



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

PRIORITY DATE November 1, 1990	APPLICATION NO. G1-25958		
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NAME Semiahmoo Resort Company LLC (Loomis Trail Golf Course)		
ADDRESS/STREET 8720 Semiahmoo Resort Parkway	CITY/STATE Blaine, Washington	ZIP CODE 98230

PUBLIC WATERS TO BE APPROPRIATED

SOURCE Groundwater (Well IW-3)		
TRIBUTARY OF (IF SURFACE WATERS)		

MAXIMUM CUBIC FEET PER SECOND (cfs)	MAXIMUM GALLONS PER MINUTE (gpm) 200*	MAXIMUM ACRE FEET PER YEAR (ac-ft/yr) 130.4
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QUANTITY, TYPE OF USE, PERIOD OF USE
 Irrigation Season (generally May through September). The golf course has approximately 75-80** acres of irrigable land.

SPECIAL REMARKS

* The instantaneous quantity of 200 gpm is less than the requested 300 gpm specified in application G1-25958. According to the applicant, the well is capable of withdrawing only 200 gpm. As a result, the instantaneous quantity has been adjusted to reflect current well production.

** Application G1-25958 indicates the golf course contains 90 acres of irrigable land. Since the time of the application, the area of irrigable land has been reduced to between 75 and 80 acres (Bill Dierdorff personal communication, 2009).

LOCATION OF DIVERSION/WITHDRAWAL

SOURCE	PARCEL	LATITUDE	LONGITUDE	QTR/QTR	SECTION	TOWNSHIP	RANGE
Well IW-3	400117200308	48.9594	122.7154	NE1/4 NW1/4	17	T40N	1E

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

N1/2 SW1/4 NE1/4, SW1/4 SW1/4 NE1/4, SE1/4 NW1/4, S1/2 NE1/4 NW1/4, and the E1/2 SW1/4 and the W1/2 SE1/4 lying north of Loomis Trail Road, within Section 17, Township 40 North, Range 1 East.

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

DESCRIPTION OF PROPOSED WORKS

The Loomis Trail project consists of a single groundwater well (IW-3) used for golf course irrigation during the months of May through September. The well is 8 inches in diameter and 526 feet deep. During the irrigation season, groundwater is pumped to a holding pond and is then pumped to the golf course for irrigation as needed.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE Already begun	COMPLETE PROJECT BY THIS DATE Complete	WATER PUT TO FULL USE BY THIS DATE Within 5 years of issuance of permit
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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 Water Use, Report Annually

Water use data shall be recorded daily. The maximum monthly rate of withdrawal and the monthly total volume shall be submitted to the Department of Ecology by January 31st of each calendar year. Water use data shall be submitted via the Internet. To set up an Internet reporting account, access <https://fortress.wa.gov/ecy/wrx/wrx/Meteringx/>.

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. Seawater Intrusion and Elevated Arsenic Concentrations

In order to be protective of the Shallow Aquifer as a drinking water resource, regular monitoring for chloride and arsenic is required to ensure that constituent concentrations remain below applicable criteria established by Chapters 173-200 of the Washington Administrative Code (WAC). Chloride, conductivity, and arsenic measurements as well as depth to static water level (pump off), measured from the top of the well casing, shall be made quarterly. The chemical analysis shall be performed by a state-accredited laboratory. A copy of the laboratory results for all sampling events and the depth to static water level shall be submitted by January 31st of each year, to the Department of Ecology, Northwest Regional Office, Bellevue, Washington. For record keeping, please include the water right number on all copies. If pumping from the well authorized by this water right causes chloride or arsenic concentrations to show an increasing trend, immediate action shall be required to prevent concentrations from increasing. These actions include, but are not limited to reducing the instantaneous withdrawal rate (gpm) of the well, lowering the annual quantity removed from the well, altering the pumping cycle, turning off the well, or drilling additional wells. If chloride or arsenic concentrations continue to increase, even after corrective measures are taken, the permit holder shall relinquish the option to perfect additional allocated quantities regardless of the stage of development.

Groundwater extracted from IW-3 may not exceed groundwater standards for chloride or arsenic prior to diversion to the golf course retention ponds and application onto the golf course. Before diversion or application, groundwater must meet the Department of Ecology groundwater standards in order to be protective of the phreatic aquifer. Consequently, extracted groundwater may need to be either treated for elevated chloride and arsenic concentrations or blended with an alternate source in order to achieve compliance with groundwater standards.

