



STATE OF WASHINGTON
PROTESTED REPORT OF EXAMINATION FOR WATER RIGHT CHANGE
Water Right Control Number CG1-300889CLA@1

Purpose Place of Use Point of Diversion/Withdrawal Season Consolidation

PRIORITY DATE 1931	CLAIM NO. 300889CLA	PERMIT NO.	CERTIFICATE NO.
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NAME
Arlington, City of

ADDRESS/STREET 238 North Olympic Avenue	CITY/STATE Arlington, WA	ZIP CODE 98223
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PUBLIC WATERS TO BE APPROPRIATED

SOURCE Well	WRIA 5	COUNTY SNOHOMISH
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TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE 135	MAXIMUM ACRE FEET PER YEAR 72.18
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QUANTITY, PURPOSE OF USE, PERIOD OF USE
72.18 acre-feet, MU, Year round as needed

Ecology performed a tentative determination of extent and validity to split vested water rights per Water Right Claim 300889CL into two separate claims: 300889CLA and 300889CLB. A report of examination issued to file 300889CLB details the transfer of 50 gallons per minute (gpm) and 30 acre-feet per year (afy) of the claim to Noah Israel and Kay Crabtree (Godstream Technologies). The remaining volume and rate of water use is claimed by 300889CLA and transferred to City of Arlington as detailed in this report of examination.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
Haller Well Field 160 feet north and 100 feet west of the center of Section 2, Township 31N, Range 05 E. W.M.

SOURCE	PARCEL	QTR/QTR	SECTION	TOWNSHIP	RANGE	COUNTY
Well 1R	00461804400000	SE/NW	2	31	05E	Snohomish Co.
Well 2	00461804400000	SE/NW	2	31	05E	Snohomish Co.
Well 3	00461804400000	SE/NW	2	31	05E	Snohomish Co.

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

[Attachment 1 shows location of the authorized place of use and point(s) of diversion or withdrawal]

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 Arlington City 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

As detailed in City of Arlington Water System Plan; prepared to satisfy Washington State Department of Health requirements.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE	COMPLETE PROJECT BY THIS DATE	WATER PUT TO FULL USE BY THIS DATE December 31, 2028
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PROVISIONS

The water transferred as changed from seasonal (irrigation) to year round as needed supply is interruptible per WAC 173-505. This interruptible quantity is equal to 68.94 afy of the total 72.18 afy transferred. See Page 6 of this report, under the heading “Conclusions,” for further details.

STANDARD PROVISIONS

1. Wells, Well logs and Well Construction Standards

- 1.1. 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.
- 1.2. 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.
- 1.3. Installation and maintenance of an access port as described in WAC 173-160- 291(3) is required.

2. Measurements, Monitoring, Metering and Reporting

- 2.1. 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.
- 2.2. Department of 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.
- 2.3. Reported water use data shall be submitted via the Internet. To set up an Internet reporting account, access <https://fortress.wa.gov/ecy/wrx/wrx/Meteringx/>. If you do not have Internet access, contact the Northwest Region Office for forms to submit your data.
- 2.4. WAC 173-173 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. Installation, operation and maintenance requirements are enclosed as a document entitled “Water Measurement Device Installation and Operation Requirements”. <http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html>
- 2.5. 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. Water levels shall be measured and recorded monthly, using a consistent methodology. The length of the pumping period or recovery period prior to each measurement shall be constant, and shall be included in the record. Data for the previous year shall be submitted by January 31 to the Department of Ecology.

Static water levels data shall be submitted in digital format and shall include the following elements:

- 1. Unique Well ID Number
- 2. Measurement date and time
- 3. Measurement method (air line, electric tape, pressure transducer, etc.)
- 4. Well status (pumping, recently pumped, etc.)
- 5. Water level accuracy (to nearest foot, tenth of foot, etc.)
- 6. Description of the measuring point (top of casing, sounding tube, etc.)
- 7. Measuring point elevation above or below land surface to the nearest 0.1 foot
- 8. Land surface elevation at the well head to the nearest foot.
- 9. Static water level below measuring point to the nearest 0.1 foot.

3. Quantity Limits, Flow and Regulation

- 3.1. This authorization is subject to the following minimum flows taken from WAC 173-505 as adopted.

Instream flows as established at monitoring station #05A070 at River Mile 11.2, Lat. 48 11 49.5, Long. 122 12 32, and any downstream stations as presented in the table below shall be protected by regulation of diversions. No diversion of water greater than 3.24 cfs under this authorization shall take place when the stream flow at this station is below the minimum flows.

This authorization is subject to all downstream control stations and instream flow requirements that may also become controlling and critical to the use of water.

