

FINAL BOTANICAL RESOURCES STUDY PLAN
Takatz Lake Hydroelectric Project (FERC No. 13234)

City and Borough of Sitka Electric Department

May, 2011

BACKGROUND

In September, 2008, the City and Borough of Sitka (“City”) received a Preliminary Permit (“Permit”) for the Takatz Lake hydroelectric Project (FERC No. 13234, “Project”) from the Federal Energy Regulatory Commission (FERC) in Washington D.C. The Project would be located approximately 18 miles *northeast* of Sitka, Alaska, on Baranof Island *and its various components would affect botanical resources in the Takatz, Baranof, Sadie Lake and Medvejie Basins*. The Project is described in detail in the Preliminary Application Document (PAD) filed June 2008.

Generally, the Project would consist of one or two dams on Takatz Lake, a power conduit consisting of a mostly unlined tunnel and steel penstock leading to a powerhouse located at tidewater on Takatz Bay. Installed capacity of the Project would be approximately 27 megawatts (MW).

CONSULTATION and COMMENT

A draft of this study plan was distributed for Stakeholder Review in August, 2010 for review and comment. Comments were received from US Dept. of Agriculture Forest Service (USFS) in September, 2010. The City assigned a number to each comment (Attachment I) and has provided a table showing how each of the comments was addressed (Attachment II). All additions or changes to text or graphics in this Final Study Plan, relative to those in the Draft Study Plan, are in italics.

OBJECTIVES

The primary objectives of botanical studies are to document vegetation that might be affected by construction and long-term operation of the Takatz Lake Project. These studies will specifically document vegetation types and identify and document the locations of rare plants, plants designated as Sensitive by the Alaska Regional Forester, and non-native plants. The reasons for gathering this information are to support FERC licensing and the NEPA process. In the NEPA analysis this information will be used to develop alternatives, determine effects, analyze effects and develop mitigation measures.

STUDY SCOPE

GENERAL

Generally, vegetation resources will be surveyed in all areas potentially disturbed by project construction or long-term operation. This will include areas within an approximately 100-foot band from project features and proposed access roads or transmission corridors. Results of the studies described in this plan will be used to generally determine vegetative type and potential for sensitive plants within the boundaries described above.

TRANSMISSION ALTERNATIVES

The scope of botanical studies will be influenced by final design and locations of Project features, including the proposed transmission line route. The proposed transmission routing as described in earlier licensing documents (City, 2008; FERC, 2009) depicted a submarine transmission route from the powerhouse proceeding underwater along Chatham Strait and then through the community of Baranof Warm Springs. This routing is referred to as the “Marine Alternative” (Figure 1). The line then proceeded underwater through Baranof Lake and on overhead lines up the Baranof River valley, across the Baranof Mountains and down the Medveje River valley to its connection with the City’s existing transmission facilities.

