompassing 1,400 acres around Swan Lake and Cascade Creek for the purpose of constructing a hydroelectric power facility as further described in paragraph 6 below.

Table A-1. U.S. Lands Within the Project Boundary

Description	Acres	Project Features	Map Locations
Tongass National Forest	720.4 acres	Project boundary including swan lake, intake, outlet control structure, tunnel complex, penstock, powerhouse, tailrace, marine access above tidewater, and housing units.	Sections 4,5,8,9,10,17,18,19 of Township 56S, Range 80E & Section 24 of Township 56S Range 79E, all & Sections 4,9,16,17,20 of Township 57S Range 80E all of the Copper River Meridian
Federal Govt. Lot 5	0.8 acres	Portion of the Project transmission line within the incorporated boundary of the City of Petersburg.	Section 3 of Township 59S, Range 79E of the Copper River Meridian
TOTAL	721.2 acres		

There are no known areas within the Project boundary that are included in or have been designated for study for inclusion in the National Wild and Scenic Rivers. There are no areas within the proposed Project boundary that are under the provisions of the Wilderness Act that have been designated as wilderness area, or designated as wilderness study area.

The proposed Project Boundary is shown on Figure 4.3, and the Project location is as follows:

Latitude 57°00'21", **Longitude** 132°46'45" NAD27

Intake, Powerhouse & related facilities

Sections 4, 5, 8, 9, 10, 17, 18, 19 of Township 56S, Range 80E of the Copper River Meridian (CRM)
 Sections 24 of Township 56S, Range 79E of the C.R.M.

Transmission segment from proposed powerhouse to Petersburg

Sections 24, 25, 26, 35 of Township 56S, Range 79E, of C.R.M.
 Sections 4, 9, 16, 17, 20, 29, 31, 32 of Township 57S, Range 80E, of C.R.M.
 Sections 5, 6, 7, 18, 19 of Township 58S, Range 80E of C.R.M.

Sections 24, 25, 34, 35, 36 of Township 58S, Range 80E, of C.R.M.
Sections 3, 4, 10, T59S, Range 79E of C.R.M.

(6) HOW THE PROJECT WOULD DEVELOP, CONSERVE, AND UTILIZE IN THE PUBLIC INTEREST IN THE WATER RESOURCES OF THE REGION.

The Applicant proposes to construct and operate the proposed Project within Power Site Classification No. 9 established by Order of the Secretary of the Department of the Interior on August 20, 1921. The lands within the Power Site Classification No. 9 have been ordered (Interpretation No. 174, August 20, 1931) to be construed as describing the following area:

TONGASS NATIONAL FOREST

In Power—Site Classification No. 9

All lands below the 1,650 foot contour above sea level which drain into Swan Lake, located in the Cascade Creek Basin about 2.5 miles inland from the east shore of Thomas Bay, Alaska; all lands south of Cascade Creek within one mile of the middle of said creek, and all lands north of Cascade Creek within one-eighth of a mile of the middle of said creek, extending from Swan Lake to the shore of Thomas Bay.

There is an anticipated increased energy demand in Southeast Alaska as a result of four major factors: 1) slow load growth increase; 2) a continued trend of fuel oil heat to electric heat conversion as the price of fuel oil increases; 3) the introduction of electric vehicles offsetting petroleum fuel in towns with short drive distances and high fuel prices; and 4) implementation of connecting large cruise ships to shore power in lieu of onboard diesel generation. All of these trends have resulted in substantially revised power need forecasts for Southeast Alaska. The Applicant anticipates the regional energy demands to increase from 279,058 MWh in 2013 to 538,770 MWh in 2028. If no other hydroelectric facilities are approved and constructed, existing plant generation of approximately 268,000 MWh will be unable to meet this demand. Additional energy needs will continue to require fossil fuel generation (primarily diesel).

The Project will fulfill the public interest for reasonably priced, reliable, and environmentally sound source of renewable energy. The approval of this Project would reduce greenhouse gas releases associated with fossil fuel generation.

EXHIBIT 2 - DESCRIPTION OF STUDIES

(1) PROPOSED STUDIES, INVESTIGATIONS, TESTS AND SURVEYS.

