



State of Washington
PROTESTED
 REPORT OF EXAMINATION
 FOR WATER RIGHT CHANGE

File NR CG1-20701C
 WR Doc ID 6167635

Changed Place of Use
 Adding Points of Withdrawal

PRIORITY DATE 6/12/1973	WATER RIGHT NUMBER G1-20701C
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MAILING ADDRESS Arlyn Visser 9451 Swanson Road Sumas, WA 98295	SITE ADDRESS (IF DIFFERENT)
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Total Quantity Authorized for Withdrawal		
WITHDRAWAL RATE	UNITS	ANNUAL QUANTITY (AF/YR)
200	GPM	120.2

Total withdrawals from all sources must not exceed the total quantity authorized for withdrawal listed above.

Purpose

PURPOSE	WITHDRAWAL RATE			ANNUAL QUANTITY (AF/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	
Irrigation	200		GPM	120.2		04/15-10/01

IRRIGATED ACRES		PUBLIC WATER SYSTEM INFORMATION	
ADDITIVE	NON-ADDITIVE	WATER SYSTEM ID	CONNECTIONS
70	0		

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Whatcom	Groundwater		01

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWP	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
IW-2	400405160279	BHN420	40N	04E	05	SW NW	48.98925	-122.33040
Future Well	400405160279	NA	40N	04E	05	S/2 SE NW	NA	NA
Future Well	400405160279	NA	40N	04E	05	N/2 NE SW	NA	NA
Future Well	400405443216	NA	40N	04E	05	NE SE	NA	NA
Future Well	400405443216	NA	40N	04E	05	SW SE	NA	NA
Future Well	400405377196	NA	40N	04E	05	NW SE	NA	NA

Datum: NAD83/WGS84

Place of Use (See Attached Map)

PARCELS

400405160279, 400405377196, 400405443216

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

Parcel 400405160279 – SW ¼ NW ¼, S ½ SE ¼ NW ¼, N ½ NE ¼ SW ¼, Section 5, Township 40 North, Range 4 East W.M., Except Portion defined as follows – Beginning on West line of SW ¼ NW ¼, South 02 degrees 07’16” West 761.62 feet of NW corner – Running thence S 87 Degrees 52’44” E 726 feet, THENCE S 02 Degrees 07’16” W 300 ft, THENCE N 87 Degrees 52’44” West 726 feet, THENCE N 02 Degrees 07’16” E 300 feet to Point of Beginning, LESS roads.

Parcel 400405377196 – NW ¼ SE ¼, Section 5, Township 40 North, Range 4 East W.M., Except North 49 Rods of West 49 Rods all lying Northwesterly of Northwesterly line of Burlington Northern Railroad Right-of-way, LESS roads. Excluding the portion defined as follows. Beginning at a point 49 rods South of NW corner of NW ¼ SE 1/4, THENCE East 570 feet, THENCE South 382.1 Feet, THENCE West 570 feet more-or-less to the centerline of Swanson Road, THENCE North along centerline of Swanson Road 382.1 feet more-or-less to Point of Beginning, LESS roads.

Parcel 400405443216 – Beginning 158 feet West of the Northwest Corner of SW ¼ SE ¼, Section 5, Township 40 North, Range 4 East W.M., THENCE South 340 feet, THENCE South 85 degrees E 430.5 feet, THENCE South 33 degrees 15’00” East 52 feet, THENCE South 00 degrees 45’00” East 89.5 feet to Bellingham-Northern Railroad right-of-way, THENCE Northeasterly along right-of-way to North line of S ½ SE ¼, THENCE West to Beginning, LESS road. Beginning at NW corner of the NE ¼ SE ¼, THENCE South to Bellingham-Northern Railroad right-of-way, THENCE northeasterly along said railroad right-of-way to a point 268 feet West of East section line, THENCE North 500 feet to North line of SE ¼, THENCE West to beginning, Except that portion thereof deeded to Whatcom County for road out of first described tract described in assessor file 733844.

Proposed Works

A well or wells tapping the Abbotsford-Sumas aquifer providing water to an irrigation system that will utilize an irrigation method appropriate for the crops to be grown.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
Started	March 31, 2016	March 31, 2020

Measurement of Water Use

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

Provisions

Well Construction Setbacks

Any new, replacement, or additional well constructed under this water right shall be installed not less than 100 feet from neighboring wells, including permit-exempt wells, which exist at the time of drilling, except that if a neighboring well has been drilled within 100 feet of well IW-2, then that separation distance shall be maintained.

Wells, Well Logs and Well Construction Standards

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

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

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

Measurements, Monitoring, Metering and Reporting

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

Recorded water use data shall be submitted via the Internet. To set up an Internet reporting account, contact the Bellingham Field Office. If you do not have Internet access, you can still submit hard copies by contacting the Bellingham Field Office for forms to submit your water use data.

Proof of Appropriation

The water right holder must file the notice of Proof of Appropriation of water (under which the superseding certificate of water right is issued) when the permanent distribution system has been constructed and the quantity of water required by the project has been put to full beneficial use. Once Ecology has accepted the Proof of Appropriation form, the applicant shall retain the services of a Certified Water Rights Examiner (CWRE) to verify the extent of the perfected right and prepare the necessary documentation to allow Ecology to issue a water right certificate for this project. The certificate will reflect the extent of the project perfected within the limitations of this authorization. Elements of a proof inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and satisfaction of provisions. Information on hiring a CWRE is available on Ecology's website at: <http://www.ecy.wa.gov/programs/wr/rights/cwrep.html> or by calling the appropriate Ecology regional office.

Schedule and Inspections

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

Real Estate Excise Tax

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

Findings of Facts

Upon reviewing the investigator's report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I concur with the investigator that the water right is partially eligible for change, the additional well(s) will tap the same body of public groundwater as the original well; there will be no impairment of existing rights; the combined total withdrawal from the original and the additional wells will not enlarge the right; and there will be no detriment to the public interest.

Therefore, I ORDER approval of Application No. CG1-20701C subject to existing rights and the provisions specified above.

Your Right To Appeal

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

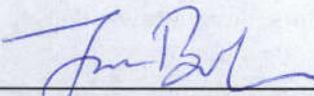
To appeal you must do the following within 30 days of the date of receipt of the Order.

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

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

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

Signed at Bellevue, Washington, this 28th day of April, 2015.



Tom Buroker, Section Manager

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

INVESTIGATOR'S REPORT

Application for Water Right: Arlyn Visser

Water Right Control Number: CG1-20701C

Investigators: Jim Bucknell, Andrew Dunn, and Adam Neff, RH2 Engineering, Inc.

