Appendix A:
Water Right Applications and Change of Use Application

PERKINS COIE LLP

1110 CAPITOL WAY SOUTH, SUITE 405 · OLYMPIA, WASHINGTON 98501-2256
TELEPHONE: 360 956-3300 · FACSIMILE: 360 956-1208

June 20, 2000

Mr. J. Mike Harris
Southwest Regional Office
Water Resources Manager
Department of Ecology
Post Office Box 47775
Olympia, WA 98504-7775

52-29921

Re: White River Water Right Application

Dear Mike:

On behalf of Puget Sound Energy, I am filing the enclosed application for a surface water right from the White River. This water right will provide a regional water supply for current and future population needs in the central Puget Sound area. As you know Puget Sound Energy (PSE) has been informally discussing this opportunity with the Department of Ecology over the last year. Because of its current White River Hydropower Project, PSE is in the unique position to provide this public water supply without further impacts during the low stream flows currently being experienced on the Puyallup River. In fact, with the requirement of bypass flows under the new FERC license, PSE will be providing significant flows and environmental enhancement to the White and Puyallup Rivers.

The application provides you with the basic information requested on the form. PSE recognizes that the application is only the filing document and additional information and analysis are necessary to support the standards set forth in the water code for obtaining a water right. PSE has done extensive research and analysis that supports the application, including the important elements of determining the beneficial use of the water and the lack of impairment to existing rights and the instream flows. I discuss these in more detail below. PSE looks forward to reviewing the result of its work with you and your staff. Additionally, PSE will be filing necessary documents under the State Environmental Policy Act (SEPA).

PSE recognizes the Department's desire to have all interests in the basin involved in decisions related to the allocation of water through basin planning. Through its application, PSE is not rejecting basin planning efforts, but wants to remain involved. Because PSE is in a position under its FERC relicensing process to act now on this unique opportunity to obtain a water supply, I have discussed with

your staff the ability to have PSE support basin planning needs through the application itself. If the application is approved, PSE can offer a supply of water that will be a key tool in future planning efforts in the basin. PSE will agree that a limited quantity of water will not be committed until 2006 or when basin plan is adopted and approved by the Department, whichever comes first. If the plan is adopted and approved, the water will be available to address the recommendations of the basin plan for water allocation. We believe that the reasonable quantity of water reserved for basin needs should not exceed 10 cfs.

PSE agrees that a new permit will be conditioned to protect existing water rights and instream flows. PSE is developing a water management plan that will be implemented as a condition of the permit during that period of time instream flows have historically not been met at the Puyallup gauge. Based on its analysis, PSE has determined that even during low flow periods historically recorded, it can supply the quantity of water it is requesting under the permit without causing any net impact on the instream flows. PSE will utilize Lake Tapps to store sufficient water and when the stream flow at the Puyallup gauge is not meeting minimum flows, PSE will either use water only out of the Lake to satisfy the beneficial uses under the new permit, or for any water diverted under the new permit, PSE will be mitigate one-for-one with water stored in Lake Tapps, causing the drafting of Lake Tapps. In other words, the plan will assure that there will be a beneficial or neutral impact on the White and Puyallup Rivers during the low flow periods to be described in the permit.

PSE also agrees that the water right will be conditioned on an instream flow that is equivelent to the flows that Puget will be required to provide in the bypass under its new FERC license. Further, PSE will agree that as a condition of the new permit, the new water right can only be exercised if PSE is exercising its current hydropower 2000 cfs water right in compliance with the instream flow conditions of the FERC license. The flow requirements will be determined by the requirements of applicable law, but as a going forward assumption, it is expected that different points of view as to the appropriate flows will be resolved through the ongoing Lake Tapps collaborative process.

As I indicate above, the beneficial use element of the application is supported by research and analysis on the demand for current and future regional public water supplies. PSE has been meeting with major regional water purveyors, including the Cities of Seattle and Tacoma. PSE has also had discussions with the Cascade Water Alliance. Based on these discussions, PSE is confident that a new regional water

supply is necessary and supports prudent growth management planning. This is supported by PSE's independent consultant's analysis of public water supply demand.

The preparation of water forecasts is a quantitative tool used to determine the likelihood of a water district or region to meet all the needs of all the users in the future. Within the central Puget Sound Region (Pierce, King, and Snohomish Counties), some regions are unable to meet the current demands placed upon the resource. To help prepare for the future, the central Puget Sound regional water supply purveyors have come together to plan to meet the needs through an array of alternatives and options that will reduce demands and increase supplies. Although no regional water planning authority exists in the central Puget Sound Region, representatives from water suppliers in King, Pierce, and Snohomish Counties are participating in a water supply planning forum and have recently produced *Central Puget Sound Regional Supply Outlook Technical Memoranda and Progress Report* (*Outlook*, February 2000). This document, while still in progress, provides a recent compilation and analysis of the regional forecasted water demand.

Forecasted demand published in the *Outlook* report were analyzed for the two largest water suppliers in King and Pierce Counties: Seattle Public Utilities (SPU) and Tacoma Water (TW), respectively. The population of King County (1.7 million in 2000) is forecast to increase to 2.1 million in 2020. Similarly, the population of Pierce County (0.73 million in 2000) is forecast to increase to 0.94 million in 2020. Considering the combined demand of SPU and TW are about 68% of the demand in King and Pierce Counties, the documentation shows that forecast water demand exceeds available supplies.

PSE will continue to divert water from the White River, subject to the bypass flows, and operate the Project to maintain Lake Tapps. A "viable lake" analysis is being conducted by the Lake Tapps Task Force, and this analysis will likely lead to a viable lake profile that restricts draw downs for revenue generating purposes. Within these parameters, Lake Tapps will be used for storage and release of water to mitigate when necessary any net impacts during low flow periods caused by the diversion of water under the new water right permit.

To allow for the diversion of water from the White River, an amendment to the White River rule is necessary. Currently, the rule provides that when new information is available or conditions have changed within the basin, the rule should be reviewed and amended to address those new conditions. WAC 173-510-100. Puget submits

that the conditions for the new FERC license including the bypass flows, and the necessary changes to the White River Project, meet the standard for amending the rule. A proposed rule amendment will be filed with the Department.

The water right will be conditioned to require Puget or its contract agent (i.e., major basin purveyor) to offer a limited quantity of water authorized under the permit for potential water users in the White River Basin. In addition, PSE will agree, as stated above, to provide a certain quantity of water reserved for future use by persons/entities that, through a future basin planning process, are recommended in the final basin report as candidates for water supply. As I state above, we believe that 10 cfs is a reasonable quantity to reserve for basin needs. This is not, however, to be a limitation on the quantity of water that may eventually be provided to the basin.

The condition on the permits requiring PSE to address the water demands in the White River Basin must be reasonably limited so as to provide the opportunity to purvey the water regionally within a reasonable amount of time. Therefore, this condition must include a schedule that authorizes Puget to sell water regionally if certain time and financial conditions are not met. PSE will work diligently with the Department of Ecology to provide water to resolve the basin needs within a timely process. However, the permit must provide that if the efforts to work with the entities in the basin do not result in an agreement within two years of initiating contact (2006 for adoption of a basin plan), PSE may begin to commit the water to regional purveyors.

I look forward to discussing the application with you in the near future. Please do not hesitate to call if you have any questions.

Very truly yours,

Tom McDonald

Tom McDonald

TM/sc

cc: Ed Schild √
Markham A. Quehrn

Rec'd 6/20/00

APPLICATION FOR PERMIT

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

washington state department of ECOLOGY

[X] SURFACE WATER ☐ GROUND WATER

$10.00 MINIMUM STATUTORY EXAMINATION FEE REQUIRED WITH APPLICATION

(GRAY BOXES FOR OFFICE USE ONLY)

APPLICATION NO.	W.R.I.A	COUNTY	PRIORITY DATE	TIME	ACCEPTED
S2-29920	10	PIERCE	~~6/19/2000~~ 6/20/2000		

APPLICANT'S NAME--PLEASE PRINT

PUGET SOUND ENERGY, INC. CONTACT: EDWARD R. SCHILD

Bus. Tel. (425) 462-3022
Home Tel.
Other Tel. (360) 956-3300

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
P.O. BOX 97034 MAIL STOP: OBC-14N	BELLEVUE	WA	98009-9734

DATE & PLACE OF INCORPORATION IF APPLICANT IS A CORPORATION

9/12/60 STATE OF WASHINGTON SUCCESSOR TO CORPORATION INCORPORATED 7/8/12 STATE OF MASSACHUSETTS

1. SOURCE OF SUPPLY

IF SURFACE WATER	IF GROUND WATER
SOURCE (Name of stream, lake, spring, etc.) (If unnamed, so state) WHITE RIVER	SOURCE (Well, tunnel, infiltration trench, etc.)
TRIBUTARY PUYALLUP RIVER	SIZE AND DEPTH

2. USE

USE TO WHICH WATER IS TO BE APPLIED (DOMESTIC SUPPLY, IRRIGATION, MINING, MANUFACTURING, ETC.)

PUBLIC WATER SUPPLY AND MUNICIPAL WATER SUPPLY PURPOSES INCLUDING INDUSTRIAL AND COMMERCIAL PURPOSES

ENTER QUANTITY OF WATER REQUESTED USING UNITS OF:	CUBIC FEET PER SECOND (CFS)	*OR*	GALLONS PER MINUTE (GPM)	ACRE FEET PER YEAR
	Qa = 100 CFS AVERAGE ANNUAL FLOW RATE Qi = 2000 CFS PEAK INSTANTANEOUS FLOW RATE			72,400

TIMES DURING YEAR WATER WILL BE REQUIRED

YEAR-ROUND

IF IRRIGATION, NUMBER OF ACRES	IF DOMESTIC USE, NUMBER OF UNITS BY TYPE, e.g., 1-HOME, 1-MOBILE HOMES, 2 CAMPSITES, etc.	IF MUNICIPAL USE, ESTIMATED POPULATION 20 YEARS FROM TODAY
		3,040,000 (EST. POPULATION FOR PIERCE AND KING COUNTIES IN 2020)

DATE PROJECT WAS OR WILL BE STARTED	DATE PROJECT WAS OR WILL BE COMPLETED	
MANY PROJECT FACILITIES ARE BUILT. ADDITIONAL CONSTRUCTION WILL BEGIN APPROXIMATELY 2006 TO 2010	ESTIMATED 2030	

3. LOCATION OF POINT OF DIVERSION / WITHDRAWAL

3A. IF IN PLATTED PROPERTY

LOT	BLOCK	OF (Give name of plat or addition)	SECTION	TOWN	RANGE	

3B. IF NOT IN PLATTED PROPERTY

ON ACCOMPANYING SECTION MAPS, ACCURATELY MARK AND IDENTIFY EACH POINT OF DIVERSION, SHOW NORTH-SOUTH AND EAST-WEST DISTANCES FROM NEAREST SECTION CORNER OR PROPERTY CORNER.

ALSO, ENTER BELOW THE DISTANCES FROM THE NEAREST SECTION OR PROPERTY CORNER TO THE DIVERSION OR WITHDRAWAL.

EXISTING DIVERSION FACILITY UNDER WATER RIGHT CLAIM NO. 160322 IN CITY OF BUCKLEY: 200 FEET EAST AND 200 FEET SOUTH FROM N1/4 SECTION CORNER OF SECTION 2. SEE MAP, ATTACHMENT "A"

LOCATED WITHIN (smallest legal subdivision)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
NE 1/4 SECTION	2	19	6 E	PIERCE

4. DO YOU OWN THE LAND ON WHICH THIS SOURCE IS LOCATED. IF NOT, INSERT NAME & ADDRESS OF OWNER. YES

5. LEGAL DESCRIPTION OF PROPERTY *ON WHICH WATER IS TO BE USED*

ATTACH A COPY OF THE LEGAL DESCRIPTION OF THE PROPERTY (ON WHICH THE WATER WILL BE USED) TAKEN FROM A REAL ESTATE CONTRACT, PROPERTY DEED OR TITLE INSURANCE POLICY, OR, COPY CAREFULLY IN THE SPACE BELOW.

THE WATER WILL BE USED WITHIN PIERCE, KING, AND SNOHOMISH COUNTIES. THE LAKE TAPPS WATER SUPPLY IS PROPOSED TO BE CONNECTED TO THE MAJOR PIERCE AND KING COUNTY REGIONAL WATER SUPPLY SYSTEMS OPERATED BY TACOMA WATER (TW) AND SEATTLE PUBLIC UTILITIES (SPU). THE TW AND SPU SERVICE AREAS ARE DEFINED IN THEIR RESPECTIVE COMPREHENSIVE WATER SUPPLY PLANS. THE SPU SYSTEM SERVES PORTIONS OF BOHTELL AND A FEW OTHER SMALL AREAS THAT ARE ACTUALLY LOCATED IN SOUTHERN SNOHOMISH COUNTY, ADJACENT TO THE KING COUNTY LINE. THE PLACE OF USE WILL INCLUDE THE AREA SERVED BY THE FUTURE INTERCONNECTION OF THE SNOHOMISH COUNTY REGIONAL WATER SUPPLY SYSTEM OPERATED BY EVERETT PUBLIC WORKS (EPW) WITH THE KING COUNGY REGIONAL WATER SUPPLY SYSTEM OPERATED BY SPU. WHEN THE EPW REGIONAL WATER SUPPLY SYSTEM INTERCONNECTS WITH THE KING AND PIERCE COUNTY REGIONAL WATER SUPPLY SYSTEMS, THE LAKE TAPPS WATER SUPPLY PROJECT WILL COVER THE MAJORITY OF THE NON-RURAL/NON-FORESTRY AREAS OF KING, PIERCE AND SNOHOMISH COUNTIES.

ECY 040-1-14
Rev. 8/91 F
[09901-8179/PSE WHITE RIVER00167.0041.doc]

WHAT IS YOUR INTEREST IN THE PROPERTY ON WHICH THE WATER IS TO BE USED (PROPERTY OWNER, LESSEE, CONTRACT PURCHASER, ETC.)

NONE, PSE OWNS PROPERTY WITHIN THE AREAS OF USE.

ARE THERE ANY EXISTING WATER RIGHTS RELATED TO THE LAND ON WHICH THE WATER IS TO BE USED (INCLUDING WATER PROVIDED BY IRRIGATION DISTRICTS OR DITCH COMPANIES) [X] YES [ ] NO

IF YES, FROM WHAT SOURCE (i.e., SURFACE OR GROUND WATER) AND UNDER WHAT AUTHORITY

PUGET SOUND ENERGY HAS A WATER RIGHT CLAIM NO. 160322; THE CURRENT WATER PURVEYORS INCLUDING THE MUNICIPALITIES WITHIN PIERCE, KING, AND SOUTHERN PORTIONS OF SNOHOMISH COUNTIES ALL HAVE EXISTING WATER RIGHTS AS PROVIDED IN THEIR WATER SYSTEM PLANS ON FILE WITH THE DEPARTMENT OF ECOLOGY.

6. DESCRIPTION OF SYSTEM PROPOSED OR INSTALLED

(FOR EXAMPLE: SIZE OF PUMP, CAPACITY OF PUMP, PUMP MOTOR HORSE POWER, PIPE DIAMETER, NUMBER OF SPRINKLERS, ETC.)

SEE ATTACHMENT "B"

7. REMARKS

A WATER FLOW MANAGEMENT PLAN WILL BE PROVIDED. PROCESSING THE APPLICATION IS SUBJECT TO AMENDMENT OF THE CURRENT BASIN RULE WAC 173-510.

8. COMPLETE THIS SECTION ONLY IF THIS APPLICATION INCLUDES IRRIGATION AS A USE

IN ORDER TO IMPLEMENT THE PROVISIONS OF INITIATIVE MEASURE NUMBER 59, THE FAMILY FARM WATER ACT WHICH WAS PASSED BY THE VOTERS ON NOVEMBER 3, 1977, WE MUST ASK THE FOLLOWING QUESTIONS.

1. LANDS THAT ARE BEING IRRIGATED UNDER WATER RIGHTS ACQUIRED AFTER DECEMBER 8, 1977. [ ] YES [ ] NO
2. LANDS THAT MAY BE IRRIGATED UNDER APPLICATIONS NOW ON FILE WITH THE DEPARTMENT OF ECOLOGY. [ ] YES [ ] NO
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W. A. GAINES, VICE-PRESIDENT, ENERGY SUPPLY

LEGAL LANDOWNER'S NAME (PLEASE PRINT)

LEGAL LANDOWNER'S SIGNATURE (OWNER OF PROPERTY DESCRIBED ON ITEM NUMBER 5)

LEGAL LANDOWNER'S ADDRESS

FOR OFFICE USE ONLY

STATE OF WASHINGTON)
) ss
DEPARTMENT OF ECOLOGY)

This is to certify that I have examined this application together with the accompanying maps and data, and am returning it for correction or completion as follows: .....

.....

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In order to retain its priority date, this application must be returned to the Department of Ecology, with corrections, on or before ....., *19* ....

Witness my hand this ..... *day of* ..... *19* ....

Department of Ecology

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00 JUN 20 AM 7:47

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) ss.
DEPARTMENT OF ECOLOGY)

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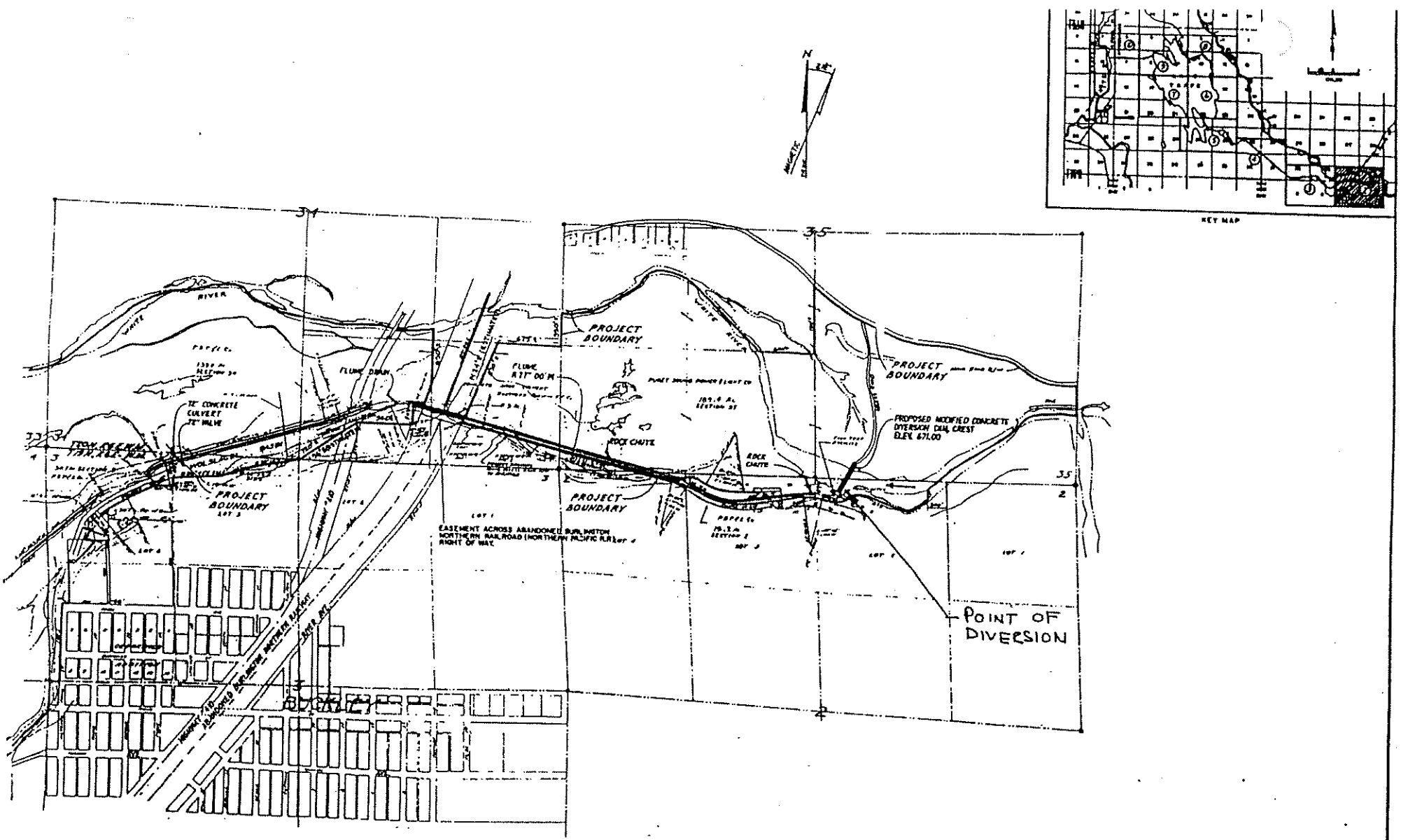
In order to retain its priority date, this application must be returned to the Department of Ecology, with corrections, on or before _____, 19____.

Witness my hand this _____ *day of* _____ 19____.

Department of Ecology



PUGET SOUND POWER & LIGHT COMPANY
APPLICATION FOR LICENSE
WHITE RIVER PROJECT
FERC PROJECT NO. 2494

PROJECT BOUNDARY MAP

EXHIBIT G-2

Waterright
Attachment A
June 19, 2000

I. EXISTING WHITE RIVER HYDROELECTRIC PROJECT FEATURES

The principal project features necessary to divert and convey water from the White River near Buckley to the place of use consist of both existing (installed) features and proposed features. The proposed features are further subdivided into common features and alternative specific features dependent on which regional supply system interconnection point(s) are ultimately selected. The following description of the system is based on this categorizing of facilities. The project holds a vested year-round water right that pre-dates the state water code of 1917, to divert 2,000 cfs from the White River at the existing diversion dam and intake location. Diverted water flows through a series of lined and unlined canal, pipeline, and basins over a distance of about 8-miles where it flows into Lake Tapps. From Lake Tapps the water is withdrawn via an intake to a one-half-mile-long tunnel and then into penstocks that supply four water turbines. After passing through the turbines, the water flows down a one-half-mile-long tailrace canal and returns to the White River. The reach of White River between the diversion dam and the tailrace canal return is about 23-miles long and is referred to as the "bypass reach" of the White River.

The existing principal project features that the proposed water supply project will Utilize are identified and briefly described here:

1. Diversion Dam – The dam is 352 feet wide and is comprised of a 4-foot high rock filled timber crib base structure, and 7-foot high flashboards. When installed, the flashboards have a crest elevation of 671 feet mean sea level (fmsl).

2. Intake – The intake is located on the left bank of the river and diverts water from the White River, as ponded behind the diversion dam. The intake is a concrete structure with no over-water operation deck. The intake has no debris rack. Water diversion is regulated by two vertical roller gates located at the down stream end of the intake, just prior water entering the flow line.

3. Flume – The first 1.1 miles of flowline consists of 2,600 lineal feet of concrete structure followed by 2400 lineal feet of wooden structure. The final section of flume consists of a 900 foot long concrete structure.

4. Earthen Canal – The next 2.4 miles of flowline are a series of earthern canals and basins (pond-like water bodies).

5. Fish Screens & Bypass Pipeline – Located within the earthen canal section of the flowline, about 2.5 miles downstream of the intake, is the 2,000 cfs fish screen and fish bypass pipeline. The vertical screen structure was put into service in 1996 and safely screens out all downstream migrating fish transporting them back to the White River via a 3000-foot-long, 31-inch diameter, 20 cfs fish bypass pipeline. Fish removed from the flowline re-enter the river and continue down the bypass reach of the White River at the discharge end of the bypass pipeline.

6. Twin Pipelines – Twin 10-foot diameter concrete pipelines convey water from a point approximately 3.5 miles downstream of the intake for a distance of 2 miles.

7. Twin Howell Bunger Valves – These valves are located at the downstream end of the pipelines and safely break the head in the pipes prior to the release of water into the downstream reach of the flowline.

8. Earthen Canal – The remaining 2 miles of flowline is a series of earthen canals and basins that end where the water enters the southeast corner of Lake Tapps.

9. Lake Tapps – Covering a surface area of roughly 2,700 acres, Lake Tapps is about 4.5 miles long by 2.5 miles wide. Lake Tapps has a storage capacity of 46,700 acres-feet at the normal maximum high pool elevation of 542.2 fmsl, and has a normal minimum low pool elevation of 515 fmsl. Therefore, Lake Tapps has a range of operating level equal to about 28.5 feet, between normal high and normal low pool elevations.

10. Tunnel Intake – Water exits Lake Tapps through a tunnel intake structure located along the northwest shore of the lake. The bottom of the intake structure is at approximate elevation 490 fmsl and the intake deck is at approximate elevation 544 fmsl.

11. Tunnel – Lake Tapps water is conveyed from the intake structure through a 2,842-foot long, 12-foot diameter concrete tunnel to a concrete forebay structure.

12. Forebay – The 30-foot diameter vertical shaft forebay structure is located near the top of the hill overlooking the White River Valley to the west. The forebay connects the 12-foot diameter tunnel from Lake Tapps to the three penstocks that supply water to the powerhouse located at the base of the hill. The forebay includes 3 slide gates that may be closed to isolate the 3 penstocks from Lake Tapps.

II. PROPOSED NEW WATER SUPPLY SYSTEM FEATURES

1. Pipeline – A pipeline is proposed to connect the proposed new water supply System to the existing Lake Tapps Project. The connection will be made on the north side of the forebay and convey raw water to a proposed water treatment plant.

2. Treatment Plant – A water treatment plant is proposed to treat Lake Tapps water Potable drinking water standards. This plant is currently planned to be located downhill and approximately 500 feet north of the forebay structure.
Alternate Specific Features

3. Regional Inter-connection Points – Currently four alternative potential points of Delivery are being examined. These are:

   Delivery to Tacoma Water's regional supply system at McMillin Reservoir;

   Delivery to Tacoma Water and Seattle Public Utilities' (SPU) regional supply system at the interconnection point of the North Branch of the Second Supply Project (SSP) with Pipeline No. 5 of the SSP;

   Delivery to SPU's regional supply system at the north end of Lake Youngs;

   Delivery to SPU's regional supply system serving the recently formed Cascade Water Alliance (CWA) near the site of the Eastside Reservoir.

4. Pipelines – Large, regional transmission pipelines are required to convey finished Water from the treatment plant near Lake Tapps to any of the potential points of delivery. These pipelines could range in diameter from 48-inches to 60-inches or larger, depending on delivery location(s).

5. Pump Stations- Due to the elevation of Lake Tapps relative to the potential points delivery, and the long distances required for water conveyance, booster pump stations will be required at various points along the pipeline alignments. The necessary pump station size ranges from 2.7 megawatt to 4.7 megawatt, depending on delivery location, alignment, and pipeline diameter.

PERKINS COIE LLP

1110 CAPITOL WAY SOUTH, SUITE 405 · OLYMPIA, WASHINGTON 98501-2251
TELEPHONE: 360 956-3300 · FACSIMILE: 360 956-1208

September 12, 2000

Mr. J. Mike Harris
Department of Ecology
S.W. Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Re: Water Right Applications for the Lake Tapps Reservoir

Dear Mike:

Enclosed please find two additional applications for the proposal described in Application No. S2-29921. I am also enclosing two documents that provide necessary information for processing the applications. These applications and documents supplement the information necessary for the Department to commence review of Puget Sound Energy's proposal to divert water from the reservoir for public water supply purposes.

The enclosed application for a reservoir permit is to allow for an additional right to store water in Lake Tapps for the water diverted for municipal/public water supply purposes under Application No. S2-29921. This right would be in addition to and not in derogation of PSE's existing storage right. As proposed, the additional use of the reservoir for municipal supply will not increase the maximum storage level (545 msl). As with the Water Right Application No. S2-29921, this application is made with a full reservation of rights as to PSE's existing diversion and storage rights.

The application for the secondary permit is filed to authorize the diversion of water from Lake Tapps reservoir for delivery to a treatment facility for use by the contracted purveyors of the water. PSE is currently in discussions with several purveyors that would be expected to be purveying the water subject to the terms of the permits.

The enclosed documents include a memorandum report by HDR Engineering Inc. that summarizes the water demand for municipal/public water supply in King and Pierce Counties. This report substantiates the need for and the expected beneficial

use of the water within the area described in the application. Attached to this report are preliminary figures and engineering plans depicting options for the diversion, processing, and delivery of the water. The second report is the Lake Tapps Reservoir Water Management Plan, which describes how the diversion and storage of water will be managed to enhance instream flows in the White and Puyallup Rivers.

Please do not hesitate to call if you have any questions.

Very truly yours,

for Tom McDonald

TM:no

Enclosures

cc: Sue Mauermann
Mark Quehrn
Ed Schild
Jill Walsh

PETITION FOR ADOPTION, AMENDMENT, OR REPEAL OF A STATE ADMINISTRATIVE RULE (RCW 34.05.330)

Petitioner's Name (please print) Puget Sound Energy Telephone (425) 462-3022

Address PO Box City State Zip Code

P.O. Box 97034 Mail Stop OBC-14N Bellevue WA 98009-9734

Agency Responsible for Administering the Rule, If Known:

The Department of Ecology

Check all that apply below and explain on the back of this form with examples. Whenever possible, attach suggested language. You may attach other pages, if needed.

☐ **1. NEW: I am requesting that a new WAC be developed.**

I believe that a new rule should be developed.

- ☐ The subject of this rule is:
- ☐ The rule will affect the following people:
- ☐ The need for this rule is:

☒ **2. AMEND: I am requesting that a change to existing *WAC 173-510.***

☐ **3. REPEAL: I am requesting existing WAC_____ be removed.**

I believe this rule should be changed or repealed because (check one or more):

- ☐ It does not do what it was intended to do.
- ☐ It imposes unreasonable costs.
- ☐ It is applied differently to public and private parties.
- ☐ It is not clear.
- ☐ It is no longer needed.
- ☐ It is not authorized. The agency has no authority to make this rule.
- ☐ It conflicts with another federal, state, or local law or rule. Please list number of the conflicting law or rule, if know:

- ☐ It duplicates another federal, state or local law or rule. Please list number of the duplicate law or rule, if known:

- ☒ Other (please explain): *The current rule closing streams from further appropriations unnecessarily restricts Ecology' authority to consider water right applications for projects that will meet the intent of stream "closures" and will otherwise be in the public interest. See Attachment A.*

Petitioner's Signature: [signature] Date: 9/14/2000

Attachment A

The Petition to amend WAC 173.510 is being filed to allow the Lake Tapps reservoir to be developed as a source of municipal and public water supply. The rule change is necessary to allow an application for a much needed regional resource of water to be considered by the Washington State Department of Ecology ("Ecology"). This petition is being filed to reflect the significant changes that are occurring in the White River Basin and is supported and offered pursuant to the specific language of the existing rule that provides:

> The Department of Ecology shall initiate a review of the rules established in this chapter whenever new information, changing conditions, or statutory modifications make it necessary to consider revisions. WAC 173-510-100.

In 1980, Ecology adopted the Puyallup River Basin Instream Flow Management Plan that provided for the allocation and management of water in the Puyallup River Basin. WAC 173-510. The Puyallup River Basin has been designated Water Resource Inventory Area (WRIA) 10. WAC 173-500. Based on the information at the time the rule was adopted Ecology determined minimum levels of instream flows for the rivers and streams in WRIA 10. These flows were established by Ecology to protect, as it saw appropriate, these instream flow values.

Having decided that many of the streams were experiencing such low flows, Ecology decided to simply "close" these streams from further appropriations. Specifically, the rule states:

> The Department, having determined that further consumptive or appropriations would harmfully impact instream values, closes the following streams and lakes in WRIA 10 to further consumptive appropriations. WAC 173-510-040(3).

The White River is "closed" under the rule.

Since the early 1900's PSE has exercised a pre-code water right to divert up to 2000 cubic feet per second (cfs) of water from the White River, store water in the Lake Tapps reservoir, and eventually run the water through a power house, and return the water back into the White River. Between the point of diversion and the point of discharge back to the White River, there exists a "by-pass" reach of the river of over 20 miles. It has been Ecology's position that this by-pass reach has insufficient flow to allow further appropriation.

A FERC license was issued in December of 1997 for the Project, a license which PSE has not accepted. Among other things, the license would require PSE to adjust its diversion, and provide more flows in the by-pass reach. These flows will, according to

federal and state resource agencies, enhance the fishery resource and the instream flow values. This change also creates circumstances justifying consideration of amending the rule related to the White River.

The petition does not however request that the closure on the White River be repealed, although this is an option. Rather, this petition requests a rule change that would allow for Ecology to consider water right applications for the use of water in "closed basins" if the applicant can support the application with evidence that the proposed project would provide substantial environmental enhancement to the Basin or support a comprehensive regional public water supply, and under no circumstances would cause additional impairment to the river during times that the flows are currently known not to meet the minimum flows established for the Puyallup River. This rule amendment will therefore recognize the purpose of the rules and meet the intent of a "closure" in the Puyallup River Basin, and will also provide Ecology with the flexibility to consider applications that, while not causing additional impairment to the instream flows during low flow times, will provide enhancement of the environmental resources or support a regional public water supply. Processing applications under this standard is consistent with the Basin planning adopted by the legislature in Chapter 90.54 RCW. See RCW 90.54.020(2), (3), (5) and (7).

The petitioner's suggest the following amendment to Chapter 173-510.

Insert at WAC 173-510-040 the following:

> **(4) Notwithstanding the closures set forth in subsections (2) and (3) of this section, the department shall process applications for the appropriation of water from surface waters and ground waters affected by such closures if the applications propose a project and use of water that: (a) will not cause any additional impact to the instream flows established for the Puyallup River at a time when the Puyallup River is not meeting the minimum flows set forth in subsection (1) of this section; and (b) will substantially enhance the quality of the natural environment or will result in providing public water supplies to meet the general needs of the public for regional areas.**

We believe that the standards set forth in the proposed amendment are consistent with the criteria that Ecology has included in current rules that allow for expediting applications. See WAC 173-152 (the Hillis Rule) and WAC 173-532 (the Walla Walla Rule). Both of these rules have allowed Ecology the flexibility to prioritize the processing of competing applications if the project would "substantially enhance or protect the quality of the natural environment" or "would result in providing public water supplies to meet the general needs of the public for regional areas." See WAC 173-152-050(3).

Washington State Department of ECOLOGY

State of Washington
Application for a Water Right

For Ecology Use
Rec'd Date
Date

Please follow the attached instructions to avoid unnecessary delays.

SECONDARY PERMIT APPLICATION FOR RESERVOIR PERMIT APPLICATION FOR LAKE TAPPS FOR APPROPRIATION FROM WHITE RIVER—SEE APPLICATION NO. S2-29921

Section 1 - APPLICANT - PERSON, ORGANIZATION, OR WATER SYSTEM

Name *Puget Sound Energy, Inc. : Edward Schild* Home Tel: (_____)_____ - _____

Mailing Address *PO Box 97034 MS: OBC-14N* Work Tel: *(425) 462-3022*

City *Bellevue* State *WA* ZiP+4 *98009 + 9734* FAX: *(425) 462-3175*

Section 2 - CONTACT PERSON TO CALL ABOUT THE APPLICATION

☒ Same as above

Name *Edward R. Schild* Home Tel: (_____)_____ - _____

Mailing Address *same as above* Work Tel: (_____)_____ - *same as above*

City _____ State ____ ZiP+4 _____+____ FAX:(_____)_____ - _____

Relationship to applicant _____

Section 3 - STATEMENT OF INTENT

The applicant requests a permit to use not more than *150 cfs* (☐ gallons per minute or ☒ cubic feet per second) from a ☒ surface water source or ☐ ground water source (check only one) for the purpose(s) of ____ *municipal and public water supply*. **ATTACH A "LEGAL" DESCRIPTION OF THE PLACE OF USE. (See instructions.)** *NOTE: a tax parcel number or a plat number is not sufficient*

Estimate a maximum annual quantity to be used in acre-foot per year: *72,400*

☐ Check if the water use is proposed for a short-term project. Indicate the period of time that the water will be needed:

From ____/____/____ to ____/____/____

Section 4 - WATER SOURCE

IF SURFACE WATER	IF GROUNDWATER
Lake Tapps Reservoir Number of diversions: *one*	A permit is desired for _____ well(s).
Source flows into (name of body of water): *White River*	Size and depth of well(s):

LOCATION

For location of diversion from Lake Tapps Reservoir, see Application S2-29921 and see Attachment A hereto

1/4 of	1/4 of	Section	Township	Range E/W	County	If location or source is platted, complete below: Lot	Block	Subdivision
NW	*NW*	*7*	*20*	*5E*	Pierce			

For Ecology Use: Date Received ____ Priority Date ____
SEPA: Exempt/Non-Exempt ____ NPDES/Consult ____ Dept. of Health ____
Date Accepted As Complete ____ By ____ Date Returned ____ By ____ WRIA ____

APPLICATION Appl. No. ____

Section 5. CENTRAL WATER SYSTEM INFORMATION

A. Name of system, if named: _____

Briefly describe your proposed water system. (See instructions.)

See Application No. S2-29921

C. Do you already have any water rights or claims associated with this property or system? ☒ YES ☐ NO
PROVIDE DOCUMENTATION.

See Application No. S2-29921. Puget Sound Energy has a Water Right Claim No. 160322; the current water purveyors including the municipalities within Pierce, King, and southern portions of Snohomish Counties all have existing water rights as provided in their water system plans on file with the Department of Ecology. This application is made with a full reservation of rights as to PSE's existing diversion and storage rights.

Section 6. DOMESTIC/PUBLIC WATER SUPPLY SYSTEM INFORMATION

(Completed for all domestic/public supply uses.)

A. Number of "connections" requested: _____ Type of connection: _____

See Application No. S2-29921 and supporting documentation on demand analysis.

B. Are you within the area of an approved water system? N/A ☐ YES ☐ NO

If yes, explain why you are unable to connect to the system. ***As stated in the application S2-29921 and supporting documents, this water supply will be a regional water supply.***

Complete C. and D. only if the proposed water system will have fifteen or more connections.

C. Do you have a current water system plan approved by the Washington State Department of Health? ☐ YES ☒ NO
If yes, when was it approved? Prospective purveyors of the water will have approved plans. Please attach the current approved version of your plan.

D. Do you have an approved conservation plan? ☐ YES ☒ NO
If yes, when was it approved? See C., above. Please attach the current approved version of your plan.

Section 7. IRRIGATION/AGRICULTURAL/FARM INFORMATION

(Completed for all irrigation and agricultural uses.)

A. Total number of acres to be irrigated: N/A

B. List total number of acres for other specified agricultural uses:

Use _____ Acres _____
Use _____ Acres _____
Use _____ Acres _____

C. Total number of acres to be covered by this application: _____

D. Family Farm Act (Initiative Measure Number 59, November 3, 1977)
Add up the acreage in which you have a controlling interest, including only:
I Acreage irrigated under water rights acquired after December 8, 1977;
I Acreage proposed to be irrigated under this application;
I Acreage proposed to be irrigated under other pending application(s).

1. Is the combined acreage greater than 2000 acres? ☐ YES ☐ NO
2. Do you have a controlling interest in a Family Farm Development Permit? ☐ YES ☐ NO
If yes, enter permit no.: _____

E. Farm uses:
Stockwater – Total # of animals _____ Animal Type _____ (If dairy cattle, see below)
Dairy -- # Milking _____ # Non-Milking _____

Section 8: WATER STORAGE

Will you be using a dam, dike, or other structure to retain or store water? ☒ YES ☐ NO

NOTE: If you will be storing 10 acre-feet or more of water and/or if the water depth will be 10 feet or more at the deepest point; and some portion of the storage will be above grade, you must also apply for a reservoir permit. You can get a reservoir permit application from the Department of Ecology.

This application is being filed with a reservoir permit application and an application to appropriate from the White River, Application No. S2-29921.

Section 9: DRIVING DIRECTIONS

Provide detailed driving instructions to the project site:

Because of the size and scope of the project, specific driving instructions are not feasible. Please contact Mr. Schild's office for instructions to the particular location you wish to visit.

Section 10: REQUIRED MAP

A. ***See Attachment A of Application for storage permit.***

Section 11: PROPERTY OWNERSHIP

A. Does the applicant own the land on which the water will be used? ☐ YES ☒ NO

If no, explain the applicant's interest in the place of use and provide the name(s) and address(es) of the owner(s):

See Application S2-29921 and supporting documents.

B. Does the applicant own the land on which the water source is located: ☒ YES ☐ NO

If no, submit a copy of agreement:

I certify that the information above is true and accurate to the best of my knowledge. I understand that in order to process my application, I grant staff from the Department of Ecology access to the site for inspection and monitoring purposes. Even though I may have been assisted in the preparation of the above application by the employees of the Department of Ecology, all responsibility for the accuracy of the information rests with me.

W. A. Gaines, Vice-President, Energy Supply, Puget Sound Energy for Applicant — Date 9/14/2000

Landowner for place of use (if same as applicant, write "same") — Date

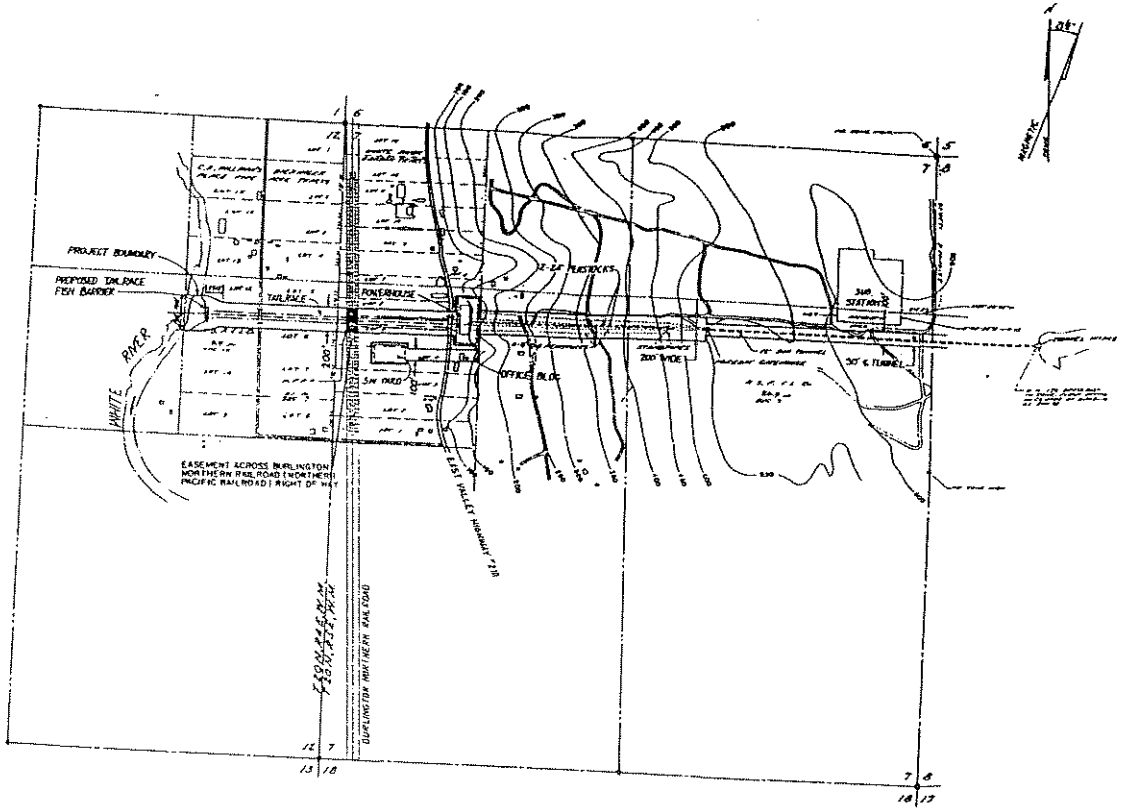
Use this page to continue your answers to any questions on the application. Please indicate section number before answer.

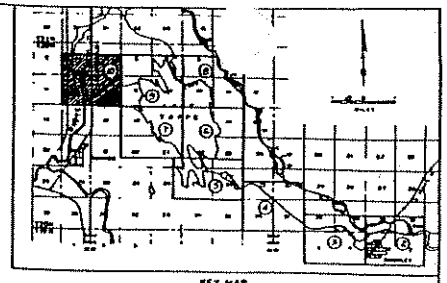
We are returning your application for the following reason(s):	
Examination fee was not enclosed.	APPLICANT PLEASE RETURN TO CASHIER, PO BOX 5128, LACEY, WA 98509-5128
Section number(s) _____ are incomplete	APPLICANT PLEASE RETURN TO THE APPROPRIATE REGIONAL OFFICE
Explanation:	
Please provide the additional information requested above and return your application by _____ *(date).*	

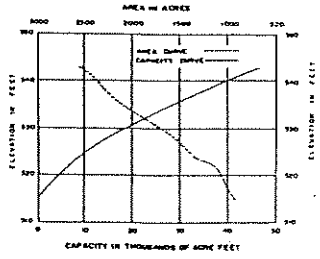
Ecology staff _____ _____ Date _____

Ecology is an Equal Opportunity and Affirmative Action employer.

To receive this document in alternate format, contact the Water Resources Program at (360) 407-6604 (Voice) or (360) 407-6006 (TDD).







AREA & CAPACITY CURVES

T. 20 N., R. 4 & 5 E. W. M.
PIERCE CO., WASHINGTON

SCALE IN FEET

LEGEND

NOTE: ALL ELEVATIONS ARE GIVEN IN FEET MEAN SEA-LEVEL (MSL), UNITED STATES COAST AND GEODETIC SURVEY DATUM.

12/83

PUGET SOUND POWER & LIGHT COMPANY
APPLICATION FOR LICENSE
WHITE RIVER PROJECT
FERC PROJECT NO. 2494

PROJECT BOUNDARY MAP

EXHIBIT G-10

ATTACHMENT A

169317

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

APPLICATION FOR PERMIT
TO CONSTRUCT A RESERVOIR AND TO STORE FOR BENEFICIAL USE WATERS OF THE STATE OF WASHINGTON

$10.00 MINIMUM STATUTORY FILING FEE REQUIRED WITH APPLICATION
(GRAY BOXES FOR OFFICE USE ONLY)

APPLICATION NUMBER	W.R.I.A.	COUNTY	PRIORITY DATE	TIME	ACCEPTED

APPLICANT'S NAME	TELEPHONE NUMBER
Puget Sound Energy Inc. Contact: Edward R. Schild	*425-462-3022*

DATE AND PLACE OF INCORPORATION, IF APPLICANT IS A CORPORATION
9/12/60 State of Washington Successor to Corporation Incorporated 7/8/12 State of Massachusetts

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
PO Box 97034 Mail Stop OBC-14N	*Bellevue*	*Washington*	*98009-9734*

1. SOURCE, USE AND CAPACITY OF RESERVOIR

NAME OF ~~PROPOSED~~ RESERVOIR
Lake Tapps Reservoir (existing)

NAME OF STREAM OR OTHER SOURCE FOR RESERVOIR SUPPLY	TRIBUTARY OF
White River	Puyallup River

USE(S) TO BE MADE OF IMPOUNDED WATER (IRRIGATION, POWER, FISH PROPAGATION, ETC.)
Public water supply and municipal water supply purposes including industrial and commercial purposes (see application S2-29921)

NUMBER OF ACRE FEET TO BE STORED AT MAXIMUM OPERATING LEVEL
46,700 acre feet

MONTHS OF YEAR DURING WHICH RESERVOIR IS TO BE FILLED
Year round – continuous

NUMBER OF ACRES TO BE IRRIGATED, IF USED FOR IRRIGATION
N/A

TYPE AND CAPACITY OF DIVERSION WORKS IF WATER IS TO BE WITHDRAWN
See Application S2-29921

2. LOCATION OF POINT OF DIVERSION OR WITHDRAWAL

ON ACCOMPANYING PLATS OR MAPS, ACCURATELY MARK AND IDENTIFY EACH POINT OF DIVERSION.
GIVE MEASURED DISTANCE AND BEARING, OR NORTH-SOUTH AND EAST-WEST DISTANCES FROM NEAREST SECTION CORNER.

COMPLETE EITHER A OR B	A	THE RESERVOIR IS TO BE LOCATED IN THE CHANNEL OF (NAME OF STREAM)
	B	THE RESERVOIR IS TO BE FILLED THROUGH A FEEDER CANAL (OR PIPELINE) HAVING ITS POINT OF DIVERSION (INTAKE) LOCATED AS FOLLOWS: *See Water Right Application S2-29921 Existing diversion facility under water right claim No. 180322 in the City of Buckley.*

DISTANCE AND BEARING TO SECTION CORNER
200 feet east and 200 feet south from NE ¼ Section corner of Section 2

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
NE ¼ Section	*2*	*19*	*6E*	Pierce

3. IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, COMPLETE THIS SECTION

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION

4. LOCATION OF IMPOUNDING STRUCTURE

IMPOUNDING STRUCTURE LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M
See Below			

LEGAL SUBDIVISION OF LANDS IN WHICH THE SUBMERGED AREA IS TO BE LOCATED
(THE OUTLINE OF THIS LAND IS TO BE SHOWN ON THE MAP TO ACCOMPANY THIS APPLICATION)

The fifteen saddle dikes surrounding Lake Tapps Reservoir are located on the attached maps from PSE's 1983 White River Project FERC Project No. 2494 License Application, Exhibits G5-G9. SEE ATTACHMENT A.

DO YOU OWN THIS PROPERTY?	IF NO, HAVE YOU SECURED FLOOD RIGHTS FOR LANDS TO BE INUNDATED?
☒ YES ☐ NO	☒ YES ☐ NO

5. CONSTRUCTION OF IMPOUNDING STRUCTURE

HEIGHT OF DAM (FEET)	LENGTH ON TOP (FEET)	LENGTH ON BOTTOM (FEET)	WIDTH ON TOP (FEET)
SEE LAKE TAPPS RESERVOIR EMBANKMENT CHARACTERISTICS-ATTACHMENT B.			

CONTINUED ON REVERSE SIDE

SLOPE OF FRONT OR WATER SIDE (NUMBER OF FEET HORIZONTAL TO ONE FOOT VERTICAL.)	SLOPE OF BACK SIDE (NUMBER OF FEET HORIZONTAL TO ONE FOOT VERTICAL.)
SEE ATTACHMENT A	*SEE ATTACHMENT A*
HEIGHT OF DAM ABOVE WATER LINE AT MAXIMUM FLOOD FLOW (FEET)	TYPE OF CONSTRUCTION OF DAM AND MATERIAL OF WHICH IS TO BE BUILT
See Below	*SEE PAGES II-2 AND II-3, ATTACHMENT B*

The structure is already constructed and operating under a vested water right for hydro-power. The height of the dikes above the water line is determined for of the dikes. The height of the dike crests above the water elevation at full pool (elevation 543.00 ft msld) is calculated by subtracting 543.00 from the elevations in the Lake Tapps Reservoir Embankment Characteristics. Attachment B. The dikes are subject to FERC's exclusive jurisdiction; dike safety is regulated by FERC pursuant to 18 CFR § 12.

LOCATION AND DIMENSIONS OF SPILLWAYS (STATE WHETHER OVER, AROUND OR THROUGH DAM)

There is no spillway at Lake Tapps Reservoir because it is an off channel storage project with controlled inlet.

NUMBER OF ACRES TO BE SUBMERGED BY RESERVOIR WHEN FULL	MAXIMUM DEPTH (FEET)	APPROXIMATE AVERAGE DEPTH (FEET)
2700 acres at normal full pool, at 543.00 ft msld	*91 ft.*	*25 ft at full pool*
ESTIMATED COST OF PROPOSED WORK – EXISTING RESERVOIR	CONSTRUCTION WILL BEGIN ON OR BEFORE (DATE)	
No additional costs are expected for the physical storage of the water for municipal supply	*N/A*	

CONSTRUCTION WILL BE COMPLETED ON OR BEFORE (DATE)

Reservoir is complete and currently used under a vested water right for hydropower purposes.

SIZE AND TYPE OF OUTLET STRUCTURE

The outlet structure is described in Sections 2.3, 2.4, and 2.5, pages A-7 through A-9 of the 1983 FERC License Application. See Attachment C.

6. LEGAL DESCRIPTION OF PROPERTY *ON WHICH WATER IS TO BE USED (IF DIFFERENT THAN ABOVE)*

COPY LEGAL DESCRIPTION FROM DEED: OR ATTACH COPY OF DEED. TAX STATEMENT DESCRIPTIONS NOT ACCEPTABLE.
ALSO OUTLINE THIS PROPERTY ON THE MAPS OR PLATS SUBMITTED WITH THIS APPLICATION

See Application S2-29921

YOU OWN THIS PROPERTY?	IF NO, GIVE NAME AND ADDRESS OF OWNER
☐ YES ☒ NO	*N/A*

This application is being filed with an application for appropriation of water from the White River, See application No. S2-29921, and an application for a secondary permit to divert water from Lake Tapps. Lake Tapps is an existing reservoir that is used for the applicant's current hydro electric power plant that operates under a vested water right. The storage of water in Lake Tapps Reservoir for public and municipal water supply purposes will be under a right that is in addition to and not in derogation of PSE's existing diversion and storage rights; this application is made with a full reservation of rights as to PSE's existing diversion and storage rights.

W. A. Gaines, Vice-President, Energy Supply Puget Sound Energy
APPLICANT

STATE OF WASHINGTON)
) ss.
DEPARTMENT OF ECOLOGY)

This is to certify that I have examined the foregoing application together with the accompanying maps and data and return the same for correction or completion as follows: _____

In order to retain its priority, this application must be returned to the Department of Ecology, with corrections, on or before _____, *20*_____

Witness my hand this _____ *day of* _____, *20*_____

Department of Ecology

APPLICATION

Lake Tapps Embankment Characteristics

Dike Number	Washington ID Number	Crest Elevation (ft)	Base Elevation (ft)	Embank-ment Height (ft)	Embank-ment Width (ft)	Crest Length (ft)
1	WA418	550.8	533.0	17.8	47	200
2A	WA419	545.5	534.0	11.5	25	350
2B	WA420	547.1	530.7	16.4	16	300
3	WA421	545.4	530.3	15.1	39	500
4	WA296	545.1	500.2	44.9	40	4000
5	WA422	545.6	521.5	24.1	55	500
6	WA423	545.6	519.5	26.1	51	500
7	WA435	546.2	540.0	6.2	52	20[illegible]
8	WA424	545.9	525.8	20.1	55	35[illegible]
9	WA425	545.8	530.6	15.2	55	200
10	WA426	546.0	526.6	19.4	48	700
11	WA427	545.4	522.8	22.6	53	1500
12	WA428	545.0	531.1	13.9	42	1250
13	WA429	547.0	539.3	7.7	20	350
14	WA430	547.2	524.0	23.2	74	1450
15	WA431	547.4	524.0	23.4	53	1500

ATTACHMENT B

Currently, Wolslegal and Dingle Basins are actively worked for sediment removal. Sediment removed from the basins is stockpiled adjacent to the canal. Stockpiled sediment at Wolslegal Basin is sold for commercial and residential uses.

The dike adjacent to Wolslegal and Wickersham Basins is approximately 2,500 feet long and is oriented roughly east-west. The crest of the dike is at elevation 668 to 673 fmsl with a width of 20 to 25 feet. The outboard slope of the dike is at an angle of approximately 35 degrees down to the toe which is at an elevation of approximately 635 to 645 fmsl. The inboard dike slope angles between 35 to 45 degrees down to the canal. The dike fill material is reported to be loose to very loose silty sand with some gravels and cobbles, and founded on alluvium and mudflow deposits (Woodward-Clyde 1995).

A concrete lined rock chute is also present at Wolslegal Basin. This chute consists of a 72-inch-diameter concrete intake conduit that discharges to a concrete spillway.

The dike adjacent to McHugh Basin is approximately 1,400 feet long and is oriented roughly southeasterly. The crest of the dike is at elevation 668 to 670 fmsl with a width of 35 to 45 feet. The outboard slope of the dike is at an angle of approximately 35 to 50 degrees. The inboard dike slope angles between 20 to 40 degrees down to the canal. The dike fill material is reported to be loose to very loose silty and clayey sands with gravels and cobbles, and founded on alluvium and mudflow deposits (Woodward-Clyde 1995).

Printz Basin

Printz Basin is located between Lake Tapps and the buried pipeline and was constructed as the final sedimentation basin in the flowline. Two dikes (Dikes 14 and 15) are located on the basin. The Printz Basin Dikes are comprised primarily of two dike fill materials. The upper dike fill is very loose to loose fine sand with silt to silty sand. The lower dike fill is primarily very loose to loose gravelly fine to coarse silty sand. Dike dimensions are listed on **Table II-1**.

Lake Tapps Dikes

Lake Tapps is impounded by a series of 13 dikes ranging in length from a few hundred to a few thousand feet and from a few feet in height up to 40 feet. The lake, once a series of smaller lakes (including Lake Tapps, Lake Kirtley, Crawford Lake, and Church Lake), was created by the construction of the dikes and the diversion of water from the White River into the reservoir. Lake Tapps is approximately 4.5 miles long and 2.5 miles wide. The lake has an area of 2,700 acres and a storage capacity of 46,700 acre-feet at normal maximum pool elevation (543 feet fmsl) (Puget Power 1983b). The main outlet of the

reservoir is through a 12-foot-diameter, concrete lined tunnel that leads to a forebay from which penstocks divert flow through the White River powerhouse.

As previously discussed, there are 13 dikes that impound the reservoir. The dikes contain approximately 600,000 cubic yards of material (Puget Power 1983a). Documentation developed during the construction of the dikes indicate that the topsoil was first stripped to the impervious strata (till) beneath each dike. Steam rollers were then used to prepare the foundation. Fill material, consisting of cemented gravels obtained from nearby excavations, was transported to the site by dump cars on railway trestles. Large scrapers and donkey engines were then used for placement of the fill.

The dikes were then finished using horse-drawn slip scrapers and wheelers. Initial design specifications required that the dikes have a minimum crest width of 40 feet, upstream slopes of 2.5 horizontal to 1 vertical, and downstream slopes of 2 horizontal to 1 vertical. Subsequent field investigations conducted by Ebasco Services Incorporated in 1983 (Puget Power 1993) and Squire Associates (**Appendix D**) have further defined the characteristics of each dike. The dike fill material typically consists of loose to medium dense silty sandy gravel with silt or clay. The dike dimensions are included in **Table II-1**.

B. SPILLWAY

The Diversion Dam is essentially a continuous spillway and is described in **Section IIA**. There are no other spillway structures on Lake Tapps. Discharge of flow from Lake Tapps if the powerhouse is out of service can be accomplished using four 16-inch penstock drain valves.

C. POWERHOUSE

The concrete powerhouse building is 85 feet wide, 225 feet long, and 55 feet high.

The initial two-unit development at the powerhouse was completed in 1911 and produced 25,000 kVA. The capacity was increased by 7,600 kVA in 1917 by rewinding the existing two units. A third 20,000-kVA unit was added in 1924. An increase of 5,000 kVA was accomplished in 1952 and 1956 by rewinding units 3 and 4, respectively, thus giving a total rated capacity of 25,000 kVA for each unit. The present rated generator capacity is 82,600 kVA. Each generator is directly connected to a single horizontal Francis-type turbine that operates 360 revolutions per minute (RPM) (Puget Power 1983b).

A conduit for collection of downstream migrants is provided and extends the entire length of the fish screens. Downstream migrants enter into the conduit and pass through a 2.0 foot diameter pipeline which discharges into a bypass channel that returns the fish to the White River. The downstream migrants enter the conduit, thus bypassing the Lake Tapps reservoir, and the powerhouse.

A gravity operated emergency gate at the fish screens is located in the south bank of the flowline. This gate is tripped automatically by differential water pressure if the screens become clogged by debris. In case of a trip, an alarm carried over telephone wires is sounded in the powerhouse.

2.2.5 Timber Lined Canal

The canal between Dingle and Printz Basins, the last basin in the flowline, is an 18,600-foot long canal of which 11,800 feet is timber lined. The cross section of the lined portion is rectangular with dimensions of 26 feet in width and 7 feet in depth.

2.2.6 Unlined Canal

From Printz Basin, an unlined canal approximately 2,600 feet long conveys flows to Lake Tapps. Typically, the unlined canal is 13 feet deep and 74 feet wide (measured across the top) and is parabolic in cross section. Flow depth and width vary with Lake Tapps elevations.

2.3 Existing Project Reservoir - Lake Tapps

Lake Tapps serves as the reservoir for the Project. It is approximately 4.5 miles long and 2.5 miles wide. Water diverted from the White River through the diversion system previously described flows into the lake at the south end. The main outlet from the lake is through the White River Powerplant. This outlet, located on the northwestern side of the lake, begins as a 12-foot-diameter, concrete-lined tunnel that leads to a forebay from which the penstocks extend. The only other outlet from the lake is a 2-foot-diameter pipe which is used to satisfy a 1 cfs downstream water right, but which can discharge 5 to 10 cfs if fully opened. The reservoir has no spillway.

Lake Tapps originally consisted of several natural lakes; Lake Tapps, Lake Kirtley, Crawford Lake, and Church Lake. By constructing earthen dikes totalling two and ½ half miles in length, the water level was raised 35 feet above the original elevation. This created the present reservoir, Lake Tapps, having a surface area of approximately 2,700 acres and an active storage capacity of approximately 46,700 acre-feet at normal maximum pool elevation 543 fmsl. The active storage is based on normal minimum pool elevation 515 fmsl.

2.4 Existing Tunnel

2.4.1 Tunnel Intake

The portal to the main tunnel at the outlet of Lake Tapps reservoir is screened with a vertical rack bar screen, 50 feet high and 45 feet wide. The bars are provided with motor operated cleaning devices divided into six separate bays with selective clutches. Debris is deposited on the tunnel intake deck and disposed of manually.

The tunnel entrance is provided with a Stoney gate, 12.5 feet high by 12 feet wide. A 24 inch square Stoney bypass gate is provided in the face of the main gate for filling tunnel. The main gate and the auxiliary gate are motor operated. Vertical air shafts lead from the gate house to the tunnel in back of the gate for venting during the closing of the main gate.

2.4.2 Tunnel Structure

The concrete lined tunnel, located on the northwest shore of the reservoir, is 12 feet in diameter and 2,842 feet in length. The invert elevation is 490 fmsl at the tunnel intake and drops to elevation 477 fmsl at the forebay well.

2.5 Existing Forebay and Penstock

The forebay well, 30 feet in diameter and 73 feet deep, is located at the brow of the hill above the powerhouse. A collection basin is provided at the top of the forebay well to accept surges at this point.

Three 96-inch diameter steel penstocks, each controlled by a 96-inch diameter standard Coffin sluice gate, direct the flow from the west side of the forebay well to the powerhouse below. Three of the penstocks are 2,135 feet long. Just below the forebay, two of the penstocks are tapped forming a supply to a fourth penstock, which is 1,791 feet long. Two 84-inch diameter butterfly valves control the flow into the fourth penstock. These valves and the sluice gates are motor operated either locally from the gatehouse or remotely from the powerhouse control panels.

2.6 Existing Powerhouse

The concrete powerhouse building is 85 feet wide, 225 feet long and 55 feet high.

The initial two unit development at the powerhouse was completed in 1911 and produced 25,000 kVA. The capacity was increased by 7,600 kVA in 1917 by rewinding the existing two units. A third 20,000 kVA unit was installed in 1918, and a fourth 20,000 kVA unit was added in 1924. An increase of 5,000 kVA was accomplished in 1952 and 1956 by rewinding units 3 and 4, respectively, thus giving a total rated capacity of 25,000 kVA for each unit. The present rated generator capacity is 82,600 kVA. Each generator is directly connected to a single horizontal Francis-type turbine that operates at 360 revolutions per minute (RPM).

2.6.1 Hydraulic Turbines

The powerhouse contains four reaction-type horizontal shaft turbines that operate at 360 RPM. Units 1 and 2 are rated at 18,000 HP and Units 3 and 4 are rated at 23,000 HP. Speed is controlled by four gate shaft type governors, the oil pressure being supplied by individual 50 gallon per minute (GPM) governor oil pumps. Each unit is provided with a 30 inch relief valve discharging water from the scroll cases into the tailrace in case of a sudden closing of the gates. Four 78 inch motor operated butterfly valves are located just upstream from the turbines. Two 8 inch bypass valves, one hydraulically operated and the other manually operated, are used to equalize the water pressure during the operation of each butterfly valve.

Large supplies of ground water are available from the post-glacial alluvium deposited in the lower White River valley. Yields of 500-1,500 gpm are typical for wells in the flood plain alluvium along the White River. In the Auburn area, exceedingly high yields in excess of 1,500 gpm can be obtained from wells tapping the deeper alluvium.

Although substantial ground water resources are present in the Project area, the actual utilization of this resource is confined primarily to the larger community systems due to economic considerations. The presence of the Osceola mud flow over much of the area generally necessitates well depths of 200 feet or more for reliable supplies. In addition, state policies generally favor development of areawide water supply systems in order to assure good water quality control. In the Lake Tapps area, this has resulted in a number of former individual wells being relegated to non-potable uses, such as lawn irrigation, with potable water supplies being imported from the larger adjoining water districts and communities, such as Bonney Lake. To the extent that the larger communities are dependent on ground water, they tap the more productive and deeper aquifers along the Lower White, Green or Puyallup valleys. For example, the cities of Sumner and Puyallup both utilize Salmon Springs 1 mile northeast of Sumner for municipal supply. The city of Auburn's utilization of Coal Creek Springs, with a yield of 4,200 gpm (Luzier, 1969), has eliminated what was formerly a highly productive salmon stream tributary to the lower White River. The city of Enumclaw utilizes Boise Creek Springs, 600-1,000 gpm, and Watercress Springs, 800 gpm (Luzier, 1969). In many instances, the larger communities are in part dependent on imported purveyed water supplies, either as a primary source or as backup.

