

State of Washington
**REPORT OF EXAMINATION
FOR WATER RIGHT CHANGE**

File NR CS1-20446C
WR Doc ID 4244960

Changed Place of Use
Added or Changed Purpose of Use
Added or Changed Point of Withdrawal/Diversion

PRIORITY DATE February 9, 1973	WATER RIGHT NUMBER S1-20446C
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MAILING ADDRESS CEDAR RIVER WATER & SEWER DISTRICT POST OFFICE BOX 1040 MAPLE VALLEY 98038	SITE ADDRESS (IF DIFFERENT)
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Total Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE 197	UNITS GPM	ANNUAL QUANTITY (AF/YR) 28.52
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Purpose

PURPOSE	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	
Municipal Supply	197		GPM	28.52		01/01 - 12/31

ADDITIVE	IRRIGATED ACRES		PUBLIC WATER SYSTEM INFORMATION	
	NON-ADDITIVE		WATER SYSTEM ID	CONNECTIONS
			41800	

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
KING	GROUNDWATER		8-CEDAR-SAMMAMISH

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWP	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
WELL 3	1322069071		22N	06E	13	NWNW	47.3978	-121.9907

Datum: NAD83/WGS84

Place of Use (See Attached Map)

PARCELS (NOT LISTED FOR SERVICE AREAS)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

The place of use (POU) of this water right is the service area described in the most recent Water System Plan/Small Water System Management Program approved by the Washington State Department of Health, so long as the water system is and remains in compliance with the criteria in RCW 90.03.386(2). RCW 90.03.386 may have the effect of revising the place of use of this water right.

Proposed Works

An existing 16-inch diameter well (at surface) completed at a depth of 550 feet and connected to distribution system required to supply water to municipal water supply customers.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
NA	NA	NA

Measurement of Water Use

How often must water use be measured?	Weekly
How often must water use data be reported to Ecology?	Annually (Jan 31)
What volume should be reported?	Total Annual Volume
What rate should be reported?	Annual Peak Rate of Withdrawal (gpm or cfs)

Provisions**Wells, Well Logs and Well Construction Standards**

All wells constructed in the state must meet the construction requirements of WAC 173-160 titled "Minimum Standards for the Construction and Maintenance of Wells" and RCW 18.104 titled "Water Well Construction". Any well which is unusable, abandoned, or whose use has been permanently discontinued, or which is in such disrepair that its continued use is impractical or is an environmental, safety or public health hazard must be decommissioned.

All wells must be tagged with a Department of Ecology unique well identification number. If you have an existing well and it does not have a tag, please contact the well-drilling coordinator at the regional Department of Ecology office issuing this decision. This tag must remain attached to the well. If you are required to submit water measuring reports, reference this tag number.

Installation and maintenance of an access port as described in WAC 173-160- 291(3) is required.

Measurements, Monitoring, Metering and Reporting

An approved measuring device must be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173, which describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements.

Recorded water use data shall be submitted via the Internet. To set up an Internet reporting account, contact the Northwest Regional Office. If you do not have Internet access, you can still submit hard

Findings of Facts

Upon reviewing the investigator's report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I concur with the investigator that water is available from the source in question; that there will be no impairment of existing rights; that the purpose(s) of use are beneficial; that the proposed new point of withdrawal shares the same source and the original spring; and that there will be no detriment to the public interest.

Your Right To Appeal

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of the Order.

File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.

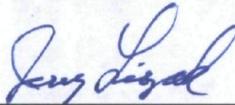
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.
- You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel RD SW Ste 301 Tumwater, WA 98501	Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903

For additional information visit the Environmental Hearings Office Website: <http://www.eho.wa.gov>. To find laws and agency rules visit the Washington State Legislature Website: <http://www1.leg.wa.gov/CodeReviser>.

Therefore, I ORDER approval of Application No. CS1-20446C subject to existing rights and the provisions specified above.

Signed at Bellevue, Washington, this 17th day of November, 2011.



Jerry L. Liszak, Acting Section Manager
Water Resources Program
Northwest Regional Office

copies by contacting the Northwest Regional Office for forms to submit your water use data.

Department of Health Requirements

Prior to any new construction or alterations of a public water supply system, the State Board of Health rules require public water supply owners to obtain written approval from the Office of Drinking Water of the Washington State Department of Health. Please contact the Office of Drinking Water at Northwest Drinking Water Operations, 20435 72nd Avenue S, Suite 200, K17-12, Kent, WA 98032-2358, (253) 396-6750.

Water Use Efficiency

The water right holder is required to maintain efficient water delivery systems and use of up-to-date water conservation practices consistent with RCW 90.03.005.

Proof of Appropriation

The water right holder must file the notice of Proof of Appropriation of water (under which the certificate of water right is issued) when the permanent distribution system has been constructed and the quantity of water required by the project has been put to full beneficial use. The certificate will reflect the extent of the project perfected within the limitations of the water right. Elements of a proof inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and satisfaction of provisions.

