

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 June 21, 1988	APPLICATION NUMBER G2-27371	PERMIT NUMBER	CERTIFICATE NUMBER
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NAME City of Lacey			
ADDRESS (STREET) Post Office Drawer B	(CITY) Lacey	(STATE) Washington	(ZIP CODE) 98503

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well (Hawk's Prairie/Marvin Road)

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE 800	MAXIMUM ACRE-FEET PER YEAR 1290
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QUANTITY, TYPE OF USE, PERIOD OF USE
1,026 acre-feet per year (Primary) Municipal Supply Year-round as needed
264 acre-feet per year (Supplemental)

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION-WITHDRAWAL
200 feet south and 230 feet east of the west quarter corner.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) NW $\frac{1}{4}$ SW $\frac{1}{4}$	SECTION 35	TOWNSHIP N. 19	RANGE, (E. OR W.) W.M. 1W	W.R.I.A. 13	COUNTY Thurston
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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

Area served by City of Lacey.

DESCRIPTION OF PROPOSED WORKS

Twelve inch diameter drilled well, 646 feet deep. 150 hp pump to existing mainline system.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE: Started	COMPLETE PROJECT BY THIS DATE: November 1, 1993	WATER PUT TO FULL USE BY THIS DATE: November 1, 1995
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REPORT

BACKGROUND:

On June 21, 1988, The City of Lacey filed for a permit under the provisions of Chapters 90.03 and 90.44, Revised Code of Washington (RCW) to appropriate public ground water from a well in the amount of 2000 gallons per minute (gpm) for municipal supply. The requested withdrawal rate was later reduced to 800 gpm. The application was accepted for processing and assigned Application No. G2-27371 and given a priority date of June 21, 1988.

A legal notice of the applicant's proposed appropriation was duly published in the "Olympian" of Olympia, Washington, on September 23 and 30, 1988.

In response to the public notice, Ecology received a protest letter from the following:

Deloris Osland, 6012 Butterball Lane N.E., Olympia, Washington 98506

The protestant's concerns can be summarized as follows:

That the proposed withdrawal of 2,000 gpm will impact her community water supply well and other ground water sources in the area.

I recommend issuance of a permit based on the following report.

INVESTIGATIONS:

In consideration of this application, Clay Keown conducted a field investigation on March 1, 1989, and I made an updated field investigation on July 25, 1990. Representatives of City of Lacey were not present during the site visits, but were later contacted for additional information. Other investigations included a review of pertinent state records, the Hart Crowser Hydrogeologic Report, water well reports, recorded water rights, claims, an evaluation of information submitted with the application, and my November 5, 1990, meeting with City of Lacey representative Don Hertzog.

As a result of these investigations, the following is reported.

Location and Description of Site

The well site is located approximately four and a half miles northwest of Lacey and two miles south of Tolmie State Park off of Marvin Road. The well was completed at a depth of 646 feet on December 13, 1988.

The well is located in a wooded area with clearing to the south. The nearest development is off of 40th and Marvin Road.

Reduction of Request

When the City of Lacey initially applied for this well, they requested a withdrawal rate of 2000 gallons per minute. Through pump testing procedures conducted by Hart Crowser, they found that the most efficient long-term yield from this well is approximately 800 gallons per minute. Pumping at a higher rate indicated a decrease in well efficiency and may cause premature screen blockage or well deterioration. Therefore the withdrawal rate of 2000 gallons per minute was reduced to 800 gallons per minute to reflect the capacity of the well. City of Lacey representative Don Hertzog concurred with this decision.

System Description

Well depth:	646 feet
Casing diameter:	12 inches
Static water level:	261 feet
Pump size:	150 hp
Screens from:	585 feet to 643 feet
Yield:	800 gpm
Distribution mainline:	6, 8, and 12 inch

A pump test was conducted and the yield was 860 gallons per minute with 145 feet of drawdown after 24 hours. The static level was 261 feet below land surface. The well casing has a welded cap and is also padlocked.

