



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
REPORT OF EXAMINATION
To Appropriate Public Waters

PRIORITY DATE September 1, 1993	APPLICATION NO. G1-27303		
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NAME Harriet M. Loop		
ADDRESS/STREET 8762 Portal Way	CITY/STATE Blaine, WA	ZIP CODE 98230

PUBLIC WATERS TO BE APPROPRIATED

SOURCE Groundwater		
TRIBUTARY OF (IF SURFACE WATERS)		

MAXIMUM CUBIC FEET PER SECOND (cfs)	MAXIMUM GALLONS PER MINUTE (gpm) 5*	MAXIMUM ACRE FEET PER YEAR (ac-ft/yr) 2**
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TYPE OF USE & PERIOD OF USE
 Single domestic supply and stock watering - year round as needed

SPECIAL REMARKS

*The instantaneous quantity is additive to Groundwater Claim 104032. The total instantaneous withdrawal under this right and Claim 104032 shall not exceed 15 gallons per minute.

**The annual quantity is non-additive to Groundwater Claim 104032. The total annual withdrawal under this right and Claim 104032 shall not exceed 2 acre-feet per year.

LOCATION OF DIVERSION/WITHDRAWAL

SOURCE	PARCEL	LATITUDE	LONGITUDE	QTR/QTR	SECTION	TOWNSHIP	RANGE
Groundwater	400117517390	48.9603	122.7044	SE1/4 NE1/4	17	T40N	R1E

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

NE1/4 NE1/4 of Section 17, Township 40 North, Range 1 East - 18.77 acres lying northeast of Portal Way (Pacific Highway)
 SW1/4 NW1/4 of Section 16, Township 40 North, Range 1 East - 12.75 acres lying northeast of Portal Way (Pacific Highway)
 SE1/4 NE1/4 of Section 17, Township 40 North, Range 1 East - 1.25 acres lying north of Portal Way (Pacific Highway)

Attachment 1 shows the location of the place of use and point of withdrawal.

DESCRIPTION OF PROPOSED WORKS

The works consist of an existing groundwater well (DW-4) with a 10-inch casing to a depth of approximately 20 feet below ground surface (bgs) and 3-inch casing from 20 to 125 feet bgs. The purpose of this application is to provide an additional 5 gpm to supplement the existing claim of 10 gpm from well DW-4. The water will be used for domestic supply and stock watering. No pump is currently installed in the well, which is flowing artesian. The well is located approximately 1,500 feet south and 150 feet west from the NE corner of Section 17, Township 40 North, Range 1 East, about 2 miles south on Portal Way (Pacific Highway) from Blaine, Washington.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE Already begun	COMPLETE PROJECT BY THIS DATE December 31, 2024	WATER PUT TO FULL USE BY THIS DATE December 31, 2029
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PROVISIONS

1. Meter Installation

An approved measuring device shall be installed and maintained on the source authorized by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use," WAC 173-173. See <http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html>

2. Metering Rule Description And Petition Info

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 titled "Water Measurement Device Installation and Operation Requirements." See <http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html>

3. Record, Report Upon Request by Ecology

Water use data shall be recorded annually and maintained by the property owner for a minimum of five years, and shall be promptly submitted to the Department of Ecology upon request.

4. Authority To Access Project

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times to the project location, and to inspect at reasonable times, records of water use, the point of withdrawal, the measuring device, and the associated distribution system for compliance with water law.

5. No Impairment of Existing Rights

This authorization to make use of public waters of the state is subject to existing rights, including any existing rights held by the United States for the benefit of Tribes under treaty or settlement.

6. Well Tag

The well shall be tagged with a Department of Ecology unique well identification number. This tag shall remain attached to the well. When submitting water measuring reports, please reference this tag number.

7. Proof of Appropriation

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

ADVISORY

8. Arsenic Testing Recommendation

Annual testing for arsenic is recommended for drinking water withdrawn from the well. The federal Maximum Contaminant Level (MCL) for arsenic in drinking water is 10 micrograms per liter ($\mu\text{g/l}$).

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 concur with the investigator that water is available from the source in question, the purpose of use is beneficial, there will be no impairment of existing rights, and there will be no detriment to the public interest.

Therefore, I order APPROVAL of Application No. G1-27303, subject to existing rights and the provisions listed above.

You have a right to appeal this ORDER. 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:

Deliver your appeal in person to:

The Pollution Control Hearings Board
PO Box 40903
Olympia, WA 98504-0903

OR

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:

Deliver your appeal in person to:

The Department of Ecology
Appeals Coordinator
P.O. Box 47608
Olympia, WA 98504-7608

OR

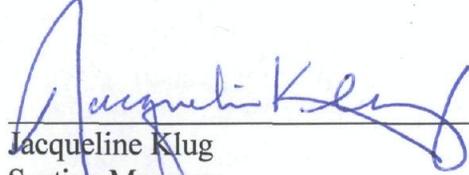
The Department of Ecology
Appeals Coordinator
300 Desmond Dr SE
Lacey, WA 98503

3. And send a copy of your appeal to:

Jacqueline Klug
Department of Ecology
3190 160th Ave SE
Bellevue, WA 98008

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://www.l.leg.wa.gov/CodeReviser>.

