

STATE OF WASHINGTON  
**DEPARTMENT OF ECOLOGY**  
**DRAFT**  
**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 May 15, 2006	APPLICATION NUMBER G2-30324	PERMIT NUMBER	CERTIFICATE NUMBER
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NAME Lewis County Water District No. 1.			
ADDRESS (STREET) 158 State Route 131, PO Box 493	(CITY) Randle	(STATE) Washington	(ZIP CODE) 98377

**PUBLIC WATERS TO BE APPROPRIATED**

SOURCE 2 wells
TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE 700 (Non-Additive)	MAXIMUM ACRE FEET PER YEAR 298 (Non-Additive)
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QUANTITY, TYPE OF USE, PERIOD OF USE

Municipal water supply – year round.

Non-additive to existing water right certificates G2-27504, #1011, #5393, and #3631

**LOCATION OF DIVERSION/WITHDRAWAL**

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL  
 Well 1: 1800 feet north and 350 feet west from the center of Section 15, within the NE ¼ of the NW ¼  
 Proposed Well 2: Within the NW ¼ of the NE ¼

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NE¼ NW¼ and NW¼ NE¼	15	12	7 E	26	Cowlitz

**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**

The place of use of this water right is the service area described in the most recent Water System Plan approved by the Washington State Department of Health, so long as the Lewis County Water District No. 1 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.

**DESCRIPTION OF PROPOSED WORKS**

8 inch diameter well approximately 100' deep  
 Proposed well

**DEVELOPMENT SCHEDULE**

BEGIN PROJECT BY THIS DATE: December 1, 2010	COMPLETE PROJECT BY THIS DATE: December 1, 2017	WATER PUT TO FULL USE BY THIS DATE: December 1, 2027
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## PROVISIONS

The permit shall be subject to existing rights and the following provisions:

1. The new well associated with this water right shall not be located closer than 1,900 feet from Silver Creek.
2. Use of the Hampton well under this water right shall be limited to November 16 through August 14. Water can continue to be withdrawn on a year-round basis from the Hampton Well at the 350 gpm and 42 afy currently permitted under the existing water right certificate G2-27504.
3. The two wells will have a maximum withdrawal rate of 350 gpm each.
4. The LCWD #1 shall negotiate a permanent agreement with the USFS within one year of issuance of this permit to allow the LCWD #1 to use the USFS water right at a different point of withdrawal in order to serve the forest service and community. Failure to obtain an agreement may result in Ecology amending the instantaneous and annual quantities of water allocated under this permit.
5. Within a year of issuance of this permit, an Application for Change of Water Right shall be filed on the USFS water right.
6. Any quantity of water diverted by the LCWD #1 from the USFS well under existing water right certificate #3631 will require an equivalent amount of water to be reduced from the points of withdrawal under this water right.
7. Any quantity of water diverted from the White Pass School well under existing water right certificate #1011 and #5393 will require an equivalent amount of water to be reduced from the points of withdrawal under this water right.
8. A certificate will not be issued until the White Pass School well is decommissioned in accordance with Chapter 18.104 RCW and Chapter 173-160 WAC
9. The applicant is advised that the quantity of water allocated by this permit may be reduced at the time of final certification to reflect system capacity and actual usage.
10. A certificate of water right will not be issued until a final investigation is made.
11. An approved measuring device shall be installed and maintained for each withdrawal of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use," Chapter 173-173 WAC.

Water use data shall be recorded monthly. The maximum monthly rate of withdrawal and the monthly total volume shall be submitted to Ecology by January 31st of each calendar year. Ecology is requiring submittal of monthly meter readings to collect seasonal information for water resource planning, management and compliance.

Installation and maintenance of an access port as described in Chapter 173-160 WAC is required. An air line and gauge may be installed in addition to the access port.

In the future, Ecology may require additional parameters to be reported or more frequent reporting. Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information.

Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

12. A completed well report of the well(s) shall be submitted by the driller to the Department of Ecology within 30 days of completing the new well. All pump test data for this well shall be submitted to the Department as it is obtained.

All wells constructed in the State shall meet the construction requirements of Chapter 173-160 WAC entitled "Minimum Standards for the Construction and Maintenance of Wells" and Chapter 18-104 RCW entitled "Water Well Construction".

In accordance with Chapter 173-160 WAC, wells shall not be located within certain minimum distances of potential sources of contamination. These minimum distances shall comply with local health regulations, as appropriate. In general, wells shall be located at least 100 feet from sources of contamination. Wells shall not be located within 1,000 feet of a solid waste landfill.

Findings of Fact and Decision

Upon reviewing the 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 Groundwater Application Number G2-30324, subject to existing rights and indicated provisions, to allow appropriation of public surface water for the amount and uses specified in the foregoing report.

***Your right to appeal***

You have the right to appeal this Order to the Pollution Control Hearings Board. Pursuant to chapter 43.21B RCW, your appeal must be filed with the Pollution Control Hearings Board, and served on the Department of Ecology, within thirty (30) days of the date of your receipt of this document. To appeal this action or decision, your notice of appeal must contain a copy of the Ecology order, action or decision you are appealing.

<b>Mail</b> your appeal to:		<b>Deliver</b> your appeal to:
Pollution Control Hearings Board	<b>OR</b>	Pollution Control Hearings Board
PO Box 40903		4224 – 6 <sup>th</sup> Ave SE Rowe Six, Bldg 2
Olympia, Washington 98504-0903		Lacey, Washington 98503

**AND MAIL TO BOTH ADDRESSES BELOW**

<b>Mail</b> your appeal to:		<b>Mail</b> your appeal to:
Department of Ecology	<b>AND</b>	Tom Loranger
Appeals Coordinator		Department of Ecology
PO Box 47608		PO Box 47775
Olympia, Washington 98504-7608		Olympia, Washington 98504-7775

Signed at Olympia, Washington, this \_\_\_\_\_ day of \_\_\_\_\_, 2007.

Thomas Loranger  
Water Resources Supervisor  
Southwest Regional Office

Reported by Deb Hunemuller  
Water Resources Program, SWRO

## **BACKGROUND:**

On May 15, 2006, Bill McMahan, chairman of the Lewis County Water District #1 (LCWD #1), filed an application for water right (G2-30324) with the Washington State Department of Ecology (Ecology) requesting to appropriate public groundwater. The applicant requested authorization for an instantaneous withdrawal (Qi) of 700 gallons per minute (gpm), with an annual withdrawal volume (Qa) of 400 acre-feet per year (afy). The applicant also requested priority processing under Chapter 173-152-050(2)(a) of the Washington Administrative Code (WAC; i.e., immediate action is necessary for preservation of public health and safety).

Notice of the proposed appropriation was published in The East County Journal of Morton, Washington, on November 22 and 29, 2006. No protests were received by Ecology.

The proposed points of withdrawal and place of use are near the confluence of Silver Creek and the Cowlitz River, in the Upper Cowlitz River Subbasin, within the Cowlitz River Water Resource Inventory Area (WRIA) 26, in Cowlitz County.

Planned use of the appropriation is municipal water supply.

The application is for the withdrawal of less than 2,250 gpm of groundwater, and is therefore categorically exempt from the State Environmental Policy Act (SEPA; WAC 197-11-800(4)).