Stream Management Unit Information (N.F. is North Fork; S.F. is South Fork)		
Stream Management Unit Name	Control Point by River Mile (RM) or Latitude North (Lat.) and Longitude West (Long.)	Stream Management Reach
Stillaguamish Mainstem	Stillaguamish River nr Silvana Ecology Station #05A070 RM 11.2 Lat. 48 11 49.5, Long. 122 12 32	From the mouth at Port Susan to the confluence of the N.F. of the Stillaguamish River and the S.F. of the Stillaguamish River.
North Fork (N.F.) Stillaguamish River:		
N.F. Stillaguamish River at Arlington, WA	USGS Station #12167000 RM 6.5 Lat. 48 15 42, Long. 122 02 47	From confluence with the S.F. Stillaguamish to river mile 17.6.
N.F. Stillaguamish River at Oso	Ecology Station #05B090 RM 17.6 Lat. 48 16 21, Long. 122 53 17	From river mile 17.6 to headwaters.
South Fork (S. F.) Stillaguamish River:		
S.F. Stillaguamish River	RM 24.4	From confluence with the N.F. Stillaguamish River to RM 34.9.

Modified from WAC 173-505 Stillaguamish Instream Flow Rule.

3.2. The holder of this authorization is required to install and maintain an adequate flow measuring device or use another method of determining flow to meet the minimum flow requirement.

4. 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, prior to beginning (or modifying) your project.

5. Municipal Place of Use

If the criteria in RCW 90.03.386(2) are not met and a Water System Plan/Small Water System Management Program was approved after September 9, 2003, the place of use of this water right reverts to the service area described in that document. If the criteria in RCW 90.03.386(2) are not met and no Water System Plan/Small Water System Management Program has been approved after September 9, 2003, the place of use reverts to the last place of use described by The Department of Ecology in a water right authorization.

6. Water Use Efficiency

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

FINDINGS OF FACT AND ORDER

Upon reviewing the investigator’s report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find the change of water right as recommended will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER the requested change to purpose and place of use, point of diversion, and season of use under Groundwater Change Application No. CG1-300889CLA@1, subject to existing rights and the provisions specified above.

You have a right to appeal this decision. To appeal this you must:

- File your appeal with the Pollution Control Hearings Board within 30 days of the “date of receipt” of this document. Filing means actual receipt by the Board during regular office hours.
- Serve your appeal on the Department of Ecology within 30 days of the “date of receipt” of this document. Service may be accomplished by any of the procedures identified in WAC 371-08-305(10). “Date of receipt” is defined at RCW 43.21B.001(2).

Be sure to do the following:

- Include a copy of this document that you are appealing with your *Notice of Appeal*.
- Serve and file your appeal in paper form; electronic copies are not accepted.

1. To file your appeal with the Pollution Control Hearings Board

Mail appeal to:	OR	Deliver your appeal in person to:
The Pollution Control Hearings Board PO Box 40903 Olympia WA 98504-0903		The Pollution Control Hearings Board 4224 – 6th Ave SE Rowe Six, Bldg 2 Lacey WA 98503

2. To serve your appeal on the Department of Ecology

Mail appeal to:	OR	Deliver your appeal in person to:
The Department of Ecology Appeals Coordinator P.O. Box 47608 Olympia WA 98504-7608		The Department of Ecology Appeals Coordinator 300 Desmond Dr SE Lacey WA 98503

3. And send a copy of your appeal to:

Andrew B. Dunn, LG, LHG
Section Manager
Water Resources Program -- Department of Ecology
3190 160th Avenue SE
Bellevue, WA 98008-5452

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> .

If you have any questions, please contact Noel Philip of Ecology at (425) 649-4451.

Signed at Bellevue, Washington, this _____ day of _____, 2009.

Andy B. Dunn, LG, LHG
Section Manager
Water Resources Program
Northwest Region Office

INVESTIGATOR'S REPORT
 Noel S. Philip, LG, Department of Ecology
 Water Right Control Number CG1-300889CLA@1

BACKGROUND

Description and Purpose of Proposed Change

City of Arlington is acquiring water from Split Claim 300889A. Ecology processed a change request in 2006 to split and transfer a portion of the parent claim (300889CL), resulting in two claims 300889A and 300889B. Water Right Claim 300889CLB is authorized for 50 gallons per minute (gpm) and 30 acre-feet per year (afy). The amount of water available in Water Right Claim 300889CLA is based on the appropriated volume and rate Donald A and Beverly J. Klein put to beneficial use less the amount authorized for claim 300889B. West Water Research compiled evidence including photographs, utility records, affidavits, etc. in its report to City of Arlington in 2007. The purpose, point of diversion, place of use, and season of use are all subject to change with this application.