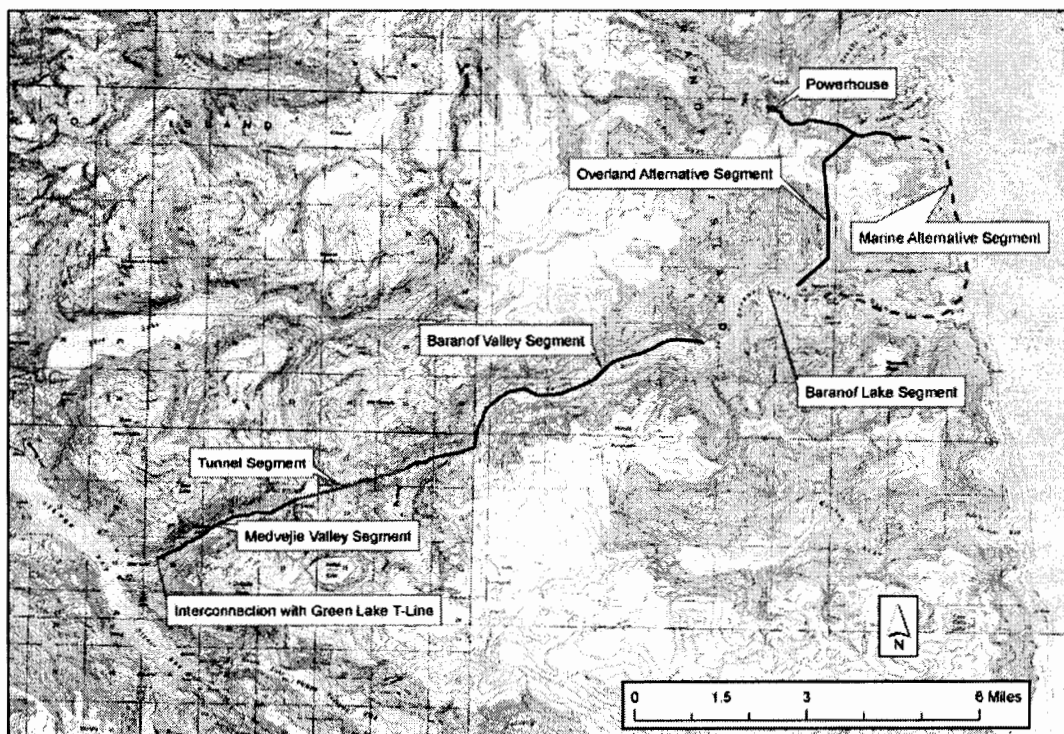


Figure 1. Takatz Lake Project Transmission Alternatives and Terminology. Note: Overland Alternative is the City’s Preferred Alternative.

NEW TRANSMISSION ROUTING

Based on comments received during SD1 review and after Scoping meetings, the City has developed a new transmission alternative which avoids potential effects on marine resources and on the community of Baranof Warm Springs. This routing, referred to as the “Overland Transmission Alternative”, or simply “Overland Alternative” is shown in Figure 2.

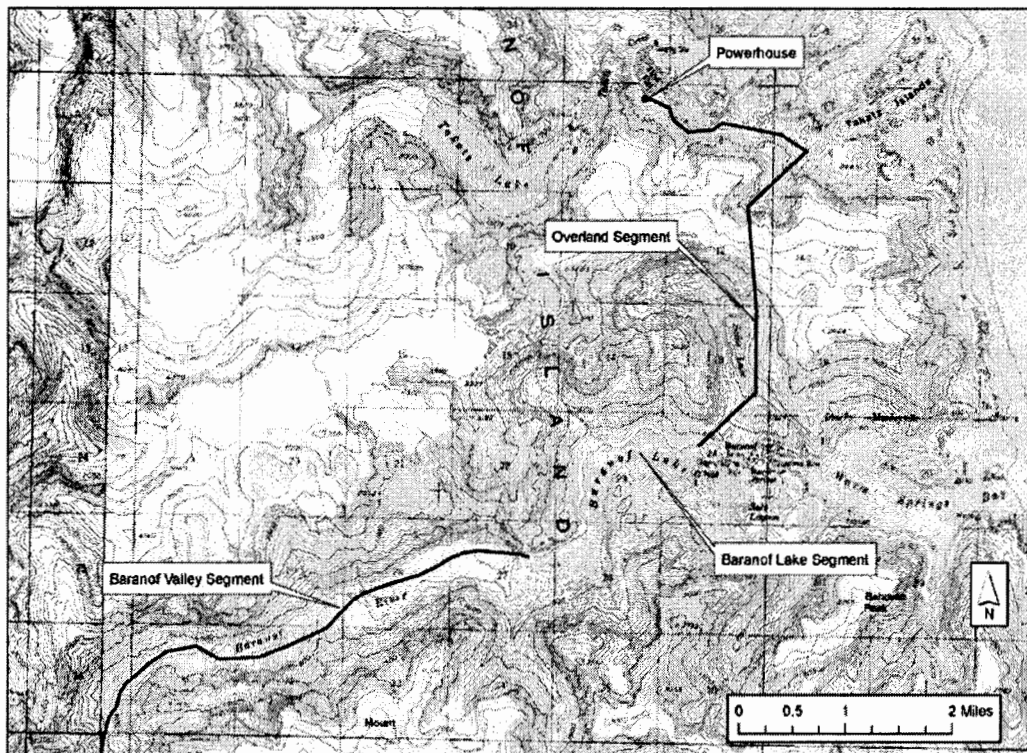


Figure 2. Detail of Overland Transmission Alternative (*Note: Line may be routed overhead north of Baranof Lake instead of underwater*).

Note that the Overland Alternative does not change the routing of the transmission segments beyond the point at which the line emerges from upper Baranof Lake.