### Current Sources

The LCWD #1 currently uses two wells: US Forest Service (USFS) Well, ID #ABR 985, and the White Pass School District School District Well (School well) ID #AFM 973. Use of the USFS well is permitted under groundwater right Certificate Number 5393A (Gifford Pinchot National Forest [USFS]) with an instantaneous quantity (Qi) of 100 gpm and the annual quantity (Qa) of 80 afy. Use of the School well is permitted under groundwater right Certificate Numbers 1011-A and 3631-A (Consolidated School District No. 214 and White Pass School District No. 303, respectively; both now represented by White Pass School District No. 303) with a combined instantaneous quantity of 250 gpm and an annual quantity of 176 afy. The total quantities associated with the groundwater rights that the Water District currently withdraws water under are 350 gpm and 256 afy.

The Water District currently receives all of its water from these two wells that are owned by the White Pass School District No. 303 and the US Forest Service. The Water District has no water rights of its own.

### Source Susceptibility

Both the School well and the USFS well have specific identified wellhead protection vulnerabilities. There are two underground petroleum storage tanks located within 20 feet of the School well, and a community septic system is located within 100 feet of the USFS well. Minor historical impacts to the water quality in the wells have been documented. Slightly elevated concentrations of iron (up to 0.3 mg/L) have been reported in the USFS well, and may be associated with organic materials (e.g., peat and wood) reported in nearby well logs. The USFS well requires frequent (e.g., annual) redevelopment and rehabilitation, likely due to the presence of iron bacteria. Aromatic hydrocarbons (e.g., benzene) were detected in the School well in 1991 within allowable drinking water levels. There have been no other detections of volatile organic compounds since then. Nitrate concentrations have historically fluctuated in the USFS well by a factor of three (e.g., 0.2 mg/L to 0.6 mg/L), and has typically not been detected in the School well.

A letter from the Department of Health dated July 26, 2006, noted significant threats to the School well and requested that Ecology expedite the processing of water rights for the LCWD #1. The 2001 Comprehensive Plan for the LCWD #1 shows the susceptibility ratings of the School well as high and the USFS well as moderate. These ratings reflect the susceptibility of a water source to contamination. The approved 2006 amendment to the Comprehensive Plan identifies the need to remove the underground storage tanks even if the District constructs a new well at the Hampton site to serve its customers.

The LCWD #1 water system comprehensive plan has identified insufficient fire flow and fire storage as a critical issue that must be resolved in order to assure public health and safety.

### Long Term Agreements/Leases

#### *USFS Water Right*

An agreement dated July 1974 allows the LCWD #1 to use the USFS and School wells to serve the forest service, school and surrounding community. However, a change to the purpose of use and place of use of the forest service water right was never submitted to Ecology.

A special use permit dated 2004, which expires December 31, 2010, allows the LCWD #1 to operate and maintain the USFS well to provide water to the forest service and to the Randle community. However, recent efforts to contact the USFS to secure the continued availability of their well and associated water right past 2010, and to obtain permission to relocate the well to a location not susceptible to contamination impacts from the community septic system, have not been productive. Though the LCWD #1 intends to discontinue using the USFS well once the new sources come on line, they cannot relocate the point of withdrawal without a permanent agreement with the USFS.

Approval of this application will be conditioned to require the LCWD #1 to enter into a permanent agreement with the USFS to allow them to use the USFS water right at a different point of withdrawal. If an agreement is not reached within a year of the issuance of this permit, Ecology may reduce the instantaneous and annual quantities on this permit to reflect the amounts on the USFS water right. In addition and within a year of issuance of this permit, an application to change the point of withdrawal, purpose of use, and place of use of the USFS water right must be submitted to Ecology.

School Water Rights

On November 11, 1974, the White Pass School District No. 303 leased the LCWD #1 the right to withdraw water from the School well for a period of 50 years, with an optional renewal term of 25 years. On August 14, 2006, the White Pass School District entered into an agreement with the LCWD #1 to allow the transfer the water rights from the school well to the new sources. On March 17, 2007, the White Pass School District submitted applications to change the point of withdrawal, purpose of use, and place of use of their water rights.

The school district has also agreed to decommission their well once the new sources are on line. However, upon approval of this permit, if the School well has not been decommissioned and is used, that amount of water will be reduced from the new sources under this water right. A certificate will not be issued until the school well is decommissioned.

Hampton Mill

An approved Water System Plan Amendment for the LCWD #1 includes a change in the service area to include the Hampton Mill. The mill is currently operating under its own water right, G2-27504, for 350 gpm and 42 afy and surface water right 8483 (changed from surface to ground withdrawal) for 350 gpm and 12 afy. The Hampton well does not have water quality issues. The mill has agreed to allow LCWD #1 to take over management of the well in order to serve water to the district and the mill. This well is one of the sources identified in this application. The mill has also agreed to allow the LCWD #1 to locate the new point of withdrawal on their property.

It should be noted that though the LCWD #1 will be serving the District and mill, the mill actually requires the full 42 afy and 350 gpm from its water right. When the District takes over this well it will effectively increase its instantaneous and annual water rights by including the Hampton right. However, the net annual quantity available to the District will not increase because the Hampton mill is already using the entire annual quantity of its right, and in fact, in recent years has exceeded its authorization.

Table 1 shows the list of existing rights.

Table 1

<b>Cert #</b>	<b>Name</b>	<b>Priority Date</b>	<b>Source</b>	<b>T/R/S</b>	<b>Purpose</b>	<b>Add Qi</b>	<b>Add Qa</b>
*8483	Hampton Lumber	2/25/60	Well	12N 7E 15	Commercial/Industrial	*350	*12
G2-27504	Cowlitz Stud	2/27/89	Well	12N 7E 15	Industrial / Fire	350	42
1011	White Pass School #303	6/6/1951	Well	12N 7E 10	Domestic / Fire protection	110	176
5393	White Pass School #303	12/17/1964	Well	12N 7E 10	Domestic / Fire protection	140	
3631	Gifford Pinchot NF	12/23/1957	Well	12N 7E 9	Domestic Supply	100	80
<b>Total</b>						700	298

\*8483 will be donated to trust. Total quantities do not include this right.

Donation to Trust

Discussions with the applicant and, Hampton Lumber have resulted in a commitment to the permanent and complete donation of surface water right 8483 to the Washington State Trust Water Right Program, concurrent with the approval of water right application G2-30324.

Summary

With this appropriation, the Water District will: 1) secure a public water supply; 2) be able to establish and use sources that are not susceptible to interruption of service and thereby maintain public health and safety; and 3) provide a better level of fire flow for public health and safety, as required by the Washington State Department of Health.

This application is receiving priority processing in accordance with WAC 173-152-050(2)(a), and with the concurrence of the Washington State Department of Health, on the basis of the vulnerability of existing drinking water sources to documented contamination sources.

The instantaneous and annual quantities under this water right will be totally non-additive to existing rights.