8. 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.

9. Surface Water Quality

In order to be protective of surface water quality, runoff from the site should be minimized to the extent possible. Runoff from the site includes direct discharge from the holding ponds to any off-site surface water body as well as runoff generated during irrigation of golf course property.

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. G1-25958, 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:

The Pollution Control Hearings Board
P.O. Box 40903
Olympia, WA 98504-0903

OR

Deliver your appeal in person to:

The Pollution Control Hearings Board
4224 – 6th Ave SE Rowe Six, Building 2
Lacey, WA 98503

2. To serve your appeal on the Department of Ecology

Mail appeal to:

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

OR

Deliver your appeal in person to:

The Department of Ecology
Appeals Coordinator
300 Desmond Drive 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://www1.leg.wa.gov/CodeReviser>.

Signed at Bellevue, Washington, this _____ day of _____, 2010.

Jacqueline Klug
Acting Section Manager
Water Resources Program
Northwest Regional Office

INVESTIGATOR'S REPORT

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 of the Loomis Trail water right application (G1-25958) was published in *The Westside Record-Journal* on December 12 and 19, 1990 (see Attachment 2).

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 gpm.

Consultation with the Department of Fish and Wildlife

The Washington State Department of Fish and Wildlife was notified of this application (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

The Loomis Trail Golf Course, Inc. (Loomis Trail) filed water right application G1-25958 requesting a groundwater right for irrigation of approximately 80 acres of land during the months of May through September (Attachment 3). The application was assigned to Semiahmoo Resort Company, LLC, on October 19, 2009, (Attachment 4). Under the current project, groundwater is withdrawn from a single well (IW-3) located on the golf course property and is then diverted to a holding pond where it is stored until required for irrigation. Groundwater from IW-3 is not diverted to the holding pond during periods of the year when golf course irrigation is unnecessary (Bill Dierdorff personal communication, 2009). Details regarding the requested water right are summarized in the table below.

Application	Priority Date	Source	Well #	Depth (ft)	Township	Range	Section	Qi (gpm)
G1-25958	11/1/1990	Groundwater	IW-3	526	40N	1E	17	300

A map showing the location of IW-3 is provided in Attachment 1. The well is located approximately 2.2 miles southeast of the City of Blaine and 0.8 miles east of Drayton Harbor. The terrain immediately adjacent to the wellhead includes forested areas (see photos in Attachment 5) and other grassy vegetation typically found at a golf course. Residential areas border portions of the golf course but are not immediately adjacent to the well head.

No formal protests against application G1-25958 are on file with the Department of Ecology. In a letter dated August 27, 1991, addressed to the Department of Ecology, Willis and Harriet Loop expressed concern regarding groundwater withdrawals from IW-3 and possible negative impacts to both the Loop's artesian well and surface water bodies on their property. This letter, however, did not protest application G1-25958.

Priority Processing/Cost Reimbursement (when applicable)

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)
City and District Applications						
City of Blaine	PW-1R	G1-26821	11/13/1992	733	450	720
City of Blaine	PW-2	G1-26820	11/13/1992	700	200	320
City of Blaine	PW-5.1	G1-28481	2/21/2007	655	1,100	850
Birch Bay Water & Sewer District	PW-2D	G1-28046	8/3/1999	700	500	806
Other Senior Applications						
Loop	DW-4	G1-27303	9/1/1993	126	15	--
Marquis	N/A	G1-25291	8/23/1998	250	200	--

Investigation

History of Water Use

The Loomis Trail Golf Course has historically used groundwater from IW-3 for irrigation during the summer months, when natural precipitation is insufficient for maintaining proper vegetative cover at the course.

Proposed Use

The Loomis Trail Golf Course plans to continue using groundwater extracted from IW-3 to irrigate during months when precipitation is insufficient to maintain course vegetation in an appropriate playing condition. Based upon the Crop Irrigation Requirement (CIR) provided in the Washington Irrigation Guide - Appendix B, pasture/turf in the Blaine, Washington, area is expected to require approximately 14.69 inches (1.22 feet) of water during the 6-month period of April through September (NRCS, 2009). Assuming an average efficiency for pop-up impact sprinklers of 75%, the golf course is expected to require approximately 19.59 inches (1.63 feet) of water during the irrigation season. This depth, when applied to the 80 acres of irrigational land, translates to 130.4 acre-ft/yr of water use needed. Both the 200 gpm maximum instantaneous use (Qi) requested by Loomis Trail Golf Course and the 130.4 acre-ft/yr annual withdrawal (Qa) based upon the CIR are considered reasonable.