BACKGROUND

Project Description

This report serves as the written findings of fact concerning Water Right Change Application Number CG1-20701C. This water right was originally issued to Mr. William D. Visser, but is now owned by Mr. Arlyn Visser (his son) who currently operates the farm. The right is for irrigation with an instantaneous rate of 200 gallons per minute (gpm) and an annual volume of 140 acre-feet per year (af/yr) for the irrigation of 70 acres. The applicant wishes to be allowed to add additional points of withdrawal (POW) and expand the size of the place of use to cover additional parcels of land owned by Mr. Arlyn Visser, approximately 0.25 miles southeast of the existing place of use. No expansion to the number of irrigated acres has been requested. The proposed change will allow Mr. Arlyn Visser the option of including a portion of his water rights with any potential future sale of a portion of his land holdings that are included within the proposed place of use.

The original POW (referred to in this report as well IW-1) was an 8-inch-diameter well drilled to a depth of 34 feet. This original well can no longer be located. In the late 1980s, a new well was drilled on the property located approximately 0.3 miles northwest of the original well. The newer well (referred to in this report as well IW-2) is an 8-inch-diameter, 77-foot-deep drilled well. Well IW-2 has been added to G1-20701 through submittal of a showing of compliance form.

The applicant is requesting the ability to drill a future well anywhere within the proposed place of use. None of these proposed future wells currently exist and will only be drilled if irrigation of the expanded place of use occurs.

History of the Water Right

On June 12, 1973, Mr. William D. Visser filed for a water right application with the State of Washington Department of Ecology. In the application, Mr. Visser requested 200 gpm for irrigation of 75 acres from a well. The application identified that Mr. Visser also held a surface water right (SWC 3936) for the same property.

On March 13, 1974, the Department of Ecology issued a report of examination on application G1-20701. In that decision Ecology authorized 200 gpm and 140 acre-feet per year for irrigation of 70 acres from April 15 to October 1.

On April 30, 1974, the Department of Ecology issued William D. Visser Ground Water Permit G1-20701P. G1-20701P authorized 200 gpm and 140 acre-feet per year for irrigation of 70 acres from April 15 to October 1.

On June 25, 1975, William D. Visser signed a proof of appropriation form, attesting to the use of 240 gpm for irrigation of 70 acres from April to October.

On July 15, 1975, the Department of Ecology issued Ground Water Certificate G1-20701C to William D. Visser. G1-20701C authorized 200 gpm and 140 acre-feet per year for irrigation of 70 acres from April 15 to October 1.

On March 25, 2014, Mr. Arlyn Visser signed, and on April 1, 2014, the Department of Ecology received, the Showing of Compliance with RCW 90.44.100(3) form to document Well IW-2 as being a replacement well for the original point of withdrawal (IW-1) under water right G1-20701C.

On April 7, 2014, Mr. Arlyn Visser submitted an Application for Change/Transfer of Water Right to the Department of Ecology describing the requested change to add additional points of withdrawal and change the place of use of G1-20701C.

EXISTING Water Right Attributes

Water Right Owner:	Arlyn Visser (name on certificate is William D. Visser)
Priority Date:	6/12/1973
Place of Use	SW $\frac{1}{4}$ NW $\frac{1}{4}$, S $\frac{1}{2}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$, AND N $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$, ALL in Sec. 5, T. 40 N., R. 4 E.W.M. LESS the West 726 feet of South 300 feet of North 1008 feet of SW $\frac{1}{4}$ NW $\frac{1}{4}$ of Sec. 5 thereof, LESS roads and rights-of-way.

County	Waterbody	Tributary To	WRIA
Whatcom	Well		01 - Nooksack

Purpose	Rate	Unit	Af/yr			Begin Season	End Season	
Irrigation of 70 acres	200	GPM	140			April 15	October 1	
Source Name	Parcel	Well Tag	Twp	Rng	Sec	QQ Q	Latitude	Longitude
IW-1 (original – abandoned)	400405160279	NA	40N	4E	5	SW NW	48.98576	-122.32677
IW-2 (added through Showing of Compliance with RCW 90.44.100(3))	400405160279	BHN420	40N	4E	5	SW NW	48.98925	-122.33040

GPM = Gallons per minute; Af/yr = Acre-feet per year; Sec. = Section; QQ Q = Quarter-quarter of a section; WRIA = Water Resource Inventory Area; E.W.M. = East of the Willamette Meridian; Datum in NAD83/WGS84.

REQUESTED Water Right Attributes

Applicant Name:	Arlyn Visser
Date of Application:	4/7/2014
Place of Use	<p>Existing Place of Use Parcel: Parcel 400405160279 – SW ¼ NW ¼, S ½ SE ¼ NW ¼, N ½ NE ¼ SW ¼, Section 5, Township 40 North, Range 4 East W.M., Except Portion defined as follows – Beginning on West line of SW ¼ NW ¼, South 02 degrees 07'16" West 761.62 feet of NW corner – Running thence S 87 Degrees 52'44" E 726 feet, THENCE S 02 Degrees 07'16" W 300 ft, THENCE N 87 Degrees 52'44" West 726 feet, THENCE N 02 Degrees 07'16" E 300 feet to Point of Beginning, LESS roads.</p> <p>Proposed Additional Place of Use Parcels: Parcel 400405377196 – NW ¼ SE ¼, Section 5, Township 40 North, Range 4 East W.M., Except North 49 Rods of West 49 Rods all lying Northwesterly of Northwesterly line of Burlington Northern Railroad Right-of-way, LESS roads. Excluding the portion defined as follows. Beginning at a point 49 rods South of NW corner of NW ¼ SE 1/4, THENCE East 570 feet, THENCE South 382.1 Feet, THENCE West 570 feet more-or-less to the centerline of Swanson Road, THENCE North along centerline of Swanson Road 382.1 feet more-or-less to Point of Beginning, LESS roads.</p> <p>Parcel 400405443216 – Beginning 158 feet West of the Northwest Corner of SW ¼ SE ¼, Section 5, Township 40 North, Range 4 East W.M., THENCE South 340 feet, THENCE South 85 degrees E 430.5 feet, THENCE South 33 degrees 15'00" East 52 feet, THENCE South 00 degrees 45'00" East 89.5 feet to Bellingham-Northern Railroad right-of-way, THENCE Northeasterly along right-of-way to North line of S ½ SE ¼, THENCE West to Beginning, LESS road. Beginning at NW corner of the NE ¼ SE ¼, THENCE South to Bellingham-Northern Railroad right-of-way, THENCE northeasterly along said railroad right-of-way to a point 268 feet West of East section line, THENCE North 500 feet to North line of SE ¼, THENCE West to beginning, Except that portion thereof deeded to Whatcom County for road out of first described tract described in assessor file 733844.</p>

County	Waterbody	Tributary To	WRIA
Whatcom	Groundwater		01 - Nooksack

Purpose	Rate	Unit	Af/yr			Begin Season	End Season	
Irrigation	200	GPM	123.2			April 15	October 1	
Source Name	Parcel	Well Tag	Twp	Rng	Sec	QQ Q	Latitude	Longitude
Well IW-2	400405160279	BHN420	40N	04E	05	SW NW	48.98925	-122.33040
Future Well	400405160279	NA	40N	04E	05	SE NW	NA	NA
Future Well	400405160279	NA	40N	04E	05	NE SW	NA	NA
Future Well	400405443216	NA	40N	04E	05	NE SE	NA	NA
Future Well	400405377196	NA	40N	04E	05	NW SE	NA	NA
Future Well	400405443216	NA	40N	04E	05	SW SE	NA	NA

GPM = Gallons per minute; Af/yr = Acre-feet per year; Sec. = Section; QQ Q = Quarter-quarter of a section; WRIA = Water Resource Inventory Area; E.W.M. = East of the Willamette Meridian; Datum in NAD83/WGS84.