The continued operation of the White River Project should not alter the viability of these existing ground water supplies. Indeed, insofar as leakage from Lake Tapps supports the discharge at nearby Salmon Springs, the continued diversion of water enhances existing ground water supplies.

2.4 Existing Water Uses and Project Water Rights

Instream uses of water in the vicinity of the Project include power production, fish and wildlife, recreation, aesthetics, and stock watering. Power production occurs at the Project's Dieringer power plant at the present time. Under this license additional power production will occur on the Project flow line as well. The assimilative capacity of

the surface waters of Boise Creek and the White River below the diversion dam is also used for the disposal of treated municipal and industrial waste discharges. In addition to the aforementioned instream uses, surface waters in the Project area are diverted and utilized for irrigation, stock watering, and domestic, municipal and industrial water supplies (WDOE, 1980).

For the White River Project, Puget holds a vested year-around water right claim to 2,000 cfs from the White River at the current point of diversion, within the NE 1/4 of the SW 1/4, Section 25, T. 20 N., R. 7 E. The right is based on claims dated April 17, 1895; April 27, 1901; and from the adjudicated Pacific Coast Power Company vs. Peter Quilquilion, dated April 13, 1910. Puget Power, or its predecessors, has, since 1911, consistently diverted this amount of water, subject to the availability, passing 30 cfs, which is required to be released downstream at all times under terms of the April 13, 1910, Pierce County Superior Court decree (No. 28120). This claim for riparian and water rights was acquired prior to the State of Washington Water Code of June 15, 1917. This water rights claim was registered in June, 1974, and was assigned a water right claim #160822 by the State of Washington Department of Ecology.

Other water rights held in connection with the Project include a registered water rights claim (#160812) to divert an average of 43 gpm from an unnamed spring in the NE 1/4 SW 1/4, Section 7, T. 20 N., R. 5 E. This water is used for domestic water for the power plant and three Company houses owned by Puget Power. The Company also claims rights for water storage in Lake Tapps in the amount of 46,700 acre-feet. The basis for this storage right is under claims dating to October 30, 1902; November 3, 1902; and August 3, 1909, and riparian and property rights acquired prior to the establishment of the state water code of June 15, 1917. Under this claim, a valved release of 1 cfs is provided from Lake Tapps to a former outlet stream to provide water for stock watering and irrigation.

Puget Power makes no other consumptive use of the Project waters; however, unregistered usage of the waters of Lake Tapps for lawn and garden watering is known to occur, and shallow wells along the 47 miles of lakeshore may draw more or less directly from the lake. Since much of the water so used is returned to the lake, no attempt has been made to quantify any consumptive water loss due to this usage. A water budget for Lake Tapps suggests that between 1963 and 1981, the average outflow from the reservoir at 949 cfs exceeded the measured canal inflow by 37 cfs. Thus,

Attachment B – Preliminary Permit

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

March 20, 2001

Ed Schild
Puget Sound Energy
PO Box 97034 OBC-14W
Bellevue WA 98009

Dear Mr. Schild:

Re: Preliminary Permit for Water Right Applications S2-29920, S2-29934, and R2-29935

On June 20 and September 15, 2000, Puget Sound Energy filed the above referenced water right applications. The intent of all three applications is to secure permits to appropriate public waters, subject to existing rights, from the White River and Lake Tapps for public and municipal water supply purposes including industrial and commercial uses. The water would be used in portions of Pierce, King and Snohomish counties. The diversion and storage of water would operate in conjunction with the applicant's current diversion and storage facilities that are used under the applicant's claimed rights to divert 2000 cfs from the White River and store water in Lake Tapps for its hydroelectric operation. The proposal includes provisions designed to mitigate for adverse impacts including, but not limited to, protection and restoration of instream flows in the White River.

Under the provisions of Chapter 173-510 WAC - Instream Resource Protection Program for the Puyallup-White River Basin, Water Resource Inventory Area 10, minimum flows have been established for the Puyallup River and the White River is closed to further consumptive withdrawals. The Department of Ecology's (Department) authority under RCW 90.54.020(3)(a) allows for approval of a further appropriation where, "it is clear that over-riding considerations of public interest will be served", even in cases of closure. RCW 90.03.290 authorizes the Department to issue a Preliminary Permit, for a period not to exceed three (3) years (subject to limited renewal) requiring the applicant to make needed surveys, investigations, and studies. Accordingly, this letter serves as a preliminary permit to collect and provide additional information.

This preliminary permit is subject to the following conditions:

1) The effective date of this preliminary permit is March 20, 2001. The preliminary permit is valid for one year and will expire on March 20, 2002, unless extended pursuant to RCW 90.03.290 prior to the date of expiration.

2) All studies and requested information will be made available to the Department, in report form, before this date. Per RCW 90.03.290, failure to comply with the conditions of the preliminary permit within the time period allowed will result in the preliminary permit and the applications on which it is based being automatically canceled and the applicant so notified.

In order to comply with this preliminary permit the applicant will need to provide the Department with the following information regarding the feasibility of the project. The applicant shall provide information

to the Department as it becomes available, and shall work with the appropriate Department staff on an ongoing basis to insure the information meets the conditions of the preliminary permit. As a result of this coordination, the Department may revise the information request. The Department reserves the discretion to determine whether a condition has been met if sufficient information is provided to make a determination under RCW 90.03.290 and 90.54.020. All analyses conducted must be accompanied by descriptions of methods, assumptions and inputs, confidence intervals, associated products (such as hydrographs), discussion sections, as well as conclusions.

1. Feasibility Information:

a) Infrastructure Analysis - The applicant must provide a report on the proposed diversion and conveyance system for the use of water requested in the application. This report should include engineering and construction diagrams, and proposed construction schedules for the water diversion structures, treatment system, and transmission lines including existing and new facilities.

b) Public Water Quality Analysis - The applicant must provide information about the construction and operation of the treatment plant. This should include an assessment as to whether the proposed treatment system would be able to address the specific water quality concerns associated with Lake Tapps water sufficient to meet the Washington State Department of Health (DOH) standard as set forth in WAC 246-290-130.

c) Description of Place of Use - The applicant must provide a map with defined boundaries that shows the proposed place of use, including a legal description of those boundaries. To the extent the proposed place of use is described and mapped as a large area that may be narrowed or limited in the future, the applicant must provide a proposal describing the manner and a schedule that would be a condition in any permit for narrowing place of use. The place of use must be consistent with the demonstration of future demand.

d) Demonstration of a Future Demand for this Water Within the Place of Use – The applicant must provide demand projections for specified purveyors or wholesale customers that are anticipated to receive water, and state the basis and provide evidence for such anticipated receipt of water. Such demand projections must take into account land use, population density, customer service type, and current rates of water use measured by utility metering data. Such analysis must also take into account at least one scenario which incorporates conservation standards based upon the best practices in the service areas and include demand side conservation measures (such as increasing block, conservation based pricing structures). The demonstration of future demand must also take into consideration other sources of water that are available to serve the same demand. Insofar as applicable, this information can be provided by summarizing current studies including but not limited to the most updated water system plans approved by DOH for the specific purveyors.

2. Puyallup River Basin Flow Analysis:

a) Flow Modeling for the White and Puyallup Rivers - The applicant must perform simulations for normal, dry and drought conditions using watershed and reach-specific models to simulate the hydrologic effects of the project using routing and reservoir management models that account for water availability and use. Prior to running these simulations the applicant shall confer with the

Department as to the normal, dry and drought conditions the applicant intends to model and obtain the Department's written approval of such conditions, which approval shall not be unreasonably withheld. Hydrologic effects shall be assessed using daily time-step increments throughout the year for projected daily flows at the USGS Buckley gauge (12098500), in the White River below the diversion dam, in the White River below Deringer, in the Lake Tapps tailrace at Deringer, and at the USGS lower Puyallup gauge (12101500). Such analyses shall require a flow modeling approach, where travel time and hydraulic routing are accounted for between gauging stations.

b) Modeling Considerations - The applicant's modeling must take into account the minimum instream flow levels and ramping rates set forth in the forthcoming NMFS Biological Opinion, the flows set forth in FERC Order 2494, the flows recommended by NMFS during that FERC proceeding and such flows as may be established under the Lake Tapps Task Force settlement (if any), and assuming all proposed water reserves or spills for mitigation. Delay in the completion of these flow recommendations by NMFS and/or the Task Force may be grounds for extension of or amendment to this component of the preliminary permit. The applicant must also take into account daily operations at Mud Mountain Dam and the applicant's Electron Powerplant. Additionally, the Department's Watershed Assessment for the Puyallup-White Watershed (OFTR 95-08) indicated a downward trend in low flows in the Puyallup River as of 1993. To the extent possible these effects should be accounted for in the model.

c) Description of the Proposed Reservoir Operations - The applicant shall produce a reservoir hydrologic budget for normal, dry and drought conditions, which considers the projected flows, the minimum instream flows and ramping rates discussed in the previous section, leakage, and evaporation. Using these results, the applicant shall then quantify the volume of reservoir water that would be available for public water supply, mitigation flows in the lower White and Puyallup rivers, hydropower purposes, and obligations set forth in any Lake Tapps homeowner's agreement. To accomplish this task the applicant shall produce a preliminary reservoir operations management plan which shall define how the reservoir would be operated during various hydrologic (normal, dry and drought) conditions, particularly with respect to prioritization of reservoir water use for public water supply, mitigation flows in the lower Puyallup, and hydropower purposes. Such analyses shall include an analysis of the timing and quantity of waters that would be diverted from the White River both for public water supply under the new water supply project and for use in the hydroelectric facility under the existing water right claim.

d) Predicted River Conditions with the Water Supply Project - Incorporating all the above, the applicant shall then construct predicted hydrographs with the effect of the water supply project on a daily, weekly and monthly basis for all above mentioned White River and Puyallup River locations during normal, dry and drought conditions. The applicant shall then conduct an analysis of current flow conditions, utilizing USGS flow records when available, and compare these to projected, post project flows. In both instances such analyses shall predict how often and with what exceedance probability minimum flows will not be met in the lower Puyallup River during normal, dry and drought conditions.

3. Specific Environmental Concerns:

a) Augmentation/Instream Flows - The applicant's applications include a proposal to condition diversions based upon FERC approved instream flows in the White River, to use water stored in

Lake Tapps to augment low flows in the lower Puyallup River, and to provide water for basin needs. Accordingly, the applicant must clarify when such water would be made available to augment and the anticipated timing of releases from the reservoir.

b) Effect on Water Quality - The applicant must provide Ecology with an analysis of how water quality (under Chapter 173-201A-030 WAC) in the lower White and Puyallup rivers would be affected by the proposed water supply project. Specifically, the applicant must analyze what effects changes in flow regimes would have on the diurnal pH cycle, nutrient concentrations ammonia-N, nitrate+nitrite-N, total nitrogen, total phosphorus, and soluble reactive phosphorus, dissolved oxygen levels, 5-day BOD, water temperatures, fecal coliform bacteria, and residual chlorine in normal, dry, and drought years.

The applicant must describe how changes in freshwater releases from the reservoir will affect bed sediment movement as it relates to the water column stratification in the lower Puyallup River in August and September.

The water quality analysis must address the effects of temperature, oxygen and oxygen demand levels of water leaving the reservoir on the lower White and Puyallup rivers. Accordingly, data must be collected from the tailrace during August, September and October of 2001 to provide a basis for prediction of the effects of discharges of reservoir water on both temperature and dissolved oxygen levels in the rivers. Tailrace monitoring must include continuous monitoring for dissolved oxygen, pH, conductivity and temperature, and weekly samples for Total Organic Carbon, Biochemical Oxygen Demand, ammonia-N, nitrate+nitrite-N, total nitrogen, total phosphorus, soluble reactive phosphorus, fecal coliform bacteria, and chlorophyll-a. If sampling in the tailrace indicates potential water quality concerns further studies of reservoir water may be necessary.

Changes in the amount of water discharged on a daily basis to the lower White River may affect dilution factors associated with mixing zones for downstream NPDES permit holders. The applicant must analyze what the effects of the proposed water supply project will have on effluent pollutant limits for downstream NPDES permit holders.

c) Effect of Water Supply Project on Fish Habitat - The applicant shall evaluate how the proposed water supply project would affect the ecosystem and fishery downstream of the project, particularly in the lower Puyallup River/estuary. Such analyses shall build upon the flow modeling described previously, and shall evaluate such things as ramping rates, changes to sediment transport and channel geometry, and influences on water quality, as these relate to fish. This analysis shall also examine the probabilities of increased mortality, stranding, susceptibility to predation, as well as altered fish migration, potential loss in communication with off-channel wetland habitat, reductions in suitable habitat, changes in food sources, and disruption of life cycle needs (spawning, recruitment, migration). Prior to undertaking this analysis, the applicant shall confer with the Department and obtain its written approval of the scope and methods of analysis and data collection proposed, which approval shall not be unreasonably withheld. The above analyses shall address both the effects of augmentation of lower White/Puyallup river summer flows and the diversion/changes in storage from Lake Tapps as they relate to consumptive use. The Puyallup Tribe has been working with Pierce County and others in implementing several restoration projects involving inundation of side channels and oxbows in the lower Puyallup River. Correspondingly, any habitat alterations that would result from the

applicant's water supply project need to be considered with respect to current and future habitat changes associated with such salmon restoration efforts.

If it is anticipated that providing water under the proposed water supply project would have any offsite (out of watershed) effects on fish, these too should be identified and evaluated. Such considerations may include surface water sources used by other purveyors, which are or will be subject to Endangered Species Act restrictions and would experience higher flows as a result of the applicant providing an alternate source of water. Additionally, if environmental benefits are anticipated as a result of the water supply project not described elsewhere, such as maintenance of wildlife lands associated with Lake Tapps itself, these should be identified and analyzed.

d) Effects on Ground Water - The applicant must analyze the effects that changes in White River flows and Lake Tapps storage would have on groundwater recharge and the regional ground water supply. Such work shall include a characterization of groundwater and surface water interactions, and discharge to the Puyallup and White rivers and their tributaries. This work shall also include an analysis of any potentially affected surface water and ground water rights, as well as effects on Coal Creek Springs, flows in the Green River, and ground water underlying the Auburn valley and the Muckleshoot Tribe and Puyallup Tribe Indian reservations. This analysis may be done based upon existing data to the extent that it is sufficient for these purposes.

It is the responsibility of the applicant to ensure that all other needed permits and approvals for this project have been identified and are being pursued. All expenses, liabilities and risks incurred as a result of providing the information requested under this preliminary permit shall be borne by Puget Sound Energy. In issuing this preliminary permit, the Department in no way guarantees or implies that a formal permit will be granted to divert water from the White River if the above information is provided. The Department reserves the right to request additional information from the applicant as needs arise.

Issuance of this preliminary permit is an appealable decision. Your appeal must be filed with the Pollution Control Hearings Board, PO Box 40903, Olympia, WA 98504-0903 within thirty (30) days of the date this decision was mailed. At the same time your appeal must be sent to the Department of Ecology c/o Appeal Coordinator, PO Box 47600, Olympia, WA 98504-7600. Your appeal alone will not stay the effectiveness of the Order. These procedures are consistent with Chapter 43.21B RCW.

Sincerely,

J. Mike Harris
Water Resources Supervisor
Southwest Regional Office

JMH:TC:th

Cc: Bob James, WA State Department of Health
Bill Sullivan, Puyallup Indian Tribe
Carla Carlson, Muckleshoot Indian Tribe
Mayor Chuck Booth, City of Auburn

PERKINS COIE LLP

1110 CAPITOL WAY SOUTH, SUITE 405 · OLYMPIA, WASHINGTON 98501-2251
TELEPHONE: 360 956-3300 · FACSIMILE: 360 956-1208

September 12, 2000

Mr. J. Mike Harris
Department of Ecology
S.W. Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Re: Water Right Applications for the Lake Tapps Reservoir

Dear Mike:

Enclosed please find two additional applications for the proposal described in Application No. S2-29921. I am also enclosing two documents that provide necessary information for processing the applications. These applications and documents supplement the information necessary for the Department to commence review of Puget Sound Energy's proposal to divert water from the reservoir for public water supply purposes.

The enclosed application for a reservoir permit is to allow for an additional right to store water in Lake Tapps for the water diverted for municipal/public water supply purposes under Application No. S2-29921. This right would be in addition to and not in derogation of PSE's existing storage right. As proposed, the additional use of the reservoir for municipal supply will not increase the maximum storage level (545 msl). As with the Water Right Application No. S2-29921, this application is made with a full reservation of rights as to PSE's existing diversion and storage rights.

The application for the secondary permit is filed to authorize the diversion of water from Lake Tapps reservoir for delivery to a treatment facility for use by the contracted purveyors of the water. PSE is currently in discussions with several purveyors that would be expected to be purveying the water subject to the terms of the permits.

The enclosed documents include a memorandum report by HDR Engineering Inc. that summarizes the water demand for municipal/public water supply in King and Pierce Counties. This report substantiates the need for and the expected beneficial

use of the water within the area described in the application. Attached to this report are preliminary figures and engineering plans depicting options for the diversion, processing, and delivery of the water. The second report is the Lake Tapps Reservoir Water Management Plan, which describes how the diversion and storage of water will be managed to enhance instream flows in the White and Puyallup Rivers.

Please do not hesitate to call if you have any questions.

Very truly yours,

for Tom McDonald

TM:no

Enclosures

cc: Sue Mauermann
Mark Quehrn
Ed Schild
Jill Walsh

PETITION FOR ADOPTION, AMENDMENT, OR REPEAL OF A STATE ADMINISTRATIVE RULE (RCW 34.05.330)

Petitioner's Name (please print) Puget Sound Energy Telephone (425) 462-3022

Address PO Box City State Zip Code

P.O. Box 97034 Mail Stop OBC-14N Bellevue WA 98009-9734

Agency Responsible for Administering the Rule, If Known:

The Department of Ecology

Check all that apply below and explain on the back of this form with examples. Whenever possible, attach suggested language. You may attach other pages, if needed.

☐ **1. NEW: I am requesting that a new WAC be developed.**

I believe that a new rule should be developed.

- ☐ The subject of this rule is:
- ☐ The rule will affect the following people:
- ☐ The need for this rule is:

☒ **2. AMEND: I am requesting that a change to existing *WAC 173-510.***

☐ **3. REPEAL: I am requesting existing WAC_____ be removed.**

I believe this rule should be changed or repealed because (check one or more):

- ☐ It does not do what it was intended to do.
- ☐ It imposes unreasonable costs.
- ☐ It is applied differently to public and private parties.
- ☐ It is not clear.
- ☐ It is no longer needed.
- ☐ It is not authorized. The agency has no authority to make this rule.
- ☐ It conflicts with another federal, state, or local law or rule. Please list number of the conflicting law or rule, if know:

- ☐ It duplicates another federal, state or local law or rule. Please list number of the duplicate law or rule, if known:

- ☒ Other (please explain): *The current rule closing streams from further appropriations unnecessarily restricts Ecology' authority to consider water right applications for projects that will meet the intent of stream "closures" and will otherwise be in the public interest.* ***See Attachment A.***

Petitioner's Signature: [signature] Date: 9/14/2000

Attachment A

The Petition to amend WAC 173.510 is being filed to allow the Lake Tapps reservoir to be developed as a source of municipal and public water supply. The rule change is necessary to allow an application for a much needed regional resource of water to be considered by the Washington State Department of Ecology ("Ecology"). This petition is being filed to reflect the significant changes that are occurring in the White River Basin and is supported and offered pursuant to the specific language of the existing rule that provides:

> The Department of Ecology shall initiate a review of the rules established in this chapter whenever new information, changing conditions, or statutory modifications make it necessary to consider revisions. WAC 173-510-100.

In 1980, Ecology adopted the Puyallup River Basin Instream Flow Management Plan that provided for the allocation and management of water in the Puyallup River Basin. WAC 173-510. The Puyallup River Basin has been designated Water Resource Inventory Area (WRIA) 10. WAC 173-500. Based on the information at the time the rule was adopted Ecology determined minimum levels of instream flows for the rivers and streams in WRIA 10. These flows were established by Ecology to protect, as it saw appropriate, these instream flow values.

Having decided that many of the streams were experiencing such low flows, Ecology decided to simply "close" these streams from further appropriations. Specifically, the rule states:

> The Department, having determined that further consumptive or appropriations would harmfully impact instream values, closes the following streams and lakes in WRIA 10 to further consumptive appropriations. WAC 173-510-040(3).

The White River is "closed" under the rule.

Since the early 1900's PSE has exercised a pre-code water right to divert up to 2000 cubic feet per second (cfs) of water from the White River, store water in the Lake Tapps reservoir, and eventually run the water through a power house, and return the water back into the White River. Between the point of diversion and the point of discharge back to the White River, there exists a "by-pass" reach of the river of over 20 miles. It has been Ecology's position that this by-pass reach has insufficient flow to allow further appropriation.

A FERC license was issued in December of 1997 for the Project, a license which PSE has not accepted. Among other things, the license would require PSE to adjust its diversion, and provide more flows in the by-pass reach. These flows will, according to

federal and state resource agencies, enhance the fishery resource and the instream flow values. This change also creates circumstances justifying consideration of amending the rule related to the White River.

The petition does not however request that the closure on the White River be repealed, although this is an option. Rather, this petition requests a rule change that would allow for Ecology to consider water right applications for the use of water in "closed basins" if the applicant can support the application with evidence that the proposed project would provide substantial environmental enhancement to the Basin or support a comprehensive regional public water supply, and under no circumstances would cause additional impairment to the river during times that the flows are currently known not to meet the minimum flows established for the Puyallup River. This rule amendment will therefore recognize the purpose of the rules and meet the intent of a "closure" in the Puyallup River Basin, and will also provide Ecology with the flexibility to consider applications that, while not causing additional impairment to the instream flows during low flow times, will provide enhancement of the environmental resources or support a regional public water supply. Processing applications under this standard is consistent with the Basin planning adopted by the legislature in Chapter 90.54 RCW. See RCW 90.54.020(2), (3), (5) and (7).

The petitioner's suggest the following amendment to Chapter 173-510.

Insert at WAC 173-510-040 the following:

> **(4) Notwithstanding the closures set forth in subsections (2) and (3) of this section, the department shall process applications for the appropriation of water from surface waters and ground waters affected by such closures if the applications propose a project and use of water that: (a) will not cause any additional impact to the instream flows established for the Puyallup River at a time when the Puyallup River is not meeting the minimum flows set forth in subsection (1) of this section; and (b) will substantially enhance the quality of the natural environment or will result in providing public water supplies to meet the general needs of the public for regional areas.**

We believe that the standards set forth in the proposed amendment are consistent with the criteria that Ecology has included in current rules that allow for expediting applications. See WAC 173-152 (the Hillis Rule) and WAC 173-532 (the Walla Walla Rule). Both of these rules have allowed Ecology the flexibility to prioritize the processing of competing applications if the project would "substantially enhance or protect the quality of the natural environment" or "would result in providing public water supplies to meet the general needs of the public for regional areas." See WAC 173-152-050(3).

Washington State Department of ECOLOGY

State of Washington
Application for a Water Right

For Ecology Use
Fee Paid _____
Date _____

Please follow the attached instructions to avoid unnecessary delays.

SECONDARY PERMIT APPLICATION FOR RESERVOIR PERMIT APPLICATION FOR LAKE TAPPS FOR APPROPRIATION FROM WHITE RIVER—SEE APPLICATION NO. S2-29921

Section 1. APPLICANT – PERSON, ORGANIZATION, OR WATER SYSTEM

Name *Puget Sound Energy, Inc. : Edward Schild* Home Tel: (_____)_____ - _____

Mailing Address *PO Box 97034 MS: OBC-14N* Work Tel: *(425) 462-3022*

City *Bellevue* State *WA* ZiP+4 *98009 + 9734* FAX: *(425) 462-3175*

Section 2. CONTACT – PERSON TO CALL ABOUT THE APPLICATION

☒ Same as above

Name *Edward R. Schild* Home Tel: (_____)_____ - _____

Mailing Address *same as above* Work Tel: (_____)_____ - *same as above*

City _____ State _____ ZiP+4 _____+_____ FAX:(_____)_____ - _____

Relationship to applicant _____

Section 3. STATEMENT OF INTENT

The applicant requests a permit to use not more than *150 cfs* (☐ gallons per minute or ☒ cubic feet per second) from a ☒ surface water source or ☐ ground water source (check only one) for the purpose(s) of *municipal and public water supply*. **ATTACH A "LEGAL" DESCRIPTION OF THE PLACE OF USE. (See instructions.)** *NOTE: a tax parcel number or a plat number is not sufficient*

Estimate a maximum annual quantity to be used in acre-foot per year: *72,400*

☐ Check if the water use is proposed for a short-term project. Indicate the period of time that the water will be needed:

From _____/_____/_____ to _____/_____/_____

Section 4. WATER SOURCE

IF SURFACE WATER	IF GROUNDWATER
Lake Tapps Reservoir Number of diversions: *one*	A permit is desired for _____ well(s).
Source flows into (name of body of water): *White River*	Size and depth of well(s):

LOCATION

For location of diversion from Lake Tapps Reservoir, see Application S2-29921 and see Attachment A hereto

1/4 of	1/4 of	Section	Township	Range (E/W)	County	If location of source is platted, complete below:		
						Lot	Block	Subdivision
NW	*NW*	*7*	*20*	*5E*	Pierce			

For Ecology Use Date Received: _____ Priority Date: _____

SEPA: Exempt/Not Exempt FERC License # _____ Dept. of Health # _____

Date Accepted As Complete _____ By _____ Date Returned _____ By _____ WRIA: _____

APPLICATION

Appl. No.: _____

Section 8. WATER STORAGE

Will you be using a dam, dike, or other structure to retain or store water? ☒ YES ☐ NO

NOTE: If you will be storing 10 acre-feet or more of water and/or if the water depth will be 10 feet or more at the deepest point; and some portion of the storage will be above grade, you must also apply for a reservoir permit. You can get a reservoir permit application from the Department of Ecology.

This application is being filed with a reservoir permit application and an application to appropriate from the White River, Application No. S2-29921.

Section 9. DRIVING DIRECTIONS

Provide detailed driving instructions to the project site:

Because of the size and scope of the project, specific driving instructions are not feasible. Please contact Mr. Schild's office for instructions to the particular location you wish to visit.

Section 10. REQUIRED MAP

A. *See Attachment A of Application for storage permit.*

Section 11. PROPERTY OWNERSHIP

A. Does the applicant own the land on which the water will be used? ☐ YES ☒ NO

If no, explain the applicant's interest in the place of use and provide the name(s) and address(es) of the owner(s):

See Application S2-29921 and supporting documents.

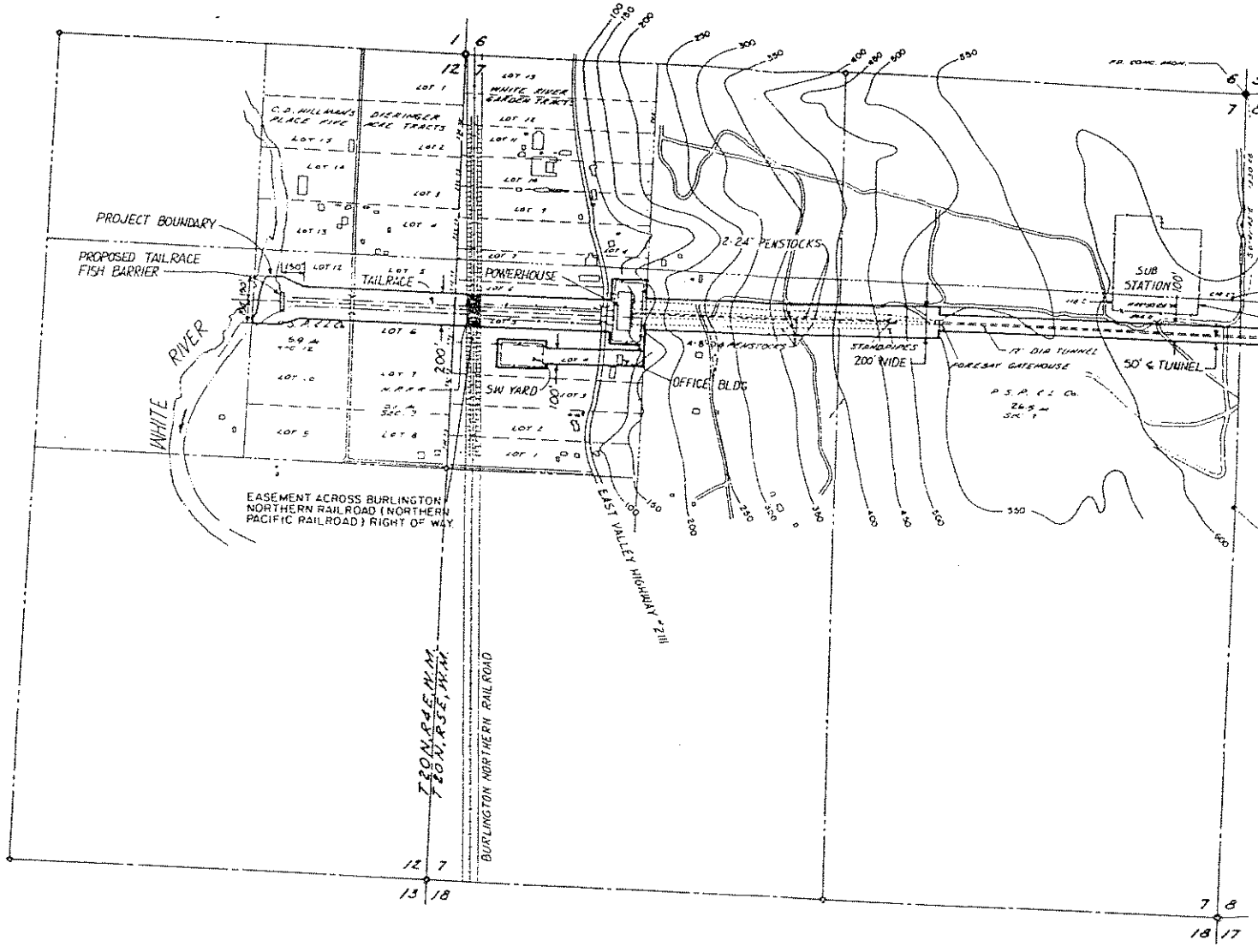
B. Does the applicant own the land on which the water source is located: ☒ YES ☐ NO

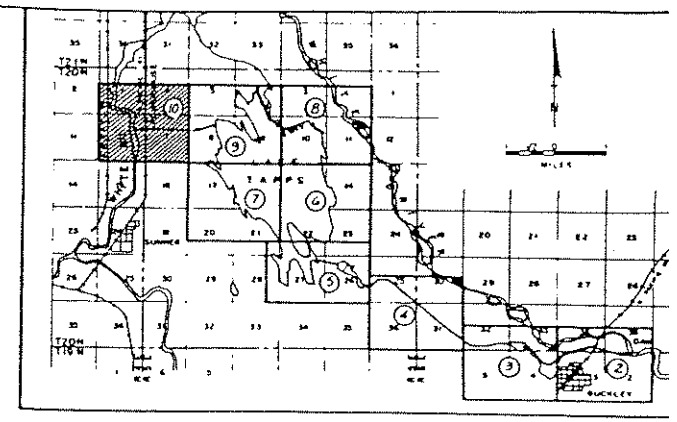
If no, submit a copy of agreement:

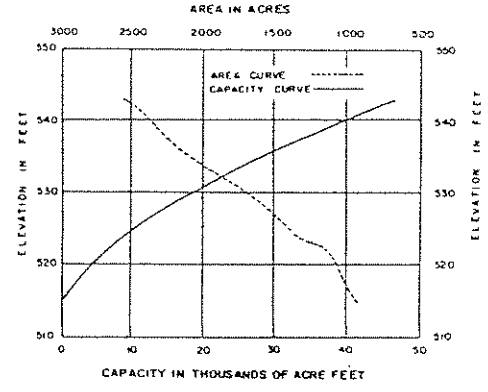
I certify that the information above is true and accurate to the best of my knowledge. I understand that in order to process my application, I grant staff from the Department of Ecology access to the site for inspection and monitoring purposes. Even though I may have been assisted in the preparation of the above application by the employees of the Department of Ecology, all responsibility for the accuracy of the information rests with me.

W. A. Gaines, Vice-President, Energy Supply, Puget Sound Energy for Applicant — Date: 9/14/2000

Landowner for place of use (if same as applicant, write "same") — Date







AREA & CAPACITY CURVES

T.20N., R.4 & 5E.W.M.
PIERCE CO., WASHINGTON

SCALE IN FEET

LEGEND
TOWNSHIP LINES
SECTION LINES
1/4 SECTION LINES
1/16 SECTION LINES
PROJECT BOUNDARY

VERTICAL DATUM U.S.C.S.

NOTE: ALL ELEVATIONS ARE GIVEN IN FEET MEAN SEA-LEVEL (FMSL), UNITED STATES COAST AND GEODETIC SURVEY DATUM.

12/83

PUGET SOUND POWER & LIGHT COMPANY
APPLICATION FOR LICENSE
WHITE RIVER PROJECT
FERC PROJECT NO. 2494

PROJECT BOUNDARY MAP

EXHIBT G-10

ATTACHMENT A

16931?

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

APPLICATION FOR PERMIT
TO CONSTRUCT A RESERVOIR AND TO STORE FOR BENEFICIAL USE WATERS OF THE STATE OF WASHINGTON

$10.00 MINIMUM STATUTORY FILING FEE REQUIRED WITH APPLICATION

(GRAY BOXES FOR OFFICE USE ONLY)

APPLICATION NUMBER	W.R.I.A.	COUNTY	PRIORITY DATE	TIME	ACCEPTED

APPLICANT'S NAME	TELEPHONE NUMBER
Puget Sound Energy Inc. Contact: Edward R. Schild	*425-462-3022*

DATE AND PLACE OF INCORPORATION, IF APPLICANT IS A CORPORATION			
9/12/60 State of Washington Successor to Corporation Incorporated 7/8/12 State of Massachusetts			
ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
PO Box 97034 Mail Stop OBC-14N	*Bellevue*	*Washington*	*98009-9734*

1. **SOURCE, USE AND CAPACITY OF RESERVOIR**

NAME OF ~~PROPOSED~~ RESERVOIR

Lake Tapps Reservoir (existing)

NAME OF STREAM OR OTHER SOURCE FOR RESERVOIR SUPPLY	TRIBUTARY OF
White River	Puyallup River

USE(S) TO BE MADE OF IMPOUNDED WATER (IRRIGATION, POWER, FISH PROPAGATION, ETC.)

Public water supply and municipal water supply purposes including industrial and commercial purposes (see application S2-29921)

NUMBER OF ACRE FEET TO BE STORED AT MAXIMUM OPERATING LEVEL

46,700 acre feet

MONTHS OF YEAR DURING WHICH RESERVOIR IS TO BE FILLED

Year round – continuous

NUMBER OF ACRES TO BE IRRIGATED, IF USED FOR IRRIGATION

N/A

TYPE AND CAPACITY OF DIVERSION WORKS IF WATER IS TO BE WITHDRAWN

See Application S2-29921

2. **LOCATION OF POINT OF DIVERSION OR WITHDRAWAL**

ON ACCOMPANYING PLATS OR MAPS, ACCURATELY MARK AND IDENTIFY EACH POINT OF DIVERSION.
GIVE MEASURED DISTANCE AND BEARING, OR NORTH-SOUTH AND EAST-WEST DISTANCES FROM NEAREST SECTION CORNER.

COMPLETE EITHER A OR B	A	THE RESERVOIR IS TO BE LOCATED IN THE CHANNEL OF (NAME OF STREAM)
	B	THE RESERVOIR IS TO BE FILLED THROUGH A FEEDER CANAL (OR PIPELINE) HAVING ITS POINT OF DIVERSION (INTAKE) LOCATED AS FOLLOWS: *See Water Right Application S2-29921 Existing diversion facility under water right claim No. 160322 in the City of Buckley.*

DISTANCE AND BEARING TO SECTION CORNER

200 feet east and 200 feet south from NE ¼ Section corner of Section 2

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
NE ¼ Section	*2*	*19*	*6E*	Pierce

3. **IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, COMPLETE THIS SECTION**

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION

4. **LOCATION OF IMPOUNDING STRUCTURE**

IMPOUNDING STRUCTURE LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.
See Below			

LEGAL SUBDIVISION OF LANDS IN WHICH THE SUBMERGED AREA IS TO BE LOCATED
(THE OUTLINE OF THIS LAND IS TO BE SHOWN ON THE MAP TO ACCOMPANY THIS APPLICATION)

The fifteen saddle dikes surrounding Lake Tapps Reservoir are located on the attached maps from PSE's 1983 White River Project FERC Project No. 2494 License Application, Exhibits G5-G9. SEE ATTACHMENT A.

DO YOU OWN THIS PROPERTY?	IF NO, HAVE YOU SECURED FLOOD RIGHTS FOR LANDS TO BE INUNDATED?
☒ YES ☐ NO	☒ YES ☐ NO

5. **CONSTRUCTION OF IMPOUNDING STRUCTURE**

HEIGHT OF DAM (FEET)	LENGTH ON TOP (FEET)	LENGTH ON BOTTOM (FEET)	WIDTH ON TOP (FEET)
SEE LAKE TAPPS RESERVOIR EMBANKMENT CHARACTERISTICS-ATTACHMENT B.			

CONTINUED ON REVERSE SIDE

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

APPLICATION FOR PERMIT

TO CONSTRUCT A RESERVOIR AND TO STORE FOR BENEFICIAL USE WATERS OF THE STATE OF WASHINGTON

$10.00 MINIMUM STATUTORY FILING FEE REQUIRED WITH APPLICATION

(GRAY BOXES FOR OFFICE USE ONLY)

JMBER	W.R.I.A.	COUNTY	PRIORITY DATE	TIME	ACCEPTED

AME	TELEPHONE NUMBER
rgy Inc. Contact: Edward R. Schild	*425-462-3022*

E OF INCORPORATION, IF APPLICANT IS A CORPORATION	
Washington Successor to Corporation Incorporated 7/8/12 State	
s	

ET)	(CITY)	(STATE)	(ZIP CODE)
Mail Stop OBC-14N	*Bellevue*	*Washington*	*98009-9734*

SOURCE, USE AND CAPACITY OF RESERVOIR

OSED RESERVOIR

rvoir (existing)

AM OR OTHER SOURCE FOR RESERVOIR SUPPLY

TRIBUTARY OF

Puyallup River

ADE OF IMPOUNDED WATER (IRRIGATION, POWER, FISH PROPAGATION, ETC.)

ply and municipal water supply purposes including industrial and commercial purposes (see application S2-29921)

RE FEET TO BE STORED AT MAXIMUM OPERATING LEVEL

AR DURING WHICH RESERVOIR IS TO BE FILLED

ntinuous

RES TO BE IRRIGATED, IF USED FOR IRRIGATION

CITY OF DIVERSION WORKS IF WATER IS TO BE WITHDRAWN

S2-29921

LOCATION OF POINT OF DIVERSION OR WITHDRAWAL

ON ACCOMPANYING PLATS OR MAPS, ACCURATELY MARK AND IDENTIFY EACH POINT OF DIVERSION.
E MEASURED DISTANCE AND BEARING, OR NORTH-SOUTH AND EAST-WEST DISTANCES FROM NEAREST SECTION CORNER.

A	THE RESERVOIR IS TO BE LOCATED IN THE CHANNEL OF (NAME OF STREAM)
B	THE RESERVOIR IS TO BE FILLED THROUGH A FEEDER CANAL (OR PIPELINE) HAVING ITS POINT OF DIVERSION (INTAKE) LOCATED AS FOLLOWS: *See Water Right Application S2-29921 Existing diversion facility under water right claim No. 160322 in the City of Buckley.*

BEARING TO SECTION CORNER

d 200 feet south from NE ¼ Section corner of Section 2

N (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
	2	*19*	*6E*	Pierce

IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, COMPLETE THIS SECTION

	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION

LOCATION OF IMPOUNDING STRUCTURE

RUCTURE LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.

LEGAL SUBDIVISION OF LANDS IN WHICH THE SUBMERGED AREA IS TO BE LOCATED
(THE OUTLINE OF THIS LAND IS TO BE SHOWN ON THE MAP TO ACCOMPANY THIS APPLICATION)

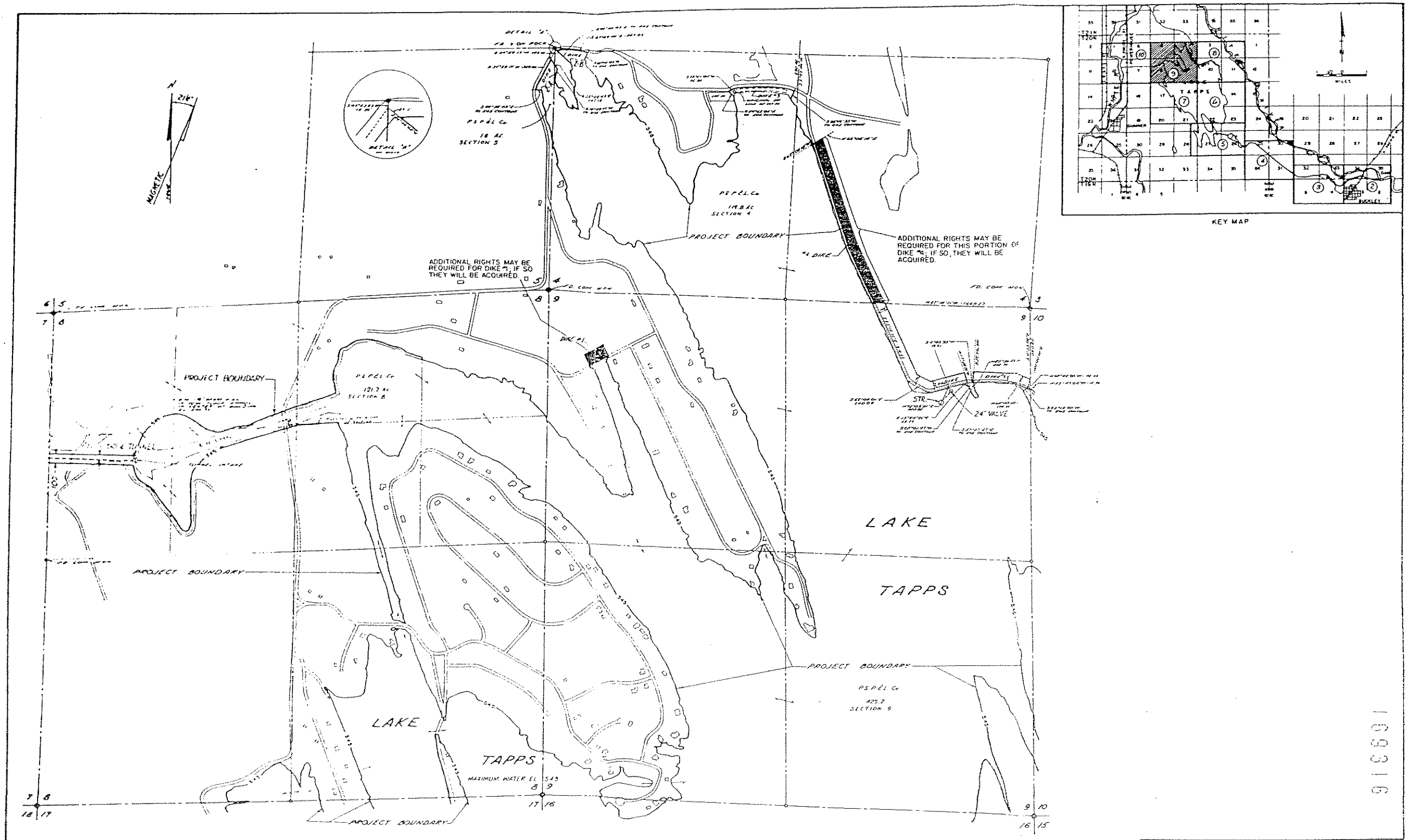
e dikes surrounding Lake Tapps Reservoir are located on the attached maps from PSE's 1983 White River Project FERC Project No. 2494
ion, Exhibits G5-G9. SEE ATTACHMENT A.

HIS PROPERTY?	IF NO, HAVE YOU SECURED FLOOD RIGHTS FOR LANDS TO BE INUNDATED?
YES ☐ NO	☒ YES ☐ NO

CONSTRUCTION OF IMPOUNDING STRUCTURE

(FEET)	LENGTH ON TOP (FEET)	LENGTH ON BOTTOM (FEET)	WIDTH ON TOP (FEET)
CS-			

CONTINUED ON REVERSE SIDE



T. 20N., R. 5 E., W.M.
PIERCE CO., WASHINGTON

SCALE IN FEET

LEGEND

TOWNSHIP LINES
SECTION LINES
1/4 SECTION LINES
1/16 SECTION LINES
PROJECT BOUNDARY

VERTICAL DATUM: USGS

NOTE: ALL ELEVATIONS ARE GIVEN IN FEET MEAN SEA-LEVEL (FMSL), UNITED STATES COAST AND GEODETIC SURVEY DATUM.

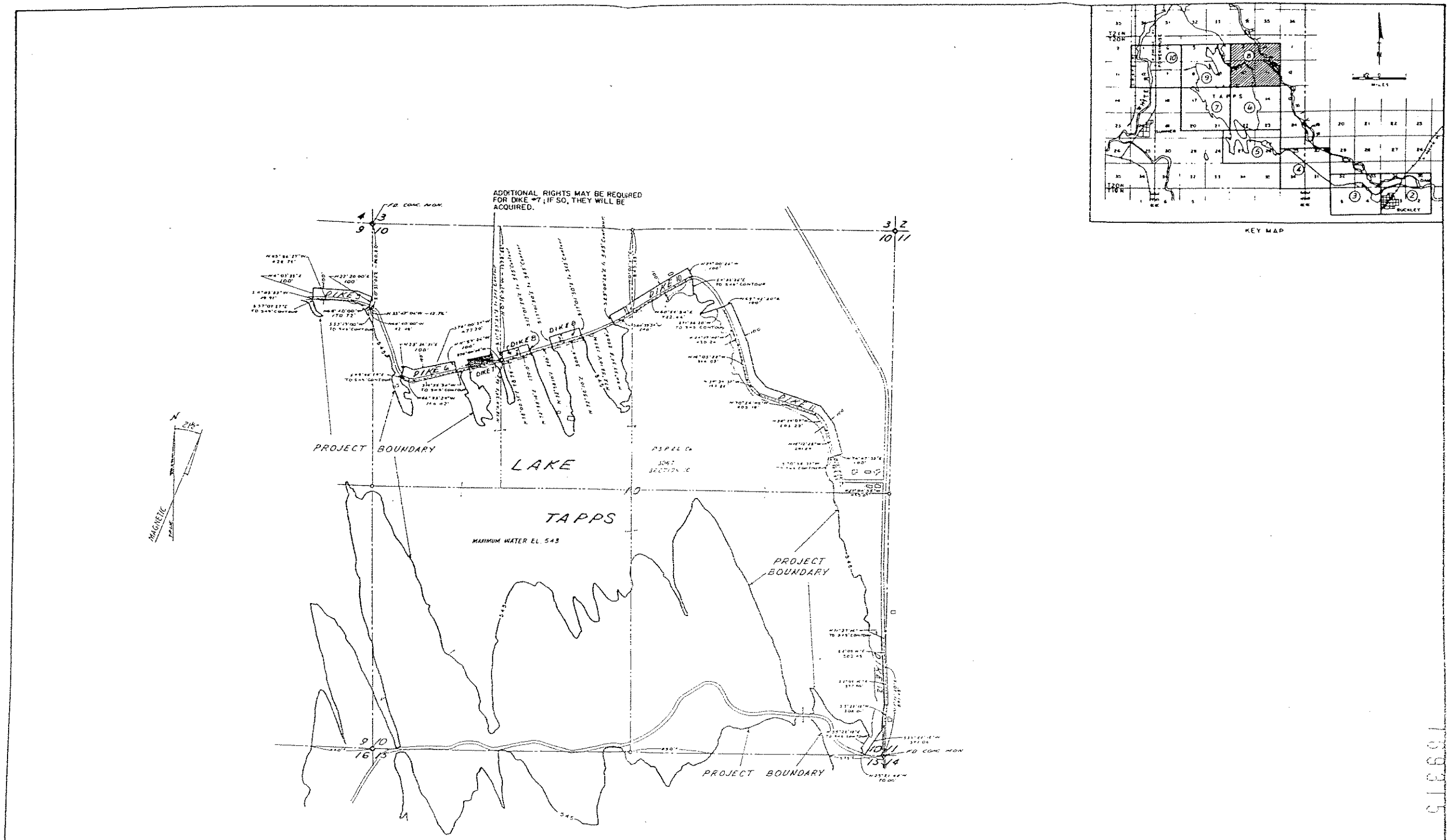
PUGET SOUND POWER & LIGHT COMPANY
APPLICATION FOR LICENSE
WHITE RIVER PROJECT
FERC PROJECT NO. 2494

PROJECT BOUNDARY MAP

EXHIBIT G-9

17183

ATTACHMENT A



KEY MAP

T. 20N., R. 5 E., W.M.
PIERCE CO., WASHINGTON

SCALE IN FEET

LEGEND

TOWNSHIP LINES
SECTION LINES
1/4 SECTION LINES
1/16 SECTION LINES
PROJECT BOUNDARY

VERTICAL DATUM - U.S.G.S.

NOTE: ALL ELEVATIONS ARE GIVEN IN FEET MEAN SEA-LEVEL (FMSL), UNITED STATES COAST AND GEODETIC SURVEY DATUM.

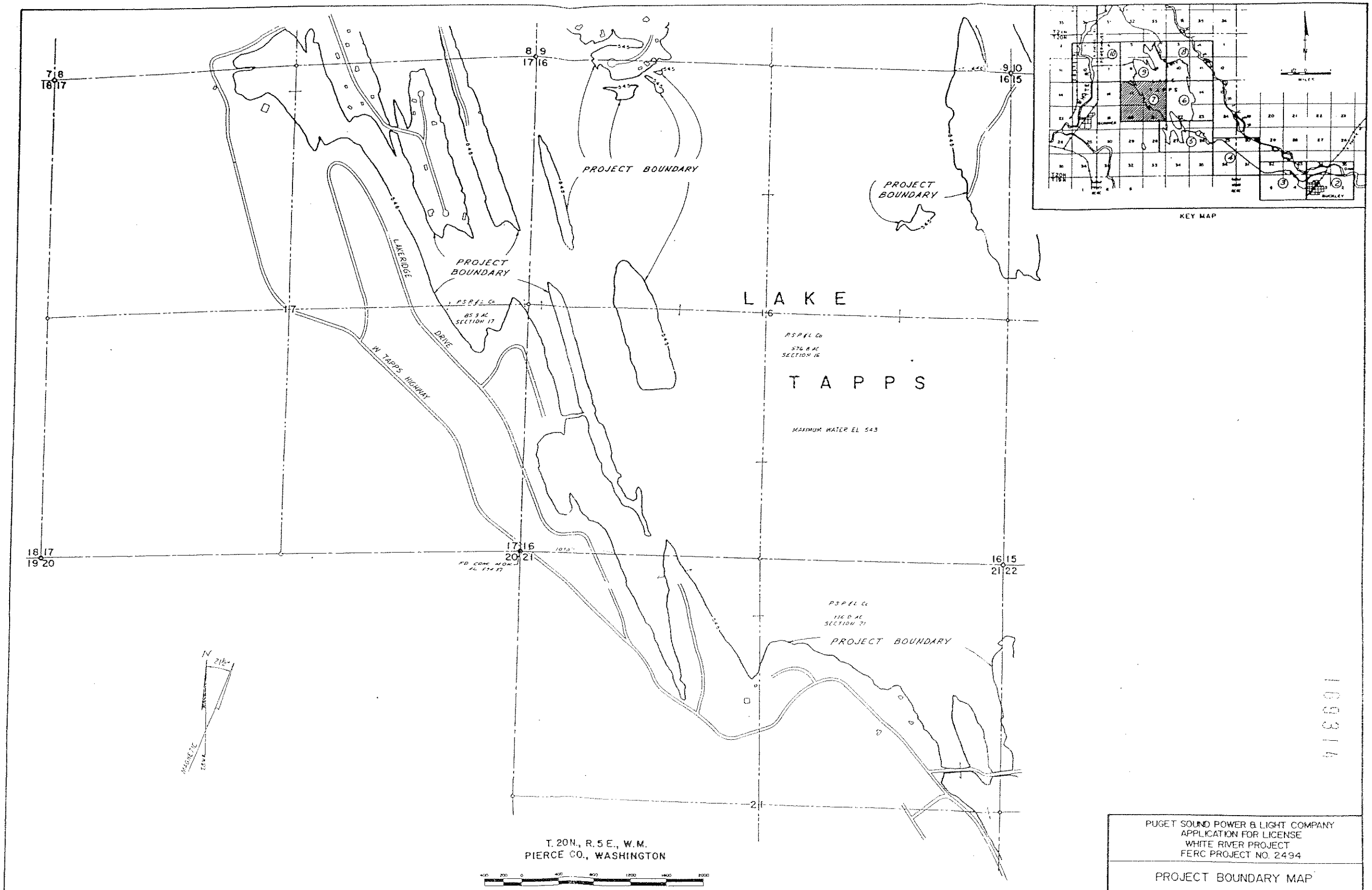
12/83

PUGET SOUND POWER & LIGHT COMPANY
APPLICATION FOR LICENSE
WHITE RIVER PROJECT
FERC PROJECT NO. 2494

PROJECT BOUNDARY MAP

EXHIBIT G-8

G1G8.1



T. 20N., R. 5 E., W.M.
PIERCE CO., WASHINGTON

SCALE IN FEET
1" = 400'

LEGEND

TOWNSHIP LINES
SECTION LINES
1/4 SECTION LINES
1/16 SECTION LINES
PROJECT BOUNDARY

VERTICAL DATUM - U.S.G.S.

NOTE: ALL ELEVATIONS ARE GIVEN IN FEET MEAN SEA-LEVEL (FMSL), UNITED STATES COAST AND GEODETIC SURVEY DATUM.

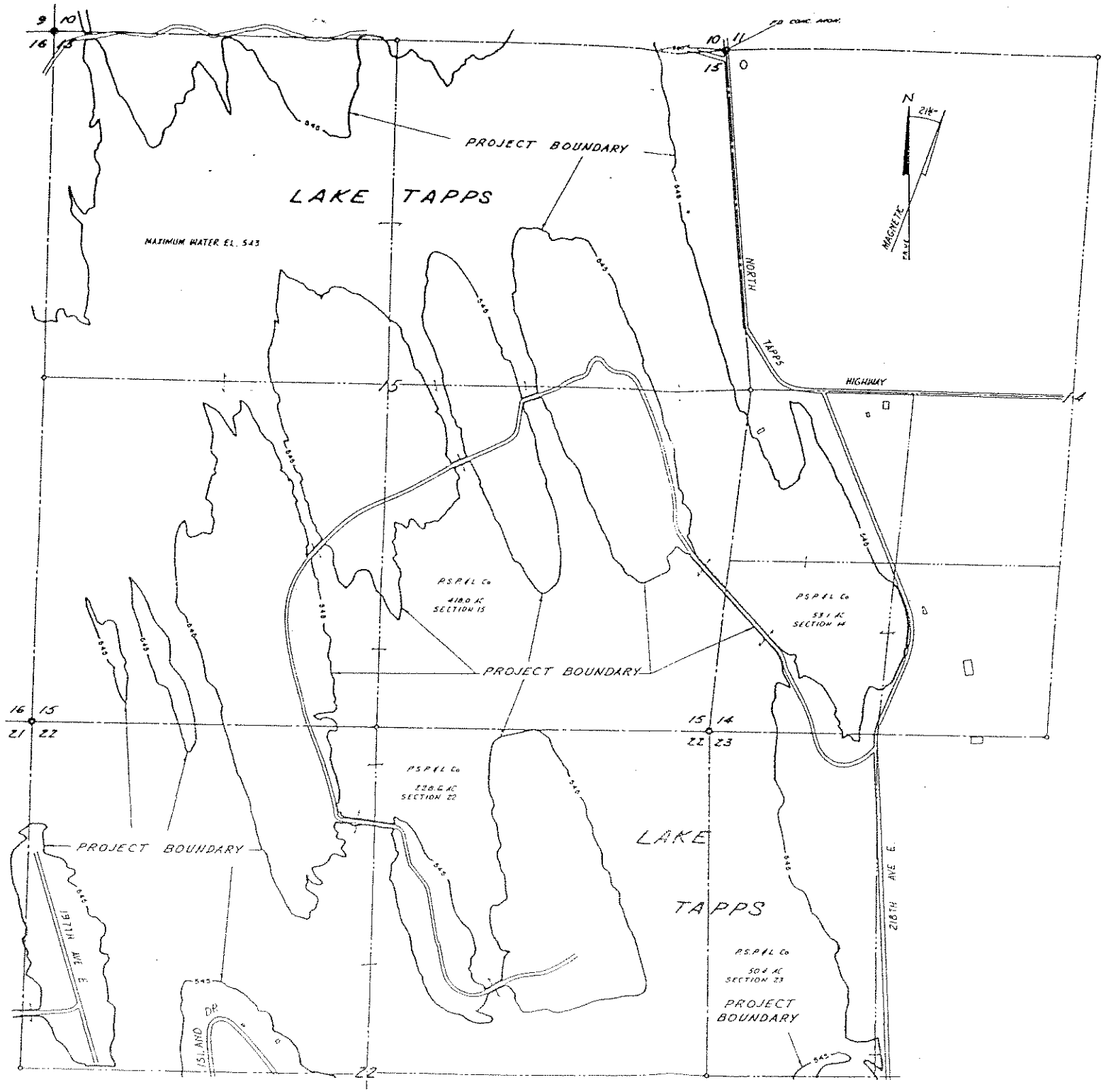
12/63

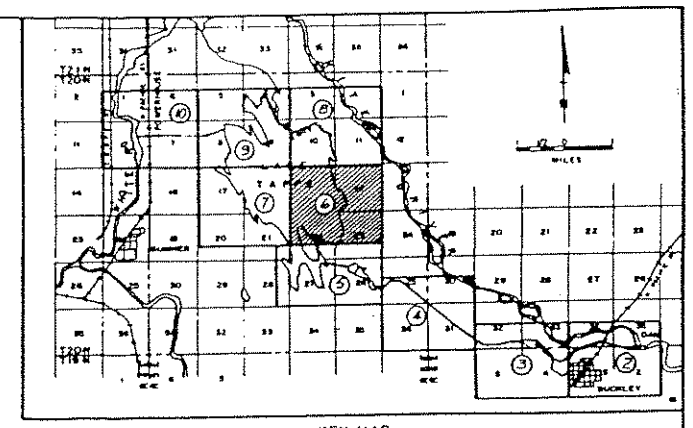
PUGET SOUND POWER & LIGHT COMPANY
APPLICATION FOR LICENSE
WHITE RIVER PROJECT
FERC PROJECT NO. 2494

PROJECT BOUNDARY MAP

EXHIBIT G-7

A1-6301





T.20N., R.5E., W.M.
PIERCE CO., WASHINGTON

SCALE IN FEET

LEGEND

TOWNSHIP LINES
SECTION LINES
1/4 SECTION LINES
1/16 SECTION LINES
PROJECT BOUNDARY

VERTICAL DATUM - U.S.C.S.

NOTE: ALL ELEVATIONS ARE GIVEN IN FEET MEAN SEA-LEVEL (FMSL), UNITED STATES COAST AND GEODETIC SURVEY DATUM.

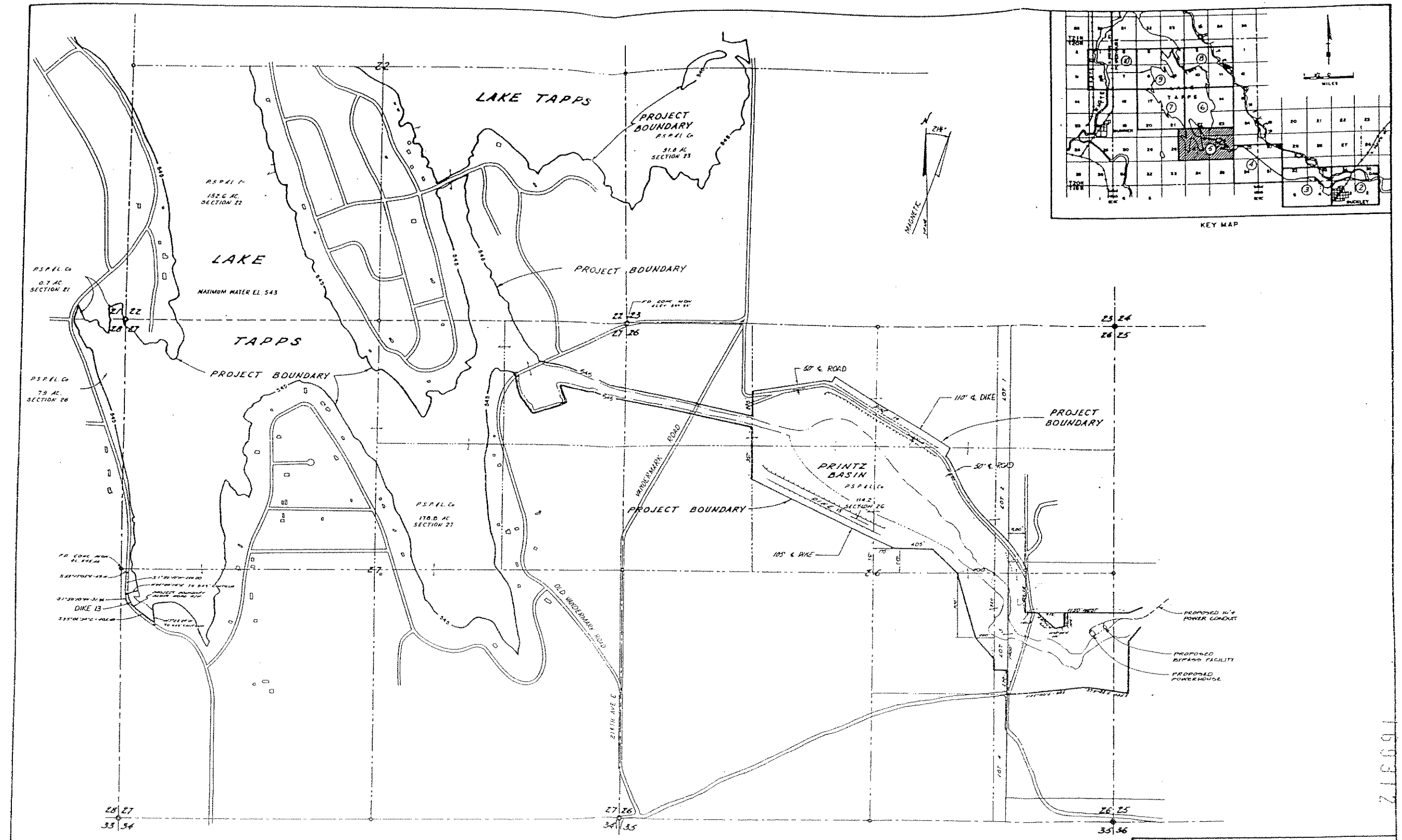
12/83

PUGET SOUND POWER & LIGHT COMPANY
APPLICATION FOR LICENSE
WHITE RIVER PROJECT
FERC PROJECT NO. 2494

PROJECT BOUNDARY MAP

EXHIBIT G-6

19313



NOTE: ALL ELEVATIONS ARE GIVEN IN FEET MEAN SEA-LEVEL (MSL), UNITED STATES COAST AND GEODETIC SURVEY DATUM.

12/83

PUGET SOUND POWER & LIGHT COMPANY
APPLICATION FOR LICENSE
WHITE RIVER PROJECT
FERC PROJECT NO. 2494

PROJECT BOUNDARY MAP

EXHIBIT G-5

21691

Lake Tapps Embankment Characteristics

Dike Number	Washington ID Number	Crest Elevation (ft)	Base Elevation (ft)	Embank-ment Height (ft)	Embank-ment Width (ft)	Crest Length (ft)
1	WA418	550.8	533.0	17.8	47	200
2A	WA419	545.5	534.0	11.5	25	350
2B	WA420	547.1	530.7	16.4	16	300
3	WA421	545.4	530.3	15.1	39	500
4	WA296	545.1	500.2	44.9	40	4000
5	WA422	545.6	521.5	24.1	55	500
6	WA423	545.6	519.5	26.1	51	500
7	WA435	546.2	540.0	6.2	52	200
8	WA424	545.9	525.8	20.1	55	350
9	WA425	545.8	530.6	15.2	55	200
10	WA426	546.0	526.6	19.4	48	700
11	WA427	545.4	522.8	22.6	53	1500
12	WA428	545.0	531.1	13.9	42	1250
13	WA429	547.0	539.3	7.7	20	350
14	WA430	547.2	524.0	23.2	74	1450
15	WA431	547.4	524.0	23.4	53	1500

ATTACHMENT B

Currently, Wolslegal and Dingle Basins are actively worked for sediment removal. Sediment removed from the basins is stockpiled adjacent to the canal. Stockpiled sediment at Wolslegal Basin is sold for commercial and residential uses.