Other Rights Appurtenant to the Place of Use

Senior water rights within the place of use or the same source of water as well IW-3, including federal or tribal reserved water rights, were identified. A total of seven certificates, permits, claims, or applications recommended for approval were identified. The place of use for this application is shown on Attachment 1.

Attachment 6 provides a table of all other claims appurtenant to the place of use. Attachment 7 provides a table of senior certificates and applications recommended for approval, appurtenant to the same source of water as IW-3 and belonging to other parties.

The claims listed in Attachment 6 were identified within the same township, range, and section containing IW-3 as well as the township, range, and section to the north of IW-3. This approach corresponds to a search distance of approximately 0.5 mile in the east/west direction and 0.9 mile in the north/south direction. The radius of influence from pumping at IW-3 is not anticipated to reach distances substantially greater than this search area. Any drawdown in the water table outside of this area is expected to be minimal (less than approximately 2 feet), based upon analyses performed by AESI (2008) and as discussed further below.

To the extent feasible, claim owners identified in Attachments 6 and 7 were contacted in order to identify the location of their well and the source of water associated with the claim, as well as to determine whether the water is in use. Claims that could not be confirmed as appurtenant to the same source of water as well IW-3, or that could not be identified as still in use, are indicated on Attachment 6.

Relationship of New and Existing Rights

This right will represent a primary water right and will be used by Loomis Trail Golf Course as needed to meet irrigation demand during the months of May through September. The right has been applied for due to the need to meet water demand associated with golf course operations during the summer months.

The proposed new right potentially shares the same source of water as one existing water right and three additional senior claims. The water right claims sharing the same source are the Loop (G1-104032CL), Westman (G1-115694CL), and Wolton claims (G1-163295CL) (Attachment 6). The identified senior water right certificate holder is the Doran water right certificate (G1-22125CWRI) (Attachment 7). In addition, one other (junior) application sharing the same source of water has been identified (Loop application G1-27303). The claims, application, and existing water right certificate may share source water with IW-3 due to possible hydraulic connectivity between the Intermediate Aquifer and the Deep Aquifer (see Hydrologic/Hydrogeologic Evaluation below).

Site Visit

A site visit for well IW-3 was performed on October 21, 2009. The site visit was conducted with Golf Superintendent Mr. Bill Dierdorff from Loomis Trail Golf Course. Groundwater well IW-3 is located on the Loomis Trail Golf Course approximately 30 feet north of an irrigation detention pond. The golf course is adjacent to the wellhead to the south, while a wooded area is located to the north. Photos of well IW-3 are provided in Attachment 5.

Hydrologic/Hydrogeologic Evaluation

Information in this section on regional and local geology 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, Ltd, 2000; and AESI, 2008).

Regional Geology

The Loomis Trail Well IW-3 is located in the area known as the Fraser-Whatcom Lowlands, which 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 City of Blaine Groundwater Management Area (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

The description of local geologic conditions is derived primarily from borings located within the GWMA as well as the boring log for well IW-3. The Loomis Trail Well IW-3 is located 0.3 mile southwest of the GWMA. Geology within the GWMA is expected to be similar to that encountered locally at IW-3. Depth to bedrock in the area varies from 300 to 400 feet near the southwest of the GWMA, to greater than 1,100 feet near the United States/Canada border. City of Blaine well PW-5.1 and six deep City and Birch Bay Water and Sewer District water supply wells (PW-1, PW-1R, PW-2, PW-3R, PW-8.1, and PW-2D) were drilled to depths ranging from 700 to 858 feet below ground surface, and none encountered bedrock.

The area 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 towards 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 below ground surface (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 IW-3 is located in an area of the Fraser-Whatcom Lowlands adjacent to the City of Blaine's 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 (Qco). 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 IW-3 is screened in the Deep Aquifer from 489 to 521 feet below ground surface (Attachment 8).