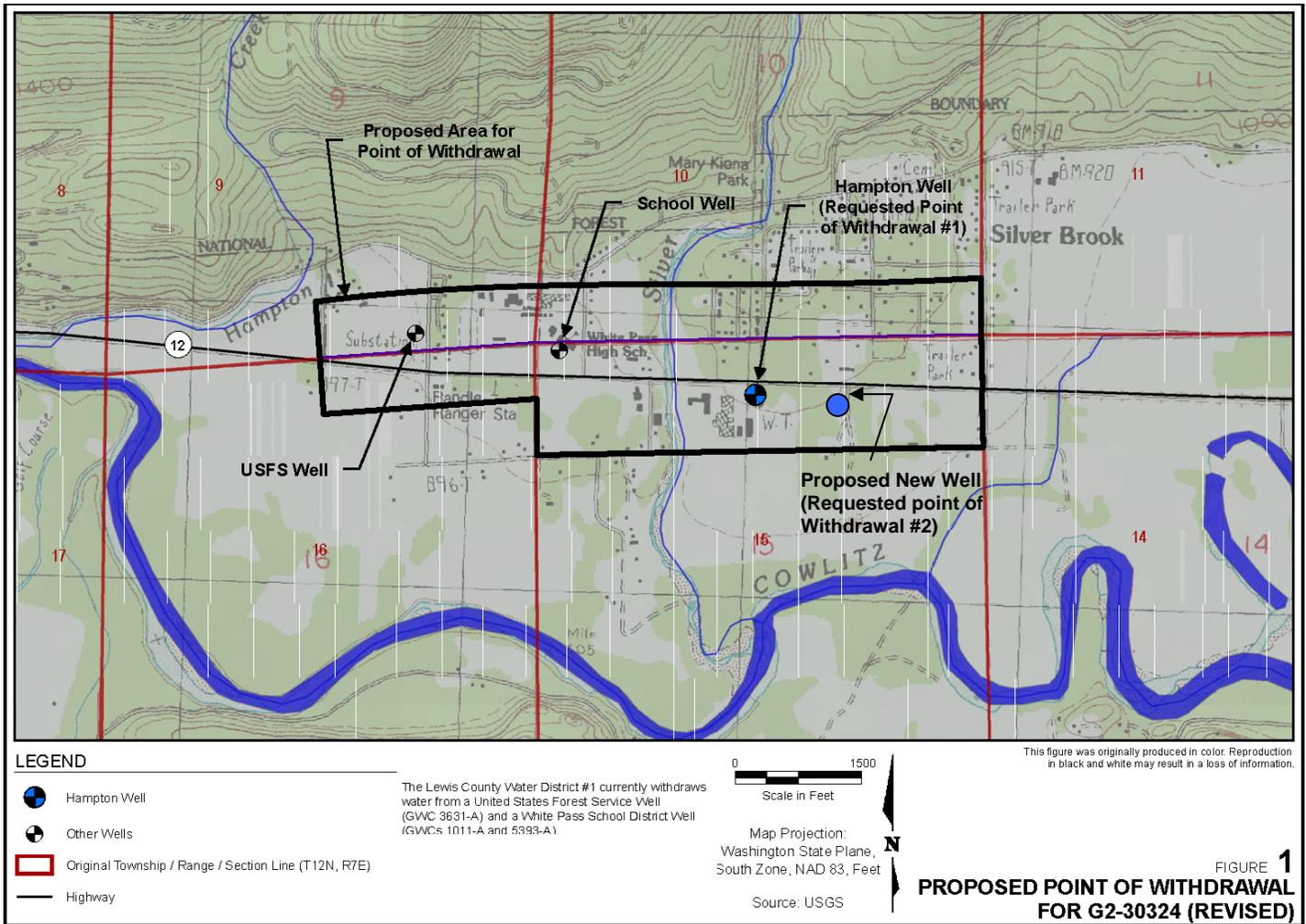
Hampton Lumber will permanently donate surface water right 8483 to the Trust Water Right Program upon approval of water right application G2-30324. The donated water right will enhance instream flows and help with fish passage and will thus enhance and protect the natural environment.

**INVESTIGATION:**

In consideration of this application, available documents pertaining to the application’s site conditions, projected water demand, and the potential effect on existing water right holders and proposed minimum instream flows were reviewed. This included the information submitted by the applicant and pertinent Ecology records including well logs, water rights records, and well construction and design reports. The review also included the Grays-Elochoman and Cowlitz Watershed Management Plan: WRIAs 25 and 26 (HDR and EES, 2006).

Deb Hunemuller and Tom Culhane of Ecology visited the site on February 20, 2007, and met with Bill McMahan, chairman of the LCWD#1, David Like, environmental manager of the Hampton Lumber Mill, and Chris Pitre of Golder Associates (Golder). During the site visit they inspected the current and proposed points of withdrawal and place of use and interviewed the applicant.

Figure 1 shows the current and proposed points of withdrawal.



**Proposed Wells**

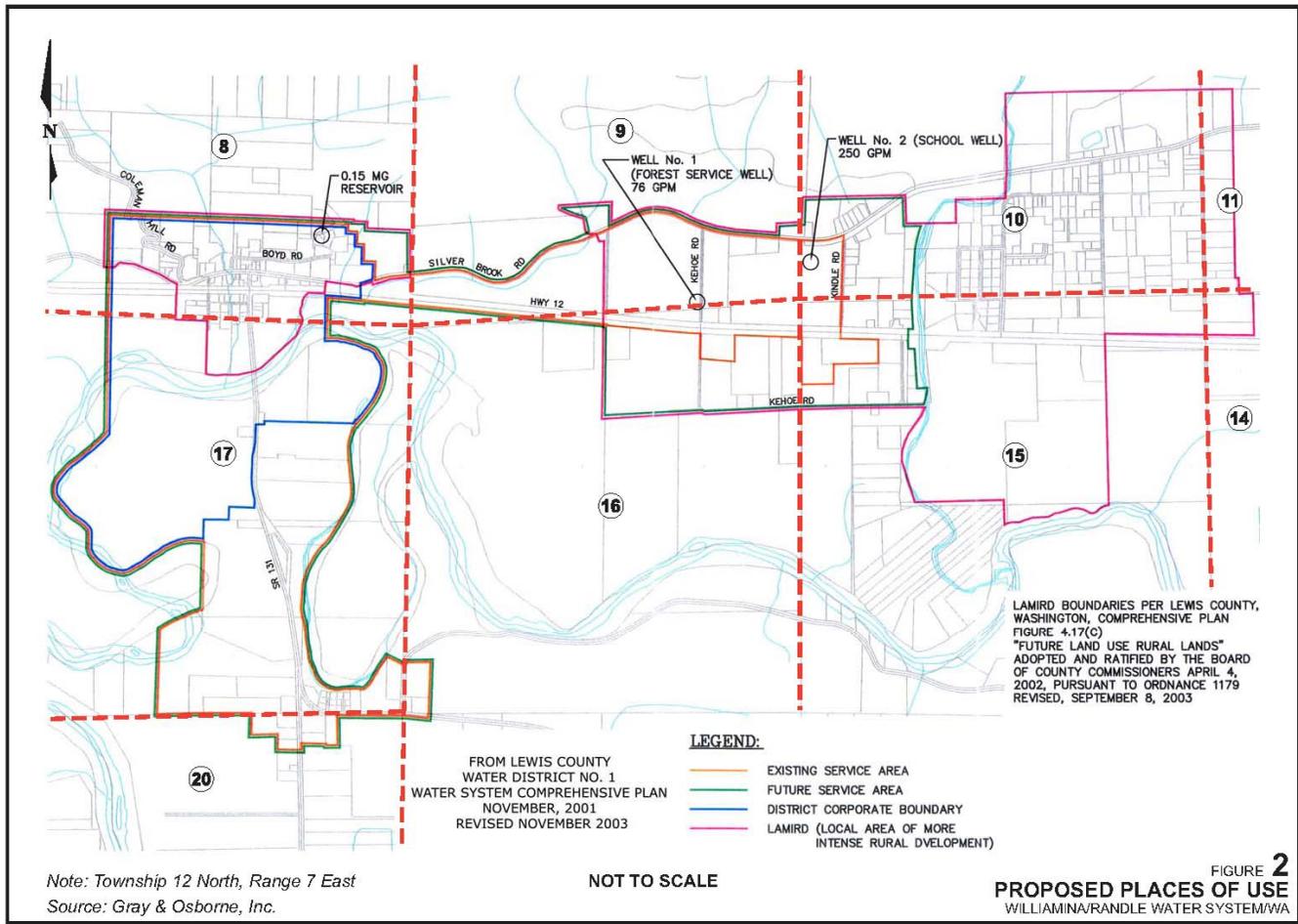
The first proposed point of withdrawal is an existing well owned by Hampton Lumber, located on the east side of the NE¼ of the NW¼, Section 15, Township 12 North, Range 7 East (Parcel #031752006000). This well is an eight-inch diameter well approximately 100 feet deep (no well log exists for this well). Groundwater is withdrawn from this well by Hampton Lumber under Groundwater Certificate Number G2-27504C with an annual quantity of 42 afy and an instantaneous rate of 350 gpm, and Surface Water Certificate Number 8483A (changed to allow withdrawal from groundwater) with an annual quantity of 12 afy.