Signed at Bellevue, Washington, this 22nd day of April, 2010.



Jacqueline Klug
Section Manager
Water Resources Program
Northwest Regional Office

Legal Requirements

Public Notice (RCW 90.03.280)

A public notice of the application must be published in a local newspaper once a week for two consecutive weeks (RCW 90.03.280). Public notice for this application was published on November 10 and 17, 1993, in *The Westside Record-Journal*, a weekly newspaper in Whatcom County, Washington. No protests against application G1-27303 are on file with the Washington State Department of Ecology.

State Environmental Policy Act (SEPA)

The subject water right is categorically exempt under SEPA [WAC 197-11-305 and WAC 197-11-800(4)] because the instantaneous quantity is less than the threshold of 2,250 gallons per minute (gpm).

Consultation with the Department of Fish and Wildlife

The Washington State Department of Fish and Wildlife was notified of this application on November 4, 2009 (RCW 77.57.020). No comments were received.

Determinations

Chapters 90.03 and 90.44 RCW authorize the appropriation of public water for beneficial use and describe the process for obtaining water rights. Laws governing the water right permitting process are contained in RCW 90.03.250 through 90.03.340 and RCW 90.44.050. In accordance with RCW 90.03.290, determinations must be made on the following four criteria in order for an application for water rights to be approved:

- Water must be available;
- There must be no impairment of existing rights;
- The water use must be beneficial; and
- The water use must not be detrimental to the public interest.

Background

Project Description

Willis (now deceased) and Harriet Loop filed application G1-27303 requesting a groundwater right for domestic supply and stock watering from a well, designated DW-4 in City of Blaine documentation (AESI, 2008), located on the Loop property. The Loops have an existing domestic supply groundwater claim for 10 gpm and 2 acre-feet/year from DW-4 with a priority date of October 1941. The intent of application G1-27303 is to provide an additional 5 gpm and thereby result in a total instantaneous quantity (Qi) of 15 gpm once the existing claim and the subject water right application are combined. Thus, this application represents a request for an additive 5 gpm from this well. No additional annual quantity (Qa) was requested. In addition, stockwatering will be included as a purpose of use.

Details regarding the requested right are summarized in the table below. A map identifying the location of the well is provided in Attachment 1.

Application	Priority Date	Source	Well ID	Depth (ft)	Township	Range	Section	Qi gpm	Qa ac-ft/yr
G1-27303	9/1/1993	Groundwater	DW-4	125	40N	1E	17	5	2

Priority Processing/Cost Reimbursement

This application is being processed by AMEC Geomatrix, Inc. (AMEC) pursuant to a cost-reimbursement agreement with the Department of Ecology. Within the scope of the agreement, the following applications are also being processed:

Owner	Well ID	Application	Priority Date	Depth	Qi	Qa
					gpm	ac-ft/yr
Loomis Trail Golf, Inc.	IW-3	G1-25958	11/1/1990	526	300	--
City of Blaine	PW-1R	G1-26821	11/13/1992	733	450	720
City of Blaine	PW-2	G1-26820	11/13/1992	650	200	320
Raoul Marquis ₁	N/A	G1-25291	8/23/1988	250	200	--
Birch Bay Water and Sewer District	PW-2D	G1-28046	8/3/1999	535	500	806
City of Blaine	PW-5.1	G1-28481	2/21/2007	805	1100	850

1. Assigned to Far North Ventures LLC

Investigation

History of Water Use

The Loop well has been used for domestic supply and/or stock watering since 1941 at a rate of at least 5 gpm. The Loops currently own a claim (Claim 104032) for 10 gpm and 2 acre-feet/year of supply from this well (Attachment 2).

It is important to note that a water right claim is not a state-issued water right. It is simply a *claim* to a vested (or grandfathered) water right for a beneficial use that pre-dates the state water permitting system. The state water right permitting system for ground water use went into effect on June 6, 1945. In order for a ground water claim to be considered a vested right, beneficial use of water had to begin prior to that date.

The actual validity of a claim can only be confirmed through a general water right adjudication, which is conducted by the county superior court. In an adjudication, the court will either deny or confirm a water right, and direct Ecology to issue a Certificate of Adjudicated Water Right for rights confirmed.

Other Rights in the Vicinity

No other rights (other than the claim) were identified appurtenant to the place of use of well DW-4.

Senior rights, including claims, located or potentially located within approximately 0.5 mile were identified as potentially sharing the same source of water as DW-4. These rights were located in the township and range containing DW-4 (Section 17), the section to the east of the well (Section 16), and the south ½ of the two sections to the north (Sections 8 and 9). The radius of influence from groundwater withdrawals from the Loop well is not anticipated to reach distances greater than this search area. These 5 rights are tabulated in Attachment 3. Only rights within the Intermediate or Deep Aquifer (defined in this report) were considered to potentially share the same source of water as DW-4.