LICENSING WORK COMPLETED TO DATE

Consultation

On August 2, 2007, the Applicant requested approval from the Commission to use the ALP for licensing the proposed Project, which it received on September 13, 2007. The Commission's regulations (18 CFR § 4.38) require that applicants consult with appropriate resource agencies, tribes, and other entities before filing an application for a license. Under the ALP, the Applicant conducts scoping in collaboration with the FERC to fulfill the FERC's National Environmental Policy Act (NEPA) responsibilities¹. This consultation is the first step in complying with the Fish and Wildlife Coordination Act, the Endangered Species Act, the National Historic Preservation Act, and other federal statutes. Pre-filing consultation must be complete and documented according to the Commission's regulations.

Under the ALP there are several opportunities for resource agencies, Indian Tribes, NGOs, and the public to provide input. During the public scoping process, the Applicant solicits oral and written comments regarding the scope of the issues and analysis for the Preliminary Draft Environmental Assessment (PDEA), including study requests. After issuance of the Commission's ready for environmental analysis notice of the Final License Application, the Commission solicits comments, recommendations, terms, conditions, and prescriptions for the Project.

Before preparing this PDEA, the Applicant conducted scoping to determine what issues and alternatives should be addressed. The Commission issued an Applicant-prepared Scoping Document (SD1) in May 2009. This document presented potential issues to be addressed in the draft Environmental Assessment (EA), as well as a discussion of the Applicant's approach to analyze the identified issues.

¹ FERC's NEPA regulations are found in 18 CFR Subchapter W-Revised General Rules, Part 380.

A site visit was conducted on June 17, 2009. Two public meetings were held on June 18, 2009 at the Tides Inn in Petersburg, Alaska to discuss and identify potential issues. A transcript of the meetings is part of the FERC public record. Agency meetings were held on August 12, 2010 and September 28, 2010 to discuss the process and proposed studies.

All interested resource agencies, Indian Tribes, NGOs, and individuals were invited to attend these meetings to assist the Commission in identifying the scope of environmental issues that should be analyzed in the draft EA. Announcement of these meetings was published in the local newspaper and in the Federal Register. A court reporter recorded the scoping meetings. During the meetings and the following comment period, the Applicant received comments on the Commission's SD1. In addition, licensing participants filed study requests.

A revised Scoping Document (SD2), submitted to the Commission on October 15, 2010, reflects comments the Applicant received during scoping, provides final proposed study plans, and presents the Applicant's understanding of issues and alternatives to be considered in the draft EA.

Environmental Study Planning and Study Conduct

Aquatics: A fisheries study plan, dated October 1, 2010, was prepared after consultation with state and federal resource agencies. Final aquatics reports, dated December 3, 2010 and December 27, 2010, were prepared and will be used to supplement the Applicant's final license application for the Project.

Wildlife: A wildlife study plan, dated September 2010, was prepared after consultation with state and federal resource agencies. A final wildlife report, dated December 7, 2010, was prepared and will be used to supplement the Applicant's final license application for the Project.

Water Quantity: A hydrology study plan, dated March 2010, was prepared after consultation with state and federal resource agencies. A final hydrology report, dated January 11, 2011, was prepared and will be used to supplement the Applicant's final license application for the Project.

Recreational: A recreation study plan, dated September 2010, was prepared after consultation with state and federal resource agencies. A draft recreational report, dated January 27, 2011, was prepared and will be used to supplement the Applicant's final license application for the Project.

Cultural: A cultural and historic properties study plan, dated August 2010, was prepared after consultation with tribes and state and federal resource agencies. A historic properties report, dated November 2010, was prepared and will be used to supplement the Applicant's final license application for the Project.

Scenic & Aesthetic: A scenic and aesthetic analysis was completed by the Applicant and will be used to supplement the Applicant's final license application for the Project.

Soils & Geology: A final soils and geology report, dated December 12, 2010, was prepared and will be used to supplement the Applicant's final license application for the Project.

Wetlands & Botanical: A final wetlands report, dated September 2010, was prepared and will be used to supplement the Applicant's final license application for the Project.

Need for Power Analysis

A need for power analysis for the region was completed by the Applicant in 2010, and the results of the analysis will be used to supplement the Applicant's license application for the Project.

Economic Analysis

An economic analysis of the proposed Project was completed by the Applicant in 2010, and the results of the analysis will be used to supplement the Applicant's license application for the Project.