At this time, the Overland Alternative is the City’s preferred transmission alternative because it responds to concerns for impacts on both the community of Baranof Warm Springs and those on marine resources in Chatham Strait. Further, the Marine Alternative would necessitate extensive and difficult marine engineering feasibility analyses.

STUDY SCOPES for 2011 and 2012 FIELD SURVEYS

As described in more detail below, the City intends to conduct field surveys in two separate Project areas in 2011 and 2012 (Figure 3). In 2011, those areas delineated on Figure 3 as

“Area 1”, from the Takatz Lake basin to the shoreline of Baranof Lake will be surveyed. In 2012, the remaining Project area, denoted on Figure 3 as “Area 2”, will be surveyed.

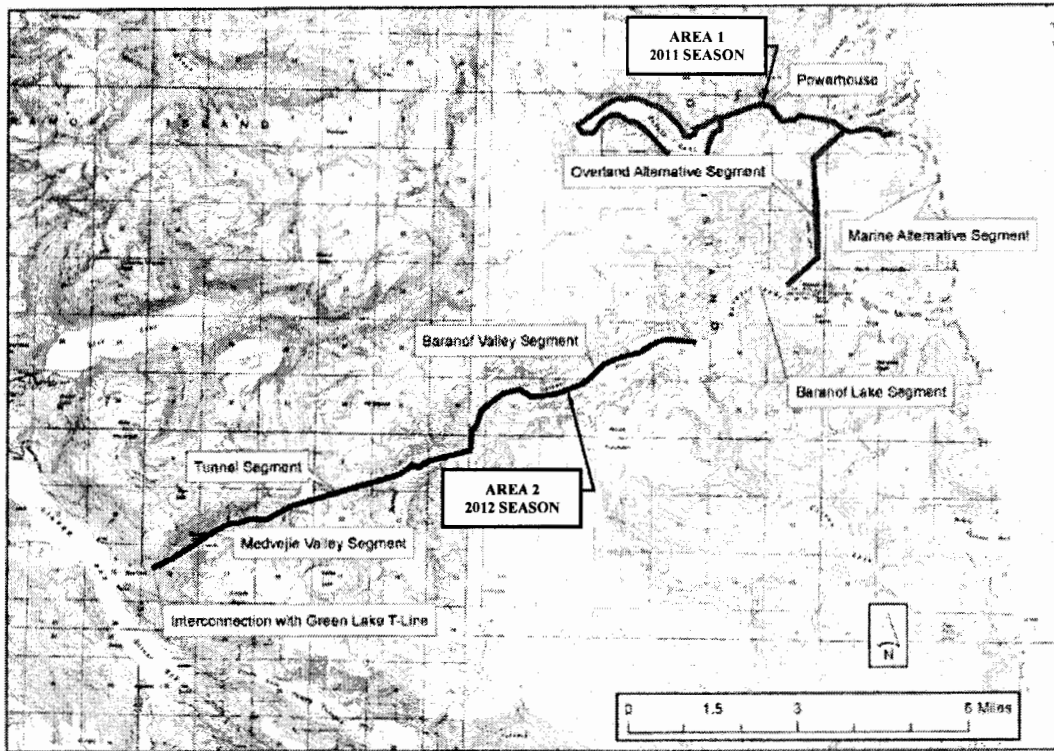


Figure 3. Study Areas for 2011 and 2012 Field Seasons. (From USGS Sitka A-3, 1:63,360)

STUDY COMPONENTS

Generally, botanical resources studies will consist of *three* separate but related elements: 1) a Pre-Field Review; and 2) Field Surveys, as described in more detail in the following; and 3) *Documenting and mapping survey results.*

PRE-FIELD REVIEW

Pre-field review will involve several sources of background information on known or potential plant existence in the general project area. These sources will include:

- US Forest Service (USFS) reports and the ARCTOS (Museum of the North) database for taxa reported from the immediate and adjacent areas on Baranof Island (Takatz, Kasnyku, Baranof Warm Springs, Medveje);
- Tongass National Forest Sensitive and Species of Special Interest plant list and the Alaska Natural Heritage Plant Tracking list to target potential habitat within the project areas suitable for listed species;

- Aerial photos and existing GIS layers for potential sensitive plant habitat in the project area;
- Existing GIS layers for vegetation and soils to delineate potential wetlands; and
- Reports of Invasive or Noxious weeds from the Project Area

FIELD SURVEYS

Survey Scope and Methods

Because of the large area covered by the various project features, field surveys during 2011 will focus on Area 1 described in Figure 3, above. Within this area, researchers will conduct a level 5 (Intuitive Controlled) survey within potentially-impacted areas including the proposed inundation zones, tunnel portals, penstocks, the powerhouse, switchyard, transmission line, access roads, and appurtenant facilities.