Relationship of New and Existing Rights

The new right will represent an additive instantaneous water right and will be used simultaneously with the existing claim owned by Harriet Loop for the same well.

Site Visit

A site visit for the Loop well was conducted on October 21, 2009. Loren Loop (Mr. Loop), son of Willis and Harriett Loop, accompanied AMEC personnel during the site visit; however, the well was not located due to dense vegetation overgrowth (see photos in Attachment 4). The property has been used for cattle grazing in recent years but is not currently being used to raise livestock. Because cattle are no longer present on the property, dense vegetation has been established in the area immediately surrounding the well. Mr. Loop informed AMEC that groundwater from the well is diverted into a holding pond that was previously used to water livestock. While livestock are not currently raised on the property, Mr. Loop plans to reintroduce cattle to the property at a future date at which time the stock water pond will be used. Groundwater diversion from the DW-4 standpipe occurs

whenever water is not being used at the Loop residence. Mr. Loop also stated that the water quality was good and salinity issues had not been a problem in the past but that the artesian head has decreased over time.

Hydrologic/Hydrogeologic Evaluation

Information on regional and local geology in this section is summarized primarily from AESI, 2008. Hydrologic and hydrogeologic information in this section is summarized from various consultant reports (Shannon and Wilson, 1975; EMCON, 1995; Golder, 1992, 1995, 1996, 1998; GeoEngineers, 2000, 2001; Piteau Associates Engineering, 2000; and AESI, 2008).

Regional Geology

The Loop well (DW-4) is located just outside the City of Blaine Groundwater Management Area (GWMA) in an area known as the Fraser-Whatcom Lowlands. These lowlands represent the landward extension of the Georgia Basin.

The Fraser-Whatcom Lowlands are located within the transborder region of the United States and Canada and are bounded by the Coast Mountains in British Columbia, the Cascade Mountains, and the Strait of Georgia. The geologic depression of the Georgia Basin developed beginning in the late Mesozoic in response to tectonic activity, which formed mountain ranges (such as the Cascade and Coast ranges) separated by basins (such as the Georgia Basin). Large volumes of sediment derived from mountain erosion were deposited in the basins and subsequently lithified to form the Eocene-age Chuckanut and Huntington Formations, which form the bedrock in much of the area.

Pleistocene glaciation subsequently eroded and modified this bedrock surface, forming hills and valleys, including a major structural trough trending generally north-south and located beneath the GWMA. This structural trough is over 1,100 feet deep near Blaine. Over the last 1.8 million years, the trough has been filled by marine, glacial, and nonglacial sediments associated with Quaternary glacial and nonglacial events. Glacial advance and retreat have resulted in isostatic adjustments in land surface and fluctuations of shoreline elevation by as much as 650 feet. Marine invasions resulting from these fluctuations led to the deposition of Quaternary marine, glaciomarine, and deltaic sediment in complex association with glacial, glaciofluvial, and ice contact sediments.

Topography of the Fraser-Whatcom Lowlands is dominated by gently rolling upland (such as the Boundary Upland) separated by relatively flat-bottomed valleys. The Fraser River is the primary surface drainage. Additional drainages include the Campbell, Nicomekl, and Serpentine Rivers in Canada and the Nooksack and Sumas Rivers in Whatcom County.

Local Geology

Depth to bedrock varies from 300 to 400 feet near the southwest portion of the GWMA in the vicinity of well DW-4, to greater than 1,100 feet near the United States/Canada border. Well PW-2D located just north and west of the Loop well (DW-4) and six deep water supply wells owned by the City of Blaine and the Birch Bay Water and Sewer District (PW-1, PW-1R, PW-2, PW-3R, PW-5.1, and PW 8.1) were drilled to depths ranging from 700 to 858 feet bgs, and none encountered bedrock.

The GWMA is underlain by several hundred feet of Quaternary glacial and nonglacial sediments deposited during the last 1.8 million years, including Sumas glacial deposits, Everson interglacial deposits, Vashon glacial deposits, Olympia nonglacial deposits, and older undifferentiated glacial and nonglacial deposits. Starting at ground surface, these deposits consist of the following.

- Sumas Glacial Outwash (Qgos). This deposit consists of a thin layer of glacial outwash, composed of loose, moderately to well-sorted sand and gravel with some silt. The outwash is generally a few tens of feet thick in the GWMA but may be deeper toward the eastern portion of the Boundary Upland.
- Sumas Glacial Outwash / Everson Emergence (beach) deposits (Qgos/Qgomee). These deposits consist of loose, moderately to well-sorted gravel and sand with local boulders. They are generally less than 25 feet thick.
- Everson Glaciomarine Drift (Qgdme). These deposits consist of glaciomarine drift, a low-permeability deposit composed of an unsorted mixture of blue-gray, fossiliferous, pebbly silt and clay with till-like mixtures; marine clay; deltaic sand and gravel; and fluvial clay, silt, sand, and gravel.
- Vashon Glacial Till/Vashon Advance Outwash (Qgt/Qga). These deposits are grouped based on provenance as follows:
 - Vashon Glacial Till: These sediments consist of lodgement till, a complex mixture of sand, gravel, and silt deposited at the base of the advancing Vashon ice sheet.

