

**DRAFT TIMBER REMOVAL and MANAGEMENT PLAN**  
**BLUE LAKE HYDROELECTRIC PROJECT (FERC NO. 2230) EXPANSION**

*Prepared By:*

**City and Borough of Sitka Electric Department**

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**INTRODUCTION and BACKGROUND**

**INTRODUCTION**

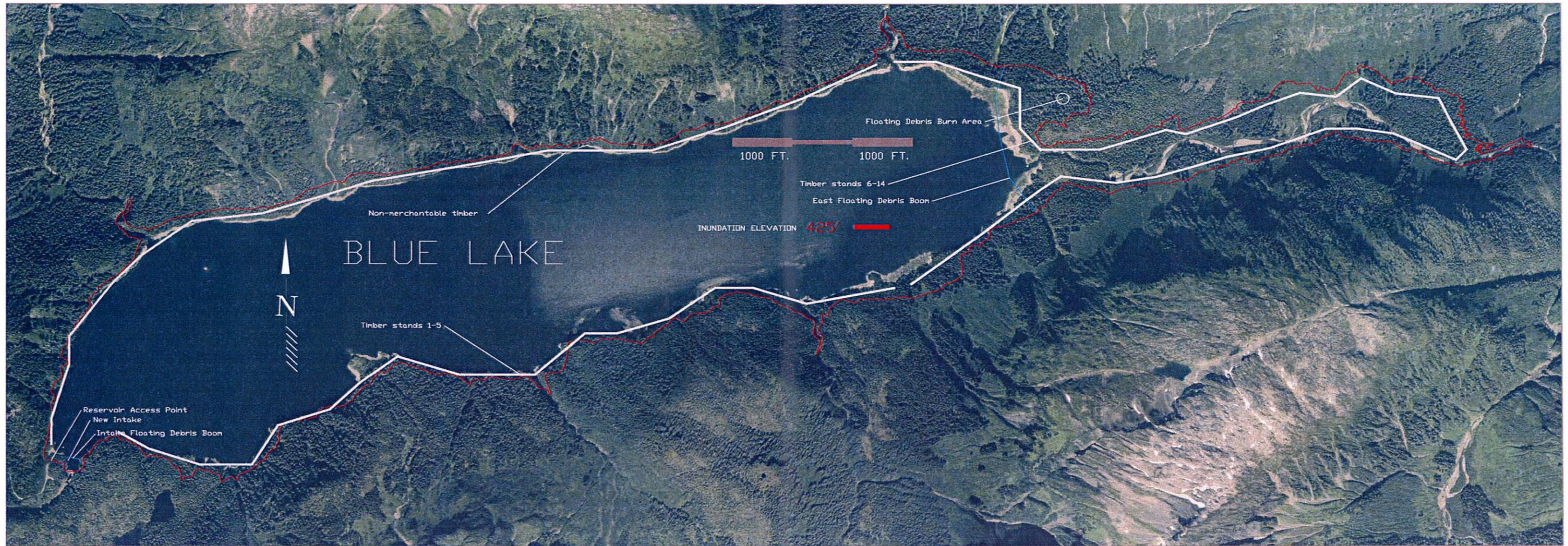
The City of Sitka plans to expand the Blue Lake hydro electric project by raising the dam 83 feet and adding additional generation. Raising the dam would inundate approximately 430 acres of land around the existing reservoir, mostly in the Blue Lake Creek (the reservoir's primary inflow tributary) valley (Figure 1).

The City has proposed to cut and remove all timber and certain other vegetation in the potentially-inundated areas prior to raising the reservoir's water level. This draft plan presents the City's current proposals for logging, storage, removal and disposal of various log types, slash and understory.

