File NR G4-29764
WR Doc ID 2085594

State of Washington
REPORT OF EXAMINATION
FOR WATER RIGHT APPLICATION

PRIORITY DATE	WATER RIGHT NUMBER
June 28, 1988	G4-29764

MAILING ADDRESS
KLICKITAT CNTY PUD 1
1313 S COLUMBUS AVE
GOLDENDALE WA 98620-9599

Quantity Authorized for Withdrawal

WITHDRAWAL RATE	UNITS	ANNUAL QUANTITY (AC-FT/YR)
400 (non-additive)	GPM	224 (non-additive)

Purpose

PURPOSE	WITHDRAWAL RATE			ANNUAL QUANTITY (AC-FT/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	
Municipal		400	GPM		224	01/01 - 12/31

PUBLIC WATER SYSTEM INFORMATION	
WATER SYSTEM ID	CONNECTIONS
49000	**281**

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
KLICKITAT	GROUNDWATER	KLICKITAT RIVER	30-KLICKITAT

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWP	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
Upper Well	03123444000100		03N	12E	34	SESE	45°41'53.112''	121°16'56.618"
Upper Well No. 2	03123444000100	N/A	03N	12E	34	SESE		

Datum: NAD83/WGS84

Place of Use (See Attached Map)

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.

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Proposed Works

Two wells: one proposed for construction and the existing Upper Well that was drilled in 1988 to a depth of 528 feet below ground. At a later date the well was modified because of a formation collapse and is 492 feet deep. The well is sealed to a depth of 68 feet into Wanapum Basalt. The well is open to basalts and interflow zones and sedimentary interbeds from 68 feet to the current depth of 492 feet. The well is equipped with a 40-horsepower (hp), 155 gallon per minute (gpm) pump. The well is connected to the Lyle water system and is currently in use. The water system includes an additional well (Lower Well), two 100,000 gallon storage tanks, disinfection systems, and the distribution system.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
Started	August 1, 2015	August 1, 2032

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)

Provisions

Project-Specific Provisions

Water use by the Town of Lyle shall not exceed 1400 gpm, 224 ac-ft/yr as authorized by Certificate No.'s 818-D, 2245-A, and G4-26121C and Permit No. G4-29764P.

The additional authorized upper well must be located within the SE¼SE¼ of Section 34, T. 3 N., R. 12 E.W.M. and at least 750 feet from any existing non-PUD wells.

Wells, Well Logs and Well Construction Standards

All wells constructed in the state shall 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 shall be decommissioned.

All wells shall 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 shall 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.

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Water Level Measurements
In order to maintain a sustainable supply of water, pumping must be managed so that static water levels do not progressively decline from year to year. Static water level is defined as the water level in a well when no pumping is occurring and the water level has fully recovered from previous pumping. Static water levels must be measured and recorded monthly, using a consistent methodology. Data for the previous year must be submitted by January 31 to the Department of Ecology (Ecology). Static water level data must be submitted in digital format and must include the following elements:

Unique Well ID Number
Measurement date and time
Measurement method (air line, electric tape, pressure transducer, etc.)
Measurement accuracy (to nearest foot, tenth of foot, etc.)
Description of the measuring point (top of casing, sounding tube, etc.)
Measuring point elevation above or below land surface to the nearest 0.1 foot
Land surface elevation at the well head to the nearest foot.
Static water level below measuring point to the nearest 0.1 foot.

Measurements, Monitoring, Metering and Reporting
An approved measuring device shall 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. This rule also describes the requirements for data accuracy, device installation and operation, and information reporting.

Recorded water use data shall be submitted via the Internet. To set up an Internet reporting account, contact the Central Region Office. If you do not have Internet access, you can still submit hard copies by contacting the Central Region 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 prior to beginning (or modifying) your project at DOH/Division of Environmental Health, 16201 E. Indiana Avenue, Suite 1500, Spokane Valley, WA 99216, (509) 329-2100.