The dike adjacent to Wolslegal and Wickersham Basins is approximately 2,500 feet long and is oriented roughly east-west. The crest of the dike is at elevation 668 to 673 fmsl with a width of 20 to 25 feet. The outboard slope of the dike is at an angle of approximately 35 degrees down to the toe which is at an elevation of approximately 635 to 645 fmsl. The inboard dike slope angles between 35 to 45 degrees down to the canal. The dike fill material is reported to be loose to very loose silty sand with some gravels and cobbles, and founded on alluvium and mudflow deposits (Woodward-Clyde 1995).

A concrete lined rock chute is also present at Wolslegal Basin. This chute consists of a 72-inch-diameter concrete intake conduit that discharges to a concrete spillway.

The dike adjacent to McHugh Basin is approximately 1,400 feet long and is oriented roughly southeasterly. The crest of the dike is at elevation 668 to 670 fmsl with a width of 35 to 45 feet. The outboard slope of the dike is at an angle of approximately 35 to 50 degrees. The inboard dike slope angles between 20 to 40 degrees down to the canal. The dike fill material is reported to be loose to very loose silty and clayey sands with gravels and cobbles, and founded on alluvium and mudflow deposits (Woodward-Clyde 1995).

Printz Basin

Printz Basin is located between Lake Tapps and the buried pipeline and was constructed as the final sedimentation basin in the flowline. Two dikes (Dikes 14 and 15) are located on the basin. The Printz Basin Dikes are comprised primarily of two dike fill materials. The upper dike fill is very loose to loose fine sand with silt to silty sand. The lower dike fill is primarily very loose to loose gravelly fine to coarse silty sand. Dike dimensions are listed on **Table II-1**.

Lake Tapps Dikes

Lake Tapps is impounded by a series of 13 dikes ranging in length from a few hundred to a few thousand feet and from a few feet in height up to 40 feet. The lake, once a series of smaller lakes (including Lake Tapps, Lake Kirtley, Crawford Lake, and Church Lake), was created by the construction of the dikes and the diversion of water from the White River into the reservoir. Lake Tapps is approximately 4.5 miles long and 2.5 miles wide. The lake has an area of 2,700 acres and a storage capacity of 46,700 acre-feet at normal maximum pool elevation (543 feet fmsl) (Puget Power 1983b). The main outlet of the

reservoir is through a 12-foot-diameter, concrete lined tunnel that leads to a forebay from which penstocks divert flow through the White River powerhouse.

As previously discussed, there are 13 dikes that impound the reservoir. The dikes contain approximately 600,000 cubic yards of material (Puget Power 1983a). Documentation developed during the construction of the dikes indicate that the topsoil was first stripped to the impervious strata (till) beneath each dike. Steam rollers were then used to prepare the foundation. Fill material, consisting of cemented gravels obtained from nearby excavations, was transported to the site by dump cars on railway trestles. Large scrapers and donkey engines were then used for placement of the fill.

The dikes were then finished using horse-drawn slip scrapers and wheelers. Initial design specifications required that the dikes have a minimum crest width of 40 feet, upstream slopes of 2.5 horizontal to 1 vertical, and downstream slopes of 2 horizontal to 1 vertical. Subsequent field investigations conducted by Ebasco Services Incorporated in 1983 (Puget Power 1993) and Squire Associates (**Appendix D**) have further defined the characteristics of each dike. The dike fill material typically consists of loose to medium dense silty sandy gravel with silt or clay. The dike dimensions are included in **Table II-1**.

B. SPILLWAY

The Diversion Dam is essentially a continuous spillway and is described in **Section IIA**. There are no other spillway structures on Lake Tapps. Discharge of flow from Lake Tapps if the powerhouse is out of service can be accomplished using four 16-inch penstock drain valves.

C. POWERHOUSE

The concrete powerhouse building is 85 feet wide, 225 feet long, and 55 feet high.

The initial two-unit development at the powerhouse was completed in 1911 and produced 25,000 kVA. The capacity was increased by 7,600 kVA in 1917 by rewinding the existing two units. A third 20,000-kVA unit was added in 1924. An increase of 5,000 kVA was accomplished in 1952 and 1956 by rewinding units 3 and 4, respectively, thus giving a total rated capacity of 25,000 kVA for each unit. The present rated generator capacity is 82,600 kVA. Each generator is directly connected to a single horizontal Francis-type turbine that operates 360 revolutions per minute (RPM) (Puget Power 1983b).

A conduit for collection of downstream migrants is provided and extends the entire length of the fish screens. Downstream migrants enter into the conduit and pass through a 2.0 foot diameter pipeline which discharges into a bypass channel that returns the fish to the White River. The downstream migrants enter the conduit, thus bypassing the Lake Tapps reservoir, and the powerhouse.

A gravity operated emergency gate at the fish screens is located in the south bank of the flowline. This gate is tripped automatically by differential water pressure if the screens become clogged by debris. In case of a trip, an alarm carried over telephone wires is sounded in the powerhouse.

2.2.5 Timber Lined Canal

The canal between Dingle and Printz Basins, the last basin in the flowline, is an 18,600-foot long canal of which 11,800 feet is timber lined. The cross section of the lined portion is rectangular with dimensions of 26 feet in width and 7 feet in depth.

2.2.6 Unlined Canal

From Printz Basin, an unlined canal approximately 2,600 feet long conveys flows to Lake Tapps. Typically, the unlined canal is 13 feet deep and 74 feet wide (measured across the top) and is parabolic in cross section. Flow depth and width vary with Lake Tapps elevations.

2.3 Existing Project Reservoir - Lake Tapps

Lake Tapps serves as the reservoir for the Project. It is approximately 4.5 miles long and 2.5 miles wide. Water diverted from the White River through the diversion system previously described flows into the lake at the south end. The main outlet from the lake is through the White River Powerplant. This outlet, located on the northwestern side of the lake, begins as a 12-foot-diameter, concrete-lined tunnel that leads to a forebay from which the penstocks extend. The only other outlet from the lake is a 2-foot-diameter pipe which is used to satisfy a 1 cfs downstream water right, but which can discharge 5 to 10 cfs if fully opened. The reservoir has no spillway.

Lake Tapps originally consisted of several natural lakes; Lake Tapps, Lake Kirtley, Crawford Lake, and Church Lake. By constructing earthen dikes totalling two and one half miles in length, the water level was raised 35 feet above the original elevation. This created the present reservoir, Lake Tapps, having a surface area of approximately 2,700 acres and an active storage capacity of approximately 46,700 acre-feet at normal maximum pool elevation 543 fmsl. The active storage is based on normal minimum pool elevation 515 fmsl.

2.4 Existing Tunnel

2.4.1 Tunnel Intake

The portal to the main tunnel at the outlet of Lake Tapps reservoir is screened with a vertical rack bar screen, 50 feet high and 45 feet wide. The bars are provided with motor operated cleaning devices divided into six separate bays with selective clutches. Debris is deposited on the tunnel intake deck and disposed of manually.

The tunnel entrance is provided with a Stoney gate, 12.5 feet high by 12 feet wide. A 24 inch square Stoney bypass gate is provided in the face of the main gate for filling the tunnel. The main gate and the auxiliary gate are motor operated. Vertical air shafts lead from the gate house to the tunnel in back of the gate for venting during the closing of the main gate.

2.4.2 Tunnel Structure

The concrete lined tunnel, located on the northwest shore of the reservoir, is 12 feet in diameter and 2,842 feet in length. The invert elevation is 490 fmsl at the tunnel intake and drops to elevation 477 fmsl at the forebay well.

2.5 Existing Forebay and Penstock

The forebay well, 30 feet in diameter and 73 feet deep, is located at the brow of the hill above the powerhouse. A collection basin is provided at the top of the forebay well to accept surges at this point.

Three 96-inch diameter steel penstocks, each controlled by a 96-inch diameter standard Coffin sluice gate, direct the flow from the west side of the forebay well to the powerhouse below. Three of the penstocks are 2,135 feet long. Just below the forebay, two of the penstocks are tapped forming a supply to a fourth penstock, which is 1,791 feet long. Two 84-inch diameter butterfly valves control the flow into the fourth penstock. These valves and the sluice gates are motor operated either locally from the gatehouse or remotely from the powerhouse control panels.

2.6 Existing Powerhouse

The concrete powerhouse building is 85 feet wide, 225 feet long and 55 feet high.

The initial two unit development at the powerhouse was completed in 1911 and produced 25,000 kVA. The capacity was increased by 7,600 kVA in 1917 by rewinding the existing two units. A third 20,000 kVA unit was installed in 1918, and a fourth 20,000 kVA unit was added in 1924. An increase of 5,000 kVA was accomplished in 1952 and 1956 by rewinding units 3 and 4, respectively, thus giving a total rated capacity of 25,000 kVA for each unit. The present rated generator capacity is 82,600 kVA. Each generator is directly connected to a single horizontal Francis-type turbine that operates at 360 revolutions per minute (RPM).

2.6.1 Hydraulic Turbines

The powerhouse contains four reaction-type horizontal shaft turbines that operate at 360 RPM. Units 1 and 2 are rated at 18,000 HP and Units 3 and 4 are rated at 23,000 HP. Speed is controlled by four gate shaft type governors, the oil pressure being supplied by individual 50 gallon per minute (GPM) governor oil pumps. Each unit is provided with a 30 inch relief valve discharging water from the scroll cases into the tailrace in case of a sudden closing of the gates. Four 78 inch motor operated butterfly valves are located just upstream from the turbines. Two 8 inch bypass valves, one hydraulically operated and the other manually operated, are used to equalize the water pressure during the operation of each butterfly valve.

Large supplies of ground water are available from the post-glacial alluvium deposited in the lower White River valley. Yields of 500-1,500 gpm are typical for wells in the flood plain alluvium along the White River. In the Auburn area, exceedingly high yields in excess of 1,500 gpm can be obtained from wells tapping the deeper alluvium.

Although substantial ground water resources are present in the Project area, the actual utilization of this resource is confined primarily to the larger community systems due to economic considerations. The presence of the Osceola mud flow over much of the area generally necessitates well depths of 200 feet or more for reliable supplies. In addition, state policies generally favor development of areawide water supply systems in order to assure good water quality control. In the Lake Tapps area, this has resulted in a number of former individual wells being relegated to non-potable uses, such as lawn irrigation, with potable water supplies being imported from the larger adjoining water districts and communities, such as Bonney Lake. To the extent that the larger communities are dependent on ground water, they tap the more productive and deeper aquifers along the Lower White, Green or Puyallup valleys. For example, the cities of Sumner and Puyallup both utilize Salmon Springs 1 mile northeast of Sumner for municipal supply. The city of Auburn's utilization of Coal Creek Springs, with a yield of 4,200 gpm (Luzier, 1969), has eliminated what was formerly a highly productive salmon stream tributary to the lower White River. The city of Enumclaw utilizes Boise Creek Springs, 600-1,000 gpm, and Watercress Springs, 800 gpm (Luzier, 1969). In many instances, the larger communities are in part dependent on imported purveyed water supplies, either as a primary source or as backup.

The continued operation of the White River Project should not alter the viability of these existing ground water supplies. Indeed, insofar as leakage from Lake Tapps supports the discharge at nearby Salmon Springs, the continued diversion of water enhances existing ground water supplies.

2.4 Existing Water Uses and Project Water Rights

Instream uses of water in the vicinity of the Project include power production, fish and wildlife, recreation, aesthetics, and stock watering. Power production occurs at the Project's Dieringer power plant at the present time. Under this license additional power production will occur on the Project flow line as well. The assimilative capacity of

the surface waters of Boise Creek and the White River below the diversion dam is also used for the disposal of treated municipal and industrial waste discharges. In addition to the aforementioned instream uses, surface waters in the Project area are diverted and utilized for irrigation, stock watering, and domestic, municipal and industrial water supplies (WDOE, 1980).

For the White River Project, Puget holds a vested year-around water right claim to 2,000 cfs from the White River at the current point of diversion, within the NE 1/4 of the SW 1/4, Section 25, T. 20 N., R. 7 E. The right is based on claims dated April 17, 1895; April 27, 1901; and from the adjudicated Pacific Coast Power Company vs. Peter Quilquilion, dated April 13, 1910. Puget Power, or its predecessors, has, since 1911, consistently diverted this amount of water, subject to the availability, passing 30 cfs, which is required to be released downstream at all times under terms of the April 13, 1910, Pierce County Superior Court decree (No. 28120). This claim for riparian and water rights was acquired prior to the State of Washington Water Code of June 15, 1917. This water rights claim was registered in June, 1974, and was assigned a water right claim #160822 by the State of Washington Department of Ecology.

Other water rights held in connection with the Project include a registered water rights claim (#160812) to divert an average of 43 gpm from an unnamed spring in the NE 1/4 SW 1/4, Section 7, T. 20 N., R. 5 E. This water is used for domestic water for the power plant and three Company houses owned by Puget Power. The Company also claims rights for water storage in Lake Tapps in the amount of 46,700 acre-feet. The basis for this storage right is under claims dating to October 30, 1902; November 3, 1902; and August 3, 1909, and riparian and property rights acquired prior to the establishment of the state water code of June 15, 1917. Under this claim, a valved release of 1 cfs is provided from Lake Tapps to a former outlet stream to provide water for stock watering and irrigation.

Puget Power makes no other consumptive use of the Project waters; however, unregistered usage of the waters of Lake Tapps for lawn and garden watering is known to occur, and shallow wells along the 47 miles of lakeshore may draw more or less directly from the lake. Since much of the water so used is returned to the lake, no attempt has been made to quantify any consumptive water loss due to this usage. A water budget for Lake Tapps suggests that between 1963 and 1981, the average outflow from the reservoir at 949 cfs exceeded the measured canal inflow by 37 cfs. Thus,

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Introduction

HDR has conducted a reconnaissance level assessment of regional municipal water demand and supply within King and Pierce Counties. The results of this assessment are presented on Figures 1, 2, and 3 (attached). Firm regional water supply availability from the two major water suppliers in King and Pierce County, Seattle Public Utilities (SPU) and Tacoma Water (TW), respectively, are presented along with Average Day Demand (ADD) and Maximum Day Demand (MDD). The 50-year + time frame examined includes the 20-year time frame required by the Department of Health (DOH) for periodic water supply plan updates, and an additional 30-year time frame as suggested by DOH when planning for new, major sources of water supply to meet regional demands. The following text provides a brief explanation of the figures and draws a conclusions based on the data.

Seattle Public Utilities with Wholesale Customers & King County Region – Water Demand & Firm Supply (Figure 1)

SPU provides 73 percent of the water to meet the ADD of the year 2000 King County population of 1.7 million. The ADD on the SPU supply system is presently 155 million gallons per day (mgd) and the MDD is 308 mgd. By the year 2020, SPU 's ADD and MDD are projected to grow to 175 mgd and 349 mgd, respectively with a population projection of 2.1 million.

SPU's firm water supply available is currently 160 mgd. The firm yield of a water supply system is defined as the supply being available 98 percent of the time (unavailable only once during any fifty year period). Modifications to SPU's Tolt Supply will increase firm yield by 11 mgd to 171 mgd when completed next year. The planned construction of the Second Supply Project (SSP) with it's Intertie between the TW and SPU systems will increase SPU's firm yield by an additional 10 mgd for a total firm supply of 181 mgd in the year 2005. Comparing SPU's firm yield with the ADD using a straight-line projection shows demand exceeding supply in the year 2026 with the SSP completed by year 2005.

Tacoma Water with Wholesale Customers & Pierce County Region – Water Demand & Firm Supply (Figure 2)

TW provides 59 percent of the water to meet the demands of the year 2000 Pierce County population of 730,000. The ADD on the TW supply system is presently 72 mgd and the MDD is 123 mgd. By the year 2020, TW 's ADD and MDD are projected to grow to 78 mgd and 136 mgd, respectively with a population projection of 940,000.

TW's firm water supply available is currently 67.6 mgd. The planned construction of the SSP will increase TW's firm yield by 10 mgd for a total firm supply of 77.6 mgd in the year 2005. Comparing TW's firm yield with the ADD, shows demand exceeding supply in the year 2018 with the SSP completed by year 2005.

Combined SPU with Wholesale Customers & King County Region and TW with Wholesale Customers & Pierce County Region – Water Demand & Firm Supply (Figure 3)

Combining information for King and Pierce County results in SPU and TW providing 69 percent of the ADD for water for the combined year 2000 population of 2.43 million. For the year 2000, the combined two county ADD is 227 mgd, the MDD is 431 mgd, and the firm supply is 227.6 mgd. By the year 2020, the combined ADD will be 253 mgd, the MDD will be 485 mgd, and the firm supply will be 258.6 mgd.

Comparing the combined regional firm supply with the ADD shows demand exceeding supply in the year 2024 with the Second Supply Project and it's Intertie in service.

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Memorandum

Washington Department of Health Standards for When to Plan for New Sources of Water Supply

DOH's April 9, 1999 Chapter 246-290 WAC, Group A Public Water Systems Manual, Section 222 Water system physical capacity states:

(4) *Total daily source capacity, in conjunction with any storage designed to accommodate peak use periods on a daily or longer basis, shall be sufficient to provide a reliable supply of treated water* ***equal to or exceeding the MDD*** **[Maximum Daily Demand].**

(5) *Treatment capacity, in conjunction with any storage designed to accommodate peak demand periods on a daily or longer basis, shall be sufficient to provide a reliable supply of treated water* ***equal to or exceeding the MDD*** *while meeting the water quality parameters set forth in Part 4 and Part 6, as applicable, of this chapter.*

Conclusion

The current firm source capacity of the primary water suppliers in King and Pierce County can individually meet Average Day Demand through the years 2026 and 2018, respectively. Together, and assuming the Tacoma-Seattle system Intertie is built, as provided by the construction of the Second Supply Project, the ADD can be met through the year 2024.

King and Pierce County water utilities have lessened demands through implementation of conservation programs. However, these utilities have not placed a major new source of supply into service in some 40 plus years. The SSP has been in planning in excess of 30 years and is scheduled to be in service in year 2005. It will be the first major new water supply source for the two county region brought on-line in the last 4 decades, contributing 30 mgd of firm supply (10 mgd each to TW, SPU, and the South King Utilities).

Both SPU and TW have some in-system storage designed to meet Maximum Day Demand periods on a daily or longer basis. However, as evidenced by the recent droughts of 1987 and 1992, the in-system storage is not sufficient to meet the MDD for either system. The central Puget Sound Region continues to grow in population. If no additional major water supply source is brought on line in the two county region, the region will have no recourse other than voluntary or mandatory curtailments of water use by residences, commerce, and industry to accommodate a drought condition in the future.

King and Pierce Counties are badly in need of a major new source of water supply to adequately handle the planned growth of the region over the upcoming half century. The proposed Lake Tapps Water Supply Project is an relatively inexpensive, environmentally beneficial project located in the heart of the region that can be brought on-line to help meet the needs of the two county region for the coming century.

References:

Central Puget Sound Regional Water Supply Outlook, February 2000

Seattle Water Supply Plan, September 1993

Tacoma Water Supply Plan (Draft), December 1998

Telephone Communication, RKing/DSherman June 2000

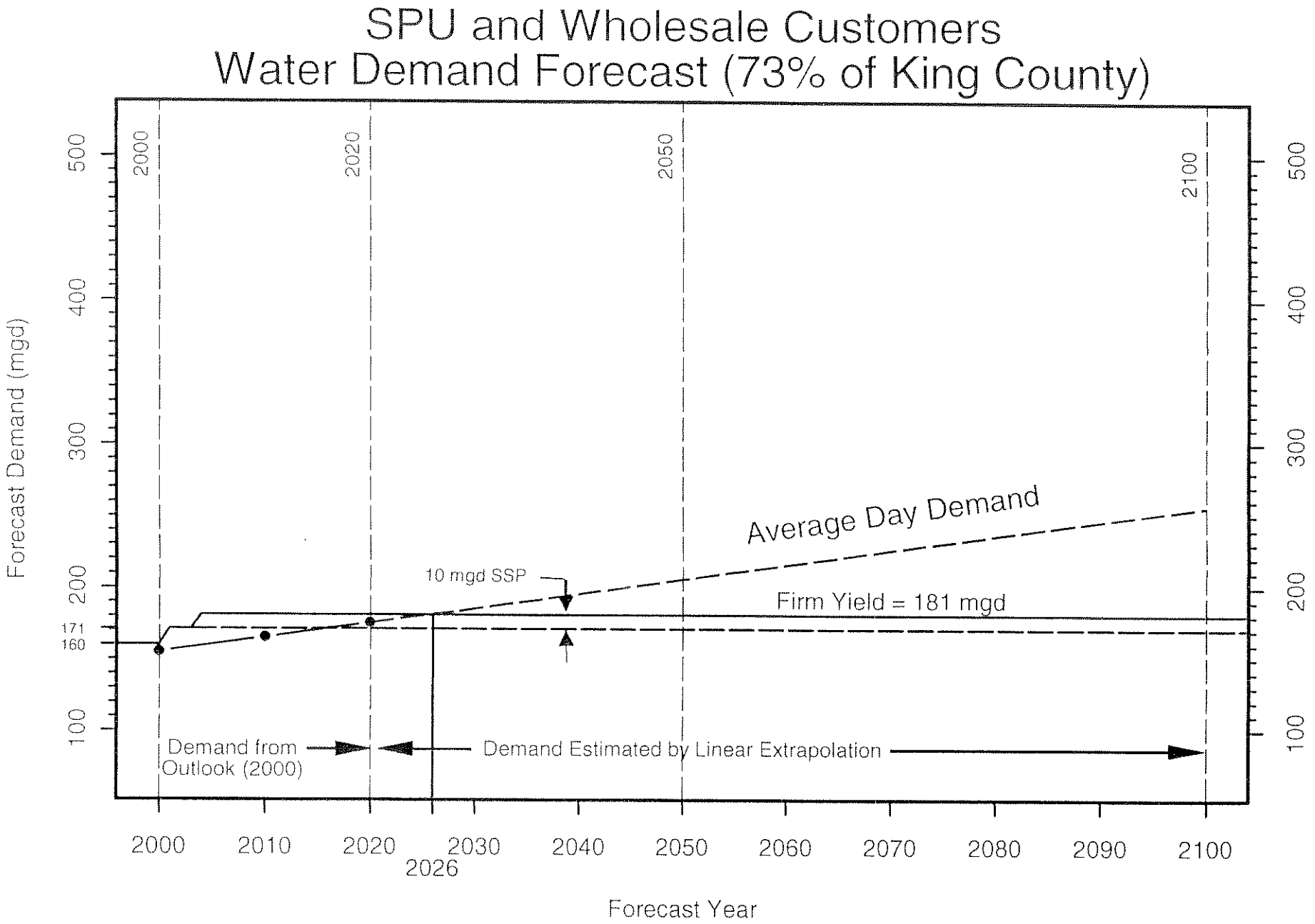


Figure 1. SPU Water Demand Forecast and Firm Supply (Yield).

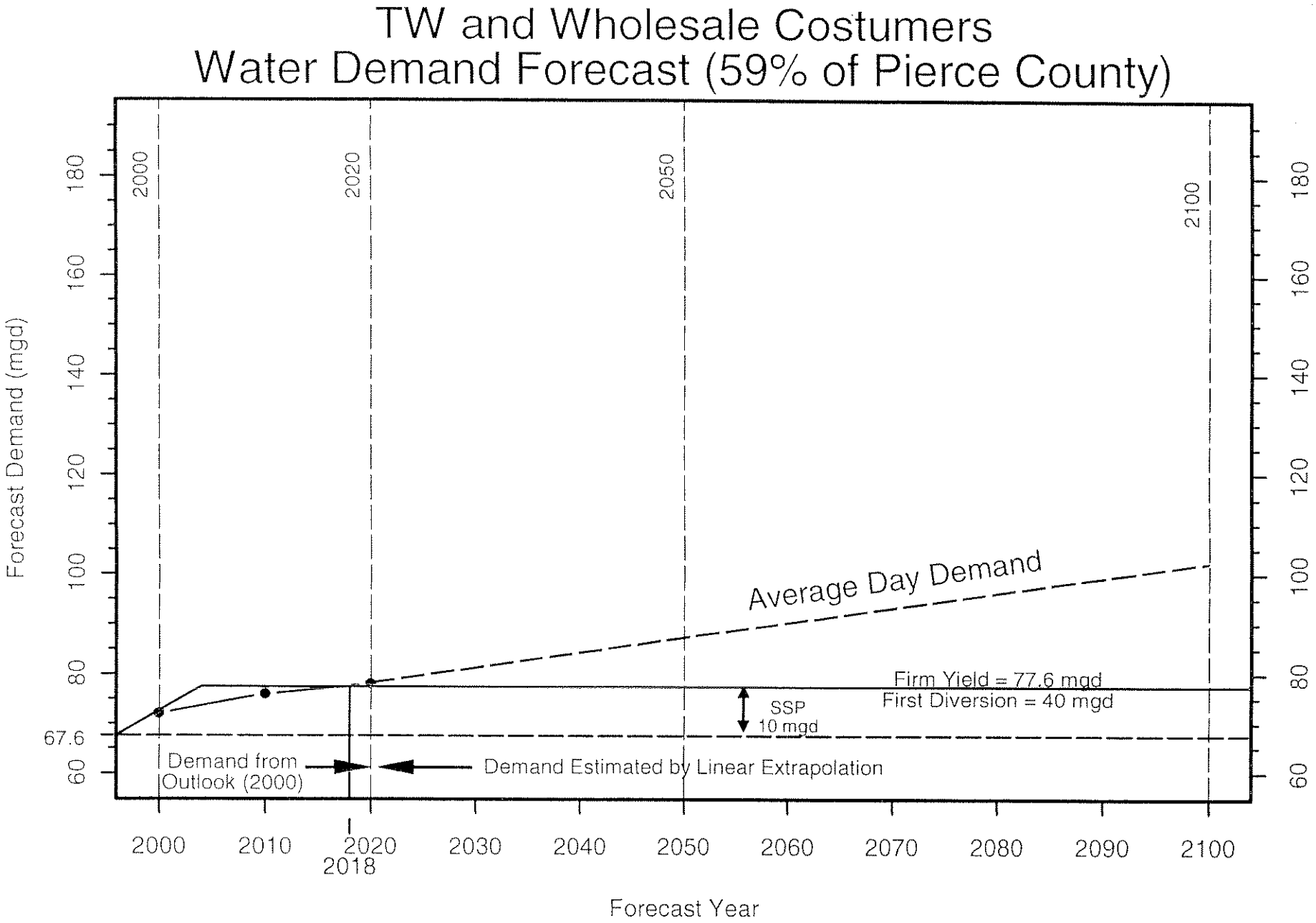


Figure 2. TW Water Demand Forecast and Firm Supply (Yield).

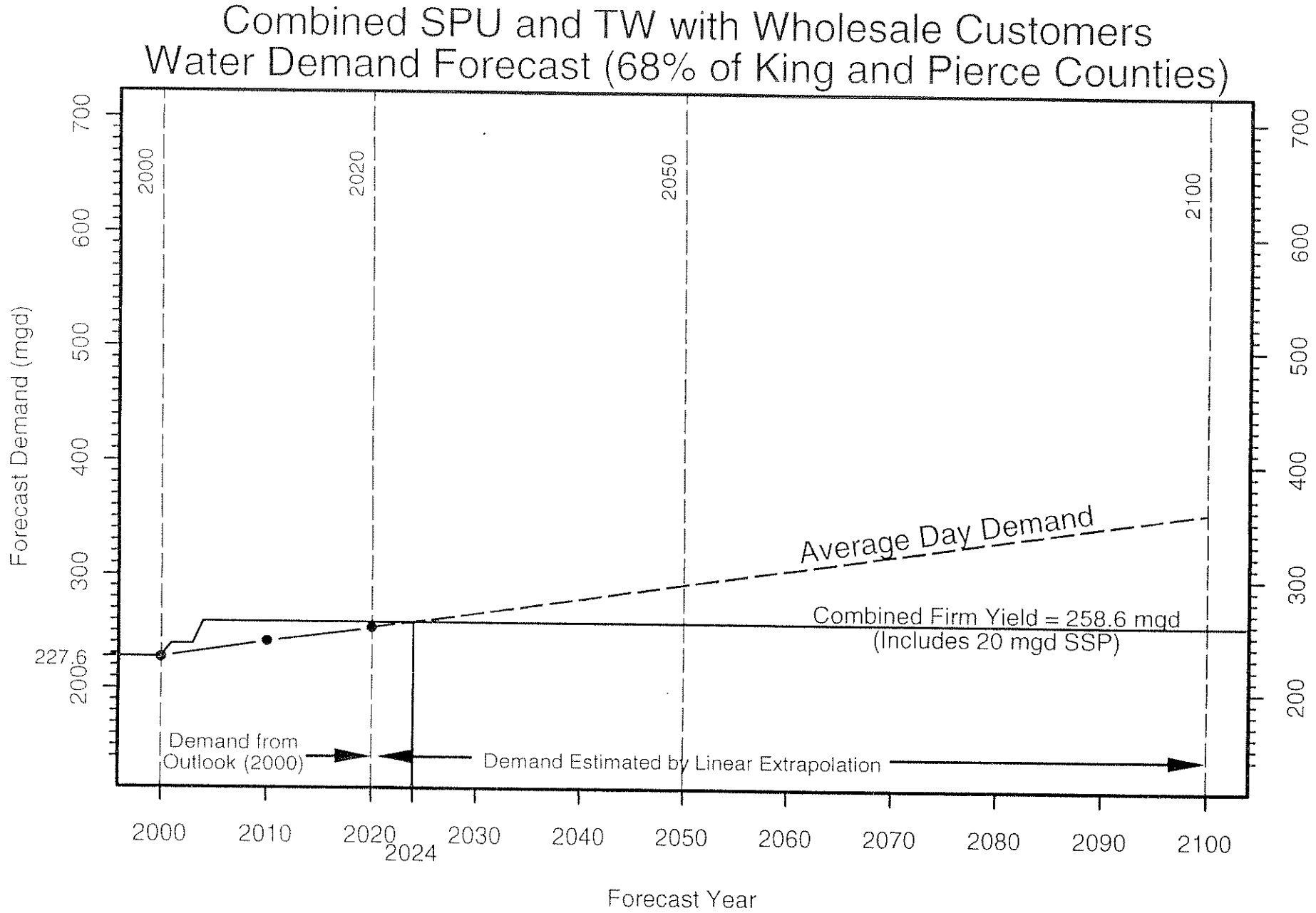
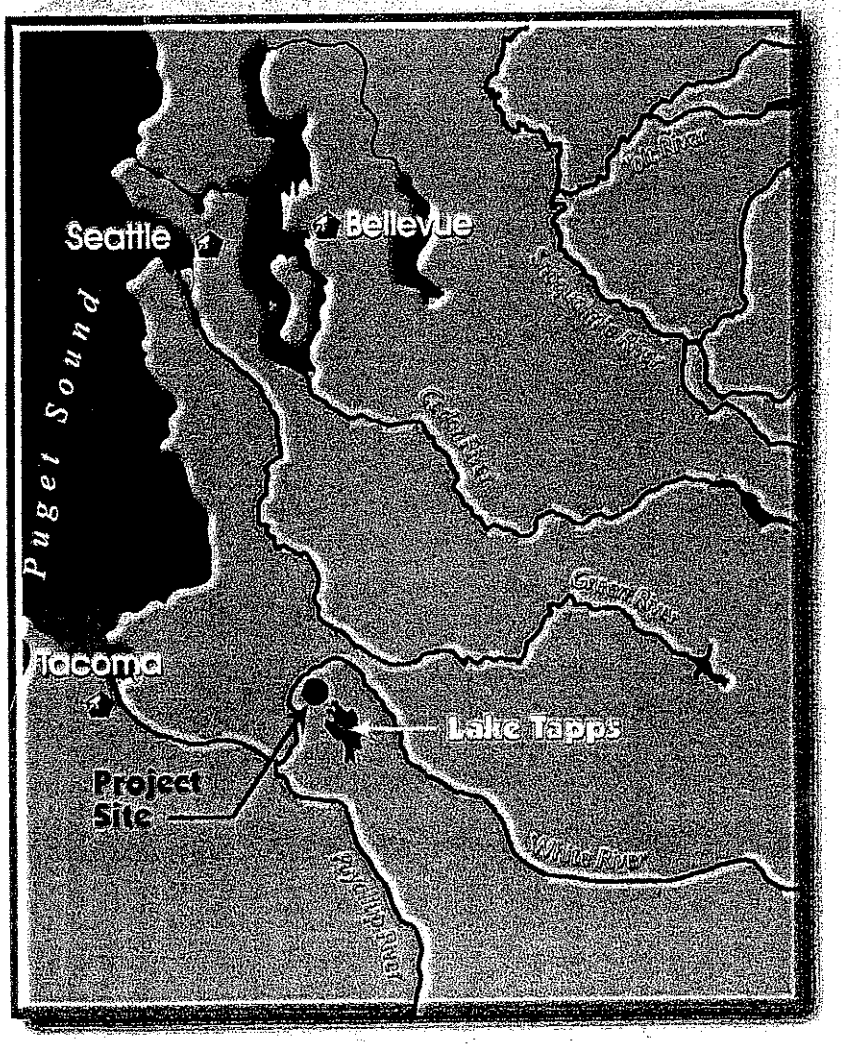


Figure 3. SPU and TW Combined Demand Forecast and Firm Supply (Yield).



VICINITY MAP

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THIS LINE IS ONE INCH WHEN DRAWING IS FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY.

FIGURE 2-1
VICINITY MAP

Date	Job Number	Sheet Number
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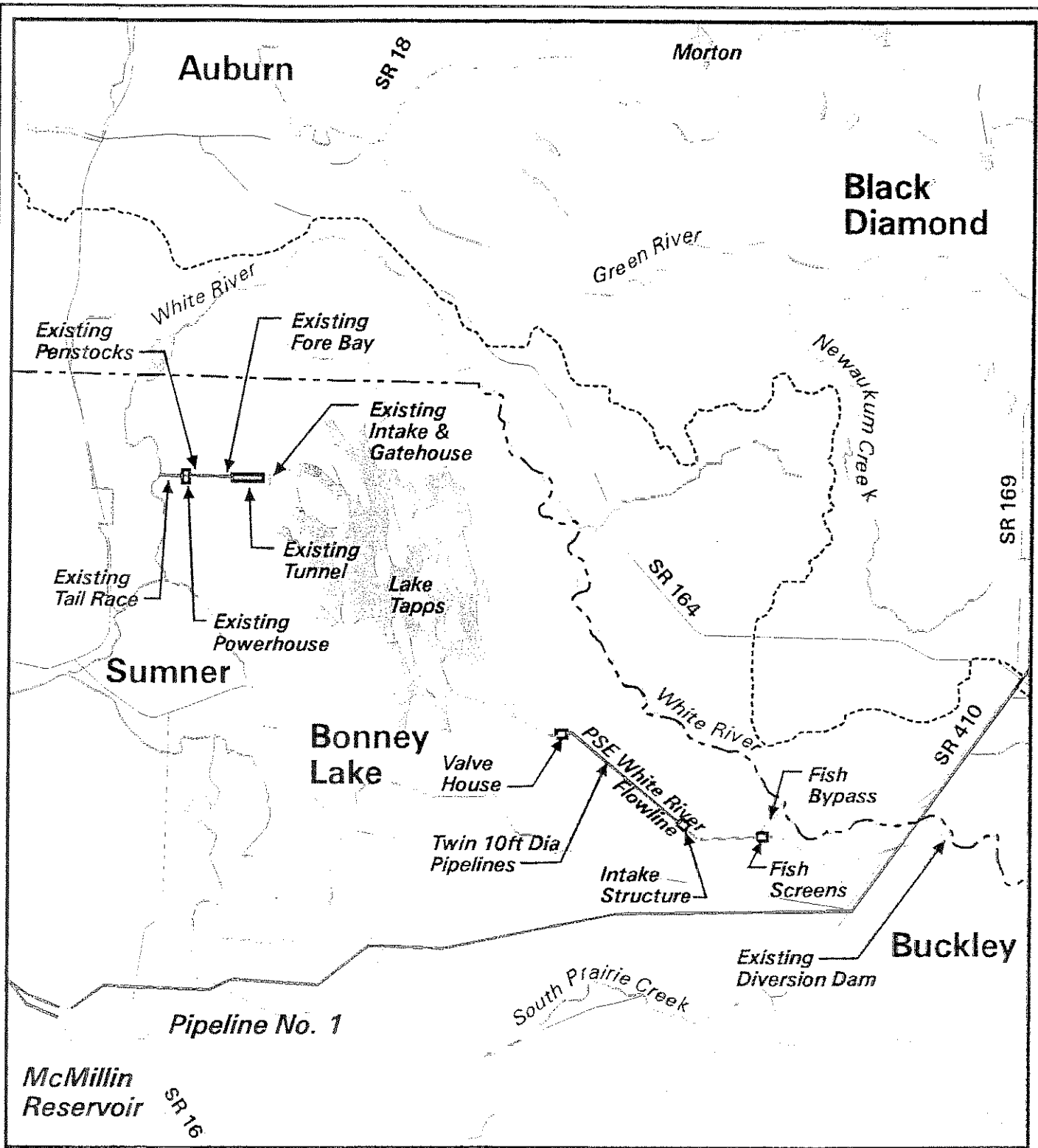
pse-th2.DGN



Legend

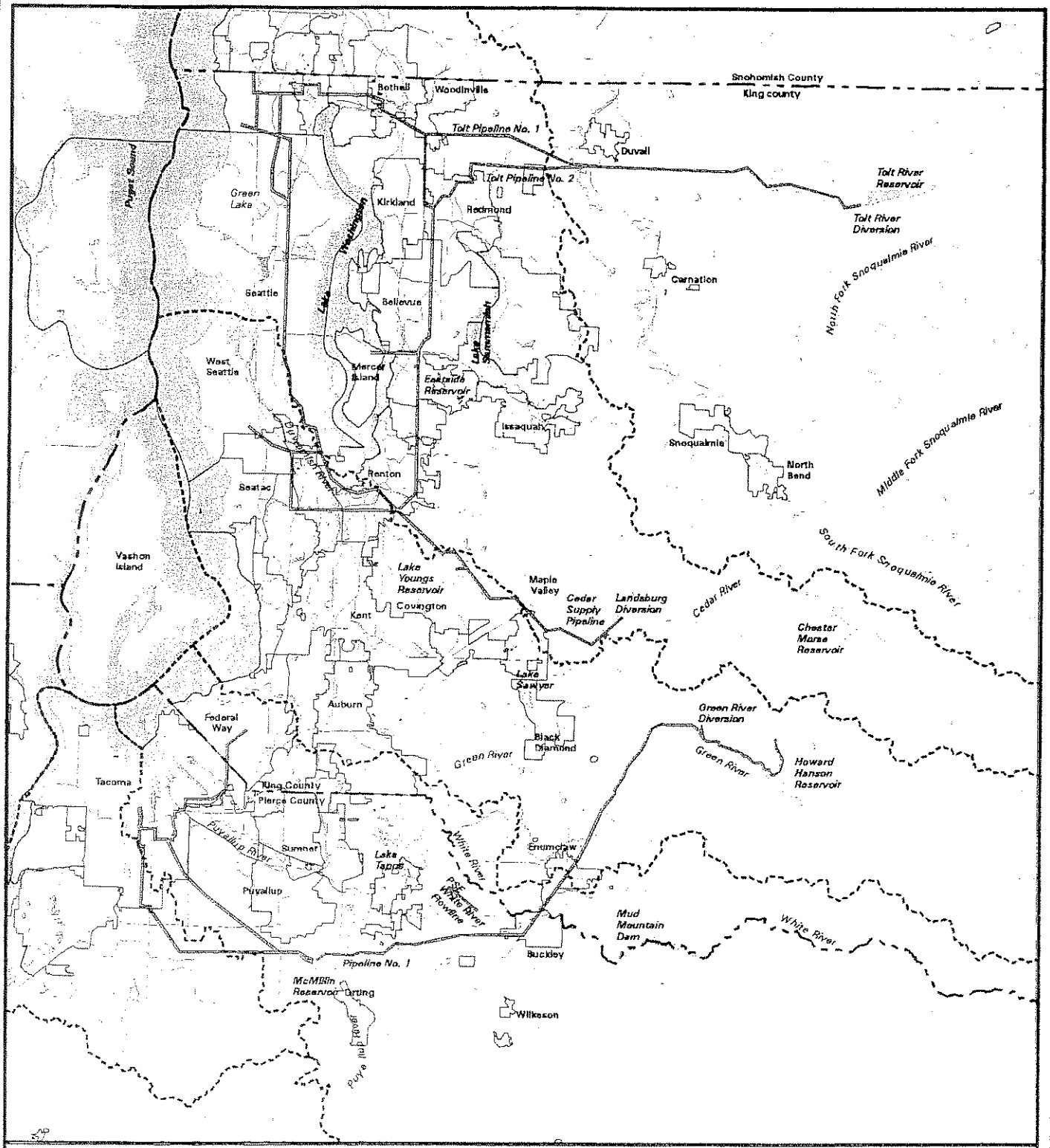
- Urban/Clearing
- Forest
- Water Body
- Existing Pipelines
- River/Stream
- State Highway
- County Boundary
- Basin Boundary

Figure 2-2

Existing White River Project Facilities

0 1 2 3 Miles

File: /home1/projects/washlpse/maps.aml Map: iktapps_letter.map Plotted: 26 Jul 00



Legend

- Urban/Clearing
- Forest
- Water Body
- Existing Pipelines
- River/Stream
- State Highway
- Basin Boundary
- Municipality Boundary
- County Boundary

Figure 2-3

Existing Major Regional Water Supply Pipelines

0 1 2 3 4 5 6 7 8 9 10

Miles

File: /home1/projects/wash/pse/maps.aml Map: ex_fac_letter_map Plotted: 26 Jul 00

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White River Water Management and Enhancement Plan

Introduction

The Washington State Department of Ecology ("Ecology") is concerned with inadequate instream flows at the Puyallup River near Puyallup USGS gaging station (12101500) that fall below the Ecology determined minimum instream flow ("MIF") at certain times during the Fall months. This is an existing condition. The gage is the control point for flows in the Puyallup River as well as the White River which enters the Puyallup River about 3.8 miles upstream of the gage. In considering PSE's proposed new water right, Ecology asked PSE to quantify the hydrological effects of higher instream flows on the White River below PSE's diversion dam associated with a new FERC license, as well as any effects such increases of instream flows might have on the Puyallup gage. To support its application for a new water right, PSE has developed a Water Management Plan ("Plan") that would specifically address Ecology's low flow concerns.

The Plan (discussed in greater detail below) proposes specific measures to enhance instream flows in the White and Puyallup River Basins. The target reaches of the river are:

1. In the project reach of the White River between the point of diversion and the confluence of the Tailrace Canal and the White River, and
2. The Puyallup River from the confluence of the White and Puyallup Rivers to Commencement Bay as measured at the USGS gaging station (12101500) during the low flow periods. The USGS gage is the control point for flows in the Puyallup River and the White River which enters the Puyallup River about 3.8 miles upstream of the Puyallup gage.

The Plan provides a low-flow augmentation such that no impairment of the instream flows between August and November as measured at the Puyallup gage will occur by reason of the proposed 100 cfs withdrawal. Instream flow enhancement elements that include:

1. Enhancement of low flows on the White and Puyallup Rivers as a result of the increased MIFs provided at the White River diversion dam (i.e., MIF required by the FERC License);
2. Protection of natural flows during low flow periods, and
3. Establishes a water budget that will provide water to enhance natural flows during severe low flow periods.

MIFs were first set at the Puyallup gage in 1980 by Ecology (WAC 173-510.030). These minimum instream flows were set at the 90% exceedance level, thus on average, it would be expected that the daily average flows would fail to meet these set minimums about 10% of the time or about 37 days a year. Ecology's Puyallup-White Watershed Initial Assessment (May 1995) states that between 1980 and 1993 minimum flows were not met an average of 35 days a year, and further observed that the number of days a year appears to be increasing. In the same document Ecology noted that the 7-day-10-year low flows exhibit a decreasing trend at this gage in recent years despite the fact that above average precipitation has occurred over this period. Ecology attributes the decline to increasing groundwater demands and the increase in impervious surfaces in the watershed, which reduces recharge to groundwater aquifers and leads to decreased groundwater contributions to streams during summer low flows. The existing and proposed minimum instream flow regimes for the Puyallup and White Rivers used in this analysis are summarized in Tables 1 and 2.

For the purposes of the present analysis PSE focused on the October 1986 to September 1998 time period for several reasons. First, this period coincides with that covered by the Muckleshoot Indian Tribe Agreement with PSE that increased the MIF to a 130 cfs at about River Mile 15.4 on the White River, as well as establishing a 3650 second feet days (sfd) water budget for Tribal use. The 1986-1998 flow record establishes the existing conditions to be compared with possible future instream flow regimes proposed by FERC or others. Comparisons with years before 1986 are also complicated by the fact that the minimum instream flow in existence at that time had been set at 30 cfs ever since a 1910 Superior Court decree. During the 1986-98 period the minimum instream flows at the Puyallup gage were not met an average of 41.7 days per year (Table 3), consistent with Ecology's earlier observations.

Hydrological Enhancement due to Higher Instream Flows Below the Diversion Dam

The MIF downstream of the diversion dam recommended by FERC in the proposed license would provide additional water relative to existing conditions approximately 52% of the time on a year around basis. During the months of August through November, flows would be enhanced on approximately 72% of the days relative to existing conditions (Table 4). As would be expected, the level of enhancement is typically greatest during those months when there is the biggest difference between the FERC MIFs and the 130 cfs existing MIF flows, e.g. August – January. The enhancement in discharges generally varies from a few tens of cfs per day from January through July, to between 170 to 270 cfs between August and January.

As a point of comparison, PSE considered the MIFs proposed by NMFS which are approximately 75% greater than the proposed FERC MIFs. If the NMFS recommended MIFs (Table 2) were to be adopted, then the flows below the diversion dam would be increased on an average of 64% of the days year around. During the low flow months from August through November, instream flows below the diversion dam would be increased on an average of about 74% of the days (Table 4). As with the FERC flows mentioned in the preceding paragraph, the level of enhancement is typically greatest during those months when there is the biggest difference between the NMFS recommended MIFs and the 130 cfs existing MIFs. Because the NMFS MIFs are generally higher than those of the FERC, the increases in discharges relative to pre-existing conditions are more typically 100 to 300 cfs year around, and from 170 cfs to 350 cfs between August and January.

Comparing the proposed FERC MIFs to the proposed NMFS MIFs, during the critical months of August through November, there is relatively little difference in flow enhancement at the Puyallup gage. The NMFS flows would enhance flows on only 2% (74% versus 72%) more days than the FERC flows during these months. The reason that there is little difference is that potential increases in low flow discharges during these months are modest, and in August and September, they are identical because the FERC and NMFS recommended instream flows are the same. In October, when the NMFS MIF would be 500 cfs and the FERC MIF would be 400 cfs, both are limited by the availability of water. In low flow years the natural October flows are typically less than 500 cfs thus limiting the effect of the NMFS flows and are often below 400 cfs as well, thereby even minimizing the effect of the FERC flows (Table 5). The situation is similar in November where the NMFS MIF recommendation is 425 cfs for the first half of the month and 350 cfs thereafter, and the FERC MIF is 265 cfs.

Benefits of the Higher Instream Flows Below PSE's Diversion on MIF exceedances at the Puyallup River Gage

The effects of higher MIFs below the diversion dam are not limited to just the bypass reach of the White River between the dam at River Mile (RM) 24.24 and the tailrace return flow at RM 3.6. The total of 41.7 days a year that MIFs are not currently met at the Puyallup gage is decreased by about 1.1 days a year under the proposed FERC flow regime. The much higher NMFS flow regime only decreases the MIF exceedances by an additional 0.6 days or about 1.7 days a year on average (Table 3).

Considering just those days when the MIFs at the Puyallup gage are not being met, the proposed FERC flow regime would enhance the flow conditions on about 26% of these low flow days. The daily enhancement in flows would range from 1 to 255 cfs/day and would average about 82 cfs. The recommended NMFS flows would enhance flow conditions on about 32% of the low flow days, with the amount of enhancement ranging from 1 to 355 cfs/day and averaging about 122 cfs/day.

Low-flow Augmentation

So that use of up to 100 cfs of water per day for public water supply will not adversely impact the minimum flows at the Puyallup gage during the September through November low flow period, PSE proposes this Plan, in support of its 100 cfs water right application, as a low flow augmentation plan consisting of four distinct elements.

1. No diversion from the White River dam for public water supply purposes will occur when the MIF immediately below PSE's diversion dam is less than or equal to the MIF established by the FERC license.
2. No diversion for public water supply purposes will occur from the White River at PSE's diversion dam between September 1 and November 30 when the minimum instream flows at the Puyallup gage are not being met. Although diversions under the original hydropower water right could still occur, they would have to be in compliance with the FERC license. All water for water supply purposes during this period will be withdrawn from storage.
3. For any period of time between September 1 and November 30 when the 7-day rolling average is not meeting the MIFs at the Puyallup gage (i.e., a "low flow period"), the hydropower facility will be operated as a run-of-the-river system. In other words any water withdrawn for hydroelectric use during a low flow period would be returned back into the White River within a seven-day period.
4. A water budget will be established to enhance the natural flows of the Lower White and Puyallup Rivers during a low flow period as defined in Element 3. The water budget will have 5600 sfd available in storage. The release of stored water will be determined by terms and conditions to be agreed upon by Ecology and PSE. The 5600 sfd provides a quantity of water that is equivalent to the maximum impact that could occur on the hydrologic system from consuming an average of 100 cfs per day during the low flow periods.

The intent of elements 1 through 3 is to further enhance natural flow conditions at the Puyallup gage during that period of time in the Fall when the Puyallup MIFs are not being met. The intent of element 4 is to provide additional water from storage in Lake Tapps Reservoir to further enhance flows at the gage. Element 4 could take the form of matching the daily withdrawal of water for water supply with the release of the equivalent volume of water, on a daily basis, via the tailrace, for as long as the water budget would permit.

Table 1. Washington State Department of Ecology's Minimum Instream Flows For the Puyallup River Near Puyallup Gaging Station as set in WAC 173-510.030. All values are given in cfs.

Beginning Date	MIF at Puyallup River near Puyallup
January 1	1400
January 15	1400
February 1	1400
February 15	1500
March 1	1600
March 15	1700
April 1	1800
April 15	1900
May 1	2000
May 15	2000
June 1	2000
June 15	2000
July 1	2000
July 15	1750
August 1	1500
August 15	1300
September 1	1150
September 15	1000
October 1	1000
October 15	1000
November 1	1000
November 15	1100
December 1	1200
December 15	1300

Table 3. Summary of the number of days per year that WAC 173-510.030 minimum instream flows were not met at the Puyallup River near Puyallup gage under existing conditions, proposed FERC minimum flows and proposed NMFS minimum instream flows for the period of record 10/1986 – 9/1998.

Month	Existing Conditions	With FERC MIFs	With NMFS MIFs
January	2.8	2. 7	2.6
February	1.3	1.3	1.3
March	1.2	1.2	1.2
April	2.5	2.5	2.5
May	4.0	4.0	3.8
June	1.9	1.9	1.9
July	3.6	3.6	3.6
August	5.9	5.8	5.8
September	6.2	5.8	5.8
October	8.0	7.5	7.4
November	3.8	3.8	3.5
December	0.6	0.6	0.6
Total	41.7	40.6	40.0

Table 4. Percentage of those days identified in Table 3 (existing conditions) that would be enhanced by proposed minimum instream flows on the White River.

	Percentage of days when flows are increased at the Puyallup gage under FERC instream flows	Percentage of days when flows are increased at the Puyallup gage under NMFS instream flows
January	57.5	62.1
February	47.6	52.1
March	47.3	65.3
April	42.2	61.4
May	34.1	52.7
June	28.3	48.3
July	20.6	69.4
August	66.7	66.7
September	75.8	75.8
October	81.7	83.9
November	64.7	70.8
December	58.6	62.1
Annual	52.2	64.1

Table 5. Lake Tapps Water Balance Summary for Water Availability. The White River near Buckley (WRNB) values are derived as 98% exceedances on a daily basis for calendar dates for the 65-year period of record. All values are in cfs except as noted.

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
FERC MIF	265	180	180	180	180	180	180	350	350	400	265	265
NMFS MIF	350	350	350	375	400	375	350	350	350	500	378	350
WRNB	411	500	593	757	1051	998	784	571	405	277	286	394
Fishpipe	20	20	20	20	20	20	20	20	20	20	20	20
Recharge	55	55	55	55	55	55	55	55	55	55	55	55
Lk Evap	1	1	2	4	8	10	12	11	8	4	2	1
Precip	30	28	25	18	14	15	6	6	13	25	33	36
FERC												
Net to lake	100	272	361	516	802	748	523	141	-50	-34	-24	89
Mo (Ac-ft)	6149	15240	22196	30703	49311	44507	32157	8669	-2975	-2091	-1428	5472
NMFS												
Net to lake	15	102	191	321	582	553	353	141	-50	-34	-24	4
Mo (Ac-ft)	922	5715	11744	19100	35785	32905	21704	8669	-2975	-2091	-1428	246

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

APPLICATION FOR PERMIT
TO CONSTRUCT A RESERVOIR AND TO STORE FOR BENEFICIAL USE WATERS OF THE STATE OF WASHINGTON

$10.00 MINIMUM STATUTORY FILING FEE REQUIRED WITH APPLICATION
(GRAY BOXES FOR OFFICE USE ONLY)

APPLICATION NUMBER	W.R.I.A.	COUNTY	PRIORITY DATE	TIME	ACCEPTED
R2-29935	10	Pierce	9-15-00		SC

APPLICANT'S NAME	TELEPHONE NUMBER
Puget Sound Energy Inc. Contact: Edward R. Schild	*425-462-3022*

DATE AND PLACE OF INCORPORATION, IF APPLICANT IS A CORPORATION
9/12/60 State of Washington Successor to Corporation Incorporated 7/8/12 State of Massachusetts

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
PO Box 97034 Mail Stop OBC-14N	*Bellevue*	*Washington*	*98009-9734*

1. **SOURCE, USE AND CAPACITY OF RESERVOIR**

NAME OF ~~PROPOSED~~ RESERVOIR
Lake Tapps Reservoir (existing)

NAME OF STREAM OR OTHER SOURCE FOR RESERVOIR SUPPLY	TRIBUTARY OF
White River	Puyallup River

USE(S) TO BE MADE OF IMPOUNDED WATER (IRRIGATION, POWER, FISH PROPAGATION, ETC.)
Public water supply and municipal water supply purposes including industrial and commercial purposes (see application S2-29921)

NUMBER OF ACRE FEET TO BE STORED AT MAXIMUM OPERATING LEVEL
46,700 acre feet

MONTHS OF YEAR DURING WHICH RESERVOIR IS TO BE FILLED
Year round – continuous

NUMBER OF ACRES TO BE IRRIGATED, IF USED FOR IRRIGATION
N/A

TYPE AND CAPACITY OF DIVERSION WORKS IF WATER IS TO BE WITHDRAWN
See Application S2-29921

2. **LOCATION OF POINT OF DIVERSION OR WITHDRAWAL**

ON ACCOMPANYING PLATS OR MAPS, ACCURATELY MARK AND IDENTIFY EACH POINT OF DIVERSION.
GIVE MEASURED DISTANCE AND BEARING, OR NORTH-SOUTH AND EAST-WEST DISTANCES FROM NEAREST SECTION CORNER.

COMPLETE EITHER A OR B	A	THE RESERVOIR IS TO BE LOCATED IN THE CHANNEL OF (NAME OF STREAM)
	B	THE RESERVOIR IS TO BE FILLED THROUGH A FEEDER CANAL (OR PIPELINE) HAVING ITS POINT OF DIVERSION (INTAKE) LOCATED AS FOLLOWS: *See Water Right Application S2-29921 Existing diversion facility under water right claim No. 160322 in the City of Buckley.*

DISTANCE AND BEARING TO SECTION CORNER
200 feet east and 200 feet south from NE ¼ Section corner of Section 2

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
NE ¼ Section	*2*	*19*	*6E*	Pierce

3. **IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, COMPLETE THIS SECTION**

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION

4. **LOCATION OF IMPOUNDING STRUCTURE**

IMPOUNDING STRUCTURE LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.
See Below			

LEGAL SUBDIVISION OF LANDS IN WHICH THE SUBMERGED AREA IS TO BE LOCATED
(THE OUTLINE OF THIS LAND IS TO BE SHOWN ON THE MAP TO ACCOMPANY THIS APPLICATION)

The fifteen saddle dikes surrounding Lake Tapps Reservoir are located on the attached maps from PSE's 1983 White River Project FERC Project No. 2494 License Application, Exhibits G5-G9. SEE ATTACHMENT A.

DO YOU OWN THIS PROPERTY?	IF NO, HAVE YOU SECURED FLOOD RIGHTS FOR LANDS TO BE INUNDATED?
☒ YES ☐ NO	☒ YES ☐ NO

5. **CONSTRUCTION OF IMPOUNDING STRUCTURE**

HEIGHT OF DAM (FEET)	LENGTH ON TOP (FEET)	LENGTH ON BOTTOM (FEET)	WIDTH ON TOP (FEET)
SEE LAKE TAPPS RESERVOIR EMBANKMENT CHARACTERISTICS-ATTACHMENT B.			

CONTINUED ON REVERSE SIDE

SLOPE OF FRONT OR WATER SIDE (NUMBER EET HORIZONTAL TO ONE FOOT VERTICAL.)	SLOPE OF BACK SIDE (NU R OF FEET HORIZONTAL TO ON OT VERTICAL.)
SEE ATTACHMENT A	*SEE ATTACHMENT A*
HEIGHT OF DAM ABOVE WATER LINE AT MAXIMUM FLOOD FLOW (FEET)	TYPE OF CONSTRUCTION OF DAM AND MATERIAL OF WHICH IS TO BE BUILT
See Below	*SEE PAGES II-2 AND II-3, ATTACHMENT B*

The structure is already constructed and operating under a vested water right for hydro-power. The height of the dikes above the water line is determined for each of the dikes. The height of the dike crests above the water elevation at full pool (elevation 543.00 ft msld) is calculated by subtracting 543.00 from the crest elevations in the Lake Tapps Reservoir Embankment Characteristics. Attachment B. The dikes are subject to FERC's exclusive jurisdiction; dike safety is regulated by FERC pursuant to 18 CFR § 12.

LOCATION AND DIMENSIONS OF SPILLWAYS)STATE WHETHER OVER, AROUND OR THROUGH DAM)

There is no spillway at Lake Tapps Reservoir because it is an off channel storage project with controlled inlet.

NUMBER OF ACRES TO BE SUBMERGED BY RESERVOIR WHEN FULL	MAXIMUM DEPTH (FEET)	APPROXIMATE AVERAGE DEPTH (FEET)
2700 acres at normal full pool, at 543.00 ft msld	*91 ft.*	*25 ft at full pool*
ESTIMATED COST OF PROPOSED WORK – EXISTING RESERVOIR	CONSTRUCTION WILL BEGIN ON OR BEFORE (DATE)	
No additional costs are expected for the physical storage of the water for municipal supply	*N/A*	

CONSTRUCTION WILL BE COMPLETED ON OR BEFORE (DATE)

Reservoir is complete and currently used under a vested water right for hydropower purposes.

SIZE AND TYPE OF OUTLET STRUCTURE

The outlet structure is described in Sections 2.3, 2.4, and 2.5, pages A-7 through A-9 of the 1983 FERC License Application. See Attachment C.

6. **LEGAL DESCRIPTION OF PROPERTY** *ON WHICH WATER IS TO BE USED (IF DIFFERENT THAN ABOVE)*

COPY LEGAL DESCRIPTION FROM DEED: OR ATTACH COPY OF DEED. TAX STATEMENT DESCRIPTIONS NOT ACCEPTABLE.
ALSO OUTLINE THIS PROPERTY ON THE MAPS OR PLATS SUBMITTED WITH THIS APPLICATION

See Application S2-29921

DO YOU OWN THIS PROPERTY?	IF NO, GIVE NAME AND ADDRESS OF OWNER
☐ YES ☒ NO	*N/A*

This application is being filed with an application for appropriation of water from the White River, See application No. S2-29921, and an application for a secondary permit to divert water from Lake Tapps. Lake Tapps is an existing reservoir that is used for the applicant's current hydro electric power plant that operates under a vested water right. The storage of water in Lake Tapps Reservoir for public and municipal water supply purposes will be under a right that is in addition to and not in derogation of PSE's existing diversion and storage rights; this application is made with a full reservation of rights as to PSE's existing diversion and storage rights.

W. A. Gaines, Vice-President, Energy Supply Puget Sound Energy
APPLICANT

STATE OF WASHINGTON)
) ss.
DEPARTMENT OF ECOLOGY)

This is to certify that I have examined the foregoing application together with the accompanying maps and data and return the same for correction or completion as follows: _____

In order to retain its priority, this application must be returned to the Department of Ecology, with corrections, on or before _____, *20* _____

Witness my hand this _____ *day of* _____, *20* _____

Department of Ecology

Washington State Department of ECOLOGY

State of Washington Application for a Water Right

For Ecology Use
Fee Paid ✓
Date 9/15/00

Please follow the attached instructions to avoid unnecessary delays.

SECONDARY PERMIT APPLICATION FOR RESERVOIR PERMIT APPLICATION FOR LAKE TAPPS FOR APPROPRIATION FROM WHITE RIVER—SEE APPLICATION NO. S2-29921

Section 1. APPLICANT – PERSON, ORGANIZATION, OR WATER SYSTEM

Name *Puget Sound Energy, Inc. : Edward Schild* Home Tel: (____)____ - ____

Mailing Address *PO Box 97034 MS: OBC-14N* Work Tel: *(425) 462-3022*

City *Bellevue* State WA ZiP+4 *98009 + 9734* FAX: *(425) 462-3175*

Section 2. CONTACT – PERSON TO CALL ABOUT THE APPLICATION

☒ Same as above

Name *Edward R. Schild* Home Tel: (____)____ - ____

Mailing Address *same as above* Work Tel: (____)____ - *same as above*

City ____ State ____ ZiP+4 ____ + ____ FAX:(____)____ - ____

Relationship to applicant ____

Section 3. STATEMENT OF INTENT

The applicant requests a permit to use not more than *150 cfs* (☐ gallons per minute or ☒ cubic feet per second) from a ☒ surface water source or ☐ ground water source (check only one) for the purpose(s) of *municipal and public water supply*. **ATTACH A "LEGAL" DESCRIPTION OF THE PLACE OF USE. (See instructions.)** *NOTE: a tax parcel number or a plat number is not sufficient*

Estimate a maximum annual quantity to be used in acre-foot per year: *72,400*

☐ Check if the water use is proposed for a short-term project. Indicate the period of time that the water will be needed:

From ____/____/____ to ____/____/____

Section 4. WATER SOURCE

IF SURFACE WATER	IF GROUNDWATER
Lake Tapps Reservoir Number of diversions: *one*	A permit is desired for ____ well(s).
Source flows into (name of body of water): *White River*	Size and depth of well(s):

LOCATION

For location of diversion from Lake Tapps Reservoir, see Application S2-29921 and see Attachment A hereto

1/4 of	1/4 of	Section	Township	Range (E/W)	County	If location of source is platted, complete below:		
						Lot	Block	Subdivision
NW	*NW*	*7*	*20*	*5E*	Pierce			

For Ecology Use Date Received: 9-15-00 Priority Date: 9-15-00

SEPA: Exempt/Not Exempt FERC License # ____ Dept. of Health # ____

Date Accepted As Complete 9/19/00 By CL Date Returned ____ By ____ WRIA: 10

APPLICATION Appl. No.: S2-29934

Section 5. GENERAL WATER SYSTEM INFORMATION

A. Name of system, if named: _____

B. Briefly describe your proposed water system. **(See instructions.)**

See Application No. S2-29921

C. Do you already have any water rights or claims associated with this property or system? ☒ YES ☐ NO
PROVIDE DOCUMENTATION.

See Application No. S2-29921. Puget Sound Energy has a Water Right Claim No. 160322; the current water purveyors including the municipalities within Pierce, King, and southern portions of Snohomish Counties all have existing water rights as provided in their water system plans on file with the Department of Ecology. This application is made with a full reservation of rights as to PSE's existing diversion and storage rights.

Section 6. DOMESTIC/PUBLIC WATER SUPPLY SYSTEM INFORMATION
(Completed for all domestic/public supply uses.)

A. Number of "connections" requested: _____ Type of connection: _____
See Application No. S2-29921 and supporting documentation on demand analysis.

B. Are you within the area of an approved water system? N/A ☐ YES ☐ NO

If yes, explain why you are unable to connect to the system. ***As stated in the application S2-29921 and supporting documents, this water supply will be a regional water supply.***

Complete C. and D. only if the proposed water system will have fifteen or more connections.

C. Do you have a current water system plan approved by the Washington State Department of Health? ☐ YES ☒ NO
If yes, when was it approved? Prospective purveyors of the water will have approved plans. Please attach the current approved version of your plan.

D. Do you have an approved conservation plan? ☐ YES ☒ NO
If yes, when was it approved? See C., above. Please attach the current approved version of your plan.

Section 7. IRRIGATION/AGRICULTURAL/FARM INFORMATION
(Completed for all irrigation and agriculture uses.)