**BACKGROUND**

In response to comments from US Department of Agriculture Forest Service, Sitka Ranger District (USFS) on the proposed timber removal, the City, through a contractor, conducted a timber cruise to assess the volume of timber to be removed (Cascade Appraisal Services, 2009). The results of the cruise (Figure 3) indicate that the potentially-inundated area contains about 8500 million board-feet (Mbf) of standing trees, including 4700 Mbf of sawlogs (merchantable timber) and 783 MBF of utility wood (logs unsuitable for lumber production).

Also, in response to the City's Draft Amendment Application (City, 2009) the USFS and Sitka Conservation Society (SCS) recommended that the City work with stakeholders to develop a timber removal plan and process, and to assure that the plan met multiple objectives of water quality retention and community benefits. This draft plan was developed in response to those requests.



BLUE LAKE EXPANSION TIMBER MANAGEMENT  
 430 ACRES, 4700 MBF NET SAWLOGS, 783 MBF UTILITY

**Figure 1. Blue Lake Expansion Project, Inundation Area at Reservoir Elevation 425**

## **TIMBER REMOVAL PROPOSALS**

The City's proposed timber removal plan addresses management and disposition of the three types of material which will result from the removal operation. These are:

- 1). Merchantable timber (saw logs);
- 2). Utility wood (logs unsuitable for use as saw logs); and
- 3). Slash and debris.

### **MERCHANTABLE TIMBER**

Generally, merchantable timber will be felled, yarded, removed from the reservoir and trucked to Sawmill Cove Industrial Park (SCIP) for export. Revenue from the saw log sale will be part of the logging contractor's compensation. The City's proposal includes a request that all merchantable timber removed from the inundated area be approved for export and sale in the round.

### **UTILITY WOOD**

The City proposes to develop a plan in conjunction with the USFS to make utility wood available as a fuel source. Like merchantable timber, utility wood will be felled, yarded and removed from the reservoir by the logging contractor. This material, could be made available for use in a local firewood or pellet program.

Preliminary research has indicated that the market value of the utility wood would be significantly less than its recovery cost because there is no local buyer. The increased sale price obtained by exporting merchantable timber will be used to offset the additional cost of removing the utility wood.

### **SLASH AND DEBRIS**

Slash and debris from all logged areas, regardless of logging method, will be collected and burned either in place or in a designated burn area at the east end of Blue Lake reservoir. Debris will be reduced to the extent possible by on-site burning in areas where shovel logging is conducted. However, significant volumes of bark and slash will be produced in all logged areas.

To manage floating debris, two floating booms will be installed, one, at the east end of the reservoir to contain debris as it is gathered by the contractor (Figure 1) and the other installed in front of the intake structure to prevent debris from being entrained into the intake (Figure 2).