Easement and Right-of-Way
The water source and/or water transmission facilities are not wholly located upon land owned by the applicant. Issuance of a water right authorization by Ecology does not convey a right of access to, or other right to use, land which the applicant does not legally possess. Obtaining such a right is a private matter between applicant and owner of that land.

Proof of Appropriation
The water right holder shall 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 permit. 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.

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Schedule and Inspections
Department of Ecology personnel, upon presentation of proper credentials, shall 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.

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; and that there will be no detriment to the public interest.

Therefore, I ORDER approval of Application No. G4-29764, subject to existing rights and the provisions specified above.

Your Right To Appeal

You have a right to appeal this Order to the Pollution Control Hearings 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

Signed at Yakima, Washington, this _____ day of _____ 2012.

_____
Mark Kemner, LHG, Section Manager
Water Resources Program/CRO

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.

INVESTIGATOR'S REPORT

Description and Purpose of Proposed Change

Ground Water Application #:	G4-29674
Applicant Name:	Public Utility District No. 1 of Klickitat County
Priority Date:	June 28, 1988
Source:	Two Wells (the existing Upper Well and an additional well)
Purpose of Use:	Municipal Supply
Period of Use:	Continuous Year Round
Notice of Publication:	Originally published on August 4 and August 11, 1988 in The Goldendale Sentinel. Republished March 22 and March 29, 1990 in The Goldendale Sentinel to correct error in point of withdrawal on original notice. Republished on July 21 and July 28 in the White Salmon Enterprise and on July 20 and July 27, 2011 in the Goldendale Sentinel to update requested instantaneous and annual quantities.
Protests:	James E. Starr on 1988 notice of publication David Berger on 2011 notice of publication
SEPA Compliance:	This application is exempt from the provisions of the State Environmental Policy Act (SEPA), Chapter 43.21 RCW, due to the fact that the cumulative quantity of water constitutes a withdrawal of less than 2,250 gallons per minute (gpm) of groundwater (WAC 197-11-800(4)).

In considering this application, the investigation included, but was not limited to, research and/or review of:

- Information in the water right file
- Ecology's online Water Rights Tracking System (WRTS) database
- Records of water rights in the vicinity
- Ecology's online Well Log Database: http://apps.ecy.wa.gov/welllog/index.asp
- Topographic and local area maps
- References
  - Information on regional geology and hydrogeology:
    - Newcomb, R.C., 1969, The Effects of Tectonic Structure on the Occurrence of Ground Water in the Basalt of the Columbia River Basalt Group of the Dalles Area, Oregon and Washington, U.S. Geological Survey Professional Paper 383-C.
    - Washington State Department of Natural Resources, 2001, Digital Geologic Map of Washington, 1:100,000 scale.
  - Consultant reports including:
    - Aspect Consulting Inc., Lyle Water System Water Rights Transfer – Hydrologic Assessment, Project No. 060008-001-01, July 12, 2006.
    - Aspect Consulting Inc., Water Right & Water Supply Evaluation, Lyle Water System, Project No. 060008-003, October 3, 2008.
    - John Grim and Associates, Draft Lyle Comprehensive Water System Plan, Klickitat County PUD No. 1, April 2011.

Golder Associates Inc. provided consulting support for preparation of the Report of Examination (ROE) through Ecology's Cost-Reimbursement Program.

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Background
The Town of Lyle was originally supplied by the Railroad and Homer James (James) Wells. The use of both wells was discontinued in the late 1980's because of water quality problems in each well. Two new wells, the Upper Well and the Lower Well, were drilled to replace the Railroad and James wells. A water right application (G4-29764) was submitted for the Upper Well in 1988, and a water right application was submitted for the Lower Well in 1992 (G4-31264).