Legal Requirements for Requested Change

The following is a list of requirements that must be met prior to authorizing the proposed change in POU and POW.

Public Notice

RCW 90.03.280 requires that notice of a water right application be published once a week, for two consecutive weeks, in a newspaper of general circulation in the county or counties where the water is to be stored, diverted and used. Notice of this application was published in both the *Lynden Tribune* and *Ferndale Record* on July 23, 2014 and July 30, 2014 and in the *Bellingham Herald* on July 24, 2014 and July 31, 2014. In an email on October 13, 2014, Ms. Michele Curtis, of the Department of Ecology's Northwest Regional Office, confirmed that the only protest received was from the Lummi Indian Business Council (Lummi Nation).

Consultation with the Department of Fish and Wildlife

The Department of Ecology must give notice to the Department of Fish and Wildlife (WDFW) of applications to divert, withdraw or store water. On December 2, 2014, December 11, 2014, and January 19, 2015, a summary of the proposed decision was provided to Mr. Steve Boessow, Water Rights Biologist with WDFW. No comments were received from WDFW.

Consultation with the Lummi Nation and Nooksack Tribe

The Department of Ecology no longer sends monthly notification of water right change applications directly to representatives from the Lummi Nation and Nooksack Tribe, but instead, the tribes are responsible to review water right change applications through an RSS feed. The Lummi Indian Business Council (LIBC) sent a letter dated May 14, 2014. In that letter the LIBC identified that it was concerned about the existing and future potential impacts on instream flows of any water rights issued in WRIA 1. It indicated that all withdrawals within WRIA-1 have the capacity to adversely impact the rights of the Lummi Nation. The Nooksack Tribe did not provide comments.

State Environmental Policy Act (SEPA)

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

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

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, POU, 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*.

RCW 90.44.100 allows Ecology to amend a ground water right to (1) allow the user to construct a replacement or additional well at a new location outside of the location of the original well, or to (2) change the manner or POU of the water, if:

- (a) The additional or replacement well taps the same body of public ground water as the original well. RCW 90.44.100(2)(a);
- (b) Where a replacement well is approved, the user must discontinue use of the original well and properly decommission the original well. RCW 90.44.100(2)(b);
- (c) Where an additional well is constructed, the user may continue to use the original well, but the combined total withdrawal from all wells shall not enlarge the right conveyed by the original permit or certificate. RCW 90.44.100(2)(c); and
- (d) Other existing rights shall not be impaired. RCW 90.44.100(2)(d).

When changing or adding points of withdrawal to groundwater rights (RCW 90.44.100), the wells must draw from the *same body of public groundwater*. Indicators that wells tap the *same body of public groundwater* include:

- (a) Hydraulic connectivity.
- (b) Common recharge (catchment) area.
- (c) Common flow regime.
- (d) Geologic materials that allow for storage and flow, with recognizable boundaries or effective barriers to flow.

Cost Reimbursement Processing

This application is being processed under a Cost Reimbursement Agreement between the applicant and the Department of Ecology. The applicant selected RH2 Engineering, Inc., (RH2) to process this application on Ecology's behalf. The change application is being processed without requiring processing of previously filed water right change applications, as allowed under RCW 90.03.265, since the proposed changes will not diminish the water available to earlier pending applicants for changes or transfers from the same source of supply.

INVESTIGATION

Site Visit

On November 5, 2014, Mr. Andrew B. Dunn, Mr. Jim Bucknell, and Mr. Adam Neff from RH2 met with Mr. Arlyn Visser and Mr. Chuck Lindsay, his consultant from Associated Earth Sciences, Inc., to perform the site visit. Before touring the proposed place of use, we met in Mr. Visser's home to discuss the general and specific farm operations and the proposed change.

According to Mr. Visser, the original place of use (POU) has been rotated between grass and corn along with several rented/leased fields near the farm; maintaining approximately 85-100 acres of corn and 110-120 acres of grass. Mr. Visser explained that they irrigate their grass via a big gun system. Each pass the grass receives approximately 6 inches of water (3 inches per pass with complete overlap from adjacent pass). Mr. Visser gets five cuttings of grass (knee high) per season. The corn does not require irrigation. The last five years, the fields within the original POU have been in grass. Corn has been grown in a portion of the proposed expanded POU.

Mr. Visser indicated that a portion of the Burton property (Parcel Number 480405052312) has been irrigated from his well, even though it is not included within the place of use. The Burton property was included under the older surface water right from Bostwick Creek (SWC 3936) that was the source of water prior to issuance of this groundwater right.

Mr. Visser stated that the earliest he's ever irrigated was May 20th and is typically finished by the end of September. The casing for the original point of withdrawal, IW-1, was pulled and backfilled with sand after IW-2 was installed. It was located near the confluence of two small tributaries of Bostwick Creek. The existing domestic well was approximately 7 feet below the existing ground covered with soil and grass; Mr. Visser pointed out the location but indicated there was no easy way to sample it. From IW-2 water is supplied through a 6-inch mainline with risers along the western property boundary for approximately 1,300 feet, then east approximately 2,600 feet to Swanson Rd.

The proposed place of use expansion area lies approximately 400 feet southeast and downhill of the original POU. Mr. Visser said he would use a soft hose to route water from the end of the mainline connected to IW-2 to the proposed POU for irrigation if a well has not yet been drilled on the property.

Well IW-2 (Well Tag ID BHN420) reportedly has a 40 hp submersible pump that can pump 400 to 450 gpm at 110 psi. Depth to water from the top of the casing at the time of the site visit was 34.57 feet with the top of the well head 1.7 feet above the ground surface. The big gun used to irrigate is an old (30 yr) Evergreen reel with approximately 1,300 feet of 4" high density polyethylene (HDPE) hose. The traveling big gun sprinkler has a 1.25" taper nozzle and is carried on a wheeled chassis. The well is supplied three phase (480 volt) power by a dedicated power meter (serial number Z10191680).

The land that is proposed to be irrigated lies north of Johnson Creek and adjacent to and north of the railroad tracks. The portion adjacent to the railroad was most recently planted in corn, while the northwest portion of the proposed area is currently and has been recently used as pasture for cows. Mr. Visser stated that this area needs to be tilled before it could go into crop (the area was previously tilled in wood stave piping but that system is failing). The eastern portion of the proposed POU is drained by an

unnamed tributary to Johnson Creek which is conveyed under the railroad track through a culvert. Due to excessive beaver activity, the culvert is often plugged which causes flooding in the eastern portion of the field.