Schedule and Inspections

Department of Ecology personnel, upon presentation of proper credentials, will have access at reasonable times, to the project location, and to inspect at reasonable times, records of water use, wells, diversions, measuring devices and associated distribution systems for compliance with water law.

Real Estate Excise Tax

This decision may indicate a Real Estate Excise Tax liability for the seller of water rights. The Department of Revenue has requested notification of potentially taxable water right related actions, and therefore will be given notice of this decision, including document copies. Please contact the state Department of Revenue to obtain specific requirements for your project. Phone: (360) 570-3265. The mailing address is: Department of Revenue, Real Estate Excise Tax, PO Box 47477, Olympia WA 98504-7477 Internet: <http://dor.wa.gov/>. E-mail: REETSP@DOR.WA.GOV.

INVESTIGATOR'S REPORT

Douglas H. Wood, Department of Ecology
Water Right Control Number CS1-20446C

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BACKGROUND

Description and Purpose of Proposed Change

The Dorre Don Community Club, an organization similar to a Homeowner's Association, applied for a water right in 1973 to serve a community that was originally established in the 1920's and 30's as summer cottages and camp sites. As population shifted eastward in the Seattle area, cottages and camp sites were replaced by permanent homes. To date 77 homes have been built within the Dorre Don community and which were served by the Dorre Don Community Club water right until 2006. The community is now served by Cedar River Water and Sewer District.

The Dorre Don community had long been served by springs which drain from aquifers hosted in Quaternary aged glacial outwash deposits that occur on either side of the Cedar River Valley. Water rights were not issued for these springs until applications were made in the late 1950's and early 1960s'. SWC 7264 and SWC 9590, with priorities of 1957 and 1963 respectively, were issued to individual lot owners and remain as active documents in Ecology's water rights database. Other homes in the community may have been served by privately developed springs or wells for which water rights were not sought through the permitting process.

In its 1973 application, Dorre Don Community Club acknowledged the two spring water rights as applying to the Club's place of use. It is not known whether these two rights are currently exercised.

The current application for change was submitted on August 31, 2005, by Cedar River Water and Sewer District (CRWSD). The water right was transferred to CRWSD as compensation in part for the costs of connecting the community to CRWSD's delivery infrastructure. CRWSD is seeking to change the right from surface to groundwater, in addition to a change in purpose of use, place of use and point of withdrawal.

Attributes of the Existing Water Right and Proposed Change

Attributes	Existing	Proposed
Name	Dorre Don Community Club	Cedar River Water & Sewer District
Priority Date	02/09/1973	
Change Application Date		08/31/2005
Instantaneous Quantity	0.44 cfs	197 gpm
Annual Quantity	39.8 af/yr	39.8 af/yr
Purpose of Use	Community Domestic Supply	Municipal Supply
Period of Use	Continuous	Continuous
Place of Use	The Plat of Dorre Don Camp Sites in Sec. 15, T22N, R6E, W.M.	CRWSD Service Area

Proposed Source of Withdrawal

Source Name	Parcel	WellTag	Tw	Rng	Sec	QQ Q	Latitude	Longitude
WELL 3	1322069071		22N	06E	13	NW NW	47.3978	-121.9907

Existing Sources of Withdrawal or Diversion

Source Name	Parcel	WellTag	Tw	Rng	Sec	QQ Q	Latitude	Longitude
UNNAMED SPRING	208520TRCT		22N	06 E	15	NW SE	47.3934	-122.0263

Legal Requirements for Proposed Change

The following is a list of requirements that must be met prior to authorizing the proposed transfer and change in point of withdrawal/diversion:

Public Notice

RCW 90.03.280 requires that notice of a water right application be published once a week, for two consecutive weeks, in a newspaper of general circulation in the area where the water is to be stored,

diverted and used. The proposed changes were published in the King County Journal on November 8 and November 15, 2005.

State Environmental Policy Act (SEPA)

A water right application is subject to a SEPA threshold determination (i.e., an evaluation whether there are likely to be significant adverse environmental impacts) if any one of the following conditions are met.

- (a) It is a surface water right application for more than 1 cubic feet per second, unless that project is for agricultural irrigation, in which case the threshold is increased to 50 cubic feet per second, so long as that irrigation project will not receive public subsidies;
- (b) It is a groundwater right application for more than 2,250 gallons per minute;
- (c) It is an application that, in combination with other water right applications for the same project, collectively exceed the amounts above;
- (d) It is a part of a larger proposal that is subject to SEPA for other reasons (e.g., the need to obtain other permits that are not exempt from SEPA);
- (e) It is part of a series of exempt actions that, together, trigger the need to do a threshold determination, as defined under WAC 197-11-305.

The current application does not meet any of these conditions and is therefore categorically exempt from SEPA and a threshold determination is not required.

Water Resources Statutes and Case Law

RCW 90.03.380(1) states that a water right that has been put to beneficial use may be changed. The point of diversion, place of use, and purpose of use may be changed if it would not result in harm or injury to other water rights.