Under this application (G2-27371) the city plans on installing a 150 hp pump and having this well connected to the main system by the summer of 1993.

Water will eventually be stored on site in a reservoir capable of holding 2.8 to 3 million gallons. In the interim the closest reservoir is at Steilacoom Road.

Aquifer Characteristics

During drilling three aquifer zones were encountered. The Vashon Advance Outwash Aquifer was the shallowest; the Salmon Springs Aquifer was encountered near sea level; and the sub-sea level aquifer called the Older Gravel Aquifer in the Hart Crowser Report. The Hawks Prairie well was completed in silt-bound sand and gravel of the Older Gravel Aquifer to take advantage of the additional available drawdown, the thicker aquifer sequence and protection from potential contamination.

Consideration of Protestant's Concerns

During my November 21, 1990, telephone interview with the protestant, Mrs. Deloris Osland, I informed her that the production rate is being reduced to 800 gallons per minute for the well in question; that the well she is being served by is considered a senior right; and that if in the future well interference occurs from the City's well, the Department of Ecology and the City will work with senior right holders. Mrs. Osland feels more comfortable with the reduced withdrawal rate of 800 gallons per minute and feels that her water rights will not be adversely affected.

Effect on Existing Rights

Department of Ecology records show that within a one mile radius from the Hawks Prairie well site, sixteen ground water rights have been issued. These rights authorize the instantaneous withdrawal of 1,414 gpm and an annual allotment of 656.2 acre-feet per year. Most of these uses consist of multiple domestic supply. Two are for commercial and industrial uses at the Olympia Cheese Company.

Nineteen ground water claims are registered with this Department that may be within the same one mile radius. The majority of these uses are for domestic supply.

Thirty seven water well reports are on file with the Department within the same one mile radius, including the City's well. These reports show that wells range in depth from 62 to 646 feet below ground level. The closest wells in the area are approximately ¼ mile west of this well site and range in depth from 140 to 180 feet below land surface; the static water levels range from 90 and 120 feet below land surface.

According to Department records and the Hydrogeologic Report prepared by Hart Crowser, production from the Hawks Prairie well should have negligible impact on existing wells in the area. As the majority of wells on record tap the Vashon Advance outwash, the thick aquitards that separate this formation from the underlying Older Gravel Aquifer will limit impacts to the shallower water-bearing zones.



City of Lacey Water Rights Summary

The integrated Lacey water system and several satellite systems are outlined as follows:

Satellite Systems

- Nisqually system operates from two wells under the authority of Ground Water Certificates G2-20104C and G2-20882C. This system operates at 600 gallons per minute, 270 acre-feet per year for community domestic supply.

The City of Lacey now owns and operates the Beachcrest water system which operates under the authority of three water right certificates as follows:

- Surface Water Certificate No. 8620 allows the diversion of 0.30 cubic feet per second from an unnamed stream tributary of Puget Sound for community domestic supply.
- Ground Water Certificate No. G2-23963 C allows the withdrawal of 250 gallons per minute from a well, 211.7 acre-feet per year for community domestic supply.
- Ground Water Certificate No. G2-24547 C allows the withdrawal of 250 gallons per minute from two wells, 301.7 acre-feet per year. The total annual withdrawal authorized under both ground water certificates is 301.7 acre-feet per year.

The City has one other well that serves a city park by Long Lake which is also separate from the main system and operates under the authority of:

- Ground Water Permit No. G2-27037 P. This well is used for community domestic supply for the park and irrigation of 1.5 acres. The permit allows withdrawal of 50 gallons per minute and 8 acre-feet per year.

The above satellite systems are not considered in the overall Lacey integrated system as they operate separately.