Attributes of the Change Application and Proposed Change

<u>Table 1. Summary of Proposed Changes to Water Right Change Application No. 300889CLA@1</u>			
<u>Attributes</u>	<u>Existing</u>	<u>Proposed</u>	
Name	Donald A. and Beverly J. Klein	Arlington City	
Priority Date	1931		
Date of Application for Change	August 18, 2005		
Instantaneous Quantity	135 gpm	300 gpm	
Annual Quantity	72.18	90	
Source	well	Well 1R (emergency Well) Well 2 Well 3	
Point of Diversion or Withdrawal	Approx. 1600 feet North and 1800 feet east From SW corner of Sec. 35	Haller Well Field: SE/NW T32N/R05E-2	
Purpose of Use	IR, ST, DM	MU	
Period of Use	Seasonal, year round	Year round	
Place of Use	NE/SW T32N/R05E-35	Detailed in City of Arlington water system plan	

Legal Requirements for Proposed Change

The following is a list of requirements that must be met prior to authorizing the proposed change in purpose, point of diversion, place of use, and season of use.

- **Public Notice**

Arlington Times, December 5 and 12, 2007

- **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.

- 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;
- It is a groundwater right application for more than 2,250 gallons per minute;
- It is an application that, in combination with other water right applications for the same project, collectively exceed the amounts above;
- 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);
- 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.

Because this application does not meet any of these conditions, it is 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*.

The Supreme Court has held that a prior perfected water right for a seasonal use of water may be changed to year-round use if the change is not detrimental or injurious to existing rights. *R.D. Merrill v. PCHB*.

The holder of the right may change the manner or purpose of use. The Washington State Supreme Court held in *Merrill* that a water right holder may change the season of use when related to a change in the purpose of use of a water right. A change in the purpose of use can approved only after the water has first been applied to beneficial use.

RCW 90.44.100(1) states that a ground water permit can be amended to replace or add wells.

INVESTIGATION

History of Water Use

The history of use by Donald A. and Beverly J. Klein is documented back to 1931. A compilation of data providing evidence of this assertion is presented in a report from West Water Research. Ecology verified the methods of calculating beneficial use quantities and evidence of historic use.

Department of Ecology (Ecology) personnel investigated Water Right Claim 300889 to tentatively determine the actual quantity Donald Klein (Klein) historically put to beneficial use on the property formerly farmed and used to keep stock (through 2004). While ultimate quantities hadn't been quantified, Ecology determined enough water existed to process a water right split-claim change application (CG1-300889CLB). Noah Israel and Kay Crabtree (Crabtree) received a portion of the water right claim in the amounts of 50 gallons per minute (gpm) and 30 acre-feet per year (afy). The water right is in permit status as a Report of Examination of file with Ecology. Klein holds a Certificate of Change to Water Right Claim CG1-300889A authorizing a 300 gpm and 90 afy withdrawal.

City of Arlington submitted water right split-claim change application to Ecology February 26, 2007, to transfer ownership of the remaining right, and appurtenance from the Klein farm acreage to its municipality. The application seeks change to the purpose and place of use, and point of withdrawal.

Ecology determined same source with respect to the Klein and Crabtree points of withdrawal. Ecology also determined the Crabtree withdrawal would not likely affect the Stilligumish River (Stilligumish) instream flow more than the Klein withdrawal. While in relatively close proximity to one another, investigation is made to determine whether the same can be stated for the City of Arlington and Klein points of withdrawal and their relative affect on the Stilligumish River.

Proposed Use

City of Arlington seeks a change to the claim to provide water for municipal purpose.

Other Rights Appurtenant to the Place of Use

The Department of Ecology Water Rights Application Tracking System (WRATS) and Well Log databases show the existence of 3 water right certificates, and 13 water right claims within a 1/2-mile radius of Haller Well Field. At least four of the 10 wells of record within one half mile are likely tied to these water rights, and some are likely exempt from the application process. Still others may be sources for existing water right certificates or claims under a different name.

A water right claim is a statement describing the beneficial use of water occurring prior to the adoption of the water right codes and is not authorized by a state-issued permit or certificate. It is unknown whether the nearby claims are valid, not valid, or once valid and now relinquished back to the state. The Department of Ecology cannot verify the validity of these claims, as water right claims can only be confirmed in an adjudication by the Washington State Superior Court. Thus, no investigation is made into their validity. Exempt withdrawal of public groundwater is defined in RCW 90.44.050.

Hydrologic/Hydrogeologic Evaluation

Snohomish County/WRIA 5 Hydrogeology

Snohomish County extends westward from Cascade Mountain Range to Puget Sound. WRIA 5 is an administrative area assigned to coincide with the Stilliguamish River watershed. Newcomb describes the geology and occurrence of groundwater in USGS Water Supply Paper 1135.

The formerly glaciated topography shows features commonly associated with such events. In the lowlands, unconsolidated units mantle pre- Tertiary and Tertiary materials. These include Vashon Drift members showing generally horizontal stratification and great lateral extent. Among these are quaternary glacial till of Pleistocene age, along with Admiralty and Pilchuck Clays and Esperance Sands. Unconsolidated sediments transition generally eastward to pre-Vashon deposits in the foothills, and further east to older volcanic, igneous, and metamorphic rocks in the mountainous side of the county. The largest streams run west and northwest to Puget Sound and the geology shows typical geomorphic activity associated with large river valleys; each home to a continuous veneer of alluvium.