The Washington Supreme Court has held that Ecology, when processing an application for change to a water right, is required to make a tentative determination of extent and validity of the claim or right. This is necessary to establish whether the claim or right is eligible for change. *R.D. Merrill v. PCHB* and *Okanogan Wilderness League v. Town of Twisp*.

A point of diversion for a surface water right may be changed to a groundwater point of withdrawal. The authority is derived from RCW 90.03.380, RCW 90.44.020-030, RCW 90.44.100 and RCW 90.54.020(9). RCW 90.03.380(1) states that a water right that has been put to beneficial use may be changed if it would not result in detriment or injury to other water rights. Additionally, moving the point of diversion to a groundwater withdrawal requires compliance with the groundwater code (RCW 90.44), including a finding that there be no detriment to the public welfare and that the source of the existing diversion and the proposed point of withdrawal be part of the same water body.

When changing or adding points of withdrawal to groundwater rights (RCW 90.44.100), or when consolidating exempt wells with an existing permit or certificate (RCW 90.44.105), the wells must draw from the *same body of public groundwater*. Indicators that wells tap the *same body of public groundwater* include:

- (a) Hydraulic connectivity.
- (b) Common recharge (catchment) area.
- (c) Common flow regime.

- (d) Geologic materials that allow for storage and flow, with recognizable boundaries or effective barriers to flow.

The transfer of unperfected quantities allocated to municipal water supplier through a surface water right is restricted under RCW 90.03.570. The criteria for approving such a change are:

- a) The supplier is in compliance with the terms of an approved water system plan or small water system management program under chapter 43.20 or 70.116 RCW that applies to the supplier, including those regarding water conservation;
- b) Instream flows have been established by rule for the water resource inventory area, as established in chapter 173-500 WAC as it exists on September 9, 2003, that is the source of the water for the transfer or change;
- c) A watershed plan has been approved for the water resource inventory area referred to in (b) of this subsection under chapter 90.82 RCW and a detailed implementation plan has been completed that satisfies the requirements of RCW 90.82.043 or a watershed plan has been adopted after September 9, 2003, for that water resource inventory area under RCW 90.54.040(1) and a detailed implementation plan has been completed that satisfies the requirements of RCW 90.82.043; and
- d) Flows that satisfy the instream flows referred to in (b) of this subsection are met or the milestones for satisfying those instream flows required under (c) of this subsection are being met.

Two of these criteria are not met. The Cedar River basin (WRIA 8) has not had a watershed plan adopted (c), and the instream flows established for the Cedar River under WAC 173-508-060 are not met on average for numerous days in any year. Failure to meet any of the listed criteria prevents Ecology from approving the transfer of unperfected (inchoate) quantities.

These inchoate quantities, while not eligible for change, would remain available from the original point of diversion for the purpose and place of use as authorized under the original right. Any Qi associated with beneficial use of the remaining inchoate quantities would also not be transferable.

References

Cook, Jay (2008), Draft Report of Examination for Change of Point of Withdrawal, Place of Use and Purpose of Use for Application CS1-20446C.

Ecology WRTS Database (2011), Water Rights Tracking System searchable database used for retrieval of archival records for water rights.

GeoEngineers (1995), Report of Phase 3 Hydrogeological Services Ground Water Resources Evaluation Test Well installation and Aquifer Testing, King County, Washington.

Penhallegon, Martin (2011a), Technical Memo regarding water use estimation using power records of the Dorre Don Springs source.

Penhallegon, Martin (2011b), Responses to questions regarding water use estimation using power records of the Dorre Don Springs source.

Pace Engineers (2006), Cedar River Water and Sewer District Comprehensive Water System Plan.

INVESTIGATION

History of Water Use

Water use under certificate S1-20446C has not been metered and therefore some uncertainty exists as to whether the right was fully perfected, a general requirement for transfer of full quantities certificated under a surface water right per RCW 90.03.380.

Records of power use at the pump facility for the springs were supplied by CRWSD consultant Martin Penhallegon, PE in a technical memo dated January 25, 2011. Energy use is provided in Table 1 below.

Table 1: Dorre Don Estimated Water Usage for 2005*

Energy Usage in kWh								
Month	Year				Estimate Usage in 2005 (in kWh)			
	2003	2004	2005	2006	Heater	Chem Pumps	Misc.	System Pumps
Jan	2,080	3,205	2,087	3,795	250	184	92	1,561
Beb	2,002	3,176	2,169	3,291	250	192	96	1,631
Mar	2,356	3,428	2,069	3,227	200	187	93	1,589
Apr	2,043	2,465	2,564	3,264	100	246	123	2,094
May	1,949	2,790	3,042	1,902	--	304	152	2,586
Jun	2,208	3,118	3,017	3,113	--	302	151	2,564
Jul	3,322	3,371	3,105	3,663	--	311	155	2,639
Aug	4,754	4,301	4,600	4,941	--	460	230	3,910
Sep	4,632	3,839	4,973	--	--	497	249	4,227
Oct	3,103	2,169	3,569	--	250	332	166	2,821
Nov	2,958	2,325	3,698	--	1,500	220	110	1,868
Dec	3,651	2,203	3,676	--	1,500	218	109	1,850
Totals	35,058	36,390	38,569		4,050	3,453	1,726	29,340