Impairment Considerations

It is expected that continued withdrawals by the Applicant related to well IW-3 would be dominantly from the Qo deposits, also referred to as the Deep Aquifer. Available data for the Deep Aquifer, including results of aquifer pump tests and groundwater chemical analyses, were reviewed to quantify hydrogeologic properties that can be used to address possible impacts on water resources or impairment of other rights.

Hydrogeologic Properties

Longer duration pump tests conducted for wells located in the study area indicate that transmissivity of the Deep Aquifer ranges from approximately 1,000 square feet per day (feet²/day) to 5,500 feet²/day. Storativity values calculated from pump test data range from 0.00049 to 0.005 (AESI, 2008). In confined aquifers, storativity values generally range from 0.001 to 0.00001 (Schwartz and Zhang, 2003), indicating that the Deep Aquifer generally behaves as a confined unit but may possess areas where the overlying aquitard is discontinuous or leaky. During a pump test for the Birch Bay Water and Sewer District well PW-2D (approximately 0.3 mile northeast of IW-3), 2 feet of drawdown was observed in a well screened within the Intermediate Aquifer (the Loop well). This finding suggests that some leakage between the Intermediate and Deep Aquifer systems may occur in the southwestern portion of the study area.

Area of Influence

The area of influence for IW-3 is not anticipated to extend past a radius of greater than 2,500 feet. Aquifer tests performed at PW-2D suggest that an extraction rate of 120 gpm at IW-3 would result in decreased groundwater levels of approximately 4 feet in well PW-2D and 2 feet in the Loop Well. Although the water right application for IW-3 requests a maximum extraction rate of 300 gpm, the maximum pumping rate historically used at IW-3 is approximately 200 gpm (Dierdorff personal communication, 2009).

Water Quality

In the southwestern portion of the GWMA, similarity in water chemistry was observed between a well screened in the Intermediate Aquifer (the Loop well; also referred to as DW-4) and deep District well PW-2D (AESI, 2008). This similarity in chemistry coupled with pump test results indicates that some hydraulic connectivity is present between the Deep Aquifer and the Intermediate Aquifer in the southwestern area of the GWMA. The low-permeability Qco sediments may thin out in this area and create semiconfined conditions in the Deep Aquifer.

Elevated chloride concentrations are present in two Loomis Trail wells (IW-3, DW-1 [also known as the Doran well]) located in the Deep Aquifer southwest of the GWMA (GeoEngineers, 2001). These concentrations range from 220 to 750 milligrams per liter (mg/L). GeoEngineers (2001) concluded that these elevated chloride levels are most likely related to migration of connate water from overlying permeable marine sediments or underlying bedrock based on the following considerations.

Calculations based on the methodology by Bear (1979) indicate that the toe of the freshwater/seawater interface is located at least 1,700 feet downgradient of the three affected wells (see GeoEngineers, 2001, for complete calculation). According to Bear, lateral migration of seawater into an aquifer will not occur if the furthest downgradient point of the well's capture zone is located inland of the toe of the freshwater/seawater interface. GeoEngineers estimated that at the maximum pump rates reported for the affected wells, the maximum capture zone would be 700 feet downgradient. This capture zone is farther inland than the closest location of the toe of the freshwater/seawater interface.

A decline in chloride concentrations at IW-3 may have occurred since the well was installed in 1990. The water well report (Attachment 8) indicated the presence of "salt" at a concentration of 700 milligrams per liter (mg/L). Groundwater samples collected from IW-3 in 2007 and 2008 exhibited chloride concentrations of 248 mg/L and 250 mg/L, respectively (AESI, 2008; Attachment 9). Chloride concentrations were also observed to vary between 310 and 324 mg/L during a 24-hour pump test completed by GeoEngineers in 1999 (GeoEngineers, 2000). The apparent decline in salinity over the past 18 years suggests the chloride source is possibly connate water that has been diluted by influx of fresh aquifer water during pumping.

Tidally induced water level fluctuations were not observed in three wells with elevated concentrations of chloride during an 88.5-hour, constant-rate aquifer test conducted on well PW-2D, suggesting that the Deep Aquifer is not tidally influenced.

Prior studies (Newcomb, 1949; Walters, 1971) indicate the possible presence of connate water at depth in the area in locations well inland of seawater, possibly related to overlying marine sediments or underlying Tertiary bedrock.