The second proposed point of withdrawal is a well to be installed on the east side of the NW¼ of the NE¼, Section 15, Township 12 North, Range 7 East (Parcel #031749007000) at least 100 feet south of the US Route 12 right-of-way and at least 1,900 feet from Silver Creek. The well is expected to be an eight- or 12-inch diameter well approximately 100 feet deep.

The wells will deliver water into the main east-west transmission main that is to be extended from its current terminus at the School Well, along US Route 12 to the proposed new well, and distributed throughout the service area.

The LCWD #1 serves an estimated population of 185, including residential homes, commercial businesses, the school, forest service, and an RV park. The area is rural and sparsely populated.

Figure 2 shows the service area for LCWD #1.



Chris Pitre, a licensed hydrogeologist in the State of Washington, provided a proposed set of findings dated January 31, 2007. Some of that information, including a hydrogeologic interpretation, is included here. Additionally, Tom Culhane, a licensed hydrogeologist in the State of Washington, performed his own investigation and that analysis, incorporated in a memo dated March 7, 2007, is also incorporated below.

**Hydrologic/Hydrogeologic Assessment**

The hydrogeology of the Upper Cowlitz Subbasin is characterized by shallow Quaternary age alluvial sediments filling the bottom of valleys set in Tertiary Volcanic bedrock.

The USFS well (ABR985) is operated by LCWD#1 as part of their municipal water system. This well was drilled to a 60 foot depth and had a static water level 12 feet below ground surface at the time of drilling. The well initially produced water at a rate of 100 gpm, but now produces approximately 60 gpm. There is a persistent problem with iron bacteria in this well that is kept in check with annual chlorine shock treatments. There are additional water quality concerns due to the presence of septic leach lines perhaps 100 feet to the north and a power substation facility about 50 feet to the south of the well head.

The School well (AFM973) is also operated by LCWD#1 as part of their municipal water system. This well was drilled to a 57 foot depth and had a static water level 26 feet below ground surface at the time of drilling. The well is reported to produce water at a rate of approximately 250 gpm. This well is located about 20 feet from a single-lined, underground petroleum storage tank and thus is vulnerable. BTEX was detected in a water sample collected in 1991, however, Bill McMahan indicated there is some question of the methodology used for sample collection and no contamination has been detected since.

The Washington State Department of Health has sent a letter to Ecology dated July 26, 2006 indicating that this well is at risk and suggesting that finding a replacement should be expedited based on health and safety concerns.

Ecology well logs from Sections 10, 11, 14 and 15, T12N, R7E were used to provide a local characterization of the hydrogeological stratigraphy and groundwater resource:

**Table 2 - Well Logs from Ecology’s On-Line Well Log Database Used in the Hydrogeologic Assessment**

Section (T 12N, R 7 E)	Number of Wells Completed in Quaternary Sediments		Number of Wells Completed in Bedrock	
	Well Logs	With Usable Pumping Test Data	Well Logs	With Usable Pumping Test Data
10	36	24	2	2
11	5	3	5	3
14	0	0	1	1
15	13	7	2	0
<b>Total</b>	<b>54</b>	<b>34</b>	<b>10</b>	<b>6</b>

Yields from bedrock wells are generally no more than 5 gpm (median specific capacity of 0.03 gallons per minute per foot [gpm/ft]), and do not constitute a significant water supply source. These wells are all located within several hundred feet of the bedrock contact with the Quaternary sediments (i.e., at the edge of the sedimentary valley fill). The proposed new well is located close to the center of the valley, approximately one-half a mile from the edge of the sedimentary valley fill. Further discussion relates to wells completed in the Quaternary sediments and the associated hydraulic aquifer properties.

The greatest documented thickness of Quaternary sediments is at least 118 feet and forms the principal aquifer in the area. The uppermost 50 feet of sediments are generally lower permeability silty and clayey sediments typical of overbank fluvial deposits. Most wells are completed in sand and gravel at depths greater than 50 feet below ground surface. The depth to water in wells completed in the Quaternary sediments is generally 36 feet to 40 feet below ground surface (average and median, respectively).

The median specific capacity of wells completed in the Quaternary sediments is 11 gpm/ft. However, there is a marked gradation of increasing specific capacity from the edge of the alluvial valley to the center. Wells within approximately 1,500 feet of the volcanic bedrock outcrop have a median specific capacity of 9 gpm/ft. Those further away from the bedrock outcrop and closer to the middle of the valley (e.g., in Section 15) have a median specific capacity of 55 gpm/ft (pumping rates ranging from 25 gpm to 300 gpm, and associated drawdown ranging from not measurable to three feet). A specific capacity of 55 gpm/ft equates to an approximate aquifer transmissivity of 110,000 gallons per day per foot (gpd/ft; Driscoll, 1986). The proposed points of withdrawal are further than 1,500 feet from the bedrock outcrop. Therefore, an aquifer transmissivity of 110,000 gpd/ft is considered representative in the vicinity of the proposed points of withdrawal.

There is no available measurement of the range of seasonal water level fluctuations. However, the yield of the USFS well used by the Water District varies from approximately 60 gpm in the summer to 75 gpm in the winter. A seasonal water level fluctuation of approximately two feet to three feet is estimated based on the original specific capacity of the well (i.e., 6.4 gpm/ft). Therefore, water levels are considered to be relatively constant year-round within the resolution of the data available, and the water levels reported in well logs are appropriate for the method of analysis applied in the assessment of potential impairment.

Silver Creek runs off of volcanic bedrock upland to the north. The landform surrounding Silver Creek in the valley may represent either a raised depositional alluvial fan associated with Silver Creek or a terrace associated with the Cowlitz River. Silver Creek is incised approximately 10 feet below the surrounding land in its lower reaches. Chris Pitre of Golder Associates, has stated that the depositional landform and ambient groundwater levels indicate that Silver may be perched above the water table in the reach overlying the sedimentary aquifer. Therefore, he has suggested that Silver Creek is hydraulically disconnected from groundwater where it is perched and that groundwater withdrawals may have limited impact on streamflows.

