

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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 July 1, 1998	APPLICATION NUMBER G3-30098	PERMIT NUMBER	CERTIFICATE NUMBER
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NAME Seattle City Light			
ADDRESS (STREET) P.O. Box 219	(CITY) Metaline Falls	(STATE) Washington	(ZIP CODE) 99153

PUBLIC WATERS TO BE APPROPRIATED

SOURCE Three wells
TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE 1230	MAXIMUM ACRE FEET PER YEAR 1088
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QUANTITY, TYPE OF USE, PERIOD OF USE

1230 gallons per minute, 1088 acre-feet per year, continuously, for powerhouse cooling and multiple domestic supply

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION-WITHDRAWAL

1. 2430 feet north and 2712 feet west from the SE corner of Sec. 3, being within the NE $\frac{1}{4}$ SW $\frac{1}{4}$
2. 2270 feet north and 2537 feet west from the SE corner of Sec. 3, being within the NW $\frac{1}{4}$ SE $\frac{1}{4}$
3. 3664 feet north and 2507 feet west from the SE corner of Sec. 3, being within the SW $\frac{1}{4}$ NE $\frac{1}{4}$

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) 1: NE $\frac{1}{4}$ SW $\frac{1}{4}$, 2: NW $\frac{1}{4}$ SE $\frac{1}{4}$, 3: SW $\frac{1}{4}$ NE $\frac{1}{4}$	SECTION 3	TOWNSHIP N. 40	RANGE, (E. OR W.) W.M. 43 E.	W.R.I.A. 62	COUNTY Pend Oreille
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RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
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LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Administrative areas and powerhouse cooling within property owned or controlled by Seattle City Light and more specifically defined as the license boundary under FERC License for Project No. 2144 being within portions of Sections 3 and 10, T. 40 N., R. 43 E.W.M. in Pend Oreille County, Washington.

DESCRIPTION OF PROPOSED WORKS

Three wells, pumps and pressure distribution system

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE: Started	COMPLETE PROJECT BY THIS DATE: September 1, 2010	WATER PUT TO FULL USE BY THIS DATE: September 1, 2011
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REPORT

BACKGROUND

An application to appropriate public ground water was submitted by Seattle City Light to the Department of Ecology on July 1, 1998. The application was accepted and assigned Ground Water Application No. G3-30098. The applicant proposed to withdraw ground water from twelve wells in the amount of 1230 gallons per minute for continuous multiple domestic supply and powerhouse cooling. On January 14, 1999 they requested that the application be reduced to eight wells. The original application only listed exact locations, by foot and distance from a section corner, for wells 1, 2, and 3. In conversations with the applicant it was determined that only wells 1, 2, and 3 would be drilled under this application. The three proposed points of withdrawal will be located within the NE 1/4 SW 1/4; NW 1/4 SE 1/4, and the SW 1/4 NE 1/4 of Sec. 3. The place of use will be the Boundary Dam Facility as defined in the FERC License for Project No. 2144.

A notice of application was duly published in accordance with RCW 90.03.280; no protests or objections were received.

This application is subject to the provisions of the State Environmental Policy Act (SEPA) of 1971, Chapter 43.21C RCW. A Declaration of Non-significance was issued by Seattle City Light on May 6, 1999. A permit issued under this application is exempt under the Family Farm Water Act of 1977, 90.66 RCW.

INVESTIGATION

James M. Lyerla conducted a field examination on April 15, 1999. Seattle City Light owns and operates the Boundary Dam facility located on the Pend Oreille River 10 miles north of Metaline, Washington. The facility consists of the dam and powerhouse, several structures that make up the service area (including the paint and sandblasting building, the shipping and receiving building, and a garage and oil house), as well as the Tailrace Recreation Area below the dam, the Forebay Recreation Area above the dam, and the Vista House located on the east side of the river.

Seattle City Light presently holds Surface Water Certificate No. 10180 issued in the amount of 0.10 cubic foot per second, 6.7 acre-feet per year, continuously, each year for domestic supply; and 0.9 cubic foot per second during the entire year for as needed for fire protection. This Certificate lists a point of diversion from Gardner Creek and holds a priority date of April 1, 1963. A portion of the surface water available in Gardner Creek (0.10 cubic feet per second for domestic supply) is presently piped from Gardner Creek to the present place of use for domestic supply. However, Gardner Creek flows are unreliable, and turbidity is common during high flow periods. The applicant proposes to replace the domestic use from Gardner Creek with a more reliable source of water from these three wells. In addition to domestic use, these wells will supply ground water for make-up cooling water.