Most wells produce from beneath the Vashon glacial till from sand and gravel aquifers where they are positioned to receive percolating precipitation and store groundwater. Wells tapping ancient stream channels and more recent alluvium also produce in quantities sufficient to sustain single- and multi- family development depending on well construction. However, these wells are typically in direct hydraulic continuity with nearby streams and have an impact on local instream flow in many cases. Wells completed in igneous and metamorphic upland rock formations are not typically viable unless they penetrate a fractured area that holds a groundwater body.

Hydrogeology Near CG1-300889CLA@1

The Arlington well described by Newcomb in 1952 is part of the Haller Well Field, less than 500 feet from the confluence of the North and South Forks of the Stilliguamish (Attachment 1). Three production wells are currently completed approximately 36 feet below ground surface (bgs), within 50 feet of one another. Wells 2 and 3AB are the primary supply wells, and Well 1R is the designated emergency well. A fourth well, Well 1, was decommissioned in May, 2002 (Ecology Well Log Notice of Intent #A43038). These and the Klein wells, described in Table 1, withdraw water from the same source; an unconfined aquifer in direct hydraulic connection with the Stilliguamish. Geology mapped in Newcomb's report shows the Stilliguamish sand member extending throughout the river valley. The Stilliguamish sand member is sand, silt, clay, and gravel deposited in the valley to thicknesses of 300 feet. It is classified a moderate producing hydrogeologic unit in areas material is coarser.

The well logs from the Klein property and Arlington's wells describe material downhole closely resembling that described in the Newcomb report. This serves as a check to local conditions described in the report because it used one of Arlington's wells as a well representative of the area. All wells discussed in this memo produce water from a screened interval (or open bottom) in a zone of sand and gravel.

A report submitted by Pacific Groundwater Group in November, 2002 details the lithology to 38 feet below ground surface (bgs) at Well 1R. The Stilliguamish sand member terminates at 35 feet bgs upon the occurrence of low-grade metamorphic bedrock.

Table 2. Wells of interest in the split to Claim CG1-300889CLA@1.								
Owner	Name	Well Tag	Completion Date	Completion Depth	Casing Diameter	Wellhead MSL ¹	Static Water MSL	Screened Interval MSL
Arlington	Well 2	AGB 953	12/1961	36	36	73.8 ⁵	20.85	38-50
Arlington	Well 3AB	AGB 951	12/1961	36	36	72.8 ⁵	19.85	38-50
Arlington	Well 1R	AFT 307	5/8/2002	38	20,16,18	73 ⁵	DNA	39-45
Klein		AGO 219	8/1/2001	35.5	6	62 ¹	4 ⁴	open bottom
Klein		207038 ³	2/3/1993	36	6	62 ¹	6 ⁴	open bottom
Notes:								
DNA = Did not attempt. Ecology personnel measured static water level with e-tape 11/05/2008.								
1) MSL= feet relative to mean sea level; taken from Ecology GIS database Zone 10 DEM								
2) Value includes 1.0 feet casing stickup relative to Well 3AB top of casing (TOC)								
3) Ecology Well Log database Notice of Intent (start card) no.								
4) Taken from Ecology Well Log Database well log image files								
5) Elevation reported in application								

Water Availability, Pump Test Data (PGG, 2002)

Arlington has been pumping water from the Haller Well Field (point of withdrawal) for decades, and a typical constant rate pumping test to determine water availability and aquifer productivity is not necessary. It is sufficient to observe the results from extended pumping to determine adequacy of availability. However, it is helpful to make determinations regarding drawdown at distance from the point of withdrawal to ascertain whether there is risk of impairment to water rights in the immediate vicinity. To that end, this report looks to data recorded during a pumping step test Pacific Groundwater Group (PGG) performed in Well 1R during 2002. It provides more recent insight into the aquifer characteristics and its ability to transmit and store water.

A step drawdown test that included an extended final step (over four hours), shows Well 1R sustained a withdrawal rate of 570 gpm during the final 240 minutes of the test. Water levels in the pumped well declined approximately 6.5 feet, reaching this level in 240 minutes. The report contains no raw data, but Figure 2 shows recovery occurring rapidly to pre-pumping conditions. The remainder of the image shows a plot of background water levels and pumping step test water levels. It is noteworthy how closely (and how rapidly) the water levels in the wells respond to Stilliguamish River stage. It is a more realistic indicator of the city's ability to pump water from all three wells at once. The PGG report discusses the inability of the well field to produce from all three wells at their maximum pumping capacity in periods of low stage in the river, and mitigating pumping schemes during these times.