These considerations suggest that seawater intrusion is not likely to occur due to pumping from wells belonging to the applicant. Due to uncertainty regarding the source of chloride, however, it is recommended that Loomis Trail Golf Course monitor for chloride in IW-3.

The arsenic concentration in a groundwater sample collected from IW-3 in December 2008 was 36 micrograms per liter (µg/L), which exceeds the arsenic standard for groundwater (Attachment 9). As a result of the elevated arsenic concentration, it is recommended that Loomis Trail Golf Course monitor for arsenic at IW-3.

Water Availability

In assessing water availability for appropriation, this report distinguishes between physical and legal water availability.

Physical availability

Total available drawdown in the Deep Aquifer at well IW-3 has been identified as 515 feet (AESI, 2008). The total anticipated drawdown during operation of this well is approximately 166 feet when pumping 120 gpm, leaving 349 feet of water above the well pump. Because the Loomis Trail Well aquifer test was performed using a rate of 120 gpm, the exact radius of influence for the requested Qi of 200 gpm could not be determined. However, the large available remaining drawdown of an additional 349 feet during the 120 gpm aquifer test suggests that the Loomis Trail well can accommodate a groundwater withdrawal rate of 200 gpm. Water is therefore considered physically available for appropriation at this location.

Legal availability

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.

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.

The following considerations were evaluated during this investigation:

- Groundwater from IW-3 is currently diverted during the irrigation season to retention ponds and is applied to the ground surface during summer months via the golf course irrigation system. As currently operated, this irrigation approach could pose a threat to groundwater quality in the shallow aquifer because arsenic and chloride concentrations may exceed applicable water quality standards.
- Monitoring of chloride during the operation of well IW-3 should be performed to verify that chloride levels remain below the threshold protective of groundwater as established by the Department of Ecology.
- Monitoring of arsenic during the operation of well IW-3 should be performed to verify that arsenic levels remain below the threshold protective of groundwater as established by the Department of Ecology.
- The valve on well IW-3 should be closed during the winter months to preserve the artesian head of the aquifer.

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 were submitted to Ecology regarding water right application G1-25958. However, a letter of concern written by Willis and Harriet Loop was received by Ecology on September 3, 1999. Mr. and Mrs. Loop were concerned about the applicant's unauthorized groundwater withdrawal and possible impacts to their artesian well. Although unauthorized, Well IW-3 has historically been used to irrigate the Loomis Trail Golf Course and the Loop well has remained artesian during this use. Given the duration over which these withdrawals have occurred, it is unlikely the Loop well will lose its artesian head in the future due to withdrawals from Well IW-3.

Furthermore, there is no legal requirement that the Loop well must remain artesian when additional water right applications are granted in the Intermediate or Deep Aquifer. If the artesian head in the Loop well is lost, the Loops may need to install a pump in order to withdraw the allotted volume specified in their water right claim. The volume specified in the Loop water right claim is expected to remain available in the Intermediate Aquifer, where the Loop well is screened.

Conclusions

In accordance with RCW 90.03.290, determinations have been made on the four criteria below in order for this water right application to be approved.

Water must be available

Water for this water right is considered to be physically available, as sufficient drawdown is present in the Deep Aquifer in which well IW-3 is screened to supply both the requested withdrawal quantity and for withdrawals associated with senior rights located in the Deep Aquifer. Based on pump tests, approximately 349 feet of drawdown is expected to remain available within the aquifer. The requested Q_a is considered reasonable based upon the Q_i applied over the duration of irrigation season.

No legal constraints to the use of water by this right were identified, therefore water is considered to be legally available.

There must be no impairment of existing rights

Due to sufficient drawdown availability within the Deep Aquifer, withdrawals from IW-3 are not expected to interrupt or interfere with the availability of water to an adequately constructed groundwater withdrawal facility or an existing right. An adequately constructed groundwater withdrawal facility is one that (a) is constructed in compliance with well construction requirements and (b) fully penetrates the saturated zone of an aquifer or withdraws water from a reasonable and feasible pumping lift.

The water use must be beneficial

Irrigation supply is considered a beneficial use in accordance with RCW 90.54.020.

The water use must not be detrimental to the public interest

No considerations that are detrimental to the public interest were identified for well IW-3, providing the right holder abides by the provisions specified in this ROE. These provisions include monitoring of chloride and arsenic concentrations to ensure that concentrations remain below the threshold for groundwater standards established by Ecology, treatment or blending of groundwater prior to diversion to golf course retention ponds, and minimizing surface runoff from the site.