History of Water Use

Information on the history of water use under this water right was pieced together from a variety of sources, including an affidavit, pump curves, aerial photos, irrigation guides, power meter records, the site visit, and weather records.

The current POU encompasses all of existing parcel 400405160279, which is 73.31 acres in size.

Affidavit

One affidavit, by Mr. Arlyn Visser, relating to knowledge of farming and irrigation practices within the place of use for SWC 3936 (Bostwick) and G1-20701C (Visser). The affidavit was signed and notarized on March 25, 2014. In that affidavit, Mr. Visser states that the operational, historical, farming, irrigation and general water use practices described in the AESI report that was submitted with the application (AESI, 2014), are "true and correct" to the best of his knowledge.

Instantaneous Rate

A pump curve was obtained for the reported submersible well pump (Berkeley Model 7S2H4 with a 40 HP motor) that is installed in the current point of withdrawal, IW-2. According to the pump curve, this pump will produce approximately 450 gpm at a total dynamic head of 260 feet (113 pounds per square inch) at the best efficiency point. The big gun nozzle being utilized for irrigation was a Nelson 1.25-inch diameter taper bore nozzle. The spacing between risers is variable, but was reported to be approximately 240 feet and Mr. Visser indicated that the spray reaches to the adjacent riser when irrigating for an irrigation diameter of approximately 480 feet. Using Nelson Irrigation Corporation product literature, it was estimated that the 1.25-inch-diameter taper bore nozzle will irrigate a diameter of 460 feet at a pressure of 110 pounds per square inch. Review of the information suggests that well IW-2 is capable of producing approximately 450 gpm, which is in excess of the 200 gpm instantaneous rate authorized under G1-20701C. Therefore, it is reasonable to conclude that the instantaneous rate of 200 gpm as authorized under this water right has been maintained through beneficial use from well IW-2, and the full rate is available for change.

The water right holder will need to reduce the pumping rate of all points of withdrawal under this water right to no more than the authorized 200 gpm.

Irrigated Acres

There are two irrigation water rights that are appurtenant to the existing place of use of G1-20701C. The most senior water right is SWC 3936, which was originally issued for irrigation from Bostwick Creek. A discussion of the history of these water rights was presented in AESI (2014) and will be summarized here so that irrigated acres can be attributed to the appropriate water right and won't be double-counted. For this research, the irrigated acres within the original place of use will be identified separately from the irrigated acres on the Burton property, which is within the original place of use of the surface water right, but not the groundwater right.

Aerial photos of the property were provided with the application packet (AESI, 2013). These aerial photos were labeled with the following dates: 7/10/1961, 6/7/1966, 7/5/1975, 7/15/1976, 7/15/1998, 8/9/2004, 7/31/2005, 8/17/2006, 10/12/2006, 7/9/2007, 5/30/2009, 9/10/2009, 8/25/2011, 9/29/2012, and 5/5/2013. The aerial photos from 1998 to present were also viewed using Google Earth™.

Review of the aerial photos support that irrigation has occurred within the place of use. In all photos, the land appears to be in active agricultural production. In a number of photos a traveling big gun reel is visible along with drag marks and big gun impact sprinkler patterns on the fields (for example see 8/25/2011 and 7/29/2007). There is also one aerial photo that shows active irrigation from the traveling big gun (8/17/2006).

Expansion of the dairy facility slowly over time supports the statement made by AESI (2014) that the minimum number of acres irrigated under this water right has occurred in the most recent years. Using Geographic Information Systems (GIS) combined with information obtained at the site visit, it was determined that 55.6 acres have been irrigated within the place of use and 3.9 acres have been irrigated on the adjacent Burton property using well IW-2, for a total irrigated acreage of 59.5 acres.

Annual Volume

Based on the evidence collected through review of the aerial photos, affidavit, site visit, and communication with Mr. Arlyn Visser and his consultant, 55.6 out of the authorized 70 acres have been maintained through irrigation within the POU under this water right, and an additional 3.9 acres have been maintained through a *de facto* change in POU to include parcel 400405052312 (Burton Parcel) that was part of the place of use under SWC 3936, but was excluded from the place of use of G1-20701C. The total irrigation that will count toward G1-20701C, through this change application process, is 59.5 acres.

There is currently no water meter installed on the POW. There is a dedicated power meter that serves the submersible well pump motor. This power meter has serial number Z10191680 with power supplied by Puget Sound Energy. During our investigation, Mr. Visser obtained power meter records from Puget Sound Energy for the period of March 2013 through October 2014. Review of this limited data set shows that, over the past two years, power consumption (from the well pump motor) has occurred over the period of July through October. While the power meter data support that the well has been used, it was not used to attempt to quantify the actual use due to the limited years of data and uncertainty in the pump efficiency, motor efficiency, and total dynamic head.

Therefore, RH2 relied on the Washington Irrigation Guide (WIG, 1992 update), older irrigation guides (1982 and 1969), weather data, and Water Resources Guidance GUID-1210 to estimate the highest annual volume of water reasonable to be pumped under this water right.

The first thing to be determined is the crop irrigation requirement (CIR). This is the amount of water that the crop would need to not experience any stress due to water availability. For this particular site, the Clearbrook WIG station was used. From the site visit it was learned that two crops are rotated on the fields. Those crops include corn and pasture/turf. Mr. Visser indicated that pasture/turf was the only crop that is irrigated. The data from the WIG (1992) suggests that, with a 2-year return interval, the crop irrigation requirement for a pasture/turf crop is 12.79 inches.

The WIG (1992) CIR estimates are for an average year and are based on average weather data that does not include at least the last 20 years. The University of Washington – Climate Impacts Group has predicted that over the next 10 to 30 years, average air temperatures in the Pacific Northwest will be 2 to 3 degrees Fahrenheit higher than the 1970 to 1999 averages and that less precipitation will occur during the summer months due to global climate changes in Washington State. The result of these changes has been warmer and drier irrigation seasons in Whatcom County. For example, the available weather data shows that the period of May through September was on average 1.3 degrees Fahrenheit warmer from 2009 through 2013, than the average temperature from the Clearbrook station provided in the WIG (**Table 1**). Therefore, it is apparent that, because the WIG values are based on older weather data, utilizing the WIG estimated CIR would result in underestimating the amount of irrigation water an irrigator has actually been using over the most recent years.

Station Circular 512 (Irrigation Water Requirements Estimates for Washington, November 1969) and EB1513 (Irrigation Requirements for Washington Estimates and Methodology, 1982) show that, for the Bellingham station (closest location to the site), the crop irrigation requirement will increase as the return period increases. These documents show an increase of 2 to 3 inches going from the 2-year to the 5-year and 10-year return intervals.