LICENSING WORK REMAINING

Environmental Study Planning and Study Conduct

The Applicant's environmental and economic analysis on the proposed Project is nearly complete and the Applicant expects to submit a draft license application to Project Stakeholders in early February 2011. The Applicant expects to conduct the following surveys in support of the final license application for the Project:

Fisheries: Remaining seasonal fish inventory & stock assessment, and additional spawner survey field work to be completed in spring/summer 2011.

Wildlife: Additional eagle/raptor & bird surveys, and amphibian surveys to be completed in spring/summer 2011.

Water Quantity: Continued hydrology gage monitoring on Swam Lake and Cascade Creek.

Recreational: Conduct aerial user surveys and spring/summer trail camera monitors.

Terrestrial: Conduct rare plant survey in spring/summer 2011.

Cultural & Historic Properties: Conduct additional ground survey and consultations spring/summer 2011.

Scenic & Aesthetic: Conduct scenic impact assessment spring/summer 2011.

Engineering Design

Preliminary engineering and design was completed in 2010, and a Preliminary Supporting Design Report will be submitted with the Applicant's final license application.

NEW ROADS for CONDUCTING STUDIES.

The Applicant expects no new roads to be required for conducting required field studies.

(2) WORK PLAN FOR NEW DAM CONSTRUCTION.

The Applicant is planning a lake siphon, which would not require new dam construction or its application.

EXHIBIT 3 - COSTS AND FINANCING

(1) ESTIMATED COSTS AND FINANCING

Engineering and Economic Evaluation Costs.

Based on review of existing information and data, the Applicant expects continued engineering and economic evaluation costs to be between \$20,000 and \$40,000.

Environmental Consultation and Study Costs.

Based on review of planned work as a result of late stage consultation, the Applicant expects remaining environmental consultation, studies, and preparation of the final license application, to cost between \$100,000 and \$250,000.

(2) FINANCING

The Applicant intends to obtain the remaining capital requirements for Project licensing through its affiliate, Alaska Hydro Corporation. In addition, there are Federal and State grant opportunities for development of renewable energy projects, and the Applicant intends to pursue these opportunities to supplement Project funding.

(3) MARKET FOR POWER GENERATED

The Project will be owned and operated by the Applicant. Energy generated will be sold at wholesale price to local and regional markets, aggregators, or other wholesale purchasers of electric generation.

The Project will fulfill the public interest for reasonably priced, reliable, and environmentally sound sources of renewable energy. The approval of the Project would also help in reducing acid rain and greenhouse effects associated with coal and oil-fired generation.

The Southeast Alaska communities of Petersburg (pop. 3,000), Wrangell (pop. 2,300) and Ketchikan (pop. 14,500) are electrically connected by the Southeast Intertie, operated by the Southeast Alaska Power Authority (SEAPA). The community of Kake (pop. 650) is proposed to be connected with a new northern extension of the Southeast Intertie, which is currently under study by the USFS as lead NEPA agency. SEAPA also provides generation to the connected

region from two existing hydro projects, Tyee Lake 22.5 MW and Swan Lake near Ketchikan 22.5 MW. Along with the SEAPA hydro projects, Ketchikan Public Utilities owns and operates the Silvas Lake, Beaver Falls, and Ketchikan Lakes hydropower projects. Petersburg owns the Crystal Lake hydropower project. Each community also has additional diesel generation plants for back-up or prime use. Power in Kake is presently diesel generation only. There are no other connections to any generation or load facilities. A proposal to connect the Southeast Intertie to B.C. Canada and the North American Grid has been studied and placed under future planning consideration by the Alaska Energy Authority, a state agency.

Community leaders in Kake, Wrangell and Ketchikan have all declared that a source of additional, affordable power will be necessary to support economic development as well as meet future energy needs.

There is an anticipated increased energy demand in Southeast Alaska because of four major categories: 1) slow load growth increase; 2) a continued trend of fuel oil heat to electric heat conversion as the price of fuel oil increases; 3) the introduction of electric vehicles offsetting petroleum fuel in towns with short drive distances and high fuel prices; and 4) implementation of connecting large cruise ships to shore power in lieu of onboard diesel generation. All of these trends have resulted in substantially revised power need forecasts for Southeast Alaska. The Applicant anticipates energy demands to increase from 279,058 MWh in 2013 to 538,770 MWh in 2028. If no other hydroelectric facilities are approved and constructed, existing plant generation of approximately 268,000 MWh will be unable to meet this demand. Additional energy needs will continue to require fossil fuel generation (primarily diesel).