Recommendations

Based on the above investigation and conclusions, I recommend application G1-25958 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:

- 200 gpm
- 130.4 ac-ft/yr
- Irrigation supply

Point of Withdrawal

NE $\frac{1}{4}$ NW $\frac{1}{4}$, Section 17, Township 40 North, Range 1 East, W.M.

Place of Use

As described on Page 1 of this Report of Examination.

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

Date

Licensed Geologist/Hydrogeologist No. 1790

Reviewed by: _____

Buck Smith, LG, LHG
Department of Ecology
Water Resources Program

Date

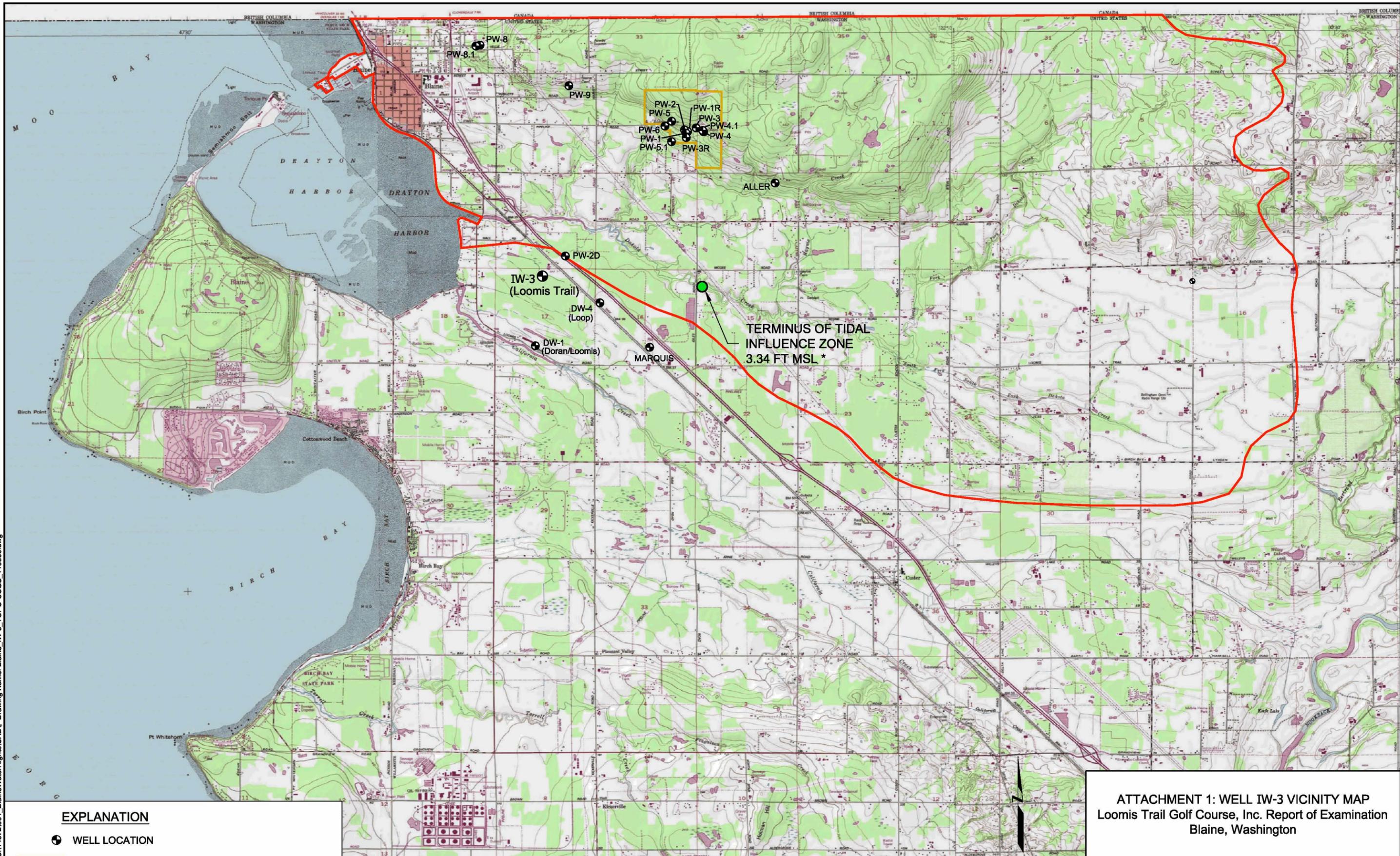
Licensed Geologist/Hydrogeologist No. 1479