Public Utility District No. 1 of Klickitat County (PUD) also submitted several applications for change to the Klickitat County Water Conservancy Board to change the points of withdrawal of the Railroad and James to the Upper and Lower Wells (CG4-26121C and CG4-CWC818-D). Hydrogeologic evaluations completed by the PUD indicated that although the Upper Well was completed within the same basalt units as the Lower and Railroad Wells, it was not in the same body of groundwater because of faulting that offset basalt flows and interbeds and therefore water rights from the Railroad and James Wells could not be transferred to the Upper Well. The Conservancy Board withdrew its decision on the change applications with the intent of modifying the ROE and resubmitting it to Ecology for the Lower Well only. Therefore Application CG4-26121C and CG4-CWC818-D are still pending for the Lower Well only.

The PUD has been using both wells without authorization since the Railroad and James wells were taken offline. Processing this application will help bring the PUD into compliance with the State Water Code.

The Upper Well was drilled in August 1988. The well is sealed from ground surface to 68.5 feet below ground with 8-inch diameter steel casing and cement-bentonite grout. The seal extends into medium hard basalt. As originally constructed, the well was completed as an 8-inch diameter open hole from 68.6 to 528 feet below ground. Groundwater inflows were observed at several locations corresponding to vesicular zones, fractured zones, or sedimentary interbeds. The depth to water was 345 feet below ground at the completion of drilling. The well was tested by airlifting 250 gpm for four hours.

In November 1988, the bottom portion of the Upper Well collapsed. The well was modified by backfilling with gravel from the base of the hole to 492 feet and installing a 6-inch diameter liner casing to 455 feet below ground. The Upper Well is presently equipped with a 40 hp pump set at a depth of 450 feet. The current well capacity is about 155 gpm.

Purpose of Use
The purpose of use is municipal supply for the Town of Lyle.

Geology and Hydrogeology of the Lyle Area
The geology and hydrogeology of the Lyle area has been described in multiple sources: Aspect (2006), Washington Department of Natural Resources (2001), and Newcomb (1959). The principal geologic unit in the Lyle area is the Columbia River Basalt Group. In the Lyle Area, the Wanapum Formation (Frenchman Springs Member) occurs at the ground surface in the upland areas north of Lyle. The Wanapum Formation is underlain by the Grande Ronde Formation, which does not crop out at the surface but may be intersected by deep wells. Glacial flood deposits (sand and gravel) occur in the area along the Columbia River.

The Columbia River Basalt forms the principal aquifer in the Lyle area. Groundwater occurs in interflow zones between basalt flows that consist of sedimentary materials, fractured and broken basalt, and pillow basalts. Three of Lyle's wells (Railroad Well, Lower Well, and Upper Well) are completed in Columbia River Basalt. The Homer James Well is completed in glacial flood deposits.

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Local Hydrogeology

The Frenchman Springs Member of the Wanapum Formation is exposed at the ground surface in the areas of the Upper Well. The Frenchman Springs Member is at least 450 feet thick in the Lyle area based on area well logs. Based on geologic cross-sections presented in Aspect (2006) there are at least three flow contacts within the Frenchman Springs Member that were intersected in the Upper Well consisting of pillow basalts or sedimentary interbeds. Two of the flow contacts are above the water level in the well.

The Grande Ronde Formation underlies the Wanapum Formation. The two formations are separated by a thick sedimentary interbed known as the Vantage Interbed. In the Lyle area, the Vantage Interbed is about 20 to 60 feet thick based on well log information and cross sections presented by Aspect.

The Washington Department of Natural Resources (2001) mapped a fault in the Lyle area offsetting the basalt units. Aspect (2006) reviewed well log information and re-interpreted the fault location using cross-sections. The fault was interpreted by Aspect to occur between the Upper Well and the Lower and Railroad Wells, offsetting the interflow zones between the wells. Based on groundwater elevation differences and groundwater level responses during pumping in the Upper and Lower Wells, Aspect concluded that the Upper Well was in a fault-bounded portion of the aquifer that was a separate body of groundwater than the Lower and Railroad Wells. Groundwater elevations in the Lower and Railroad wells are about 65 to 76 feet below mean sea level (msl), similar to the normal pool elevation of the Bonneville Pool (Columbia River) of 74 feet. The groundwater elevation in the Upper Well and the James Well are significantly higher at about 185 feet msl and 132 feet msl, respectively.