The Project will fulfill the public interest for reasonably priced, reliable, and environmentally sound sources of renewable energy. The approval of this Project would reduce greenhouse gas releases associated with fossil fuel generation.

Use of Energy By The Applicant.

The Applicant would not use the Project's energy on-site other than for station service as required.

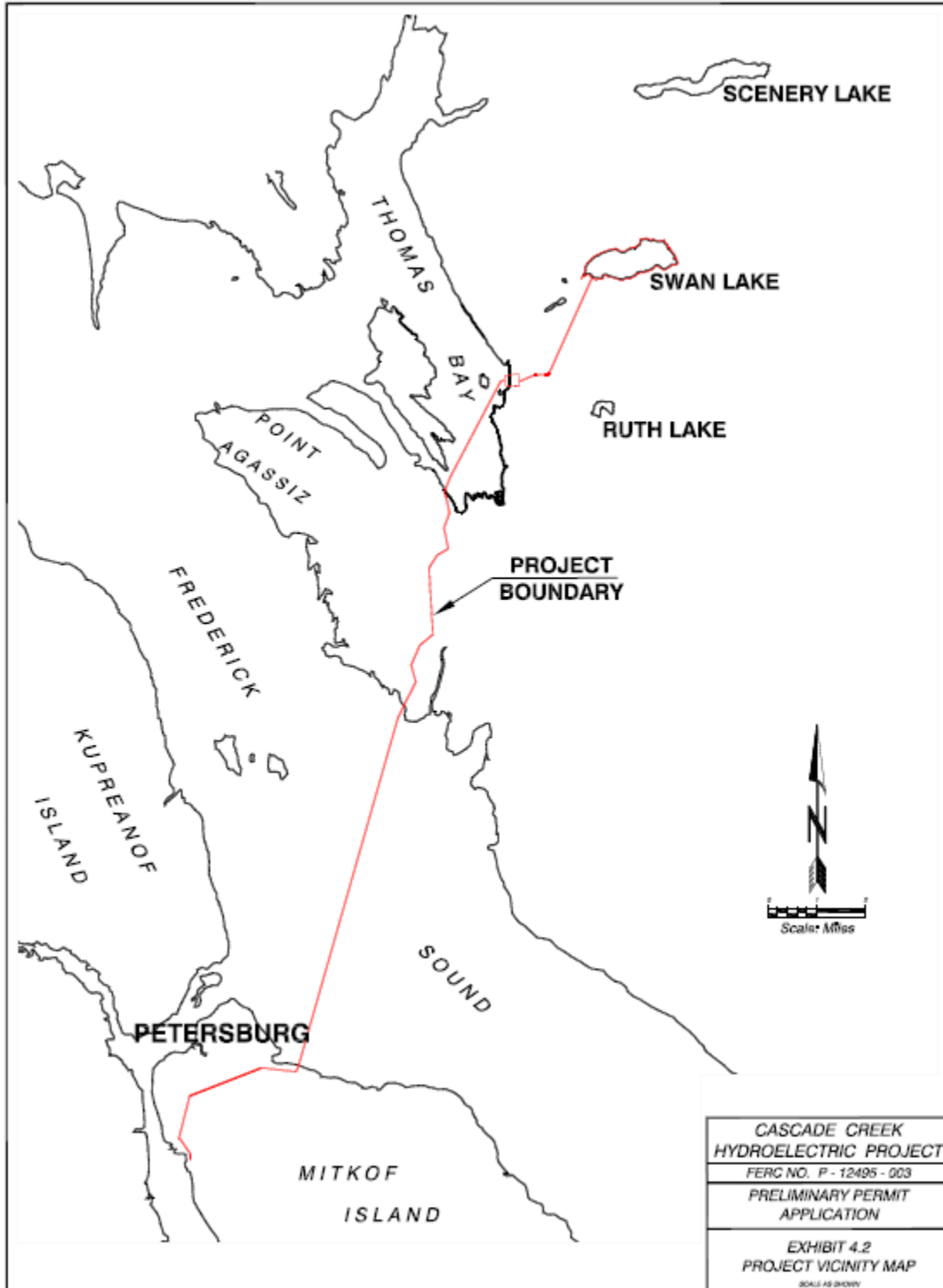
EXHIBIT 4: - PROJECT MAPS

- 4.1 PROJECT LOCATION MAP**
- 4.2 PROJECT VICINITY MAP**
- 4.3 PROJECT BOUNDARY & FACILITIES MAP**
- 4.4 PROJECT TRANSMISSION LINE MAP**
- 4.5 POWER CONDUIT SCHEMATIC**