- Vashon Advance Outwash: These sediments consist of silt, fine sand, and clay, which were deposited in proglacial, fluvial (river or stream) and lacustrine (lake) environments.
- Olympia Nonglacial deposits (Qco). These deposits, interpreted to have been deposited in a meandering river environment, may be more than 200 feet thick below the GWMA. They are grouped based on grain size and texture as follows:
 - Coarse grained: These sediments appear to consist of relatively permeable sand and silty sand with some lenses of gravel and silt.
 - Fine grained: These sediments appear to consist of a relatively thick sequence of low-permeability silt and silty sand with lenses of fine sand.
- Older Undifferentiated glacial and nonglacial deposits (Qo). These deposits, considered effectively one unit by AESI (2008), consist of marine sediments, glacial deposits of the Double Bluff and Possession glacial events, nonglacial Whidbey Formation sediments, and older glacial/nonglacial sediments. They consist of sand, gravel, silty till, and some silt, clay, and peat.
- Bedrock (B). Bedrock in the area is expected to consist of the Eocene-age Chuckanut and Huntington Formations. Throughout most of the area, depth to bedrock is generally several hundred to more than 1,000 feet bgs.

The coarse-grained Sumas Glacial Outwash/Everson Emergence (Qgos/Qgomee), Vashon Glacial Till/Vashon Advance Outwash (Qgt/Qga), Olympia Nonglacial (Qco) (coarse grained), and Older Undifferentiated glacial and nonglacial (Qo) deposits form the principal aquifers beneath the GWMA, although the Sumas Glacial Outwash/Everson Emergence deposits are generally too thin and discontinuous to be considered significant aquifers for more than household use. The Everson Glaciomarine Drift (Qgdme) and Olympia Nonglacial (Qco) (Fine grained) deposits form aquitards between the coarse-grained aquifer deposits.

Groundwater Occurrence and Flow

Well DW-4 is located in an area of the Fraser-Whatcom Lowlands that includes the Blaine Watershed and the City of Blaine GWMA. The region is underlain by three major water-bearing units, which are identified as the Perched, Intermediate, and Deep Aquifer Systems.

- **Perched Aquifer:** This system is found predominantly within Sumas Glacial Outwash (Qgos) and Everson Beach Deposits (Qgomee) located beneath the Boundary Upland. Perched conditions have developed due to underlying low-permeability sediments associated with the Everson Glaciomarine Drift deposit (Qgdme). Water-bearing zones within the overlying outwash and beach deposits generally possess low to moderate permeability but may adequately provide water for domestic purposes. Shallow groundwater infiltration due to precipitation is the primary source of recharge to the perched system.
- **Intermediate Aquifer:** This system is located from approximately 50 to 250 feet above mean sea level (MSL) within permeable layers of the Vashon glacial (Qgt/Qga) and Olympia Nonglacial deposits (Qco) and is a major water supply source for many wells in the area. These deposits may thin and occur only intermittently with increasing distance from the Boundary Upland. The Intermediate Aquifer is separated from the Perched Aquifer by the Everson Glaciomarine Drift deposit (Qgdme) except near the Canadian border, where the drift deposits may be absent. Consequently, the aquifer is considered semiconfined. The base of the Intermediate Aquifer coincides with low-permeability Olympia Nonglacial sediments. Recharge to the Intermediate Aquifer occurs in the Boundary Upland through vertical infiltration of precipitation as well as vertical percolation from the overlying Perched Aquifer. Groundwater in the Intermediate Aquifer flows in a radial direction away from the Boundary Upland and ultimately discharges to seawater. Other secondary discharge points may include wells and Dakota Creek at lower ground surface elevations.
- **Deep Aquifer:** This system is located in permeable sediments of older, undifferentiated glacial and nonglacial deposits from approximately 200 to 300 feet below MSL. Regionally, the aquifer likely extends to the north and northeast into Canada and to the south and southwest beneath Drayton Harbor and Birch Bay. The Deep Aquifer is overlain by approximately 100 to 300 feet of lower permeability Olympia Nonglacial sediments, which separate the Intermediate and Deep Aquifer systems. Some wells screened within the Deep Aquifer and located at lower elevations, such as valley floors, are flowing artesian wells (AESI, 2008). In the southwestern portions of the project area, the overlying confining Olympia Nonglacial sediments may be thinner, such that the Deep Aquifer becomes semiconfined and communicates with the overlying Intermediate Aquifer. Recharge to the Deep Aquifer likely occurs north of the United States/Canada border in the highland areas of British Columbia, Canada. Groundwater in the Deep Aquifer flows to the southwest beneath the study area and likely discharges to seawater in the Strait of Georgia.