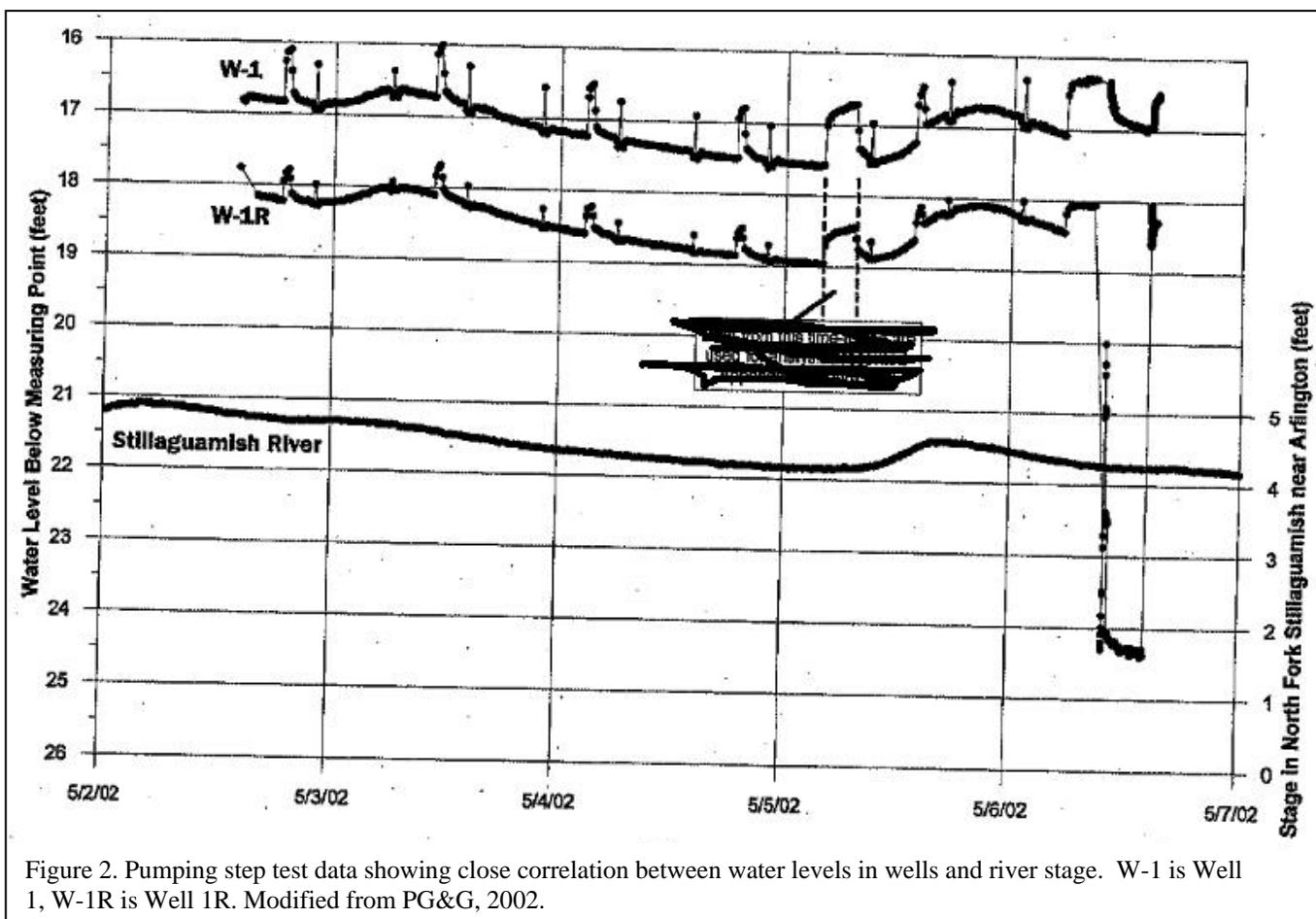


Figure 2. Pumping step test data showing close correlation between water levels in wells and river stage. W-1 is Well 1, W-1R is Well 1R. Modified from PG&G, 2002.

The pump step test data confirm the source of these wells is the Stillaguamish River. The groundwater source of the Klein withdrawal is known to be in direct hydraulic continuity with Armstrong Creek, a named tributary of the South Fork Stillaguamish River in WAC 173-505, the administrative rule setting minimum flows in the Stillaguamish through the year. Thus, the water source for these two withdrawals is the same, as it pertains to this change application.

Impairment Considerations

Drawdown of approximately 9 inches in Well 1 during the test approximately 25 feet from the pumping well (Figure 2) shows how the aquifer responds at distance within the well field between wells.

Extrapolating this response shows negligible theoretical drawdown outside the well field. Washington water law does not consider drawdown to be an impairment of existing water rights, unless the affected wells fully penetrate the aquifer and can no longer produce their allocations. Therefore, impairment to any senior water rights due to pumping at the Haller Well Field wells is unlikely.