Aspect (2008) also performed groundwater elevation monitoring in the Upper, Lower, and Railroad Wells between April 17 and May 23, 2008. The monitoring indicated that the Railroad Well responded to cyclical pumping of the Lower Well, and both wells responded to changes in the stage of the Columbia River, indicating they are in hydraulic continuity. The Lower Well did not respond to cyclical pumping of the Upper Well indicting the Upper and Lower Wells are in different bodies of groundwater.

Groundwater level monitoring in the Upper Well and monitoring of river stage in the Klickitat and Columbia Rivers suggests that changes in groundwater elevation in the Upper Well did not correspond to stage changes in the Klickitat or Columbia Rivers. The monitoring performed by Aspect indicates that the Upper Well is completed in a separate, fault-bounded portion of the aquifer than the Lower or Railroad Wells.

Within the Upper Well, groundwater was observed in the flow bottom of the lowermost Frenchman Springs Flow, immediately above the lowermost sedimentary interbed intersected in the well (interpreted to be the Vantage Interbed) , and in a flow top immediately below the Vantage Interbed, interpreted to be the upper part of the Grande Ronde Basalt. However, because the well only penetrates the upper approximately 10 feet of the Grande Ronde Basalt below the Vantage Interbed, it is considered to be completed within the same aquifer unit because of hydraulic communication between the Wanapum and Upper Grande Ronde Basalt Aquifers.

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Pumping Test Results
There is no pumping test completed when the well was drilled. The well log indicates the well was airlifted at about 250 gpm. A step-pumping test was performed in 2007. The pre-test water level was about 321 feet below ground and the pumping water level was about 423 feet below ground at the end of the test. The pumping rate, durations, and drawdown at end of each step are summarized in the following table:

Step	Pumping Rate (gpm)	Duration (minutes)	Drawdown (feet)
1	74	60	29
2	115	15	61
3	131	15	78
4	155	10	102

Water levels were not measured in any other wells during the test. Information in the draft water system plan indicates the current capacity of the well is 155 gpm with about 100 feet of drawdown, or a specific capacity of about 1.55 gpm/ft.

Surface Water
The Upper Well is located about 1,500 feet east of the Klickitat River and 2,500 feet north of the Columbia River. The groundwater elevation in the well of about 150 to 190 feet msl is above the stage in both the Columbia River (pool elevation about 74 feet msl) and the Klickitat River (estimated elevation 75 to 80 feet msl). This suggests that groundwater in the portion of the aquifer where the Upper Well is located discharge to both Rivers, but groundwater level monitoring indicates the aquifer is not in continuity with the river based on lack of response in groundwater levels to river stage fluctuations.

Other PUD Rights Appurtenant to the Place of Use
The PUD holds several water right certificates for the Lyle Water System. The PUD's water right portfolio is summarized in the draft Water System Plan (Grim 2011). The water rights for the Lyle system are somewhat complex and in a state of flux. The PUD has been engaged with the Klickitat Water Conservancy Board and Ecology since 2005 to obtain water rights for the Upper (and Lower) Wells, which are currently operating without an authorized water right. The PUD holds significant water rights for the Railroad and James Wells, and has attempted to move these rights to the currently active sources. The PUD has also applied for new water rights for the Upper Well (this application).
The PUD's current water rights allow:

- Withdrawal of water from the Homer James and Railroad wells (authorized points of withdrawal).
- Withdrawal of up to 1400 gpm and 224 ac-ft/yr total from all authorized sources.
- Use of water within the retail service area (authorized place of use) based on approval of the 2003 water system plan.
- Use of water for municipal purposes, which include specific authorizations for locomotive and domestic use.