Well DW-4 is 125 feet deep and is considered to be screened within the Intermediate Aquifer.

Impairment Considerations

Due to the small quantity of water being withdrawn, withdrawals associated with this right are not anticipated to adversely interrupt or interfere with the availability of water to an adequately constructed groundwater withdrawal facility of an existing right. Similarly, no interruption or interference with surface water rights or in-stream flows is anticipated.

Wells located near DW-4 and potentially in the same source of water have been found to contain levels of arsenic greater than federal drinking water standards. Water samples from Birch Bay Water and Sewer District well PW-2D and Loomis Trail Golf, Inc., well IW-3 were found to contain concentrations of arsenic above the federal threshold of 10 micrograms per liter ($\mu\text{g/L}$), with a maximum concentration of 36 $\mu\text{g/L}$ measured in a sample from well IW-3. Both these wells are screened in the Deep Aquifer, while the Loop well is screened in the Intermediate Aquifer. However, several considerations suggest that communication occurs between the two aquifers in the area of the Loop well. First, similarity in major element water chemistry was observed between DW-4 and well PW-2D (AESI, 2008). In addition, during an 88.5-hour constant-rate pump test conducted by GeoEngineers (2001) at PW-2D, water levels declined nearly 2 feet in DW-4, indicating some hydraulic connection between the Intermediate and Deep Aquifer in this area. Because of this connection, it is recommended that water in DW-4 be tested for arsenic content prior to further use and then annually thereafter.

Water Availability

In assessing water availability, the report distinguishes between *physical* and *legal* water availability.

Physical availability

Total available drawdown in the Intermediate Aquifer at DW-4 has been identified as 134 feet (AESI, 2008). Very little drawdown is anticipated during operation of this well when the maximum rate of 15 gpm is achieved due to the small quantity of water being withdrawn and the artesian nature of the well. Water is therefore considered physically available for appropriation at this location.

Legal availability

Water to be captured by the Loop well would naturally discharge to the salt water of Drayton Harbor. No impact to surface (fresh) water, including Dakota Crèek and California Creek, in administratively closed areas is expected to occur from operation of this well. Therefore, water is legally available for appropriation.

Public Interest Considerations

RCW 90.03.290 requires that a proposed appropriation not be detrimental to the public interest. It is not necessary that an application advance the public interest, but it cannot be adverse to it.

No factors detrimental to the public interest were identified related to this application.

Mitigation

No mitigation plans were developed or identified as needed to avoid detrimental impacts to the public interest or impairment of existing water rights.

Consideration of Protests and Comments

No protests or comments have been submitted to Ecology regarding water right application G1-27303.

Conclusions

In accordance with RCW 90.03.290, determinations were made on the four criteria below during the investigation of the subject application for water rights:

Water must be available

Water for this water right is considered to be physically available, as sufficient drawdown is present in the Intermediate Aquifer in which DW-4 is screened to supply both the requested withdrawal quantity and for

withdrawals associated with senior rights located in the same source of water. Based on pump tests, approximately 134 feet of drawdown is expected to be available within the aquifer at the location of DW-4.

Water withdrawn from well DW-4 would naturally discharge to the salt water of Drayton Harbor. No impact to surface (fresh) water, including Dakota Creek and California Creek, in administratively closed areas is expected to occur from operation of this well. Therefore, water is legally available for appropriation.

There must be no impairment of existing rights

Due to sufficient drawdown availability within the Intermediate Aquifer, withdrawals from DW-4 are not expected to interrupt or interfere with the availability of water to an adequately constructed groundwater withdrawal facility or an existing right.

The water use must be beneficial

Domestic use and stock watering are considered beneficial uses under chapter 90.54.020 RCW.

The water use must not be detrimental to the public interest

No considerations that are detrimental to the public interest were identified for the Loop well.

Recommendations

Based on the above investigation and conclusions, I recommend application G1-27303 be approved in the amounts and within the limitations listed below and subject to the provisions noted on page 2.

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:

- 5 gpm (additive)
- 2 acre-feet per year (non-additive)
- Single domestic supply and stock watering – year round as needed

Point of Withdrawal

SE¼ NE¼, Section 17, Township 40 North, Range 1 E.W.M.

Place of Use

As described on Page 1 of this Report of Examination.