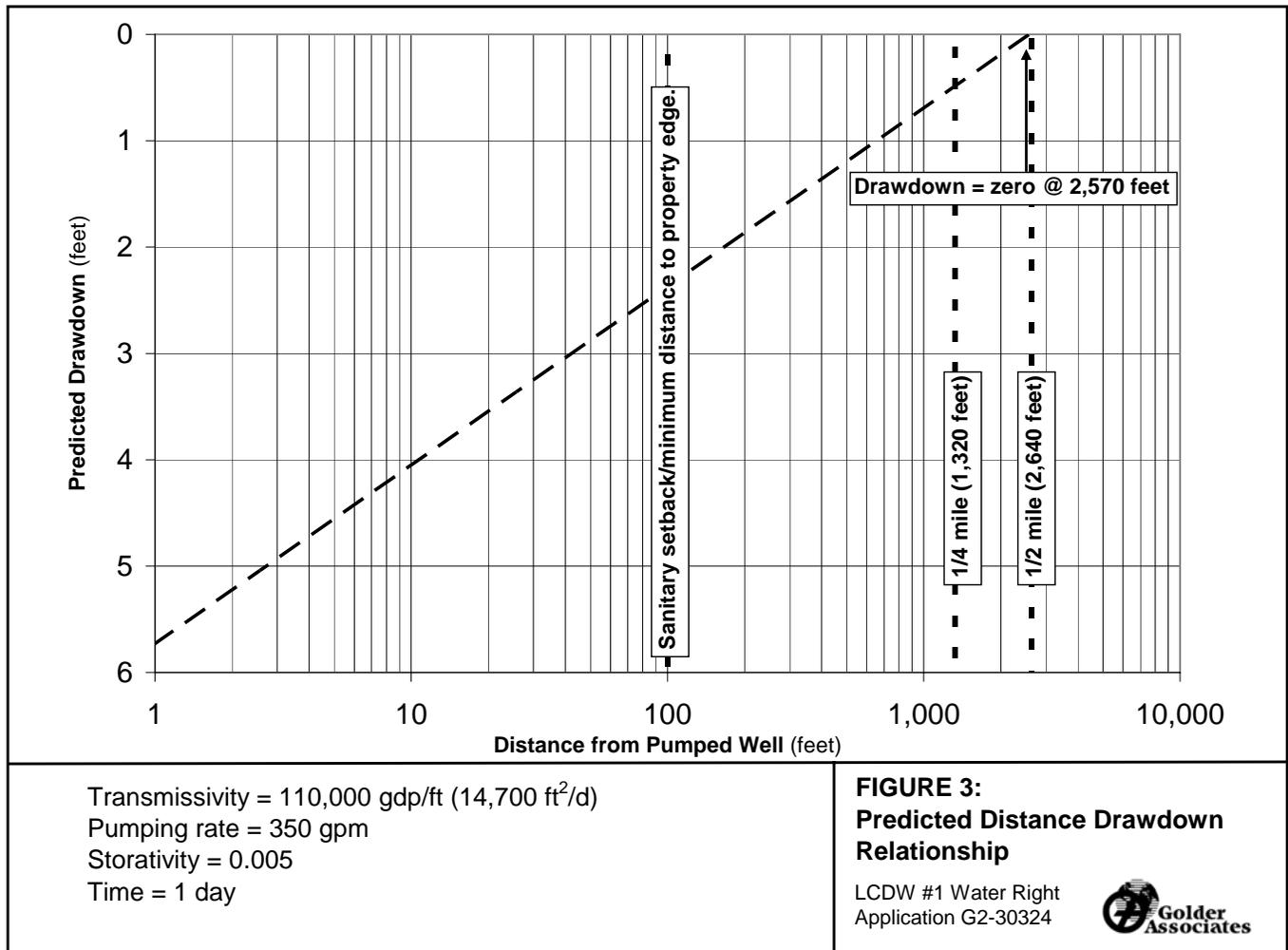
There is little information available upon which to discern whether portions of Silver Creek are hydraulically disconnected from the area’s water table aquifer. In order to determine this properly, a ground water-level map for the area would need to be constructed and this compared to the elevations of the stream bed of Silver Creek. Although a number of driller’s logs do exist for the area, the significant relief dictates that constructing such a map would require accurate well location and land surface elevation information for all vicinity wells, and presently such information does not exist.

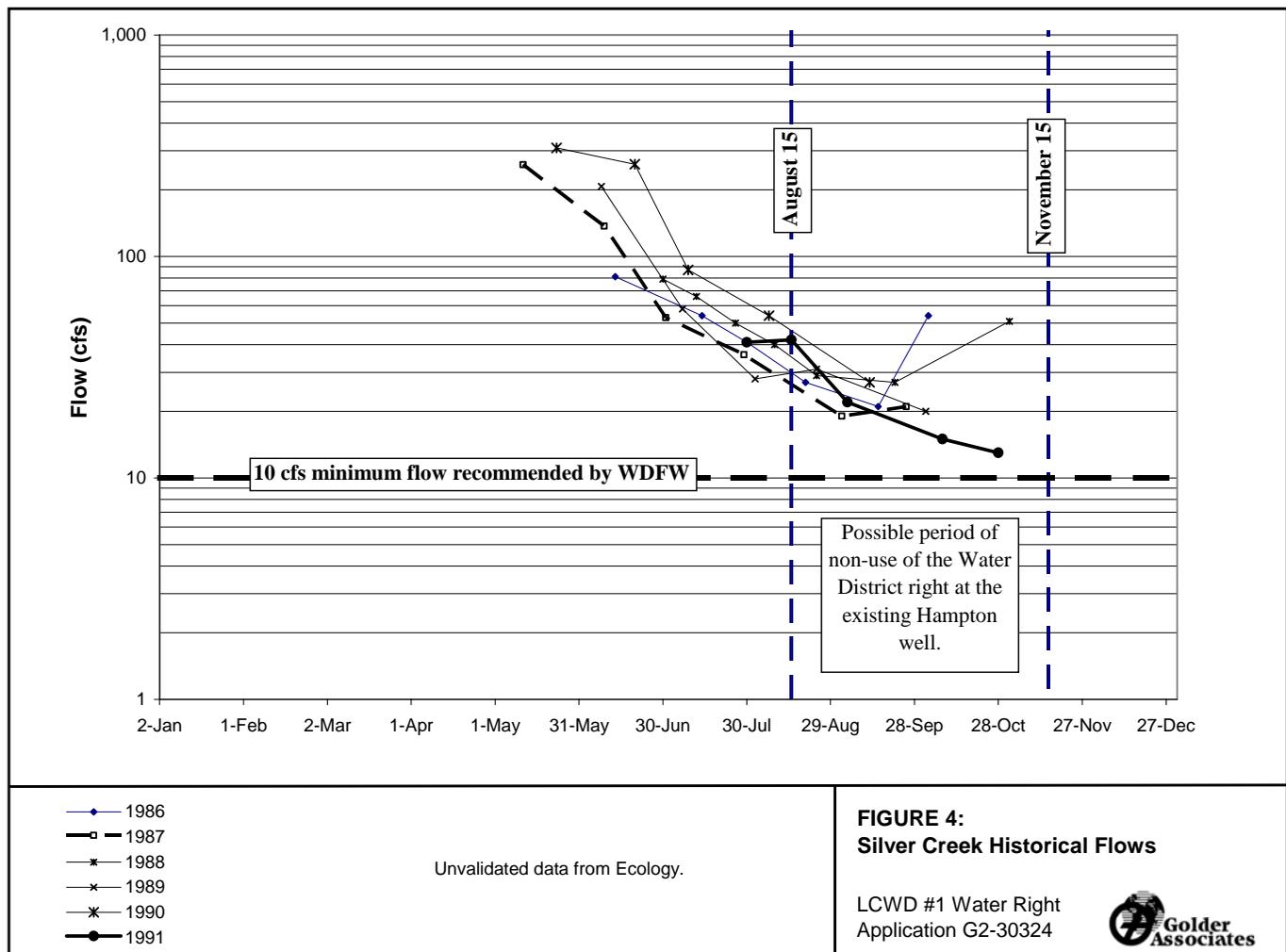
In order to evaluate potential adverse effects associated with the proposed pumping, Golder performed some Theis (1935) equation-based potential drawdown interference analyses relying on assumptions from Freeze and Cherry (1979) and, Driscoll (1986), and the aquifer properties described above. During these analyses Golder assumed a storativity of 0.005 (Chris Pitre, personal communication, February 26, 2007), which corresponds with somewhat confined aquifer conditions and is reasonable given the limited information. Based on these assumptions, approximately 2.5 feet of interference drawdown was predicted at the edge of the sanitary setback of the well and the minimum distance to the edge of the property upon which the proposed well is to be located (i.e., a distance of 100 feet from the proposed well; Figure 3). Less than one foot of drawdown interference was predicted at a distance of 700 feet from the proposed well, and essentially no interference was predicted at a distance of half a mile from the pumped well.