A. Total number of acres to be irrigated: N/A

B. List total number of acres for other specified agricultural uses:

Use _____ Acres _____
Use _____ Acres _____
Use _____ Acres _____

C. Total number of acres to be covered by this application: _____

D. Family Farm Act (Initiative Measure Number 59, November 3, 1977)
Add up the acreage in which you have a controlling interest, including only:
I Acreage irrigated under water rights acquired after December 8, 1977;
I Acreage proposed to be irrigated under this application;
I Acreage proposed to be irrigated under other pending application(s).

1. Is the combined acreage greater than 2000 acres? ☐ YES ☐ NO
2. Do you have a controlling interest in a Family Farm Development Permit? ☐ YES ☐ NO
If yes, enter permit no.: _____

E. Farm uses:
Stockwater – Total # of animals _____ Animal Type _____ (If dairy cattle, see below)
Dairy -- # Milking _____ # Non-Milking _____

Section 8. WATER STORAGE

Will you be using a dam, dike, or other structure to retain or store water? ☒ YES ☐ NO

NOTE: If you will be storing 10 acre-feet or more of water and/or if the water depth will be 10 feet or more at the deepest point; and some portion of the storage will be above grade, you must also apply for a reservoir permit. You can get a reservoir permit application from the Department of Ecology.

This application is being filed with a reservoir permit application and an application to appropriate from the White River, Application No. S2-29921.

Section 9. DRIVING DIRECTIONS

Provide detailed driving instructions to the project site:

Because of the size and scope of the project, specific driving instructions are not feasible. Please contact Mr. Schild's office for instructions to the particular location you wish to visit.

Section 10. REQUIRED MAP

A. ***See Attachment A of Application for storage permit.***

Section 11. PROPERTY OWNERSHIP

A. Does the applicant own the land on which the water will be used? ☐ YES ☒ NO

If no, explain the applicant's interest in the place of use and provide the name(s) and address(es) of the owner(s):

See Application S2-29921 and supporting documents.

B. Does the applicant own the land on which the water source is located: ☒ YES ☐ NO

If no, submit a copy of agreement:

I certify that the information above is true and accurate to the best of my knowledge. I understand that in order to process my application, I grant staff from the Department of Ecology access to the site for inspection and monitoring purposes. Even though I may have been assisted in the preparation of the above application by the employees of the Department of Ecology, all responsibility for the accuracy of the information rests with me.

W. A. Gaines, Vice-President, Energy Supply, Puget Sound Energy for Applicant — Date 9/14/2000

Landowner for place of use (if same as applicant, write "same") — Date

Use this page to continue your answers to any questions on the application. Please indicate section number before answer.

We are returning your application for the following reason(s):	
_____ Examination fee was not enclosed.	APPLICANT PLEASE RETURN TO CASHIER, PO BOX 5128, LACEY, WA 98509-5128
_____ Section number(s) _____ is/are incomplete	APPLICANT PLEASE RETURN TO THE APPROPRIATE REGIONAL OFFICE
Explanation:	
Please provide the additional information requested above and return your application by _____ *(date).*	

Ecology staff _____ Date _____

Ecology is an Equal Opportunity and Affirmative Action employer.

To receive this document in alternate format, contact the Water Resources Program at (360) 407-6604 (Voice) or (360) 407-6006 (TDD).

STATE OF WASHINGTON

APPLICATION FOR CHANGE/TRANSFER OF WATER RIGHT

For filing with Ecology or with County Conservancy Boards

A MINIMUM FEE OF $10.00 PAYABLE TO ECOLOGY MUST ACCOMPANY THIS APPLICATION

(Check all that apply.)

- ☐ Change purpose(s) of use
- ☒ Add purpose(s) of use
- ☐ Change point(s) of diversion/withdrawal
- ☐ Add point(s) of diversion/withdrawal
- ☐ Change/transfer place of use
- ☐ Other (i.e. consolidation, intertie, trust water)

Explain: Done under reservation of rights

FOR OFFICE USE ONLY
CHANGE No. 160822 WRIA 10
DATE ACCEPTED 11/22/05 BY SC
FEE $ ✓ REC'D 11/22/05
CHECK No. _____
SEPA: ☐ Exempt ☐ Not exempt

IF MORE SPACE IS NEEDED, ATTACH ADDITIONAL SHEETS (PLEASE PRINT OR TYPE CLEARLY)

1. Applicant Information:

APPLICANT/BUSINESS NAME	PHONE NO.	FAX NO.
PUGET SOUND ENERGY, INC. c/o EDWARD R. SCHILD	(425) 462-3022	(425) 462-3223
ADDRESS: M/S 81-3022, P.O. BOX 97034		
CITY: BELLEVUE	STATE: WA	ZIP CODE: 98009-9734

CONTACT NAME (IF DIFFERENT FROM ABOVE)	PHONE NO.	FAX NO.
TOM MCDONALD	(360) 956-3300	(360) 956-1208
ADDRESS: 111 MARKET STREET N.E., SUITE 200		
CITY: OLYMPIA	STATE: WA	ZIP CODE: 98501-1008

2. Water Right Information:

WATER RIGHT OR CLAIM NUMBER	RECORDED NAME(S)
CLAIM # 60822. See comments. 160822	PUGET SOUND POWER AND LIGHT/PACIFIC COAST POWER COMPANY

DO YOU OWN THE RIGHT TO BE CHANGED? ☒ YES ☐ NO

IF NO, PROVIDE OWNER(S) NAME:

HAS THE WATER BEEN PUT TO BENEFICIAL USE IN THE LAST FIVE (5) YEARS? ☒ YES ☐ NO

Please attach copies of any documentation that demonstrates consistent, historical use of water since the right was established. Also, if you have a water system plan or conservation plan, please include a copy with your application. – The Applicant has voluminous records of water use and power fee payments. These will be provided within 30 days.

FOR OFFICE USE ONLY
APP. NO._____ PERMIT NO. _____ CERT. NO. Claim 160822 CERT. OF CHANGE NO. 160822

3. Point(s) of Diversion/Withdrawal:

A. Existing

SOURCE	NO.	¼	¼	SEC.	TWP.	RGE.	PARCEL #	WELL TAG #
NOT APPLICABLE.								

B. Proposed

SOURCE	NO.	¼	¼	SEC.	TWP.	RGE.	PARCEL #	WELL TAG #
NOT APPLICABLE.								

DO YOU OWN THE EXISTING AND PROPOSED POINT(S) OF DIVERSION/WITHDRAWAL?

EXISTING: ☐ YES ☐ NO PROPOSED: ☐ YES ☐ NO – IF NO, PROVIDE OWNER(S) NAME:

Please include copies of all water well reports involved with this proposal. Also, if you know the distances from the nearest section corner to the above point(s) of diversion/withdrawal, please include that information in Item No. 6 (remarks) or as an attachment.

4. Purpose of Use:

A. Existing

PURPOSE OF USE	GPM or CFS	ACRE-FT/YR	PERIOD OF USE
HYDROPOWER AND OTHER BENEFICIAL USES	2,000 CFS	1,440,000	YEAR-ROUND

B. Proposed

PURPOSE OF USE	GPM or CFS	ACRE-FT/YR	PERIOD OF USE
TO THE EXTENT THESE PURPOSES ARE NOT OTHERWISE ALREADY AUTHORIZED: RECREATIONAL RESERVOIR LEVELS; WINTER RESERVOIR LEVELS TO MAINTAIN RESERVOIR; PROTECT AND ENHANCE FISH AND WILDLIFE; MAINTENANCE OF WATER QUALITY FOR RECREATIONAL PURPOSES IN THE RESERVOIR AND TO MEET OTHER REGULATORY REQUIREMENTS	2,000 CFS	1,440,000	YEAR-ROUND

5. Place of Use:

A. Existing

LEGAL DESCRIPTION OF LANDS WHERE WATER IS PRESENTLY USED:
NOT APPLICABLE.

¼	¼	SEC.	TWP.	RGE.	COUNTY	PARCEL #	# OF ACRES

DO YOU OWN ALL THE LANDS IN THE EXISTING PLACE OF USE? ☐ YES ☐ NO – IF NO, PROVIDE OWNER(S) NAME:

B. Proposed

LEGAL DESCRIPTION OF LANDS WHERE NEW USE IS PROPOSED:
NOT APPLICABLE.

¼	¼	SEC.	TWP.	RGE.	COUNTY	PARCEL #	# OF ACRES

DO YOU OWN ALL THE LANDS IN THE PROPOSED PLACE OF USE? ☐ YES ☐ NO – IF NO, PROVIDE OWNER(S) NAME:

Attach a detailed map of your proposed change/transfer. The map should show existing and proposed point(s) of diversion/withdrawal, place of use and any other features involved with this application. If platted property, please include a certified copy of the plat map.

Are there any ADDITIONAL WATER rights OR CLAIMS RELATED to the same property as the ONE PROPOSED FOR CHANGE/TRANSFER?
☐ YES ☒ NO – IF YES, PROVIDE THE WATER RIGHT/CLAIM NUMBER(S):
Except as provided with this Application.

6. Remarks and Other Relevant Information:

Applicant's water right dates back to before 1900. The applicant has the right to divert and use water for multiple beneficial purposes, including maintenance of lake levels and flow augmentation in addition to power production. The Application is filed for the sole purpose of confirming these uses of water and resolve any dispute or disagreement regarding such uses. A more descriptive basis of the right is provided in the attached document.

PSE, on behalf of itself and its successors and assigns, expressly reserves and does not waive, release, or in any way relinquish any and all rights, benefits, privileges, and interests arising, directly or indirectly, in, under, and through the water right. Without limiting the generality of the foregoing, this application (i) is made and filed without prejudice as to any such right, benefit, privilege, and interest, and (ii) is made and filed with a full reservation of rights by and on behalf of PSE and its successors and assigns.

IF FOR SEASONAL OR TEMPORARY, START DATE ____/____/____ END DATE ____/____/____

7. Signatures:

I certify that the information above is true and accurate to the best of my knowledge. I understand that in order to process my application, I am hereby granting staff from the Department of Ecology or the County Conservancy Board access to the above site(s) for inspection and monitoring purposes. If assisted in the preparation of the above application, I understand that all responsibility for the accuracy of the information rests with me.

Edward R. Schild — 9/28/05
(Applicant) Edward R. Schild for Puget Sound Energy — *(Date)*

_____ — ____/____/____
(Water Right Holder) (SAME) — *(Date)*

_____ — ____/____/____
(Land Owner(s) of Existing Place of Use) (SAME) — *(Date)*

IMPORTANT! APPLICATION FILING INFORMATION IS PROVIDED ON THE NEXT PAGE.

WE ARE RETURNING YOUR APPLICATION FOR THE FOLLOWING REASON(S):

☐ APPLICATION FEE NOT ENCLOSED ☐ MAP NOT INCLUDED or INCOMPLETE

☐ ADDITIONAL SIGNATURES REQUIRED ☐ SECTION _____ IS INCOMPLETE

☐ OTHER/EXPLANATION:_____

STAFF: _____ *DATE:* ____/____/____

Perkins Coie

July 23, 2004

"Final"
per MQuehrn

TO: Mark Quehrn
Ed Schild
Paul Wetherbee
Kendall Fisher

FROM: Tom McDonald

RE: **PSE Application for Change**

Here is the draft application to change the water right with the proposed attachments. I will be back on August 2, 2004.

TM:vla

STATE OF WASHINGTON

APPLICATION FOR CHANGE/TRANSFER OF WATER RIGHT

For filing with Ecology or with County Conservancy Boards

A MINIMUM FEE OF $10.00 PAYABLE TO ECOLOGY MUST ACCOMPANY THIS APPLICATION

(Check all that apply.)

- ☐ Change purpose(s) of use
- ☒ Add purpose(s) of use
- ☐ Change point(s) of diversion/withdrawal
- ☐ Add point(s) of diversion/withdrawal
- ☐ Change/transfer place of use
- ☐ Other (i.e. consolidation, intertie, trust water)

Explain:_____

FOR OFFICE USE ONLY

CHANGE No._____ WRIA_____

DATE ACCEPTED____/____/____ BY_____

FEE $_____ REC'D ____/____/____

CHECK No. _____

SEPA: ❑ Exempt ❑ Not exempt

IF MORE SPACE IS NEEDED, ATTACH ADDITIONAL SHEETS (PLEASE PRINT OR TYPE CLEARLY)*

1. Applicant Information:

APPLICANT/BUSINESS NAME	PHONE NO.	FAX NO.
PUGET SOUND ENERGY/ED SCHILD	(425) 462-3022	(425) 3223
ADDRESS		
M/S 81-3022, P.O. BOX 97034		
CITY	STATE	ZIP CODE
BELLEVUE	WA	98009-9734

CONTACT NAME (IF DIFFERENT FROM ABOVE)	PHONE NO.	FAX NO.
TOM MCDONALD	(360) 956-3300	(360) 956-1208
ADDRESS		
111 MARKET STREET N.E., SUITE 200		
CITY	STATE	ZIP CODE
OLYMPIA	WA	98501-1008

2. Water Right Information:

WATER RIGHT OR CLAIM NUMBER	RECORDED NAME(S)
CLAIM # 60822 – Adjudicated in 1910. See comments.	PUGET SOUND POWER AND LIGHT/PACIFIC COAST POWER COMPANY

DO YOU OWN THE RIGHT TO BE CHANGED? ☒ YES ❑ NO

IF NO, PROVIDE OWNER(S) NAME:

HAS THE WATER BEEN PUT TO BENEFICIAL USE IN THE LAST FIVE (5) YEARS? ☒ YES ❑ NO

Please attach copies of any documentation that demonstrates consistent, historical use of water since the right was established. Also, if you have a water system plan or conservation plan, please include a copy with your application. – The Applicant has voluminous records of water use and power fee payments. These will be provided within 30 days.

FOR OFFICE USE ONLY

APP. NO._____ PERMIT NO. _____ CERT. NO._____ CERT. OF CHANGE NO._____

Attach a detailed map of your proposed change/transfer. The map should show existing and proposed point(s) of diversion/withdrawal, place of use and any other features involved with this application. If platted property, please include a certified copy of the plat map.

Are there any ADDITIONAL WATER rights OR CLAIMS RELATED to the same property as the ONE PROPOSED FOR CHANGE/TRANSFER?
☐ YES ☒ NO – IF YES, PROVIDE THE WATER RIGHT/CLAIM NUMBER(S):
Except as provided with this Application.

6. Remarks and Other Relevant Information:

Applicant's water right dates back to before 1900. The applicant takes the position that it has had the right to divert and use water for multiple purposes, including maintenance of lake levels and flow augmentation in addition to power production. The applicant reserves, and does not waive this position. The Application seeks to confirm these uses of water and resolve any dispute or disagreement regarding such uses. A more descriptive basis of the right is provided in the attached document.

IF FOR SEASONAL OR TEMPORARY, START DATE ____/____/____ END DATE ____/____/____

7. Signatures:

I certify that the information above is true and accurate to the best of my knowledge. I understand that in order to process my application, I am hereby granting staff from the Department of Ecology or the County Conservancy Board access to the above site(s) for inspection and monitoring purposes. If assisted in the preparation of the above application, I understand that all responsibility for the accuracy of the information rests with me.

_____ ____/____/____
(Applicant) ***(Date)***

_____ ____/____/____
(Water Right Holder) (SAME) ***(Date)***

_____ ____/____/____
(Land Owner(s) of Existing Place of Use) (SAME) ***(Date)***

IMPORTANT! APPLICATION FILING INFORMATION IS PROVIDED ON THE NEXT PAGE.

WE ARE RETURNING YOUR APPLICATION FOR THE FOLLOWING REASON(S):

☐ APPLICATION FEE NOT ENCLOSED ☐ MAP NOT INCLUDED or INCOMPLETE

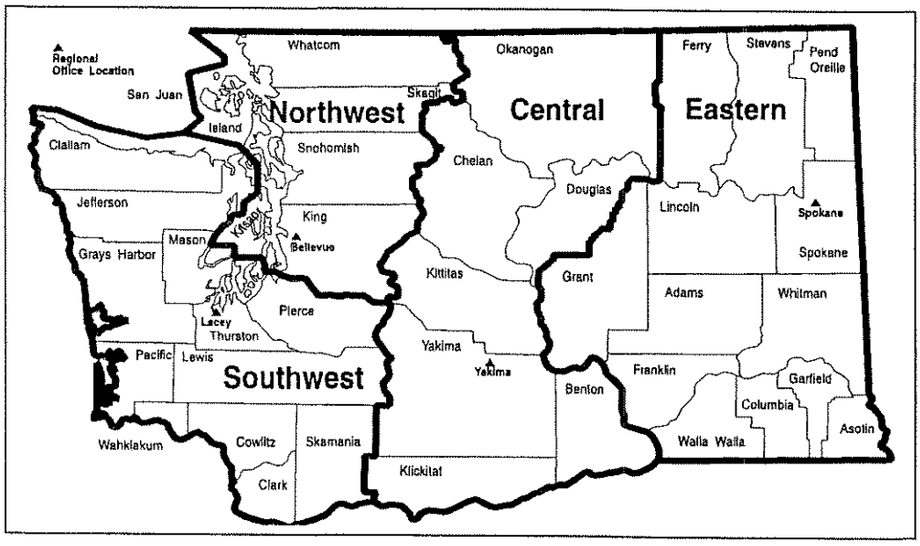
☐ ADDITIONAL SIGNATURES REQUIRED ☐ SECTION _____ IS INCOMPLETE

☐ OTHER/EXPLANATION:_____

STAFF: _____ ***DATE:*** ____/____/____

IMPORTANT!

Submit your application to Ecology at the regional office for the area of proposed or existing water use or at a Conservancy Board with jurisdiction. Below is a map of the State of Washington, with outlines of the four Ecology regional offices. If you have questions about your application or whether a County Conservancy Board with jurisdiction exists, contact the Water Resources program at the regional office in which your project is located.



Department of Ecology
Central Regional Office
15 W. Yakima Avenue, Suite 200
Yakima, WA 98902
Telephone: (509) 575-2490

Department of Ecology
Eastern Regional Office
N. 4601 Monroe, Suite 202
Spokane, WA 99205-1295
Telephone: (509) 456-2926

Department of Ecology
Northwest Regional Office
3190 – 160th Avenue SE
Bellevue, WA 98008-5452
Telephone: (425) 649-7000

Department of Ecology
Southwest Regional Office
PO Box 47775
Olympia, WA 98504-7775
Telephone: (360) 407-6300

Persons of disability needing assistance in the application process or those needing this application in an alternate format, may call (360) 407-6607 (voice) or (360) 407-6006 (TDD).

Ecology is an Equal Opportunity and Affirmative Action employer...

ATTACHMENT

PSE has existing water rights, storage rights and other rights pertaining to the White River and the White River Project that pre-date the State's water code. PSE's vested water rights derive from claims dated April 19, 1895, and April 5, 1901, and from the decree of the Superior Court of the State of Washington for Pierce County, Pacific Coast Power Co. v. Quilquilion (Decree No. 28120, dated April 13, 1910) (specifying the amount of PSE's 2,000 cfs water right, including the 30 cfs minimum flow), as well as property acquired by Puget Power along the project reach. Under the 1967 claims registration act, PSE filed another claim, No.160822. The several claims list a multiple of uses, including power, manufacturing, industrial, domestic, irrigation and mining.

PSE's exercise of its existing water rights is limited by the October 31, 1986 settlement agreement between the Muckleshoot Indian Tribe and PSE. This settlement, approved and ordered by the United State District Court in Muckleshoot Indian Tribe of the Muckleshoot Indian Reservation v. Puget Sound Power & Light Co., No. 472-72C2(V) (W.D. Wash.), requires minimum White River instream flows of 130 cfs measured at the boundary of the Muckleshoot Indian Reservation, and provides a supplementary 3,650 second-foot-day fish transportation flow budget, to be provided in accordance with the settlement agreement. The Department of Ecology has further recognized the water right in approving a change to allow 12 cfs for use for a fish hatchery, dated April 15, 1994.

In support of the foregoing, the following documents are attached:

1. Water Right Claim for White River dated June 10, 1974

2. *Pacific Coast Power Co., Inc. v. Peter Quilquilion*, King County Superior Court No. 63969, Decree dated April 13, 1910.

3. *Pacific Coast Power company v. Peter Quilquilion*, No. 28120, Decree dated April 13, 1910.

4. Certificate of Change to Water Right Claim No. 160822, dated April 15, 1994.

5. Certificate of Water Right G1-25214C, dated March 29, 1988 and accompanying reports (discusses agreement with Muckleshoot Indian Tribe and validity of PSE's water right).

6. Claim by White River Water Company dated April 19, 1895, Book 1, Page 76.

7. Notice by White River Water Company dated September 24, 1895, Book 1, Page 82.

8. Notice by White River Power Company dated April 1, 1901, filed April 5, 1901, #137037.

The following claims are also supportive of PSE's rights, showing intent to use the water:

9. Notice by Charles E. Warner dated February 8, 1896, filed February 14, 1896, Book 1, Page 98.

10. Notice by Charles E. Warner dated January 11, 1897, filed January 12, 1897, Book 1, Page 115.

11. Notice by John P. Conduit dated February 16, 1898, filed June 1, 1898, Book 1, Page 133.

12. Notice by Merfyn P. Randolph dated May 15, 1902, recorded May 25, 1902, Book I, Water Rights, Page 195, Fee No. 149531.

13. Notice by S.L. Shuffleton dated October 12, 1902, recorded October 21, 1902, Book 1, Water Rights, Fee No. 153982.

14. Notice by Mervyn P. Randolph dated October 28, 1902, recorded October 31, 1902, Book 1, Water Rights, Page 218, Fee No. 154373.

15. Assignment of Water Rights by Mervyn P. Randolph dated November 7m 1902, recorded November 8, 1902, Book 202, Deeds, Page 101, Fee No. 154736

Puget Sound Power & Light Co.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
WATER RIGHT CLAIMS REGISTRATION

WATER RIGHT CLAIM

White River

1. NAME Puget Sound Power & Light Company

ADDRESS P.O. Box 868

Bellevue, Wa ZIP CODE 98009

2. SOURCE FROM WHICH THE RIGHT TO TAKE AND MAKE USE OF WATER IS CLAIMED: Surface Water (SURFACE OR GROUND WATER)

W.R.I.A. (LEAVE BLANK)

A. IF GROUND WATER, THE SOURCE IS

B. IF SURFACE WATER, THE SOURCE IS White River

3. THE QUANTITIES OF WATER AND TIMES OF USE CLAIMED:

A. QUANTITY OF WATER CLAIMED Max. 2,000 cfs PRESENTLY USED Max. 2,000 cfs
(CUBIC FEET PER SECOND OR GALLONS PER MINUTE)

B. ANNUAL QUANTITY CLAIMED Max. 1,440,000 ac/ft PRESENTLY USED Max. 1,440,000 ac/
(ACRE FEET PER YEAR)

C. IF FOR IRRIGATION, ACRES CLAIMED None PRESENTLY IRRIGATED None

D. TIME(S) DURING EACH YEAR WHEN WATER IS USED: Continuously

4. DATE OF FIRST PUTTING WATER TO USE: MONTH Apr. 17, 1895 and Apr. 27, 1901 YEAR

5. LOCATION OF THE POINT(S) OF DIVERSION/WITHDRAWAL: 200 FEET East AND 200 FEET South FROM THE North Quarter Section CORNER OF SECTION 2

BEING WITHIN North 1/4 Sec. OF SECTION 2 T. 19 N. R. 6E (E.OR W.)

IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, LOT BLOCK OF

(GIVE NAME OF PLAT OR ADDITION)

6. LEGAL DESCRIPTION OF LANDS ON WHICH THE WATER IS USED: Please see attached descripti of Project lands.

COUNTY Pierce

7. PURPOSE(S) FOR WHICH WATER IS USED: Hydroelectric plant for private utility use.

8. THE LEGAL DOCTRINE(S) UPON WHICH THE RIGHT OF CLAIM IS BASED: Riparian and water rights acquired prior to Water Cod June 15, 1917. Adjudicated Pacific Coast Power Co. vs Peter Quiquilion, April 13, 1910, Pierce County Superior Court #28120.

DO NOT USE THIS SPACE

THE FILING OF A STATEMENT OF CLAIM DOES NOT CONSTITUTE AN ADJUDICATION OF ANY CLAIM TO THE RIGHT TO USE OF WATERS AS BETWEEN THE WATER USE CLAIMANT AND THE STATE OR AS BETWEEN ONE OR MORE WATER USE CLAIMANTS AND ANOTHER OR OTHERS. THIS ACKNOWLEDGEMENT CONSTITUTES RECEIPT FOR THE FILING FEE.

DATE RETURNED THIS HAS BEEN ASSIGNED WATER RIGHT CLAIM REGISTRY NO.

5-16-75 160823

I HEREBY SWEAR THAT THE ABOVE INFORMATION IS TRUE A ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

X D. H. Knight

D. H. Knight, Vice Presid

DATE June 10, 1974

IF CLAIM FILED BY DESIGNATED REPRESENTATIVE, PRINT OR TY FULL NAME AND MAILING ADDRESS OF AGENT BELOW.

D. H. Knight
Vice President

In the Superior Court of the State of Washington for the County of King

State of Washington, } ss.
County of King }

Pacific Coast Power Company

vs.

Peterson

Plaintiff

No. 63969

Peter Christensen

Defendant

D K Sickels

I, OTTO A. CASE, County Clerk of King County, and ex-officio Clerk of the Superior Court of the State of Washington for the County of King, do hereby Certify that I have compared the foregoing copy with the original Decree

in the above entitled cause as the same appears on file and of record in my office, and the same is a true and perfect transcript of said original and of the whole thereof.

Witness my hand and the Seal of the said Superior Court, at my office in Seattle this 13 day of April 1910

D K Sickels Clerk

By M L Cushing Deputy

63969

IN THE SUPERIOR COURT OF THE STATE OF WASHINGTON FOR KING COUNTY.

Pacific Coast Power Company, a corporation,

Petitioner,

vs.

Peter Quilquilion (a single man),

Respondent.

No. 63969.

D E C R E E.

This proceeding came on duly for hearing before the above entitled court in the court room of department No. 6 of said court in the court house of said King county on the 12th day of April, 1910, upon the application of the petitioner for a final decree herein, appropriating and vesting in the petitioner the lands described in the petition herein and hereinafter described, and releasing and discharging the petitioner from any and all further liability therefor to the respondent. The petitioner appeared by its attorney, James B. Howe, and the respondent Peter Quilquilion (a single man), appeared by Elmer E. Todd, United States District attorney and their attorney. It appeared to the court that a decree adjudging public use and directing and ordering the impanneling of a jury to ascertain and determine the compensation to be made in money, irrespective of any benefit from any improvement proposed by said petitioner, to the respondent and all other persons interested, for the taking or injuriously affecting the lands above referred to and hereinafter described, real estate, water, premises, riparian rights and other property in the manner prescribed by law, was heretofore, on to-wit, the 23 day of December, 1908 made and entered herein, and that thereafter the jury, duly impaneled and sworn, rendered its verdict, wherein and whereby said jury found that the full compensation to be paid to the respondent was the sum of five hundred eighty-eight and 23/100 dollars; and that thereafter, and on to-wit the 12th day of April, 1910, a judgment and decree of appropriation was duly made and entered herein, wherein and whereby, amongst other things, it was

ordered, adjudged and decreed that, upon payment by the petitioner to the respondent, or to the clerk of this court for the benefit of the respondent, as provided by law, of the said amount so assessed by the jury in favor of the respondent, and of all costs of this proceeding, a further judgment and decree, adjudging, decreeing, appropriating and vesting in the petitioner the right of diversion of the waters of White river, prayed for in its petition, should be made and entered herein. And it now further appearing to the court that the petitioner has paid to the clerk of this court, for the benefit of the respondent as provided by law, the amount of the damages assessed by the jury in favor of the respondent, to-wit, the sum of $588.23, and all the costs of this proceeding;

IT IS, by reason of the law and the facts, and with the consent in open court of the attorney for the respondent, by the court HERE AND NOW ADJUDGED AND DECREED that the right of the petitioner, so far as those lands described as all that part, situated within King county, of the tracts described as the northeast quarter of the southwest quarter, and lots numbered twelve and thirteen of section two, in township twenty north of range five east W.M., containing sixty-four and ten one-hundredths acres, more or less, or any riparian or other rights appurtenant or incident to such lands are concerned, to divert the water of White river at a point on the south bank of said river opposite the quarter section corner between section two in township nineteen north, range six east of the Willamette Meridian, and section thirty-five in township twenty north, range six east of the Willamette Meridian, to the extent of two thousand cubic feet of water per second of time, when and so long as the water flowing past said point of diversion equals or exceeds two thousand and thirty cubic feet of water per second of time, and all of the water of said White river, except thirty cubic feet of water per second of time, when and so long as the water flowing past said point of diversion is less than two thousand and thirty cubic feet of water per second of time (leaving in said White river and flowing through the original channel thereof at the point of diversion at all times at least thirty cubic feet of water per second of time), is here-

by released and discharged from any and all further liability therefor to th respondent, unless upon appeal the respondent shall recover a greater amount of damages.

Dated at Seattle, King county, Washington, this 12th day of April, 1910.

John F. Main
Judge.

In the Superior Court of the State of Washington
for the County of King

State of Washington, }
County of King } ss.

Plaintiff

No.

I, [illegible], Clerk of the Superior Court of the State of Washington for said County of King, do hereby Certify that I have compared the foregoing copy with the original

in the above entitled cause as the same appears on file in my office, and the same is a true and perfect transcript thereof and of the whole thereof.

10804

Pacific Coast Power Company, a corporation
Petitioner,

vs

Peter Quilquillion (a single man) Respondent.

DECREE.
No. 28120.
Dated April 13, 1910.

Recorded April 13, 1910;
At 11:40 A. M.
Book 351Deeds, Page 188.
Fee No. 314039.

IN THE SUPERIOR COURT OF THE STATE OF WASHINGTON
FOR PIERCE COUNTY.

This proceeding came on duly for hearing before the above entitled court in the court room of department four of said court in the court house of said Pierce county on the 13th day of April, 1910, upon the application of the petitioner for a final decree herein, appropriating and vesting in the petitioner the lands described in the petition herein and hereinafter described, and releasing and discharging the petitioner from any and all further liability therefor to the respondent. The petitioner appeared by its attorney, James B. Howe, and the respondent Peter Quilquillion (a single man) appeared by Elmer E. Todd United States District Attorney and his attorney. It appeared to the court that a decree adjudging public use and directing and ordering the impaneling of a jury to ascertain and determine the compensation to be made in money, irrespective of any benefit from any improvement proposed by said petitioner, to the respondent and all other persons interested, for the taking or injuriously affecting the lands above referred to and hereinafter described, real estate, water, premises, riparian rights and other property in the manner prescribed by law, was heretofore made and entered herein, and that thereafter the jury duly impaneled and sworn, rendered its verdict wherein and whereby said jury found that the full compensation to be paid to the respondent was the sum of one dollar; and that thereafter, on to-wit the 13th day of April, 1910, a judgment and decree of appropriation was duly made and entered herein, wherein and whereby, amongst other things, it was ordered, adjudged and decreed that, upon payment by the petitioner to the respondent, or to the clerk of this court for the benefit of the respondent, as provided by law, of the said amount so assessed by the jury in favor of the respondent, and of all costs of this proceeding, a further judgment and decree, adjudging, decreeing, appropriating and vesting in the petitioner the right of diversion of the waters of White river, prayed for in its petition, should be made and entered herein. And it now further appearing to the court that the petitioner has paid to the clerk of this court, for the benefit of the respondent as provided by law, the amount of the damages assessed by the jury in favor of the respondent, to-wit, the sum of one dollar, and all the costs of this proceeding;

It is by reason of the law and the facts, and with the consent in open court of the attorney for the respondent by the court here and now ADJUDGED AND DECREED that the right of the petitioner, so far as those lands described

Note - All decrees on this form. 5/16/40

as all that part, situated within said Pierce county, of tracts described as:

the northeast quarter of the southwest quarter, and lots twelve and thirteen of section two, township twenty north of range five east, W.M.,

or any riparian or other rights appurtenant or incident to such lands are concerned, to divert the water of White river at a point on the south bank of said river opposite the quarter section corner between section two in township nineteen north, range six east of the Willamette Meridian, and section thirty-five in township twenty north, range six east of the Willamette Meridian, to the extent of two thousand cubic feet of water per second of time, when and so long as the water flowing past said point of diversion equals or exceeds two thousand and thirty cubic feet of water per second of time, and all of the water of said White river, except thirty cubic feet of water per second of time, when and so long as the water flowing past said point of diversion is less than two thousand and thirty cubic feet of water per second of time-(leaving in said White river and flowing through the original channel thereof at the point of diversion at all times at least thirty cubic feet of water per second of time), is hereby appropriated and vested in the petitioner; and the petitioner is hereby released and discharged from any and all further liability therefor to the respondent, unless upon appeal the respondent shall recover a greater amount of damages.

M. L. Clifford
Judge.

Certificate.

I, J. F. Libby, County Clerk and by virtue of the laws of the State of Washington ex-officio Clerk of the Superior Court of the State of Washington, for Pierce County, do hereby certify that the annexed is a true and correct copy of the Decree, in the above entitled action, now on file and of record in this office.

In Witness Whereof, I have hereunto set my hand and seal of the said Superior Court, at my office in the City of Tacoma, this 13 day of April 1910.

J. F. Libby
Clerk

(Superior Court Seal)

By E. F. McKenzie
Deputy.

THROUGH THE LUCKLESHOOT RESERVATION

That part of the following described lands situated in King County:

No	S.	T.	R.	
247	28	21	5E	NE¼ of NE¼ and SE¼ of NE¼ and NW¼ of NE¼ and lot #3
248	28	21	5E	NE¼ of NW¼ and lots 1, 8, 2, and 7.
249	28	21	5E	Lots 4, 5 and 6 NE¼ of SW¼ and NW¼ of SW¼
250	28	21	5E	SE¼ of SE¼, SE¼ of SW¼ SW¼ of SE¼
251	34	21	5E	NW¼ of NW¼ and lots 1 and 2.
252	34	21	5E	SW¼ of NW¼ and lots 3 and 4.
253	34	21	5E	NW¼ of SW¼ and SW¼ of SW¼ and SE¼ of SW¼
254	34	21	5E	Lot #5
255	34	21	5E	NE¼
256	34	21	5E	NE¼ of SE¼ and lot 6
257	34	21	5E	Lots 7, 8, 9 and 10
258	2	20	5E	Lots 3, 4, 5, 6, and 14 and SE¼ of NW¼
259	2	20	5E	NE¼ of SE¼, NW¼ of SE¼, SE¼ of SE¼ and lots 11 and 10.
260	2	20	5E	NE¼ of SW¼ and lots 12 and 13.
261	12	20	5E	Lots 1, 2 and 3.
262	2	20	5E	Lots 7, 8 and 9.
263	12	20	5E	SW¼ of NW¼

That part of the following described lands situated in Pierce County.

264	2	20	5E	NE¼ of SW¼ and lots 12 and 13.
265	2	20	5E	Lots 7, 8 and 9.
266	12	20	5E	Lots 1, 2 and 3.
267	2	20	5E	NE¼ of SE¼, NW¼ of SE¼, SE¼ of SE¼ and lots 11 and 10
268	2	20	5E	Lots 3, 4, 5, 6, and 14 and SE¼ of NW¼

CERTIFICATE. NW¼ NW¼ & S½ of NW¼ 32-20-6

This Company hereby certifies that on the 17th day of January, 1908, the right to abstract, divert and carry away from the channel of White River, at any point therein that part thereof contiguous or adjacent to the northwest quarter of the northeast quarter and the southeast quarter of the northeast quarter of Section 32, Township 20 North, of Range 6 East, W.M., was vested in Seattle-Tacoma Power Company, subject to the reservation of water required for the use of cattle and domestic purposes, and further to a provision that actual work on the plan for the diversion of such waters shall have been begun on or before July 1st, 1900, as appears by the records in the office of the County Auditor of Pierce County, State of Washington; and that its title thereto was free and encumbered, except as to the limitatioms above recited, and subject also to the lien of a judgment against the White River Power Company for $324.75, entered March 12th, 1906, in Execution Docket 22, page 102, and one for costs against said Company entered March 28th, 1906 in Execution Docket 22, page 112, and that ever since said 17th day of January, 1908, Pacific Coast Power Company, a Washington corporation, has been and is now the record owner of the rights hereinabove recited, under a conveyance executed by the then record owners of said tract of land to Pacific Coast Power Company, which conveyance to Pacific Coast Power Company is of record in the office of the Auditor of Pierce County, Washington, in Volume 325, page 61, and the title of Pacific Coast Power Company to such water rights and right to divert such waters is at the date of this certificate free and unincumbered, except by the following:

The encumbrances above recited, and the lien of a mortgage given by Pacific Coast Power Company to Seattle-Tacoma Power Company, for $583,333, recorded in Book 153 of Mortgages, page 216, January 18th, 1908.

Made at the request of D. N. King,
Dated March 10th, 1910, at 5 o'clock, P.M.

The Title Insurance and Investment Company, of Tacoma,

By W. T. Clark
Ass't Manager.

32-20-6

Abstract 155

DEPARTMENT OF ECOLOGY

RECEIVED THIS DAY

CERTIFICATE OF CHANGE TO WATER RIGHT CLAIM

[X] Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

APR 27 3 01 PM '94

BY THE DIVISION OF RECORDS & ELECTIONS KING COUNTY

[ ] Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
First date claim used*	160822		WRC No. 160822

NAME
Puget Sound Power & Light Company

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
P.O. Box 97034	Bellevue	Washington	98009-9734

* *The priority date for the vested right changed in this certificate is the first date of appropriation under Water Right Claim No. 160822*

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
White River

TRIBUTARY OF (IF SURFACE WATERS)
Puyallup River

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
12		N/A non-consumptive Reuse

QUANTITY, TYPE OF USE, PERIOD OF USE
Fish Hatchery Operation - Continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION–WITHDRAWAL
500 feet north and 800 feet west from the SE corner of Section 35, Township 20 North, Range 6 East, W.M.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼ SE¼ SE¼	35	20	6E	10	King

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

S½ SE¼ of Section 35, Township 20 North, Range 6 East, W.M. in King County, Washington.

8.00

FILED for Record at Request of
Name Puget Sound Power & Light
Address P.O. Box 97034
Bellevue, Wa. 98009-9734

PROVISIONS

This Certificate of Change to Water Rigth Claim No. 160822 documents the specific changes as noted:

1. Addition of a point of diversion

   Reuse of the water for fish propagation

3. Addition of the place of use to include the fish hatchery and wetlands.

Surface water intake structure on the north bank of the White River sized for 12 cfs. Water from the river will be screened through a static sieve and then piped to the hatchery. Overflow from the screen will be routed to an optional clarifier and then to the discharge point located at the existing fish ladder and trap point. Pipelines from the intake structure to the hatchery facilities will be placed upon the existing ground surface.

If the hatchery produces in excess of 20,000 lbs. of fish, or uses over 5,000 lbs. of food per month, the applicant shall notify the Water Quality Program. Department of Ecology, and proced to obtain an NPDES permit.

The applicant will develop and submit to the Department for approval a sediment management plan for those sediments removed by the static sieve associated with the surface water intake structure. *

The Washington State Department of Fisheries will be consulted as to the design and construction of the intake structure screen.

The permittee shall obtain an HPA from the appropriate agency prior to initiating work on the surface water intake structure.

*A sediment management plan is not required as outlined in letters dated May 7, 1992, and June 1, 1994, to the Washington State Department of Ecology (copies attached).

Bonnie Lindner
Hydropower Regulation
Puget Power
June 3, 1994

9404220362

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Bellevue, Washington,

this 15th day of April, 1994.

Department of Ecology

ENGINEERING DATA
OK

by Stephen J. Hirschey

Stephen J. Hirschey, Section Supervisor, Water Resources

FOR COUNTY USE ONLY

This Certificate of Change to Water Rigth Claim No. 160822 documents the specific changes as noted:

1. Addition of a point of diversion

   Reuse of the water for fish propagation

3. Addition of the place of use to include the fish hatchery and wetlands.

Surface water intake structure on the north bank of the White River sized for 12 cfs. Water from the river will be screened through a static sieve and then piped to the hatchery. Overflow from the screen will be routed to an optional clarifier and then to the discharge point located at the existing fish ladder and trap point. Pipelines from the intake structure to the hatchery facilities will be placed upon the existing ground surface.

If the hatchery produces in excess of 20,000 lbs. of fish, or uses over 5,000 lbs. of food per month, the applicant shall notify the Water Quality Program. Department of Ecology, and proced to obtain an NPDES permit.

The applicant will develop and submit to the Department for approval a sediment management plan for those sediments removed by the static sieve associated with the surface water intake structure. *

The Washington State Department of Fisheries will be consulted as to the design and construction of the intake structure screen.

The permittee shall obtain an HPA from the appropriate agency prior to initiating work on the surface water intake structure.

*A sediment management plan is not required as outlined in letters dated May 7, 1992, and June 1, 1994, to the Washington State Department of Ecology (copies attached).

Bonnie Lindner
Hydropower Regulation
Puget Power
June 3, 1994

9404220362

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Bellevue, Washington,

this 15th day of April, 1994.

Department of Ecology

ENGINEERING DATA
OK

by Stephen J. Hirschey

Stephen J. Hirschey, Section Supervisor, Water Resources

FOR COUNTY USE ONLY

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

☐ Surface Water (issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendatory thereto, and the rules and regulations of the Department of Ecology)

☒ Ground Water (issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendatory thereto, and the rules and regulations of the Department of Ecology)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
March 29, 1988	G1-25214	G1-25214 P	G1-25214 C

NAME
Puget Sound Power & Light Company

ADDRESS (STREET)	(CITY)	(STATE)	ZIP CODE
Post Office Box 97034	Bellevue	Washington	98009

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well field consisting of seven ground water wells

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	1,950*	0.5*

QUANTITY, TYPE OF USE, PERIOD OF USE
1950 gpm; fish hatchery operation & group domestic supply - continuous; fish hatchery operation non-consumptive, group domestic supply 0.5 af/yr
* total withdrawal is supplemental to Certificate of Change to Water Right Claim No. 160822.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION/WITHDRAWAL
Well field within area defined below

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE E. OR W.M.	W.R.I.A.	COUNTY
SE¼ E½ of SW¼	35	20 N	6 E	10	King

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OR PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

That portion of the SE¼ and the E½ of the SW¼ of Section 36, T.20 N., R. 6 E., W.M. lying southerly of the SE Mud Mountain Road and lying northerly of the White River.

CERTIFICATE

PROVISIONS

The certificate holder will maintain a sufficient quantity of water flowing in the wetlands to retain the wetlands in essentially their natural condition. At a minimum, when well field operations causes the water flowing in the wetlands northeast of the access road to flow at velocities less than 0.2 feet per second, the permittee will augment wetland water with White River water to ensure wetland water velocities of 0.2 feet per second. Wetland water velocities will be measured downstream of the culvert under the hatchery access road.

The certificate holder will install an in-line flow meter capable of recording instantaneous and total volume of water supplied to the wetlands. Records will be kept showing the daily amount of water supplied to the wetlands during augmentation periods and the records provided to the Department upon request.

If the hatchery produces in excess of 20,000 lbs. of fish, or uses over 5,000 lbs. of food per month, the permittee must notify the Water Quality Program, Department of Ecology, and obtain the necessary permit.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Bellevue, Washington,

this 30th day of December, 1994.

Department of Ecology

ENGINEERING DATA OK

by
Stephen J. Hirschey, Section Supervisor, Water Resources

FOR COUNTY USE ONLY

CERTIFICATE

No. G1-25214 C

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PROTESTED

REPORT OF EXAMINATION

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
March 29, 1988	G1-25214		

NAME
Puget Sound Power & Light Company

ADDRESS (STREET)	CITY	STATE	ZIP CODE
Post Office Box 97034	Bellevue	Washington	98009

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well field consisting of seven ground water wells

TRIBUTARY OF (IF SURFACE WATER)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	2,200*	0.5*

QUANTITY, TYPE OF USE, PERIOD OF USE
2200 gpm: fish hatchery operation & group domestic supply - continuous; fish hatchery operation non-consumptive, group domestic supply 0.5 af/yr
* total withdrawal is supplemental to Certificate of Change to Water Right Claim No. 160822.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION/WITHDRAWAL
Well field within area defined below.

LOCATED WITHIN SW¼NE¼ (LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE E. OR W.	W.M.	COUNTY
SE¼ E½ of SW¼	36	20 N	6 E	10	King

RECORDED PLAT(S), IF PROPERTY

LOT	BLOCK	OF PLAT NAME OF PLAT OR ADDITION

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

That portion of the SE¼ and the E½ of the SW¼ of Section 36, T.20 N., R. 6 E., W.M. lying southerly of the SE Mud Mountain Road and lying northerly of the White River.

DESCRIPTION OF PROPOSED WORKS

Seven (7) wells, six (6) of which are production wells 12 inches in diameter, 40 - 55 in depth, along side the White River for the fish hatchery. One well, 8 inches in diameter, located next to the domestic residence for domestic supply.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE: Stated	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	November 1994	November 1994

REPORT

BACKGROUND:

Puget Sound Power and Light Company (Puget) and the Muckleshoot Indian Tribe (Tribe) signed a stipulated agreement settling Tribal claims to White River water and fisheries impacts. As part of this settlement, Puget constructed a hatchery designed to use ten (10) cubic feet per second (cfs) of water. Puget will convey title of the hatchery to the Tribe at some future date. The hatchery is being built in two phases, with both phases requiring five (5) cfs of water. Puget's obligation to construct Phase II hatchery expansion is contingent upon the outcome of Puget's Federal Energy Regulatory Commission proceedings for their White River Hydroelectric Project (#2494). Should Puget not build Phase II of the hatchery, the Tribe has indicated they will construct Phase II.

The applicant holds Water Right Claim No. 160822 filed pursuant to RCW 90.14.041. Water Right Claim No. 160822 is for 2000 cfs, with a priority date of April, 1910, annual quantity of water claimed is 1,440,000 acre-feet (AF), continuous use, for hydroelectric plant. The point of diversion is 200 feet south and 200 feet east from the north quarter corner of Section 2, Township 19 North, Range 6 East, W.M., Pierce County. A review of Water Right Claim No. 160822, along with supporting documentation, indicates Puget appears to have a valid claim.

The White River was closed to further consumptive water use in March of 1980, Washington Administrative Code 173-510-040(3). The mean annual flow of the White River at the Buckley diversion is 1429 cfs. Since Puget claimed all of the water upstream of the Buckley diversion, and the court ordered instream flow downstream of the diversion was 30 cfs, the river was closed.

Phase I of hatchery construction is on the north side of the White River directly across from Puget's Buckley diversion. In developing the hatchery, Puget filed application G1-25214 (4480 gallons per minute (gpm), 7240 acre-feet per year) to appropriate ground water to supply two domestic residences and a fish hatchery. Application G1-25214 was received on March 29, 1988. Notice was published in the Enumclaw Courier-Herald on May 5 and 12, 1988. Protests were received from Annis R. Maney, Alan B. Reiter, Joe and Janet Berthon, and Ester and Dave Wickersham. The protestants are uniformly concerned that granting the subject application may be detrimental to their water supply.

A temporary permit was issued to Puget to develop and beneficially use ground water under application number G1-25214 on August 29, 1989. The temporary permit allows water use during the pendency of application review.

Long-term pump testing of the well field indicated the well field is not capable of producing the desired amount of water during the period July through September. Since the well field could not supply all hatchery water needs, Puget filed application number S1-25687 on April 3, 1990 for twelve (12) cfs of surface water to be used in conjunction with the ground water.

Representatives of Puget and the Department of Ecology (Department) met several times to discuss hatchery water issues. The closure of the White River prohibits the Department from approving any new consumptive water use impacting the White River. Subsequently, Puget made application to change a vested water right, represented by Water Right Claim No. 160822, to include the following:

- an additional point of withdrawal,
- change the place of use, and
- reuse a portion of the power production water for fish propagation.

The application for change of water right claim was received September 2, 1990, and is addressed in the report of examination for Change of Water Right Claim No. 160822.

Report Continued

The applicant needs to supply five (5) cfs of water on a reliable schedule: ground water will be used in conjunction with surface water during hatchery operation. When ground water conditions are good for the well system, it is anticipated that the majority of the hatchery water will come from the wells.

INVESTIGATION

On March 2, 1989, and January 3, 1991 I visited the hatchery site and have completed an office investigation pertinent to this application.

The hatchery is located at 25305 SE Mud Mountain Road near Enumclaw, in the SE¼ SE¼ of Section 35, T. 20 N., R. 6 E.W.M., along side the White River at river mile 24.1.

Hatchery facilities include a hatchery building (5,000 square feet), four raceways 8 feet wide by 106 feet long, generator building, rearing ponds (6,600 square feet), water clarifiers, fish ladder, and two residences. Construction is complete for Phase I.

There are no other existing water rights in the proposed project area.

The well field is located in the SE 1/4 E 1/2 SW 1/4 and is composed of six (6) production wells, thirteen (13) observation wells or test pits, and the domestic well. Production well S.B.-1/TW4 is a back-up well which will not normally be used. The domestic well is located near the residences, approximately 1200 feet west of the hatchery well field. (Domestic water use allocation is based on 0.25 acre feet per year per service; two services would require 0.5 acre feet per year.

General information on the wells is as follows:

Well Number	Depth Of Casing	Diameter	Pump Size	Maximum Volume Of Withdrawal	Flow Meter
PW1	56.8 ft.	12"	5 h.p.	290 gpm	4"
PW2	41.2 ft.	12"	30 h.p.	800 gpm	6"
PW3	28.0 ft.	16"	30 h.p.	800 gpm	6"
PW4/TW-10	32.0 ft.	12"	15 h.p.	500 gpm	6"
PW5/TW-11	32.0 ft.	12"	15 h.p.	500 gpm	6"
SB1/TW-4	55.5 ft.	12"	7.5 h.p.	530 gpm	4"
OB-1	46.5 ft.	6"			
OB-2	40.0 ft.	6"			
OB-3	31.0 ft.	6"			
OB-5	52.0 ft.	8"			
OB-6 No longer in use, casing pulled.					
OB-9 No longer in use, casing pulled					
OB-12		12"			
TW-7	31.2 ft.	8"			
TW-12 No longer in use, casing pulled					
TP2		4" PVC			
TP3		4" PVC			
TP4		4" PVC			
TP5 Near the springs		4" PVC			
Domestic well/TW-1		8"			

A technical ground water investigation pertaining to G1-25214 was conducted by Jerry Lissak, Department Hydrogeologist, and is based primarily on a review of electromagnetic surveys of the region, aquifer tests conducted by the applicant, and regional well logs. Reports reviewed include:

- Groundwater Supply Evaluation White River Hatchery Mr. Buckley, Washington; report to Fishpro Inc.; Golder Associates, August 1988.
- White River Hatchery - Evaluation Of Long Term Pump Test Data And Well-Field Yield., Letter to Mr. E. Donahue, March 7, 1990.

All pertinent technical reports and data were reviewed by Jerry. An excerpt of his final report is indented here.

The aquifer system drilled to supply the hatchery consists of fluvial sediments which were deposited by numerous meandering or braided channels within the White River flood plain. The aquifer system is not homogeneous and is complicated by differing sediment types and grain sizes over short vertical and horizontal distances. The system was deposited within an erosional channel cut into the Osceola Mudflow deposits and the Osceola Mudflow deposits form a regional aquitard up to 75 feet thick. The aquifer is underlain by mudflow deposits about 30 feet deep and the mudflow really confines the fluvial aquifer system. The Osceola Mudflow is underlain by both glacial sediments and volcanic bedrock.

The aquifer system sediments are breached by the White River which acts as a recharge boundary to the system. The degree of hydraulic continuity between the White River and the well field is variable, depending on the time of year and flow in the White River. The White River is the major source of recharge to the aquifer, as demonstrated by ground water levels in all wells at the site being controlled by the river stage. Maximum well yields are controlled by river water levels and a number of factors which reduce hydraulic continuity between wells and the river during low flow periods. The main controlling factors appear to be a combination of a reduction to the wetted perimeter of the river, variable permeability of the riverbed due to sediment load changes, and decreased continuity within the aquifer system with lower aquifer water levels. Based on pump testing, the applicant's consultant, Golder Associates, estimates that the well field can produce 1,800 to 2,200 gallons per minute (gpm) throughout the winter and spring. Yield from the well field for the summer and fall is estimated at 800 to 1,100 gpm, but may fall to 500 gpm.

The pumping rates of the individual wells will be changed by the applicant based on individual well drawdown. In the winter months, the wells have the capability to pump 2200 gpm. During the August through October time period the well field may only produce 500 gpm. The applicant has indicated the total instantaneous rate of withdrawal from all wells will be limited to 2200 gpm. The production rates of the various wells listed above are approximate maximum rates for each well disregarding impacts from adjacent wells. The application requested 4400 gpm, 7,240 AF per year for hatchery operation. As stated above, the applicant now proposed to limit withdrawals to an instantaneous rate of 2200 gpm.

When the White River is not recharging the aquifer tapped by the well field, aquifer storage is depleted and ground water levels drop. Aquifer storage is limited. Depending on pumping rates, static water levels in the various wells can drop as much as 20 feet in a matter of days. Steady-state aquifer conditions were not observed during the two long-term pump tests conducted by the applicant.

A wetlands complex of approximately 82 acres is located on the project site. A wetlands inventory, White River Hatchery Wetland Assessment Report, November 1990, was completed by the applicant. The water supply for the wetlands is regional ground water and a spring located on the northeast corner of the well field, within twenty feet of Test Fit (T.F.) No. 5. The water supply for the wetlands is impacted by pumping the well field. During the low-flow period, spring-water inflows to the wetlands are impacted a relatively short time after pumping begins. Pumping of the well field reduced the wetland's water flow from about 700 gpm (at the culvert under the project access road) to about 70 gpm after four days of pumping. Long-term impacts of wetland dewatering caused by well field pumping are unknown.

The applicant has proposed replacing water withdrawn from the wetlands with White River water on a one to one basis, when the wetlands are impacted by pumping the well field. The water would be taken from the surface water diversion and discharged in the vicinity of T.F. No. 5 next to the springs in the northeast corner of project area.

In addition to a water right permit, the applicant was required to comply with the State Environmental Policy Act, King County lead agency; waste water discharge permit; and State Flood Control Zone Permit.

SEPA compliance was satisfied with the issuance of a Determination of Nonsignificance (June 22, 1988) for the construction of the White River Hatchery (file No. 008-88-SH). A State Flood Control Zone Permit was obtained August 6, 1987 for the preliminary test of the well field. The applicant initiated the process to obtain a National Pollution Discharge Elimination System (NPDES) permit, but stopped the process at the public notice phase. A NPDES permit is not required at this time, because the applicant is producing less than 20,000 pounds of fish and/or using less than 5000 pounds of fish food per month.

Protests to this application were received from Annis R. Maxey, Alan B. Reiter, Joe and Janet Berthon, and Ester and Dave Wickersham. The protestants are uniformly concerned that granting the subject application may be detrimental to their water supply. An investigation of the protestant's claims was conducted by Jerry Liszak and Troy Tremblay. Based on the locations and elevations of the protestor's wells, geology of the region, and well field recharge by the White River, the pumping of the hatchery well field will not cause interference with the protestor's water supplies.

Report Continued

The temporary permit issued on August 29, 1989, will not be needed when this application is approved, and will be canceled.

CONCLUSION:

The degree to which the White River recharges the aquifer tapped by the hatchery well field changes over the course of the year. A direct correlation of change in river stage to observation well static water levels has been documented. During times of little aquifer recharge by the White River, the utilization of the well field causes a decline of the ground water table. The regional aquifer is recharged by White River flows and precipitation in the fall.

Chapter 173-510 WAC directs that ground water withdrawals which may impact surface water rights shall be provisioned to protect those rights. Because of the hydraulic continuity between the well field and the White River, this ground water application should be provisioned to protect existing rights. Since the White River is closed to further water diversions, ground water withdrawals under this application should be supplemental to the Certificate of Change on Water Right Claim No. 160822 issued on the vested water right claimed by Puget.

Declines in the ground water elevation in the regional aquifer may impact a wetlands on the project site.

Water use for fish propagation and domestic residential use is a beneficial use of water. No impairment of existing rights will occur because of appropriations authorized pursuant to this application.

The public interest will be served if water is used under this application, provided the wetlands are maintained in essentially their natural condition.

RECOMMENDATION:

It is recommended that a permit issue authorizing the instantaneous withdrawal rate of 2,200 gpm, nonconsumptive for fish hatchery operation and 0.5 af/yr consumptive for group domestic use all supplemental to Certificate of Change on Water Right Claim No. 160822 and subject to the following provisos. The recommended instantaneous withdrawal is less than the amount requested by the applicant based on water availability.

The permittee will maintain a sufficient quantity of water flowing in the wetlands to retain the wetlands in essentially there natural condition. At a minimum, when well field operations causes the water flowing in the wetlands northeast of the access road to flow at velocities less than 0.2 feet per second, the permittee will augment wetland water with White River water to ensure wetland water velocities of 0.2 feet per second. Wetland water velocities will be measured downstream of the culvert under the hatchery access road.

The permittee will develop a wetlands augmentation program consisting of operation procedures and system design and submit the information to the Department prior to July 15, 1992. In addition, the permittee will provide copies of all wetland water flow information collected prior to November 1, 1991. The Department will review the augmentation program and system design and make recommendations in order to ensure the wetlands are maintained.

The permittee will install an in-line flow meter capable of recording instantaneous and total volume of water supplied to the wetlands. Records will be kept showing the daily amount of water supplied to the wetlands during augmentation periods and the records provided to the Department upon request.

The permittee will develop, in consultation with the Department and King County, a detailed monitoring program to assess and document long-term changes to the wetlands. This monitoring program will include, at a minimum, data on wetland water quantity, determining changes to the vegetation from water level fluctuations, and be conducted annually for a five (5) year period. Records of the monitoring program shall be provided to the Department upon request. The monitoring program shall be developed by July 15, 1992.

If the hatchery produces in excess of 20,000 lbs. of fish, or uses over 5,000 lbs. of food per month, the permittee must notify the Water Quality Program, Department of Ecology, and obtain the necessary permit.

REPORTED BY: Stephen Hendricks DATE: 12/12/91
by Raphael Lloyd

REPORT OF EXAMINATION

No. 01-02214

N O T I C E .

UNDER THE AUTHORITY, Granted by the laws of the State of Washington, The White River Water Power Company, a corporatio organized under the laws of the State of New Jersey, and auth orized to do business in the State of Washington, does hereby through Charles E. Warner, its agent in and for the State of Washington, claim the right to appropriate and use the waters of the White River, to the amount of two thousand (2000) cubi feet of water per second of time, to be used for power and manufacturing, industrial & domestic purposes, at the most co venient point on Stuck River, at adjacent to or near the Town of Stuck Junction, Pierce County, Washington.

The point of diversion is marked by the location of this notice, which is approximately on, or near the quarter section line running East and Westerly through the center of Section thirty three (33) township twenty (20) North of Range six (6) East of the Willamette Meridian, in Pierce County, State of Washington.

The waters are to be diverted by a dam and to be conveyed by means of a ditch and flumes to a reservoir now known as Lak Tapps and situated in Sectionsfour (4) eight (8) nine (9) six- teen (16) and twenty one (21) Township twenty (20) North of Ra five (5) East of Willamette Meridian, Pierce County, Washingto and thence by flumes or pipes to the place of use.

Dated April 17th, A. D., 1895.

WHITE RIVER WATER POWER COMPANY,
By Chas. E. Warner, Agent & Atty.

State of Washington,)
County of Pierce.)SS.

Charles E. Warner, being duly sworn on his oath say that he is more than twenty one years of age and a citizen of Tacoma, Pierce County, Washington; that as the agent and attor of the White River Water Power Company, he did on April 17th, 1895, post a notice of which the annexed is a true copy at a point on the south bank of the White River, at the place of pr posed diversion of water named therein, by securely nailing sa notice to a tree and by protecting same from the storms with a box which is enclosed at the top, back and sides.

Chas. E. Warner.

day of April,

1895,

(Seal) Frank J. Miller, Notary Public, for the State of Washington, residing at Tacoma, Pierce County.

8	The Public.	Book 1, Page 82.

N O T I C E .

UNDER THE AUTHORITY, Granted by the laws of the State of Washington, The White River Water Power Company, a corporation organized under the laws of the State of New Jersey, and authorized to do business in the State of Washington, does hereby through Charles E. Warner, its agent in and for the State of Washington, claim the right to appropriate and use the waters of the White River to the amount of two thousand (2000) cubic feet of water per second of time, to be used for power, manufacturing, industrial and domestic purposes, at the most convenient point on Stuck River at adjacent to or near the Town Stuck Junction, Pierce County, Washington.

The point of diversion is marked by the location of this notice, which is approximately on or near the quarter section line running north and south through the center of the South one-half (S.½) of Section (33) Thirty-three, Township Twenty (20) North of Range Six (6) East of the Willamette Meridian, in Pierce County, State of Washington.

The waters are to be diverted by a dam and to be conveyed by means of a ditch and flumes to a reservoir, now known as Lake Tapps, and situated in Sections Four (4), Eight (8), Nine (9) Sixteen (16) and Twenty one (21), Township Twenty (20) North Range Five (5) East of Willamette Meridian, Pierce County, Washington, and thence by flumes or pipes to the place of use.

Dated __ September, 24th, 1895.

White River Water Power Company,

By Chas. E. Warner,
Agent & Attorney.

corporation, -To- The Public.	14	Dated April 1, 1901. Filed Apr. 5, 1901; 2:50 P.M. #137037.

N O T I C E .

T O W H O M I T M A Y C O N C E R N .

Notice is hereby given, that the White River Power Compar a corporation, claims and will appropriate, under and by virt of the laws of the State of Washington, Two Thousand cubic fe of water per second now flowing in the stream known as and na White River, said appropriation diversion and taking is at a place on said White River about Two Thousand Three Hundred, (2300) feet East and One Thousand Eight Hundred (1800) feet North of and from the South West Corner of Section Twenty Thre (23) Township Twenty (20) North of Range Eight (8) East of the Willamette Meridian, the said place and location being in Pier County, State of Washington.

The purpose for which said water is and will be appropri ted and intended use thereof is for manufacturing purposes, industrial purposes, irrigation and mining purposes. For the production of and transmission of power by electricity and otherwise to and into the cities of Seattle, Tacoma and other cities to which said corporation may wish to extend the same.

The said water claimed and to be appropriated is to be conveyed from said point of diversion in flumes, tunnels or ditches to a place where the same will be used for the purpose herein described.

In Testimony Whereof, the said White River Power Company, has this the 1st day of April, 1901, signed the foregoing notice at Seattle, Washington, for the purpose herein mentione

White River Power Co.,
By M. P. Randolph, Agent.

State of Washington,)
County of Pierce.) ss.

O. J. Campbell, who being duly sworn says he is a resident of King County, Washington, over the age of twenty-one years, and that on the 2-day of April, 1901, he posted a true copy of the within and foregoing notice in a cor spicuous place at a point 2300 feet East of and 1800 feet Nort of the South West corner of Section 23 Township 20 North Range 8 East W.M. the same being in the County of Pierce, in the State of Washington.

O. J. Campbell.

Subscribed and sworn to by the said O. J. Campbell, befor me, this the 2-day of April, 1901, at Buckley, Washington.

James McNeely, Notary Public, in and for the State of Washington, residing at Buckley, in said State. With Seal.

9

-To-

The Public.

Notice

Dated Feb. 8, 1896.

Filed Feb. 14, 1896; 4:40 P.M.

Book 1, Page 98.

Notice is hereby given to whom it may concern that I, Charles E. Warner, of Tacoma, Washington, claim the water flowing in White River at a point approximately near quarter Section line running North and South through Centre of South 1/2 of Sec. 33, Township 20 North of Range 6 East of Willamette Meridian, in Pierce County, Washington, to the extent of Two thousand (2,000) cubic feet of water per second of time; that this appropriation is made for irrigating and manufacturing purposes and for the generation of power; that the water thus appropriated is intended to be used at and about Lake Tapps, and between the said Point of Diversion and Lake Tapps and the said lake and Stuck River; and that the said water thus appropriated is to be diverted from White River by means of a ditch or flumes.

Chas. E. Warner.

State of Washington)
County of Pierce) ss

Charles E. Warner being first duly sworn on oath says; I am the claimant above named; the foregoing is a true and correct copy of the original notice; and I posted the said original notice on February 8, 1896, in a conspicuous place at the point of intended diversion named in the said notice.

Chas. E. Warner.

Subscribed and sworn to before me this February 14th,1896.
(Seal) Eric Edw. Rosling,Notary Public in and for State of Washington, residing at Tacoma.

	-To-	Dated Jan. 11, 1897.
10	The Public.	Filed Jan. 12, 1897; 3:05 P.M.
		Book 1, Page 115.

Notice.

Notice is hereby given to whom it may concern that I, Charles E. Warner, of Tacoma, Washington, claim the water flowing in the White River at a point approximately near quarter section line running North and South through Center of South 1/2 of Section 33, Township 20, North of Range 6 East of Willamette Meridian, in Pierce County, Washington, to the extent of Two thousand (2,000) cubic feet of water per second of time; That this appropriation is made for irrigation and manufacturing purposes and for the generation of power; That the water thus appropriated is intended to be used at and about Lake Tapps, and between the said point of diversion and Lake Tapps and the said lake and Stuck River; and that the said water thus appropriated is to be diverted from White River by means of a ditch or flumes.

Dated January, 11, 1897.

Chas. E. Warner.