* After Penhallegon Memo (2011a)

The calculations from the Penhallegon memo take into account the other devices at the pump house that would have been operating through the same power account. Penhallegon states that the two pumps operated at 5 horsepower and estimates that the “wire to water” efficiency (the product of pump efficiency times the motor efficiency) was 65%. Using the 2005 energy use of 29,340 kWh and calculating with the formula below gives a volume of 29,212,633 gallons (89.65 acre-feet). This greatly exceeds the allocated Qa of 39.8 acre-feet per year (af/yr). With a 20% loss due to system leakage, domestic interior and exterior use would be 71.7 af/yr or about 830 gallons per day per connection through this estimate.

In correspondence dated July 20, 2011 Mr. Penhallegon (2011b) provides the following updates to his analysis:

Using 65% pump/motor efficiency

Formula = $V = 318,600(kWh)(Peff)(Meff)/TDH$

Using 1600 kWh for winter month (from table in my report) or 53.3 kWh per day (based on a 30 day month)

Using 65% combined pump/motor efficiency

Using TDH (total dynamic head) = 208 feet

$$V = 318,600 (53.3)(.65)/208 = \underline{53,067 \text{ gallons/day}}$$

*Assuming a winter water usage of 150 gal./day and 80 ERU's = 12,000 gallons/day
Therefore estimated 53,000+ gpd – 12,000+ gpd = 41,000 gpd in unaccounted for water
For 365 days in a year @ this loss amount = 45.92 AF in a year
Based on 89.7 AF* of water being pumped in 1995 (per my study) this results in 43.4 AF
of water put to beneficial use*

**Note that using the formula in the WAC changed the calculated water pumped in 1995
from 89.3 AF to 89.7 AF.*

Using 60% pump/motor efficiency

$$V = 318,600 (53.3)(.60)/208 = \underline{48,985 \text{ gallons/day}}$$

*Reducing this by winter usage of 12,000 gallons/day = 36,985 gpd in unaccounted for
water*

For 365 days in a year @ this loss amount = 41.43 AF in a year

*Based on 82.8 AF of water being pumped in 2005 (per my study but using 60% efficiency)
this results in 41.4 AF of water put to beneficial use*

The 41.4 af/yr of beneficial that Mr. Penhallegon estimates would include system inefficiencies and leakage as they might exist during winter. On July 26, 2011 Mr. Penhallegon was contacted by telephone and he stated that the right had been used to provide irrigation needs for open space areas within the Dorre Don Community. Mr. Penhallegon also stated that Dorre Don water system managers often left the sprinkler systems on for extended periods during the summer. Mr Penhallegon further stated that the Dorre Don delivery system utilized galvanized pipes (since replaced by CRWSD). These and other practices and equipment may account for some of the system volumes that exceed typical water needs for a 77 home community.

It is reasonable to assume that the Dorre Don community is similar to many semi-rural communities throughout the Puget Sound region. Average water use for such communities ranges between 200 and 400 gallons per day per connection depending on the size of lot and amount of lawn/garden within the lot.

During a June 2011 site visit it was noted that most homes in the Dorre Don community utilized approximately 1/8 acre for lawn or garden space. If it is assumed that (1) each of the 77 developed lots within the community used 1/8 acre for lawn and garden space, that (2) the typical household used approximately 180 gallons per day for non-irrigation water needs (based on 69.3 gpd/person and 2.59 people/home), and that the system managers irrigated 1.75 acres of open space in the three areas set aside in the development for this purpose (total open space reserve in the plat is approximate 4.65 acres, but airphotos indicate less than half of it was cleared as open space), an estimate can be made for water usage. Irrigation usage is estimated at 12 inches per acre/year and system inefficiencies of 6% are based on the average reported by CRWSD for its current system.

Table 2 provides an estimate of beneficial use for the Dorre Don community based on the assumptions stated above and is consistent with typical semi rural patterns of water use in the Puget Sound region. The total estimated water use for the community is 28.52 af/yr.

Use	Factors	Duty (af/yr)
Domestic indoor Use	77 x 180 gpd	15.53
Domestic Irrigation	77 x 1/8 Ac x 1 ft/Ac	9.63
Open Space Irrigation	1.75 Ac x 1 ft/Ac	1.75
Total		26.91
Add 6% efficiency loss		28.52

The difference between the estimates of water quantities based on likely use (Table 2; 28.52 af/yr) and estimates based on energy use (Table 1 and Penhallegon memo at 89 af/yr) is likely due to several factors including leakage, over irrigation, and other system inefficiencies. Such losses, wasteful practices, and inefficiencies would not however be considered beneficial use, thus precluding their inclusion in quantities available for change.

Some infrastructure inefficiency can be reasonably transferred. This would however be limited to what is necessary to deliver water at the new point of withdrawal (6% based on the most recent CRWSD Water System plan).