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Table 1. Summary of Klickitat PUD Water Rights and Pending Applications (from Table 4-3, Draft Water System Plan, Grim 2011)

Water Right Number	Document Type	Name on Water Right	Priority Date	Source Name	Purpose of Use	Qa (ac-ft)	Qi (gpm)
2245-A	Certificate	Lyle Water Company	1955	Homer James Well	Municipal	224	500
G4-26121C	Certificate	Klickitat PUD No. 1	1/20/1979	RR Well	Municipal	0	600
818-D	Certificate	SP & S RY Co.	3/4/1929	RR Well	Locomotive and Domestic	111	300
G4-29764	Application	Klickitat PUD No. 1	6/28/88	Upper Well	Municipal	0	(300)
G4-31264	Application	Klickitat PUD No. 1	5/15/1992	Lower Well	Municipal	0	(225)
CG4-26121C	Change Application	Klickitat PUD No. 1	6/22/2005	Lower Well	Municipal	(335)	(900)
CG4-GWC818-D	Change Application	Klickitat PUD No. 1	6/22/2005	Lower Well	Municipal	(335)	(900)
Total						**224**	**1400**

Ecology considers the annual quantity for Certificate No.'s 818-D and 2245-A to be non-additive, but the instantaneous quantity to be additive. And Certificate No. 818-D for municipal use may have relinquished. There is also a water right claim associated with the Railroad Well (G4-12242CL) for 700 gpm and 1,129.1 ac-ft/yr that was donated to the Lyle Water Company (the former owner of the Lyle water system). This claim has not been adjudicated or confirmed by Ecology.

According to the Lyle Water System Plan, last revised in September of 2011, the 20 year projection for water needs is capped at 126 ac-ft/yr. Therefore, issuing a permit for additional water would not serve as beneficial use. The proposed additional upper wells would function as alternate sources to Certificate No.'s 818-D, 2245-A, and G4-26121C. The upper wells would be limited to 400 gpm, 224 ac-ft/yr, which is part of Lyle's total maximum quantities of 1400 gpm, 224 ac-ft/yr.

Site Visit

A site visit was not completed as a part of the preparation of this ROE. A teleconference was held on June 16, 2011 between the applicant, their consultant, Ecology, and Golder Associates Inc.

Evaluation of Protests

Two protests were received. James E. Starr submitted a timely protest on the original application published in 1988 through the law office of Thomas S. Olmstead. David Berger submitted a timely protest on the republished application in 2011.

James E. Starr Protest

James E Starr filed a protest through the law office of Thomas S. Olmstead dated September 9, 1988. Starr has a "deed for water rights" from D.C Dillabough dated August 8, 1910 that was obtained when he purchased the property in Section 34, T3N, R12E in 1964. There are not water rights on file in the

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WRATS database under Dillabough. Starr has two surface water right claims on file for a total of 1.6 cfs and 162.4 ac-ft/yr. It is not known if these claims are for water under the property deed or other water. The claims are summarized as follows:

Document Number	Name	Priority Date	Purpose of Use	Qi (cfs)	Qa (ac-ft)	Location	Source
S4-140002CL	STARR JAMES E	1/1/1912	ST, IR	1	160	03.0N 12.0E 34	MILL CREEK
S4-140003CL	STARR JAMES E	1/1/1913	ST, IR	0.6	2.4	03.0N 12.0E 34	SPRING

Starr's protest includes two concerns. The first is the State is attempting to take water from his water supplies in derogation of his rights. The second is the State may be in violation of the Gorge Legislation (P.L. 99-663) and whether the State Ecology Department has coordinated its proposed action with the Gorge Commission.

Starr's property and the points of diversion are both located on the west side of the Klickitat River based on descriptions of on the two water right claim forms. The surface water or spring diverted under the claims would otherwise discharge to the Klickitat or Columbia Rivers. Based on mapping by Aspect (2006) the Upper Well is in a different portion of the aquifer than feeds surface water or spring discharge on the west side of the Klickitat River. Thus, pumping from the Upper Well on the east side of the river, which is completed in a different, fault-bounded part of the aquifer, should have little or no effect on Starr's ability to use water under the two claims.