Table 1. Comparison of WIG Averages to Actual Weather Data

Irrigation Season	Temperature (degrees F)			Precipitation (inches)		
	WIG Average	Actual	Difference (Actual - WIG)	WIG Average	Actual	Difference (Actual - WIG)
2009	59.00	61.38	2.38	11.67	11.5	0.17
2010		59.51	0.51		16.72	5.05
2011		59.29	0.29		12.36	-0.69
2012		59.74	0.74		9.82	1.85
2013		61.74	2.74		13.71	-2.04

- Irrigation season is considered to be May through September.
- Annual data is from the Clearbrook weather station.
- Weather data was obtained from www.wrcc.dri.edu.

Publication EB1513 presents CIR estimates for various crops (based on average weather data from 1948 through 1973) and 2-, 5-, 10-, and 20-year return intervals to account for climatic variability. Publication EB1513 states that the CIR 2-year return period values will be adequate on the average, once every 2 years. Similarly, the 5-year CIR values, 10-year CIR values and 20-year CIR values will be adequate on the average, 4 of 5 years, 9 of 10 years, and 19 of 20 years, respectively. Again, it should be noted that these CIR values and return periods are based on weather data collected from 1948 through 1973 and, as discussed above, likely underestimate the current CIR values and return interval time periods due to ongoing global climate change.

Publication EB1513 indicates that, for Bellingham (closest location to site), the pasture/turf crop CIR increased by approximately 23 percent going from the 2-year to the 10-year return interval. Increasing the WIG pasture/turf CIR by 23 percent results in a 15.73 inch CIR for pasture/turf. RH2 has assumed that increasing the WIG values to represent the anticipated 10-year return interval for the crop is a reasonable way to estimate the actual CIR for this water right.

Ecology guidance document 1210 indicates that the efficiency of the moving big gun irrigation methods utilized by Mr. Visser to irrigate pasture/turf ranges between 55 percent and 75 percent, with an average of 65 percent (Ecology Guidance 1210).

Table 2 contains calculations of the annual volume based on the WIG. One is using the values straight from the WIG and the second is adjusting the WIG values upward to account for climate change and a longer return interval, as discussed above.

Table 2. Annual Volume Calculated Using Various Methods

Method	CIR (inches)	Application Efficiency	TIR (inches)	TIR (feet)	Volume (af/yr)
Straight WIG 2-year return interval	12.79	65%	19.68	1.64	97.6
Adjusted WIG 10-year return interval	15.73	65%	24.20	2.02	120.2

- Crop is pasture/turf.
- Irrigation method is moving big gun.
- Straight WIG CIR is from Clearbrook Station.
- 10-year return interval is the straight WIG times 1.23.
- 59.5 acres of irrigation.
- Application efficiency is equal to the average values provided in Ecology Guidance 1210.
- Water right limit is 140 af/yr.

The annual volume that has been maintained through beneficial use is 120.2 af/yr, which is less than the originally authorized annual limit of 140 af/yr. Due to this discrepancy, it appears that 19.8 af/yr has been lost due to non-use without sufficient cause and cannot be changed.

Proposed Use

The applicant requests to add additional points of withdrawal and increase the size of the POU to include additional parcels to allow for irrigation of the same number of originally authorized acres (70 acres).

If the change is approved, irrigation shall be managed to ensure that irrigation does not exceed the maximum number of acres allowed under the water right.

Other Rights Appurtenant to the Place of Use

The Water Resources Explorer was used to determine what rights might be appurtenant to the existing and proposed place of use.

There are three water rights that include the existing place of use of G1-20701C within their place of use (Table 3).

Table 3. Water Rights and Claims Appurtenant to the Proposed Place of Use

Water Right Name	Water Right Number	Purpose of Use
William D. Visser	G1-030360CL	Drinking and Cattle
L.L. Bostwick	SWC 3936	Irrigation of 65 acres
City of Sumas	G1-26398C	Municipal

Water right claim G1-030360CL is in the name of William D. Visser. The quantities claimed from the well are 10 gpm and 2 af/yr for domestic and cattle purposes. AESI (2014) identified this water right claim as being associated with the Visser drinking water well (DW-1) located to the northwest of the dairy complex. The uses of groundwater from this well likely qualify under either the water right claim or the groundwater permit exemption. Since the uses claimed do not include irrigation, there is no issue with these water rights being appurtenant to the same property.

Water Right SWC 3936 is in the name of L.L. Bostwick. This water right is for the use of surface water from Bostwick Creek up to 0.4 cfs for irrigation of 65 acres within a place of use that includes both parcel 400405160279 and 400405052312. This water right was applied for on March 11, 1948. According to AESI (2014) Bostwick Creek was the source of irrigation supply up through the early 1970s for the place of use until water right G1-20701 was applied for and granted to allow for the supply to be a well as opposed to surface water. Once the groundwater right was obtained, the use of surface water for irrigation ceased. However, Mr. Visser continued and continues to irrigate a portion (approximately 3.9 acres) of parcel 400405052312 (currently owned by Marcus R. and Marilyn A. Burton) with groundwater, even though it fell outside of the place of use under the groundwater right. As mentioned above, it has been accounted here that the use of groundwater on the Burton property represents a *de facto* change in the place of use of G1-20701C as opposed to continued use of SWC 3936.

Water right (G1-26398C) is held by the City of Sumas and is for municipal water supply. This is the only water right certificate for which the place of use includes the new land within the proposed POU. However, since the City of Sumas water right is for a different purpose of use, overlap of this water right with the original and proposed POU does not present a problem.

Hydrologic/Hydrogeologic Evaluation

A separate hydrogeologic memorandum was prepared by Adam Neff, L.G., of RH2 and reviewed by Andrew B. Dunn, L.G., L.H.G., focusing on the same body of public groundwater test and impairment (RH2 Engineering Technical Memorandum, December 23, 2014). A summary of that memorandum is presented here and more detail can be obtained from the memorandum, located in the water right file.

The points of withdrawal and POU involved in this water right change lie on the border between the geographic features referred to as the Lynden Terrace and the Sumas Trough. The Lynden Terrace is an

area that is primarily mantled by recessional glacial outwash deposits. The Sumas Trough is a low-lying region located north of the Nooksack River, east of the Lynden Terrace, and northwest of Sumas Mountain (**Figure 1**).

All of the existing and proposed points of withdrawal fall within the Johnson Creek subbasin as defined by the Water Resources Inventory Area (WRIA) 1 Initiating Governments (2002). Bostwick Creek, a tributary to Johnson Creek, flows through the western portion of the existing POU from north to south. The original and existing POWs are located within the Bostwick drainage sub-basin. There are several small tributaries, branches, and springs associated with Bostwick Creek. All wells are completed within the Sumas outwash aquifer. The Sumas outwash aquifer at this location is composed of sand and gravel that ranges from approximately 70 to 120 feet thick. Deeper sediments (Everson Glaciomarine Drift) are fine-grained and do not yield water in sufficient quantities, or of high enough quality, to be used for irrigation supply. Recharge to the Sumas outwash aquifer is almost exclusively through vertical infiltration of precipitation. The water table is from 10 to 40 feet below ground surface depending on the topographic location in the late summer and fluctuates by approximately 5 feet over the course of the year due to changes in recharge and groundwater use. In this area the Sumas outwash aquifer is directly connected to the many ditches and tributaries associated with Johnson Creek.