A rate of diversion (Q_i) of 0.44 cfs (197 gpm) was established when the Proof of Appropriation was filed prior to issuance of the certificate for S1-20446C. Under normal operating conditions the system did not likely exceed a Q_i of greater than 135 gpm but there is no evidence that quantities above 135 gpm were abandoned.

The transferable quantities for the purposes of the proposed change are 0.44 cfs (197 gpm) and 28.52 af/yr. Non-transferable Q_a (11.28 af/yr) includes those quantities which exceed 28.52 af/yr. These are inchoate quantities and therefore may not be transferred under the restrictions applicable under RCW 90.03.570.

Although the remaining 11.28 af/yr remains available for beneficial use per RCW 90.03.570, it must be obtained from the original source. The rate at which it could be diverted or withdrawn must also be subtracted from the Q_i transferred to the Well 3 (Maplewood Estates Deep Well).

CRWSD manager Ron Sheadel was contacted on August 3, 2011, regarding the district's intentions with respect to inchoate quantities which cannot be transferred. Mr. Sheadel stated that the remaining inchoate quantity will not be developed independently of the quantities transferred to Well 3. In this discussion two methods of accounting for the remaining Q_a were discussed – (1) retention of the remaining Q_a for local use, and (2) voluntary relinquishment. Mr. Sheadel stated that voluntary relinquishment is preferred by the district.

Proposed Use

CRWSD has proposed to change the purpose of use from Community Domestic Supply to Municipal Supply, to change the place of use to the area served by CRWSD, and to replace the point of diversion at Dorre Don springs with the district's Well 3 located approximate 2 miles east of the Dorre Don Community.

The water code definition of a municipal water supplier applies to both Dorre Don Community Club (original water right holder) and to CRWSD. The actual use would therefore remain the same, thus the change in purpose of use is moot. The superseding certificate should nonetheless be issued for Municipal Supply purposes.

Other Rights Held by CRWSD

CRWSD supplies its customers with water from surface and groundwater source. The majority of its water is purchased wholesale from the City of Seattle Cedar Supply (~95%). The remainder of the district's supply is provided via Well 3, the proposed new point of withdrawal. Table 3 summarizes the water rights currently allocated to CRWSD through Well 3.

Water Right	Priority Date	Qi (gpm)	Qa (af/yr)	Source	Location
G1-00387C	1/4/1971	100	46.9	Well 3	NW1/4NW1/4 Sec13-T22N-R6E
G1-23937C	9/4/1981	160	34	Well 3	NW1/4NW1/4 Sec13-T22N-R6E
G1-26357C	9/25/1991	60	17	Well 3	NW1/4NW1/4 Sec13-T22N-R6E
GWC 3908(B)	10/17/1961	6	8.8	Well 3	NW1/4NW1/4 Sec13-T22N-R6E
G1-20497C	3/20/1973	127	4.1	Well 3	NW1/4NW1/4 Sec13-T22N-R6E
	Total	453	109.9		

Hydrologic/Hydrogeologic Evaluation

Well 3 is located between Maple Valley and Hobart in east King County in a lowland area near the foothills of the Cascade Range. The well was drilled to a depth of 700 feet and completed at 550 feet below ground surface (bgs). The screens are placed from 530 feet to 550 feet bgs. Bedrock was encountered at 685 feet. Unconsolidated Quaternary glacial and interglacial sediments were encountered above the bedrock contact.

An aquifer test was performed on Well 3 for CRWSD in 1995 by GeoEngineers, Inc. Those tests, based on measurements from a test well, and extrapolated for a subsequent production well, indicated that a production well would be capable of sustainably producing 900 to 1,700 gpm.

CRWSD subsequently decided to utilize the test well as a production well. A re-analysis of the aquifer test in 2006 was performed by Robinson and Noble Inc. They reported that the well in its current configuration could sustainably produce at a pumping rate of 720 gpm. They noted that 720 gpm slightly exceeds the manufacturer's recommended production capacity of the installed screens, but that this should not affect the well's capacity.

Well 3 is currently allocated a total Qi of 453 gpm through four water rights (Table 3). The addition of 197 gpm from approval of the current proposal would result in a total of 650 gpm, below the 720 gpm value recommended as sustainable by Robinson and Noble, Inc.

The well log for Well 3 indicates that the production zone is separated from the surface by three clay dominated intervals (125 to 142 feet, 145 to 197 feet, and 324 to 455 feet bgs). The deepest of these is not found in other nearby wells, presumably due the fact that Well 3 is the deepest well in the area at 550 feet bgs (other wells in the vicinity are no deeper than 235 feet).

Well logs for 62 wells located within approximately one mile of the site of Well 3 show that there are three distinct aquifers. These are, in order of depth from surface, Vashon Advance Outwash (Qva), Pre Fraser alluvial or glacial sediments (Qpf), and a deep aquifer that occurs within unclassified Quaternary sands and gravels (Qu). Both Qu and Qpf can include material of glacial and/or interglacial origin. The presence of wood fragments in the Qu unit at Well 3 suggests these sediments were deposited during an interglacial period.