State of Washington)
County of Pierce) ss

Charles E. Warner being first sworn on oath says: I am the claimant above named; the foregoing is a true and correct copy of the original notice; and I posted the said original notice on January 11, 1897, in a conspicuous place at the point of intended diversion named in the said notice.

Chas. E. Warner.

Subscribed and sworn to before me this January 12, 1897.

F. L. Denman, Notary Public, in and for Washington, residing at Tacoma.

(Seal)

Ex. of Com. Sept. 15, 1899.

	-To-	Notice of Water Claim.
11	The P u b l i c.	Dated Feb. 16, 1898.
		Filed June 1, 1898; 12:10 P.M.
		Book 1, Page 133.

N o t i c e.

Notice is hereby given, to whom it may concern, that I, John P. Conduit, of Tacoma, Washington claim the water flowing in White river at a point approximately near quarter section line running north and south through centers of South 1/2 of Section 33, Township 20 North of Range 6 East of Willamette Meridian , in Pierce County, Washington to the extent of two thousand (2,000) cubic feet of water per second of time; that this appropriation is made for irrigation and manufacturing purposes, and for the generation of power; that the water thus appropriated is intended to be used at and about Lake Tapps,and between the said point of diversion and Lake Tapps and the said lake and Stuck river; and that the said water thus appropriated is to be diverted from White river by means of a ditch or flume Dated Feb. 16th, 1898.

John P. Conduit.

State of Washington)
County of Pierce) ss

I, John P. Conduit, being first duly sworn on oath says: I am the claimant above named; the foregoing is a true and correct copy of the original notice, and I posted the said original notice on Feb. 16th, 1898 in a conspicuous place at the point of intended diversion named in the said notice.

John P. Conduit

Subscribed and sworn to before me this 28th day of February, 1898.

Alfred J. Holmes, Notary Public in and for th State of Washington residing at Tacoma,Pierce County

(Seal, Ex of Com)
(Aug. 30, 1898.)

COMMONWEALTH TITL[illegible] COMPANY Date .....

Mervyn P. Randolph

-To-

The Public./

Notice of Water Right.
Dated May 15, 1902
Ack'd May 15, 1902
Recorded May 25, 1902
At 10.55 A.M.
Book 1, Water Rights,
Page 195.
Fee No. 149531.

TO WHOM IT MAY CONCERN: Notice is hereby given that Merfyn P. Randolph a citizen of the United States and of the State of Washington, residing at Seattle in said State of Washington, claims and does hereby appropriate under and by virtue of the laws of the State of Washington, the water being and flowing in the stream in said State known as and named White River to the extent of to two thousand (2000) cubic feet of such water per second of time.

That the purposes for which said water is claimed and appropriated and will be used are as follows: For the creation of power to be used in manufacturing and other industrial purposes and in mining if possible and for the production of electricity and electric power to be used in such purposes and to be transmitted to and into the cities of Seattle, Tacoma and other cities to which said Mervyn P. Randolph may wish to extend the same and in such place or places to be sold and used for whatever such power may or can be used or sold.

That the place of such appropriation, diversion and taking is at

A point on White River on the South bank of said river about two thousand three hundred (2300) feet East and one thousand eight hundred (1800) feet North of and from the Southwest corner of Section thirty-three (33) in Township twenty (20) North of Range six (6) East, Willamette Meridia the said place and location being in Pierce County, in the State of Washington.

The means by which it is intended to store or divert th water hereby claimed and appropriated are as follows: The said water is to be conveyed from said point of diversion and appropriation in pipes, flumes, tunnels or ditches or any other convenient and proper means of conveying the same to a place where the said water will be used for the purpos hereinbefore mentioned.

That the place of intended use of said water, and where the same will be used, is at the Southwest corner of the Southwest quarter of Section 31, Township 21 North, of Range 5 East of the Willamette Meridian, which said place is in the County of King, in said State of Washington.

IN TESTIMONY WHEREOF the said Mervyn P. Randolph has hereunto set his hand and seal at Seattle, Washington, this 15th day of May A.D. 1902 for the purposes hereinbefore mentioned.

Two Witnesses.

Mervyn P. Randolph (Seal)

State of Washington)
) ss
County of King)

Acknowledged by Mervyn P. Randolph, as his free and voluntary act and deed, before

Thomas B. Hardin, Notary Public, in and for the State of Washington, in said State.

(Seal Ex of Com)
Mar. 5, 1903

S.L. Shuffleton,

-To-

The Public.

Notice of Water Claim
Dated October 12, 1902
Ack'd October 21, 1902
Recorded October 21, 1902
At 2;20 P.M.
Book 1, Water Rights, Page
Fee No. 153982.

NOTICE IS HEREBY GIVEN, That the undersigned, in conformity with the Act of Congress and the legislation of the State of Washington, has taken possession of, located and appropriated, and does hereby take possession of, locate and appropriate two thousand (2000) cubic feet per second of time of waters of White River, said stream flow at the point of location between and serving as the bound of the Counties of Pierce and King in the State of Washington.

The point of location of this notice is about two thousand (2000) feet West of the Northeast corner of Section thirty two (32) in Township twenty (20) North Range (6) East W.M. and this notice is posted upon the Pierce County side of said stream at a point on the bank thereof on an Alder tree 12 inches in diameter.

Notice is hereby given that the undersigned pursuant to said appropriation intends to dam said stream at or ne said point and carry the said quantity of water therefrom in a flume, ditch or canal, or by natural channel whereev found suitable so far as it may be found necessary for th purpose of creating therefrom a water power and a plant for the generation by water power of electric power, and the purpose of said appropriation are for the creation of the power aforesaid for public and other uses. It is intended to use said water between the point of its locatio and a point of return thereof to the river which point is six miles, more or less, below the point of appropriation

A copy of this notice for record is made contemporaneously with the posting thereof.

Done at said point of diversion and posting this 12th day of October A.D. 1902.

S.L. Shuffleton.

State of Washington,)
County of King.)ss

I,S.L. Shuffleton, being duly sworn say on oath, tha I am the same S.L.Shuffleton named in the notice in writi hereto attached, and that the notice hereto attached is a correct and true copy of the original notice in writing signed by me, which original notice I posted on the 12th day of October. 1902 in a conspicous place at the point o

intended diversion and storage named in said notice, the same being posted by me on the Alder Tree 12 inches in diameter, which is described in said Notice.

S.L. Shurfleton.

Subscribed and sworn to before me this 21st day of October, 1902.

John Kelleher, Notary Public, in and for the State of Washington Residing at Seattle.

(Seal, Ex of Com)
(Jan. 17, 1904.)

COMMONWEALTH TRUST COMPANY

Mervyn P. Randolph,

-To-

The Public.

Claim of Water Rights
Dated October 28, 1902
Ack'd October 28, 1902
Recorded October 31, 1902
At 11;59 A.M.
Book 1, Water Rights,
Page 218.
Fee No. 154373.

N O T I C E .

TO WHOM IT MAY CONCERN: Notice is hereby given that Mervyn P. Randoplh a citizen of the United States and of State of Washington, residing at Seattle in said State o Washington, claims and does hereby appropriate under and by virtue of the laws of the State of Washington, the water being and flowing in the stream in said State know as and named White River, to the extent to Two thousand cubic feet of such water per second of time.

That the purposes for which said water is claimed a appropriated and will be used are as follows: For the cr tion of power to be used in municipal and commercial lighting, manufacturing and other industrial purposes an in mining if possible and for the production of electric and electric power to be used for such purposes and to b transmitted to and into the cities of Seattle, Tacoma an other cities to which said Mervyn P. Randolph may wish t extend the same, and in such place or places to be sold and used for whatever such power may or can be used or s

That the place of such appropriation, diversion and taking is at a point on White River, on the South bank o said river about

Two hundred and fifty (250) feet North and 2000 fee East of the Southwest corner of Section thirty five (35) Township twenty (20) North Range six (6) East Williamett Meridian, the said place and location being in Pierce Co in the State of Washington.

The means by which it is intended to store or diver the water hereby claimed and appropriated are as follows said water is to be conveyed from said point of diversio and appropriation in pipes, flumes, tunnels or ditches o any other convenient and proper means of conveying the same, to a place where the said water will be used for t purposes hereinbefore mentioned.

That the place of intended use of said water, and where the same will be used is near the Southwest corner the Southwest quarter of Section 31, Township 21, North Range 5 East of the Williamette Meridian, which said pla is in the County of Pierce, in said State of Washington.

In Testimony Whereof the said Mervyn P. Randolph h
hereunto set his hand and seal at Seattle, Washington,
this 28 day of October, A.D. 1902 for the purposes here
before mentioned.

Signed and executed in
presence of Leroy V. Newcomb.

Mervyn P. Randolph.

State of Washington,)
County of King.)ss

Acknowledged by Mervyn P. Randolph, a
his free and voluntary act and deed, before

Leroy V. Newcomb, Notary Public,
in and for the State of Washing
Residing at Seattle in said Sta

(Seal, Ex of Com)
(Sep. 28, 1905.)

COMMONWEALTH TITLE TRUST COMPANY

Mervyn P. Randolph,

-To-

Snoqualmie Falls and
White River Power Company.

Assignment of Water Rights
Consideration $1. and othe:
good and valuable consider:
Dated November 7, 1902
Ack'd November 7, 1902
Recorded November 8, 1902
At 11;51 A.M.
Book 202, Deeds, Page 101
Fee No. 154738.

Do assign, transfer and set over unto the Snoqualmie Falls and White River Power Company, all my right, title & interest in or to any and all rights or property acquired by me under and by virtue of that certain notice appropria ing the waters of White River to the amount of 2000 cubic feet per second of time at a point about 2300 feet East and 1800 feet North of and from

The Southwest corner of Section 33, Township 20 North of Range 6 East of the Willamette Meridian in Pierce Count State of Washington.

and which notice of appropriation of such water is dated May the 15th, 1902, and is recorded in the office of the Auditor of said Pierce County, Washington and a copy and duplicate of which notice was on the 16th day of May, 1902 posted about 2300 feet East of and 1800 feet North of and from the Southwest corner of Section 33, on a cedar tree about two feet in diameter, which was standing and growing on the South bank of said White River about 15 feet from the water line of said river, and about 300 feet from the buildings of the White River Power Co., and about 30 from the road or trail, and about 40 feet from the intersection of the dam of said river with the South bank of said River, and which said notice was posted in a conspicuous place at said point, and in plain view from said road.

Also all rights or property acquired by me under and by virtue of that certain notice appropriating the waters of White River to the amount of two thousand cubic feet per second of time at a point about

250 feet North and 2000 feet East of the Southwest corner of Section 35, Township 20 North of Range 6 East of Willamette Meridian, said place of location being in Pierce County, State of Washington.

and which notice of appropriation is dated October 28th, 1902, and is recorded in the office of the Auditor of said Pierce County, Washington, and a copy and duplicate of which notice was on the 30th day of October, posted on the South bank of said river about 250 feet North and 2000 feet East of the Southwest corner of Section 35 on a cotton wood tree about two feet in diameter, which was standing

and growing on the South bank of White River, about 100 feet from the water line of said River, which said notic was posted in a conspicuous place and in plain view.

Also all the rights or property acquired by me unde and by virtue of that certain notice appropriating the waters of White River to the amount of two thousand cubi feet per second of time at a point

450 feet North and 2000 feet East of the Southwest corner of Section 35, Township 20 North of Range 6 East of Willamette Meridian, said place of location being in King County, State of Washington. * * * * * * * * * * * *

the object and purpose hereof being to surrender and tra fer any and all rights which I may have secured or obtai to the appropriation of the waters of said river at said points herein mentioned by reason of the posting of said notices and recording of the same in the office of the Auditors of the Counties aforesaid.

Mervyn P. Randolph.

State of Washington,)
County of King.)ss

Acknowledged by Mervyn P. Randolph, free and voluntarily, before

Leroy V. Newcomb, Notary Public, in an for the State of Washington, Residing at Seattle said County.

(Seal, Ex of Com)
(Sep. 23, 1905.)

Appendix B: Chronology

Date	Event
1895 - 1901	April 17, 1895 and April 27, 1901. The White River Power Company claimed water rights on the White River. The claim was for year-round diversion of 2,000 cubic feet per second (cfs) from the White River.
1902-03	The White River Power Company and the Snoqualmie Falls Power Company jointly purchased a site on the White River for a hydroelectric project.
1906	The Seattle–Tacoma Power Company (a merged company that included the Snoqualmie Falls Power Company) purchased the assets of the White River Power Company for $1,250,000.
1906	A massive flood broke through the narrow barrier between the Stuck River and the White River, diverting most of the White River water southward.
1908	The Seattle-Tacoma Power Company quit-claimed and conveyed the lands formerly held by the White River Power Company to the Pacific Coast Power Company.
1909-11	The Pacific Coast Power Company built the White River Hydroelectric Project (Hydro Project). The company joined four lakes (Lake Tapps, Lake Kirtley, Crawford Lake, and Church Lake) and built dikes to create Lake Tapps Reservoir.
1910	April 13, 1910. An adjudicated case, *Pacific Coast Power Company vs. Peter Quilquilion*, addressed the Pacific Coast Power Company's water right claim on the White River. Pierce County Superior Court issued a decree (No. 28120) that required the company to maintain instream flows of at least 30 cfs below the diversion dam.
1913	The Sumner Lumber & Shingle Company brought suit against the Pacific Coast Power Company, alleging that diverting water from the White River interfered with its ability to float logs from the wooded mountains to its downstream shingle mill. The Washington Supreme Court ruled against the lumber company.
1920	Puget issued a souvenir edition of *Hydro-Electric Development, an Illustrated Story of the Power Properties of the Puget Sound Power & Light Company, Showing How the Forces of Nature Have Been Harnessed and Made to Serve Useful and Productive Industry*. This publication described the White River Station as the largest and most important of the company's hydro-electric developments.
1920 1930 1938	In 1920, Congress established the Federal Power Commission (FPC) to coordinate hydroelectric projects under federal control. The Federal Power Act of 1930, the Natural Gas Act of 1938, and subsequent acts gave the FPC authority to regulate the sale and transportation of electricity.
1939	A rotating drum fish screen was installed near the intake structure.

Date	Event
1948	Mud Mountain Dam was completed. The dam was constructed on the White River upstream of the Hydro Project to help control flooding. The U.S. Army Corps of Engineers (USACE) began operating a trap and haul operation at the diversion dam to transport migrating salmonids upstream above the dam.
1954	June 22, 1954. Puget sold the land around Lake Tapps Reservoir to the Lake Tapps Development Company, Inc. Land use around Lake Tapps Reservoir began to transition from rural to residential.
1964	Puget submitted a license application for the Hydro Project to the federal government.
1972	Puget withdrew its 1964 application for a hydropower license.
1977	Congress reorganized the FPC as the Federal Energy Regulatory Commission (FERC). FERC's responsibilities under the FPA include licensing or relicensing hydroelectric projects, overseeing all ongoing project operations, and monitoring environmental concerns.
1977–78	FERC reversed the 1976 findings of an Administrative Law Judge; FERC determined that the Hydro Project was located on navigable waters, and thus it had licensing jurisdiction (October 28, 1977). FERC denied a rehearing on its order (August 9, 1978).
1980	The Washington State Department of Ecology (Ecology) adopted the Instream Resources Protection Program for the Puyallup River Basin including the White River, pursuant to the Water Resources Act of 1971. The program specified minimum in-stream flows for the Puyallup River (Puyallup River minimum instream flows [MIFs]) but not for the White River. The White River was closed to further consumptive appropriations per state regulation (WAC 173-510-040(3)).
1981	Puget challenged FERC's order directing Puget to refile its application for a license to operate the Hydro Project. The U.S. Court of Appeals for the Ninth Circuit decided that the White River, at the project site, was navigable as defined by the Federal Power Act; therefore, operation of the project required a FERC license.
1983	November 23, 1983. Puget applied to FERC for an initial license for its existing and operating Hydro Project.
1986	Puget and the Muckleshoot Indian Tribe reached a settlement that required Puget to increase the amount of water it left in the White River from 30 cfs to 130 cfs.
1992	October 9, 1992. FERC issued an Environmental Assessment (EA) for the Hydro Project. The EA described the analysis of several instream flow regimes and ramping rates, and recommended licensing the Hydro Project. FERC considered recommendations it received from federal and state fish and wildlife agencies, but disagreed with them.
1996	New fish screen facilities were constructed.

Date	Event
1997	December 19, 1997. FERC issued an original 50-year license to Puget for the Hydro Project, including authorization to install an additional 14,000-KW generating unit. Puget filed for a rehearing with FERC on articles of the license related to enhancing salmon runs on the White River because Puget believed those conditions could make the plant uneconomic to operate.
Late 1990s	The Save Lake Tapps Coalition, Friends of Lake Tapps, and Lake Tapps Task Force were formed.
1999	March 24, 1999. NOAA Fisheries Service concluded that spring-run White River Chinook salmon should be listed as threatened under the Endangered Species Act (ESA).
1999	June 30, 1999. FERC issued a 2-year stay in the license proceeding to allow Puget, state agencies, local governments, and public interest groups to resolve common issues relating to the plant's continued operation and economics.
2000	Puget filed three applications with Ecology relating to the diversion and storage of water from the White River: (1) S2-29920 for diverting 100 cfs average flow (72,400 acre-feet per year [afy]) and 2,000 cfs instantaneous; (2) S2-29934 for a daily peak of 150 cfs and daily average per year of 100 cfs not to exceed 72,400 afy from Lake Tapps; and (3) R2-29935 for reservoir storage in Lake Tapps of 72,400 afy.
2001	August 7, 2001. Puget and Cascade signed a Memorandum of Understanding (MOU); Puget agreed to work exclusively with Cascade for Cascade to acquire all of the rights that Puget obtained under its pending water rights applications.
2001	Cascade assumed lead agency status for undertaking a State Environmental Policy Act (SEPA) analysis of the proposed Lake Tapps Water Supply Project.
2002	October 8, 2002. NOAA Fisheries provided a preliminary draft biological opinion, prepared in response to FERC's request to initiate formal consultation under Section 7(a)(2) of the ESA.
2003	Ecology, the Washington Department of Fish and Wildlife (WDFW), the Puyallup Tribe of Indians, and NOAA Fisheries Service submitted a recommendation to FERC as required under Section 10(j) of the Federal Power Act for FERC licensing. This recommendation is referred to as the "Agency 10(j) Flows."
2003	February 10, 2003. Cascade published a SEPA environmental checklist for the proposed Lake Tapps Water Supply Project. On February 13, 2003, Cascade issued a Mitigated Determination of Nonsignificance (MDNS) for the project.
2003	October 31, 2003. NOAA Fisheries issued the *Draft Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Consultation for the White River Hydroelectric Project*.
2003	June 30, 2003. Ecology issued a Report of Examination (ROE) granting Puget's three applications for water rights.

Date	Event
2003	November 2003. Puget determined that it could no longer continue to economically operate the Hydro Project. Puget's decision was primarily due to the additional conditions specified in the license relating to the listings of two fish species under the Endangered Species Act.
2003	December 23, 2003. Puget notified FERC that it rejected the 1997 license for the Hydro Project.
2004	January 15, 2004. Puget ceased generating electricity at the Hydro Project. Puget was actively seeking to sell the project to one or more entities interested in maintaining the reservoir for commercial purposes.
2004	January 16, 2004. FERC rescinded the license (FERC Project No. 2494) issued to Puget on December 19, 1997.
2004	March 31, 2004. Puget and Lake Tapps community representatives signed an agreement regarding reservoir management.
2004	July 2004. Ecology's June 2003 approval of Puget's application for municipal water rights was appealed to the Pollution Control Hearings Board (PCHB) by the Puyallup Tribe of Indians, the Muckleshoot Indian Tribe, the City of Auburn, the City of Buckley, and others. The PCHB remanded the decision back to Ecology for further analysis of non-hydropower operations.
2004	Puget renewed its contract with USACE to maintain operation of the White River diversion dam to support [USACE's] ongoing operation of its Mud Mountain Dam fish passage facilities. The agreement…directs [Puget] to operate the diversion dam in accordance with measures determined by federal agencies to be necessary to protect listed species and habitat.
2005	March 11, 2005. NOAA Fisheries Service sent a letter to the U.S. Army Corps of Engineers that set new flows necessary to protect White River fisheries resources. These flows are referred to as the Modified 10(j) Flows.
2005	November 22, 2005. Puget submitted an Application for Change in Water Right to add multiple purposes of use to Surface Water Claim 60822.
2006	September 22, 2006. Ecology issued the *Draft Report of Examination for Lake Tapps Reservoir Water Supply Project Application S2-29934*.
2008	February 22, 2008. Prior to the approval by Cascade's Board of the Lake Tapps Asset Purchase Agreement, Cascade published an Environmental Checklist and SEPA MDNS for the Lake Tapps Reservoir Water Supply Project.
2008	March 26, 2008. The Cascade Water Alliance Board of Directors approved the Lake Tapps Asset Purchase Agreement.

Date	Event
2008	June 2008. Cascade published the *Lake Tapps Reservoir Issuance of New Municipal Water Rights and Change of Use for Existing Claim No. 60822 Determination of Significance and Request for Comments on Scope of Environmental Impact Statement and Environmental Checklist*.
2008	August 6, 2008. Cascade, the Muckleshoot Indian Tribe, and the Puyallup Tribe of Indians approved the White River Management Agreement (WRMA), which provides for the protection of fish, habitat, water supply, and recreation in the White River and Lake Tapps.
2008	August 6, 2008. Cascade entered into the Lake Tapps Water Rights Settlement Agreement with the Muckleshoot Indian Tribe and the Natural Resources Enhancement Agreement with the Puyallup Tribe of Indians.
2009	May 13, 2009. Cascade entered into the 2009 Agreement Regarding Lake Tapps Between Cascade Water Alliance and the Lake Tapps Community.
2009	October 26, 2009. The Washington State Department of Ecology accepted the temporary donation of a portion of Puget's Claim into the State Trust Water Rights Program.
2009	December 18, 2009. The purchase and sale under the Asset Purchase Agreement was completed and Cascade became the owner of Lake Tapps Reservoir and associated facilities.

Appendix C: White River Management Agreement

WHITE RIVER MANAGEMENT AGREEMENT

Between

The Puyallup Tribe of Indians,

The Muckleshoot Indian Tribe and

Cascade Water Alliance

August 6, 2008

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WHITE RIVER MANAGEMENT AGREEMENT

This White River Management Agreement (hereinafter "Agreement") is entered into by and among the Puyallup Tribe of Indians (the "Puyallup Tribe"), the Muckleshoot Indian Tribe ("Muckleshoot Tribe"), and Cascade Water Alliance ("Cascade"). The Puyallup Tribe, the Muckleshoot Tribe, and Cascade are collectively referred to as the "Parties."

I. RECITALS

WHEREAS, Cascade joined with Puget Sound Energy ("PSE") in pursuing Water Right Application Nos. S2-29934 and S2-29920, Storage Application No. R2-29935, and Water Right Change Application No. CS2-160822CL, intending to acquire the Municipal Water Right from PSE to develop a Municipal Water Supply Project meeting the demands of Cascade's service area;

WHEREAS, in June 2003, the Washington State Department of Ecology ("Ecology") issued a Report of Examination ("ROE") approving Water Right Application Nos. S2-29934 and S2-29920, and Storage Application No. R2-29935;

WHEREAS, the ROE was appealed to the Washington State Pollution Control Hearings Board ("PCHB") by various parties, including the Puyallup Tribe and the Muckleshoot Tribe;

WHEREAS, in January 2004, Puget Sound Energy ("PSE") ceased operation of the White River Hydroelectric Project;

WHEREAS, in August of 2004 the PCHB remanded the ROE back to Ecology for further consideration;

WHEREAS, in January 2008 Cascade and PSE completed negotiations upon the terms and conditions under which Cascade would purchase the Municipal Water Right, the Lake Tapps Reservoir and Associated Facilities;

WHEREAS, Cascade now seeks to resolve concerns raised by the Puyallup Tribe and the Muckleshoot Tribe with regard to the Municipal Water Right and proposed diversions of water from the White River and Lake Tapps Reservoir and to provide for a dispute resolution process to address any future issues that may arise among the Parties related to the interpretation, implementation or enforcement of this Agreement;

WHEREAS, the Puyallup Tribe and the Muckleshoot Tribe wish to provide for timely and effective restoration, protection and enhancement of fishery resources, fishery habitat and water quality in the lower White River, and in the Puyallup River (below its confluence with the White River). The Puyallup Tribe and the Muckleshoot Tribe further wish to protect the flow in these waters from further appropriation by others; and

WHEREAS, the Parties desire to avoid further litigation and establish a process to cooperatively address future issues related to the interpretation, implementation or enforcement of this Agreement cooperatively in a manner consistent with their above-stated interests;

NOW, THEREFORE, in consideration of the mutual covenants and representations herein contained and for other good and valuable consideration as set forth below, and in separate contemporaneous agreements between the Puyallup Tribe and Cascade, and the Muckleshoot Tribe and Cascade with respect to the Municipal Water Right, the Parties agree as follows:

II. TERMS AND CONDITIONS

A. Defined Terms

1. "Agreed Flow Regime" refers collectively to the Minimum Flows, the Diversion Optimization Plan and the Ramping Rate established in Sections II.B. 1 – II.B.5 of this Agreement.

2. "Associated Facilities" consists of all structures and property, and any future replacements, which were components of the former White River Hydroelectric Project, or will be components of the WSP, including, but not limited to, the diversion canal, dikes, concrete outlet tunnel, forebay, penstocks, powerhouse, turbines, and Tailrace.

3. "Buckley Gage" shall mean U.S. Geological Service ("USGS") streamflow station No. 12099200 - White River above Boise Creek at Buckley, WA, or any other USGS streamflow station subsequently designated by agreement of the Parties.

4. "Coordinating Committee" shall mean the committee established under the provisions of Section II.L.

5. "Control Date" shall mean the date upon which the transaction between Cascade and PSE closes or the date upon which Cascade becomes the Operator as defined in Section II.A.16, whichever occurs first.

6. "Diversion Dam," whether characterized as "White River Diversion Structure" or "Barrier Dam" means the dam, intake and associated facilities as built, or as rebuilt in the future, at or near the City of Buckley (at approximately river mile 24.3) that functions to divert water from the White River into a flowline to the Lake Tapps Reservoir.

7. "Effective Date" means the date of execution hereof by the last Party to execute this Agreement.

8. "Fall Drawdown" shall mean the reduction of the level of the Lake Tapps Reservoir in the fall to expose portions of the lake bed for the purpose of preventing macrophyte growth or for the purpose of conducting maintenance at the Lake Tapps Reservoir and/or Associated Facilities.

9. "Force Majeure" means events that are beyond the reasonable control of a Party (including its contractors and subcontractors) and that did not occur through the fault or negligence of a Party (including its contractors and subcontractors), including, but not limited to: acts of God; mandatory government regulations and restrictions; and, sudden natural events, such as earthquakes and volcanic eruptions, that delay or prevent the timely performance of any obligation under this Agreement despite the Parties' best efforts to fulfill the obligation.

10. "Lake Tapps Reservoir" means the waters and the real property below 545' msl, more particularly described in the recorded Deed No. 1686523 executed on June 22, 1954 by Grantor, Puget Sound Power & Light Company for the benefit of Grantee, the Lake Tapps Development Co., Inc., and recorded at Pages 485-495 of Volume 1063, Office of County Auditor for Pierce County, Washington ("1954 Deed").

11. "Mean Sea Level" or "msl" when used herein refers to the elevation of the Lake Tapps Reservoir above the mean sea level established by the National Geodetic Vertical Datum of 1929.

12. "Minimum Flow" or "MF" means the minimum streamflow as measured at the Buckley Gage below which Cascade will not cause the White River to fall as the result of diversions from the White River into the Lake Tapps Reservoir.

13. "Municipal Water Right" means, for the purposes of this Agreement, any permit (or subsequent certificate) issued under water right application nos. S2-29934 (surface water permit to divert up to 2,000 cfs not to exceed 72,400 acre feet per year (af/y)) and S2-29920 (secondary permit to divert water from the Lake Tapps Reservoir for the WSP up to a maximum instantaneous rate of 150 cfs, with an average annual rate of 100 cfs, and a maximum annual quantity of 72,400 af/y), and storage application no. R2-29935 (reservoir permit to store in the Lake Tapps Reservoir up to 2,000 cfs of water, not to exceed 72,400 af/y) and any change of use permit issued under water right change application no. CS2-160822CL (change of use application to add additional uses for continuing recreation, reservoir maintenance, and water quality in the Lake Tapps Reservoir) all with regard to PSE's existing (but not operational) hydropower claim.

14. "Municipal Water Supply Project" or "WSP" means the proposed municipal water supply project that, when constructed, will use the Lake Tapps Reservoir as a source of municipal water for Cascade.

15. "Normal Full Pool" means a water level at the Lake Tapps Reservoir between 541.5 mean sea level ("msl") and 543 msl, as measured at USGS reservoir gaging station no. 12101000, or any other USGS reservoir gaging station subsequently designated by the Parties.

16. "Operator" means Cascade and/or a Qualified Operator as defined in Section II.A.17. Cascade shall remain responsible for implementing all of its

obligations under this Agreement, notwithstanding any contract into which it may enter for operation of some or all the WSP.

17. "Qualified Operator" shall mean PSE, the United States Army Corps of Engineer, or another entity that is reasonably qualified to operate the Diversion Dam.

18. "Ramping Rate" is the rate of change in River Stage, measured in inches per hour, at which the White River water elevation rises or lowers in response to changes in the quantity of water diverted into Lake Tapps or discharged from Lake Tapps through the Tailrace.

19. "River Stage" is the height of the water surface above an established datum plane.

20. "Spring Refill" shall mean the late winter or early spring refill of the Lake Tapps Reservoir to Target Elevations.

21. "Tailrace" means the canal through which water from Lake Tapps is discharged into the White River.

22. "Target Elevations" means the target surface water elevation of the Lake Tapps Reservoir established under Section II.B.5. and measured at USGS reservoir station no. 12101000, or any other USGS gaging station subsequently designated by agreement of the Parties.

B. <u>Agreed Flow Regime</u>

1. Cascade shall divert water and/or contract with a Qualified Operator to divert water from the White River into the Lake Tapps Reservoir in accordance with the Diversion Optimization Plan in Section II.B.3 and the Ramping Rates in Section II. B.4 to achieve or exceed the Minimum Flows in Section II.B.2 all as established by this Agreement.

2. <u>Minimum Flows</u>. Water may be diverted from the White River to the Lake Tapps Reservoir if and only if the diversion does not reduce the instream flow of the White River (measured at the Buckley Gage) below the Minimum Flows (MF) established by the Minimum Flow Table set out below (Table 1). Notwithstanding the foregoing, to avoid stranding fish in the diversion canal between the headgate and fishscreens, Cascade may divert up to 20 cfs of water from the headgate and through the fishscreens during those periods of time that the flow is below the MF, set out in Table 1, due to natural flow conditions.

Minimum Flow Table (Table 1)

Time Period	Minimum Flows ("MF")	Time Period	Minimum Flows ("MF")
January 1-14	650 cfs	July 1-23	800 cfs
January 15-31	525 cfs	July 24-31	650 cfs
February 1-14	550 cfs	August 1-6	650 cfs
February 15-29	500 cfs	August 7-31	500 cfs
March 1-14	550 cfs	September 1-14	500 cfs
March 15-31	725 cfs	September 15-30	500 cfs
April 1-14	775 cfs	October 1-14	500 cfs
April 15-30	825 cfs	October 15-31	500 cfs
May 1-14	875 cfs	November 1-14	500 cfs
May 15-31	875 cfs	November 15-30	550 cfs
June 1-14	800 cfs	December 1-14	550 cfs
June 15-30	800 cfs	December 15-31	600 cfs

3. Diversion Optimization Plan.

Unless otherwise agreed by the Parties in writing, the following Diversion Optimization Plan shall be implemented on the Control Date as defined in Section II.A.5. of this Agreement:

a. On an annual basis, beginning on February 15 and continuing until the Lake Tapps Reservoir is refilled to Normal Full Pool in accordance with the Spring Refill Plan, or until July 1, whichever is earlier (the "Refill Date"), water may be diverted into the Lake Tapps Reservoir in an amount not to exceed 1000 cfs if and only if the instream flow of the White River at the Buckley Gage exceeds the MF established by Table 1.

b. On an annual basis, beginning on the Refill Date, (as defined in Section II.B.3.a), until September 15 or the subsequent date the Operator commences drawing down the water level of the Lake Tapps Reservoir, whichever is later ("Fall Drawdown Date"), water may be diverted into the Lake Tapps Reservoir in an amount not to exceed 400 cfs if and only if the instream flow of the White River at the Buckley Gage exceeds the MF established by Table 1.

c. On an annual basis, beginning on the Fall Drawdown Date (as defined in Section II.B.3.b) until February 15, water may be diverted into the Lake Tapps Reservoir in an amount not to exceed 150 cfs if and only if the instream flow of the White River at the Buckley Gage exceeds the MF established by Table 1.

d. To maintain desired elevations in the Lake Tapps Reservoir while minimizing diversions from the White River, Cascade shall limit discharges from Lake Tapps Reservoir into the Tailrace to no more than 50 cfs, which is the estimated leakage through the powerhouse under current conditions, except during the Fall Drawdown. If technically feasible and if the associated cost is not unreasonable, Cascade shall at the point in time when it modifies the Lake Tapps Reservoir outlet structures in conjunction with development of the intake for the water treatment plant, endeavor to reduce the amount of leakage and further decrease discharges from the Lake Tapps Reservoir outside of the Fall Drawdown period.

e. All diversions from the White River and all discharges from the Tailrace, shall comply with Sections II.B.3.a. through II.B.3.d. above, and shall further comply with the Ramping Rate in Section II.B.4. and the Gaging provisions in Section II.D.

f. The diversions provided for under Sections II.B.3.a. through II.B.3.c. above shall at no time result in the reduction of streamflow in the White River below the MF as established in Section II.B.2.

4. Ramping Rate. The water intake facility to the Lake Tapps Reservoir and the discharge through the Tailrace from the Lake Tapps Reservoir shall at all times:

a. Comply with applicable law;

b. Be operated so that the Ramping Rate does not exceed one inch per hour (increase or decrease) as measured respectively at the Buckley Gage and the Lake Tapps Diversion Gage at Dieringer, USGS Gaging Station No. 12101100; and

c. Be operated so that between February 16 and June 15 of each year, daylight downramping shall not be permitted. Daylight shall be defined for this purpose as commencing one hour before sunrise and ending one hour after sunset.

5. Target Lake Elevation.

a. Subject to compliance with the Minimum Flows, the Diversion Optimization Plan, the Ramping Rate, and Section II.B.5.b., the Parties anticipate that:

(1) Cascade will endeavor to maintain the Lake Tapps Reservoir elevation between April 15 and September 14 so that the Lake Tapps Reservoir target water surface elevation is Normal Full Pool;

(2) Between September 15 and November 30 Cascade may draw down the Lake Tapps Reservoir water surface elevation to 530' msl;

(3) Cascade will endeavor to maintain the Lake Tapps Reservoir elevation between December 1 and February 14 so that the Lake Tapps Reservoir target water surface elevation is 530' msl; and

(4) Between February 15 and July 1, Cascade may fill the Lake Tapps Reservoir to Normal Full Pool.

b. The Coordinating Committee may act pursuant Section II.L. to authorize Cascade to alter the Target Lake Elevations and the draw down and refill schedules provided in Section II.B.5.a. provided that such alteration shall not adversely impact salmonids, reduce flows, or impair water quality in the White River.

C. Flow Monitoring

1. Cascade shall be responsible for the monitoring of the following flows:

   a. The streamflow at the Buckley Gage;

   b. The diversion from the White River into Lake Tapps;

   c. The discharge into the Tailrace;

   d. The diversion from Lake Tapps into the WSP; and,

   e. The water surface elevation of the Lake Tapps Reservoir.

2. Cascade shall ensure that all streamflow monitoring is conducted on a real-time basis, and that all elevation monitoring of the Lake Tapps Reservoir is conducted on a daily basis, to insure compliance with the Minimum Flows, the Diversion Optimization Plan and the Ramping Rates established in this Agreement. For the purpose of this Agreement, "real-time" shall mean flow measurement no less than once every fifteen (15) minutes and data transmittal from the gage no less than once per hour.

3. Cascade shall provide the Muckleshoot Tribe and Puyallup Tribe with access to all monitoring information on a real-time basis, and in the case of the Lake Tapps Reservoir elevation levels on a daily basis.

4. All gages required under this Agreement shall utilize the most accurate gaging equipment and methodology as determined by the USGS. The gages shall be evaluated at least every five (5) years.

D. Gaging

1. Cascade shall consult with the Puyallup Tribe, the Muckleshoot Tribe and the USGS in Cascade's development of a plan to replace the current diversion canal gaging equipment ("Diversion Canal Gage"). Cascade shall replace the Diversion Canal Gage with an agreed state of the art piece of gaging equipment designed to provide real-time metering of the diversion canal flow.

2. Cascade shall fund USGS to operate and maintain the gaging equipment, telemetry and data production for:

   a. the gages identified in Section II.C.1.;

   b. the Buckley Gage;

   c. the additional USGS gages listed on **Exhibit 1** attached hereto; and,

   d. any additional gages agreed to by the Parties.

3. In the event that USGS determines that any of the gages listed in Section II.D.2. should be replaced or relocated to a more suitable site, Cascade shall promptly carry out and fund such replacement or relocation.

4. Any Party may convene the Coordinating Committee, established under Section II.L., to address issues associated with operation, maintenance, repair of the gages listed in Section II.D.2. to ensure compliance with the terms and conditions with this Agreement.

5. All gages required under this Agreement shall have the capacity to measure and report surface water flow and water quality parameters identified in **Exhibit 2**.

E. Project Maintenance

Cascade shall develop and implement a Project Maintenance Plan within ninety (90) days of the Control Date. The Puyallup Tribe and the Muckleshoot Tribe shall be afforded a reasonable opportunity to review and comment upon the Project Maintenance Plan. The right to comment or any comment made pursuant to that right shall not be construed as a limitation on either Tribe's right to enforce this Agreement through the dispute resolution provisions of this Agreement or judicially, if judicial relief is available.

At a minimum the Project Maintenance Plan shall include the following provisions:

1. Fish Screens.

   a. Cascade shall maintain the fish screens in the diversion canal so that they continue to meet or exceed their design specifications for fish passage and all applicable federal or state requirements; provided that, if Cascade replaces the existing screens during the term of this Agreement, any new screens shall meet all then applicable state and federal requirements and be at least as efficient as the existing screens in safely returning fish to the White River.

   b. Within sixty (60) days of the Control Date, the Coordinating Committee shall meet and develop a plan to assess the effectiveness of the fish screens and to conduct annual effectiveness testing and inspections of the fish screens. The effectiveness testing and inspections of the fish screens shall be conducted by Cascade. Cascade shall provide the Tribes with thirty (30) days notice of the effectiveness testing and inspections of the fish screens and permit the Tribe to participate in the testing and inspections.

2. Outlet Screening.

   a. If required by law, regulatory agency or otherwise agreed upon by the Parties, Cascade will take such measures, as may be necessary, to either screen the outlet of the Lake Tapps Reservoir or to prevent the introduction of exotic or predatory species from the Lake Tapps Reservoir into the White River.

   b. The Coordinating Committee shall in conjunction with the selection of a consultant to conduct the Tailrace Study, also select a consultant to study and prepare a report to the Parties on the risk of introduction of predatory or exotic species from the Lake Tapps Reservoir into the White River and the need for outlet screening or other measures to minimize said risk ("Outlet Screening Study").

   c. Cascade shall be solely responsible for funding the Outlet Screening Study and shall invite input from the Federal, State, and Tribal fishery management agencies. The Parties each reserve all of their legal rights and remedies with respect to the need for outlet screening or other measures to prevent introduction of exotic or predatory species from the Lake Tapps Reservoir into the White River, and are free to take positions and pursue legal remedies with respect to this matter outside of the dispute resolution provision of this Agreement.

3. Sediment Trapping. Cascade shall use best efforts to maintain the sediment trapping functions of the current diversion canal and settling basins to prevent sediment and nutrients from entering the Lake Tapps Reservoir to further protect and enhance the water quality of the Lake Tapps.

4. Rock Chutes. Cascade shall maintain the rock chutes in good working order.

5. Other Facilities. Cascade's Project Maintenance Plan may address other facilities required to maintain the Lake Tapps Reservoir and the Associated Facilities.

F. Fall Drawdown and Spring Refill Plans

1. Each year prior to the commencement of the Fall Drawdown, the Parties shall consult on measures consistent with the Agreed Flow Regime to accomplish the drawdown and refill of the Lake Tapps Reservoir in a manner that minimizes potential adverse impacts on salmonids in light of anticipated hydrological conditions ("Annual Drawdown Plan").

2. Each year prior to the Spring Refill, Cascade shall consult with the Tribes and relevant federal and state fishery resource agencies to develop a plan for the Spring Refill that, among other things, takes into account anticipated hydrological conditions that minimize impacts on fishery resources while seeking to achieve Normal Full Pool consistent with Section II.B.5.a.(1) ("Annual Refill Plan"). The Annual Refill Plan shall include provisions for establishing the date for beginning Spring Refill, the elevation within the Normal Full Pool range at which time Cascade shall reduce diversion in accordance with Section II.B.3.b., and the target date for achieving the appropriate Normal Full Pool.

3. Cascade may, in its discretion, consult with interested parties, including, but not limited to, Pierce County and the Lake Tapps community, with regard to the development and implementation of the Annual Drawdown and the Spring Refill.

G. Tailrace

1. Tailrace Study.

   a. Within sixty (60) days of the Effective Date of this Agreement, the Coordinating Committee shall meet and engage in good faith discussions with regard to fish attraction at the Tailrace. It is anticipated that a focused study to identify water quality and fishery concerns, and to determine the nature and scope of the improvements needed at the Tailrace to address the identified concerns, will be necessary ("the Tailrace Study").

   b. The Coordinating Committee shall select a consultant to conduct the Tailrace Study and agree upon the scope of the Study. Cascade shall be solely responsible for funding and carrying out the Tailrace Study and the Parties shall invite input and recommendations from Federal, State and Tribal fishery management agencies.

   c. After considering such comments and conducting other necessary and relevant analysis as may be necessary, the Tailrace Study shall set forth its factual findings and specific recommendations. Such recommendations

shall address the development and implementation of any needed procedures (and schedules) for the implementation of improvements to the Tailrace (the "Tailrace Plan").

2. Tailrace Plan.

a. The purpose of Tailrace Plan shall be to:

(1) improve water quality discharged from Lake Tapps, and

(2) prevent the entry, delay, stranding and/or delayed migration of salmonids in the Tailrace.

b. Implementation of the Tailrace Plan shall commence within ninety (90) days of the completion date of the Tailrace Study. If required by law, regulatory agency or otherwise agreed upon by the Parties, Cascade will install a tailrace barrier to prevent stranding or delayed migration of salmonids. The Parties each reserve all their legal rights and remedies with respect to the need for a Tailrace Barrier to prevent the entry, stranding, or delays in migration of salmonids in the Tailrace and are free to take positions and pursue legal remedies with respect to this matter outside of dispute resolution provisions of this Agreement.

c. The Tailrace Plan shall be attached to this Agreement as **Exhibit 3** and may be amended and modified by the written agreement of the Parties.

H. Water Resource Operation Manual

1. Cascade shall develop a water resource operational manual (the "Operational Manual") for presentation to the Coordinating Committee one year after Cascade assumes Operational Control. The purpose of the Operational Manual is to implement the provisions of this Agreement. At a minimum, the Operational Manual shall include provisions to address the Minimum Flows, Diversion Optimization Plan, Ramping Rate, Target Lake Elevation, Flow Monitoring, and Gaging.

2. Prior to its release to the public, a draft of the Operational Manual shall be provided to the Puyallup Tribe and the Muckleshoot Tribe for their review, comment and approval, which shall not be unreasonably withheld.

3. Cascade shall update the Operational Manual as needed, but in any event at least annually, to maintain compliance with the provisions of this Agreement. Updates to the Operational Manual shall be presented to the Coordinating Committee for approval. Approval of the Operational Manual by the Tribes shall not relieve Cascade of any obligation under this Agreement.

I. Force Majeure

1. Cascade shall not be liable for any failure, delay or default in performance under this Agreement to the extent proximately caused by a Force Majeure event where Cascade has used best efforts (1) to anticipate any potential Force Majeure event and (2) to address the effects of any potential Force Majeure event as it is occurring and following the potential Force Majeure event, such that the delay of the timely performance of any obligation under this Agreement is minimized to the greatest extent practicable.

2. Cascade shall give the Puyallup Tribe and the Muckleshoot Tribe prompt written notice, with full details, following the occurrence of a Force Majeure event relied upon as the cause of the delay of timely performance of any obligation under this Agreement.

3. Diverting water in excess of the Agreed Flows into Lake Tapps for the purpose of improving water quality or for recreational purposes shall not be deemed a Force Majeure event, or alleged Force Majeure event.

4. Neither the foregoing Sections II.I.1 through II.I.3 governing Force Majeure, nor any other provision of this Agreement relieves, or is intended to relieve, Cascade of the obligation to insure that diversions of water into Lake Tapps permitted under Section II.B. do not reduce the flow of the White River below the Minimum Flows established in Table 1, or exacerbate Minimum Flow shortfalls resulting from natural conditions or actions of the United States Army Corps of Engineers at Mud Mountain Dam, provided that, under the following two conditions Cascade is excused from compliance with the Minimum Flows of Table 1 for the amount of time necessary to respond to the following Force Majeure events:

    a. A Force Majeure event which damages the headworks so that it is physically impossible for Cascade to reduce or cease diversions shall temporarily excuse Cascade of its Minimum Flow obligations, for the minimum time necessary to make emergency repairs; and

    b. A Force Majeure event whereby Cascade is requested to divert more water into the Lake Tapps Reservoir in response to an environmental emergency declared by the Washington Department of Ecology, the United States Environmental Protection Agency, or another authorized emergency response agency for the purpose of reducing flows in the White River to facilitate emergency cleanup of a major hazardous substance spill or release into the White River downstream of the headworks of the diversion canal. Such event shall temporarily excuse Cascade of its Minimum Flow obligations for the minimum time necessary to allow for the emergency clean up activities.

J. Water Right Trust

1. Cascade shall transfer that portion of the perfected hydropower water right that it obtains from PSE in excess of the quantity of water that it is permitted to divert into Lake Tapps under the terms of this Agreement ("Trust Water") to the State Water Trust for the purpose of providing instream flows in the White River. The transfer will be in a form acceptable to the Puyallup Tribe and the Muckleshoot Tribe and will be in perpetuity. The transfer will be revocable only by the written agreement of the Parties. Cascade shall complete the transfer as soon as practicable after the Effective Date of this Agreement.

2. In the event that Cascade fails to or is unable to complete the transfer of the Trust Water to the State Water Trust as provided in Section II.J.1, Cascade shall transfer undivided interests in the Trust Water to the Puyallup Tribe and the Muckleshoot Tribe upon their request. If Cascade does transfer the Trust Water to the Puyallup Tribe and the Muckleshoot Tribe, the Puyallup Tribe and the Muckleshoot Tribe agree to dedicate the Trust Water to instream flows. Cascade, the Puyallup Tribe and the Muckleshoot Tribe shall work together and use best efforts to take all actions and implement all such measures as may be available to them jointly or individually to prevent the out of stream or consumptive use of the Trust Water by third parties.

3. The Trust Water dedication for instream flow purposes to the State Water Trust or the Tribes under Section II.J.1 and II.J.2. shall not affect the right to use twelve (12) cfs for fish hatchery operations under Certificate of Change to Water Right Claim No. 160822, dated April 15, 1994. Cascade shall continue to hold said water right and make such water available for hatchery operation by the Muckleshoot Tribe as provided in the Certificate of Change.

K. Water Quality

1. Maintenance and Improvement of Lake Tapps Reservoir Water Quality

   a. The Parties shall use best efforts to work with the appropriate local agencies, including but not limited to Pierce County, to facilitate development of a management plan that would protect the water quality of the Lake Tapps Reservoir to the maximum extent practicable by addressing stormwater discharges and filtration from septic systems into the Lake Tapps Reservoir and/or any other factor determined to significantly impact water quality of the Lake Tapps Reservoir, and be consistent with state and federal law.

   b. The Tribes will each determine the extent of their own participation in issues related to the foregoing efforts to maintain and improve the water quality of the Lake Tapps Reservoir.

2. Water Quality Monitoring

a. Within sixty (60) days of the Effective Date of this Agreement, the Coordinating Committee shall meet for the purpose of developing a good faith schedule to work together to develop and implement a water quality monitoring plan ("WQ Monitoring Plan"). The WQ Monitoring Plan shall include, but is not limited to, the following:

(1) Protocols for measurement (methods, quality assurance, frequency of measurement, parameters measured, monitoring locations);

(2) Provisions to ensure that the water released from Tailrace shall meet applicable water quality standards;

(3) Staffing; and

(4) Data management and analysis.

b. The WQ Monitoring Plan shall be attached to this Agreement as **Exhibit 4** and may be amended and modified by the agreement of the Coordinating Committee.

L. Coordinating Committee

1. Formation of Coordinating Committee

a. The Parties agree to cooperate in good faith to implement the letter and spirit of this Agreement. The Coordinating Committee is intended to facilitate such cooperative efforts.

b. The Coordinating Committee shall be composed of the Chief Executive Officer of Cascade, the Director of the Puyallup Tribe Natural Resources Department, and the Chairperson of Muckleshoot Tribal Fisheries Commission, or their respective delegates. The Parties may invite additional staff or policy representatives to attend and participate as non-voting members in any Coordinating Committee meeting.

c. The Coordinating Committee shall meet whenever requested by a Party, but in any event shall meet at least once each calendar year to assess compliance with this Agreement, recommend needed changes to the Flow Monitoring and Gaging, develop the Annual Drawdown Plan and the Annual Refill Plan based upon anticipated hydrological conditions, discuss the Tailrace Study and the Outlet Screening Study, exchange data, and identify other issues that relate to the interpretation, implementation and enforcement this Agreement. By mutual agreement of the Parties, the Coordinating Committee may address other matters that relate to the WSP.

d. The Coordinating Committee may conduct public outreach activities that may include presentation of study results, the Annual Drawdown Plan, the Annual Refill Plan, hydrological data, and fishery information.

2. Committee Procedures

a. If a Party desires to convene a meeting of the Coordinating Committee, it may do so by advance written notice to the other Parties of at least five (5) days, which such notice shall also identify the matter or matters to be submitted to the Coordinating Committee for consideration, except that in the case of an emergency such advance written notice shall not be required. If a meeting of the Coordinating Committee is called in accordance with Section II.L.1.c. or this Section II.L.2.a., then the Committee shall promptly meet and confer in good faith, and endeavor to render a decision as to the matter or matters under consideration.

b. Decisions of the Coordinating Committee shall be by consensus where the Parties shall each have one vote. If the Coordinating Committee has rendered a decision that, for any reason, is not to a Party's satisfaction, then any Party may submit the matter (or the Committee's decision, as the case may be) to dispute resolution in accordance with Section II.M.

M. Dispute Resolution

1. Except as otherwise provided in this Agreement, any dispute or claim arising either between two of the Parties or among all three of the Parties regarding the interpretation, implementation, or enforcement of this Agreement or its performance or nonperformance, including a Party's alleged failure to comply with any provision of this Agreement ("Dispute"), shall be settled by the procedures set out in this Section II.M. of this Agreement and not by court action except as provided in this Section.

2. Statement of Positions. In the event of a Dispute, the complaining Party or Parties ("Disputing Party or Parties") shall first promptly provide the non-complaining Party or Parties with a general written statement of its claim(s) and position(s). This statement need not be complete and will not limit the claims of the Disputing Party or Parties in any further procedure. If the Parties involved in the Dispute cannot informally resolve the Dispute within 14 days of the non-complaining Party or Parties receipt of the written statement(s), the Disputing Party or Parties may proceed as set forth in Sections II.M.3 and II.M.4 below.

3. Mediation Procedure. If the Disputing Party or Parties cannot resolve the Dispute with the non-complaining Party or Parties pursuant to Section II.M.2, then either the Disputing Party or Parties, or the non-complaining Party or Parties may commence mediation by notice of selection of a third party, neutral mediator and proposed time(s) and date(s) for the mediation. If the other Party or Parties do not propose an alternative mediator within fifteen (15) days of such notice,

then the mediation shall occur before the first person proposed. If the Parties to the Dispute do not agree on a mediator, then the selection of the mediator shall be determined by Judicial Arbitration and Mediation Services ("JAMS") or a comparable organization who shall select a qualified mediator with experience in the subject matter of the Dispute. The mediation shall take place in King or Pierce County, Washington, and the mediator's fees shall be equally shared either between the two Parties or among the three Parties to the Dispute. If the mediation resolves the Dispute, the resolution shall be memorialized in writing. If the Parties to the Dispute cannot resolve the Dispute through mediation, any Party participating in the mediation may terminate mediation. Upon termination of mediation, any Party to the Dispute may submit the Dispute to binding arbitration under Section II.M.4. Notwithstanding the foregoing the Parties to the Dispute may by written agreement waive mediation of any Dispute and proceed to binding arbitration.

4. Binding Arbitration. If the Parties to a Dispute do not resolve the Dispute pursuant to Sections II.M.2 and II.M.3 above, the Dispute shall be resolved by binding arbitration in King or Pierce County, Washington, as follows:

   a. AAA Rules Apply. The arbitration shall be under the then existing Commercial Arbitration Rules of the AAA or a like successor organization.

   b. Arbitrators. The Parties to the Dispute shall attempt to agree on an arbitrator with relevant natural resource or related dispute resolution expertise. If they cannot so agree, then the selection of the arbitrator shall be determined by Judicial Arbitration and Mediation Services ("JAMS") or a comparable organization who shall select a qualified arbitrator with experience in the subject matter of the Dispute. After the appointment of the arbitrator, and before any hearings or conferences with the arbitrator, the arbitrator shall take an oath of impartiality, and the Parties to the Dispute may communicate directly with the arbitrator only by using the same procedures as would be proper for the Parties or their representatives to communicate with a superior court judge relating to litigation pending in a superior court of the State of Washington for King or Pierce County. The arbitrator's fees shall be jointly shared either between the two Parties or among the three Parties involved in the Dispute. Any attempt by a Party or Parties to assert a position solely for the purpose of causing delay, increasing costs or vexing another Party or other Parties shall be subject to Rule 11 sanctions and responsible for paying all costs and fees incurred by the Parties as a result, direct or indirect, of that Party's efforts undertaken in violation of Rule 11.

   c. Discovery. The Parties to a Dispute shall be permitted to obtain discovery from each other of documents and other tangible evidence at a time reasonably prior to the arbitration hearing. No more than two depositions shall be permitted to be taken by each Party to the Dispute.

d. Governing Rules and Awards. To the extent applicable, the Washington Arbitration Act, Chapter 7.04A RCW, as amended at the time of the arbitration, shall govern any judicial proceedings, resolve any issue of arbitration, and procedurally govern arbitration under or related to this Agreement. The arbitrator shall resolve any Dispute in accordance with this Agreement, including the applicable law designated by the Parties in Section II.M.7. Unless otherwise agreed to by the Parties, the arbitrator shall not decide the Dispute on summary disposition. The Parties agree that the arbitrator shall have authority, without resort to any court, to award any remedy, order or relief, including without limitation awards, orders granting preliminary and permanent affirmative, mandatory, prohibitory injunctive, or specific performance relief relating to any obligation under this Agreement, compensatory damages (but expressly excluding punitive or exemplary damages), and sanctions for abuse or frustration of the arbitration process to the same extent that a court with personal and subject matter jurisdiction could award, order or issue or any other specific performance of any obligation. The Parties agree that the obligation to arbitrate under this Agreement and any award, order or judgment of the arbitrator under this Agreement shall be final and may be specifically enforced in the Superior Court of the State of Washington for King or Pierce County. Each Party to the Dispute shall bear its own attorney, expert and other fees and costs associated with the arbitration, except that the prevailing Party or Parties in any action brought to enforce this arbitration clause shall be entitled to recovery of its reasonable attorney's fees from the other Party or Parties to the Dispute.

5. Puyallup Tribe Limited Waiver of Sovereign Immunity. The Puyallup Tribe voluntarily grants Cascade a limited waiver of its sovereign immunity, and that of its officers and employees acting for the Puyallup Tribe in their official capacities, and consents to binding and mandatory arbitration for the limited purpose of claims by Cascade regarding the interpretation, implementation, and enforcement of this Agreement, the enforcement of the obligation to arbitrate, and the enforcement of any award, order or judgment of the arbitrator(s) in any arbitration authorized by this Section II.M . The Puyallup Tribe consents to suit by Cascade for the purpose of judicial enforcement of an arbitration award in accordance with this Section II.M in a suit brought in the Superior Court of the State of Washington for King or Pierce County. The Puyallup Tribe agrees that it will not raise sovereign immunity as a defense in any judicial action brought by Cascade to enforce an arbitration award in accordance with this Section II.M. This limited waiver shall expire upon the expiration or termination of this Agreement pursuant to Section II.W. The limited waiver of sovereign immunity granted to Cascade herein shall not extend to any monetary award or judgment, other than for mediator or arbitrator fees, and costs, and attorney fees expressly authorized in this Section. The Puyallup Tribe also grants the Muckleshoot Tribe a limited waiver of its sovereign immunity for the sole purpose of permitting the joinder of the Puyallup Tribe as a party in connection with the arbitration or litigation of a

claim by the Muckleshoot Tribe against Cascade authorized in this Section II.M, for which the Puyallup Tribe is a necessary or indispensable party.

6. Muckleshoot Tribe Limited Waiver of Sovereign Immunity. The Muckleshoot Tribe voluntarily grants Cascade a limited waiver of its sovereign immunity, and that of its officers and employees acting for the Muckleshoot Tribe in their official capacities, and consents to binding and mandatory arbitration for the limited purpose of claims by Cascade regarding the interpretation, implementation, and enforcement of this Agreement, the enforcement of the obligation to arbitrate, and the enforcement of any award, order or judgment of the arbitrator in any arbitration authorized by this Section II.M. The Muckleshoot Tribe consents to suit by Cascade for the purpose of judicial enforcement of an arbitration award in accordance with this Section II.M in a suit brought in the Superior Court of the State of Washington for King or Pierce County. The Muckleshoot Tribe agrees that it will not raise sovereign immunity as a defense in any judicial action brought by Cascade to enforce an arbitration award in accordance with this Section II.M. This limited waiver shall expire upon the expiration or termination of this Agreement pursuant to Section II.W. The limited waiver of sovereign immunity granted to Cascade herein shall not extend to any monetary award or judgment, other than for mediator or arbitrator fees, and costs, and attorney fees expressly authorized in this Section. The Muckleshoot Tribe also grants the Puyallup Tribe a limited waiver of its sovereign immunity for the sole purpose of permitting the joinder of the Muckleshoot Tribe as a party in connection with the arbitration or litigation of a claim by the Puyallup Tribe against Cascade authorized in this Section II.M, for which the Muckleshoot Tribe is a necessary or indispensable party.

7. Governing Law. The Parties agree that this Agreement and all questions concerning the performance of this Agreement shall be interpreted, construed and enforced in all respects in accordance with applicable laws of the State of Washington, without reference to rules relating to choice of law.

8. No Jurisdiction in Tribal Court. This Agreement and actions taken pursuant to this Agreement shall not be interpreted under any circumstances as consent by Cascade to jurisdiction in a Tribal Court over any claims or disputes arising under this Agreement. The Puyallup Tribe and the Muckleshoot Tribe expressly waive any right they may have to require Cascade to exhaust its remedies in a Tribal Court before bringing an enforcement action pursuant to Section II.M.4.d. of this Agreement. The Puyallup Tribe and the Muckleshoot Tribe agree that they will not prosecute, maintain, or institute any action, suit, administrative action or proceeding of any kind or nature against Cascade in a Tribal Court for any matter within the scope of this Agreement.

9. Specific Performance. The Parties agree that there is no adequate remedy at law with respect to their respective undertakings and obligations under this Agreement and that the Parties shall be entitled to specific performance of those undertakings and obligations in any arbitration or action authorized under this Agreement.

N. Good Faith; Commitment to Support Agreement

1. The Parties covenant and agree to act in good faith and to support the terms and validity of this Agreement.

2. The Parties, at their discretion have the right to participate in the state administrative process to assure Ecology's Municipal Water Right is consistent with this Agreement and provides for implementation of the Agreed Flow Regime set forth in this Agreement.

3. Cascade shall, during the term of this Agreement, support and defend the validity of the Agreement and shall not seek, either directly or indirectly, to invalidate the Agreement or undermine or modify its terms and conditions through administrative, legislative, judicial or other means.

O. Reservation of Rights

Each Party reserves all of its rights and interests except as explicitly addressed by the terms of this Agreement. In particular, but without limitation, except as explicitly spelled out in the Agreement, the Agreement does not in any way define, affect, limit or modify the inherent or treaty-reserved fishing, hunting, gathering or water rights of the Puyallup Tribe and the Muckleshoot Tribe and does not in any way define, limit or modify the inherent sovereign rights, or rights reserved by treaty or provided by executive order, statute or common law of the Puyallup Tribe and the Muckleshoot Tribe.

P. Successors and Assigns

1. This Agreement shall be binding upon and inure to the benefit of the Parties' respective successors and assigns.

2. The Parties agree that Cascade may, with the written permission of the Puyallup Tribe and the Muckleshoot Tribe, assign or transfer its respective rights and obligations under the Agreement to a third party; provided that the assignee or transferee assumes in writing all of the obligations under this Agreement.

3. The Parties finally agree that any attempt by Cascade to transfer or assign this Agreement (or any amendment to this Agreement) in violation of this Section II.P. is void. A change of corporate form by Cascade shall not be considered an assignment for the purposes of this Section II.P; provided, that Cascade gives the other Parties to this Agreement reasonable prior notice of such change and the reasons for it; and provided further that the new entity is obligated by law or by written Agreement to assume all of the rights and obligations of this Agreement. Notwithstanding the dispute resolution provisions of this Agreement, the other Parties may seek judicial relief with respect to any proposed change in Cascade's corporate form.

Q. Construction and Interpretation

1. The headings, titles, and captions contained in this Agreement are merely for reference and do not define, limit, extend, or describe the scope of this Agreement or any provision herein.

2. The word "include(s)" means "including, without limitation."

3. Neither this Agreement nor any provision herein shall be construed against any Party due to the fact that said Agreement or any provision herein was drafted by said Party.

R. Modification

This Agreement may only be modified by written agreement of the Parties duly approved by resolution or ordinance of the Muckleshoot Tribe, the Puyallup Tribe, and Cascade.

S. Severability

If any provisions of this Agreement are determined to be unenforceable or invalid by a court of law, then this Agreement shall thereafter be modified to implement the intent of the Parties to the maximum extent allowable under law.

T. No Third Party Beneficiaries

No third Party is intended to, or shall have any rights under this Agreement. The Parties to this Agreement are the only ones with any right to enforce its terms.

U. Equal Participation in Drafting

The Parties have participated equally in drafting this Agreement and have been represented by legal counsel. No Party shall be deemed to have more responsibility than any other for any ambiguous language.

V. Notice

All notices under this Agreement shall be in writing and shall be deemed to have been made when personally served on the Party's designee, or on the third business day after notice is sent by first class mail, or an equivalent method of transmittal. A Party may change its designee by providing notice of the change in writing to the other Parties. The Parties initial designees are:

Puyallup Tribe:
Herman Dillon Sr., Chairperson
Puyallup Tribal Council
Puyallup Tribe of Indians
3009 E. Portland Ave.
Tacoma, WA 98404

with a copy to:	John Howard Bell, Director Law Office of the Puyallup Tribe of Indians 3009 E. Portland Ave. Tacoma, WA 98404
Muckleshoot Tribe:	Charlotte Williams, Chairperson Tribal Council Muckleshoot Indian Tribe 39015 172nd Ave. SE Auburn, WA, 98092
with a copy to:	Richard Reich, Tribal Attorney Muckleshoot Indian Tribe 39015 172nd Ave. SE Auburn, WA, 98092
Cascade:	Ed Oberg, Chief Executive Officer Cascade Water Alliance 11400 SE 8th Street, Suite 440 Bellevue, WA 98004
with copies to:	Michael Gagliardo, Director of Planning Cascade Water Alliance 11400 SE 8th Street, Suite 440 Bellevue, WA 98004
and to:	Michael P. Ruark, General Counsel Inslee Best Doezie & Ryder 777 - 108th Avenue NE, Suite 1900 P.O. Box C-90016 Bellevue, WA 98009-9016

W. Term of the Agreement

This Agreement shall be binding on the Parties on the Effective Date and shall continue in force and effect so long as Cascade or any successor or assign diverts water from the White River. The Agreement shall terminate only upon written agreement of the Parties duly approved by resolution or ordinance of the Muckleshoot Tribe, the Puyallup Tribe, and Cascade, or upon permanent cessation of diversions from the White River into the Lake Tapps Reservoir and surrender or other final extinguishment of the water rights authorizing said diversions.

X. Non-waiver

Waiver of any provision herein shall not be deemed a waiver of any other provision herein, nor shall waiver of any breach of this Agreement be construed as a continuing waiver of other breaches of the same or other provisions of this Agreement.

Y. Power of the Parties

Each Party by executing this Agreement warrants that it duly approved this Agreement and has the power to enter into the Agreement and to enforce its terms.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be duly executed as of this 6th day of August, 2008.