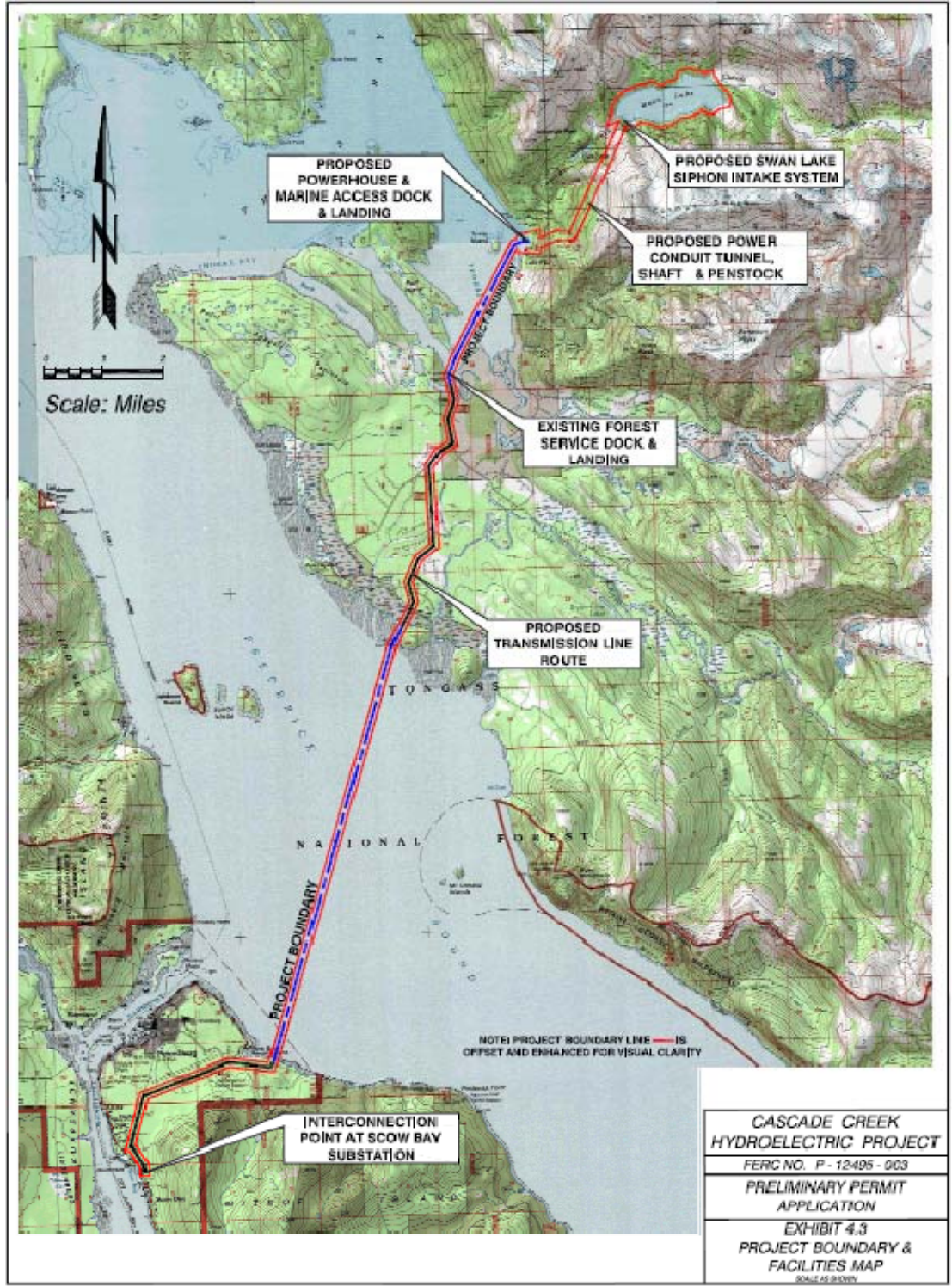
4.1 PROJECT LOCATION MAP



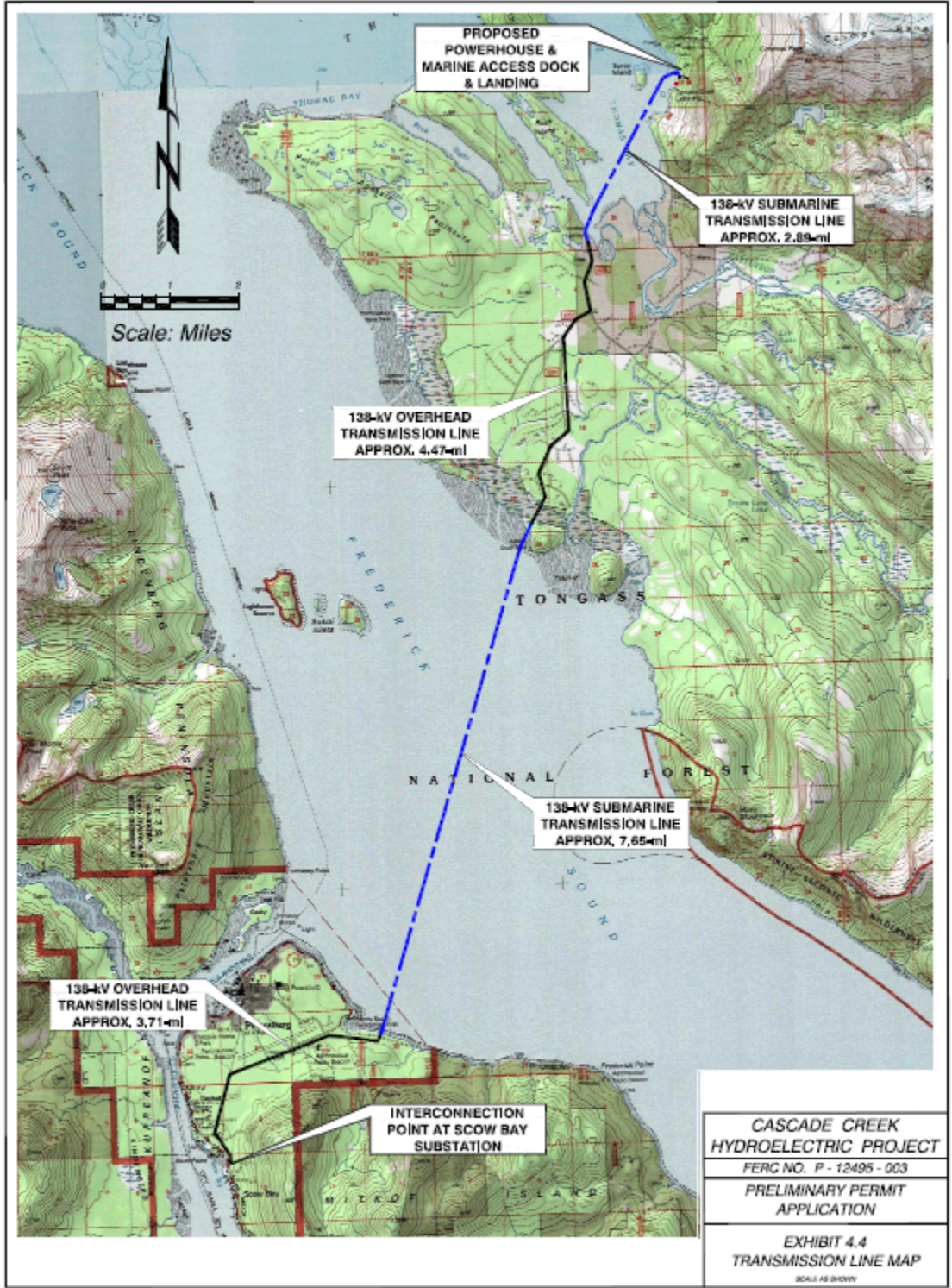
4.2 PROJECT VICINITY MAP



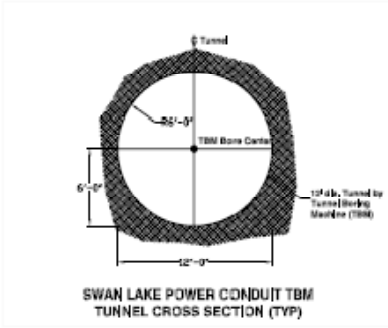
