

**Scope of Work and Request for Proposal and Study Plan  
A Survey of Rare Plant Species in the Lake Chelan Project Area  
Lake Chelan Hydroelectric Project  
FERC No. 637**

**REVIEW - COPY**  
February 17, 1998

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## ***SECTION 1: INTRODUCTION***

The Public Utility District No. 1 of Chelan County (Chelan PUD) wishes to apply for a new license from the Federal Energy Regulatory Commission (FERC) for the Chelan Hydroelectric Project. The new license application will require environmental studies, including a survey of rare plants within the area influenced by the project. Rare plant surveys were also required for the Rock Island Project relicense and the Rocky Reach Project pool rise application.

A survey is needed to identify occurrences of rare plant species, their distribution, relative abundance, and when appropriate, provide management and enhancement recommendations for them. While several isolated occurrences of rare plants are known on the Lake Chelan shoreline, the vast majority of the shoreline has not been surveyed. No past systematic botanical survey has been conducted on Lake Chelan or the Chelan River Gorge.

## ***SECTION 2: STUDY OBJECTIVES***

As part of the relicensing process, rare plant populations within the Lake Chelan study area will be identified, mapped and described. The term "rare plant" is used here to indicate any plant species or variety of a species which is designated by the U.S. Fish and Wildlife Service (USFWS), the U.S. Forest Service (USFS), or by the Washington Natural Heritage Program (WNHP) as Endangered, Threatened, or Sensitive (WNHP 1997). This includes species or varieties which are included in the Washington "Review Group 1" list. Federal and state status designations may change over time, so the status of some of the species found within the project may change in the future. Until surveys are initiated, it is difficult to ascertain potential problems and effects. Populations of at least four Washington state-listed rare plant species are historically known to occur within the project area, and some of these occur on the shores of the lake.

## ***SECTION 3: STUDY AREA***

Lake Chelan is located in northern Chelan County in north-central Washington. The lake is approximately 50 miles long and is more than one mile wide in places. Habitat types along the lake range from mixed Douglas fir/ponderosa pine forest and deciduous forest types at the northwest end of the lake, to big sagebrush/bluebunch wheatgrass shrub-steppe at the southeast end of the lake. Habitats at the downlake one third of the lake is heavily impacted by residences, recreation sites, and orchards. Rare plant species could potentially be found in all of these habitat types. Lake Chelan and the Chelan River Gorge provide habitat for wetland and riparian plant species.



complete close searching in areas with rare plant populations or with habitat with a very  
high potential of having rare plant populations.

It is expected that most of the study area will receive a moderate survey intensity.

### ***SECTION 5: STUDY OBJECTIVES***

Calypso Consulting will provide staff and equipment required for the completion of the project. The Chelan PUD Fish and Wildlife Department will assist by providing motorboat support in areas difficult to access and if possible, a radio to for communications.

### ***SECTION 6: ANALYSIS AND REPORT***

Once located and positively identified, populations of rare plant species will be accurately mapped and documented according to WNHP guidelines. Rare plant siting forms will be completed and submitted to the WNHP. Survey results will be summarized in a final report with a standard format similar to that used for the Rock Island and Rocky Reach relicensing projects. It will include: purpose, methods, results, discussion, figures, tables, maps, and rare plant siting forms. In addition, a summary narrative of the natural history of the plants found, potential threats to plant populations, and a complete list of all plants species found in the project area will be included. This information will address the concerns of resource agencies involved in relicensing as they relate to the botanical resources of the project area. Enhancement plans would be developed in coordination with resource agencies. A draft report will be submitted to Chelan PUD for review. Revisions will be incorporated into the final report.

The final report will be in a format suitable for printing by Chelan PUD to satisfy relicensing requirements. The text of the report will be provided to Chelan PUD in electronic format for Word and Excel. Rare plant populations and areas searched will be mapped to allow for eventual incorporation into an existing GIS database.

### ***SECTION 7: PROJECTED SCHEDULE***

This the timing and tasks of this schedule are tentative.

1. Spring 1998 - summer 1998: Literature review; consultation with the WNHP, USFS, USFWS, NPS, and other appropriate persons and agencies will be done to identify the occurrence and distribution of rare plant species within the Lake Chelan study area.

2. Spring 1998: A field reconnaissance of the study area will be done to help plan the field season and map high potential areas.
- 3A-B. Spring 1998 - late summer 1999: Field surveys will be conducted by botanists on foot or watercraft along the entire shoreline of Lake Chelan and the Chelan River Gorge. Areas for which more than one visit will be required will be mapped. A report will be prepared for inclusion in the ICD.
4. Fall 1998 - spring 2000: Verification of findings and consultation with agencies.
5. Fall 1999 - March 31, 2000: A draft report will be provided to Chelan PUD for review and comment.
6. March 31 - June 15, 2000: A final report and relevant materials will be provided to Chelan PUD.