The use of Gardner Creek for domestic supply will be discontinued and the applicant is requesting under Surface Water Application S3-30103 that this surface water source now be used in the amount of 1.5 cubic feet per second, continuously, for cooling water for the turbine shafts, air-compressors and air-conditioning. The cooling water will be run through the powerhouse and discharged to the Pend Oreille River. There will be no consumptive use of this water and all of the diversion from Gardner Creek will be returned to the Pend Oreille River.

The applicant has applied for ground water from three wells under this application as a back-up water supply for powerhouse cooling and to replace Gardner Creek surface water with well water for domestic use. Apparently, neither the wells nor the surface water, used individually, can supply the total demand for cooling of the turbine shafts, compressors, and air-conditioning of the powerhouse. Ground water will be used to make up the deficit when Gardner Creek water is not available. Additionally, some of the turbine shafts could be damaged due to the abrasive nature of the surface water during high flow conditions. Ground water would be used during these times for cooling. Other uses such as air-conditioning and compressor cooling are not affected by the sediment in the surface water and it will be used continuously.

It is difficult for Seattle City Light to predict the amount of water that will be needed annually from the individual ground and surface water sources for cooling. In discussions with representatives for Seattle City Light it was learned that the cooling water use would be continuous at 1.5 cubic feet per second, or 1230 gallons per minute used in combination for a potential maximum total annual diversion of 1088 acre-feet per year from both sources. However, the actual annual diversion will vary by source, and demand. The ground water use for cooling will be dependent on the availability and quality of surface water and the production capabilities of the three wells. The annual quantity issued under the final Ground and Surface Water Certificates will be refined, and possibly reduced, based on flow meter records. These records will be supplied to the Department of Ecology when the final proof of appropriation is filed and a Certificate of Water Right will be issued based on these records. In addition, the multiple domestic use will be refined and specific quantities will be allocated under the Certificate of Water Right for domestic use.

Due to their near proximity to the Pend Oreille River, these three proposed wells are considered to be in hydraulic continuity with the Pend Oreille River and will be subject to the Pend Oreille River low flow of 7,700 cubic feet per second as further described in the provisions of this report.

CONCLUSIONS

It is the conclusion of this examiner that: public ground water is available for appropriation for beneficial use; that non-consumptive cooling water and multiple domestic supply are beneficial uses; that the appropriation of such water will not impair existing rights or be detrimental to the public welfare.

This application for a public ground water permit should be approved in the amount of 1230 gallons per minute, 1088 acre-feet per year, continuously, for non-consumptive cooling water for powerhouse cooling and multiple domestic supply, subject to the following provisions:

"An approved measuring device shall be installed and maintained in accordance with RCW 90.03.360 and/or WAC 508-64-020 through WAC 508-64-040." (Installation, operation and maintenance requirements attached hereto).

"The amount of water granted is a maximum limit that shall not be exceeded and the water user shall be entitled only to that amount of water within the specified limit that is beneficially used and required."

The water source and/or water transmission facilities are not wholly located upon the land owned by the applicant. Issuance of a permit by this Department for appropriation of the waters in question does not convey a right of access to, or other right to use, land which the applicant does not legally possess. Obtainment of such right is a private matter between applicant and owner of that land.

"This authorization to make use of public waters of the State is subject to existing rights, including any existing rights held by the United States for the benefit of Indians under treaty or otherwise."

"A certificate of water right will not be issued until a final examination is made."

"Nothing in this authorization shall be construed as satisfying other applicable federal, state, or local statutes, ordinances, or regulations."

"All water wells constructed within the State shall meet the minimum standards for construction and maintenance as provided under RCW 18.104 (Washington Water Well Construction Act of 1971) and Chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Water Wells)."

"The installation of an access port, described in Ground Water Bulletin #1, shall be required prior to issuance of a final certificate of water right. In addition, an airline and pressure gauge shall be installed and maintained in operating condition. The pressure gauge shall be equipped with a standard tire valve and placed in an accessible location. The airline shall extend from land surface to the top of the pump bowls and the total airline length shall be reported to the Department of Ecology upon completion of the pump system."

"A well log of the completed well shall be submitted by the driller to the Department of Ecology within thirty (30) days of completion of this well. This well log shall be complete and all information concerning the static water level in the completed well in addition to any pump test data shall be submitted as it is obtained."