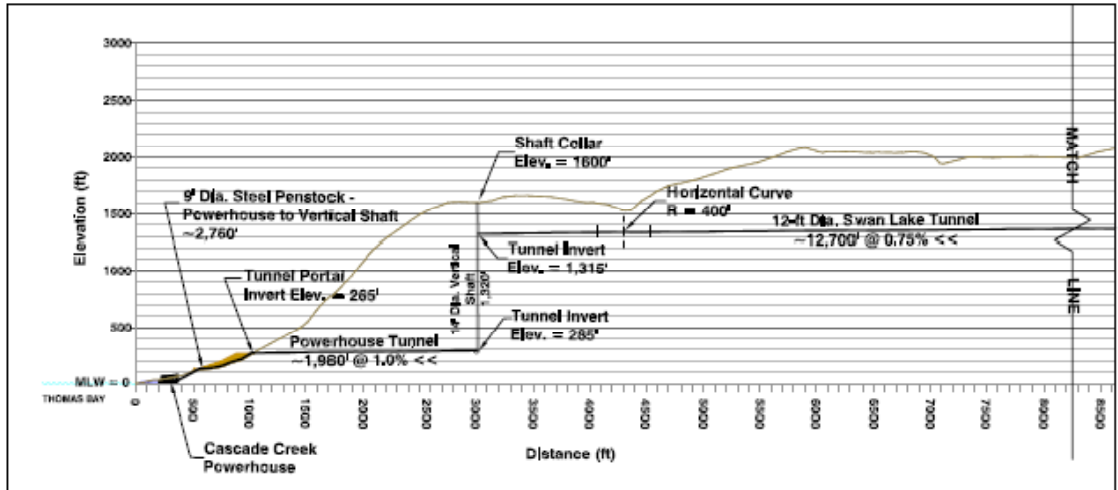
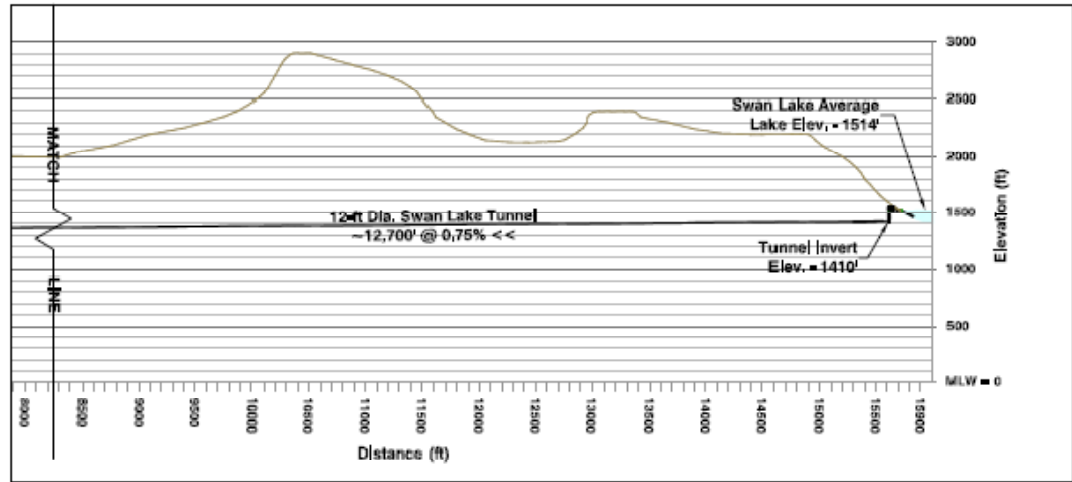
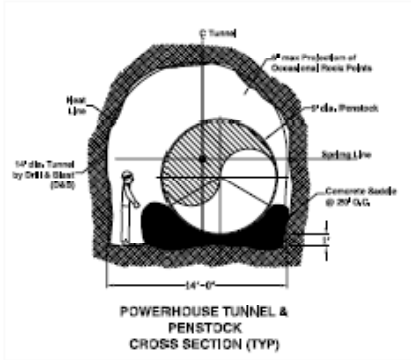
4.3 PROJECT BOUNDARY & FACILITIES MAP



4.4 PROPOSED TRANSMISSION LINE MAP



4.5 POWER CONDUIT SCHEMATIC



CASCADE CREEK
HYDROELECTRIC PROJECT
FERC NO. P - 12495 - 003
PRELIMINARY PERMIT
APPLICATION
EXHIBIT 4.5
POWER CONDUIT SCHEMATIC
SCALE AS SHOWN