Unit	Depth (feet)
Qva	38 to 160
Qpf	145 to 235
Qu	456 to 683

Bedrock was encountered below a depth of 685 feet at Well 3. Three other wells encountered bedrock at depths from 170 to 230 feet bgs. While four wells does not make a good representative sample, the three other wells that encountered bedrock are all located within approximately ¼ mile of Well 3. This suggests a bedrock high may be located beneath this area and that a valley or other low feature is situated within this paleo-topographic high, possibly a fluvial channel.

Same Source

A requirement for changes involving groundwater under RCW 90.44.100 is that the proposed new point of withdrawal taps the same source of groundwater as the original source. In the present case the Dorre Don springs occur where groundwater emerges at the surface from the shallow Qva aquifer.

The several aquifers located in the Maple-Valley, Hobart area are hydraulically connected across leaky aquitards, thus recharge of deeper aquifers originates in shallower aquifers and pumping of the deeper aquifers is compensated by increased recharge in the same direction. In cases where the deeper aquifer is contained at a higher potentiometric head than the overlying shallower aquifer, these relationships can be reversed.

Base on the location and the material separating the Qva, which supplies the Dorre Don springs and deeper aquifer, which supplies Well 3, it is determined that both locations tap the same body of public groundwater.

Impairment Considerations

The term "instream flow" is used to identify a specific stream flow (typically measured in cubic feet per second, or cfs) at a specific location for a defined time, and typically following seasonal variations. Instream flows are usually defined as the stream flows needed to protect and preserve instream resources and values, such as fish, wildlife and recreation. Instream flows are most often described and established in a formal legal document, typically an adopted state rule.

Once established, a minimum flow constitutes an appropriation with a priority date as of the effective date of the rule establishing the minimum flow (RCW 90.03.345). Thus, a minimum flow set by rule is an existing right which may not be impaired (RCW 90.03.345; RCW 90.44.030).

The Dorre Don water right was issued prior to the establishment of the minimum flow for the Cedar River (WAC 173-508 dated September 6, 1979). The quantities allocated under S1-20446C are therefore considered to have accounted for when the minimum flow was established and are exempt from regulation through the rule so long as the quantities are diverted from the original point of diversion.

A change in the exercise of a right that would result in the instream flow not being met would be considered impairment. In the case of the present proposal, the impacts of pumping from Well 3 on the flows of the Cedar River would not be directly measurable. The deep aquifer source, while hydraulically connected to the Cedar River, contributes to flows within the river along its alluvial valley between the well site and Renton, where the USGS gage governing the minimum flows is located. A portion of the flows within the deep portions of the Well 3 aquifer likely flow directly to Puget Sound without interacting with the Cedar River.

The currently authorized diversion intercepts direct contributions to flows adjacent to the river. These flows will continuously contribute their full extent to the Cedar River if the quantities under S1-20446C are transferred to the Maplewood Deep Well. Any indirect and diffused impacts from the same quantity being withdrawn from the Maplewood Deep Well would be adequately offset by the direct input to the river from the springs.