Puyallup Tribe:

Puyallup Tribe of Indians

By: Nancy Foster
Title: Vice-Chair Council
Dated: 8-6-08

Cascade:

Cascade Water Alliance

By: Lloyd Warner
Title: Chair
Dated: 08-06-08

Muckleshoot Tribe:

Muckleshoot Indian Tribe

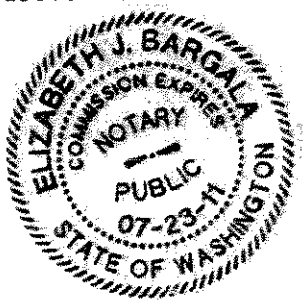
By: Charlotte Williams
Title: Chairperson
Dated: August 6, 2008

PUYALLUP TRIBE OF INDIANS ACKNOWLEDGMENT

STATE OF WASHINGTON)
) ss
COUNTY OF KING)

On this 6TH day of AUGUST, 2008, personally appeared before me ~~Herman Dillon Sr.~~ to me known to be the VICE Chairperson of the Puyallup Tribe of Indians, and HENRY JOHN JR acknowledged this instrument to be the free and voluntary act and deed of the Puyallup Tribe of Indians for uses and purposes therein mentioned, and on oath stated that he/she was authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written



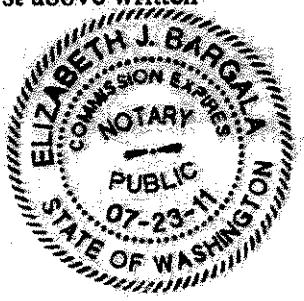
Elizabeth J. Bargala
Notary Public in and for the State of Washington
Residing at Enumclaw

MUCKLESHOOT INDIAN TRIBE ACKNOWLEDGMENT

STATE OF WASHINGTON)
) ss
COUNTY OF KING)

On this 10TH day of AUGUST, 2008, personally appeared before me Charlotte Williams to me known to be the Chairperson of the Muckleshoot Indian Tribe, and acknowledged this instrument to be the free and voluntary act and deed of the Muckleshoot Indian Tribe for uses and purposes therein mentioned, and on oath stated that he/she was authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written



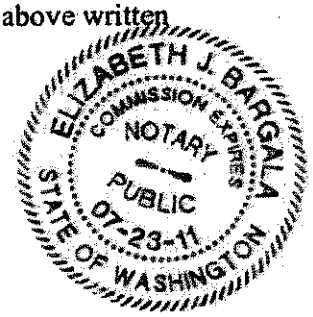
Elizabeth J Bargala
Notary Public in and for the State of Washington
Residing at Enumclaw

CASCADE WATER ALLIANCE ACKNOWLEDGMENT

STATE OF WASHINGTON)
) ss
COUNTY OF KING)

On this 6TH day of AUGUST, 2008, personally appeared before me Lloyd Warren to me known to be the Chair of the Board of Directors of the Cascade Water Alliance, and acknowledged this instrument to be the free and voluntary act and deed of the Cascade Water Alliance for uses and purposes therein mentioned, and on oath stated that he/she was authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.



Notary Public in and for the State of Washington
Residing at ENUMCLAW, WA

Exhibit 1 List of Gages

Exhibit 2 Water Quality Parameters for Gages

Exhibit 3 Tailrace Plan

Exhibit 4 Water Quality (WQ) Monitoring Plan

EXHIBIT 1

Puyallup River Basin USGS Gages		Location & Justification
12098500	WHITE RIVER NEAR BUCKLEY, WA	Upstream of Lake Tapps Diversion and downstream of Mud Mt. Dam. Long Term record but only gage height has been measured in recent years. Corps provides funding and they have been working with USGS for several years to come with a more accurate alternative. River should be gaged above the diversion; either at/near this location or closer to the diversion.
12099000	WHITE RIVER CANAL AT BUCKLEY, WA	Located on the diversion canal. Gaging is crucial for determining diversion flows. Flows have not been metered for several years. Gaging facilities upgrades & methods should be per USGS recommendations and records should be put back online ASAP.
12099200	WHITE RIVER ABOVE BOISE CREEK AT BUCKLEY, WA	Located on White River mainstem below diversion and upstream of Boise Creek. Needed to measure instream flows. When Corps builds new dam, gaging location may move upstream from current site. This site should continue to be monitored on a short-term basis by the USGS as a check for flows at the new diversion gage. Also, a stage gage should remain in operation at this or a nearby location to ensure ramping rates are met.
12099600	BOISE CREEK AT BUCKLEY, WA	Located near mouth of Boise Creek. Gage will soon be moved upstream due to King County channel work along the White River. Boise Creek is an important salmon bearing stream and should continue to be gaged.
12101100	LAKE TAPPS DIVERSION AT DIERINGER, WA	Located at Tailrace. Gaging is needed to measure outflows.
12100496	WHITE RIVER NEAR AUBURN, WA	Located on the White River mainstem near Auburn & upstream of tailrace. Gaging here measures flow in the lower White River. Adding flow measured here to tailrace flows determines mainstem flows of the lower river for critical flow target for downramping. We recommend that Pierce County continue to fund the gage and work with the USGS on increases in gage accuracy.
12101000	LAKE TAPPS NEAR SUMNER, WA	Gage is needed to measure reservoir levels.
New Gage	HUCKLEBERRY CREEK	Gaging is needed on Huckleberry Creek, which is upstream of Mud Mt. Reservoir.
New Gage	CLEARWATER CREEK	Gaging is needed on Clearwater Creek, which is upstream of Mud Mt. Reservoir.
New Gage	UPPER MAINSTEM WHITE RIVER	Gaging is needed on the mainstem White River upstream of Mud Mt. Reservoir.
New Gage	NEW SEASONAL STAGE GAGE - Lower White River	A new seasonal stage gage may be needed downstream of tailrace to ensure downramping rates are met during reservoir evacuation.

Exhibit 2

Parameters For White River Water Quality Monitoring

I. Continuous Monitoring

For all streamflow monitoring gages, collection and computation of 15-minute unit value data and the publication of daily-mean values for the following parameters:

- temperature
- pH
- specific conductance
- dissolved oxygen
- turbidity
- chlorophyll

II. Discrete Water-Quality Sampling

For at least 3 sites in the White River Basin, the following discrete samples shall be collected using depth- and width integrated sampling techniques:

- nitrate plus nitrite
- nitrite
- total nitrogen
- ammonia
- orthophosphate
- total phosphate

Appendix D: Agreement with Lake Tapps Community

2009 AGREEMENT REGARDING LAKE TAPPS BETWEEN CASCADE WATER ALLIANCE AND THE LAKE TAPPS COMMUNITY

This Agreement Regarding Lake Tapps ("Agreement") is made and dated as of this 13th day of May 2009, between the Cascade Water Alliance, a Washington Non-Profit Corporation ("Cascade"), and each and all of the following organizations: Friends of Lake Tapps, dba the Lake Tapps Community Council, a Washington non-profit corporation; the Church Lake Maintenance Co., a Washington non-profit corporation; Driftwood Point Association, a Washington non-profit corporation; Inlet Island Maintenance Company, a Washington non-profit corporation; Snag Island Maintenance Association, a Washington non-profit corporation; Tacoma Point Improvement Club, a Washington non-profit corporation; Tapps Island Association, Washington non-profit corporation; and West Tapps Maintenance Co., a Washington non-profit corporation (each individually a "Party" and collectively the "Lake Tapps Community"). Cascade and the Lake Tapps Community together are sometimes collectively referred to as the "Parties".

RECITALS

A. WHEREAS, Puget Sound Energy, Inc. ("PSE") owns certain assets comprising the White River Project ("Project"); and

B. WHEREAS, until January 15, 2004, PSE operated the Project subject to the jurisdiction of the Federal Energy Regulatory Commission ("FERC") but ceased hydropower operations at that time; and

C. WHEREAS, construction of the Project formed Lake Tapps and PSE diverted water from the White River into Lake Tapps Reservoir (hereinafter "Lake Tapps") pursuant to its pre-code water right claim ("Claim"); and

D. WHEREAS, the Church Lake Maintenance Co., Driftwood Point Association, Inlet Island Maintenance Company, Snag Island Maintenance Association, Tacoma Point Improvement Club, Tapps Island Association, and West Tapps Maintenance Co. have authorized the Lake Tapps Community Council to implement the terms and conditions of this Agreement on their behalf; and

E. WHEREAS, PSE and Cascade have executed an Asset Purchase Agreement (dated April 23, 2008) under which PSE will transfer the Project to Cascade. The Project Assets are more particularly described as "Transferred Assets" in Article 2 of the Asset Purchase Agreement. The Asset Purchase Agreement is available at the offices of Cascade Water Alliance; and

F. WHEREAS, in order to provide for the use of Lake Tapps as a resource of water for municipal supply purposes, PSE submitted four applications to the Washington State Department of Ecology ("Ecology"), including one change of use application for its Claim (CS2-160822CL) and three new applications (S2-29920, R2-29935, and S2-29934) (PSE's water right applications in their current form or as may be modified and as approved by Ecology are collectively referred to as the "Water Rights"); and

G. WHEREAS, Cascade submitted correspondence to Ecology on August 12, 2008 in support of PSE's application with requested conditions of issuance, including the condition to meet specified minimum flows, and the Parties recognize that Ecology may issue Water Rights that reflect those minimum flows; and

H. WHEREAS, the Parties agree that the Lake Tapps Community must have an appropriate and equitable role in and responsibility for the settlement of the issues surrounding the Project, and accordingly that all stakeholders including the Lake Tapps Community who receive a direct or indirect benefit from the Project must assume responsibility for benefits received; and

I. WHEREAS, to receive the support of the collective Lake Tapps Community, the resolution of such issues must assure the long-term viability of Lake Tapps; and

J. WHEREAS, Cascade must manage Lake Tapps for water supply purposes; and

K. WHEREAS, Cascade recognizes that the Lake Tapps Community desires a lake-level fluctuation plan that assures the recreational and ecological viability of Lake Tapps; and

L. WHEREAS, the Lake Tapps Community and PSE entered into the Agreement Regarding Reservoir Management dated March 31, 2004 (the "2004 Agreement"), which included provisions designed to keep Lake Tapps at "Normal Full Pool" (as defined below) for extended periods of time, taking into account recreation, flood control, dock repair and maintenance, water quality (including but not limited to Eurasian Watermilfoil Control, "milfoil control"), maintenance and repair of the penstock intake, maintenance and repair of dikes and withdrawal for water supply; and

M. WHEREAS, on April 10, 2009, the Parties entered into a Memorandum of Agreement that anticipated the development of this Agreement based on the 2004 Agreement and the Parties intend for this Agreement upon its Effective Date, as defined in Section 1.6 below, to supersede both the Memorandum of Agreement and the 2004 Agreement;

NOW, THEREFORE, the Parties agree as follows:

1. Implementation of Agreement: This Agreement shall be implemented when all of the following conditions have been satisfied:

1.1 Cascade. Cascade shall implement this Agreement when all of the following conditions have been satisfied:

1.1.1 Cascade has acquired the Project Assets from PSE and notified the Lake Tapps Community that it has acquired these Assets; and

1.1.2 Cascade, after reviewing the Final Reports of Examination ("Ecology decision") on the Water Rights and in consultation with the Lake Tapps Community, but no later than 15 days after receiving the Ecology decision, has notified the Lake

Tapps Community that it is prepared to accept the Ecology decision on the Water Rights. Cascade's acceptance of the Water Rights shall commit it to this Agreement unless the Lake Tapps Community exercises its option to withdraw under 1.3; and

1.1.3 Cascade has not received notice from the Lake Tapps Community of its intent to withdraw pursuant to Section 1.3 below.

1.2 Lake Tapps Community. The Lake Tapps Community shall implement this Agreement when all of the following conditions have been satisfied:

1.2.1 The Lake Tapps Community has received notice from Cascade that it has acquired the Project Assets from PSE; and

1.2.2 The Lake Tapps Community, in consultation with Cascade, has reviewed the Ecology decision on the Water Rights, and has received notice from Cascade that it is prepared to implement the Agreement; and

1.2.3 The Lake Tapps Community has determined that it will not exercise the withdrawal option of Section 1.3 below and will support Cascade in any water rights challenges pursuant to Section 7 of this Agreement.

1.3 Lake Tapps Community Withdrawal Option. The Lake Tapps Community may withdraw from this Agreement by providing Cascade with written notice of its decision to withdraw, but not later than 5 days after receipt of notice from Cascade that Cascade is prepared to implement this Agreement. If the Lake Tapps Community withdraws from this Agreement, then this Agreement shall be of no further force or effect and the 2004 Agreement will remain in effect.

1.4 Effect of Cascade Decision Not to Implement. If Cascade, after reviewing the Ecology decision on the Water Rights, but no later than 15 days after receiving the Ecology decision, notifies the Lake Tapps Community that it is not prepared to implement the Agreement, this Agreement shall be of no further force or effect and the 2004 Agreement will remain in effect.

1.5 Effect of 2004 Agreement and Memorandum of Agreement:

1.5.1 The parties recognize that unless and until satisfaction of all the conditions by both parties under Sections 1.1 and 1.2, the 2004 Agreement remains in effect.

1.5.2 Upon satisfaction by both parties of all conditions in both Sections 1.1 and 1.2, the 2004 Agreement and the Memorandum of Agreement are superseded.

1.6 The date upon which all conditions in both Sections 1.1 and 1.2 are satisfied shall be referred to as the **"Effective Date."**

1.7 Issuance of Water Right In Advance of Project Asset Acquisition: In the event that the conditions of Sections 1.1.2, 1.1.3, 1.2.2, and 1.2.3 are satisfied prior to Cascade

acquiring the Project Assets from PSE, the parties shall work together in connection with Ecology's decision.

2. Term. This Agreement is final upon signature and subject to the Implementation provisions of Section 1. It shall remain in effect unless terminated by mutual agreement of the Parties or otherwise under the Termination provisions provided by Section 11 of this Agreement.

3. Recreational Lake Levels.

3.1 Beginning on the Effective Date, Cascade will maintain a **"Normal Full Pool"** (defined as a water level between 542.2 feet and 543.7 feet[1]) during the "**Annual Recreational Period.**" The "Annual Recreational Period" constitutes times during which the Normal Full Pool is required as described in the following sections. Within the described time periods, operational variances may be required due to forecasts or available precipitation, the terms and conditions of the Water Rights, any necessary milfoil control, or the terms and conditions of applicable law.

3.1.1 Initial Phase—April 15 through September 30: Cascade will maintain Normal Full Pool from April 15 through September 30 of each year until the later of (i) thirty (30) years from the Effective Date or (ii) Cascade's commencement of the use of Lake Tapps for municipal water supply.

3.1.2 Secondary Phase—April 15 through September 15: Following completion of the Initial Phase described in Section 3.1.1, Cascade will maintain Normal Full Pool from April 15 to September 15 of each year.

3.1.3 Secondary Phase—September 16 through September 30: Following completion of the Initial Phase described in Section 3.1.1, Cascade will maintain Normal Full Pool from September 16 through September 30 of each year more than ninety percent (90%) of the time, measured by the number of days (i.e., no more than fifteen (15) days in a rolling ten year period of time) below the lower parameter of the Normal Full Pool, starting with the first calendar year in which lake levels fall below the lower parameter of Normal Full Pool.

3.1.4 October: Cascade will make reasonable efforts to maintain Normal Full Pool through October 31 in all years.

3.2 Cascade's obligations under this Agreement shall be implemented in a manner that is consistent with the following priority of interests for use of White River flows: (i) provision of instream flows; (ii) provision of recreational lake levels; and (iii) provision of municipal water supply.

3.3 Changes in the definitions of either "Normal Full Pool" or "Annual Recreation Period"

[1] The U.S. Geological Survey in Washington State uses the National Geodetic Vertical Datum (NGVD) of 1929 as the datum for gages to determine the elevation of gage-height data. These figures are expressed in NGVD. These elevations are equivalent to water levels of 541.5 msl and 543 msl as measured at the USGS Gage 12101000 as contained in the 2004 Agreement.

may be proposed by either Cascade or the Lake Tapps Community; however, any change may only be effective upon mutual agreement of the Parties.

3.4 Lake Management Team: The Parties will establish a Lake Management Team ("Team") to help Cascade plan the yearly operations of Lake Tapps. Membership of the Team will include Cascade, the Lake Tapps Community, and other appropriate persons or entities. Local governments may be invited to join the Team.

3.4.1 Annual Meeting: Prior to February 1 of each year and additionally on an as needed basis, the Team will meet to address the following topics and other topics as they may arise:

(a) Refill/Drawdown - Cascade will provide a report containing information about expected water forecast for the upcoming year, a projection of the schedule for spring refill and fall drawdown, and a discussion of how Cascade will meet the required recreational lake levels. The Team will review and provide comments on this report;

(b) Any expected maintenance or drawdowns of the lake levels, and potential timing thereof;

(c) Past year's lake levels and management decisions;

(d) Data collected from the previous year under Section 6;

(e) Any issues relating to boat management, milfoil control, water quality, shoreline development, or other matters of common interest;

(f) Communication and outreach within the Team. This shall include verification or designation of the primary contact for the Lake Tapps Community and Cascade, two alternate contacts for each Party, and notification of designated legal representatives. This shall also include discussion of the best methods for timely and efficient communication, including but not limited to telephone, email, fax, US mail, or other;

(g) What meetings in addition to the Annual Meeting should be scheduled by the Team in the current year; and

(h) The Lake Tapps Community will provide an Annual Report on the Community Communications Plan outlined in 4.1 below.

3.4.2 Comprehensive Review: The Team shall develop a review process by which either Cascade or the Lake Tapps Community may propose modifications to this Agreement, including without limitation its provisions for the Annual Recreational Period or the parameters of Normal Full Pool. The Parties must conduct this review process no later than the year 2030. Either Party may propose meeting and conferring at any time if information raises concerns about long-term changes in the hydrograph. A change to the range of elevation constituting Normal Full Pool may require physical changes to the Lake to increase the storage volume and appropriate implementation measures (including funding) for such activities. Any modification will require mutual agreement by both Parties.

3.4.3 The Team may take on other activities as are agreed to by the Parties.

3.4.4 Cascade will provide the Lake Tapps Community with copies of all documents relating to the Water Rights that Cascade files with Ecology at the time such documents are filed.

4. In-Kind Services Provided by the Lake Tapps Community: On their own accord, or in combination with local governments, including appropriate law enforcement agencies, the Lake Tapps Community will assist Cascade through the following efforts:

4.1 Community Communication. Within 90 days of the Effective Date, in consultation with Cascade, the Lake Tapps Community will implement a Communications Plan for communicating with its members regarding issues related to operation of Lake Tapps addressed by this Agreement. The goal of this Communication Plan is to ensure timely, cost effective communication.

4.1.1 Required Elements: These elements must be included in the plan.
(a) Crisis communication plan
(b) Routine updates to a website

4.1.2 Potential Elements:
(a) Newsletter to members
(b) Active phone tree
(c) Call in number
(d) Community-wide meetings as needed
(e) Mechanism for feedback to Cascade
(f) Other mechanisms as appropriate

The Lake Tapps Community shall provide a report on the implementation of the Communications Plan at the Annual Meeting described in Section 3.4.1.

4.2 Other Voluntary Lake Enhancements. Cascade and the Lake Tapps Community may, at any time, and by mutual agreement, conduct additional voluntary lake enhancement projects that benefit Lake Tapps.

5. Responsibility for Milfoil: Cascade shall control milfoil to the extent required by law or to achieve Cascade's own operational goals, and may do so in whatever manner Cascade deems most appropriate, including extended fall/winter drawdowns if necessary. Any such actions by Cascade will include consultation with the Team.

6. Gauging and Monitoring: Cascade will establish and fund an ongoing stream flow, lake level and water quality data collection program in consultation with the Team. Data collected will be made available to the Team and will be used to guide the annual operation of Lake Tapps and to inform the comprehensive review process. Data collected through this effort will be reviewed as needed, but at least once every year at the Meeting referenced in Section 3.4.1.

7. Lake Tapps Community Support of Water Rights: The Lake Tapps Community will support Cascade in connection with any challenge to Ecology's decisions on the Water Rights. This support may include but is not limited to participation at public hearings, submission of public comments, and, depending upon the costs of and the availability of funding for such

activities, participation in administrative or judicial proceedings as an intervenor or a friend of the court.

8. Transferability: The rights and obligations of the Parties arising under this Agreement shall inure to the benefit of and shall be binding upon such Parties' respective successors and assigns. Any Party may transfer or assign its rights and obligations under this Agreement, provided, however, in the event of any such transfer or assignment, such assignee or transferee shall, as evidenced in a written instrument signed by such assignee or transferee, assume and be bound by all of the terms and conditions of this Agreement and the Party having so transferred or assigned its rights and obligations under this Agreement is thereafter fully released and discharged from any further obligations arising under this Agreement. In the event of any transfer or assignment by Cascade of substantially all of the Project Assets, all the terms and conditions of this Agreement shall be binding upon any such transferee or assignee, except as provided in Section 11. If Cascade determines that it does not wish to retain ownership of any portion of the Project, it will follow the procedures set forth in Section 11 below.

9. Enforceability: The Parties intend this Agreement to be certain and enforceable, as well as a mechanism for ongoing collaboration as to any issues that may arise in connection with implementation of the Agreement. Except as necessary for compliance with and enforcement of this Agreement, the parties do not intend this Agreement to modify their respective property rights.

10. Compliance with All Applicable Law; Modification: All the foregoing shall be performed in compliance with all applicable law (including, but not limited to, the Safe Drinking Water Act, the Clean Water Act and the Endangered Species Act) and all necessary consents or approvals of government bodies. In the event that compliance with applicable law has a material adverse effect upon the viability of the Water Rights, or in the event that compliance with applicable law makes it impossible for a Party to comply with its obligations under this Agreement, the Parties shall negotiate in good faith to modify the terms and conditions of this Agreement in order to achieve its purposes to the maximum extent possible.

11. Right of First Offer, Right of Match or Right of Last Offer, and Termination.

11.1 Intent. The Parties recognize that circumstances may arise whereby it would not be possible or desirable for Cascade to operate the Project or maintain Lake Tapps as a reservoir or may not be possible for Cascade to transfer the Project Assets to any other party for such purposes. The Parties desire to establish a procedure whereby Cascade in such an event may terminate this Agreement after providing the Lake Tapps Community with the right to acquire the Project Assets (or such portions thereof as Cascade may then own) on terms and conditions that are fair and reasonable.

11.2 Section Not Applicable to Certain Events. Section 11 shall not apply to, nor be triggered by, any action taken by Cascade's governing body that is intended to lead to a potential transfer of all or a part of the Project Assets under the following circumstances:

11.2.1 Transfer to a public entity who will be bound by the terms and conditions of this Agreement;

11.2.2 A transfer of a portion of the Project Assets, provided that the assets being transferred are not essential for Cascade to comply with its obligations under this Agreement and Cascade will continue to be bound by the terms and conditions of this Agreement; or

11.2.3 A transfer that results from a corporate restructuring of Cascade, provided that the successor entity will be bound by the terms and conditions of this Agreement.

11.3 Application. Section 11.4 to 11.7 shall apply to any action taken by Cascade's governing body intended to transfer all or part of the Project Assets not governed by Section 11.2. In the event that Cascade transfers the Project Assets to a non-public entity for municipal water supply purposes, then the purchaser will be bound by the terms of this Agreement. In the event that Cascade decides to sell the Project Assets for any other purpose, such transfer may result in the termination of this Agreement.

11.4 **Notice.** In accordance with Section 23 (Notice) of this Agreement, Cascade shall notify the Lake Tapps Community, within a commercially reasonable time period, when any action is taken by its governing body that is intended to lead to a potential sale or transfer of all or a material part of the Project Assets other than those actions described in Section 11.2 above. Cascade shall include with such notice a description of the Project Assets to be conveyed (the "**Project Assets to be Conveyed**"), together with a copy of (1) any minutes, resolutions, or other documents reflecting the governing body's action; and (2) current and recent financial statements and system plans insofar as they relate to Lake Tapps, subject to any person to have access to the above materials first entering into a confidentiality agreement with Cascade with respect to such information being shared (the "**Confidentiality Agreement**").

11.5 Right of First Offer. Within one hundred and fifty (150) days of the date of such notice, the Lake Tapps Community may submit to Cascade a bona fide offer to purchase the Project Assets to be Conveyed (the "**First Offer**"), together with supporting documentation for the purchase price for the Project Assets to be Conveyed. The First Offer shall include additional material terms including, without limitation, any contingencies to closing, closing timeframe, or additional requirements of Cascade.

11.6 Action on First Offer. Within sixty (60) days of Cascade's receipt of the First Offer under Section 11.5, the following shall occur:

11.6.1 If First Offer Accepted. If the First Offer is accepted by Cascade, the parties shall proceed with negotiating a purchase and sale agreement pursuant to the terms of the First Offer.

11.6.3 If Negotiation Requested. In the event that Cascade requests that the Parties enter into further negotiations on the First Offer, the Parties shall have thirty (30)

additional days to agree upon the material terms of the purchase and sale agreement. Failure of the Parties to agree upon the terms and conditions of the purchase and sale agreement prior to the expiration of said thirty (30) additional day period shall be deemed as a rejection by Cascade of the First Offer.

11.6.4 No First Offer or First Offer Rejected. If the Lake Tapps Community does not make a First Offer within the time period specified, or if the First Offer is rejected by Cascade or deemed rejected, Cascade may thereafter market the Project Assets to be Conveyed to a third party, subject to the terms of Section 11.7 and provided that Cascade must utilize a publicly advertised process. Failure by Cascade to respond within sixty (60) days from Cascade's receipt of the First Offer shall be deemed as a rejection by Cascade of the First Offer.

11.7 Application, Opportunity to Match, Right of Last Offer.

11.7.1 Opportunity to Match. This Section shall apply when Cascade markets the "Project Assets to be Conveyed" to a third party under Section 11.6.4. If Cascade finds a suitable third party purchaser of the Project Assets to be Conveyed on terms and conditions that are acceptable to Cascade, then Cascade shall promptly notify the Lake Tapps Community and provide the Lake Tapps Community with the opportunity to offer to match the terms of the third party offer within thirty (30) days of the date of such notice ("**Match**").

11.7.1.1 If the Lake Tapps Community offers a Match, the Parties shall proceed with negotiating the purchase and sale agreement.

11.7.1.2 If the Lake Tapps Community does not offer a Match within the time period specified, then Cascade may dispose of the Project Assets by consummating the transfer that has not been matched.

11.7.1.3 If for any reason said third-party transaction is not consummated, then Cascade may negotiate with another third party purchaser, and the Lake Tapps Community will have an additional opportunity to match, unless the Lake Tapps Community waives further opportunity.

11.7.2 Last Offer. This Section applies when Cascade markets the Project Assets to be Conveyed to a third party under Section 11.6.4 and fails to find a suitable third party purchaser on terms and conditions that are acceptable to Cascade in its sole discretion after any of the following events: (1) Lake Tapps Community has not provided a First Offer under Section 11.5; (2) Cascade has rejected the Lake Tapps Community's First Offer under Section 11.6.3; or (3) Cascade is unable to consummate a third party transaction following the Lake Tapps Community's failure to Match under Section 11.7.1. In this case, Cascade shall promptly notify the Lake Tapps Community. Together with such notice, Cascade shall provide the Lake Tapps Community with any available information that Cascade has regarding rejected bids, subject to any person to have access to the above materials first entering into a Confidentiality Agreement. Within ninety (90) days of the date of such notice, the Lake Tapps Community may submit to Cascade a

bona fide offer to purchase the Project Assets to be Conveyed, which shall include the purchase price and other material terms as described in Section 11.6 (the "**Last Offer**"). Cascade shall have ninety (90) days to evaluate the Last Offer.

11.7.2.1 If Cascade accepts the Last Offer, then the Parties shall proceed with negotiating the terms and conditions of the purchase and sale agreement.

11.7.2.2 If the Lake Tapps Community fails to make a Last Offer within the time period specified or Cascade rejects the Last Offer, then Cascade may dispose of the Project Assets to be Conveyed in any manner it deems appropriate in its sole discretion.

11.8 Community Affiliation with Public Entity; Good Faith Negotiations. In connection with any offer made by the Lake Tapps Community to acquire the Project Assets to be Conveyed in accordance with Sections 11.1 through 11.7, the Lake Tapps Community may affiliate with a public entity provided that such public entity is: (i) legally able and authorized to acquire the Project Assets to be Conveyed, and (ii) able to promptly and reliably finance the acquisition of the Project Assets to be Conveyed. Further, in connection with any such effort by the Lake Tapps Community to acquire the Project Assets to be Conveyed, Cascade shall, at the request of the Lake Tapps Community, cooperate with the Lake Tapps Community in undertaking due diligence activities by providing the Lake Tapps Community with reasonable access to relevant documents and other information readily available to Cascade, subject to the Confidentiality Agreement. Cascade shall also, if so requested by the Lake Tapps Community, engage in good faith negotiations over such matters as the Parties may then determine to be relevant to the fairness and reasonableness of any acquisition of the Project Assets to be Conveyed contemplated by the Parties. By way of example, and not by way of limitation, such matters may include the determination of the fair market value of the Project Assets to be Conveyed, the allocation of liabilities (if any) associated with the Project Assets to be Conveyed, and the ability of the Lake Tapps Community (and/or its affiliate public entity) to finance and close the transaction in a timely manner.

11.9 Right of Termination after Right of First Offer and Right to Match or Last Offer.

11.9.1 Cascade's Right of Termination. Cascade may, at any time from and after the effective date of this Agreement, terminate this Agreement if all of the following are met:

11.9.1.1 Cascade shall have determined, in its sole discretion, that it is unable to operate Lake Tapps; and

11.9.1.2 Cascade shall have notified the Lake Tapps Community of its determination and followed the procedures of Right of First Offer, Match, and Right of Last Offer in Section 11.5 through 11.8 above such that either Section 11.7.1.2 or 11.7.2.2 is triggered; and

11.9.1.3 Cascade shall have determined, in its sole discretion, that it is unable to sell, lease or otherwise dispose of substantially all of the Project Assets on satisfactory terms and conditions as described in Section 11.2.1 above or otherwise for municipal water supply purposes. Effective from and after five (5) days of the date Cascade provides notice to the Lake Tapps Community under 11.9.1.2, this Agreement shall be null and void and of no further force or effect as between any Party and no Party shall thereafter be entitled to assert any right or interest arising under this Agreement except as specified in Section 20 (Survival of Claims).

11.9.2 The Lake Tapps Community's Right of Termination. At any time after Cascade provides notice to the Lake Tapps Community under Section 11.4 above, the Lake Tapps Community may terminate this Agreement upon thirty (30) days notice to Cascade. Effective from and after the date of such notice, this Agreement shall be null and void and of no further force or effect as between any Party, and no Party shall thereafter be entitled to assert any right or interests arising under the Agreement except as specified in Section 20 (Survival of Claims).

12. Notice of Breach; Opportunity to Cure:

12.1 Notice of breach. In the event that any Party believes another Party has breached its obligations under this Agreement, the aggrieved Party shall provide the other Party with notice of said breach and an opportunity to cure the breach within five (5) days.

12.2 If the aggrieved Party believes that such breach has not been timely cured, the aggrieved Party may pursue its remedies as follows:

12.2.1 Breach Involving Imminent Threats: In the event any Party believes another Party has breached its obligations under this Agreement, in a manner that either (a) poses an imminent threat to Normal Full Pool during the Annual Recreational Period or (b) involves the obligation to support the Water Rights under this Agreement, the aggrieved Party may pursue remedies either under Section 13 or 14.

12.2.2 Other Breaches. For breaches other than those specified in Section 12.2.1, the aggrieved Party must pursue remedies under Section 13 and thereafter, may pursue remedies under Section 14.

12.3 In the event that the Lake Tapps Community fails to perform its obligations under this Agreement after notice and an opportunity to cure, Cascade shall have the right (but not the obligation) to undertake the performance of any and all such obligations and if Cascade undertakes performance due to a material breach by the Lake Tapps Community, Cascade may suspend performance of its obligations under this Agreement after completion of the informal dispute resolution procedure set forth in Section 13 of this Agreement.

13. Dispute Resolution:

In the event that any dispute arises between Cascade and the Lake Tapps Community, the aggrieved Party shall give a notice of the dispute to the other Party as provided in Section 12. Cascade and the Lake Tapps Community shall, within five (5) days of such notice, each nominate a senior officer of its management to meet at a mutually agreed location, to attempt to resolve such dispute. The parties shall each designate a representative(s) to confer on the best and most cost effective way to resolve the dispute. By mutual agreement, they may choose direct negotiations, mediation or arbitration. If there is no agreement between the parties on how to proceed within thirty (30) days, either Party may pursue legal action subject to the limitations set forth in Section 14 below.

14. Specific Performance; Other Remedies:

14.1 Each Party acknowledges that a monetary remedy for a material breach of this Agreement may be inadequate and may be impracticable and extremely difficult to prove, and that any such breach could cause the other Parties irreparable harm. In the event of such a breach, the aggrieved Party shall be entitled to temporary and permanent injunctive relief, including temporary restraining orders, specific performance, preliminary injunctions and permanent injunctions, without the necessity of posting a bond or making any undertaking in connection therewith and without the necessity of proving actual damages. Each Party hereby waives any such requirement of a bond or undertaking, and acknowledges that absent such a waiver, the court might require a bond or undertaking. Except as otherwise provided by Sections 14.2 to 14.4, no remedy conferred by this Agreement is intended to be exclusive of any other remedy, and each and every such remedy shall be cumulative and shall be in addition to any other remedy given hereunder or now or hereafter existing at law or in equity.

14.2 A Party shall not be liable to another Party for any damages other than direct damages in connection with any breach, default or other noncompliance with the terms and conditions of this Agreement. Without limiting the generality of the foregoing, each and all of the Parties hereby agree that no Party shall be liable for any indirect, incidental, consequential, special, exemplary or punitive damages (including, but not limited to, loss of profits, revenues or property values) arising out of such Party's performance or nonperformance of this Agreement, or such Party's breach of or default under this Agreement. Except as otherwise provided by Section 14.3 below, Cascade's liability in connection with any breach, default or other noncompliance with the terms and conditions of this Agreement shall not exceed One Hundred Thousand and 00/100 Dollars ($100,000.00) per occurrence, and Cascade's aggregate and cumulative liability under this Agreement (for any one or more events of breach, default or noncompliance) is limited and shall not exceed One Million and 00/100 Dollars ($1,000,000.00).

14.3 In the event of a material breach of Section 3.1 by Cascade in connection with the beneficial use of the Water Rights, the foregoing limitations of liability shall not apply if and to the extent such breach is attributable to the gross negligence or wanton

and reckless misconduct of Cascade.

14.4 The aggregate liability of the Parties comprising the Lake Tapps Community in connection with any breach, default or other noncompliance with the terms and conditions of this Agreement by one or more such Parties shall not exceed Fifty Thousand and 00/100 Dollars ($50,000.00) per occurrence, and the cumulative aggregate liability of such Parties under this Agreement (for any one or more events of breach, default or noncompliance) is limited and shall not exceed Two Hundred Fifty Thousand and 00/100 Dollars ($250,000.00). The Parties comprising the Lake Tapps Community shall be jointly and severally liable for any such breach, default or other noncompliance; provided, however, that each such Party shall retain any and all rights of contribution it may have against any other such Party.

15. Non-Waiver: No delay or failure by a Party to exercise any of its rights, powers or remedies under this Agreement following any breach by another Party shall be construed to be a waiver of any such breach, or any acquiescence therein, or of or in any similar breach thereafter occurring, nor shall any waiver of any single breach be deemed a waiver of any other breach theretofore or thereafter occurring.

16. Severability: In the event that any of the terms of this Agreement are in conflict with any rule of law or statutory provision or otherwise unenforceable, such terms will be deemed stricken from this Agreement, but such invalidity or unenforceability will not invalidate any of the other terms of this Agreement, and this Agreement will continue in force, unless the invalidity or unenforceability of any such provisions hereof does substantial violence to, or where the invalid or unenforceable provisions comprise an integral part of, or are otherwise inseparable from, the remainder of this Agreement.

17. No Third Party Beneficiary: This Agreement is for the sole and exclusive benefit of the Parties and is not intended to and shall not confer any rights or benefits on any third party not a signatory hereto.

18. Integrated Agreement; Relationship to Other Documents: Except as otherwise provided by this Agreement with respect to maintenance of Normal Full Pool during the Annual Recreational Period (as defined and limited by this Agreement), this Agreement shall not alter, confirm or affect the rights, benefits, privileges, interests and obligations of the Parties arising under that certain "Deed" dated June 22nd, 1954, wherein Puget Sound Power & Light Company is "Grantor" and Lake Tapps Development Co., Inc. is "Grantee," recorded with the Pierce County Auditor in Vol. 1063, pages 485 through 495, records of Pierce County Washington. With respect to maintenance of Normal Full Pool during the Annual Recreational Period (as defined and limited by this Agreement), the Parties intend this Agreement to be their complete agreement and that this Agreement supersedes all other negotiations or agreements, whether written or oral, with respect to the Annual Recreational Period (as defined and limited by this Agreement). In all other respects, the Parties intend for this Agreement to be interpreted and construed to be consistent with and complementary to their existing property rights. The Parties expressly recognize that certain matters that are the subject of this Agreement are also, or may also be, the subject of the Water Rights, and that under certain circumstances the provisions of the Water Rights may take precedence over this Agreement by operation of law.

19. Amendment: This Agreement only may be amended or supplemented in a writing signed by the Parties.

20. Survival of Claims: Any claim that a Party has asserted by raising it under the Dispute Resolution provisions of this Agreement (Sections 12-14) prior to the termination of this Agreement and that may reasonably be interpreted or construed to survive the termination of this Agreement shall survive the termination of this Agreement.

21. Signature in Counterpart: This Agreement may be executed in any number of counterparts and all of those counterparts taken together shall constitute one and the same instrument.

22. Lake Tapps Community Contact:

22.1 No later than fourteen (14) days after the date of execution of this Agreement, the Lake Tapps Community will designate in writing an individual ("Lake Tapps Contact Person"), and two alternates, to serve as a single point of contact for day-to-day implementation of this Agreement and notices, except a notice of breach or default. The Lake Tapps Contact Person will be responsible for all communications between Cascade and the Lake Tapps Community. The Lake Tapps Community shall notify Cascade in writing of any change in the Lake Tapps Contact Person. As noted in Section 3.4.1 above, this designation will be reviewed at least once a year at the Annual Meeting.

22.2 In the event that the Friends of Lake Tapps, dba the Lake Tapps Community Council, intends to dissolve, such dissolution shall not affect the viability of this Agreement so long as (1) Cascade is provided prior notice of said intended dissolution and (2) the remaining Parties comprising the Lake Tapps Community provide Cascade with adequate assurances of their ability to fully and satisfactorily perform all obligations of the Lake Tapps Community arising under this Agreement. If Cascade is not adequately assured, then prior to termination of this Agreement, the Parties will engage in dispute resolution as described in Section 13 above, provided that no further legal action must be pursued prior to termination.

23. Notices.

23.1 All notices, except a notice of termination, breach or default, to be given between Cascade and the Lake Tapps Contact Person, hereunder shall be given in writing (i) by personal delivery, (ii) by recognized overnight air courier service, (iii) by United States postal service, postage prepaid, registered or certified mail, return receipt requested, (iv) by facsimile transmission, using facsimile equipment providing written confirmation of receipt at the receiving facsimile number, or (v) electronic mail.

23.2 A notice of termination, breach or default shall be given by certified or registered mail, return receipt requested, with a courtesy copy by ordinary mail and electronic mail being sent to each Party at the address set out in Exhibit A or such other address as each Party may designate by notice to the other Parties.

24. Further Assurances: Each Party covenants and agrees to do all things necessary or advisable in order to confirm and better assure the intent and purposes of this Agreement.

25. Authority: Each party, by executing this Agreement warrants that it has duly approved this Agreement and has to power to enter into this Agreement and to enforce its terms.

26. Good Faith Commitment to Support Agreement: The Parties covenant and agree to act in good faith and to support the terms and validity of this Agreement. Cascade shall, during the term of this Agreement, support and defend the validity of the Agreement and shall not seek, either directly or indirectly, to invalidate the Agreement or undermine or modify its terms and conditions through administrative, legislative, judicial or other means.

27. Future Use for Hydropower: Nothing in this Agreement shall preclude the development of hydropower as long as such development does not adversely affect the ability of the Parties to perform under this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first above written.

Chuck Clarke, CEO
Cascade Water Alliance

Charles Romeo, President
Lake Tapps Community Council

Leon Stucki, Snag Island Maintenance Association;
VP & Director, Lake Tapps Community Council

James Diebag, GM Tapps Island Association;
Director, Lake Tapps Community Council

John Farrell, Church Lake Maintenance Co;
Director, Lake Tapps Community Council

Vickie Karuzas, Inlet Island Maintenance Co;
Director, Lake Tapps Community Council

Cliff McIntosh, President
West Tapps Maintenance Co

Tacoma Point Improvement Club

Joseph Muscarnera, President
Driftwood Point Association

Ralph Mason, Director At Large
Lake Tapps Community Council

Kirk Shuler, Director At Large
Lake Tapps Community Council

Ron Wilderman, Director
Lake Tapps Community Council

Don Fisher, Treasurer
Lake Tapps Community Council

Michelle Whittmier, Director
Lake Tapps Community Council

EXHIBIT A—CONTACTS

Lake Tapps Community Contacts

Primary Contact:
Lake Tapps Community Council
Community/Lake Management Team Coordinator
c/o Tapps Island Club House
20818 Island Park Way E
Lake Tapps, WA 98391
(253) 862-6616

Initial appointee:
Dr. Leon G. Stucki, LTCC VP
21406 Snag Island Drive
Lake Tapps, WA 98391
LStucki@Future-Tech.com
(253) 939-7552

Alternate #1
Lake Tapps Community Council
Lake Management Team Member
c/o Tapps Island Club House
20818 Island Park Way E
Lake Tapps, WA 98391
(253) 862-6616

Initial appointee:
Ralph Mason
2425 199th Ave. Ct. E.
Lake Tapps, WA 98391
RalphMason55@msn.com
(253) 862-7418

Alternate #2
Lake Tapps Community Council
Lake Management Team Member & Tapps Island General Manager
c/o Tapps Island Club House
20818 Island Park Way E
Lake Tapps, WA 98391
(253) 862-6616

Initial appointee:
James Diebag, GM Tapps Island
jdiebag@comcast.net
(253) 862-6616

Attorney
Liz Thomas
K&L Gates LLP
925 4th Avenue, Suite 2900
Seattle, WA 98104-1158
Direct Dial (206) 370-7631
Cell (206) 228-5506
Fax (206) 370-6190
Email liz.thomas@klgates.com

Cascade Water Alliance Contacts

Primary Contact:
Cascade Water Alliance
Chief Executive Officer
11400 SE 8th Street, Suite 440
Bellevue, WA 98004
Phone (425) 453-0930
Fax (425) 453-0953

Alternate #1:
Cascade Water Alliance
Director of Planning
11400 SE 8th Street, Suite 440
Bellevue, WA 98004
Phone (425) 453-0930
Fax (425) 453-0953

Alternate #2
Cascade Water Alliance
Intergovernmental and Communications Director
11400 SE 8th Street, Suite 440
Bellevue, WA 98004
Phone (425) 453-0930
Fax (425) 453-0953

Attorney
Terese Neu Richmond
Gordon Derr LLP
2025 First Avenue, Suite 500
Seattle WA 98121
Phone 206-382-9540
Fax 206-626-0675
trichmond@gordonderr.com

A courtesy copy of any notice of breach, default, or intent to transfer shall be given to:

Pierce County Executive
County-City Building
930 Tacoma Avenue South, Room 737
Tacoma, WA 98402
Phone: 253-798-7477
pcexecutive@co.pierce.wa.us

In addition, any notice of breach under Section 23.2 shall be given to:

1. Lake Tapps Community Council President
   Charles Romeo, LTCC President
   18402 Driftwood Dr., Lake Tapps, WA 98391
   charles_romeo48@msn.com
   (253) 862-6565

2. Lake Tapps Community Council (regular mail only)
   P. O. Box 2093
   Sumner, WA 98390

3. Lake Tapps Community Council
   c/o Tapps Island Club House
   20818 Island Park Way E
   Lake Tapps, WA 98391
   (253) 862-6616

4. Attorney for Lake Tapps Community Council
   Liz Thomas
   K&L Gates LLP
   925 4th Avenue, Suite 2900
   Seattle, WA 98104-1158
   Direct Dial (206) 370-7631
   Cell (206) 228-5506
   Fax (206) 370-6190
   Email liz.thomas@klgates.com

Appendix E: Technical Memoranda

Water Demand Forecast
Final Draft
December 18, 2009

Supply Alternatives Assessment
Final
December 18, 2009

CASCADE WATER ALLIANCE

Water Demand Forecast

Task 600

FINAL DRAFT

December 18, 2009

CDM

In association with

HDR R·W·BECK

Cascade Water Alliance
Water Demand Forecast

Task 600

Final Draft

December 18, 2009

CDM
1218 3rd Ave
Suite 1100
Seattle, WA 98101
(206) 336-4900

In association with
HDR

Table of Contents

1.0 Background

The purpose of this document is to summarize the methodology, data assumptions and results of a comprehensive water demand forecast for the Cascade Water Alliance (Cascade).

The objective of this analysis was to forecast total water demand for the forecast period 2010 to 2060 for the combined utilities of Cascade. The water demand forecast is designed to serve as a basis for supply and infrastructure decision making, as well as financial planning. In addition, the water demand forecast model will estimate and communicate effects from major sources of uncertainty to assist Cascade decision-makers understand both the upside and downside risks in source and infrastructure planning.

A water demand forecast model (demand model) was estimated based on water billing and production data, demographic and socioeconomic data, weather, and water conservation for the eight utilities within the Cascade service area:

- City of Bellevue
- Covington Water District
- City of Issaquah
- City of Kirkland
- City of Redmond
- Sammamish Plateau Water and Sewer District
- Skyway Water and Sewer District
- City of Tukwila

A comprehensive database was developed, and organized into monthly time series (across historical years 1994 to 2008) and cross sectional (across utilities) data set. It should be noted that not all of the utilities had complete data from 1994 to 2008.

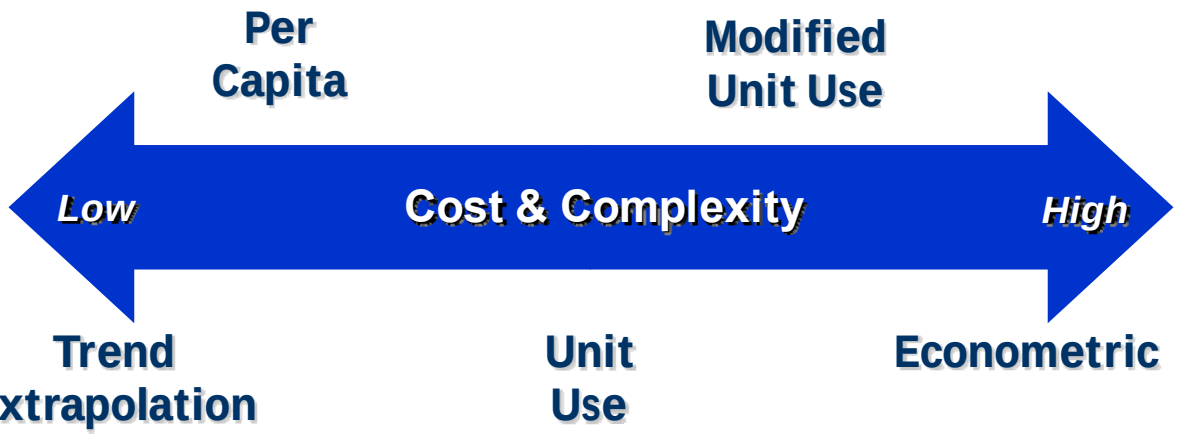
Section 2 reviews common water demand forecasting approaches and discusses the method employed for the Cascade demand model. Section 3 reviews the data used to develop the demand model and generate the water demand forecast. Section 4 presents the results of the statistical regression analyses, which serve as the basis for the demand model. Section 5 provides an overview of the water demand uncertainties, presents the demand forecast scenarios, and summarizes the demand forecast results.

2.0 Water Demand Forecasting Approach

2.1 Overview of Different Demand Forecasting Methods

Common approaches to forecasting water demands range from simple trend extrapolation to detailed econometric models (see Figure 1).

Figure 1. Common Water Demand Forecasting Approaches



The trend extrapolation method simply extends historical trends into the future. The advantage to this method is it is not time consuming to prepare and thus is very low cost to produce. The disadvantages are that it assumes the unlikely scenario that past trends carry into the future unchanged, it has no ability to "explain" water demands, and it cannot account for any changes in factors that influence demand, such as demographics or weather.

The per capita demand forecasting method assumes population is the primary driver in determining future demand. The approach takes historical total demand divided by population to get per capita use and multiplies it by the projected population to calculate future demand. The advantage of this methodology is it is simple to understand and is relatively low cost to produce. The disadvantages are that demand does not always mirror population growth and demographic, socioeconomic, and factors other than population are not accounted for.

A unit use methodology is more costly and complex than the two previous approaches. It is similar to the per capita method, but instead of a single population driver it uses multiple drivers to generate sector water demands (e.g., single-family, multifamily and non-residential). The unit use method involves dividing each sector's water demand by the appropriate drivers (e.g. housing or employment) to calculate a per unit water demand value. Next, the unit use values are multiplied by the projected future number of units to derive a future unit use demand. The primary advantage of the unit use

methodology is that it allows for demand in each sector to be projected independently. The primary disadvantage is that important influencing factors such as weather, income, and price of water are not incorporated into the demand forecast.

A modified unit use methodology, such as the one used for the **Central Puget Sound Water Supply Forum's *2009 Regional Water Supply Outlook (2009 Outlook)***, applies factors from other empirical studies of water demands to adjust or modify the unit use rates over time to account for weather, income and price of water impacts.

As decisions regarding development of new water supplies and infrastructure become more complex and costly, many utilities across the country are seeing value in moving towards more sophisticated approaches for forecasting water demands. These econometric methods start with empirical statistical analysis of historical water demands and the factors known to influence water use. Then they use Monte Carlo simulation of key variables in order to produce a statistical range in water demands, which can help decision makers understand uncertainty and the implications of their planning.

To determine the most effective water demand forecasting method, three primary factors should be examined. First, what are the goals and objectives of the forecast? To answer this question one must understand the information needed by the planners or decision-makers as well as the ramifications of the decisions. Second, is there adequate data availability? This requires understanding what data is available, its quality, and the models the data will support. Finally, what are the budget and resources available? In order to select the proper forecasting methodology the financial constraints as well as the project schedule must factor into the decision.

2.2 Recommended Water Demand Forecasting Method for Cascade

Based on the importance of the decisions being made by Cascade, the availability of data, and the fact that much of the information from key utilities had already been collected for the ***2009 Outlook***, CDM recommended that the econometric water demand approach with uncertainty analysis be used to develop the water demand forecast.

An econometric approach statistically correlates sector water demands with factors that influence those demands. The econometric model relies on regression analysis to compute coefficients or elasticities that describe how water use is influenced by a number of explanatory variables (such as weather, price of water, income, etc). For each explanatory variable, elasticity is statistically estimated. For example, a price elasticity of -0.10 implies that a ten percent increase in the real price of water will result in a one percent decrease in water demand.

The following is an example of an equation used to calculate sector water demand using an econometric approach:

$$E(y) = a + b_1x_1 + b_2x_2 + b_nx_n$$

Where:

E(y) = the expected value of dependent variable (y) as estimated by the function

a = intercept, or the value of (y) when x = 0

b = coefficient of x, or the change in y given a change in x

x = value of the independent variable

Based on the available data, two statistical models would be generated, one for combined residential (single-family and multifamily) and one for non-residential. The reason for combining single-family and multifamily into one combined model is because the utilities had very different definitions of what constituted multifamily. The independent variables would therefore be:

- Residential Water Use (gallons per household per day)
- Non Residential Water Use (gallons per employee per day)

The explanatory variables that the statistical model will find relationships to water use are:

- Weather (temperature and precipitation)
- Income
- Price of Water
- Mix of Single-Family and Multifamily Households
- Mix of Industrial (Manufacturing) Employment
- Monthly Binary Variables to Capture Seasonal Variability
- Passive Conservation (that which has occurred from state plumbing codes)
- Active Conservation (that which utilities have implemented)

3.0 Data Sources and Assumptions

A database was built containing data for monthly production, billing, maximum temperature, precipitation, the number of single-family households served, the number of multi-family households served, employment, median household income, employment mix, marginal price, passive conservation, and active conservation for each of the eight utilities from 1990 to 2008 where data was available.

3.1 Water Production and Billing Data

Water billing and production data availability was not uniform for all CWA members. Billing and production data was collected by HDR from a variety of sources, including a Cascade utility survey, Seattle Public Utilities, and the Cascade Water Alliance.

Water production data was organized according to the source of the water. Data for water purchases from the Cascade Water Alliance/Seattle Public Utilities dated back to 1990 for some utilities and monthly data was complete across all utilities, where applicable, for the years 2000 to 2008. One utility, Covington, did not directly purchase water from Cascade Water Alliance/Seattle Public Utilities from 1990 to 2008.

Water production data from independent supplies was available beginning in 1990 for some utilities and was complete for all applicable utilities from 1995 to 2008. Three utilities, Bellevue, Kirkland, and Tukwila, did not acquire any water from independent supply production during the period 1990 to 2008.

Water billing data varied among Cascade Members. Monthly billing data supplied by Seattle Public Utilities was the primary source of data from 1994 to 2003 for the following utilities: Bellevue, Kirkland, Redmond, Skyway, and Tukwila. Complete monthly billing data was available for all utilities from 2006 to 2008.

Cascade utilities utilize bi-monthly customer billing cycles which involve reading customer meters at approximately one-month-long time intervals that overlap with two consecutive calendar months. A data smoothing technique was therefore needed in order to generate monthly water consumption. The following formula was used to estimate the monthly consumption during a particular month (Q_N^e) based on bi-monthly billing data:

$Q_N^e = (0.25*Q_N^b)+(0.5*Q_{N+1}^e)+(0.25*Q_{N+2}^e)$

Where:

Q_N^e = estimate of water consumed during month N

Q_N^b= estimate of water billed during month N

3.2 Weather

Base year and the historical normal monthly values for average maximum temperature and precipitation are used in forecasting future water use. Two weather stations, SeaTac and Landsburg, where used to represent the Cascade region. SeaTac weather data dated back to 1949, while Landsburg data dated back to 1931. Figure 2 presents the long-term normal values for average maximum temperature for the two weather stations, while Figure 3 presents the long-term normal values for precipitation. Temperature between the two stations is nearly the same, while precipitation is significantly higher for Landsburg.

Figure 2. Long-Term Normal Average Maximum Temperature for Sea Tac and Landsburg Weather Stations

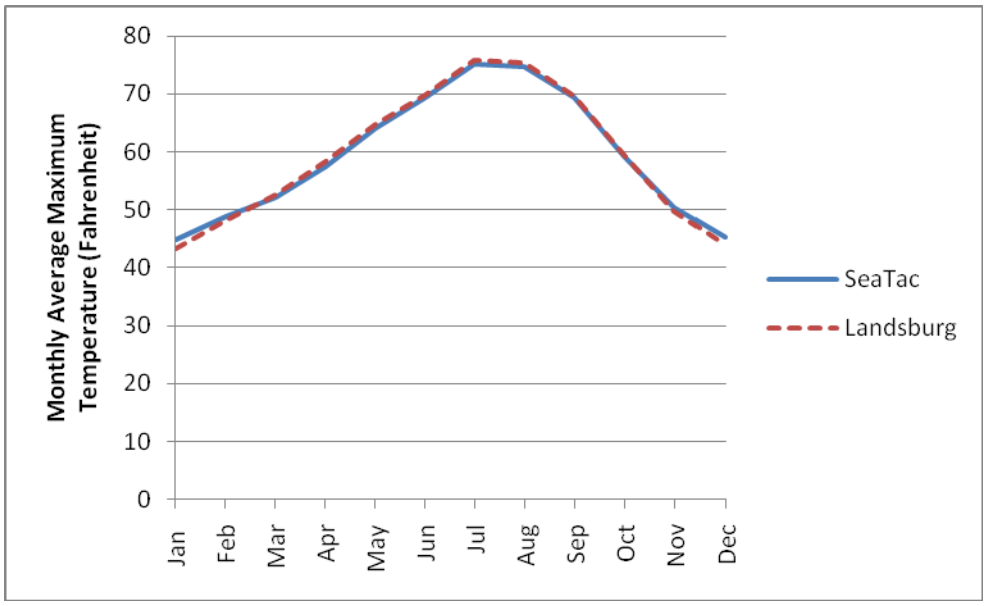
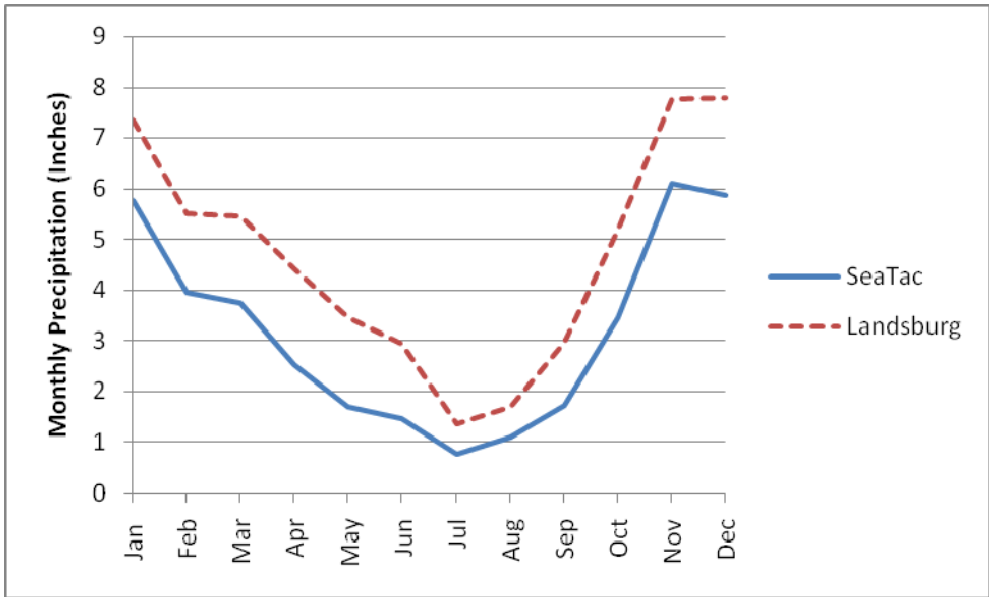


Figure 3. Long-Term Normal Precipitation for Sea Tac and Landsburg Weather Stations



Cascade utilities were assigned to a particular weather station based on geographic proximity to a station. Table 1 lists the assignment of utilities to weather stations.

Table 1 Cascade Utility Weather Station Assignments	
SeaTac Weather Station Utilities	**Landsburg Weather Station Utilities**
Bellevue	Covington
Kirkland	Issaquah
Redmond	Sammamish Plateau
Skyway	
Tukwila	

Temperature and precipitation are strong explanatory variables in predicting water use. Greater temperatures and lower precipitation results in greater water demands due to greater irrigation use and higher process water for industrial and commercial users.

3.3 Demographic and Socioeconomic Data

Demographic data used in the development a water use forecast for Cascade was obtained from the Puget Sound Regional Council (PSRC) from 2000 to 2040. PSRC produces historical and projected demographics at the Traffic Analysis Zone (TAZ) level. A TAZ is an area delimited by a state and/or local transportation official for tabulating traffic and planning related data. A TAZ typically consists of one or more census blocks, block groups, or census tracts. CDM aggregated TAZ level data to each of the Cascade utilities using GIS. Utility boundaries were overlaid against the TAZ boundaries, along with land use data, in order to determine which demographics corresponded to each of the eight Cascade utilities.

Because of the desire to produce a 50-year water demand forecast, CDM extended PSRC demographic projections from 2040 to 2060 using linear extrapolations. Table 2 presents the baseline projections of demographics for the Cascade service area.

Table 2
Baseline Projections of Demographics for Cascade

		Households			Employment	
Year	Population	Total	Single Family	Multifamily	Total	Industrial
2007	357,059	144,481	96,144	48,337	338,152	35,695
2010	371,753	151,150	99,721	51,429	354,101	34,096
2020	423,808	178,798	113,220	65,578	414,296	29,886
2030	465,382	203,705	124,146	79,559	468,547	26,563
2040	507,661	229,508	135,666	93,842	511,342	24,322
2050	554,181	259,387	148,547	110,840	567,427	22,272
2060	605,408	294,074	162,979	131,095	620,523	20,865

Population

Although population as an independent variable is not used to predict water demands using the econometric approach, it is an important driver of other variables such as households and employment. The base year (2007) total population for the eight member utilities was 357,059. The utility with the largest population was Bellevue with 134,221 people, followed by Redmond with 54,811 people. Tukwila had the smallest population in 2007, at just over 7,000 people.

Population is projected to increase to over 605,000 by 2060, representing an average annual growth rate of 1.3 percent.

Households Served

The number of households served water by Cascade utilities is an important forecast driver for future residential water use. Total households are projected to increase from 144,418 in 2007 to just over 294,000 by 2060, representing an annual growth rate of 1.9 percent.

Because single-family homes use more water than multifamily homes, it was also important to track the growth between single-family and multifamily households. Single-family households are expected to increase at an annual rate of 1.3 percent, while multifamily households are expected to increase at an annual rate of 3.1 percent (almost double that of single-family).

Employment

Total employment is the forecast driver non-residential water use. Total employment in the Cascade service area in the base year (2007) is estimated to be 338,152 (or 94 percent of the total population). This does not mean that 94 percent of people living in the Cascade service area are employed. The Cascade service area is rich in employment opportunities, with many corporations and industry located here. People commute from Seattle, and from other counties such as Snohomish and Pierce, to work in Cascade's service area.

Employment is in the area is projected to increase to just over 620,000 by 2060, representing an annual growth rate of 1.5 percent. But because industrial establishments use more water than commercial/institutional establishment, it was important to track industrial employment as well. Due to the changing economy of the region and the loss of many heavy manufacturing, industrial employment is projected to decrease by 42 percent by 2060 from the current level of 36,000.

Income

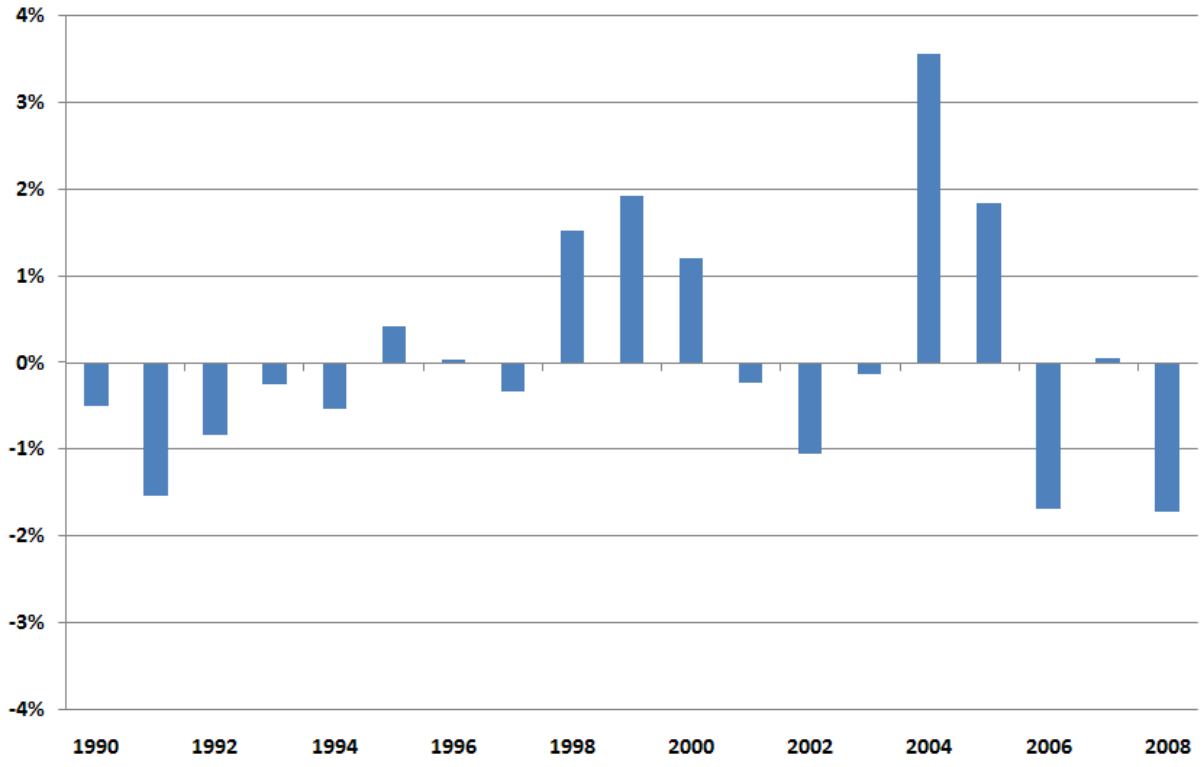
Household income is an important explanatory variable for predicting water demand. Empirical studies across the country for the last 20 years indicate as real (above inflation) incomes go up, so does residential water demand. Homes with greater

incomes tend to have bigger yards, irrigate more, have more water using fixtures and use those fixtures with greater frequency.