A letter dated April 16, 1957 from Department of Fisheries recommends that Silver Creek maintains a minimum flow of 10 cubic feet per second (cfs). The USFS and School Wells are located about 3,000 feet and 1,200 feet from Silver Creek, respectively, while the new well is located about 2,000 feet from the creek. The School well is responsible for the bulk of the pumping (176 afy) and is located closest to the creek. Golder also used the Theis equation in order to compare the potential impacts on Silver Creek from the proposed new well versus the existing USFS and School wells. Those results suggest that potential impacts on Silver Creek were at all times less when pumping the proposed point of withdrawal.

The Hampton well is located less than 1,000 feet away from Silver Creek. The well was installed around 1973 and there is no well completion report. Although Golder did not provide an analysis comparing pumping from this well to that of the USFS and School Wells, it can be presumed that the effects of pumping the Hampton Well would be greater than pumping the USFS well and/or the School well at comparable rates. In order to address this concern, Chris Pitre sent a letter to Ecology on March 7, 2007 in which he analyzed streamflow data collected by Ecology. These data were collected roughly monthly June through October 1986 through 1991, and indicate that the lowest stream flow on record for Silver Creek is 13 cfs (recorded October 28, 1991). The data also indicate that recorded streamflows in Silver Creek rarely dropped below 20 cfs, which is twice the regulatory flow. Of the 3 out of 34 measurements that did drop below 20 cfs, those low flow times occurred in September and October. Low flows are generally important to anadromous salmon returning to spawn and that natural spawning in the Upper Cowlitz River occurs between late August and early October (Northwest Power and Conservation Council, Lower Columbia Province Plan, Volume II.E, Cowlitz Subbasin).

Based on this evidence Chris Pitre suggested that not using the LCDW#1 water right at the existing Hampton well between August 15 and November 15 may be considered appropriate. See Figures 3 and 4 below.





### Water Resource Inventory Area 26

The Lower Columbia Fish Recovery Board (LCFRB) was the Lead Agency for the Planning Unit and facilitated completion of the Grays-Elochoman and Cowlitz Watershed Management Plan: WRIAs 25 and 26 (HDR and EES, 2006). The watershed planning process sought to include stakeholders and agencies from all levels, including Ecology, and to "develop and implement a watershed management plan for the responsible use of water to balance the needs of people and natural resources."

WRIA 26 is divided into seven major subbasins. The subbasins represent all or portions of the mainstem and major surface water tributaries to the Cowlitz River. The subbasins are the Upper Cowlitz River, Cispus River, Tilton River, Mayfield Dam, Toutle River, Coweeman River, and Lower Cowlitz River.

Ecology participated in the watershed planning process and accepted the plan approved by the county commissioners. Policy SFP-6 of the watershed plan, of which Ecology was a participant, encourages Ecology to identify water right holders willing to sell or donate water rights to the Trust Water Right Program. Ecology is the lead agency for implementation of this policy.

### Minimum Instream Flows

A Surface Water Source Limitation (SWSL) letter dated April 16, 1957 for Silver Creek by the Department of Fisheries with a minimum flow of 10 cubic feet per second (cfs). A state instream resources protection program with specified minimum instream flows and closures is currently under development as WAC 173-526. Following Ecology ratification, the program will effectively limit, and in some cases prohibit, the further issuance of consumptive water rights that could affect instream flows in the Cowlitz River. It is anticipated, based on the current recommendations in the Watershed Management Plan, that allowances will be made for future development by placing 0.69 cfs of water in the Upper Cowlitz Subbasin into reserve for future allocation for out-of-stream uses.

### Fisheries

Anadromous species in the Upper Cowlitz River Subbasin include Spring Chinook (primary population) and Fall Chinook (stabilizing population), as well as winter steelhead and Coho (contributing populations). Chinook and steelhead are listed as threatened and coho are proposed for listing under the federal Endangered Species Act. Resident salmonids include a variety of trout (e.g., cutthroat). The Upper Cowlitz River Subbasin is ranked of high importance for fish recovery goals (rated Tier 1 and 2 – i.e., highest priority – in the Lower Columbia Fish Recovery Board Recovery Plan documents). The Limiting Factors Analysis conducted by the Washington Conservation Commission has identified low flow fish passage as a problem in the Upper Cowlitz Subbasin. As long as this water right is non-additive to existing rights and the wells are managed so that the instantaneous quantities of the water rights are not exceeded, the Department of Fish and Wildlife does not have additional recommendations.

### Groundwater Quality

Water quality in the proposed Hampton well has been excellent with no identified parameters of concern. Organic materials (e.g., peat and wood) are reported in well logs in the vicinity, which may cause slightly elevated concentrations of iron or manganese.

## **Projected Water Demand**

The Water District currently relies on wells owned and water rights held by the USFS and the White Pass School District. Their current water demand is 129 afy, and is projected to be 146 afy in twenty years (Comprehensive Water System Plan update, 2006). Current instantaneous demand is 383 gpm, and exceeds the currently available water right instantaneous quantity of 350 gpm. Future instantaneous demand is projected to be 423 gpm in twenty years.

## **FINDINGS:**

This Report of Examination (ROE) evaluates the application based on the hydrologic/hydrogeologic assessment presented above. To approve the application, Ecology must issue written findings of fact and determine that each of the following four requirements of RCW 90.03.290 has been satisfied:

- (1) The proposed appropriation would be put to a beneficial use;
- (2) Water is available for appropriation;
- (3) The proposed appropriation would not impair existing water rights; and
- (4) The proposed appropriation would not be detrimental to the public welfare.

## **Beneficial Use**

This proposed appropriation will serve as the primary source of water for the Water District. In accordance with RCW 90.54.020(3), the proposed appropriation for municipal supply is a beneficial use of water.