Report by: *Dave Haddock*
 Dave Haddock, LG, LHG
 AMEC Geomatrix

 4/20/2010
 Date



DAVID R. HADDOCK

Licensed Geologist/Hydrogeologist No. 1790

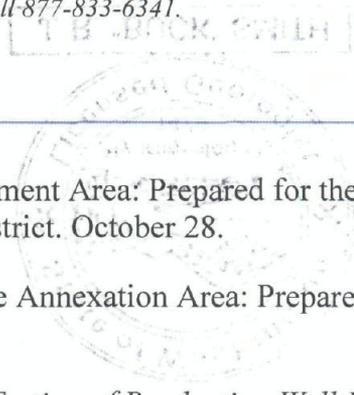
Reviewed by: *Buck Smith*
 Buck Smith, LG, LHG
 Department of Ecology
 Water Resources Program

 4/20/2010
 Date



J. R. "BUCK" SMITH

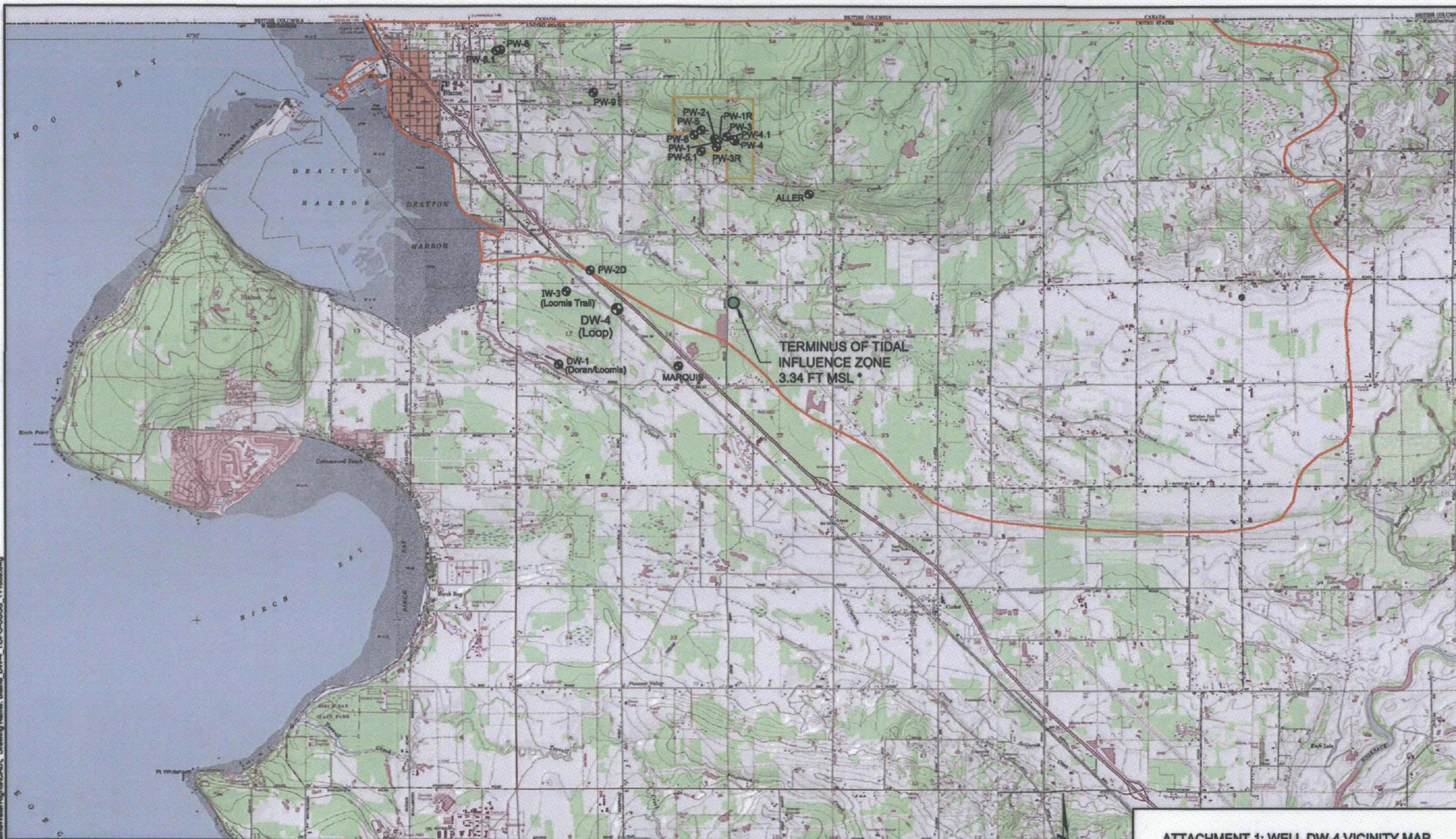
Licensed Geologist/Hydrogeologist No. 1479