Impairment of Minimum Instream Flow Water Rights

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).

Impairment, Qualifying Ground Water Withdrawal Facilities, and Well Interference

There are three concepts that are important when considering whether a withdrawal of water from a well would impair another existing water right. The concepts are defined as follows:

Impairment is an adverse impact on the physical availability of water for a beneficial use that is entitled to protection i.e. water rights that are both senior and junior in priority to the right the applicant seeks to change.

Qualifying ground water withdrawal facilities are defined as those wells which in the opinion of the Department 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) the withdrawal facilities must be able to accommodate a reasonable variation in seasonal pumping water levels; and (d) the withdrawal facilities including pumping facilities must be properly sized to the ability of the aquifer to produce water.

Well interference 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. At any point in an aquifer, the composite drawdown caused by pumping wells will be greatly influenced by the transmissivity (T) of the aquifer. In aquifers with high Ts, composite drawdown will generally be much less than in aquifers with similar properties but with low Ts. Transmissivity is related to hydraulic conductivity (K) and the saturated thickness (b) of an aquifer by the relationship $T=Kb$.

An aquifer's hydraulic conductivity (K) is derived from the physical properties of both the fluid and geologic materials that form an aquifer. Once formed, an aquifer's saturated thickness (b) becomes important in evaluating its transmissivity. For regions of similar K in an aquifer, a large saturated thickness will result in a much higher T than a small saturated thickness. As a result, regions of similar K in an aquifer with a large saturated thickness will experience less composite drawdown or well interference than with a small saturated thickness.

Some conditions, however, will increase or steepen composite drawdown in an aquifer. For instance, where characteristics (such as very fine, clay-rich, or poorly sorted sediments) of an unconfined aquifer cause significant drawdown relative to the saturated thickness, the composite drawdown will increase as saturated thickness is reduced and T becomes smaller. Additionally, in regions where negative or no-flow boundaries occur, such as near the edges of a valley fill aquifer where it is bounded by bedrock, composite drawdown will be steeper than in the central part (generally the greatest thickness region) of the aquifer. Consequently, it is commonly understood that the greatest composite drawdown or well interference is more likely to occur in regions of low transmissivities, thin saturated thicknesses and near negative or no-flow boundaries than in regions of high transmissivities, large saturated thicknesses, and away from negative or no-flow boundaries.

Enlargement

The City of Arlington is receiving a transferred quantity based on a tentative determination of extent and validity. Only that water put to beneficial use is transferred, and only that amount is authorized to be withdrawn (by this authorization) from the wells in Haller Well Field. Thus, no enlargement is anticipated.

Public Interest Considerations

Factors considered in determining whether this use of water is in the public interest include but were not limited to: consideration given to exempt wells; existing water right certificates, applications, and claims; potential impacts to the aquifer subject to withdrawal as it pertains to drawdown and water quality (i.e. aquifer degradation); beneficial use of water as a resource defined in this report. No detriment to the public interest could be identified during the investigation of the subject application. Available data show existing wells in the area are not expected to be impaired by the anticipated operation of the subject well.

Consideration of Protests and Comments

Tulalip Tribes submitted a protest April 30, 2007, detailing a number of concerns regarding this change application. They are identified and addressed individually for clarity and completeness in addressing the protestant's arguments:

"...Tulalip objects to the transfer of a groundwater claim used seasonally for irrigation and year round for three homes to year round municipal uses. This action changes a claim, which is subject to relinquishment, to a municipal water right which is not subject to relinquishment." A water right is relinquished if it endures 5-year period of unjustifiable non-use, and is thus not a water right. There is tentatively established beneficial use from the present extending back in time to 1931. The water right in question is not subject to relinquishment. The seasonality of the change from irrigation to municipal supply is discussed elsewhere in this report.

"...seasonal use of the majority of the claimed water for irrigation would at least return water to the groundwater system." Wastewater from Arlington is channeled away from the city via surface water, a source shown to be in direct hydraulic connectivity with groundwater in the river basin.

“...we find that Arlington, with its ability to purchase water from Snohomish PUD and Marysville, does not need the transfer...” The ability to purchase water is not a vested water right. The city still has a right to apply for change to existing rights and augment its supply to provide water for its population growth estimates supported in documentation in a water system plan. While it’s possible the city may have water rights adequate for the present, they have demonstrated a determined future development in their water system plan requiring the acquisition of additional water rights to provide for their citizens in the future.

Tulalip Tribes are worried withdrawal will negatively affect summer flows in the Stilliguamish. The irrigation water transferred in this change is interruptible when flows in the river are not met outside of irrigation season. However, the season of irrigation use is typically from May to September each year. Arlington is within its rights to pump during the summer regardless of flows, due to the seniority of the water right to instream flows.