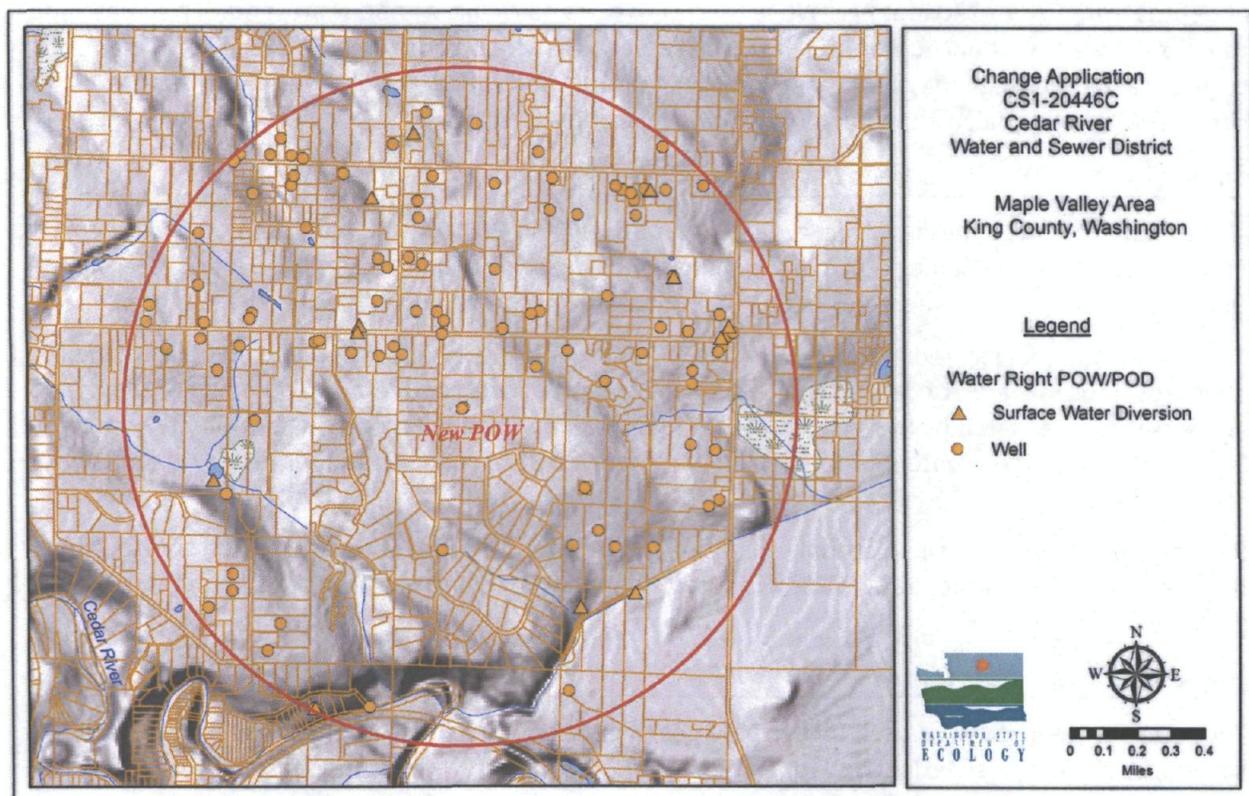


Figure 1: Map of the Well 3 area showing water rights within a 1-mile radius of Well 3 and property parcels.

Existing water rights must not be impaired through a change. Impairment of a water right may be defined as where the other water right is impacted so as to prevent that right from being fully exercised

to serve the beneficial uses for which it was issued (or established). The right to beneficial use attaches to both rights issued through the Water Code and to exempt withdrawals of groundwater.

The Ecology Water Rights Tracking System (WRTS) was searched and additionally an Arc GIS software platform was used to select location data for water rights within an approximate 1- mile radius surrounding Well 3 (Figure 1). Well logs for 62 locations within an approximate 1-mile radius of Well 3 were also reviewed.

The information retrieved from WRTS and Arc GIS indicates there are records of 110 water rights whose point of withdrawal or diversion are located within a 1-mile radius of Well 3. The names associated with the water rights do not typically match current ownership of parcels, but since water rights attach to the land (rather than the owner of the land or name on the water right) it can be assumed the water rights are in good standing for the purposes of impairment analysis.

More than two thirds of wells within a 1-mile radius of Well 3 are completed in the Qva aquifer (44 of 62 wells from the well log database). Qva is separated from the aquifer tapped by Well 3 by at least two aquitards. Only three wells in the area of Well 3 encountered bedrock and these are completed some 200 feet or more above the screens in Well 3. These three appear to be separated from the Well 3 aquifer by at least one aquitard.

Well 3 is completed within a deep aquifer separated from other aquifers by up to three clay dominated intervals within the groundwater regime. No other wells share the deep aquifer tapped by Well 3. Further, if Well 3 is tapping an aquifer within a paleo-channel above the bedrock interface, the potential for interference with other wells in the area is further reduced.

Based on the information reviewed, including aquifer tests, GIS data, well logs and water rights records for the Well 3 area, there does not appear to be any evidence of potential harm to existing water rights or to minimum instream flows from the proposed change.

Public Interest Considerations

The current proposal seeks to provide to members of the Dorre Don community a reliable source of clean water. This would, on its face, constitute a benefit to the health and well being of the community.

An additional benefit of the proposed change is that quantities of water withdrawn and consumed by members of the community will be subject to conservation measures that have been implemented by CRWSD. This has in fact occurred since the district began serving the community in 2006. Many community members completed surveys in which they attest to significant reductions in water use after the community was connected to the CRWSD distribution system.

A further benefit is that the springs which formerly served the needs of the community will hence forth directly contribute cool fresh water to the flows of the Cedar River from the Dorre Don springs. This will benefit the public interest by providing greater potential for species habitat on this reach of the Cedar River.

Consideration of Protests and Comments

No protests were received regarding this application.

Conclusions

The facts, as revealed above, support approval of the proposed changes in point of withdrawal, purpose of use, and place of use. Surface water right S1-20446C has been beneficially used to serve the needs of the

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Dorre Don community. While not metered, it is estimated that beneficial use did not exceed 0.44 cfs (197 gpm) and 28.52 af/yr.

The proposed changes will not result in impairment to existing water rights or to instream flows of the Cedar River, nor will the proposed changes prove detrimental to the public interest.

Availability of the water issued under S1-20446C was determined at the time the permit was issued and is therefore not subject to determination under this change. Based on aquifer tests performed at the proposed new point of withdrawal, Well 3, water is physically available for the proposed change.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that the request for change to S1-20446C be approved in the amounts and within the limitations listed below and subject to the provisions beginning on Page 2, et seq.