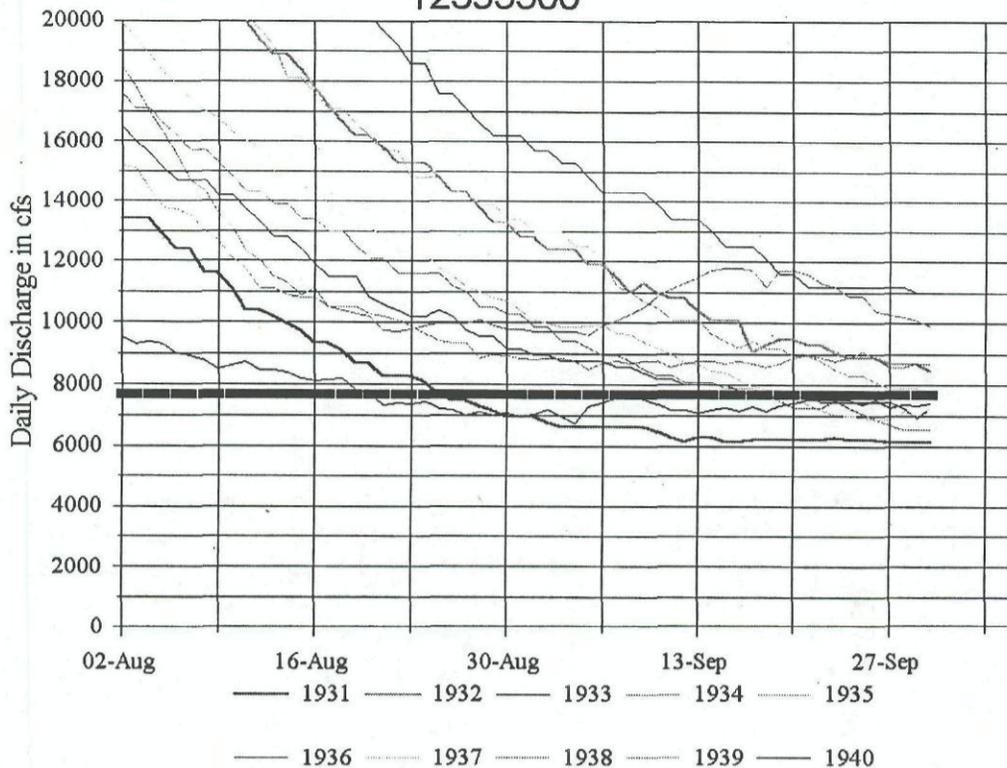
"Use of water under this authorization shall be contingent upon the water right holder's utilization of up to date water conservation practices and maintenance of efficient water delivery systems consistent with established regulation requirements and facility capabilities."

"The Washington State Department of Fish and Wildlife (WDFW), has recommended that water rights from the Pend Oreille River be conditioned with instream flows of 7,700 cubic feet per second (cfs) on a year-round basis (as measured at the gage near Newport, Washington).

The following hydrographs for the U.S.G.S. Gage on the Pend Oreille River at Newport, Idaho (12395500) demonstrate important hydrologic characteristics of the Pend Oreille River. Before the construction of the Albeni Falls Dam, the river exhibited normal, riverine flow conditions. The first hydrograph shows the typical late summer flow regime for 10 different water years in the 1930s and early 1940s. The solid line at 7700 cfs represents WDFW's recommended instream flow value as it would have applied to the river in the 1930s. When summer flows reached their baseflow, they tended to stay down at that level for the remainder of the water year.