CONCLUSIONS

The Klein claim (300889CLA) is tentatively determined valid in the amounts given below (Table 3) for irrigation (seasonal use), stockwatering, and domestic purposes (“Classification column” and associated figures). West Water Research arrived at the values based on water use data not including metering data, and affidavits from the water right holder. A portion of water was split from the original claim and transferred in change G1-300889CLB. The remainder is transferred to City of Arlington in this decision.

The water split from the original claim and subsequently transferred to Water Right Claim 300889CLB was for development of 35 homes, stockwatering, and irrigation. Annual water allocation required by an applicant for year round domestic purpose of use is calculated using the number of anticipated connections and water use per connection. Residential water use is based on historical and current data from similarly-sized water systems. Presently, these systems indicate average use per connection is approximately one-third (0.3) acre-foot per year. At this rate, the annual water quantity required by the holder of claim 300889B to serve 35 residential connections is 10.5 acre-feet per year. This year round use absorbs most of the available water for year round use in the Klein claim. The remainder (19.5) is for stockwatering and seasonal irrigation, transferred from the irrigation portion of the Klein claim. The total transferred to 300889CLB was 30 afy. The instantaneous withdrawal rate transferred was 50 gpm.

There remains 3.24 afy to transfer to City of Arlington for year round use (combining stockwatering, dairy activities, and domestic uses), and 68.94 afy are classified year round use-interruptible when stream flows are not met when irrigation is out of season (October through April).

Table 3. Destination of available water in Water Right Claim 300889 based on purposes of use.				
Classification	Used by Klein	GPM	Transferred to 300889CLB	Transferred to 300889CLA
Instantaneous		185	50 gpm	135 gpm
Irrigation	88.44		19.50	68.94
Stock Water	10.78		10.5	0.28
Dairy Activities	1.46		0	1.46
Domestic	1.50		0	1.50
Total	102.18		50 gpm, 30 afy	135 gpm, 72.18 afy
Note: 1) Units are acre-feet per year (afy) unless otherwise indicated.				

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that the request for change to Water Right Claim 300889CLA 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:

- 135 gpm
- 72.18 acre-feet per year

- Municipal Supply

Point of Withdrawal

SE¹/₄, NW¹/₄, Section 2, Township 31 North, Range 05 E.W.M.

Place of Use

As described on Page 1 of this Report of Examination.

Report by: _____ Date _____
Noel S. Philip, LG
Water Resources Program

References

National Resource Conservation Service. Washington Irrigation Guide. United States Department of Agriculture, National Resource Conservation Service, 2007. Available for download as of May 22, 2008 at: http://www.wa.nrcs.usda.gov/technical/ENG/irrigation_guide/index.html.

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Pacific Groundwater Group, 2002. Constructing and Testing Replacement Well No. 1 (Well-1R) Haller Park Well Field.