Rare, sensitive and invasive plant surveys in the project area will be conducted on foot, using the timed meander technique. Habitats supporting rare, sensitive or invasive plants will be surveyed at survey level 5. Habitats not likely to support these plants will be searched less intensely. Surveys will be conducted from late June through late August. When rare, sensitive or invasive plants are found they will be documented and mapped using GPS.

To the extent possible given the size and accessibility of the potentially affected lakes, aquatic plants surveys will be conducted. To more evenly spread survey efforts, aquatic plant surveys may be conducted as a work scope item by the wetlands contractor.

Researchers will record GPS tracks of all areas surveyed, transferred to base maps of the survey areas and will collect herbarium specimens and photographic record of specific plant taxa of interest. *Forest Service sighting forms will be completed for each rare, sensitive or invasive plant population.*

Field surveys will note noxious or invasive species found in the project area including a Risk Assessment for Invasive species, conducted according to Forest Service Handbook Supplement No.: R10 TNF - 2000-2007- 1.

Survey Schedule

Field surveys will begin in August, 2011 and continue throughout August, depending on access and movement restrictions. Because so little field study has been conducted in Area 1 (See Figure 3), the rate of survey completion will not be known until initial reconnaissance and early field surveys have been completed. Surveys will, to the extent possible, account for periods related to the growing season for maximal species capture.

REPORTING

A draft report documenting results of studies conducted in 2011 will be distributed in late 2011 or early 2012. One of the prime objectives of the 2010 report will be to develop study scope and protocol for the 2012 field season.

The 2011 report will document baseline distribution of vegetation types, observed species of concern and wetlands. Data from foot surveys will also be used to ground-truth the existing GIS vegetation mapping layers and projected wetland areas. From this, researchers will determine locations and acres of each vegetation type (Caouette and DeGayner, 2005) and wetlands within the project area.

Because project design and layout are likely to change through the licensing period, actual impact analysis will await be done after final project feature locations and construction details are developed.

LITERATURE CITED

Caouette, John and Eugene DeGayner (2005). Predictive mapping for tree sizes and densities in southeast Alaska. . Landscape and Urban Planning, 72:49-63

ATTACHMENT I
NUMBERED COMMENTS FROM USFS COMMENT LETTER

We reviewed the August 2010 Draft Botanical Resources Study Plan (Plan) and offer the following comments:

- USFS 1 { BACKGROUND: The Project is located 18 miles **northeast** of Sitka. The Plan mentions affects to Takatz Lake, Takatz Creek, Baranof Lake and River. Effects should be considered for all project facilities (tunnel, transmission line, etc.) and to Medvejie Lake and valley and Sadie Lake.
- USFS 2 { OBJECTIVES: Suggested wording to clarify this section - the objectives of botanical studies are to document vegetation that might be affected by construction and long-term operation of the Takatz Lake Project. These studies specifically document vegetation types and identify and document the locations of rare plants, plants designated as Sensitive by the Alaska Regional Forester and non-native plants. The reasons for gathering this information are to support FERC licensing and the NEPA process. In the NEPA analysis this information will be used to develop alternatives, determine effects, analyze effects and develop mitigation measures.
- USFS 3 { STUDY SCOPE - GENERAL: The meaning of the third sentence: "Exact survey areas, particularly for sensitive plants, will be determined after final design of the project and just prior to construction." is not clear. Plant surveys are used to generate alternatives or mitigation measures for impacts to Sensitive or rare plant species.
- USFS 4 { Also later on in the Plan mention is made of surveys in 2010 and 201 1, how do these surveys fit in with the statement above?
- USFS 5 { Suggested wording: Generally, vegetation will be surveyed and documented in all areas potentially affected by project construction or long-term operation. This includes areas within approximately 100-feet from proposed project features, access roads, transmission corridors, etc.
- USFS 6 { STUDY SCOPES FOR 2010 and 201 1 FIELD SURVEYS: Field work was completed without Final Botanical Study Plan in place. We suggest the City check in with us before moving forward with additional field studies or reports.
- USFS 7 { Also, recommend moving this section. Survey schedules should be in the METHODS section.
- USFS 8 { STUDY COMPONENTS: First sentence - There is a third critical element to a botanical study. Please include "Documenting and mapping survey results" to this sentence.
- USFS 9 { PRE-FIELD REVIEW: Suggest a clear statement of why and how this review will be conducted.
- USFS 10 { The fourth bullet is the first mention of wetlands. If wetlands are to be included as a separate study component in the Plan, they should track from the beginning of the document, same for invasive plants.
- USFS 11 { FIELD SURVEYS: The first two paragraphs of Survey Scope and Methods are moot. Suggest something more like - Rare, sensitive and invasive plant surveys in the project area will be conducted on foot, using the timed meander technique. Habitats supporting rare, sensitive or invasive plants will be surveyed at survey level 5. Habitats not likely to support these plants will be searched less intensely. Surveys will be conducted from late June through late August.
- USFS 12 { When rare, sensitive or invasive plants are found they should be documented and mapped using GPS.