Under Section 350-81-070 Exempt Land Uses and Activities, of the Columbia River Gorge Commission Land Use Ordinance, Section 1(c) specifically exempts regulation of groundwater rights:

> *(c) Rights to surface or ground water shall be exempt from regulation under the Management Plan or land use ordinances adopted by counties or the Gorge Commission pursuant to the Scenic Area Act.*

Thus, Ecology has the responsibility to regulate groundwater and surface water rights in the Columbia River Gorge.

David Berger Protest

David Berger filed a protest on June 26, 2011. Berger has an exempt well that is 535 feet deep and completed in the same part of the basalt aquifer as the Upper Well. The well is located about 1,000 feet southeast of the Upper Well. The well was originally drilled for Ronald James. Berger's protest expresses concern that there may be impairment of his well, specifically regarding the following three questions:

1. Will this appropriation result in increased pumping of the Lyle Well?
2. Will there be assurances (re: monitoring & enforcement) that this well is not over-pumped?
3. What population growth protection is being utilized in this application?

Issuance of a water right certificate to the PUD for the Upper Well could allow the PUD to pump the well at an instantaneous rate of up to 400 gpm for short period of time. However, the well is presently limited to pumping about 155 gpm because of well inefficiency, and the well currently operates on a cyclical pattern in response to system demand. Thus, for the maximum instantaneous capacity to be realized, the PUD would likely have to drill a replacement well or additional point of withdrawal. If the PUD operated the Upper Well to supply the authorized annual quantity of 224 ac-ft/yr without operating any other wells, the Upper Well would have to be pumped continuously at a rate of 139 gpm.

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The Upper Well has been operated by the PUD for at least 12 years. During this time, there have been no reports of impairment at the Berger well. The Berger well is 525 feet deep. Based on the well log, the depth to water is 347 feet below ground. Thus, there is about 188 feet of water in the well. The Berger well is an exempt well, limiting pumping to 5,000 gpd. There is no record of a pumping test done on the Berger well following completion. Assuming a specific capacity of 1.5 gpm/ft, similar to the Upper Well, pumping of the Berger well at a typical rate for an exempt well (10 to 30 gpm) would result in about 7 to 20 feet of drawdown.

Interference drawdown from continuous pumping of the Upper Well for 10 days at a rate of 400 gpm at a point 1,000 feet away is estimated to be about 5 to 24 feet assuming an aquifer transmissivity of 1,500 to 10,000 feet^2/day and a storativity of 10^{-4}. This does not include the effects of any low-permeability boundaries which would increase drawdown or recharge boundaries which would decrease drawdown. The estimated interference drawdown is likely an overestimate because it is unlikely the well would be pumped continuously over 10 days. Thus, the total estimated drawdown would be a maximum of about 45 feet. Given the depth of the Berger well and the depth to water, it is unlikely that there will be impairment of the Berger well as a result of pumping of the Upper Well.

The PUD will be required to monitor and report groundwater levels and pumping quantities in accordance with the provisions detailed on the water right permit and certificate. Ecology has enforcement policies and penalties in place for non-compliance.

Evaluation of population growth protection is outside of Ecology's water rights purview.

Statutory Tests
In accordance with state law, the following considerations must be addressed prior to the issuance of a permit:

- Water Availability
- Impairment to Existing Rights
- Beneficial Use of Water

Water Availability
The Upper Well has been in operation for over 12 years with no documented negative impacts. Based on groundwater level measurements at the time of drilling in 1988 and measurements made in 2005 and 2008, there are no long-term groundwater level declines.

Impairment to Existing Groundwater Rights
Impairment occurs when there is an adverse impact on the physical availability of water for a beneficial use that is entitled to protection.