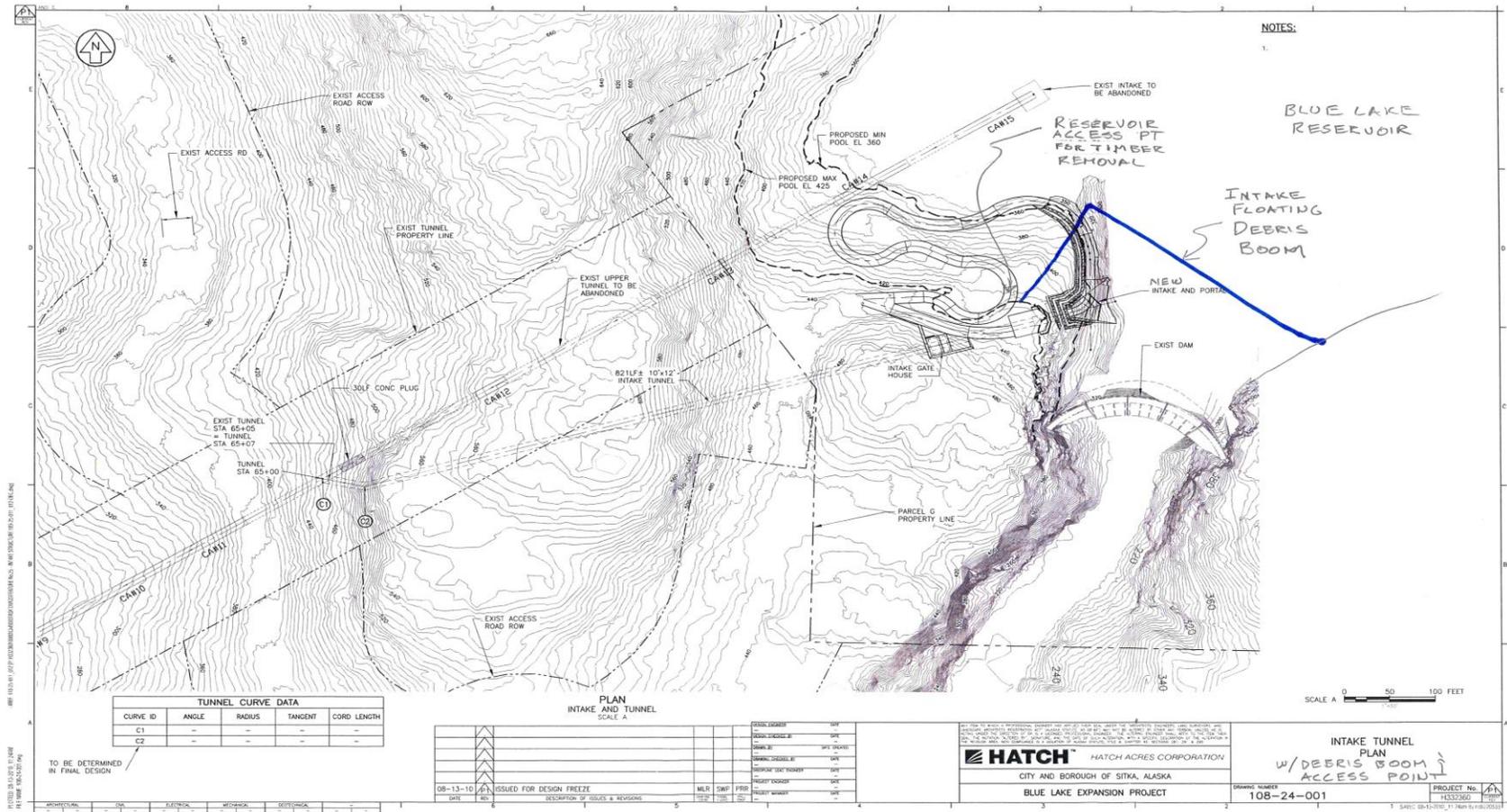


Figure 2. Proposed Log Boom Locations, Blue Lake.

As water level increases, floating debris at the east end of the reservoir will be collected and placed within the boom in the burn area. When the water level drops in the winter the debris will remain out of the water to be burned in the early spring. The ash generated during the burning process will be buried on site. This procedure will continue for at least 2 to 3 years, or until all floating debris has been disposed of.

## **LOGGING and MANAGEMENT METHODS**

### **GENERAL**

Logging will be done by two primary methods, depending on location. In areas accessible to the appropriate machinery, shovel logging will be used to minimize ground disturbance and runoff of dissolved or suspended material into Blue Lake.

Regardless of logging technique, all sawlogs and utility wood will be left in the inundated area until the reservoir is filled. Where shovel logging is appropriate, logging machinery will be used to move the felled logs to yarding areas at about El 410. This will allow them to remain in place until water rises to that level as the reservoir is filled.

Where shovel logging is not appropriate, logs will be left where felled. As the reservoir fills, logs will float and be sorted according to grade. These logs will be rafted and the rafts towed to temporary storage areas around the reservoir.

In shovel logged areas, as much slash and debris as possible will be collected mechanically and burned in place.