The groundwater contours created by Cox and Kahle (1999) include the project site (**Figures 2 and 3**). Generally, groundwater in this portion of the Sumas aquifer flows from the northwest to southeast; from Laxton and Judson Lakes toward the Sumas River, until it reaches the Sumas trough where it then changes to a north to northeast flow path, following the drainage direction of Johnson Creek and the Sumas River (**Figure 3**).

Pumping Impacts on Neighboring Groundwater Rights

If it is assumed that the well is pumped at 200 gpm for 158 straight days (time needed to exhaust the full annual volume), the drawdown calculated within the pumping well is 5.8 feet, which represents approximately 9.5% of the available drawdown. Within 100 feet the drawdown decreases to just over 3 feet, which is less than the seasonal fluctuation of the water table (Cox and Kahle, 1999). The nearest well and water right (Dale Steele; G1-083036CL) is 400 feet from the proposed POU and future POW area. At this POW, the drawdown associated with this change is modeled to be 2.4 feet, approximately half of the seasonal fluctuation.

Although, there are likely one or more exempt wells located closer to the proposed POU expansion area, the impacts from an additional well on these exempt wells will be minimal if future POWs are installed away from these exempt wells.

Pumping Impacts on Surface Water Bodies and Surface Water Rights

Johnson Creek is a year round watercourse that bisects the proposed POW area. According to the WDFW SalmonScape website (<http://apps.wdfw.wa.gov/salmonscape/map.html>), this stream provides habitat for a number of salmon and trout species, including presumed bull trout presence.

There are several surface water right diversions located either adjacent to or immediately downstream of the proposed future POW area (**Figure 2**). The first three diversions downstream account for just over one cubic foot per second (cfs) of withdrawal (1.08 cfs). Gibbons and Culhane (1994) reported flows within Johnson Creek approximately 500 feet upstream (JC-10) of the proposed POW area between June 1, 1993, and October 18, 1993, ranged from 2 to 15 cfs. The three surface water rights mentioned above account for approximately 50 percent, or less, of the flow within Johnson Creek during low flow conditions.

Johnson Creek and all tributaries, including Bostwick Creek, are closed year round to new consumptive appropriation per WAC 173-501-030(2). Groundwater in the vicinity is hydraulically connected to surface water (Culhane, 1993; Cox and Kahle, 1999). Therefore current pumping under this water right is already reducing groundwater discharge to Bostwick Creek, a tributary to Johnson Creek, and Johnson Creek proper. A new well located within the proposed point of withdrawal location would reduce the pumping impact on Bostwick Creek while shifting that direct impact to Johnson Creek. However, since the new pumping impacts to Johnson Creek would be downstream of the confluence of Bostwick and Johnson Creeks, and since the cumulative impact to Johnson Creek due to groundwater pumping under this water right will be the same, the change will not cause any greater impact to a closed water body than exists currently.