Main Integrated System

Within the main integrated system, the City of Lacey enjoys the following water rights:

<u>Well No.</u>	<u>Cert.</u>	<u>GPM</u>	<u>AF/Primary</u>	<u>AF/Supplemental</u>	<u>Cert/Change</u>
1	4578-A	215	344		27
1	G2-20880	450		240	
2	5655-A	600	960		28
3	7450-A	1126	1650		
4	55-A	900	260		19
4	G2-23191	600		320	
5	G2-20879	300		160	
6-A	3654-A	283	453		24
6-B	3823-A	300	480		25
7	G2-24351	2150		2775	
8	6320-A	150	108		29
8	G2-23743	500		400	
9	G2-25779	1300	21	1027	
10	G2-25778	2250	22	2938	
13	1288-A	55	30		20
13	G2-20878	200		107	
14	1777-A	300	432		22
18A & 18B	G2-20883	700		374	
MA 1 & 2	G2-25802	250	130		
Seasons 1&2	G2-26685P	300	157		
Totals:		12,929	5,047	8,341	

Report Continued

The City of Lacey has filed three additional ground water applications as follows:

- G2-27370: Pattison/Long Lake Test Well, the test well drilled at this site proved to be inadequate for achieving Lacey's water supply requirements for this area. The well will be used as a monitor well only, and the application has been canceled.
- G2-27372: Pleasant Glade Test Well, this 8 inch test well will be used as a monitor well and a new 20 inch production well will be drilled under this application. The 20-inch well will be tied into the main system with an anticipated production of 800 gallons per minute for municipal supply.
- G2-27373: Judd Hill Production Well 6C, this well will be on line for 800 gpm and supply water to the main system for municipal supply.

Annual Water Demand

The City of Lacey has a current population of 19,300 and serves approximately 30,000 people with service reaching into county areas; 10,010 services are metered.

As water demand increases, the City of Lacey may need to operate this well continuously at 800 gallons per minute. Based on this quantity the Hawks prairie well will produce 1,290 acre-feet per year.

The City of Lacey's total annual water demand for 1991 amounted to 4,979.3 acre-feet, which is within the City's existing primary rights of 5,047 acre-feet per year as outlined above in the water right summary. The city is currently developing a new comprehensive water system plan which will be subject to Department of Health approval. Ultimately the annual water right allocation under these new permits will be based on the demand projection incorporated in the approved Comprehensive Plan.

Pending completion of the Department of Health approved demand projections which will be part of the City's new Comprehensive Plan, annual quantities authorized under this filing will be issued to meet the City's water needs through 1993. The water demand estimate for 1992 is 1,791,519,168 gallons or 5,498 acre-feet; estimated water demand for 1993 is 1,979,000,000 gallons which amounts to 6,073 acre-feet.

On an interim basis this filing will be issued with quantities sufficient to meet the estimated water demand for 1993. Accordingly, of the 1,290 acre-feet per year that the Hawks Prairie well produces, 1,026 acre-feet will be issued as primary, bringing the total annual allocation to 6,073 acre-feet per year. The remaining 264 acre-feet will be supplemental, augmenting system supply within the 6,073 acre-feet per year total.

Monitoring

Some lowering of water levels is unavoidable as a result of new pumping. However, senior water rights must be protected, and long-term aquifer depletion must be avoided. Pumping must be managed so that there is no ongoing, progressive decline of static water levels from year to year. Therefore the subject permit will require monitoring and data submittal for a three-year period prior to issuance of a final water right certificate.

Thurston County Reservation

Chapter 173-591 WAC, Reservation of Future Public Water Supply for Thurston County, applies only to peaking capacity supplementing rights in existence as of August 13, 1986. This appropriation (G2-27371) involves new primary rights, as indicated above. Therefore the Reservation does not apply to this filing.

The Department of Ecology is reviewing the provisions of WAC 173-591 Reservation of Future Public Water Supply of Thurston County, to determine whether new primary rights are eligible for the Reservation priority date. If it is determined that new primary rights can be issued under the Reservation, an amended permit would be issued with the Reservation priority date of August 13, 1986.