Purpose of Use and Authorized Quantities

The amount of water recommended is a maximum limit and the water user may only use that amount of water within the specified limit that is reasonable and beneficial:

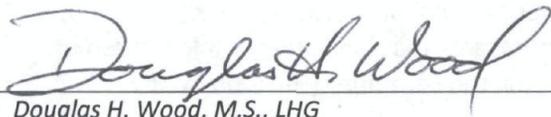
Qi: 197 gallons per minute (0.44 cubic feet per second)

Qa: 28.52 acre-feet per year

Purpose: For Municipal Supply Purposes (continuously)

Point of Withdrawal: NW¼, NW¼, Section 13, Township 22 North, Range 6 East, W.M.

Place of Use: As described on Page 2 of this Report of Examination.

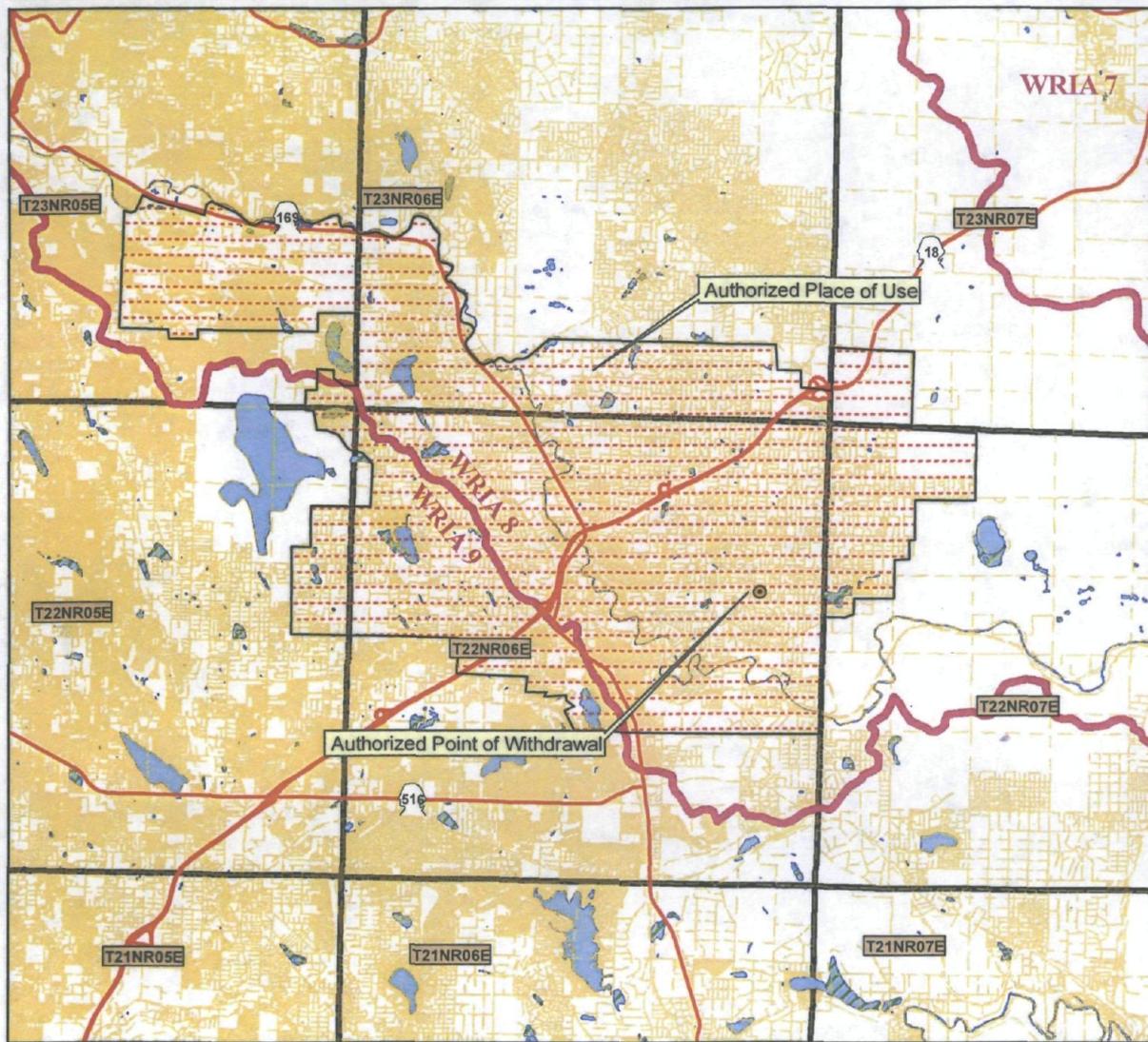

Douglas H. Wood, M.S., LHG

Nov. 16, 2011
Date

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DOUGLAS H. WOOD



Legend

- County
- WRIA
- Highways
- Townships
- cities
- Sections
- Authorized Point of Withdrawal
- Authorized Place of Use

Place of use and point(s) of diversion/withdrawal are as defined on the cover sheet under the headings, 'LOCATION OF DIVERSION/WITHDRAWAL' and 'LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED.'