## **Availability**

### Quantities to be Associated with the New Water Right

Based on the analyses discussed in the Hydrologic/Hydrogeologic Assessment section above, it can be concluded that pumping the new well at 350 gpm and 256 afy will produce no greater an effect on Silver Creek than the maximum permitted pumping associated with the existing permitted pumping rates from the USFS and School wells combined. Consequently, the water right can be processed with non-additive quantities at these rates for the new well. Due to the closer proximity of the Hampton Well to Silver Creek, pumping that well at an increased rate could produce a greater effect on the creek. Therefore use of the LCWD#1 water right at the existing Hampton well should be limited to November 16 through August 14, to avoid potential effects during periods when flows in Silver Creek drop below 10 cfs. Water can continue to be developed on a year-round basis from the Hampton Well at the 350 gpm and 42 afy currently permitted under the existing water right.

### Source of Water Proposed for Appropriation

The applicant seeks to withdraw water from two wells located in the NW ¼ of the NE ¼, Section 15, Township 12 North, Range 7 East. The existing Hampton well is located approximately 1,800 feet north and 350 feet west from the center of Section 15. As discussed above, a requirement to pump this well only November 16 through August 14 under the LCWD#1 water right should prevent any violations of the 10 cfs SWSL on Silver Creek. The new well is proposed for installation approximately 1,450 feet west and 700 feet south of the northeast corner of Section 15. That well location was a critical assumption during the Golder analyses and moving the well to the west would produce a greater effect upon Silver Creek. Moreover, the current described new well location is at the eastern edge of the quarter-quarter and it would be possible to drill a well within this quarter-quarter and bring it as much as 1,200 feet closer to the creek. Consequently, a limitation of the subject water right will be that the new well not be located closer than 1,900 feet from Silver Creek.

The nearby Hampton well has produced water at 350 gpm and 42 afy for many years. Therefore evidence suggests that 350 gpm likely is physically available for appropriation at the new well site, which is only approximately 900 feet to the east. A well pumping at 350 gpm for 11 hours per day can produce 256 afy. Therefore evidence suggests that an annual quantity of 256 afy also is likely physically available for appropriation from both sites combined.

Mitigation for the effects of pumping will come in the form of making the new water right subject to non-additive quantities associated with the USFS well (under groundwater right Certificate Number 5393A), the School well (under groundwater right Certificate Numbers 1011-A and 3631-A), and the Hampton well (under groundwater right Certificate Number G2-27504). All of the proposed points of withdrawal combined have a maximum instantaneous rate of withdrawal of 700 gpm already authorized by their collective water rights. To assure the non-additive nature of this water right, this water right will be conditioned so that neither well produces more than 350 gpm. Used together under the existing rights, both wells may pump at the same time to allow the LCWD #1 to serve the mill and water district under the school and USFS water rights and to serve the mill under the mill water right. As such, provided the other requirements for a new water right are met, these quantities are available for appropriation.

## **Potential for Impairment**

RCW 90.03.290 and RCW 90.44.060 require a determination that a new appropriation will not impair existing rights.

During their analyses Golder predicted less than one foot of drawdown interference at a distance of 700 feet from the proposed well and essentially no interference one half a mile from the pumped well. Consequently, Golder performed its evaluation of potential impairment within a one-half mile radius of the proposed point of withdrawal. This analysis relied primarily on data contained in Ecology's Water Rights Application Tracking System (WRATS) database of 2006, and the on-line well log database accessed in January 2007. During their assessment Golder also assumed the location of existing water rights and potentially effected wells to be within the described area at the closest point to the proposed point of withdrawal. This conservatively maximized the potential impairment. Actual impairment as a function of the location is expected to be less than predicted.

**Golder Evaluation of Potential for Impairment of Existing Groundwater Right Certificates**

The WRATS database lists four active groundwater certificates that may be within a half mile of the proposed point of withdrawal, excluding rights held by the Hampton Lumber and the School District:

**Table 3 - Groundwater Certificates Within ½ Mile of the Proposed Point of Withdrawal**  
(Ecology WRATS database, 2006)

Name	Water Right	TRS	Quad	Priority Date	Qi (gpm)	Qa (afy)
Pierce, Benjamin T	G2-00361C	T12N/R07E-10	NE/SE	25-Feb-72	65	12.7
Rice, L C	G2-20313C	T12N/R07E-10	SW/SE	13-Jun-72	24	4.5
Henderson, William E	G2-22443C	T12N/R07E-10	NW/SE	17-May-74	100	22.5
Larson, Edward E	G2-26914C	T12N/R07E-15	SW/NW	22-May-86	15	2.0

Golder’s analysis suggests that the Pierce well has an excess available drawdown of 22 feet when pumped at the full instantaneous rate allowed by the associated water right, based on well construction details and the median of specific capacities of nearby wells (no pumping test was indicated to have been conducted on the well log). The maximum interference drawdown from the proposed point of withdrawal on the Pierce well was 0.25 feet (assuming a minimum distance from the pumped well of 1,870 feet), or approximately two orders of magnitude smaller than the excess available drawdown. Therefore, no impairment of the Pierce water right is predicted to occur as a result of exercising the proposed point of withdrawal.

A well log for the Rice well was not available. However the water right file (G2-20313C) indicates an instantaneous quantity of 24 gpm, and reports the well to be 68 feet deep and approximately 1,900 feet from the Water District’s proposed point of withdrawal. No other well-specific data is currently available (e.g., depth to water, screened interval, pumping test data). Using aquifer properties for other wells in Section 10 (ambient depth to water = 41 feet), a maximum available drawdown of 27 feet was estimated. Using the average specific capacity from other wells in Sections 10 and 11 (Cs = 9 gpm/ft), a drawdown of three feet was estimated to occur as a result of exercising the water right associated with the Rice well, leaving approximately 21 feet of excess available drawdown. The maximum interference drawdown from the proposed point of withdrawal on the Rice well was 0.22 feet (assuming a minimum distance from the pumped well of 1,900 feet). The estimated magnitude of impact was approximately one order of magnitude smaller than the estimated seasonal water level fluctuations, and approximately two orders of magnitude smaller than the maximum excess available drawdown. Therefore, no impairment of the Rice water right was predicted to occur as a result of exercising the proposed point of withdrawal.

The pumping test conducted on the Henderson well when installed indicates an excess available drawdown of five feet when pumped at the full instantaneous rate allowed by the associated water right. The maximum interference drawdown from the proposed point of withdrawal on the Henderson well was 0.5 feet (assuming a minimum distance from the pumped well of 1,320 feet), or approximately an order of magnitude smaller than the excess available drawdown. Therefore, no impairment of the Henderson water right was predicted to occur as a result of exercising the proposed point of withdrawal.

The Larson water right is registered in the SW ¼ of the NW ¼ of Section 15. However, the well is registered in the SW ¼ of the SW ¼. For the purposes of assessment, the location closer to the proposed point of withdrawal was assumed (i.e., the SW ¼ of the NW ¼). The pumping test conducted on the Larson well when installed indicates an excess available drawdown of 41 feet when pumped at the full instantaneous rate allowed by the associated water right. The maximum interference drawdown from the proposed point of withdrawal on the Pierce well was 2.4 feet (assuming a minimum distance from the pumped well of 100 feet). Therefore, no impairment of the Larson water right was predicted to occur as a result of exercising the proposed point of withdrawal.