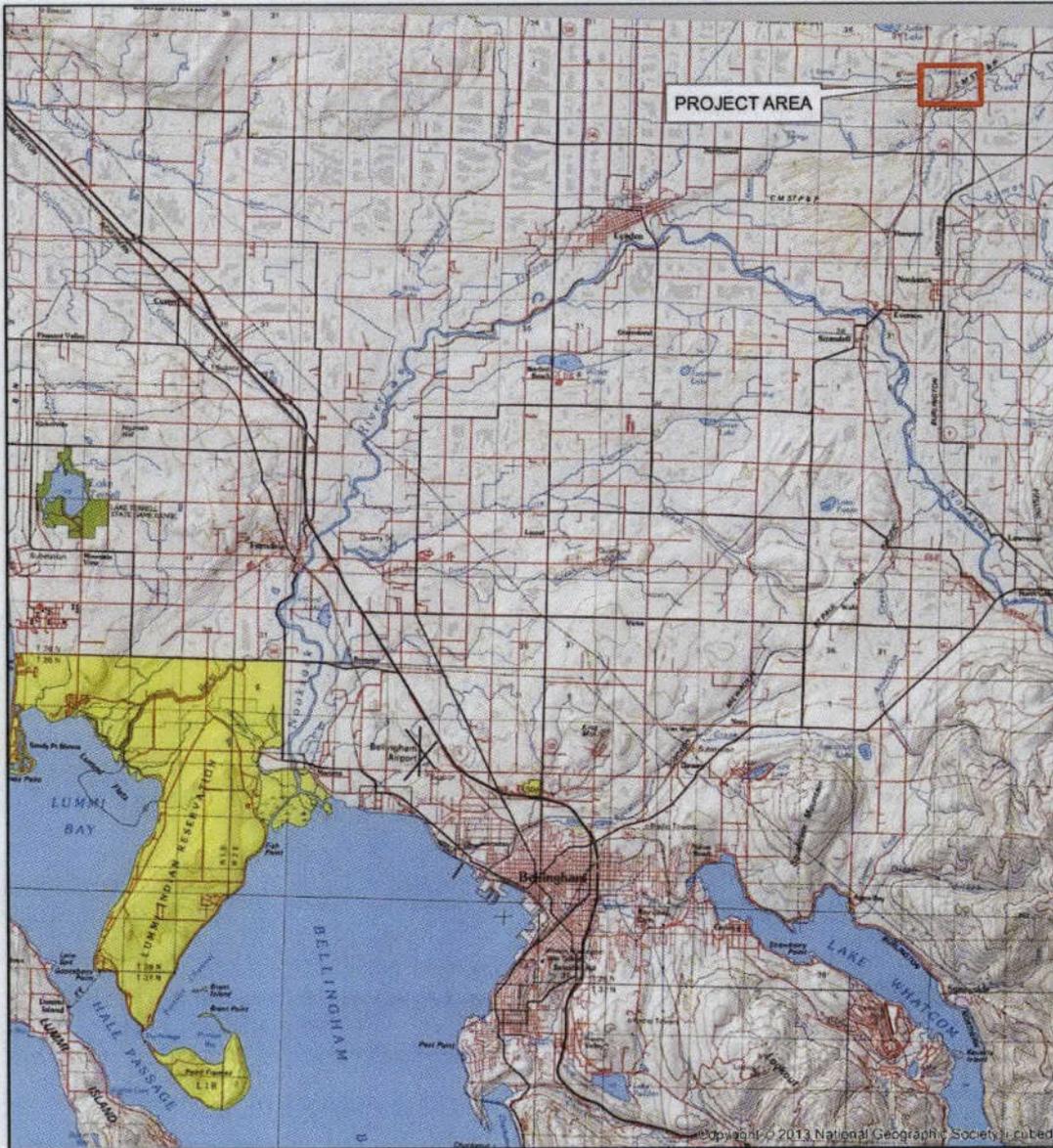


FIGURE 1: Overview Map

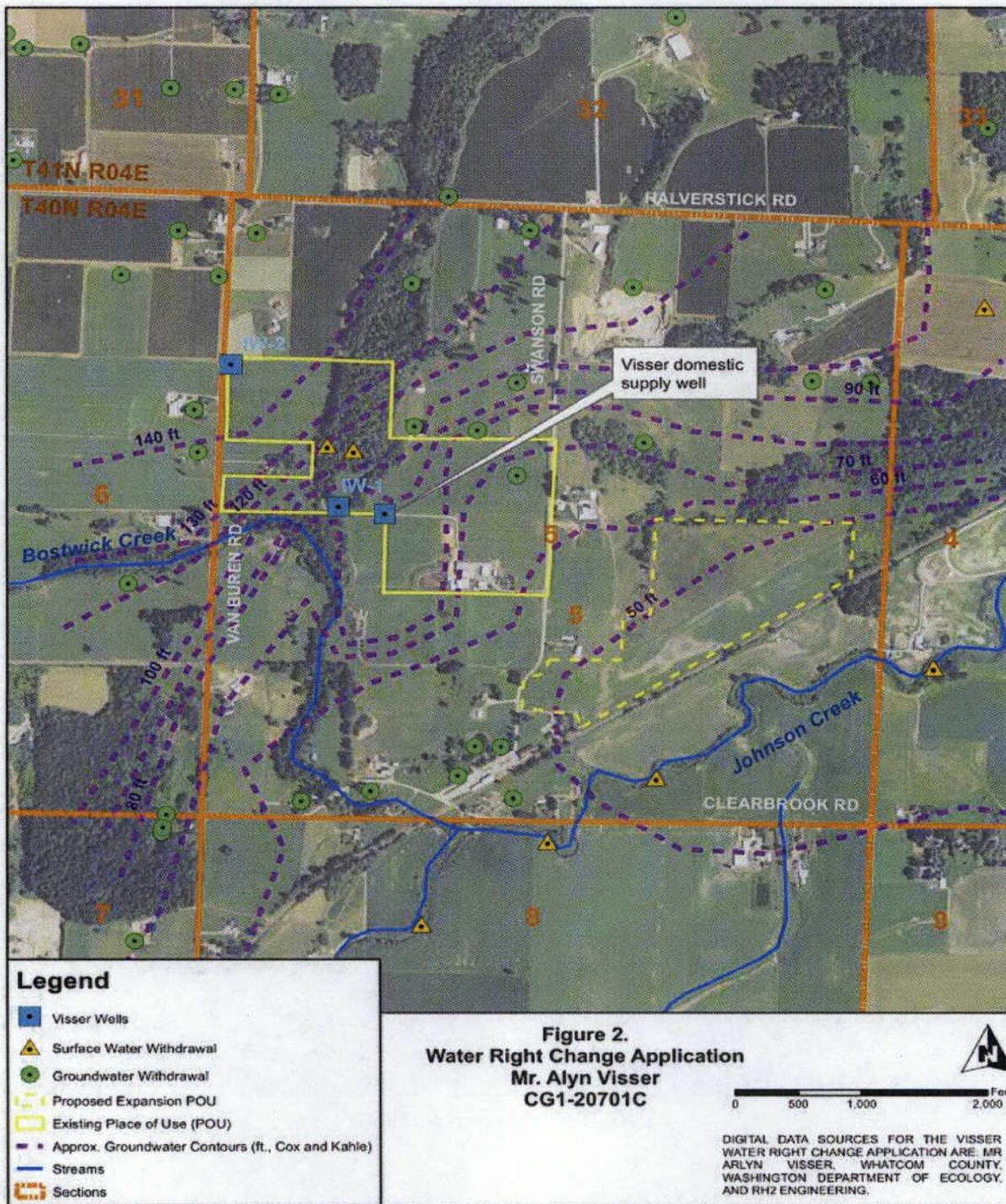


Figure 2. Existing Well, Proposed, and Recommended Well Locations
 (Groundwater elevations and flow directions based on Cox and Kahle, 1999)