Pend Oreille R at Newport

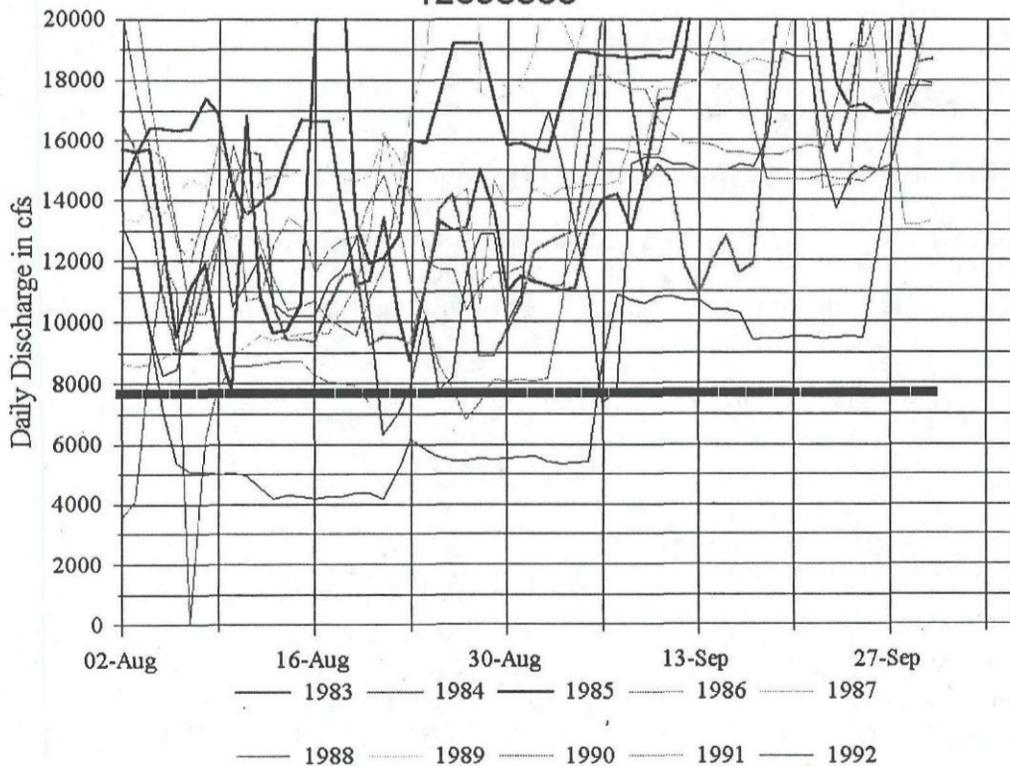
12395500



With the construction of the Albeni Falls dam in 1952, the character of the daily discharge changed dramatically from a riverine regime to an impounded, highly regulated, flow regime. The next hydrograph depicts the late summer, daily average discharge for a ten-year period in the 1980s through the early 1990s. The highly variable discharge data reflects the flows that result from the power generation demands that are placed on the river.