References

- AESI. 2008.** *Technical Report. City of Blaine Ground Water Management Area:* Prepared for the City of Blaine Public Works Department and the Birch Bay Water and Sewer District. October 28.
- EMCON. 1995.** *Hydrogeological Characterization Study. East Blaine Annexation Area:* Prepared for Blaine City Council and Blaine City Manager. February 8.
- GeoEngineers. 2000.** *Hydrogeologic Services Well Installation and Testing of Production Well PW-1R.* Birch Bay, Washington: Prepared for Birch Bay Water and Sewer District. November 1.
- GeoEngineers. 2001.** *Hydrogeologic Services Installation and Testing of Production Well No. 2.* Birch Bay, Washington: Prepared for Birch Bay Water and Sewer District. April 30.
- Golder (Golder Associates, Inc.). 1992.** *Report on Rehabilitation and Pump Testing of Blaine City Well No. 2:* Prepared for the City of Blaine, Washington. June 26.
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- Golder. 1996.** *Report on Construction and Testing of Replacement Well 1:* Prepared for the City of Blaine, Washington. January 30.
- Golder. 1998.** *Water Quality Analysis Results-Well 3R and Well 1R:* Prepared for the City of Blaine, Washington. May 18.
- Piteau Associates Engineering, LTD. 2000.** *Potential Role of Groundwater in Servicing Agricultural Development of the Hazelmere Area.* Surry, BC. November.
- Shannon and Wilson. 1975.** *Potential Groundwater Supply.* Blaine Watershed. Blaine, Washington. November.

Plot Date: 11/13/09 - 2:23pm. Plotted by: wslm
 Drawing Path: S:\14872001_Blanne\Drawings\CAD, Drawing Name: Blaine_DW-4_Topo-USGS_111309.dwg



EXPLANATION

- WELL LOCATION
- CITY OF BLAINE WATERSHED
- GROUND WATER MANAGEMENT AREA

NOTE

* DETERMINED VIA SURVEYING BY AESI (2006)



ATTACHMENT 1: WELL DW-4 VICINITY MAP
 Loop Well Report of Examination
 Blaine, Washington

By: APS | Date: 11/13/09 | Project No. 14872

AMEC Geomatrix

Attachment 1

ATTACHMENT 2

Water Right Claim



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
WATER RIGHT CLAIMS REGISTRATION

WATER RIGHT CLAIM

RECEIVED
DEPARTMENT OF ECOLOGY

MAY 31 10 98 97 1

CASH OTHER NONE

1. NAME Willis & Harriet M. Loop

ADDRESS Route 2

Blaine, Wa ZIP CODE 98230

2. SOURCE FROM WHICH THE RIGHT TO TAKE AND MAKE USE OF WATER IS CLAIMED: Ground Water
(SURFACE OR GROUND WATER)

W.R.I.A. 81

(Two Water Right Claims are being submitted - one for

A. IF GROUND WATER, THE SOURCE IS Well (each well - in each location)

B. IF SURFACE WATER, THE SOURCE IS _____

3. THE QUANTITIES OF WATER AND TIMES OF USE CLAIMED:

A. QUANTITY OF WATER CLAIMED 10 GPM PRESENTLY USED .5 GPM
(CUBIC FEET PER SECOND OR GALLONS PER MINUTE)

B. ANNUAL QUANTITY CLAIMED 2 PRESENTLY USED 1
(ACRE FEET PER YEAR)

C. IF FOR IRRIGATION, ACRES CLAIMED _____ PRESENTLY IRRIGATED _____

D. TIME(S) DURING EACH YEAR WHEN WATER IS USED: Continuously - year around

4. DATE OF FIRST PUTTING WATER TO USE: MONTH OCT YEAR 1941

5. LOCATION OF THE POINT(S) OF DIVERSION/WITHDRAWAL: 15.00 FEET SOUTH AND 15.0

FEET WEST FROM THE NORTH EAST CORNER OF SECTION 17

BEING WITHIN NE 1/4 OF SECTION 17 T. 40 N. R. 1 E (E. OR W.) W.M.

IF THIS IS WITHIN THE LIMITS OF A RECORDED, PLATTED PROPERTY, LOT _____ BLOCK _____ OF _____

(GIVE NAME OF PLAT OR ADDITION)

6. LEGAL DESCRIPTION OF LANDS ON WHICH THE WATER IS USED: All of SW 1/4 of NW 1/4 of Sec. 16, Twp. 40, R. 1 E, W.M., Whatcom County, Wash. except easterly 474.7 ft. lying easterly of the right-of-way of Highway #1. All that portion of the SE 1/4 of NE 1/4 of Sec. 17, Twp. 40 N, R. 1 E lying northeasterly from Highway #1 (commonly called Pacific Highway) and being 1 1/2 acre in extent; also an easement for road purposes 40 ft. in width and 474.7 ft. in length over the north end of the easterly 474.7 ft. of said 40 acre tract. ALSO: That part of the northeast qtr of the northeast qtr of Sec. 17, Twp. 40 N, R. 1 E of W.M. lying northeasterly of the highway; excepting therefrom the following described tract: beginning at the northwest corner of the northeast quarter of the northeast quarter of Sec. 17; thence running east along the quarter line 25 rods; thence south 16 rods; thence west 25 rods; thence north 16 rods, to the point of beginning and less all roads; and less a portion conveyed to the state of Wash. *SEE ATTACHED FOR CONTINUATION

7. PURPOSE(S) FOR WHICH WATER IS USED: DOMESTIC

8. THE LEGAL DOCTRINE(S) UPON WHICH THE RIGHT OF CLAIM IS BASED: APPROPRIATION

DO NOT USE THIS SPACE

THE FILING OF A STATEMENT OF CLAIM DOES NOT CONSTITUTE AN ADJUDICATION OF ANY CLAIM TO THE RIGHT TO USE OF WATERS AS BETWEEN THE WATER USE CLAIMANT AND THE STATE OR AS BETWEEN ONE OR MORE WATER USE CLAIMANTS AND ANOTHER OR OTHERS. THIS ACKNOWLEDGEMENT CONSTITUTES RECEIPT FOR THE FILING FEE.