If you need this publication in an alternate format, please call the Water Resources Program at 425- 649-7000. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

References

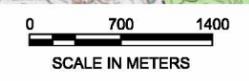
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Plot Date: 11/09/09 - 1:26pm. Plotted by: adam.stenberg
 Drawing Path: S:\14872001_BlaireWaterRights\CAD\ Drawing Name: Blaine IW-3_TOPO-USGS_110509.dwg



EXPLANATION	
	WELL LOCATION
	CITY OF BLAINE WATERSHED
	GROUND WATER MANAGEMENT AREA

NOTE
 * DETERMINED VIA SURVEYING BY AESI (2008)



ATTACHMENT 1: WELL IW-3 VICINITY MAP
 Loomis Trail Golf Course, Inc. Report of Examination
 Blaine, Washington

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

AMEC Geomatrix Attachment **1**

ATTACHMENT 2

AFFIDAVIT OF PUBLICATION

RECEIVED
JAN 23 1991
DEPT. OF ECOLOGY

NOTICE OF APPLICATION
TO APPROPRIATE
PUBLIC WATERS
TAKE NOTICE:
That LOOMIS TRAIL GOLF,
INC., of BLAINE, WASHINGTON
on NOVEMBER 1, 1990 under Ap-
plication No. GI-25958 filed for per-
mit to appropriate public waters,
subject to existing rights, from
WELL in the amount of 300
GALLONS PER MINUTE each
year, for IRRIGATION - DURING
IRRIGATION SEASON
The source of the proposed ap-
propriation is located within NE 1/4
NW 1/4 of Section 17, Township 40,
N., Range 1E W.M., in WHATCOM
County.
Protests or objections to ap-
proval of this application must in-
clude a detailed statement of the
basis for objection: protests must
be accompanied by a two dollar
(\$2.00) recording fee and filed with
the Department of Ecology, at the
address shown below, within thirty
(30) days from December 19, 1990.
Department of Ecology
Northwest Regional Office
4350-150th Ave. N.E.
Redmond, Washington 98052
Published Dec. 12 & 19, 1990
(M1012).

affid 01/19/91 2-5-91

STATE OF WASHINGTON,
COUNTY OF WHATCOM

Elaine Westhoff....., being first sworn
on oath, deposes and says that she is the principal clerk of THE
WESTSIDE RECORD-JOURNAL, a weekly newspaper. That said
newspaper is a legal newspaper and has been approved as a legal
newspaper by order of the superior court in the county in which it is
published and it is now and has been for more than six months prior
to the date of the publications hereinafter referred to, published in the
English language continually as a weekly newspaper in Whatcom Coun-
ty, Washington, and it is now and during all of said time was printed
in an office maintained at the aforesaid place of publication of said
newspaper.

That the annexed is a true copy of a *legal notice*
as it was published in regular issues (and not in supplement form)

of said newspaper once each week for a period of *2*
consecutive weeks, commencing on the

12th day of *December*, 19 *90*, and ending on the

19th day of *December*, 19 *90*, both dates inclu-
sive, and that such newspaper was regularly distributed to its
subscribers during all of said period. That the full amount of the fee

charged for the foregoing publication is the sum of \$ *94.50*

which amount has been paid in full, at the rate of \$ *10.80*

per column inch for the first insertion and \$ *8.10*
per column inch for each subsequent insertion.

Elaine Westhoff.....

Subscribed and sworn to before me this *3rd* day

of *January*, 19 *91*

Thomas L. George

Notary Public in and for the State of
Washington, residing at Ferndale.



P.O. BOX 38, FERNDAL, WA 98248
Ph. 384-1411 or 671-9083
FAX: 384-1411 or 671-9083



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

NOTICE OF APPLICATION TO APPROPRIATE PUBLIC WATERS

TAKE NOTICE:

That LOOMIS TRAIL GOLF INC.,
of BLAINE, WASHINGTON on NOVEMBER 1, 1990 under
Application No. G1-25958 filed for permit to appropriate public waters, subject to existing rights,
from WELL
in the amount of 300 GALLONS PER MINUTE
each year, for IRRIGATION - DURING IRRIGATION SEASON

The source of the proposed appropriation is located within NE 1/4 NW 1/4

of Section 17, Township 40 N., Range 1E W.M., in WHATCOM County.