**Table 1: Rare plant taxa potentially present in the Lake Chelan Project Area (based on WNHP 1997).**

Taxa listed include those currently considered Endangered, Threatened, or Sensitive in Washington, and those for whom not enough is known to assign a status (Review Group 1).

Taxon	Typical Habitat	Status	ID+
<i>Agoseris elata</i>	meadows, open woods	S	5-7
<i>Antennaria parvifolia</i>	dry open places, sandy areas, pine forests	S	3-4
<i>Astragalus arrectus</i>	shrub-steppe, grassy hillsides	S	5-6
<i>Astragalus sinuatus</i>	rocky hillsides with sagebrush	E	4-5
<i>Botrychium lunaria</i>	moist to dry areas	S	6-7
<i>Botrychium paradoxum</i>	moist to dry areas	S	6-7
<i>Botrychium pinnatum</i>	fields, shrubby slopes	S	6-7
<i>Botrychium simplex</i>	moist to dry meadows, marshes	S	6-7
<i>Carex buxbaumii</i>	wet, marshy areas	S	5-7
<i>Carex comosa</i>	lake margins, marshes, drainage ditches	S	5-8
<i>Carex hystericina</i>	wet areas along streams, rivers	S	5-8
<i>Chaenactis thompsonii</i>	dry open areas, serpentine slopes	S	5-8
<i>Cicuta bulbifera</i>	marshes, bogs, wet meadows	S	8-9
<i>Cryptantha spiculifera</i>	sage steppe, dry, open slopes and flats	S	5-7
<i>Cryptogramma stelleri</i>	moist shaded cliffs, ledges, limestone	S	5-8
<i>Cypripedium fasciculatum</i>	moist to dry rocky open coniferous forest	T	4-7
<i>Eleocharis atropurpurea</i>	wet places, lakeshores	EX	5-8
* <i>Epipactis gigantea</i>	streambanks, lakes, springs, seeps	S	4-7
<i>Erigeron salishii</i>		S	
* <i>Githopsis specularioides</i>	dry open places in valleys and foothills	S	5-6
<i>Hackelia hispida</i> var. <i>disjuncta</i>	cliffs, talus	S	5-6
<i>Hackelia venusta</i>	rocky slopes, with <i>Ponderosa</i> pine	E	5-6
<i>Iliamna longisepala</i>	dry open slopes, open pine forests	S	5-9
<i>Mimulus suksdorfii</i>	open, moist to dry places	S	4-6
Taxon	Typical Habitat	Status	ID+
<i>Pellaea breweri</i>	rock crevices, ledges, talus slopes	S	5-8
<i>Petrophyton cinerascens</i>	basalt cliffs and bluffs	T	5-8
<i>Platanthera sparsiflora</i>	open wet areas, bogs	S	6-8
<i>Saxifragopsis fragarioides</i>	rock crevices, ledges, talus	S	5-7
<i>Sidalcea oregana</i> var. <i>calva</i>	moist soils, boggy meadows near streams	E/PE	6-7
<i>Silene seelyi</i>	steep talus slopes, rock crevices	T	5-8
* <i>Spiranthes porrifolia</i>	moist to wet meadows	S	6-9
<i>Trifolium thompsonii</i>	open areas with sagebrush, sandy soils	T	4-6

- + Months during which the taxon is typically identifiable.
- \* Plant taxa currently known to occur in the vicinity of the Lake Chelan Project Area.
- E Endangered. Taxa that are in danger of becoming extinct in the state within the near future if factors contributing to their decline continue.
- T Threatened. Taxa that are likely to become Endangered in the state within the near future if factors contributing to their decline continue.
- S Sensitive. Taxa that are vulnerable or declining, and could become Endangered or Threatened in the state without active management or removal of threats.
- R1 Review Group 1. Taxa in need of additional field work before a status can be assigned.
- EX Extirpated. Taxa possibly extirpated from Washington.
- PE Proposed Endangered. Any taxon which is in danger of extinction throughout all or a significant portion of its range and which has been proposed for listing as such in the Federal Register pursuant to the Federal Endangered Species Act.

Sources for information include: the Washington Natural Heritage Information System, Flora of the Pacific Northwest by Hitchcock et al. (1955 - 1969) and The Jepson Manual: Higher Plants of California edited by J. Hickman (1993). The status of all the plant taxa listed in Table 1 reflect the most current information available; however, the status of a particular rare plant taxon is subject to change by the WNHP and/or the USFWS.