To generate household income for each of the eight utilities, CDM first used the historical PSRC household income data by quartile. Using this quartile data, CDM estimated the median household income for each utility in 1990 (adjusted to year 2000 dollars). This information was used to get an accurate spatial (across utility) representation of income.

To generate historical income growth from 1990 to 2008, CDM used the personal income data for King County generated by the Washington State Office of Financial Management. This data was adjusted to reflect real income in year 2000 dollars. The real growth rates in personal income were then applied to the 1990 household income by utility in order to get utility specific income data. Figure 4 shows the real income growth for the aggregate of the Cascade utilities from 1990 to 2008. From 1990 to 2000, real income grew by 3 percent, or just under 0.3 percent annually. This was considered to be a period of average economic growth according to the Office of Financial Management. From 2001 to 2008, real income only grew by 0.1 percent. This period was considered to be poor in terms of overall economic growth. Although population and employment continued to increase during this time, wages and the loss of manufacturing in the region produced stagnant income growth.

Figure 4. Annual Changes in Real Household Income for Cascade Service Area



Since no localized projections of personal or household income were available, CDM made baseline assumptions regarding real income growth into the future based on the historical income. From 2010 to 2020, the assumed real increase in income for the Cascade service area is 0.2 percent annually. After 2020, the assumed real increase in income will increase 0.4 percent annually by 2060.

Price of Water

The price of water at the margin is another explanatory variable in predicting both residential and non-residential water use. Empirical studies in the last 30 years indicate that as real marginal price increases, water use tends to decrease. The marginal price of water is determined by the commodity charge to the average customer for water and sewer service. It is an explanatory variable input into the database to forecast both residential and non-residential water demand. Each Cascade utility sets its own pricing structure with the marginal price of water based on the amount of water consumed per account. Pricing structures vary among Cascade utilities. Most have implemented block rate structures whereby the per unit price of water increases as water use increase. Some utilities also employ a higher per unit charges during the summer season as a way to conserve water during times of peak usage. One utility, Tukwila, implements neither a block rate structure, nor a summer season rate.

All Cascade utilities base their water pricing structures on the charge per hundred cubic feet (ccf) of water. To calculate the marginal price of water for a particular utility during a particular month, the water use factor (gallons per day per household/employee) was converted to hundred cubic feet per month.

For the purposes of this forecast the residential marginal price of water was determined using the mean water use factor for single family and multi-family household consumption. The mean single family water use factor was approximately 200 gallons per day (8.1 ccf per month). The mean multifamily water use factor was approximately 120 gallons per day (5 ccf per month). The non-residential marginal price was based on the per unit charge for the highest tier of use or the per unit charge in the absence of a tiered water pricing structure.

Marginal price data was converted to year 2000 dollars using the monthly Consumer Price Index (CPI). The real dollar amount, used to account for inflation, was calculated for the marginal price data and entered into the database for each utility for each month.

To calculate a residential marginal price for each utility, the single family and multi-family marginal price for each month was weighted by the number of single family and multifamily households respectively for each month and for each utility. Next, the base year marginal price was weighted by total households served across all utilities for each month to get an overall Cascade residential marginal price for each month. Finally, the twelve month baseline year marginal price average was calculated and used as the baseline year residential marginal price.

To project real increases in the marginal price of water, financial data and projected costs for Cascade were used. The demand model assumes a 1.4 annual percent increase in real marginal price for both the residential and non-residential sectors for the period 2007 to 2015. A 2 percent annual increase in marginal price is assumed from 2015 to 2025. A 1 percent annual increase in marginal price is assumed from 2025 to 2035. A 0.5 percent increase in marginal price is assumed from 2035 to 2050. The demand model assumes no real increases in price from 2050 to 2060.

3.4 Water Conservation

Passive Conservation

In 1992 Congress passed the Energy Policy Act of 1992 which, among other measures, set maximum flow rates for toilets, urinals, showerheads, and faucets sold in the United States. To estimate passive water conservation, the ratio of post 1992 households to total households was used. The theory is that newer homes will use less water than pre-1992 homes. By 2007, the percentage of post-1992 households was estimated to be 65 percent. Assuming remodeling rates and useful life of plumbing fixtures, it is estimated that 100 percent of households in Cascade's service area will be compliant with the 1992 plumbing codes by 2060.

Active Conservation

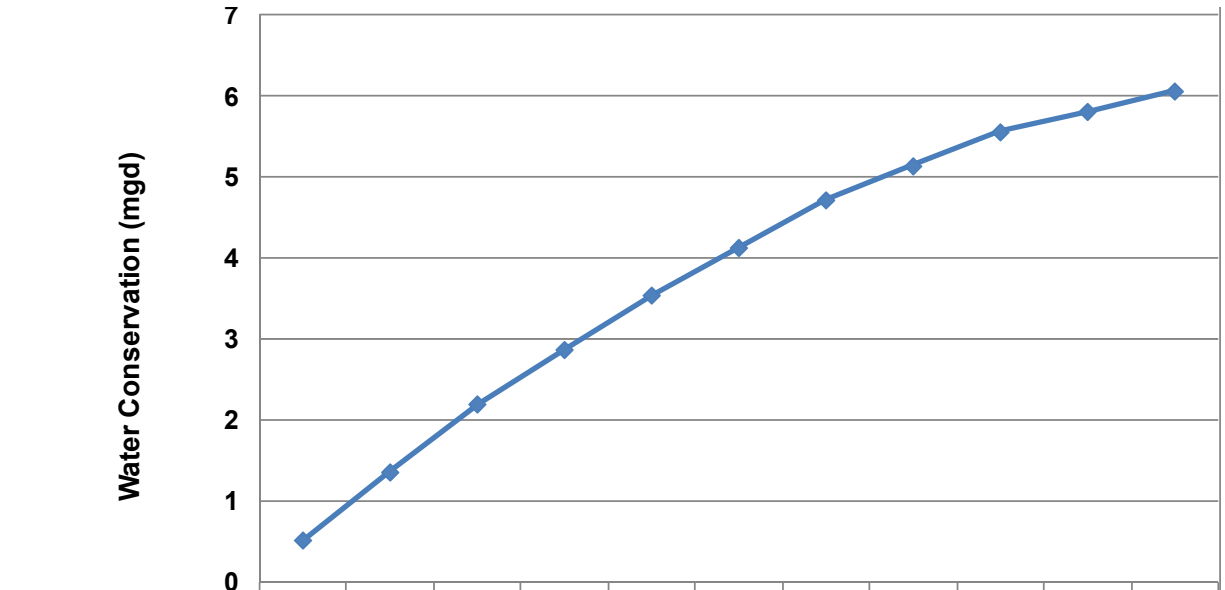
Active water conservation data was collected from individual utility water plans. For the water demand model, a variable called active conservation was created that reflected the number of residential and non-residential active conservation programs being implemented from 1994 to 2008.

Future levels of water conservation were based on active water conservation that Cascade is implementing currently (see Figure 5). This future active conservation is expected to increase from the current (2007) levels of 0.5 million gallons per day (mgd) to 6.1 mgd by 2060. This is considered in the demand forecast as a baseline level of active conservation. More aggressive conservation beyond these levels are evaluated as future water supply options for Cascade.

3.5 Non-Revenue Water

Non-revenue water is that which is not billed to water customers. It can represent water for fire protection, system flushing of mains, unaccounted water, and system losses. Non-revenue water was estimated by taking the difference between total water production and total water consumed (or billed). Using the utility data from 1994 to 2008, the weighted average non-revenue water was estimated to be 7.4 percent of total water production. This number is about average for utilities in the western United States. For forecast purposes, it is assumed that the non-revenue water will remain at 7.4 percent through 2060.

Figure 5. Projected Levels of Baseline Water Conservation for Cascade



	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
Conservation (mgd)	0.5	1.3	2.2	2.9	3.5	4.1	4.7	5.1	5.6	5.8	6.1

4.0 Econometric Models for Cascade Forecast

To calculate the explanatory variable coefficients, a multivariate regression analysis was run using Statistics Analysis Software (SAS) to produce a model for both the residential and non-residential sectors. A log model was estimated to improve the overall fit of the data. In a log model, all variables represent the natural log of the raw data. The use of log variables is common practice in estimating econometric models.

The explanatory variable coefficients (or elasticities) derived from these statistical models will result in changes to per household and per employee water use rates over time. These modified use rates will then be multiplied by the number of projected households and employees (drivers) to determine the residential and non-residential water demands.

4.1 Residential Model

The baseline forecast utilizes a combined single family and multi-family residential model. The dependent variable for the model is the log of monthly residential household water use (gallons per home per day). Table 3 presents the estimated residential model, based on 924 observations derived from data from 8 member utilities. The model explains approximately 76 percent of the variation in water use among the residential water use observations.

Table 3 Residential Water Demand Statistical Regression Model				
Number of Observations				924
Adj. R-Square				0.765
Explanatory Variables	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr >t**
Intercept	-0.6036	0.3654	-1.65	0.0989
January Indicator (0/1)	0.0342	0.0168	2.04	0.0421
February Indicator (0/1)	0.0274	0.0164	1.67	0.0957
April Indicator (0/1)	0.3964	0.0164	2.41	0.0160
May Indicator (0/1)	0.1154	0.0164	7.02	<.0001
June Indicator (0/1)	0.2675	0.0165	16.25	<.0001
July Indicator (0/1)	0.3776	0.0166	22.77	<.0001
August Indicator (0/1)	0.4335	0.0169	25.70	<.0001
September Indicator (0/1)	0.3254	0.0166	19.63	<.0001
October Indicator (0/1)	0.1708	0.0166	10.32	<.0001
November Indicator (0/1)	0.0415	0.0168	2.46	0.0140
Departure of log Precipitation from long-term	-0.0111	0.0058	-1.92	0.0546
Departure of log Maximum Temperature from	0.4506	0.1028	4.38	<0.001
log Percent Multifamily Households to Total	-0.1913	0.0095	-19.1	<.0001
log Median Household Income (year 2000 dollars)	0.4947	0.0339	14.59	<.0001
log Marginal Price of Water (year 2000 dollars)	-0.0404	0.0047	-8.67	<.0001
log Passive Conservation Indicator (% new homes	-0.0728	0.0386	-1.89	<.0594
log Active Residential Conservation (# of	-0.0309	0.0054	-5.75	<.0001

All of the variables in the model had the expected correct signs and were significant at the 10 percent level, with many of the variables significant at the one thousand of one percent level.

The weather components of the model include a monthly binary, the monthly precipitation departure from normal, and the monthly maximum temperature departure from normal. The monthly binary variables capture the effects of seasonality on residential water use. The binary variables for March and December were not significant and thus excluded from the model.

The demographic component of the residential model consists of a single variable, percent of total households that are classified as multifamily. This variable captures the effect of multi-family residential water use on the variation in total residential water use. The coefficient indicates that a one percent increase in the percent of multifamily households is estimated to produce a 0.19 percent decrease in residential water use.

The socioeconomic component of the model consists of two variables, median household income and marginal price. According to the model, median household income is the strongest indicator of the variation in residential water use. A one percent increase in median household income is estimated to lead to a 0.49 percent increase in residential water use. The marginal price variable is also a significant explanatory variable. The marginal price coefficient indicates that a one percent increase in price is estimated to produce a 0.04 percent decrease in residential water use.

The passive conservation indicator and the active conservation indicator are the two explanatory conservation variables in the residential model. Each of the two variables is statistically significant and both had the correct sign. A one percent increase in the passive conservation indicator is estimated to produce a 0.07 percent decrease in residential water use. A one percent increase in the active conservation indicator is estimated to produce a 0.03 percent decrease in residential water use.

4.2 Non-Residential Model

Table 4 presents the water demand model for the non-residential sector. The model is based on 910 observations and the four explanatory variables explain about 44 percent of the variation in water use among non-residential water use observations. All variables were significant and had the correct anticipated sign.

The socioeconomic component of the model is the marginal price variable. The model estimates show that a one percent increase in the non-residential marginal price of water is estimated to reduce non-residential water use by about 0.17 percent.

The demographic component of the model is the ratio of manufacturing employment to total employment. The manufacturing ratio is equal to the total number of manufacturing employees for a given month divided by the total number of employees for that month.

The model shows that a one percent increase in the manufacturing employment ratio is estimated to increase non-residential water use by almost 0.21 percent.

The observed maximum temperature is the explanatory weather variable in the non-residential model. The model shows a very strong relationship between maximum temperature and non-residential water use. The observed maximum temperature coefficient implies that a one percent increase in maximum temperature is estimated to produce a 1.4 percent increase in non-residential water use.

The conservation explanatory variable in the model is the count of active non-residential conservation programs. The model shows that a one percent increase in the number of active non-residential water conservation programs is estimated to produce a 0.05 percent decrease in the non-residential sector gallons per day.

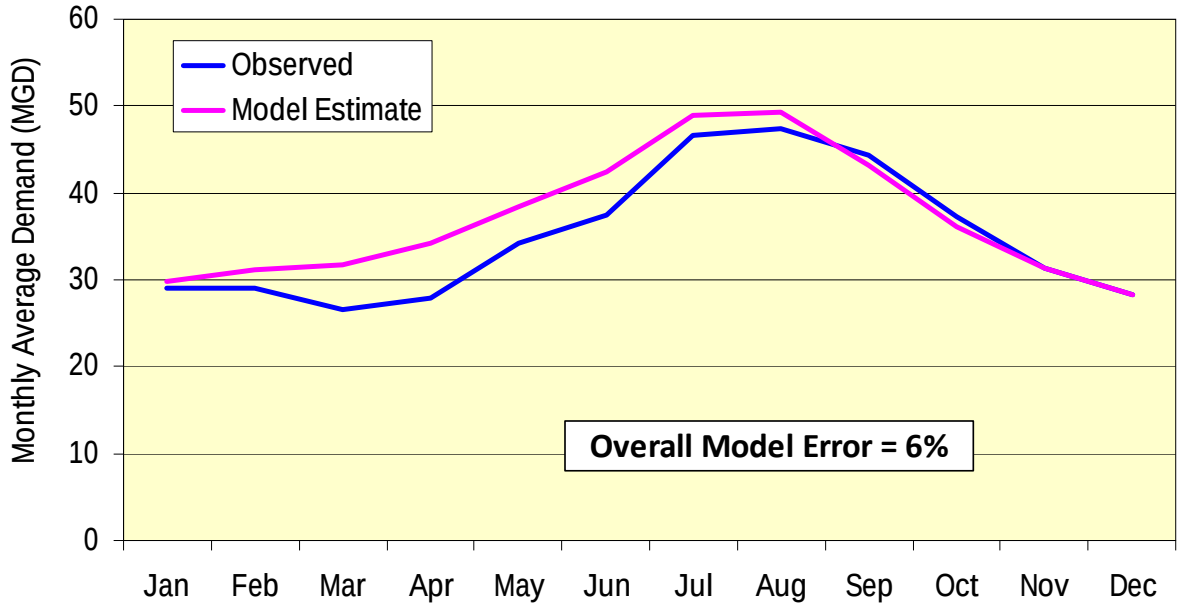
Table 4
Non-Residential Water Demand Model

Number of Observations				910
Adj. R-Square				0.4444
Explanatory Variables	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Intercept	-1.7232	0.2918	-5.91	<.0001
log Marginal Price of Water (year 2000 dollars)	-0.1757	0.0132	-13.27	<.0001
log Manufacturing Employment Ratio (% to total)	0.2147	0.0135	15.89	<.0001
log Maximum Temperature	1.4589	0.0715	20.41	<.0001
log Active Non-Residential Conservation (# of programs)	-0.0495	0.0180	-2.75	0.0060

4.3 Demand Model Verification

In order to test the overall accuracy of the combined residential and non-residential demand models, actual weather data and demographic data was input to the model for 2007. Then the results of the models were compared to actual water consumption for 2007. Figure 6 presents this comparison. As shown, the empirical demand models represent actual water consumption fairly well. Overall, the model error is approximately 6 percent.

Figure 6. Comparison of Demand Model Results to Actual Consumption for 2007



5.0 Water Demand Forecast

5.1 Uncertainty Approach and Assumptions

CDM developed a spreadsheet tool to forecast water demands, using the econometric models described in Section 4, along with projected demographic drivers and projected explanatory drivers. The software package called @Risk, which works in MS Excel, was utilized to produce probabilistic ranges in the demand forecast based on key uncertainties. For those variables that wish to be evaluated in terms of uncertainty, @Risk produces probability distribution function (PDF) using Monte Carlo simulation. Monte Carlo simulation involves random draws from either a predetermined range of data or estimated range of data using a selected distribution type (e.g., normal distribution, triangular, or skewed). @Risk also allows for correlations between certain variables to be estimated, which can impact the range of outputs. For example, temperature and precipitation are correlated (meaning when temperature increases, precipitation tends to decrease).

The variables that were included as part of the uncertainty analysis of water demand included:

1. Number of Households – Alternative PSRC demographic forecasts were used to establish lower and upper bound estimates, and @Risk was used to generate a normally distributed sample.

2. Total Employment – Alternative PSRC demographic forecasts were used to establish lower and upper bound estimates, and @Risk was used to generate a normally distributed sample.

3. Weather – Historical weather for the years 1949 to 2007 were used to generate a distribution of temperature and precipitation.

4. Price of Water – Upper and lower ranges around the baseline projection of marginal price of water were established by CDM, using professional judgment, and @Risk was used to generate a normally distributed sample.

5. Household Income – Upper and lower ranges around the baseline projection of household income were established by CDM, using professional judgment, and @Risk was used to generate a normally distributed sample.

Table 5 presents the projected ranges for these variables.

In addition, several alternative scenarios were tested as sensitivity in the water demand forecast:

Climate Change Scenario

In 2006, King County formed the Climate Change Technical Committee, made up of participants from King County, Seattle Public Utilities, Cascade Water Alliance, and other members. A technical report was generated that summarized a process used to select a represented sample from a dozen global circulation models and carbon emission scenarios. This sample of climate change was also used for the 2008 Regional Municipal Water Supply Outlook. The three represented climate change scenarios are:

a. GISS_ B1: “warm” regional climate change scenario with nearly the smallest increase in temperature, and nearly the largest decrease in precipitation

b. ECHAM5_A2: ”warmer” regional climate change scenario with mid-range increases in both temperature and precipitation

c. IPSL_A2: “warmest” regional climate change scenario with large increase in temperature, and nearly the largest increase in precipitation

@Risk was then used randomly select from these three climate change scenarios in order to produce future estimates of temperature and precipitation. Table 6 presents a summary of how July temperature and annual precipitation change as a result of potential climate change.

Table 5
Ranges in Demographic, Socioeconomic and Weather Data
Used for Uncertainty Analysis of Water Demand

	Number of Total Households			Total Employment		
Year	Min Value	Mean Value	Max Value	Min Value	Mean Value	Max Value
2010	148,183	151,638	155,091	349,125	354,060	358,994
2020	172,684	178,936	185,187	405,691	414,739	423,783
2030	192,548	203,242	213,931	449,985	468,082	486,172
2040	214,573	229,378	244,179	483,611	511,582	539,538
2050	237,776	259,161	280,542	525,696	561,888	598,073
2060	265,114	294,722	324,325	571,551	620,908	670,242

	Real Price of Water ($/HCF)			Real Household Income		
Year	Min Value	Mean Value	Max Value	Min Value	Mean Value	Max Value
2010	$2.44	$2.47	$2.50	$72,668	$72,997	$73,326
2020	$2.76	$2.92	$3.08	$73,462	$74,285	$75,107
2030	$3.15	$3.38	$3.61	$74,518	$76,163	$77,807
2040	$3.19	$3.65	$4.11	$75,517	$78,479	$81,439
2050	$3.17	$3.75	$4.33	$76,828	$81,270	$85,711
2060	$3.06	$3.75	$4.44	$77,743	$84,159	$90,573

	Average Monthly Max. Temperature (oF)			Monthly Precipitation (inches)		
Month	Min Value	Mean Value	Max Value	Min Value	Mean Value	Max Value
Jan	21.6	43.6	64.8	2.3	6.6	11.6
Feb	35.5	48.7	61.3	1.7	4.7	8.9
Mar	34.7	51.1	67.0	1.5	4.3	7.0
Apr	44.9	57.5	79.4	1.1	3.3	5.6
May	56.5	64.4	91.7	0.6	2.3	4.0
Jun	56.7	69.4	83.7	0.2	2.0	3.8
Jul	61.0	75.2	88.9	0.0	1.0	2.4
Aug	54.8	74.7	95.3	0.2	1.4	3.7
Sep	57.5	69.6	81.4	0.2	2.1	4.9
Oct	53.8	59.6	65.0	1.0	4.0	8.2
Nov	41.1	50.3	60.4	1.9	6.5	11.2
Dec	33.3	44.7	55.8	2.9	6.6	10.3
Ave/Total	46.0	59.1	74.6	13.7	44.8	81.5

Table 6
Projections of Temperature and Rainfall Based on Climate Change Scenarios

	Average Max. July Temperature (oF)			Mean Annual Precipitation (inches)		
Year	Low Scenario	Av. Scenario	High Scenario	Low Scenario	Av. Scenario	High Scenario
Current	75.2	75.2	75.2	44.8	44.8	44.8
2020	77.8	78.1	78.4	45.0	47.2	49.3
2040	78.7	79.0	79.5	45.3	47.8	50.2
2060	79.1	81.1	81.3	45.8	48.5	51.1

Regional Demand Contingency

One variable that Cascade wanted to test was regional demand contingency. This variable estimates the potential impact of additional demands for Cascade due to: (1) local supplies of water systems outside the eight Cascade members are compromised by contamination or regulatory actions; (2) Climate change leads to higher than expected demand throughout the region or reduced yield of existing regional or local supplies for water systems outside the eight Cascade members; or (3) growth in demand of local water systems not served by a regional supplier exceeds the capacity of local supplies. Any of these scenarios (or a combination of all three) could lead water systems in the region to request supplies from Cascade. This would represent an additional demand on top of the demands forecast by the econometric models discussed above. Therefore a demand contingency of 10 mgd was identified. The lower range of this regional demand contingency was set to 0 mgd, while the upper range was set at 20 mgd. A triangular distribution was assumed using @Risk to generate a sample. Table 7 presents the regional demand contingency.

Table 7
Regional Demand Contingency (mgd)

Year	Low Range	Average Range	High Range
2010	0.0	0.0	0.0
2020	0.0	0.0	0.0
2030	0.0	0.3	2.5
2040	0.0	3.5	8.7
2050	0.0	6.8	14.0
2060	0.0	10.0	20.0

5.2 Demand Forecast Scenarios and Results

Working closely with Cascade, CDM developed three demand forecasting scenarios:

1. No climate change and no regional contingency water demands
2. With climate change and no regional contingency water demands
3. With climate change and with regional contingency water demands

For each of these demand forecast scenarios, a range of water demand forecasts are produced by the @Risk model. Table 8 summarizes the mean (or average) value of water demands for the three scenarios.

Table 8
Mean Water Demand Forecast Results (mgd)

Demand Forecast Scenario	2010	2020	2030	2040	2050	2060
No climate change, no regional demand contingency (baseline)	40.33	43.01	47.87	52.18	57.98	65.60
With climate change, no regional demand contingency	41.16	44.13	49.35	54.05	60.31	68.87
With climate change, with regional demand contingency	41.18	44.14	49.69	57.62	67.13	78.87

Climate change alone adds approximately 3 mgd of water demand to the baseline forecast scenario by 2060, while regional contingency alone adds 10 mgd of water demand by 2060. Table 9 presents the full range of water demand forecasts. The 95% level represents the demand which is expected to be exceeded 95 percent of the time, while the 5% level represents the demand which is expected to be exceeded 5 percent of the time.

Table 9
Full Range of Water Demand Forecast Results (mgd)

	No Climate Change, No Regional Demand Contingency				
Year	min	95%	mean	5%	max
2010	37.75	39.29	40.33	41.39	43.49
2020	39.36	41.52	43.01	44.50	46.93
2030	42.51	45.52	47.87	50.23	53.69
2040	43.75	48.93	52.18	55.41	60.23
2050	46.42	53.39	57.98	62.58	69.72
2060	51.47	59.27	65.60	72.11	80.93

	With Climate Change, No Regional Demand Contingency				
Year	min	95%	mean	5%	max
2010	38.56	40.08	41.16	42.26	44.74
2020	40.20	42.62	44.13	45.67	48.06
2030	43.51	46.95	49.35	51.80	55.33
2040	45.43	50.71	54.05	57.41	62.28
2050	49.55	55.65	60.31	65.05	71.52
2060	53.55	62.25	68.87	75.57	85.26

	With Climate Change, With Regional Demand Contingency				
Year	min	95%	mean	5%	max
2010	38.67	40.10	41.18	42.28	44.74
2020	40.39	42.61	44.14	45.71	48.06
2030	44.34	47.25	49.69	52.13	55.33
2040	47.71	53.49	57.62	61.77	67.12
2050	52.84	60.58	67.13	73.75	81.76
2060	57.59	69.38	78.87	88.44	99.40

Figures 7 through 9 present the full range in water demand forecasts for the three scenarios. The shaded area in these figures represents the entire range of the forecast, while the 95% and 5% exceedance represent the demands that could be exceeded 95 percent of the time or 5 percent of the time, respectively. As shown, the 95% and 5% exceedance forecasts are much tighter than the full range (shaded area). This is due to the normal (or bell shaped) distribution that is assumed for the demand drivers and explanatory variables shown in Table 4. Normal distributions assume that the bulk of the outcomes are clustered closer to the mean, and that the tails of the distribution are less probable.

Figure 7. Demand Forecast: No Climate Change, No Regional Contingency

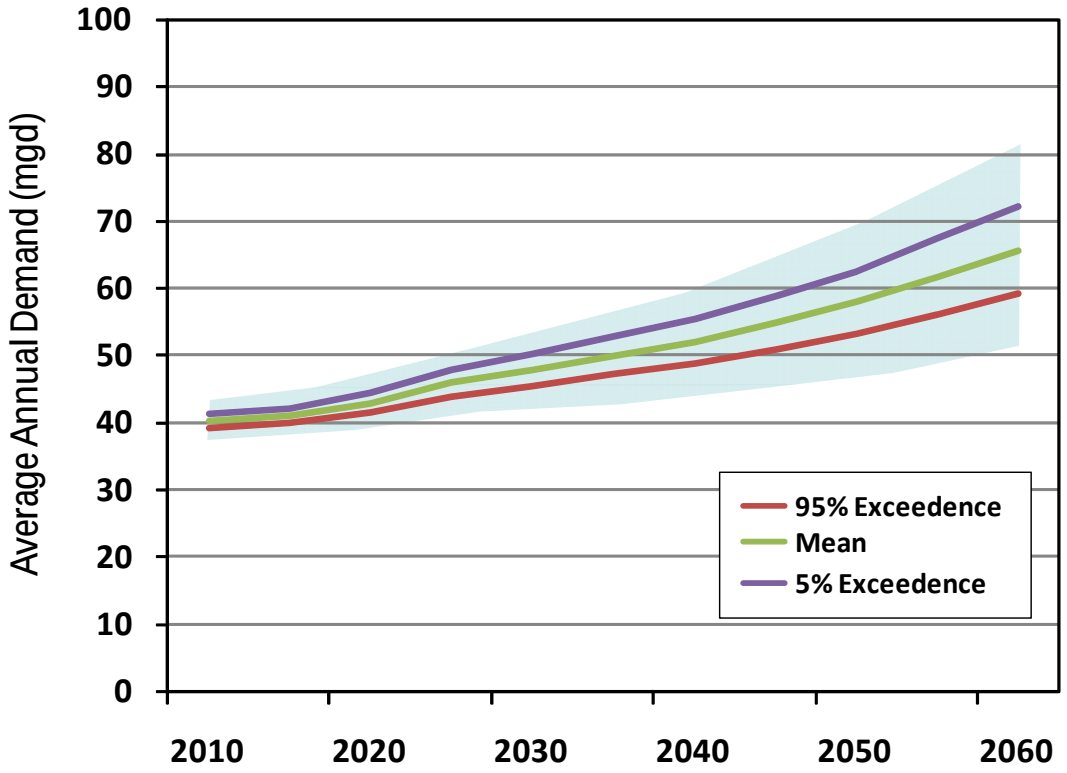


Figure 8. Demand Forecast: With Climate Change, No Regional Contingency

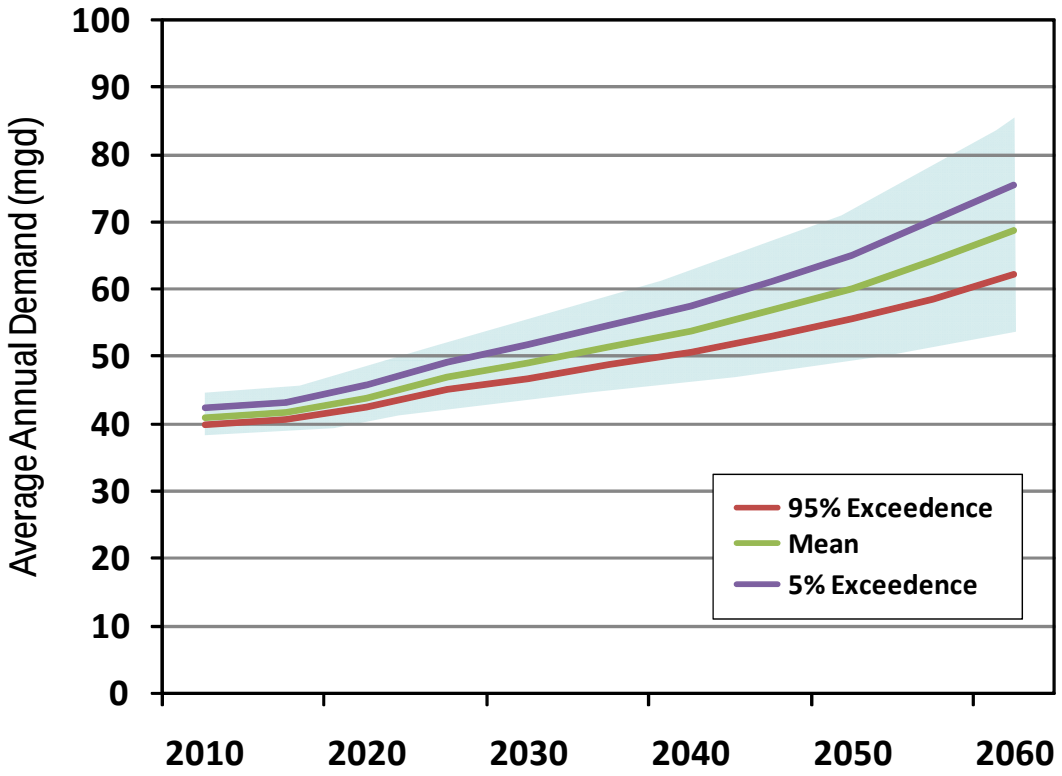
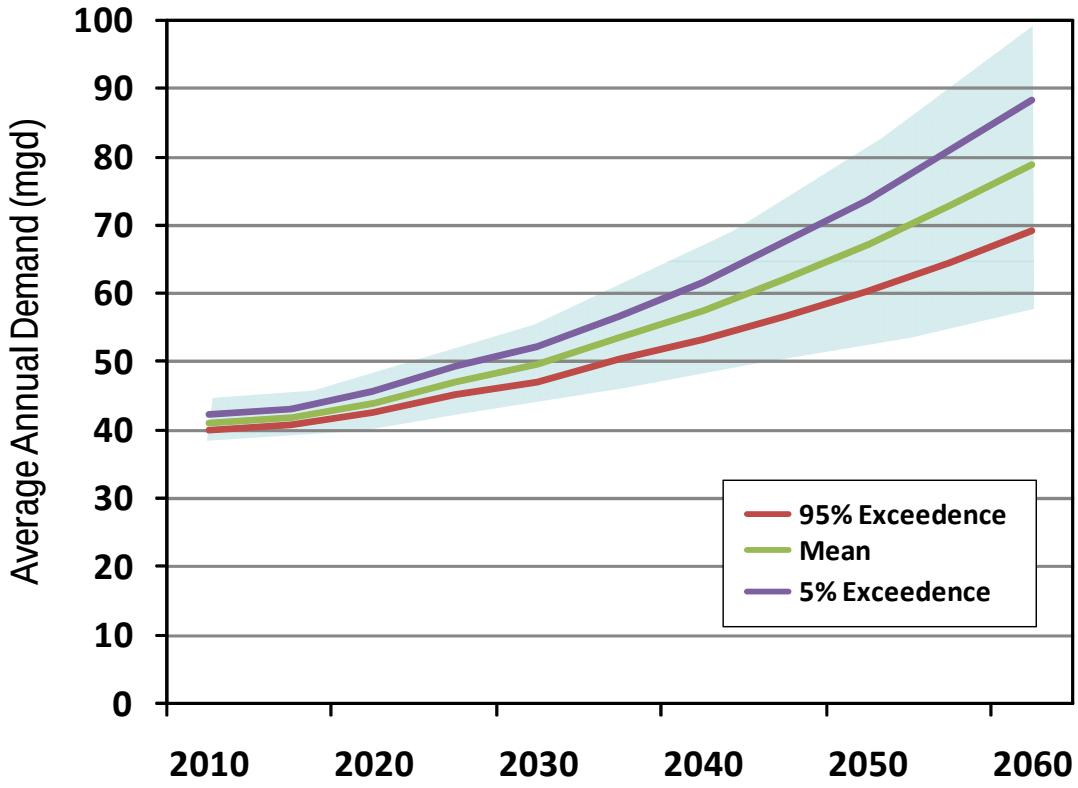


Figure 9. Demand Forecast: With Climate Change, With Regional Contingency



6.0 Conclusion

The comprehensive water demand forecast for Cascade indicates that the most likely range (90% confidence) without climate change or regional demand contingency is between 60 and 72 mgd by 2060. This range increases to 62 to 76 mgd by 2060 if climate change materializes as depicted in the three possible climate change models used in this study (note, there are approximately a dozen climate models vetted by the scientific community). When climate change and regional contingency are included, the most likely range in water demands is 69 to 88 mgd by 2060.

Also, it is important to understand that these statistical ranges in demand forecasts are based on a set of assumptions regarding data inputs. The range in data inputs may not reflect the entire possibility of outcomes. CDM relied on the best planning information available in setting these ranges, and only used professional judgment when planning information was not available. It is strongly recommended that these data inputs be revisited at least every 5 years in order to evaluate the short and long term trends of demographics, income and price of water. In addition, as future water conservation programs are implemented in the region, water usage may change (possibly dramatically). Therefore, Cascade should continue to monitor water demand trends in the service area.

CASCADE WATER ALLIANCE

Supply Alternatives Assessment

Task 700

FINAL

December 18, 2009

CDM

In association with

HDR R·W·BECK

Cascade Water Alliance
Supply Alternatives Assessment

Task 700

December 18, 2009

FINAL

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Table of Contents

1.0 Introduction

1.1 Purpose

Cascade Water Alliance (Cascade) is reviewing water supply needs and plan for necessary infrastructure projects. One key aspect of the plan is the evaluation of various water supply options to meet current and projected water demands. Guiding this evaluation is a set of goals that were established by Cascade during a Planning Objectives Workshop held on February 5, 2009. The planning goals are:

- The plan should identify a viable portfolio of water sources that can provide Cascade with secure and reliable water supplies through at least the year 2050. A broad range of supply alternatives and project partnerships should be considered.

- The plan should identify adequate supplies to serve at least the eight current Members of Cascade. It should also consider how investments in supply and infrastructure could serve additional water systems seeking new or replacement supplies and how these investments could improve reliability of supplies in the Central Puget Sound Region (King, Pierce and Snohomish Counties).

- The plan should enable water rates to be managed at levels acceptable to water customers over the short and long terms.

- The plan should provide flexibility to Cascade to adjust to changing circumstances or new opportunities. To this end, smaller supply options, interim supplies, and phased development of larger supplies should be considered in the mix of source alternatives.

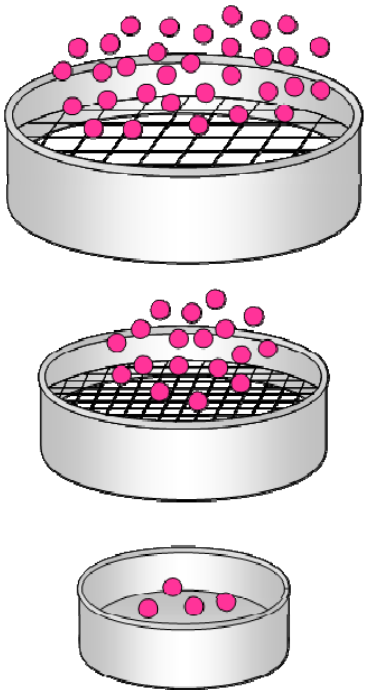
- The plan should recognize the drop in current, contracted supplies at year 2024 and should outline a clear and viable path towards addressing Cascade's needs at that time.

- The plan should apply clear criteria and rationale for recommended actions. It should provide a sound basis for communication with elected officials, regulators and water resource stakeholders in the Central Puget Sound Region.

1.2 Report Organization

The evaluation of supply options is separated into three major stages, presented in Figure 1. The first stage in the supply options evaluation is the initial screening, which eliminates options from further investigation that are not feasible. In the second stage of the process, the remaining options are evaluated using a more rigorous multi-criteria analysis method, which ranks the feasible supply options according to their performance in achieving specified criteria. The final stage of the project evaluation is to conduct a detailed infrastructure and financial evaluation of the highest ranked supply options from the second stage.

Figure 1. Three Stages of Supply Project Evaluation



Screening:
Eliminates projects that are not feasible and do not warrant further investigation, using pass/fail criteria

Multi-Criteria Analysis:
More refined analysis that evaluates projects using multiple ranking criteria

Detailed Evaluation
Detailed infrastructure and financial evaluation of the highest ranked projects

This report summarizes work completed as part of the first two stages (Tasks 300 and 700) and provides recommendations for continuation to Task 800. Section 2 describes initial screening of the original 28 supply options under Cascade consideration and the outcome of this process. Section 3 presents the methodology of the multi-criteria supply analysis and the established performance measures and weights determined by Cascade members and staff to evaluate the 20 supply options that passed the initial screening. Section 4 provides the approach and conventions used in estimating costs associated with the supply options reviewed under the multi-criteria analysis. Section 5 presents the results of the multi-criteria analysis, which is followed by conclusions and recommendations of higher ranking projects that will be grouped into supply packages for more detailed analysis in Task 800.

2.0 Initial Supply Option Screening

This Section documents the Task 300 initial screening process and summarizes assumptions made. Initially, 28 different supply options were considered.

2.1 Supply Options Considered for Initial Screening

The first aspect of the initial screening is the identification of possible water supply options to be screened. Table 1 shows the list of supply options considered for the initial screening stage. This list presents existing Cascade source management contracts that have historically been considered by Cascade, as well as existing and new surface water, ground water, desalination, reclaimed water and conservation supply options. The supply options are taken from a variety of regional supply planning documents that exist, or are in the process of production, which include:

- East King County Coordinated Water System Plan (1993) (e.g. elements of the DRAW project).
- Existing Cascade Supply Contracts Options under consideration (Tacoma TCP 1 through 3 and Seattle Supply Contracts).
- Supply projects presented in the Central Puget Sound Regional Water Supply Outlook (both 2001 & 2009 update).
- Supply options identified by the consultant team, based on work with individual Cascade Members.
- Comments received from Cascade members during the Source Criteria Workshop held on March 20, 2009.

Table 1. Supply Options Considered for Initial Screening

Existing Source Management	New Surface Water Options	New Ground Water Options	Reclaimed Water and Conservation
Tacoma Lite	Lake Tapps	Chambers Creek Wells	Brightwater Reclaimed Water, South Segment
TCP w/ Wheeling	North Fork Tolt	Snoqualmie Aquifer	South Treatment Plant Reclaimed Water, Tukwila
TCP w/ North Segment	Everett- Sultan River Supply Expansion	Deep Resource Aquifer Withdrawal (DRAW)	Satellite Treatment Plants Reclaimed Water, King County
TCP Expanded	SRRWA - Snohomish River Supply	OASIS Phases 1 & 2	Direct Potable Use of Reclaimed Water, Brightwater
SPU Expanded Block	Lake Washington Supply	OASIS Phase 3	Enhanced Cascade Conservation 1 – Expansion beyond current levels
	Lake Sammamish Supply	Cascade Member ASR	Enhanced Cascade Conservation 2 – Suite of new technically feasible measures
	Off-Stream Storage – Sammamish, Green Rivers, Issaquah Creek		Stormwater Capture, Satellite Package Plants
	Desalination		Rainwater Collection for golf courses
			Reduction in Regional Unaccounted-for-Water

Based on Member feedback at the meeting and a follow-up technical review of the list with Cascade staff on March 24th, 2009, several options on the list reviewed at the March 20th, 2009 workshop were removed from the Initial Screening List. These supply options were removed for the following reasons:

- The project scale of the supply option is already built into the outside utilities' firm supply yield and is unlikely to warrant partnership opportunities (e.g. Lake Youngs, South Fork Tolt).
- A few supply options were redundant of other viable options on the list (these were predominantly conservation options looked at individually by the 2008 Water Forum; e.g., water rate structure and sub-metering), but will become grouped into two conservation packages for Cascade consideration.
- Some options from previous regional source assessments are no longer actively being nominated by regional partners to merit initial screening (e.g. North Fork Snoqualmie options in the 1993 EKC coordinated water system plan).

2.2 Criteria for Initial Screening

The main objective of the initial screening was to eliminate options that are easily distinguishable as not feasible for Cascade as a regional supply option by applying some very basic pass/fail screening criteria. The six screening criteria, initially developed by the consultant team, were later refined at the Source Criteria Workshop and are presented below. Supply options were required to pass all of the screening criteria in order to be considered in the subsequent and more detailed Multi-Criteria Analysis. The screening criteria were:

1. Legal complications associated with source water: Fail - appear insurmountable; Pass - can be successfully overcome.

2. Permit / Institutional complications associated with source water: Fail - appear insurmountable; Pass – can be successfully overcome.

3. Water Rights: Fail - significantly difficult to secure and the process has yet to begin[1]; Pass - water rights secured, or in the process of being secured.

4. Public Acceptance: Fail - development of source water is not publicly accepted at this time and unlikely to change within the next 20 years; Pass – development of the source water is publicly supported or public acceptance is likely to evolve favorably within the next 20 years.

5. Supply Yield: Fail – option (or combination of "like" options) is less than 1 mgd[2]; Pass – option (or combination of "like" options) is 1 mgd or greater.

6. Location of Supply: Fail – option is not located in King, Pierce, or Snohomish County[3]; Pass – option is located in King, Pierce or Snohomish County.

Criteria 1, 2, 3 and 4 each encompass, in part, environmental issues associated with supply sources. Further evaluation of environmental issues is anticipated as part of the Multi-Criteria Analysis to be performed in the next stage of source evaluation.

2.3 Application of Initial Pass/Fail Screening

There were 7 options that failed the initial pass/fail screening process. Reasons the supply options failed the specific criterion are provided below:

Everett-Sultan River Supply Expansion: This supply option fails the permit/institutional criterion based on the fact that supply of this water is currently restricted to use inside Snohomish County and significant effort would be required to change the out-of-county restrictions in this permit.

Lake Sammamish: This option fails the permit/institutional and water rights criterion on the basis of yield due to environmental issues associated with summer season low flows in the

[1] The water right criterion may be waived for large sources where the value of acquiring a water right is very high and could justify more extensive efforts to secure a water right.
[2] Supply options expected to provide less than 1mgd may be viable for an individual Cascade Member to pursue but do not meet Cascade's established supply yield criterion for regional supply consideration.
[3] A supply project located in King County is preferable over options located in Pierce or Snohomish Counties.

Sammamish River. These flows would be impacted by the withdrawal of Lake Sammamish water. A preliminary analysis of summer baseflow conditions in the Sammamish River and factoring 10% withdrawal limitation to this low flow presents a yield for this supply option that is not large enough to justify work on resolving the large permitting, institutional and water right complications.

Off-Stream Storage: This option fails the water right criterion. Water rights would require careful attention to environmental aspects of flow management in several different creek basins. The yield from this surface water option is not expected to be large enough to justify the time and effort necessary to address these issues effectively and obtain appropriate water rights with the necessary mitigation elements.

Oasis Phases 1 & 2: This supply option fails the yield criterion. While the standard 30% assumption described above would nominally yield more than 1 mgd, it seems inaccurate for this particular source. Lakehaven Utility District is unlikely to have any water available from the first two phases of this supply to provide to Cascade Members outside their existing service area and Tacoma Second Supply Partners (TSSP) partners (i.e. Covington).

South Treatment Plant: This supply option fails the minimum yield criterion (>1 mgd) for Cascade regional supply consideration. However, it still is a viable supply option for individual Cascade members to pursue, such as Tukwila and Skyway, who have service areas very near this reclaimed water source.

Rainwater Collection: This supply option also fails the minimum yield requirement criterion (>1 mgd) for Cascade regional supply consideration but again may have potential as a viable supply option for individual members to pursue.

Reduction in Regional Unaccounted-for Water: This supply option fails the permit and institutional criterion as well as the yield criterion. The reason for permit and institutional failure on the initial screening is that repairing regional infrastructure leaks would require repairs to major transmission not owned by Cascade. This increases risk and liability to Cascade well beyond the expected benefits of the anticipated supply yield for this water conservation option (likely to be <1 mgd).

North Fork Tolt: While researching the North Fork Tolt project, SPU stated that they would not allow direct Cascade involvement in the project and would instead include the additional supply in the SPU Expanded Block supply option. Therefore, the North Fork Tolt supply option was also removed from further consideration.

2.4 Options Carried to Next Step (Multi-Criteria Analysis)

Table 2 presents the 20 supply options that have passed the screening criteria and will be carried into the Multi-Criteria Analysis stage.

Table 2. Options Carried to Next Supply Evaluation Step (Multi-Criteria Analysis)

Existing Source Management	New Surface Water Options	New Ground Water Options	Conservation and Reclaimed Water
Tacoma Lite TCP w/ Wheeling TCP w/ North Segment TCP Expanded SPU Expanded Block	Lake Tapps SRRWA - Snohomish River Supply Lake Washington Supply Desalination	Chambers Creek Wells Snoqualmie Aquifer Deep Resource Aquifer Withdrawal (DRAW) OASIS Phase 3 Cascade Member ASR	Brightwater Reclaimed Water, South Segment Satellite Treatment Plants Reclaimed Water, King County Direct Potable Use of Reclaimed Water, Brightwater Enhanced Cascade Conservation 1 – Expansion beyond current levels Enhanced Cascade Conservation 2 – Full suite of technically feasible measures Stormwater Capture, Satellite Package Plants

3.0 Methodology of Multi-Criteria Supply Analysis

The Multi-Criteria Analysis step involved development of performance measures and the collection of conceptual level information for each of the supply options. Finally after performance measures were established and information was collected for each of the supply options, a scoring procedure was carried out that incorporated the criteria and the Members' weighting of those criteria to calculate a total decision score for each supply option.

3.1 Evaluation Criteria

The initial process of the Multi-Criteria Analysis was the development of a list of evaluation criteria and sub-criteria. These criteria were developed initially by Cascade Members at the Source Criteria Workshop during the supply criteria evaluation brainstorming session. After this workshop, the consultant team and Cascade staff, worked to organize and group the initial source criteria list. In grouping and selecting the source criteria, the consultant team and Cascade adhered to the following rules based on the principles of multi-criteria decision-making:

Non-Redundant –criteria should not overlap (example: cost and rate impacts should not be two criteria because they will ultimately measure the same thing).

Easily Understood – the definition and interpretation of the criteria should be understood by multiple audiences.

Measurable – criteria are not useful if they cannot be measured quantitatively or through an agreed-upon qualitative scoring.

Differentiation – criteria should be selected only if they can show differentiation between alternatives (example: if all alternatives will meet safe drinking water standards, having the criterion "meet water quality standards" will not be useful in ranking alternatives because all alternatives will score the same).

Concise in Numbers – having too many criteria will result in ranking scores that are not different from each other significantly. Generally, having six or less primary criteria is preferable.

Following input by Cascade Members (at the Cascade Resources Management Committee meeting held on April 16, 2009), and bearing these general rules in mind, the following six supply criteria and their definitions were developed:

1. **Supply Reliability**

   This criterion measures the ability to provide dependable water supplies. Specifically this criterion addresses:

   - Availability of supply (the degree of certainty that a given source will be available when it is needed)

- Variability of yield (including effects of potential climate change as well as contract provisions; and including both surface water and groundwater
- Vulnerability to effects of emergency disruptions

2. Financial Considerations

This criterion measures the ability to provide water utility services in a cost-effective manner. Specifically this criterion addresses:

- Capital and operational costs (levelized unit cost, expressed as present value in current dollars)
- Degree of uncertainty in capital and operational costs (including unknowns in future contract purchases and changes in energy costs)
- Utilization of prior Cascade investments in sources and infrastructure

3. Environmental Considerations

This criterion measures the ability to provide water supply in an environmentally sensitive and sustainable manner. Specifically this criterion addresses:

- Relative energy demand per unit of supply
- Environmental impacts (positive and negative, with primary emphasis on long-term effects rather than construction effects)

4. Operational Considerations

This criterion measures the ability to maximize operational flexibility in the delivery of water. Specifically this criterion measures:

- Vulnerability of source water to potential contamination
- Water quality compatibility with other supplies
- Operational complexity
- Flexibility to adjust yield in response to need and in conjunction with other sources

5. Implementation Considerations

This criterion measures the ease and certainty of project implementation. Specifically this criterion addresses:

- Degree of difficulty for acquiring water rights
- Degree of difficulty for acquiring other required permits
- Public acceptance
- Construction flexibility (lead time of project)

- How well the source either enables, or precludes other projects from being developed

6. Regional/Intergovernmental Considerations

This criterion measures institutional complexity of delivering supplies. Specifically this criterion addresses:

- Level of control of supply (ownership)
- Regional value of supply source
- Partnerships and governance (complexity of partnerships and governance issues – how many and difficulty in resolving)
- Institutional hurdles (political and institutional barriers)

3.2 Criteria Weighting

The criteria defined in Section 0 must be weighted in order to reflect decision-maker preferences. While all of the criteria are important, some will have higher priority over others according to individual decision-maker values.

A weighting exercise was conducted at the Cascade Resource Management Committee meeting (on April 16, 2009). The 17 participants included board members, alternates, member staff and Cascade staff. Each participant was given 20 voting dots, which individually represented 5 percent out of 100 percent weighting. Participants placed these dots on the six criteria, with the more dots indicating greater weight. Additionally, no criterion could receive less than 5 percent, or 1 voting dot per participant, to reflect that all of the criteria are important (enough to receive some minimal weighting). Figure 2 presents the results of the participant criteria weighting exercise.

Figure 2. Cascade Member Criteria Weights

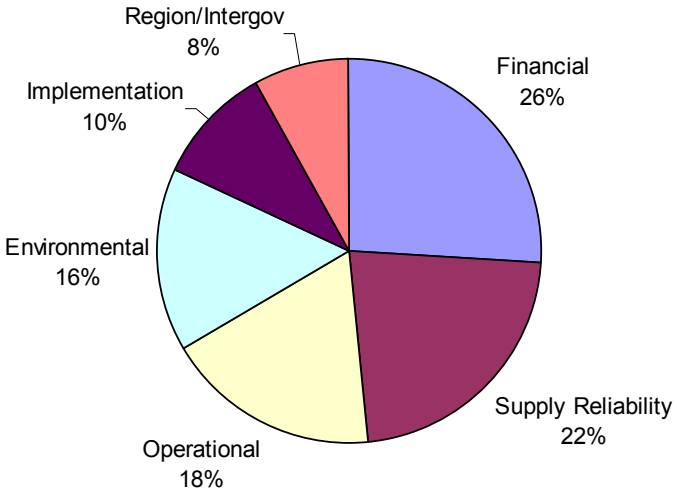


Figure 2 shows that the participants, on average, gave the financial criterion the most weight at 26%, followed by supply reliability at 22%. The next highest weighted criteria included operational at 18% and environmental at 16%. The least weighted criteria were implementation at 10% followed by regional/intergovernmental at 8%.

3.3 Establishing Performance Measures for Criteria

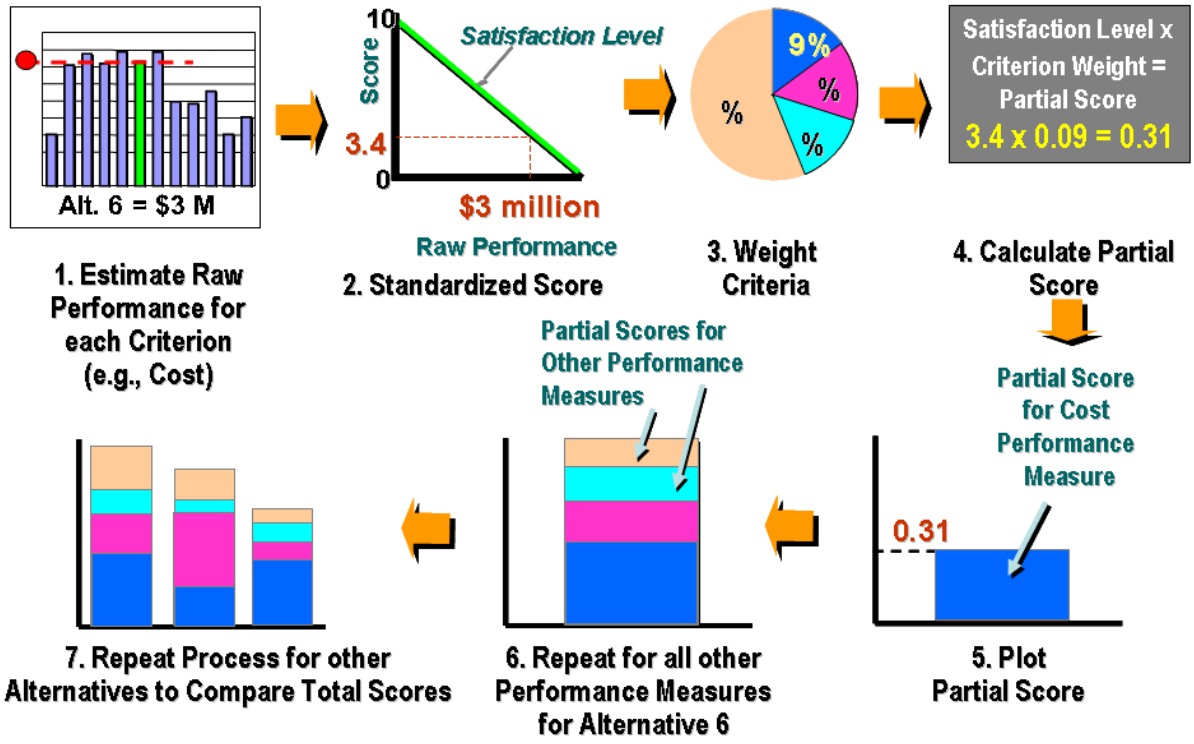
Along with decision maker weights of the selected criteria, the Multi-Criteria Analysis requires an establishment of performance measures to objectively and uniformly evaluate the various supply options. This uniform evaluation was achieved through the preparation of a supply evaluation index that established objective metrics of the Member selected criteria and sub-criteria for scoring the supply options. The scoring index was necessary because each criterion may be measured in different units, and standardization allowed the sub-criteria scores to be added together. Appendix A provides the metrics for scoring the list of supply options Cascade reviewed under the Multi-Criteria Analysis step.

In order to use the scoring index in Appendix A and assign meaningful criteria scores, more information on each of the supply options was needed. To accomplish this, the consultant group developed Supply Fact Sheets for the 20 identified Cascade supply options. The supply fact sheets were developed using reconnaissance-level research to fill in information that focused on the criteria and sub-criteria. This research included using applicable information developed and presented in the Central Puget Sound Water Suppliers' Forum 2009 Outlook as well as additional research for the supply options and criteria unique to Cascade's process. Appendix B presents the project fact sheets for each of the 20 supply options reviewed under the multi-criteria analysis process.

3.4 Multi-Criteria Analysis

Figure 3 shows the key steps of the multi-criteria analysis.

Figure 3. Steps of the Multi-Criteria Analysis



Using the developed supply evaluation scoring index and the prepared Supply Fact Sheets, the raw performance values of a supply option (Step 1) were converted into a standardized score for each criterion (Step 2).

The next step (Step 3), involved applying the decision-makers' weightings for the criteria from Section 3.

In Step 4 of the process (shown in Figure 3) the partial score was calculated, multiplying the standardized score for a given criterion by its weight. The process was repeated for the other criteria being used in the evaluation of the alternatives. As shown in Figure 3, the entire process was then repeated for all the other supply options being evaluated, and the results were plotted so comparisons could be made.

In the end, a supply option received a total decision score, which reflected how well it performed in each of the specified criteria. The total decision score clearly shows how much of each criterion contributed to the decision score of every supply option. This breakdown allows decision-makers to easily compare the supply options. Section 5 presents decision score results for the 20 supply options reviewed by Cascade.

3.5 Use of the Multi-Criteria Output

Cascade's decision makers will use the output of the multi-criteria analysis to develop supply portfolio options that could consist of a single supply option or several options that best meet the objectives and policy guidelines of Cascade and its members. The Multi-Criteria Analysis is not intended to lock Cascade or its members into selecting the highest scoring options. Rather, high scoring supply options that score lower in one criterion may be supplemented by low scoring supply options that score higher in that criterion. As a result, these lower scoring options could work compatibly and compliment higher scoring options in portfolios to meet projected demands.

4.0 Cost Estimating and Financial Analysis Methodology

Accurate cost estimates are central to establishing the basis for key project decisions, for establishing the metrics against which project success will be measured and for communicating the status of a project at any given point in time. Logical and reasonable cost estimates are necessary in maintaining public confidence and trust throughout the life of a major project.

This section outlines the process the consulting team used to estimate costs and perform financial analysis to ensure consistency and accuracy for the Task 700 supply evaluation. The cost estimates were intended to be inclusive of all life cycle costs associated with each supply option that was evaluated. The various options evaluated range from concepts that have not been studied previously to those that have completed a high level of engineering design. Supply options were defined with details that were available and appropriate for the level of design. To the extent possible, the cost estimating approach applied to each supply option was similar among those that have reached the same level of design.

4.1 Cost Estimate under Task 700

The output desired in the Task 700 stage of the process was a planning level cost estimate in cost per unit of water produced. The key characteristics of cost estimates in this task are:

- Capital costs are inclusive of all supply option costs.
- Annual Operations and Maintenance (O&M) costs.
- Costs are planning level depending on current level of design
- The level of detail is suitable only for broad relative comparisons among the 20 supply options.
- Costs are depicted in 2010 dollars.
- Costs are expressed as total dollars per million gallons per day of water produced on an average, year-round basis ($/mgd).
- Timing or phasing of the supply option is not considered at the screening level and no financial analysis (e.g. rate impact analysis) is included under this task.

4.2 Spreadsheet Platform

Cost estimates were developed using a Microsoft Excel spreadsheet program. The file consisted of a workbook of multiple spreadsheets.

For Task 700, each supply option is on a single spreadsheet. See supply options Fact Sheets in Appendix B.

To track progression of the design, the spreadsheets are fully linked to automate the process of revising, correcting and updating. The cost line items are arranged and grouped by major facility type and logical work breakdown. Multiple sub-cost items are also identified under each

cost item, as applicable, to adequately breakdown the work. Line item descriptions, associated quantities and unit costs are broken down and arranged so that subsequent estimates can be easily modified and updated.

4.3 Data Sources and Unit Costs

The cost estimates in Task 700 were prepared by utilizing existing available sources, which define the supply source alternatives at the appropriate level of design. The basis of unit costs was developed from the following sources:

- Central Puget Sound Regional Water Suppliers' Forum, 2009 Regional Water Supply Outlook project.
- King County Tabula Cost Data Base.
- Tacoma Cascade Pipeline Project – Central Segment, 90% Opinion of Probable Cost, August 2007.
- Bid tabulation of similar regional water supply projects.
- RS Means.
- Budgetary quote for major equipment, if applicable.

Task 700 level costs for all supply options were estimated as year 2010 costs using the ENR Construction Cost Index for Seattle to adjust estimates completed in prior years.

4.4 Units/Quantity Take Offs

Units presented in the cost summary sheet were developed based on preferred units that can readily be used for actual measurement in the field. These units tended to be either linear, areas, or weights. Quantity takeoffs were based on existing design drawings or GIS mapping and sketches created to define the supply options.

4.5 Allied Costs

Allied costs are common to each level of costing for Task 700.

- Engineering:
  a. 15% of total construction cost for options with higher level of planning/preliminary design completed.
  b. 25% of total construction cost for options with little or no planning/preliminary design completed.
- Legal and permitting: 5% of total construction cost.
- Construction Management:
  a. 10% of total construction cost for transmission pipeline.
  b. 15% of total construction cost for water treatment plant facilities.

- Washington State Sales Tax: 9%

4.6 Contingency

The type of estimating used for screening was considered planning level. Some of the supply options on the screening list were well into design; however, most of them were at a conceptual level. Contingency was used to account for uncertainties, unforeseen conditions, and to cover the cost of project elements that can not be defined with the level of information available at a given stage of design. As the design progresses, certainty increases and contingencies generally decrease.

Contingencies with the following definitions were applied to the cost estimates as follows:

Description	**Contingency Range**
Conceptual	-20% to +75%
Feasibility	-15% to +40%
Pre-Design	-10% to +30%
Final Design	-5% to +10%
Construction/Bid	-3% to +5%

To capture market fluctuation, a range of cost was applied to the total estimate.

4.7 Annualized Unit Cost Calculation (Task 700)

Cost is expressed in annualized unit cost of dollars per gallon based on the average annual yield at full development of each source and was calculated as follows:

$$AnnualizedUnitCost = \frac{(AnnualizedCapitalCost + AnnualO\&MCosts)}{AverageDailyWaterSupplyYield}$$

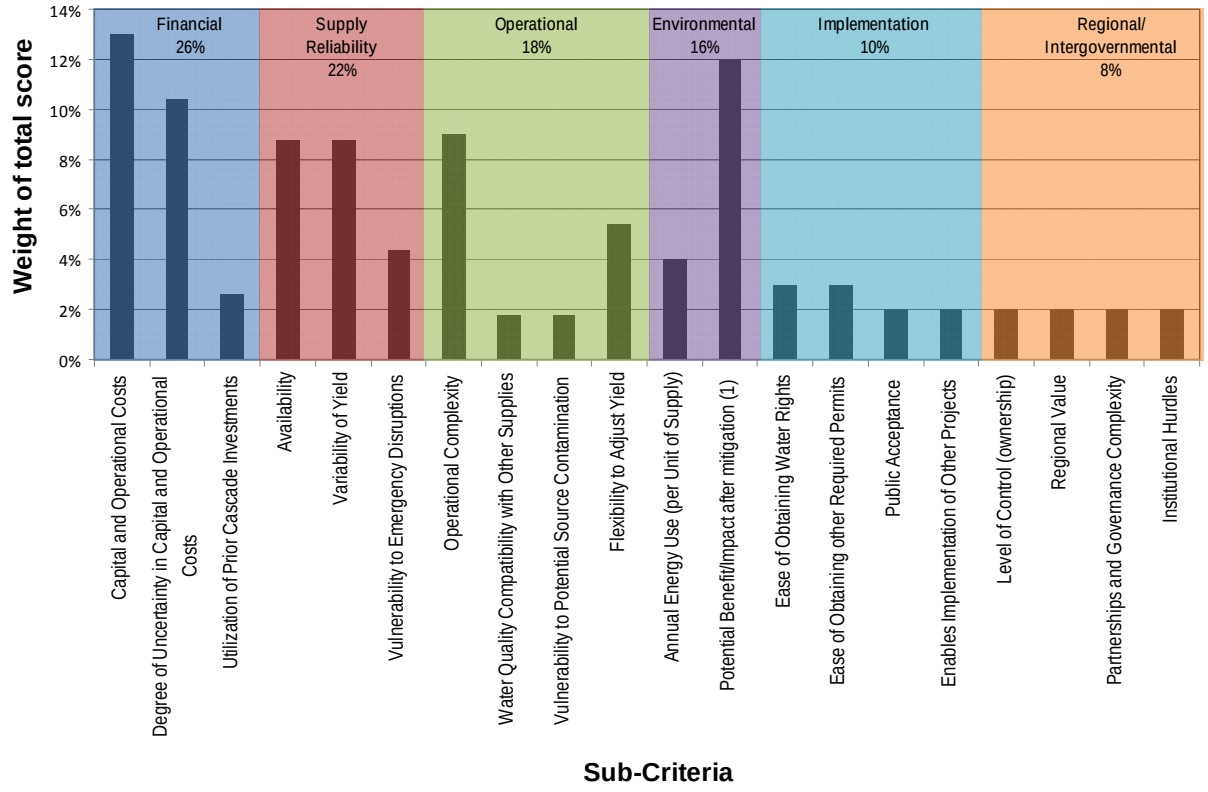
The capital cost was annualized based on an assumption that 100% of the capital cost is financed over a 30-year period, at six percent interest.

A separate cost methodology document, *Cost Estimating and Financial Analysis Methods* (HDR; June 5, 2009) provides more detail on specific costs for facility types and infrastructure that are normally associated with water supply projects.

5.0 Supply Evaluation Results

To provide initial project ranking for Task 700, 20 water supply options were evaluated against six main criteria and 20 sub-criteria. The weights for the sub-criteria are shown in Figure 4below.