CONCLUSIONS:

In accordance with Chapters 90.03 and 90.44 RCW, I find there is water available for appropriation from the source in question and the appropriation as recommended is a beneficial use and should not impair existing rights or be detrimental to public welfare.

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RECOMMENDATIONS:

I recommend approval of this application and issuance of a permit to allow appropriation of 800 gallons per minute from the Hawks Prairie well for municipal supply. The period of use shall be year around as needed. The total annual withdrawal shall not exceed 1,290 acre-feet per year, for the Hawks Prairie/Marvin Road well. The total annual withdrawal under all City rights shall not exceed 6,073 acre-feet per year.

Approval shall be subject to the following provisions:

"This permit is recommended to be issued on an interim basis, pending completion of the new City of Lacey Comprehensive Water System Plan now being developed. Accordingly with submittal of Department of Health approved demand projections, an amended permit may need to be issued to reflect any additional annual quantity needed."

"Prior to issuance of a final water right certificate, data shall be submitted covering three years' production from the subject well, including pumpage and water levels as described below:

- * An approved metering device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through 040 (installation, operation, and maintenance requirements are attached). Meter readings shall be recorded at least monthly.
- * Installation and maintenance of an access port as described in WAC 173-160-355 is required. An air line and gauge may be installed in addition to the access port. Water levels shall be measured and recorded using a consistent methodology, in accordance with accepted industry standards. Such measurements shall be made at least monthly. The length of the pumping period or recovery period prior to each measurement shall be constant, and shall be included in the record.
- * A summary of the production and water level data for this well shall be submitted quarterly to the Department of Ecology, Water Resources Program, Southwest Regional Office, during the months of January, April, July, and October. The frequency of data reporting shall be modified upon request from the Department."

"This permit shall not progress to the certificate phase until the Department of Ecology has received and reviewed the first three years of water level and water use data for the subject well. The permitted annual and instantaneous withdrawal quantities shall be reevaluated at that time to assure that continued use of the well will not impair senior rights or exceed the safe sustaining yield of the aquifer tapped by the well. Quantities authorized under this permit may be reduced on the final water right certificate."

"Pursuant to RCW 90.03.330 and 90.44.080, a final certificate will be issued upon a showing satisfactory to the Department that the appropriation has been perfected in compliance with the terms of the subject permit. The certificated withdrawal rate and annual quantity will reflect a sustainable yield and protection of senior rights, within the amounts specified on the permit. Monitoring and data submittal will be required under the certificate as well as the permit."

The applicant is advised that notice of proof of appropriation of water (under which the final certificate of water right issues) should not be filed until the permanent diversion facilities have been installed, together with a mainline system capable of delivering the recommended quantity of water to an existing or proposed distribution system within the area to be served.

The water source and/or water transmission facilities are not wholly located upon 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.

The use of the waters to be appropriated under this application will be for a public water supply. The State Board of Health rules require every owner of a public water supply to obtain written approval from the Office of Water Supply, Department of Health, Mail Stop LD-11, Building 3, Olympia, Washington 98504, prior to any new construction or alterations of a public water supply.

Report Continued

The Water Resources Act of 1971 specifies certain criteria regarding utilization and management of the waters of the state in the best public interest. Favorable consideration of this application has been based on sufficient waters available, at least during portions of the year. However, it is pointed out to the applicant that this use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

This permit is subject to the implementation of the minimum requirements established in the Interim Guidelines for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology and Conservation Programs, July 1990, (which is attached).

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the states water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this permit, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

REPORTED BY: Vicki Windust DATE: January 6, 1993

The statutory permit fee for this application is \$20.00.

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts relevant and material to the subject application have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended, is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Ground water Application Number G2-27371, subject to existing rights and indicated provisions, to allow appropriation of public ground water for the amount and uses specified in the foregoing report.

Signed at Olympia, Washington, this 6th day of January, 1993

Gale Blomstrom

Gale Blomstrom
Water Resources Supervisor
Southwest Regional Office

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