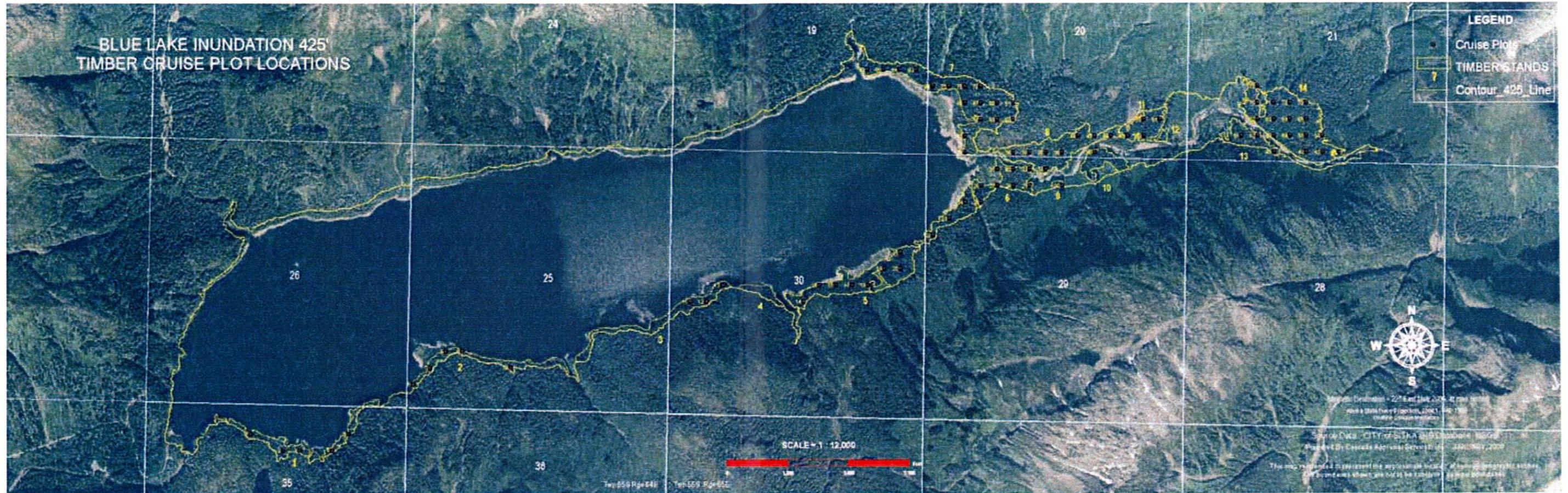
In areas too steep for shovel logging access, logging will be done using manual techniques. In these areas, slash and debris will be allowed to float as the reservoir rises and will be periodically collected and towed to the designated burn area at the east end of Blue Lake reservoir.

It is expected that no logging will be conducted above El 428, to ensure that there will be no visible impacts from the logging work when the reservoir is full. It may be necessary to store debris handling equipment at the east end of the reservoir above El 428 during periods when the reservoir is full.

### **METHODS by AREA**

The methods and sequence for timber management will vary within the following areas (Figure 1)

1. North and west shores of Blue Lake;
2. Stands 1 through 5 on south shore of Blue Lake; and
3. Stands 6 through 14 at the east end of Blue Lake and in Blue Lake Creek valley.



**Map 1. Cruise Plots for Blue Lake Expansion Timber Inventory**

**Figure 3. Numbered Timber Stands, from Blue Lake Timber Cruise Study**

## **NORTH and WEST SHORES of BLUE LAKE**

Because of steep terrain, all logging in this area is expected to be done manually. All merchantable timber, utility wood, slash and debris will be left in place until the reservoir is filled. As the reservoir fills, slash and debris will be collected in rafts and towed to the east end of the lake and placed in the burn area. Merchantable timber and utility wood will be collected and prepared for floating and removal after the reservoir is filled.