**Golder Evaluation of Potential for Impairment of Existing Groundwater Right Claims and Wells**

There are 107 claims within sections 10, 11, 14 and 15 that may be within a half mile of the proposed point of withdrawal (they are only located with the resolution of a section, and most of these claims may be located further than half a mile from the proposed point of withdrawal):

**Table 4 - Claims Within Sections 10, 11, 14 and 15, T12N, R7E**

Purpose of Use	Short Form Claims	Long Form Claims	Totals
Domestic General	20	48	68
Domestic General, Irrigation	7	3	10
Domestic General, Stock Watering	10	11	21
Domestic General, Irrigation, Stock Watering	3	5	8
<b>Totals:</b>	<b>40</b>	<b>67</b>	<b>107</b>

The maximum acreage irrigated by any one of these claims is 3 acres.

There is currently no water service provided by the Water District in the vicinity of the proposed point of withdrawal and most residences are dependent upon private permit exempt wells. A review of Ecology’s on-line well log database identified 46 wells in Sections 10, 11 and 15 that may be located within a half mile of the proposed point of withdrawal (no wells were located in Section 14 within a half mile of the proposed point of withdrawal).

A quantitative assessment evaluated whether, for each existing well, there was sufficient available drawdown to accommodate the combined drawdown from a) the use of that existing well under its associated water right, and b) possible interference drawdown from the requested new points of withdrawal.

Available drawdown in each existing well was estimated by the difference between the reported static water level and the top of the open interval of the well. Drawdown in each existing well from the use of that well at the pumping rate that the well was tested was obtained from the well log. Where a well log was correlated to a water right, the instantaneous quantity of the water right was used to calculate drawdown in the well. Where drawdown data was not available on the well log (e.g., an air test), the average specific capacity of well logs reported in the hydrologic/hydrogeologic assessment above was used.

Potential interference drawdown in each existing well from the requested new point of withdrawal was calculated using the relationship derived in Figure 3. Minimum distances between the proposed point of withdrawal and existing wells for which potential impacts were estimated, and associated predicted interference drawdown were as follows:

**Table 5 - Estimated Distances of Existing Wells From the Proposed Point of Withdrawal and Interference Drawdown**

<b>Relative Distance/Location of the Proposed Point of Withdrawal to an Existing Well</b>	<b>Distance (feet)</b>	<b>Predicted Interference Drawdown (feet)</b>
3/8 of a mile (i.e., wells in the northern quarters of the southern quarters of Section 10)	1,980	0.2
Diagonal of 1/2 a qtr section (i.e., wells in Section 11)	1476	0.4
1/4 mile (i.e., wells in the NW 1/4 of the NW 1/4 of Section 15)	1,320	0.5
1/8 mile (i.e., wells in Section 10 without a designated quadrant)	660	1.0
Sanitary set back (i.e., wells within the NE 1/4, or the NE 1/4 of the NW 1/4 of Section 15)	100	2.4

Nine of these wells were correlated with water right claims, and four were correlated to groundwater right certificates (one of which was subsequently determined to be further than one-half mile from the proposed point of withdrawal). Predicted interference drawdown, as a percentage of the available drawdown remaining in existing wells after drawdown caused by use of those wells was considered, to range from 1% to 14% with an average of 4%, with the exception of one well registered to Alvin Schroeder (Ecology well log on-line database ID #10741).

The Schroeder well is registered as being located in Section 10, with no quadrant designation, and no water right was correlated to the well. The well was tested at a rate of 22 gpm, and at that rate, drew water levels below the top of the perforated interval without consideration any interference drawdown from the proposed point of withdrawal. The method of impairment assumes wells are used at the rate that they were tested (i.e., 30 gpm for the Schroeder well). Assuming that the Schroeder well is used for domestic use, a pumping rate of 5 gpm is realistic. Under that condition, there is 16 feet of remaining available drawdown. The maximum interference drawdown from the proposed point of withdrawal on the Schroeder well is one foot (assuming a minimum distance from the pumped well of 660 feet). Therefore, no impairment of the use of the well is predicted.

Because the method of analysis assumed that the points of existing groundwater rights were the closest possible within the described legal description of their location to the proposed point of withdrawal, actual well locations are likely to be located further from the proposed point of withdrawal than assumed in the method of analysis. Therefore, the analysis presented above is considered worst case. The method of analysis conservatively overestimates potential impacts to existing groundwater rights, and does not identify any impairment.

Furthermore, WAC 173-150-060 requires that the impairment test be applied to “qualifying withdrawal facilities”. Qualifying groundwater withdrawal facilities are defined as those wells that are adequately constructed. An adequately constructed well is one that fully penetrates the saturated thickness of an aquifer and can accommodate reasonable variation in seasonal pumping water levels (WAC 173-150). As such, even if any neighboring wells are significantly interfered with, legal impairment would not occur unless those wells were drilled deep enough to fully penetrate the aquifer.

Based on the collective information, impairment of existing water rights is not anticipated with full use of the requested quantity at the proposed points of withdrawal.

**Public Welfare**

The requested groundwater withdrawal is non-additive to existing rights.

The new well will be kept at least 1,900 feet from Silver Creek. Therefore, no impairment to the 10 cfs SWSL for Silver Creek is expected from the new well.

Due to the closer proximity of the Hampton Well to Silver Creek, pumping that well at an increased rate could produce a greater effect on the creek. Therefore use the Hampton well under this water right will be limited to November 16 through August 14. By limiting withdrawals from the Hampton Well to these times, Silver Creek should not be affected during periods when flows drop below 10 cfs.

In approving this application the point of withdrawal will be moved slightly up-gradient in the watershed and a short stretch of Cowlitz River could experience very slightly decreased flows. No flow restrictions currently exist for the Cowlitz River, however, a state instream resources protection program with specified minimum instream flows and closures is under development as WAC 173-526. Based on the current recommendations in the Watershed Management Plan it is anticipated that allowances will be made for future development by placing 0.69 cfs of water in the Upper Cowlitz River Subbasin into reserve for future allocation for out-of-stream uses. However, at this point no closures or water reservations have been established.

Additionally, the donation of a water right by Hampton Lumber to the Trust Water Right program upon approval of the Water District's groundwater right application G2-30324 will provide an environmental benefit to the river and the creek that should offset any potential decrease in Cowlitz River flows.

The issuance of this water right is in the public welfare in that it provides for the preservation of public health and safety.

Consequently, issuance of this water right will not be detrimental to the public welfare.

### **CONCLUSIONS:**

The conclusions based on the above investigation are as follow:

1. The proposed appropriation for municipal use is a beneficial use of water.
2. The quantity of water requested for use in this application is available for appropriation. The Water District is under obligation to provide water within its service area.
3. The proposed appropriation will not impair senior water rights.
4. The proposed appropriation will not be detrimental to the public interest.

### **RECOMMENDATIONS:**

I recommend approval of application G2-30324 and issuance of a permit to allow appropriation of groundwater from the existing Hampton well and a new proposed well, consistent with WAC 173-150(2)(a) and Policy 1021. The recommended maximum instantaneous withdrawal rate (Qi) for each well is 350 gpm, with a combined maximum instantaneous withdrawal rate (Qi) of 700 gpm. The recommended total annual withdrawal (Qa) is 298 acre-feet per year for municipal water supply, non-additive to Groundwater Certificate Numbers 5393A, 1011-A, and 3631-A, and G2-27504. The period of use will be year round, as needed, from the proposed well, and limited to November 16 through August 14 from the existing Hampton well.

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

REPORTED BY: \_\_\_\_\_ Date: \_\_\_\_\_

### **CITATIONS:**

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