Forest Service sighting forms should be completed for each rare, sensitive or invasive plant population.

USFS 13

{Also, due to the potential for disturbance and effects to Baranof Lake, aquatic plant surveys should be conducted.

USFS 14

{REPORTING: Field surveys must report noxious or invasive species found in the project area. Ground disturbing projects on National Forest System lands also require a Risk Assessment for Invasive species. Risk Assessments are described in the enclosed Forest Service Handbook Supplement No.: R10 TNF - 2000-2007- 1.

USFS 15

{The level of surveys as proposed in the Draft Study Plan will be difficult, expensive and take a tremendous amount of time. I advocate looking at some of the study plans prepared for other FERC projects.

Thank you for the opportunity to comment. If you have further questions, please contact me by at 747-4218; or cg-oularte@fs.fed.us. Please copy (cc) Melissa Dinsmore, at mdinsmore@fs.fed.us; or 747- 420 1.

Sincerely,

CAROL A. GOULARTE

District Ranger

cc: Dean Orbison, Engineer, City Electric Department

ATTACHMENT II

TABLE SHOWING HOW NUMBERED USFS COMMENTS WERE ADDRESSED in FINAL STUDY PLAN.

COMMENT NUMBER	COMMENT SUMMARY	ACTION TAKEN and LOCATION in FINAL STUDY PLAN
USFS1	Project located northeast of Sitka; Consider effects for all project facilities	"Northeast" added; language in this paragraph changed to indicate all basins and all Project features.
USFS2	Suggested wording for Objectives Section	Suggested language replaces original, with minor changes, without dispute.
USFS3	Clarify third sentence under Study Scope, General	Subject sentence has been removed.
USFS 4	How does USFS3 fit in with studies proposed for 2010 and 2011.	This plan is for 2011 studies only.
USFS 5	Suggests wording change	We believe that existing text, after removal of sentence referenced in USFS 4, addresses this request.
USFS 6	Suggests issuing a Final Study Plan before additional field studies or reports are conducted.	The Final Study Plan will be issued prior to 2011 field studies or reports.
USFS 7	Question on 2010 and 2011 studies. Survey schedule should be in Methods section	No botanical studies were conducted in 2010; in this section, elsewhere in the text of this Final Plan, and in Figure 3 Title, "2010" has been replaced by "2011", and "2011" has been replaced by "2012". We have not changed the location of the Schedule section.
USFS 8	Suggests adding third element	Suggested third element added.
USFS 9	Suggests clear statement as to why and how Pre-Field Surveys will be conducted	We believe the existing language is sufficiently clear.
USFS 10	Questions whether wetlands	"wetlands" removed. As

	will be handled separately	addressed in USFS 12, wetlands studies will be conducted under a separate study plan.
USFS 11	Suggests additional language on plant survey methods	Suggested added under Field Surveys, second paragraph.
USFS 12	Suggests language added on rare, sensitive plants, use of sighting forms	Suggested language added, fourth paragraph under Field Surveys
USFS 13	Suggests surveys for aquatic plants	Language added as third paragraph under Field Studies, notes that this will be done under wetlands contract.
USFS 14	Requests surveys and recording for noxious or invasive plant species	Language added as fifth paragraph under Field Studies instead of in Reporting.
USFS 15	Suggests review of botanical resources study plans for other projects	City will review other studies, as suggested.