Qualifying ground water withdrawal facilities are defined as those wells which in the opinion of Ecology are adequately constructed. An adequately constructed well is one that (a) is constructed in compliance with well construction requirements; (b) fully penetrates the saturated thickness of an aquifer or withdraws water from a reasonable and feasible pumping lift (WAC 173-150); (c) has withdrawal facilities capable of accommodating a reasonable variation in seasonal pumping water levels; and (d) the withdrawal facilities and pumping facilities are properly sized to match the ability of the aquifer to produce water. Washington water law does not consider drawdown to be impairment of existing water rights, unless the affected wells fully penetrate the aquifer and can no longer produce their allocations.

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Well interference is the overlap of the cones of depression for two or more wells. Well interference reduces the water available to the individual wells and may occur when several wells penetrate and withdraw ground water from the same aquifer. Each pumping well creates a drawdown cone. When several wells pump from the same aquifer, well density, aquifer characteristics, and pumping demand may result in individual drawdown cones that intersect and form a composite drawdown cone.

The Upper Well has been operational for over 12 years with no reports of impairment to surface water or other groundwater users. Only one other well (Berger well) is completed in the same part of the aquifer as the Upper Well, and the estimated interference drawdown in the Berger well is such that no impairment or adverse impact is expected to occur.

Analysis

Interference drawdown in existing wells was estimated by Aspect (2008) to be less than five feet at a distance of 1,000 feet for one year of pumping at 208 gpm based on aquifer hydraulic properties estimated from the step-pumping test. Aspect (2008) also estimated less than 0.01 feet of interference drawdown at a point 1,000 feet from the Upper Well from pumping 400 gpm continuously for 3 days. Interference drawdown from continuous pumping the Upper Well for 10 days at a rate of 400 gpm at a point 1,000 feet away is estimated to be about 5 to 24 feet assuming an aquifer transmissivity of 1,500 to 10,000 feet^2/day and a storativity of 10^{-4}. Given the available drawdown in the nearest well of over 180 feet, there should be no impairment to existing wells.

Beneficial Use

Water used for municipal supply is considered a beneficial use under RCW 90.54.020(1).

CONCLUSIONS

Water is available at the additional withdrawal sites requested by Klickitat PUD for the beneficial use of supplying water to the town of Lyle. The use of these additional withdrawal sites as alternate sources will not impair existing rights.

RECOMMENDATIONS

Based on the information presented above, the author recommends that a groundwater permit be issued for Application No. G4-29764 authorizing the following and subject to the provisions in this Order for G4-29764 on pages 1-4.

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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: Two municipal wells limited to **400 gpm, 224 ac-ft/yr, as alternate sources for Certificate No.'s 818-D, 2245-A, and G4-26121C**, and part of Lyle's total maximum quantities of 1400 gpm, 224 ac-ft/yr.