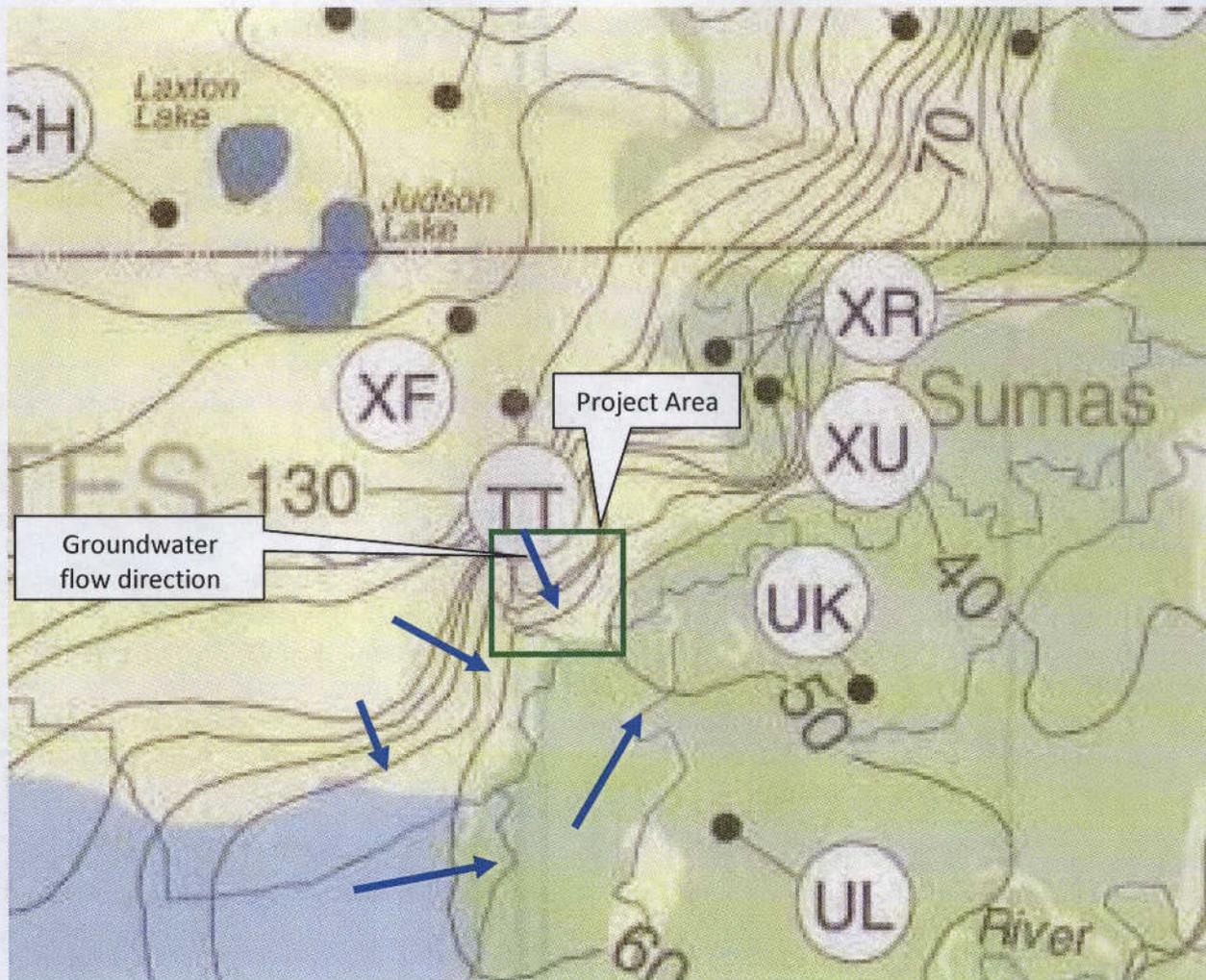


Figure 3. Potentiometric Surface Map from Cox and Kahle (1999)

Figure 3 shows approximate location of the Visser project with groundwater contours (elevation in feet). Flow direction arrows were added in the vicinity of the project for clarity.

Same Body of Public Groundwater

In order for the requested additional points of withdrawal to be added to the groundwater right, all points of withdrawal must tap the same body of public groundwater. RH2's Adam Neff, L.G. concluded that all future well locations within the proposed POU expansion area tap the same body of public groundwater as the existing POW based on the following facts:

1. The original, existing, and proposed points of withdrawal are currently tapping or will tap the shallow Sumas outwash aquifer.
2. The original and proposed points of withdrawal are located within the Johnson Creek sub-basin.

3. Groundwater flow for the area is to the southeast, then ultimately to the northeast. No major groundwater flow divides or flow boundaries exist between the existing and proposed points of withdrawal.
4. The potential maximum distance between the existing and proposed well(s) is 1.0 miles.

Impairment Considerations

Impairment of Surface Water Rights

The proposed change should not impact surface water rights beyond the existing or original impacts.

Impairment, Qualifying Groundwater 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 groundwater withdrawal facilities are defined as those wells which in the opinion of the Department of Ecology are adequately constructed. An adequately constructed well is one that (a) is constructed in compliance with well construction requirements; (b) fully penetrates the saturated thickness of an aquifer or withdraws water from a reasonable and feasible pumping lift (WAC 173-150); (c) 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.

As discussed in the Hydrologic/Hydrogeologic Evaluation section, no impairment is expected to occur in neighboring wells as a result of pumping in the wells associated with this water right change application, for the following reasons.

1. The distance to neighboring wells.
2. The aquifer is relatively thick (70 to 120 feet).
3. The hydraulic conductivity of the aquifer is moderately high.
4. The calculated maximum drawdown is less than 10 percent of the aquifer saturated thickness, even in the pumping well.

Pumping a well completed in a thick aquifer with a high hydraulic conductivity and moderately high storage coefficient (for a confined aquifer) will tend to create a very broad, but thin, cone of depression around the well. This minimal drawdown in the aquifer prevents there from being a negative impact to neighboring wells. There are likely one or more exempt wells located closer to the proposed POU expansion area, primarily to the southwest. The exact location of these wells is unknown. Future POWs should be installed away from these properties to reduce the impact to neighboring wells.

Due to the unspecified location of the future POWs, all future POWs within the proposed area shall be installed at least 100 feet from neighboring wells, including permit-exempt wells, which exist at the time of drilling, except that if a neighboring well has been drilled within 100 feet of well IW-2, then that separation distance shall be maintained, to reduce the potential for interference drawdown.

Public Interest Considerations

Consideration of Protests and Comments

This application was protested by the Lummi Indian Business Council. The May 14, 2014, protest letter from the Lummi Indian Business Council indicates that the change application is for points of withdrawal located within the WRIA 1 watershed. The protest is based on concerns over current and future potential impacts on instream flows. However, these are change applications and not applications for new (consumptive) water use. Because the quantities of water involved will remain unchanged and because each of the sources will pump from the same body of public water, no additional or new impacts are associated with the change being recommended for approval.

RH2 solicited comments from WDFW for this particular water right change application on December 2, 2014, December 11, 2014, and January 19, 2015, but no comment letter was provided.

Conclusions

Although the Lummi Nation objected to the proposed change application, no specific technical arguments were provided. The Lummi objection likely originates from ongoing disputes between the Lummi Nation and the United States or the State of Washington over unresolved senior water right issues. The general public did not protest nor did the WDFW express concern or opposition to this change. This change does not increase the impacts to surface water beyond those of the existing water right, therefore this change will not be detrimental to the public welfare.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that this request for a water right change be partially approved in the amounts and within the limitations listed below and subject to the provisions listed above.

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:

200 gpm
120.2 acre-feet per year
Irrigation of 70 acres
April 15 through October 1

Points of Withdrawal:

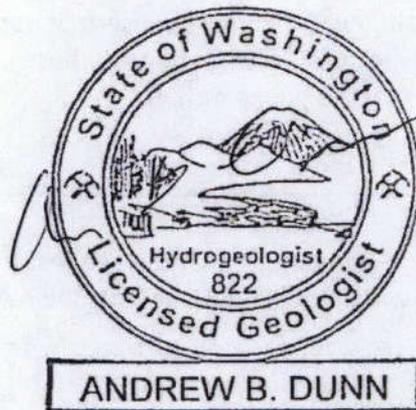
Within existing parcels 400405160279, 400405377196, and 400405443216 contained within:
SE $\frac{1}{4}$ NW $\frac{1}{4}$, Section 5, Township 40 North, Range 4 E .W.M.
NE $\frac{1}{4}$ SW $\frac{1}{4}$, Section 5, Township 40 North, Range 4 E .W.M.
SE $\frac{1}{4}$, Section 5, Township 40 North, Range 4 E .W.M

Place of Use:

As described on Page 2 of this Report of Examination.

Report by: Jim Bucknell
Jim Bucknell – RH2 Engineering, Inc.

April 28, 2015
Date



Report by: Andrew B. Dunn
Andrew B. Dunn, L.G., L.HG., CWRE – RH2 Engineering, Inc.

April 28, 2015
Date



ADAM RUSSELL NEFF

Report by:

Adam Neff, L.G. – RH2 Engineering, Inc.

April 28, 2015

Date



JERRY LEE LISZAK

Reviewed by:

Buck Smith, L.G., L.H.G. - Water Resources Program

4/28/15

Date

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ATTACHMENT