## **STANDS 1 THROUGH 5, SOUTH SHORE of BLUE LAKE**

Some timber in this area is located on slopes too steep to use shovel logging methods. All timber, slash and brush that cannot be shovel logged will be felled and left in place until the reservoir is filled. Where shovel logging is possible, the slash and brush will be collected with mechanical equipment and burned in place. Merchantable timber and utility wood will be collected and prepared for floating and removal after the reservoir is filled. When the reservoir is filled, slash and debris not collected in the shovel-logged areas will be collected in rafts and towed to the burn area for burning.

## **STANDS 6 THROUGH 14 , EAST END of BLUE LAKE and BLUE LAKE CREEK VALLEY**

The bulk of the timber within the potentially-inundated area is located at the east end of Blue Lake in timber stands 6-14, on flatter ground that lends itself to shovel logging methods. Shovel logging equipment will be transported to these areas using temporary barges traveling from the existing boat access area just north of Blue Lake Dam to the east end of the reservoir.

In order to recover the timber in this area, the logging contractor will construct minimal roads, generally parallel with Blue Lake Creek, from the east end of Blue Lake to timber stands 7 and 14. From these roads the contractor will shovel log timber stands 6 through 14. All timber in this area will be felled and limbed. The contractor will collect the merchantable timber and utility wood and store it between El 400 and El 410 and prepare it for removal from the reservoir when the reservoir is near full. All slash will be collected mechanically and burned in place or used for road construction where needed. Following the burning of slash, the ash will be buried on site. The general vegetation will be left in place to contain sediment during reservoir filling and future operation.

## **TIMBER REMOVAL**

Generally, merchantable timber and utility wood logged by shovel logging methods will be transported and stored at about El 410 around the reservoir. This timber will begin to float when the reservoir level reaches El 410, in October 2014. Timber not logged by shovel logging methods will float when the reservoir reaches the elevation where this felled timber lies. These logs will have to be collected as they float and stored in the water until they are removed in October 2014 with the removal of the shovel logged

timber. All floating timber will be towed to the removal site at the end of the reservoir access road for removal from the reservoir.

The access road provides minimal maneuvering room so timber removal is best accomplished when the reservoir is around El 410. Removal will be done with a track mounted grapple operating at the water's edge on the access road. The grapple will remove the timber directly from the water and place it directly on a log truck which would haul the timber to the log storage yard at the SCIP.

### **TIMBER STORAGE**

The timber removed from the reservoir via the reservoir access road will be hauled to the SCIP. The timber will be dry decked until shipped off site. It will require about 5 acres at the SCIP to deck the logs prior to shipment. It is planned that bundled logs would be placed in the water for transport to the ship for export.

### **TIMBER REMOVAL and MANAGEMENT SCHEDULE**

Logging operations are scheduled to begin in January and June, 2012, when the reservoir is at about El 330 (elevation in feet above mean sea level) and is expected to be complete by June, 2013. Figure 4 shows the timber removal schedule, including estimated times of logging, storage, removal and brush relative to reservoir stage at specific yearly time periods. Removal of the timber from the lake and burning of the debris will take place over a longer time period because these activities are dependent on reservoir water level.