DATE RETURNED _____ THIS HAS BEEN ASSIGNED WATER RIGHT CLAIM REGISTRY NO. _____

JAN 13 75 104032

J. Papp

DIRECTOR, DEPARTMENT OF ECOLOGY

I HEREBY SWEAR THAT THE ABOVE INFORMATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

X Willis Loop
Harriet M. Loop
DATE 29 March 1974

IF CLAIM FILED BY DESIGNATED REPRESENTATIVE, PRINT OR TYPE FULL NAME AND MAILING ADDRESS OF AGENT BELOW.

ADDITIONAL INFORMATION RELATING TO WATER QUALITY AND/OR WELL CONSTRUCTION IS AVAILABLE.

A FEE OF \$2.00 MUST ACCOMPANY THIS WATER RIGHT CLAIM

ORIGINAL DWR

RETURN ALL THREE COPIES WITH CARBONS INTACT, ALONG WITH YOUR FEE TO:
DEPARTMENT OF ECOLOGY
WATER RIGHT CLAIMS REGISTRATION
P.O. BOX 829 OLYMPIA, WASHINGTON 98501

Continuation Sheet - for Willis R. Loop & Harriet M. Loop

WATER RIGHT CLAIM

#6 - continuation of Legal Description of Lands on which water is used:

ALSO: All that portion of the NW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of said section 16 lying south-
westerly from the Great Northern Railroad right of way and-also-also
Also that part of NW/SW Sec. 16, 40 1E, lying northerly of highway - also
beginning at SE corner of SW/NW then 315-TR W. 379.5 ft. (4.00-acres)

ATTACHMENT 3

RELEVANT SENIOR WATER RIGHTS

Loop Well Report of Examination

Blaine, Washington

Right No.	Owner	Priority Date	Initial Use	Depth (ft bgs)	Aquifer	Township/Range /Section	Qi (gpm)	Qa (acre-ft/yr)
CERTIFICATES								
G1-22125CWRIS	DORAN PATRICK H	9/30/1974	NA	365	Intermediate	40.0N 01.0E 17	15	2.8
APPLICATIONS								
G1-25958	LOOMIS TRAIL GOLF INC	11/1/1990	NA	530	Deep	40.0N 01.0E 17	300	--
CLAIMS								
Active								
G1-104032CL	LOOP WILLIS & MARJORIE	3/19/1974	1941	60	Intermediate/Deep	40.0N 01.0E 17	10	2
G1-063359CL	WORKENTIN PETE I. ¹	2/9/1974	1948	21	Perched	40.0N 01.0E 16	10	1
G1-038750CL	CHESTERLEY FREDERICK D. & INGER G. ²	9/7/1973	--	23/50	Intermediate	40.0N 01.0E 17	E	E
Unconfirmed⁴								
G1-157954CL	FREEMAN LARRY C	5/28/1974	--	--	--	40.0N 01.0E 16	E	E
G1-156782CL	BEATTY H ROE	5/14/1974	--	--	--	40.0N 01.0E 16	E	E
G1-026657CL	HALE JAMES R.	9/1/1972	1936	--	--	40.0N 01.0E 16	450	400,725
Not Active								
G1-120545CL	LINDQUIST EINAR & DEBRA ³	5/10/1974	1908	--	--	40.0N 01.0E 16	10	1
G1-104033CL	LOOP WILLIS & MARJORIE ⁴	3/19/1974	1961	126	Intermediate	40.0N 01.0E 17	10	2

Notes

1. Property sold to Everett A. Thompson. Mr. Thompson was contacted and confirmed that the right is in use.
2. Based upon Washington State Department of Ecology well log records, it appears two wells are associated with this water right claim.
3. Property sold to Judy A. and Steve W. Hamilton. The Hamiltons were contacted and indicated the well has been decommissioned and the right is not in use.
4. Property sold to railroad. The claim is believed to be inactive. In order to be valid claims must have been put to initial use prior to 1945. Therefore, this claim appears to be invalid.

Abbreviations

- = Not specified
- E = Exempt quantity
- ft bgs = feet below ground surface
- gpm = gallons per minute
- acre-ft/yr = acre-feet per year
- NA = Not Applicable

ATTACHMENT 4

PHOTOGRAPHS OF LOOP WELL
Loop Well Report of Examination
Blaine, Washington



Photograph 1 General vicinity of well DW-4 looking south.



Photograph 2 General vicinity of well DW-4 looking north.