Figure 4. Relative Weight of Criteria and Sub-Criteria



For each sub-criterion a performance score was assigned for each of the 20 supply options. Some scores are continuous-scale (such as unit cost) while other scores are scaled using a discrete classification (i.e., 1 to 5, where 5 equals superior performance). **Table 3** presents a summary of the performance scores for each of the 20 supply options. Appendix C presents these scores along with text that explains the assigned sub-criteria performance scores for each of the 20 supply options.

The sub-criteria weights and performance scores for the supply options were input into a decision support software program called Criterium Decision Plus (CDP). CDP is an industry standard evaluation tool used by public and private organizations to compare and rank alternatives using a technique called multi-attribute rating. CDP correctly accounts for the fact that some performance scores are continuous in nature while others are discrete.

Table 3. Summary of Performance Scores

			Financial			Supply Reliability			Operational				Environment		Implementation				Regional/Intergovernment			
Supply Projects (sorted by peak yield)	Annual Average Supply Yield (mgd)	Peak Supply Yield (mgd)	Unit Cost ($1000/mgd)	Cost Uncertainty	Past Dollar Investment ($M)	Availability	Variability	Vulnerability	Op. Complexity	Water Quality Compatibility	Source Contamination	Op. Flexibility	Energy Usage	Environmental Impact	Ease of Water Rights	Ease of Permitting	Public Acceptance	Enables Other Projects	Level of Control	Regional Value	Partnerships/Gov. Complexity	Institutional Hurdles
Lake Tapps - P	50.0	75.0	647	3	45	4	4	2	2	3	3	5	3	4	4	2	3	3	5	5	4	4
Lake Washington - P	50.0	75.0	607	1	0	4	4	4	3	3	3	5	4	2	1	1	2	3	5	5	2	1
Snohomish River - P	23.7	36.0	739	3	0	3	3	3	2	3	3	5	2	2	5	2	3	3	3	3	2	1
TCP Expanded - I	20.0	33.0	636	4	58	4	4	4	4	5	4	4	4	3	5	3	4	5	4	3	4	4
TCP w/North Segment - I	10.0	33.0	484	4	58	4	4	4	4	5	4	4	4	3	5	3	4	5	4	3	4	4
SPU Expanded Block - I	15.0	27.9	382	4	0	4	4	3	5	5	4	5	4	3	5	5	5	3	4	2	4	4
TCP with Wheeling - I	10.0	24.0	583	3	36	4	4	4	4	4	4	4	4	3	5	3	4	5	4	3	3	3
OASIS Phase 3 - P	16.0	39.1	463	4	36	4	4	4	3	3	4	5	4	3	3	4	4	3	2	2	3	2
Desalination - P	15.0	15.0	2,438	2	22	5	5	3	2	3	3	5	1	2	4	1	2	3	1	5	2	2
Chambers Creek Wells - I	10.6	14.3	864	4	36	4	4	4	4	3	5	5	4	3	4	4	4	3	2	2	2	2
Enhanced Conservation 2 - P	8.4	13.4	247	1	0	3	4	5	4	5	5	2	5	4	5	5	2	3	4	2	2	1
Snoqualmie Aquifer - P	5.4	12.0	284	3	0	4	4	3	2	3	3	5	2	5	2	2	4	3	3	3	3	2
Cascade Member ASR - P	4.6	11.2	306	1	0	4	4	4	3	3	4	5	4	3	3	4	4	3	5	1	5	5
Deep Resource Aquifer - P	7.8	10.4	221	1	0	4	4	4	4	3	5	5	3	3	3	4	4	3	5	2	5	5
Direct Potable Reclaimed - P	10.0	10.0	1,196	1	0	5	5	3	1	3	3	5	2	4	5	1	1	3	2	3	1	1
Enhanced Conservation 1 - P	6.5	9.4	247	3	0	4	4	5	4	5	5	2	5	4	5	5	5	3	4	2	5	4
Brightwater Reclaimed - P	1.6	4.0	699	2	0	5	5	3	3	1	3	5	4	4	5	5	4	3	4	1	4	4
Satellite Reclaimed - P	1.5	3.0	3,201	1	0	4	4	3	3	1	3	2	2	4	5	3	3	3	5	1	3	3
Tacoma Light - I	1.5	2.0	445	1	26	5	4	3	3	5	4	4	5	3	5	5	4	3	2	1	2	2
Storm Water Capture - P	0.2	0.5	666	1	0	1	1	2	3	1	2	1	3	4	1	3	3	3	5	1	4	4

**Unless noted otherwise, all scores represent a performance from 1 to 5, where 1 = poor performance and 5 = superior performance.*

Although identified as interim in this scoring summary table, TCP Projects include 4mgd of permanent supply

5.1 Preliminary Ranking of All Supply Options

The water supply options evaluated range from 1 to 75 million gallons per day (mgd) in providing peak water supply. Some of the options provide interim supply benefits (meaning the supply cannot be counted on throughout the 50 year planning period) while other projects provide more permanent supply benefits.

The purpose of this initial ranking was to determine those supply options that could be eliminated from further, more detailed evaluation. The remaining higher-ranking supply options will then be combined to form complete portfolios that will meet specific water demand targets in Task 800. More detailed-level cost and water rate analyses will be conducted for these portfolios. CDP will also be used to evaluate complete portfolios in Task 800.

Figure 5 through Figure 10 indicate how all 20 supply options rank for each of the major criteria: financial (Figure 5), supply reliability (Figure 6), operational (Figure 7), environmental (Figure 8), implementation (Figure 9), and regional/intergovernmental (Figure 10). On these graphs, the supply option names have an identifier indicating if the supply is interim ("I") or permanant ("P"). The longer the bar, the better the project performs for that specific criterion using the following definitions and guidelines:

- Financial - longer bar means the supply option has a good combination of being low-cost, having low uncertainty in cost estimates, and utilizes prior Cascade investments (sunk costs)

- Supply Reliability - longer bar means the supply option has high certainty of availability, low variability in yield, and low vulnerability to outages

- Operational - longer bar means the supply option has a good combination of low operational complexity, good water quality compatibility, is protected from source contamination, and provides operational flexibility

- Environmental - longer bar means the supply option has lower energy requirements and a positive impact to the environment

- Implementation - longer bar means the supply option will be easier to implement and enables other projects to move forward

- Regional/intergovernmental - longer bar means the supply option has a good combination of high level of control for Cascade, provides regional value, has low partnership/governmental complexity, and few institutional hurdles

Figure 5. Financial Criterion

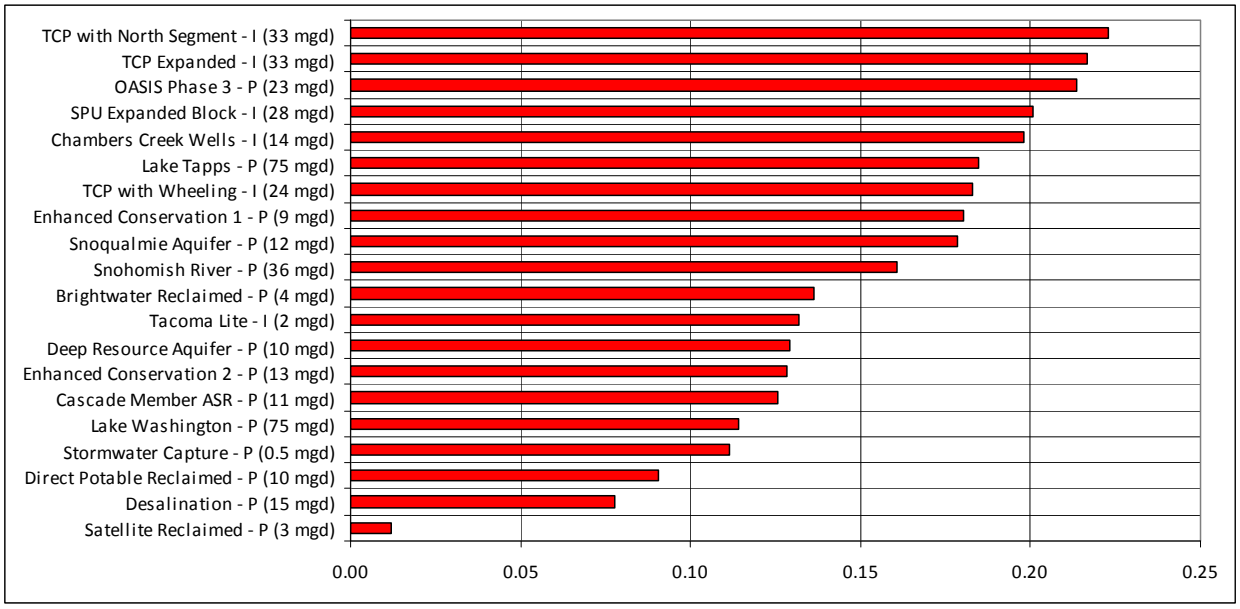


Figure 6. Supply Reliability Criterion

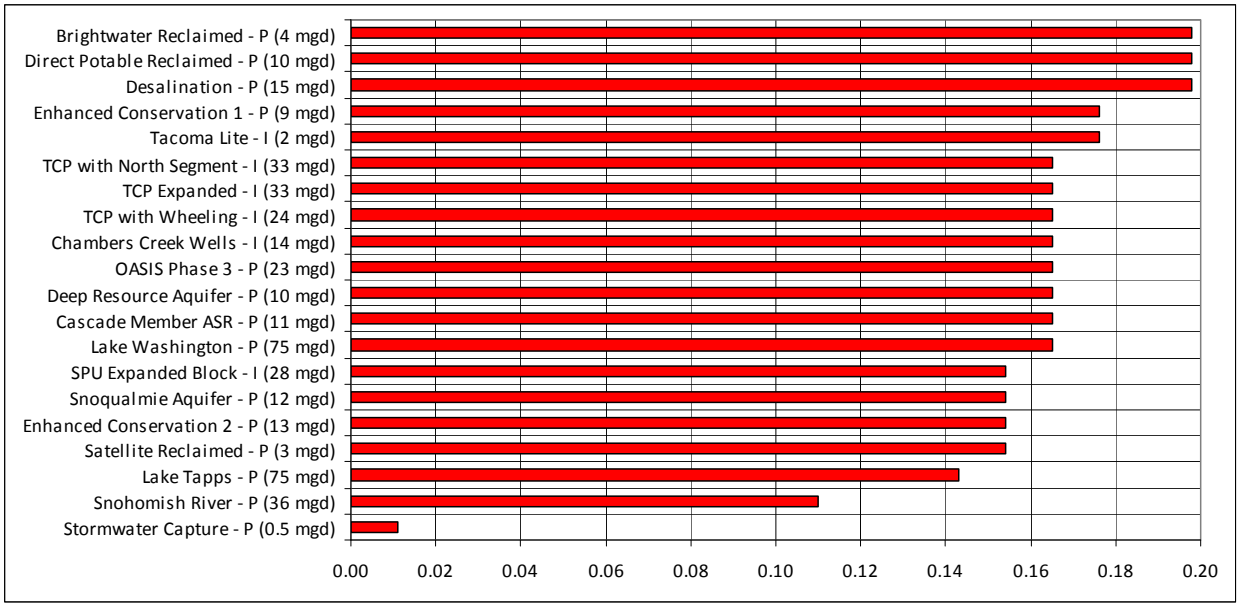


Figure 7. Operational Criterion

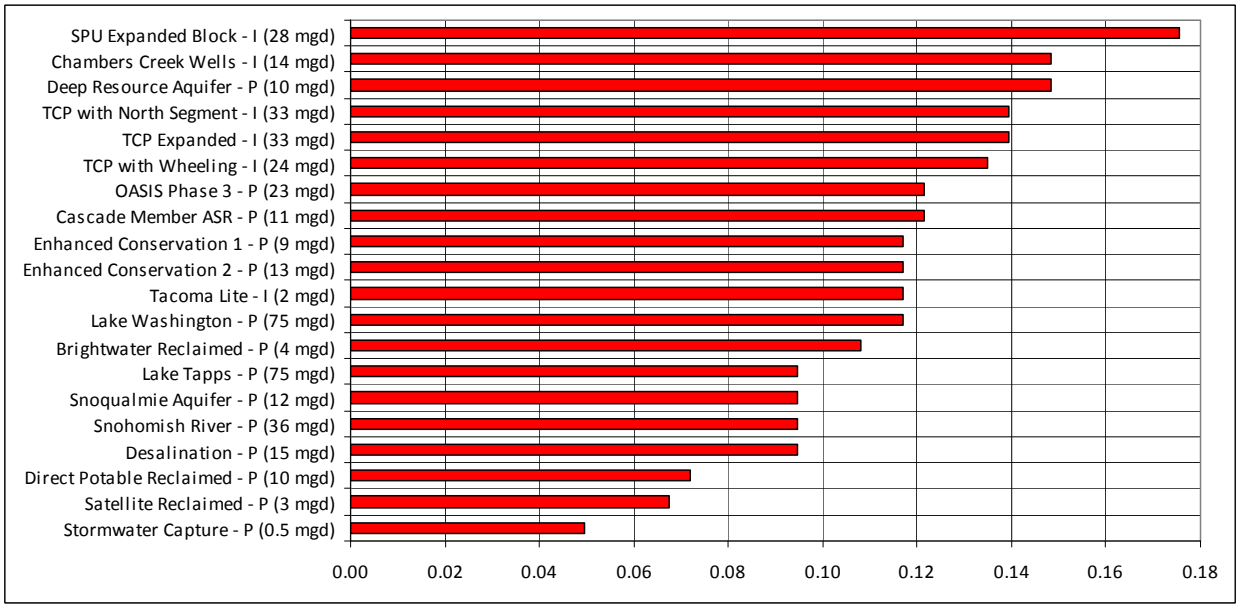


Figure 8. Environmental Criterion

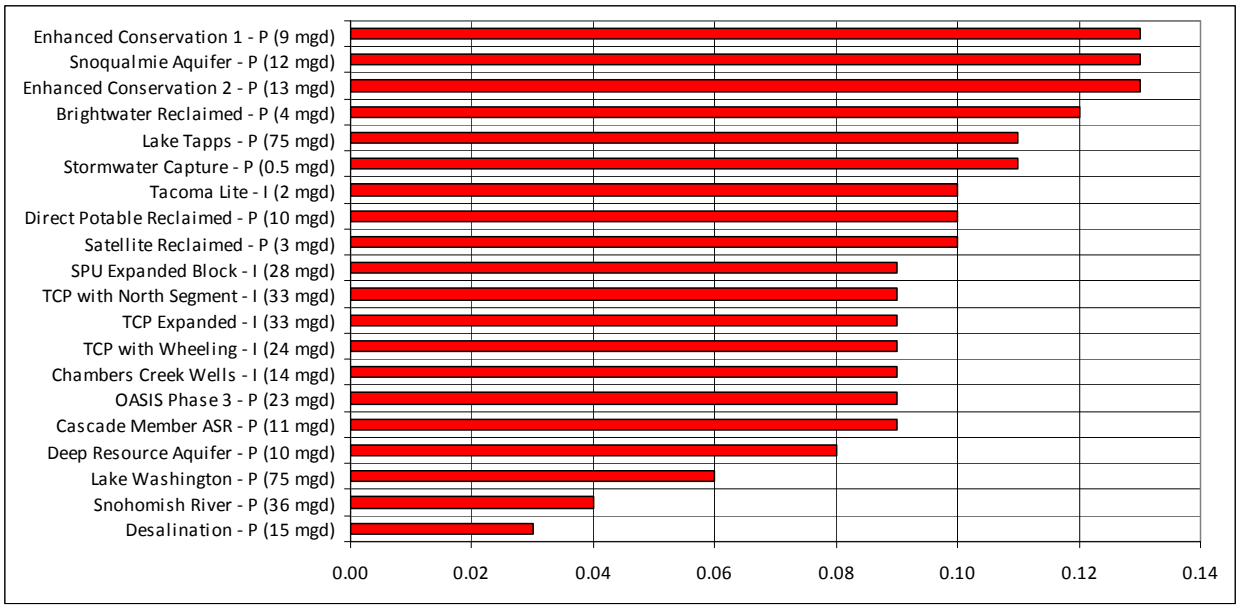


Figure 9. Implementation Criterion

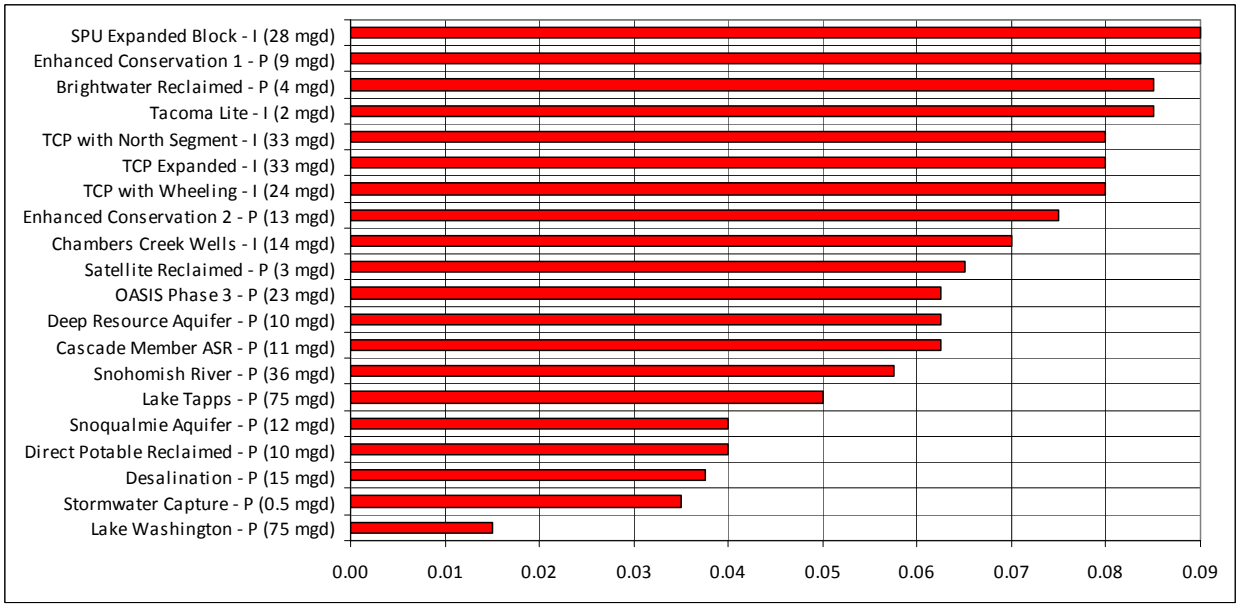
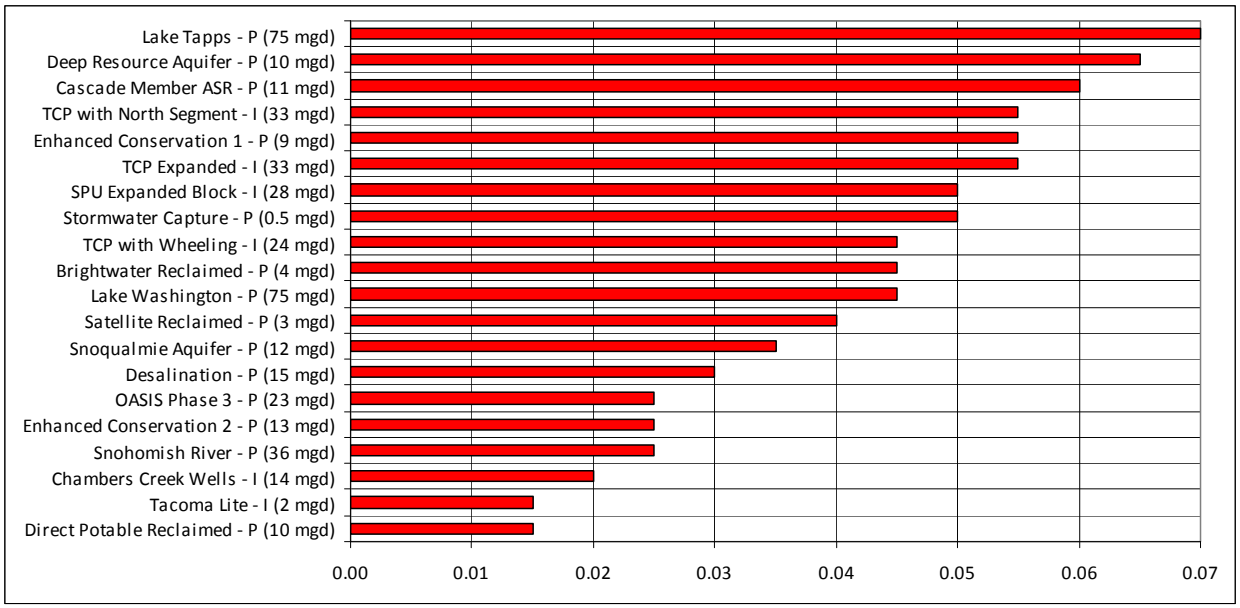
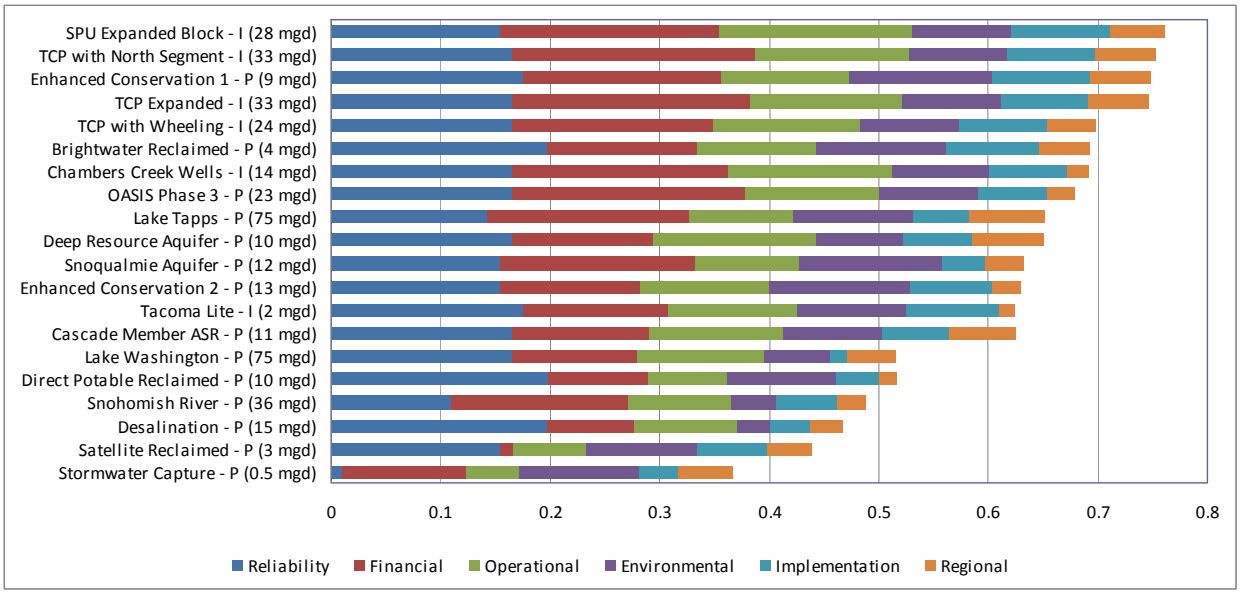


Figure 10. Regional / Intergovernmental Criterion



CDP uses the performance scores, along with criteria weights, to develop an overal ranking of each supply option based on a weighted-score methodology. Figure 11 presents the overall ranking of all supply projects. The longer the color bar segment, the better the project performs for that individual criterion, but the length of the color bar also represents how important the criterion is in the overal decision. Supply options that are ranked the highest generally score well in most of the important (or highly weighted) criteria. Supply options that rank the lowest generally score poorly in most of the highly weighted critiera.

Figure 11. Overall Ranking of All Supply Options



Based on this initial ranking, three general ranking breakpoints emerge: (1) those options that score 0.7 or better, most of which are interim supply options; (2) those options that score between 0.6 and 0.7, most of which are permanent supply options; and (3) those options that score around 0.5 or less. The six supply options that score near 0.5 or less are recommended to be eliminated from further, more detailed evaluation.

5.2 Preliminary Ranking of Permanent and Interim Supply Projects

Because some options provide only interim supply benefits while others provide permanent supply, supply options were compared and ranked based on this classification as well. These two additional rankings provide helpful information, especially for use in Task 800 when options will be combined into portfolios to meet specified water demand targets over time.

Figure 12 shows a ranking that compares permanent supply options. The results are consistent with the ranking of all options in that the lowest ranked options are the same six that are recommended to be eliminated from further, more detailed evaluation.

Figure 12. Overall Ranking of Permanent Supply Options

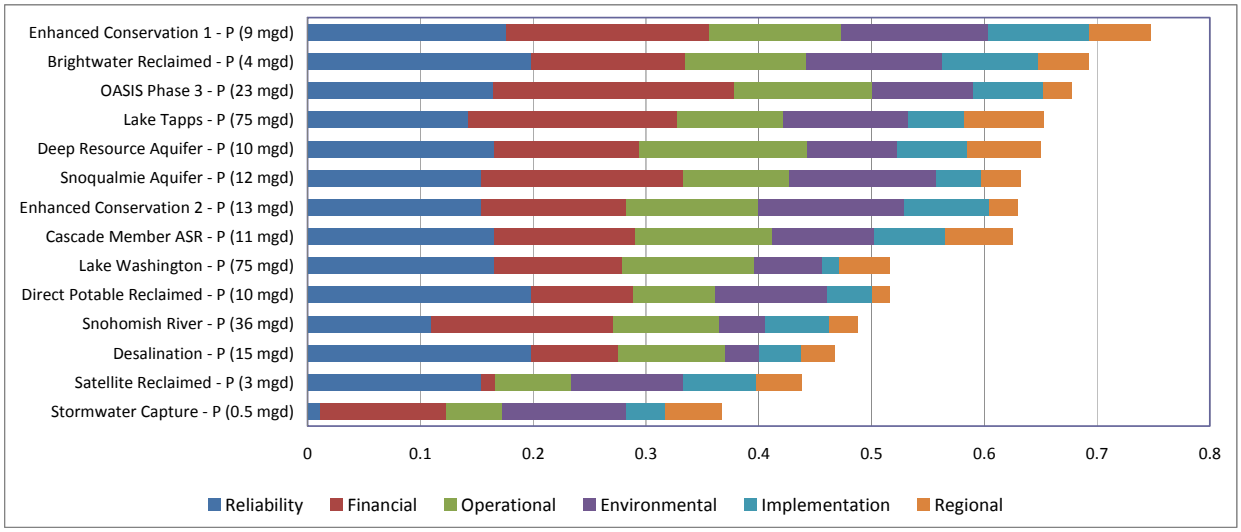
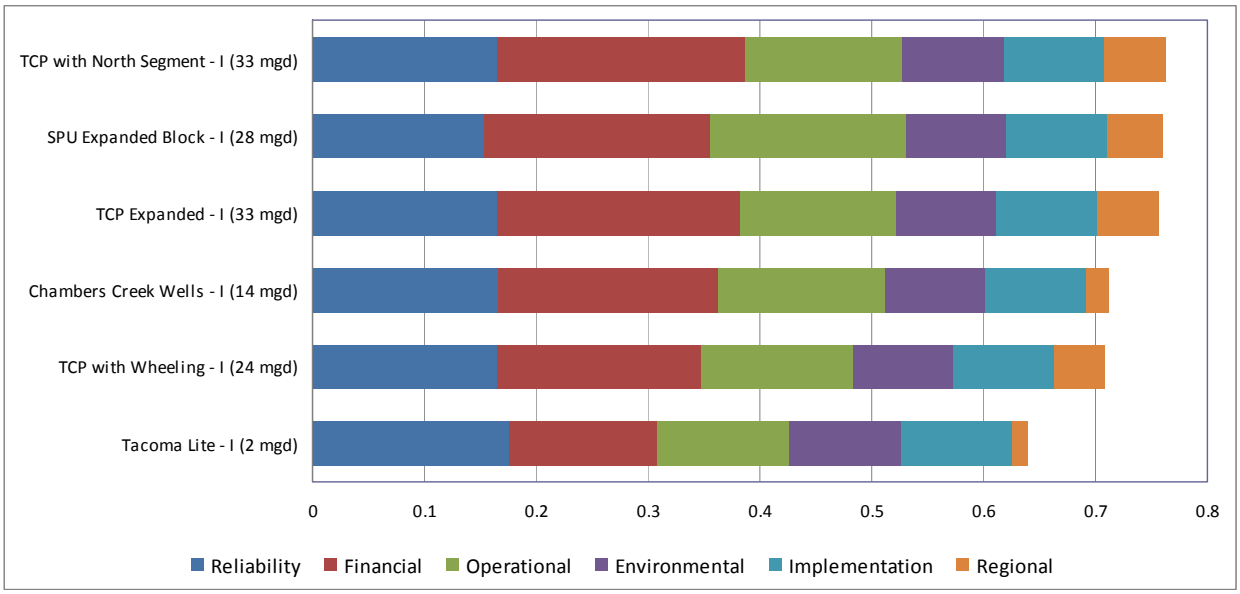


Figure 13shows a ranking that compares interim supply options. The results show that the SPU Expanded Block, TCP with North Segment, and TCP Expanded supply options all score the same and are ranked highest. The Tacoma Lite supply option ranks the lowest, and given its very small supply yield it is recommended that this supply option be eliminated from further evaluation.

Figure 13. Overall Ranking of Interim Supply Options



5.3 Sensitivity Analyses

To evaluate how supply option rankings change as input assumptions change, CDM conducted the following three sensitivity analyses:

- Used stakeholder weights from the Cascade Connections Working Group (CCWG)
- Changed the financial criteria, and
- Removed financial criteria, and used a combined multi-attribute rating technique with quadrant analysis.

For each of these scenarios, the revised supply option rankings are presented. The scenarios were evaluated separately, and combined scenarios were not conducted.

Stakeholder Weights: The first sensitivity used the criteria weights developed by the CCWG instead of the RMC weights. Figure 14 shows the overall ranking of permanent supply options, while Figure 15 shows the ranking of interim supply under the CCWG weighting.

Figure 14. Overall Ranking of Permanent Supply Projects – CCWG Weights

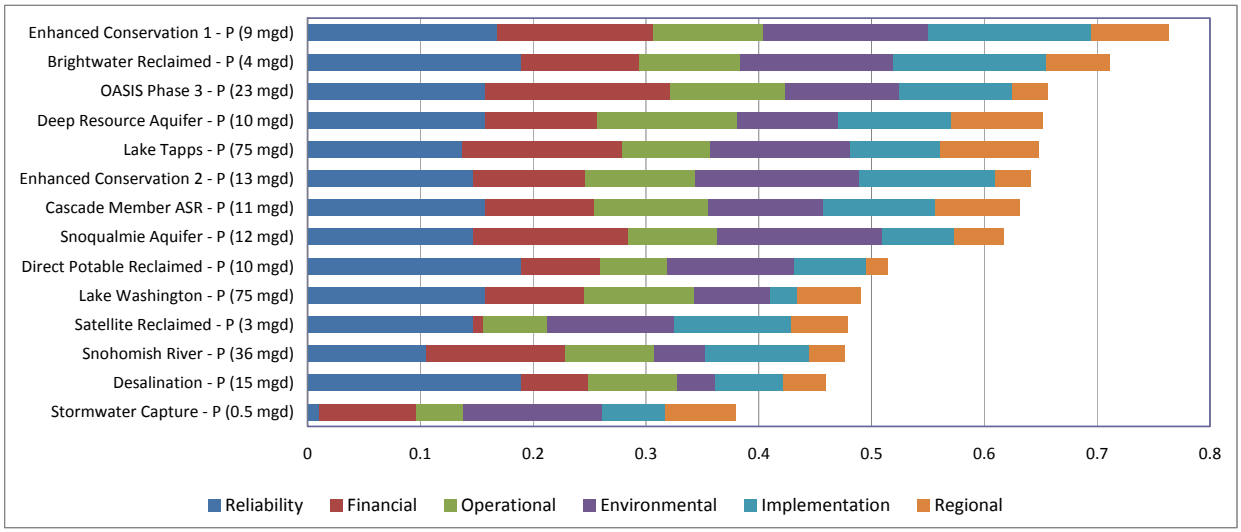
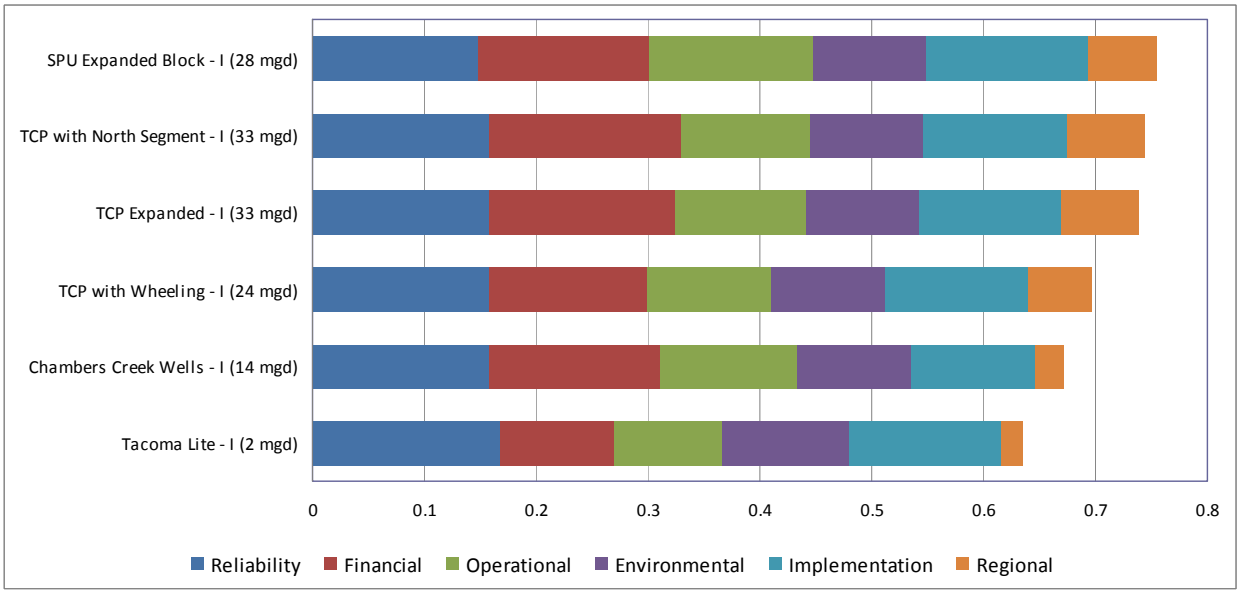


Figure 15. Overall Ranking of Interim Supply Projects – CCWG Weights



Changed Financial Criteria: This second sensitivity evaluated changes in rankings from the baseline when the sub-criterion **utilization of past investments** is removed from decision model. Figure 16 and Figure 17 show the new rankings for permanent and interim supply projects, respectively.

Figure 16. Overall Ranking of Permanent Supply Projects – Changed Financial Criterion

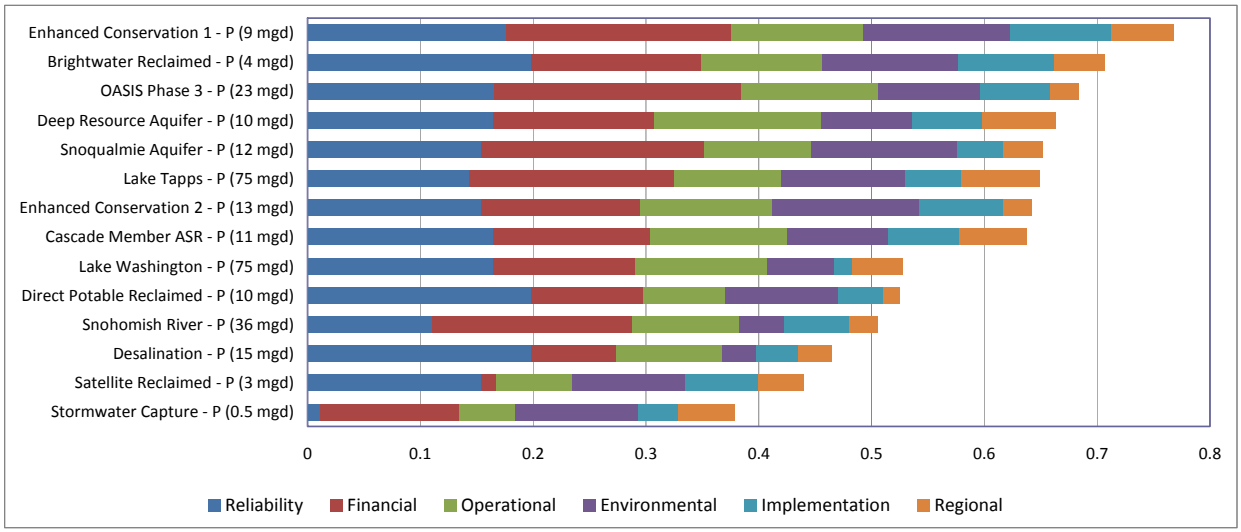


Figure 17. Overall Ranking of Interim Supply Projects – Changed Financial Criterion

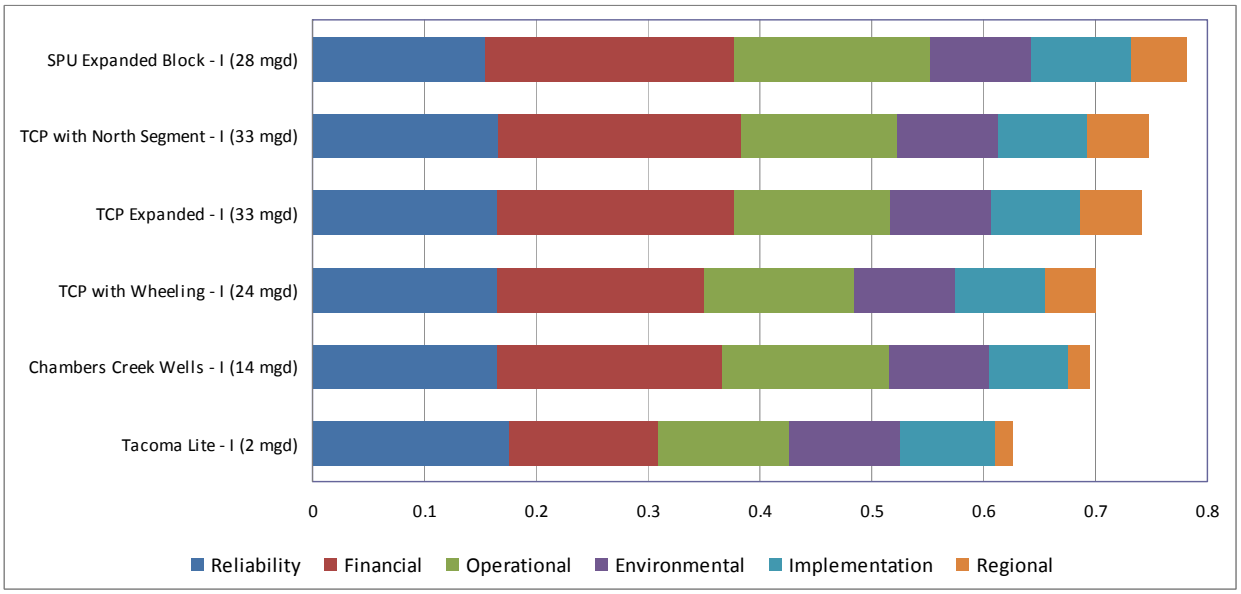


Table 4 shows the project rankings. Yellow highlights indicate no change in relative ranking between the sensitivities and the baseline. Red highlights indicate the ranking where the most shifts occur between the baseline and sensitivities. While the blue highlights show only a slight shift in rankings between the baseline and sensitivities.

The supply options that had the largest shifts in rankings between the baseline and sensitivities are Lake Tapps and Snoqualmie Aquifer. Under the baseline ranking, Lake Tapps was ranked 4th among all permanent supply projects, while Snoqualmie Aquifer was ranked 6th. However, Lake Tapps was ranked 6th under the scenario in which the financial criterion was changed, and

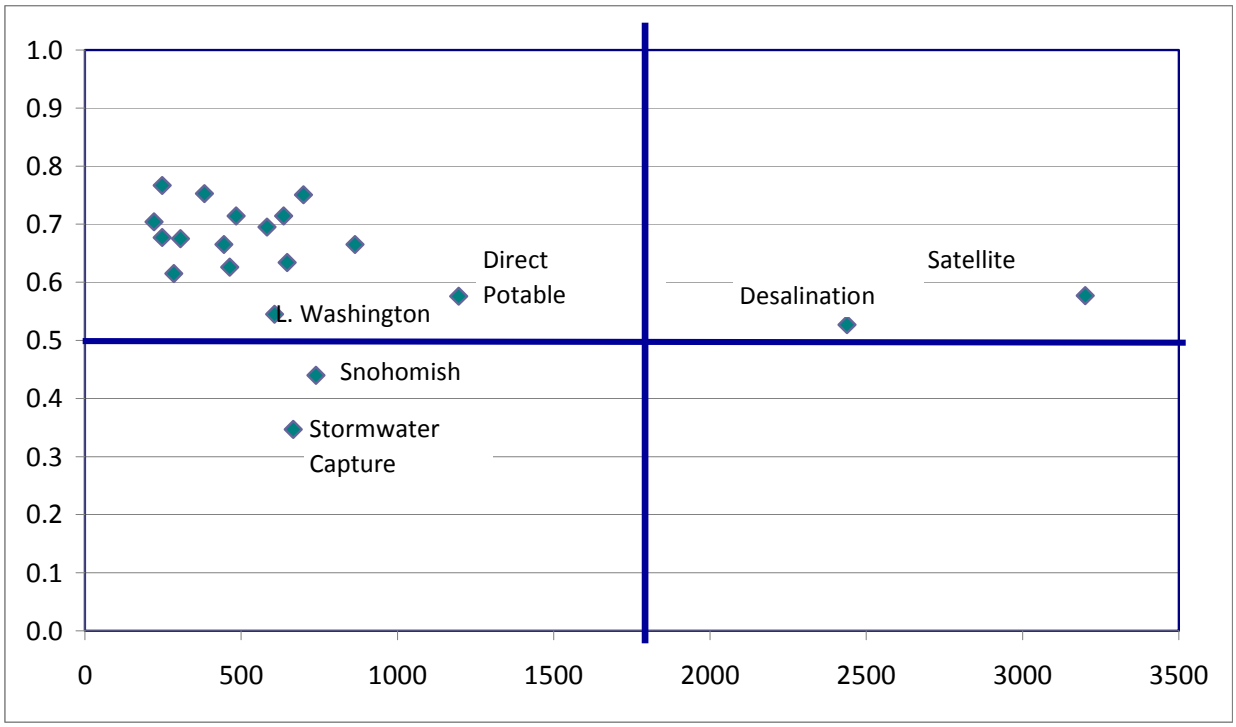
Snoqualmie Aquifer was ranked 8th under the scenario in which the CCWG criteria weights were used.

Table 4. Summary Ranking Orders

Supply Projects	Baseline Ranking	Stakeholder Weight Ranking	Changed Financial Criterion Ranking
Permenant Projects			
Enhanced Conservation 1 - P (9 mgd)	1	1	1
Brightwater Reclaimed - P (4 mgd)	2	2	2
OASIS Phase 3 - P (23 mgd)	3	3	3
Lake Tapps - P (75 mgd)	4	5	6
Deep Resource Aquifer - P (10 mgd)	5	4	4
Snoqualmie Aquifer - P (12 mgd)	6	8	5
Enhanced Conservation 2 - P (13 mgd)	7	6	7
Cascade Member ASR - P (11 mgd)	8	7	8
Lake Washington - P (75 mgd)	9	10	9
Direct Potable Reclaimed - P (10 mgd)	10	9	10
Snohomish River - P (36 mgd)	11	12	11
Desalination - P (15 mgd)	12	13	12
Satellite Reclaimed - P (3 mgd)	13	11	13
Stormwater Capture - P (0.5 mgd)	14	14	14
Interim Projects			
TCP with North Segment - I (33 mgd)	1	2	2
SPU Expanded Block - I (28 mgd)	2	1	1
TCP Expanded - I (33 mgd)	3	3	3
Chambers Creek Wells - I (14 mgd)	4	5	5
TCP with Wheeling - I (24 mgd)	5	4	4
Tacoma Lite - I (2 mgd)	6	6	6

Removed Financial Criteria: In this sensitivity, all financial-related criteria were removed from consideration. To conduct this analysis, CDM used the Quadrant Analysis Approach. This approach is similar to that used by Seattle Public Utilities. A total decision score, calculated using the multi-attribute rating method, without the financial criterion, is plotted against total unit cost, creating a quadrant graph, as shown in Figure 18.

Figure 18. Quandrant Analysis Results



Projects in the upper left quadrant are high ranking with lower costs while projects in the lower right quadrant are lower ranked with higher costs. The majority of projects are clustered in the upper left, indicating a high score with a relatively lower cost than other supply options. The projects identified in Figure 18 are those that have the lowest rank combined with some of the higher costs.

5.4 Recommended Supply Options to be Carried-Forward

The results of the baseline analysis and sensitivity showed that the supply option rankings are fairly robust. The top three projects remained consistent, as did the bottom six projects. Based on the baseline and sensitivity analyses, Table 5 shows the projects that CDM recommends be evaluated further in Task 800, as well as the projects that we recommend be dropped from further consideration.

Table 5. Recommendations

Recommended Projects for Task 800	
Permanent	**Interim**
Enhanced Conservation	TCP with North Segment
Brightwater Reclaimed	SPU Expanded Block
OASIS Phase 3	TCP Expanded
Lake Tapps	TCP with Wheeling
Deep Resource Aquifer	
Enhanced Conservation 2	
Cascade Member ASR	
Recommended Projects for Elimination from Further Consideration	
Snoqualmie Aquifer	Chambers Creek Wells
Lake Washington	Tacoma Light
Direct Potable Reclaimed	
Snohomish River	
Desalination	
Satellite Reclaimed	
Stormwater Capture	

The projects recommended for elimination from further consideration are those that ranked the lowest amongst permanent and interim supply options plus two additional projects. We recommend eliminating Snoqualmie Aquifer due to major uncertainties associated with developing that source for Cascade. We also recommend eliminating Chambers Creek Wells because this project is better treated as a subset of options for acquiring additional water from Tacoma (swapping Chambers Creek groundwater for more Tacoma Green River supply).

6.0 Conclusion / Next Steps

Cascade Water Alliance (Cascade) has sought to identify possible future supply options, and determine which of the projects represent the best options for future supply. To that end, a multiple stage approach is being taken to assess various supply options.

In the first stage (Task 300), 28 supply options were identified, and a coarse pass/fail approach was taken to eliminate supply options that did not warrant further consideration. After the first stage, 20 options were carried forward.

The second stage (Task 700) involved a more in-depth vetting of the 20 supply options. A Multi-Criteria Analysis was used to provide a more uniform and objective ranking of the options.

Initially, a criterion scoring index was developed to aid in the scoring process. Next, detailed supply option fact sheets were written specifically addressing the criteria noted in the index. When the fact sheets and index were completed, a scoring workshop was held to score the supply options. Once scored, the data and scores were analyzed using the Criterium Decision Plus (CDP) software. The CDP software output graphics ranked each supply option in each of the scoring criteria. The total final score was calculated, and some general trends were seen in the data. Options generally fell into three groups, those with scores above 0.7, those with scores between 0.6 and 0.7, and those with scores near or below 0.5. We recommend that the lowest scored group, the 6 options with scores near or below 0.5, be eliminated from further consideration in Task 800. Additionally, we recommend that the lowest ranking interim supply option be eliminated. Two additional projects are also recommended for elimination: Snoqualmie Aquifer (development uncertainties) and Chambers Creek Wells (strategic reasons). The remaining 11 supply options being considered in Task 800 are listed in Table 6.

Table 6. Options Carried to Task 800

Existing Source Management	New Surface Water Options	New Ground Water Options	Conservation and Reclaimed Water
TCP w/ Wheeling TCP w/ North Segment TCP Expanded SPU Expanded Block	Lake Tapps	Deep Resource Aquifer Withdrawal (DRAW) OASIS Phase 3 Cascade Member ASR	Brightwater Reclaimed Water, South Segment Enhanced Cascade Conservation 1 – Expansion beyond current levels Enhanced Cascade Conservation 2 – Full suite of technically feasible measures

The goal of the final report is to identify the best supply options to meet the future needs of Cascade Members, and present them as a well defined Capital Improvement Plan with which Cascade can plan future expenditures.

The final stage of the planning process (stage three - Task 800) will involve assembling the remaining options into supply portfolios to meet projected demand for the interim and the long-term.

Afterwards, more detailed cost estimates and further research into the portfolios will be conducted, the result of which will be the final Capital Improvement.

Appendix A

Supply Evaluation Criteria and Scoring Index

Financial

Supply Evaluation Criteria and Scoring Index [a]

1	2	3	4	5
Low	Med. Low	Medium	Med. High	High

Score	Capital and Operational Costs (weighted 50%)	Degree of Uncertainty in Capital and Operational Costs (weighted 40%)	Utilization of prior Cascade Investments (weighted 10%)
1	Criterium Decision Plus (CDP) will assign a score for this financial sub-criteria based on developed Capital and Operational (lifecycle) unit cost of the supply option A lower unit cost for the supply option will reflect a higher score	-20% to +75% Contingency (Unconventional approach with high probability of unforeseen expenses. Possibility of source failure. High risk premium demanded on work. Few qualified suppliers/contractors. Heavily dependent on fluctuating input costs (electricity, fuel))	Will be completed by entering direct costs of CWA investments utilized by the project into CDP. Greater use of prior Cascade investments will reflect a higher score.
2	Score represents a level between the descriptions/metrics provided above and below		
3		-10% to +30% Contingency (Conventional approach with possible unforeseen issues. Moderate risk premium demanded for contract work. Several qualified suppliers/contractors. Dependent on inputs whose costs are relatively stable.)	
4	Score represents a level between the descriptions/metrics provided above and below		
5		-5% to +10% Contingency Conventional approach with low probability for unforeseen expenses. Little risk premium for contract work. Many well qualified suppliers/contractors. Does not require inputs with varying costs (gravity conveyance).	

Note:
a) Definitions in project index key are not intended to include all scenarios, nor be mutually exclusive. Some projects may fit one or more of the definitions in the index key, but not all. Professional judgment and knowledge of project are inherent in the selected ranking.

Supply Reliability

Supply Evaluation Criteria and Scoring Index [a]

1	2	3	4	5
Low	Med. Low	Medium	Med. High	High

Score	Availability (weighted 40%)	Variability of Yield (weighted 40%)	Vulnerability to Emergency Disruptions (weighted 20%)
1	**50% Certainty Supply Source will be available by 2030** (Greatly impacted by long-term climate change. Impacts > 90% of the supply; Yield may decrease over time unexpectedly due to non-renewable agreement(s) or source competition. Conservation program, or code change relies heavily on behavioral savings and/or a large amount of uncertainty in success, or not enough incentive for mass appeal; Conservation device, if applicable, has limited life-span and requires high degree of maintenance to maintain effectiveness.)	**70-80% reliable** (Impacted by drought and/or storms of short duration (days-weeks); Extremely difficult to obtain approvals to operate as assumed in computing yield. Very careful management of source is needed to operate in a given year to achieve quantity stated)	**Highly Vulnerable** (Project impacted by emergency disruptions such as power outages, or natural events (earthquakes, wildfires, volcanic activity); Supply crosses vulnerable areas such as faults or floodplains. Long transmission to large portion of demand area; Utilizes older sections of pipeline that are more susceptible to damage; Access to improvements is not secured.)
2	Score represents a level between the descriptions/metrics provided above and below		
3	**75% Certainty Supply Source will be available by 2030** (Possibility of climate change impacts in the long-term. Impacts, if existing, influence at least 50% of the source. Access to source is term-limited and/or licensed, but terms have moderate likelihood of being renewed without modification. Conservation program, or code change, is mixed for behavioral savings and uncertainty in desired savings, or incentive for mass appeal; Conservation device, if applicable, has moderate life-span and requires some routine maintenance to maintain effectiveness.)	**85-90% reliable** (Impacted by extended drought/storm conditions (years); Some approvals necessary, yet feasible to obtain in order to operate as assumed in computing yield under abnormal conditions. Moderate complexity in managing the source to achieve quantity stated in a given year.)	**Moderately Vulnerable** (Project impacted by power and/or other emergency disruptions, but has backup supply sources, power generation, and other options to maintain supply at non-peak demand levels; Moderate transmission to large demand area; Utilizes new pipeline sections that are less susceptible to damage Moderate security access to improvements.)
4	Score represents a level between the descriptions/metrics provided above and below		
5	**90% Certainty Supply Source will be available by 2030** (Little to no discernable impacts by climate change; <10% of the supply source influenced by climate change. Access to source is not term limited through agreement(s) and/or licenses. Conservation program or code change relies on measures with known technologies and certain long-term savings. Program provides incentive for mass appeal; Little to no reliance on behavioral changes to obtain savings. Conservation device/technology, if applicable, has unlimited life-span and requires no maintenance to maintain effectiveness.)	**95-99% reliable** (Not greatly impacted by droughts/storms; no additional agency/stakeholder approvals required for operations. Requires minimal source management to achieve quantity stated in any given year.)	**Low Vulnerability** (Centralized supply system that is mostly gravity fed to majority of customers and impacted by power outages and emergency disruptions only under rare and unusual events; Short transmission to large portion of demand area. High security controls limiting access to improvements. Has redundant transmission system(s) from source to service areas.)

Note:

a) Definitions in project index key are not intended to include all scenarios, nor be mutually exclusive. Some projects may fit one or more of the definitions in the index key, but not all. Professional judgment and knowledge of project are inherent in the selected ranking.

Operational

Supply Evaluation Criteria and Scoring Index [a]

1	2	3	4	5
Low	Med. Low	Medium	Med. High	High

Score	Operational Complexity (weighted 50%)	Water Quality Compatibility with Other Supplies (weighted 10%)	Vulnerability to Potential Source Contamination (weighted 10%)	Flexibility to Adjust Yield (weighted 30%)
1	Very complex (unconventional operation requiring several extensively trained operators and significant control infrastructure)	Low Compatibility (Not compatible with other supplies; or blending with other sources not allowed)	High DOH susceptibility rating or High Vulnerability (Surface water source: unrestricted access; Groundwater source: Shallow Wells, tap unconfined/water table aquifer; undeveloped wellhead protection)	Very little yield flexibility (±10%)
2	Score represents a level between the descriptions/metrics provided above and below			
3	Moderately complex (established operation requiring several trained operators and control infrastructure)	Moderate Compatibility (Source presents moderate potential for blending issues that have not been studied.)	Moderate DOH susceptibility rating or Medium Vulnerability (Only 50% of the access and restrictions to the source is controlled; Wells are at medium depth)	Some yield flexibility (±50%)
4	Score represents a level between the descriptions/metrics provided above and below			
5	Basic (established operation requiring few basically trained operators and no control infrastructure)	High Compatibility (Very compatible with other supplies)	Low DOH susceptibility rating and Low Vulnerability (Highly protected and/restricted access/prohibition on certain activities within location of source water; If groundwater, wells are deep and have a very thick overlying confining layer)	Large yield flexibility (±100%)

Note:

a) Definitions in project index key are not intended to include all scenarios, nor be mutually exclusive. Some projects may fit one or more of the definitions in the index key, but not all. Professional judgment and knowledge of project are inherent in the selected ranking.

Environmental

Supply Evaluation Criteria and Scoring Index [a]

1	2	3	4	5
Low	Med. Low	Medium	Med. High	High

Score	Annual Energy Use (per Unit of Supply) (weighted 25%)	Potential net environmental benefits/impacts after mitigation (weighted 75%)
1	Significant Energy Use	Negative Net Environmental Impact (Aquatic Habitat, Stream flow/Groundwater Depletion, Contamination Potential) Direct impacts to existing beneficial uses of surface and/or groundwater; Requires significant transmission construction that negatively alters existing landscape (i.e., tree cutting, land grading). Code Change, or green supply project has long lasting impacts to existing conditions that cannot be readily mitigated. Potential examples (Storm water Injection, Irrigation reduction/loss increasing nutrient leaching).
2		
3	Moderate Energy Use	No Discernable Impact (Aquatic Habitat, Stream flow/Groundwater Depletion, Contamination Potential) Impacts to beneficial uses/environment are neutral; Code Change, or green supply project has some form of potential contamination to existing conditions, but this impact can be mitigated.
4	Score represents a level between the descriptions/metrics provided above and below	
5	Minimal Energy Use	Net Positive Environmental Impact (Aquatic Habitat, Stream flow/Groundwater Depletion, Contamination Potential) Project benefits the environment. Code change, or green supply project has no detectable impact to existing conditions.

Note:
a) Definitions in project index key are not intended to include all scenarios, nor be mutually exclusive. Some projects may fit one or more of the definitions in the index key, but not all. Professional judgment and knowledge of project are inherent in the selected ranking.

Score represents a level between the descriptions/metrics provided above and below

Implementation

Supply Evaluation Criteria and Scoring Index [a]

1	2	3	4	5
Low	Med. Low	Medium	Med. High	High

Score	Ease of Obtaining Water rights (weighted 30%)	Ease of Obtaining other Required Permits (weighted30%)	Public Acceptance (weighted 20%)	Enables Implementation of Other Projects (weighted 20%)
1	Project would require new rights in a closed basin (Project area has a significant number of existing water right applicants pending decision)	Requires a significant number of federal, state, and local agency permits (Directly impacts existing tribal agreements; Impacts cannot be mitigated)	Strong opposition (in public or political arenas; Will force major change in lifestyle and/or perceptions on the definition of a potable water source)	Eliminates possible implementation of other major projects.
2	Score represents a level between the descriptions/metrics provided above and below			
3	Some effort/cost necessary in finalizing water right approval (if needed) (project area has moderate number of existing water right applicants pending decision.	Minimal to no permits needed at the federal level, mostly local permits (Project applications have been submitted; Impacts existing tribal treaty interests/agreements, but these are mitigated with moderate concessions and/or limits)	Mixed opposition/support Local elected officials has and public have mixed 50/50 opinions on project; May involved some lifestyle changes and/or significant public education on potable water.	Has no effect on other projects.
4	Score represents a level between the descriptions/metrics provided above and below			
5	Project has water rights (project viewed positively, or supported by existing local holders of senior water rights	Project has all necessary permits (claims, tribal treaty interests/agreements not impacted/needed)	Supported (in both public and political arenas; Satisfies emergency and health/safety concerns)	Enables other major projects to be completed with significantly less effort, or allows multiple minor projects to be implemented with less effort.

Note:

a) Definitions in project index key are not intended to include all scenarios, nor be mutually exclusive. Some projects may fit one or more of the definitions in the index key, but not all. Professional judgment and knowledge of project are inherent in the selected ranking.

Regional/Intergovernmental

Supply Evaluation Criteria and Scoring Index [a]

1 Low | 2 Med. Low | 3 Medium | 4 Med. High | 5 High

Score	Level of Control (ownership) (weighted 25%)	Regional Value (weighted 25%)	Partnerships and Governance Complexity (weighted 25%)	Institutional hurdles (weighted 25%)
1	Project controlled by two or more different stakeholders with competing interests (Project would require significant coordination with outside stakeholders)	Will be completed using size of total yield. Scoring will be scaled from low yield = 0;	Complicated partnerships with federal level entities. (Requires significant regulatory approval and oversight. Unconventional approach with ill-defined regulatory framework)	Lengthy and/or complicated contract negotiations (Requires significant transmission line/intertie work through multiple jurisdictions; Significant portion of land for project site and transmission not currently owned by Cascade)
2	Score represents a level between the descriptions/metrics provided above and below			
3	Project controlled by two or more different stakeholders with aligned interests (Project would require little coordination with outside stakeholders)	to the project with the highest yield = 5.	Complicated partnership with state entity, or simple relationship with regional entity. (Requires moderate regulatory approval and oversight. Common approach with moderately well-defined regulatory framework)	Moderately complicated contract negotiations (Land for project and transmission obtainable and feasible locations for infrastructure identified, but not currently owned by Cascade)
4	Score represents a level between the descriptions/metrics provided above and below			
5	Project wholly controlled by Cascade (no coordination with outside stakeholders required)		No partnership required (Project requires little regulation or oversight)	No contracts necessary, or minor modification of existing contract (Inter-County/City agreements intact; Land available and owned by Cascade)

Note:

a) Definitions in project index key are not intended to include all scenarios, nor be mutually exclusive. Some projects may fit one or more of the definitions in the index key, but not all. Professional judgment and knowledge of project are inherent in the selected ranking.

Appendix F: Distribution List

CASCADE WATER ALLIANCE
LAKE TAPPS RESERVOIR WATER RIGHTS AND SUPPLY PROJECT

NOTICE OF AVAILABILITY AND REQUEST FOR COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT

DISTRIBUTION LIST

CASCADE WATER ALLIANCE MEMBERS[1]

City of Bellevue
Covington Water District
City of Issaquah
City of Kirkland
City of Redmond
Sammamish Plateau Water & Sewer District
Skyway Water & Sewer District
City of Tukwila

LOCAL GOVERNMENTS

King County DNR/P – Water Policy[1]
Seattle and King County Public Health[2]
City of Auburn[2]
City of Kent[2]
Pierce County Office of the County Executive[3]
Pierce County Planning and Land Services[2]
City of Buckley[2]
City of Bonney Lake[2]
City of Sumner[2]
City of Pacific[2]
City of Algona[2]
City of Enumclaw[2]
King County Executive[3]
Pierce County Councilmember Shawn Bunney[3]

STATE OF WASHINGTON

Department of Ecology SEPA Register[1]
Department of Ecology Northwest Regional Office[1]
Department of Ecology Southwest Regional Office[1]
Department of Health[2]
Department of Archaeology and Historic Preservation[2]
Department of Natural Resources[2]
Department of Transportation[2]
Department of Fish and Wildlife[2]
Parks and Recreation Commission[2]
Utilities and Transportation Commission[2]
Puget Sound Clean Air Agency[2]

Interagency Committee for Outdoor Recreation[2]
Office of the Attorney General[1]
State Senator Roach[3]
State Senator Kauffman[3]
State Representative Roach[3]
State Representative Hurst[3]
Senator Murray[3]
Senator Cantwell[3]
Representative Inslee[3]
Representative McDermott[3]
Representative Reichert[3]
Representative Smith[3]
Representative Dicks[3]

FEDERAL AGENCIES

U.S. Army Corps of Engineers, Seattle District[1]
Bureau of Indian Affairs[2]
U.S. Environmental Protection Agency, Region 10[2]
Federal Emergency Management Agency, Region 10[2]
U.S. Fish and Wildlife Service[2]
U.S. Geological Survey[2]
NOAA Fisheries - National Marine Fisheries Service[2]
Natural Resource Conservation Services[2]

TRIBES

Muckleshoot Indian Tribe[1]
Puyallup Tribe of Indians[1]
Duwamish Tribe[2]
Tulalip Tribe[2]
Snoqualmie Tribe of Indians[2]

LIBRARIES[1]

King County Library System, Redmond Regional Branch
King County Library System, Bellevue Regional Branch
King County Library System, Issaquah Branch
King County Library System, Tukwila Branch
King County Library System, Covington Branch
King County Library System, Auburn Branch
Pierce County Library System, Bonney Lake
Pierce County Library System, Sumner
University of Washington Suzzallo Library

SPECIAL INTEREST GROUPS

Washington Environmental Council[3]
Seattle Audubon Society[3]
Trout Unlimited[3]
Washington Trout[3]
Sierra Club[3]
Lake Tapps Community Council[1]
Citizens for Clean Drinking Water[3]
League of Women Voters[3]
Center for Environmental Law and Policy (CELP)[3]
Church Lake Maintenance Association[2]
Tapps Island Association[2]
West Tapps Maintenance Company[2]
Driftwood Point Association[2]
Inlet Island Homeowner's Association[2]

WHOLESALE WATER PURVEYORS

Seattle Public Utilities[2]
Tacoma Water[2]
East King County Regional Water Association[3]
South King County Regional Water Association[3]

NEWSPAPERS

Daily Journal of Commerce[4]
Seattle Times[4]
Tacoma News Tribune[4]
Bonnie Lake and Sumner Courier Herald[3]
Auburn Reporter[3]
Bellevue Reporter[3]
Kirkland Reporter[3]
Issaquah Reporter[3]
Sammamish Reporter[3]
Renton Reporter[3]
Redmond Reporter[3]

OTHER

Puget Sound Energy[1]
Aspect Consulting, LLC[1]
Perkins Coie, LLP[3]
HDR Engineering, Inc.[1]
GordonDerr, LLP[1]
Eglick Kiker Whited, PLLC[3]
K & L Gates, LLP[3]
Ralph Mason[1]
Cascade Connections Group[3]

Notes:

1. These entities on the distribution list have received the Notice of Availability and Request for Comments on Draft EIS, printed copy of the Draft EIS, and a CD copy of the Draft EIS.
2. These entities on the distribution list have received the Notice of Availability and Request for Comments on Draft EIS, and a CD copy of the Draft EIS.
3. These entities on the distribution list have received the Notice of Availability and Request for Comments on Draft EIS, and the Summary of the Draft EIS.
4. The Notice of Availability and Request for Comments on Draft EIS is being published in these newspapers.