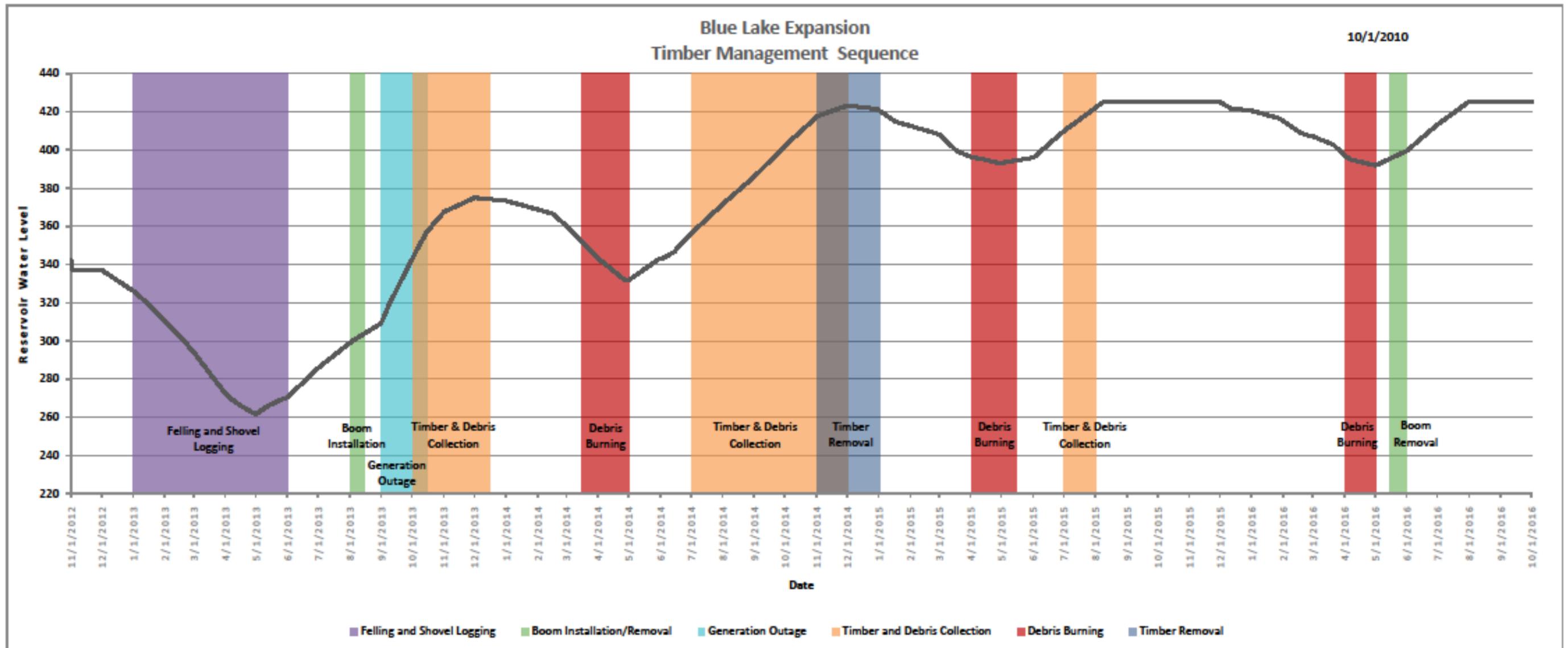


Figure 4. Timber Removal vs. Reservoir Level Schedule

Note that complete timber removal and debris disposal (by burning) are estimated to take as many as three years.

### **WATER QUALITY MONITORING**

Blue Lake is the source of unfiltered drinking water for the City of Sitka. It will be necessary to keep the Blue Lake drinking water system in full operation before, during and after the construction and commissioning of the Blue Lake Expansion Project, except during a 1- to 2-month period when the City will utilize a secondary water supply from Indian River.

The bulk of the merchantable timber to be removed is located in the Blue Lake Creek valley at the east end of Blue Lake reservoir, some 3 miles from the dam/intake area. Because Blue Lake is as much as 520 feet deep, the reservoir will act as a settling basin for many solids that may enter the lake from logging and storage in the upper end of the reservoir.

However, some of the runoff material from logged areas may either float or be suspended or dissolved in the Blue Lake water column. To detect all changes in Blue Lake water quality, particularly as they relate to drinking water criteria, the City will conduct an extensive water quality monitoring program. A detailed draft Water Quality Monitoring Plan will be prepared by the City for Stakeholder review.

## LITERATURE CITED

Cascade Appraisal Services, Inc., 2009. Blue Lake Dam Expansion Timber Inventory Specification Report. Prepared for: City and Borough of Sitka Electric Department, Sitka, AK. 9 pp.