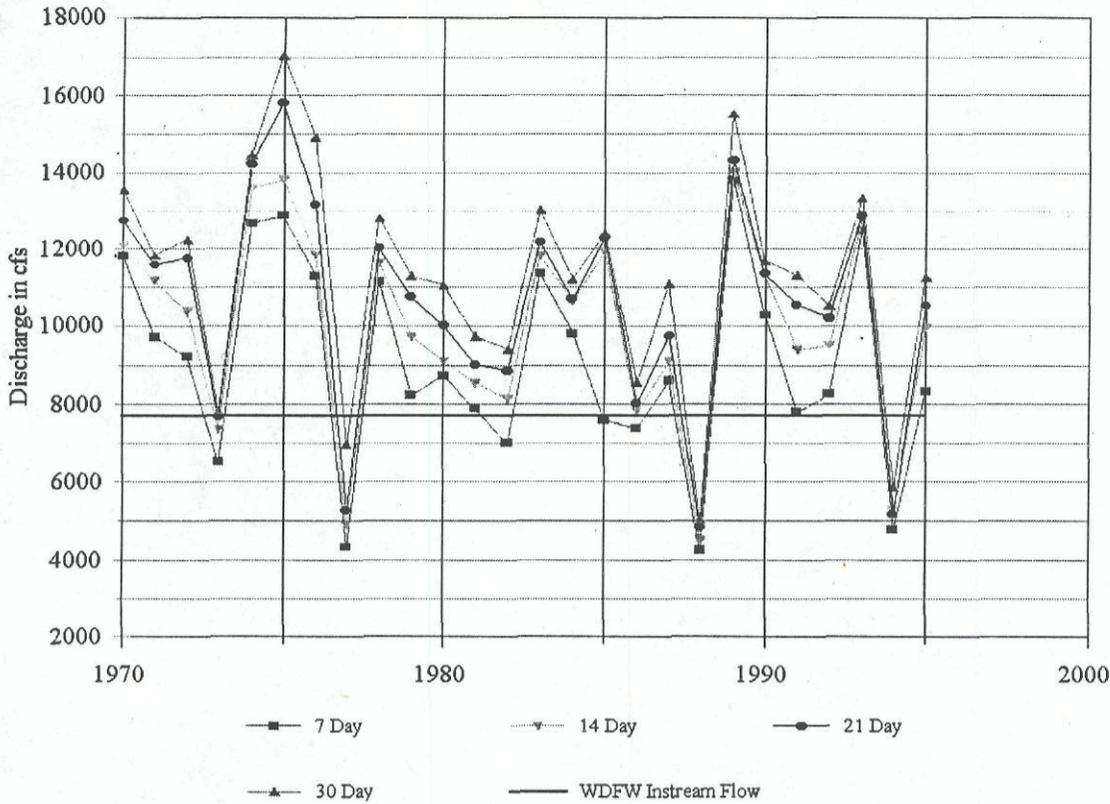
Pend Oreille R at Newport

12395500



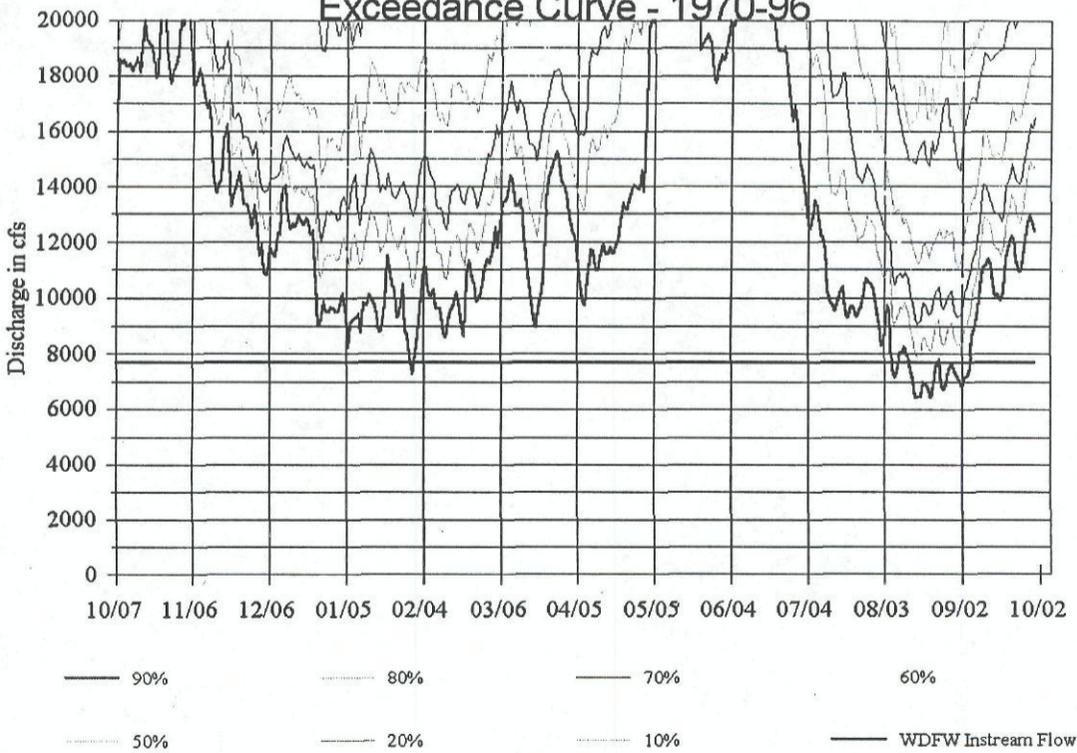
Trying to devise a methodology to implement the WDFW recommended instream flow given the current flow regime of the river requires some careful consideration of the day-to-day variability of the discharge. Given its fluctuations, just simply regulating junior water rights every time the daily average flow drops below 7700 cfs (the recommended instream flow) would be inappropriate and unworkable. Examining the data in the hydrograph indicates that the day-to-day variability is on the order of 5,000 cfs. Looking at a suite of duration frequency low flow analyses (7-day, 14-day, 21-day, and 30-day) for the 1970 through 1996 period allows us to get a better handle on when the flow in the river is truly flowing at a rate that is below the recommended instream flow. By looking at the actual daily flow data, we can see that three water years during the period 1970 – 96 exhibited sustained, low flow periods that were lower than the 7700 cfs threshold (1977, 1988, and 1994). The data from the duration frequency analysis shows that using a 14-day low flow criteria gives us the best opportunity to identify the low flow events.

Pend Oreille River Low Flow Analysis



Calculating the exceedance probability for the daily average flows for the period 1970 – 96 allows us to see how frequently (on a yearly basis) and for what duration (how many weeks during each year) the flows on the Pend Oreille River can be expected to be below the recommended instream flow. The following graph demonstrates that on average, we can expect the summer low flows in the Pend Oreille River will be above the instream flow 8 to 9 times out of ten years. During that one in ten year event when the flow in the river is below the recommended flow, the low flow will last for approximately one month (typically August).

Pend Oreille R at Newport Exceedance Curve - 1970-96



Therefore, this permit shall be conditioned that all diversion shall cease when the 14-day average flow in the Pend Oreille River falls below 7700 cfs (as measured at the Pend Oreille River at Newport gage) as recommended by WDFW.”

Signed at Spokane, Washington
this 28th day of October, 1999


 for JAMES M. LYERLA
 Water Resources Program
 Department of Ecology