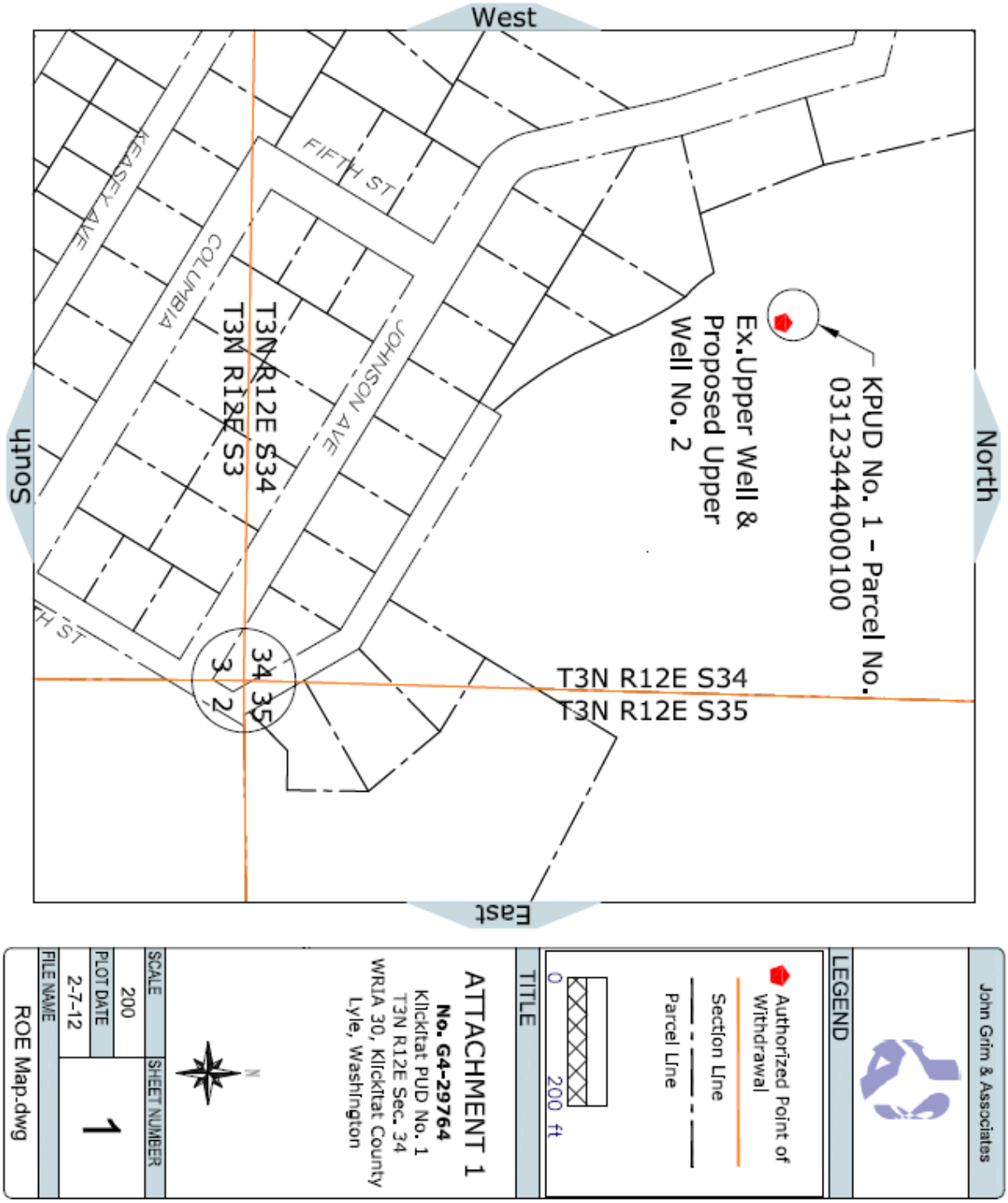
Points of Withdrawal
Lyle Upper Well and Upper Well No. 2, in the SE¼ SE¼ Section 34, T3N, R12E.

Place of Use
The service area described in the most recent Water System Plan/Small Water System Management Program approved by the Washington State Department of Health

Report by: _____ _____
Carl Einberger, LHG (#1100), Golder Associates Inc. Date

Reviewed by: _____ _____
Kelsey Collins, Water Resources Program Date

DRAFT


North
KPUD No. 1 - Parcel No.
0312344400100
Ex.Upper Well &
Proposed Upper
Well No. 2
T3N R12E S34
T3N R12E S35
West
East
South
FIFTH ST
JOHNSON AVE
COLUMBIA
KEASEY AVE
T3N R12E S34
T3N R12E S3
34
35
3
2
John Grim & Associates
LEGEND
Authorized Point of Withdrawal
Section Line
Parcel Line
0
200 ft
TITLE
ATTACHMENT 1
No. G4-29764
Klickitat PUD No. 1
T3N R12E Sec. 34
WRIA 30, Klickitat County
Lyle, Washington
N
SCALE
200
SHEET NUMBER
1
PLOT DATE
2-7-12
FILE NAME
ROE Map.dwg