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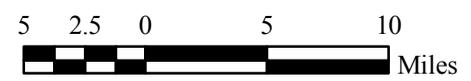
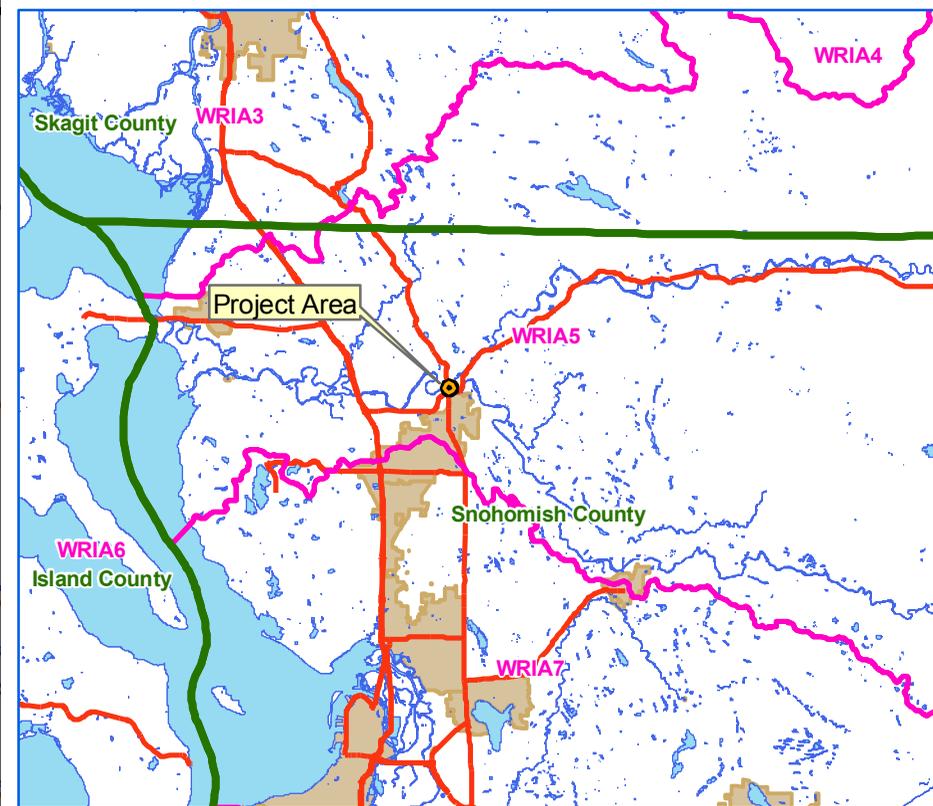
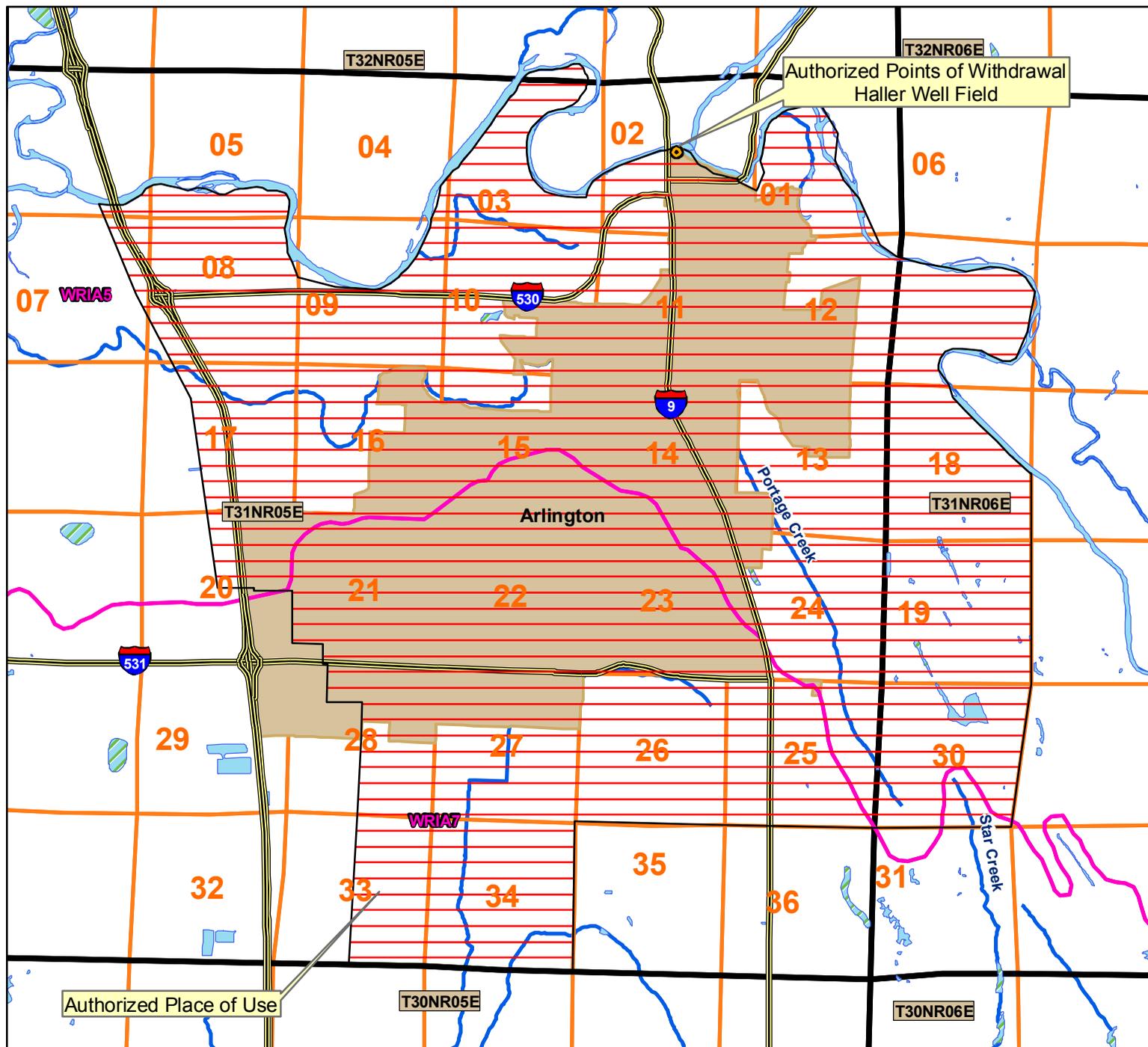
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West Water Research, 2007. Water Right Summary and Beneficial Use Analysis of Ground Water Right Claim 300889CLA (Donald and Beverly Klein).

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City of Arlington
 Water Right Number CG1-300889CLA
 Sec. 2, T 31N R 05E W.M.
 WRIA5 - Snohomish County



- 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.'