Protests or objections to approval of this application must include a detailed statement of the basis for objections; protests must be accompanied by a two dollar (\$2.00) recording fee and filed with the Department of Ecology, at the address shown below, within thirty (30) days from

Department of Ecology
Northwest Regional Office
4350 - 150th Ave. N. E.
Redmond, Washington 98052

(Last date of publication to be entered above by publisher)

ATTACHMENT 3

I have examined this application

required by SEPA and find that it is:

not an "action".

SURFACE WATER

GROUND WATER

RECEIVED

categorically exempt

\$10.00 MINIMUM STATUTORY EXAMINATION FEE REQUIRED WITH APPLICATION

NOV 01 1990



DATE: 11/9/90

SIGNATURE: Steve Baker

(GRAY BOXES FOR OFFICE USE ONLY)

APPLICATION NO. 61-25958	W.R.I.A. 1	COUNTY Whatcom	PRIORITY DATE 11-1-90	DEPT. OF ECOLOGY TIME	ACCEPTED [initials]
-----------------------------	---------------	-------------------	--------------------------	-----------------------	------------------------

APPLICANT'S NAME - PLEASE PRINT
LOOMIS TRAIL GOLF, INC.

See progress sheet for mailing.

Bus. Tel. 332-6300
Home Tel. _____
Other Tel. _____

ADDRESS (STREET) (CITY) (STATE) (ZIP CODE)
4342 LOOMIS TRAIL RD. BLAINE WA. 98230

DATE & PLACE OF INCORPORATION IF APPLICANT IS A CORPORATION

1. SOURCE OF SUPPLY

IF SURFACE WATER	IF GROUND WATER
SOURCE (NAME OF STREAM, LAKE, SPRING, ETC.) (IF UNNAMED, SO STATE)	SOURCE (WELL, TUNNEL, INFILTRATION TRENCH, ETC.) <u>WELL</u>
TRIBUTARY	SIZE AND DEPTH <u>DIA: 8" DEPTH: 526"</u>

2. USE

USE TO WHICH WATER IS TO BE APPLIED (DOMESTIC SUPPLY, IRRIGATION, MINING, MANUFACTURING, ETC.)
IRRIGATION

ENTER QUANTITY OF WATER REQUESTED USING UNITS OF:	CUBIC FEET PER SECOND (CFS)	OR	GALLONS PER MINUTE (GPM)	ACRE FEET PER YEAR
			<u>300</u>	

TIMES DURING YEAR WILL BE REQUIRED
3 times a day - during irrigation season
MAY THRU SEPTEMBER

IF IRRIGATION, NUMBER OF ACRES <u>90</u>	IF DOMESTIC USE, NUMBER OF UNITS BY TYPE, E.G. 1-HOME, 1-MOBILE HOME, 2-CAMPSITES, ETC.	IF MUNICIPAL USE, ESTIMATED POPULATION 20 YEARS FROM TODAY
DATE PROJECT WAS OR WILL BE STARTED <u>7-12-89</u>	DATE PROJECT WAS OR WILL BE COMPLETED <u>SPRING 91</u>	

3. LOCATION OF POINT OF DIVERSION/WITHDRAWAL

3A. IF IN PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)	SECTION	TOWN	RANGE	ALSO, PLEASE ENCLOSE A COPY OF THE PLAT AND MARK THE POINT(S) OF WITHDRAWAL OR DIVERSION

3B. IF NOT IN PLATTED PROPERTY

ON ACCOMPANYING SECTION MAPS, ACCURATELY MARK AND IDENTIFY EACH POINT OF DIVERSION. SHOW NORTH-SOUTH AND EAST-WEST DISTANCES FROM NEAREST SECTION CORNER OR PROPERTY CORNER.

ALSO, ENTER BELOW THE DISTANCES FROM THE NEAREST SECTION OR PROPERTY CORNER TO THE DIVERSION OR WITHDRAWAL.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION <u>17</u>	TOWNSHIP N. <u>40N</u>	RANGE (E. OR W.) W.M. <u>1E.</u>	COUNTY <u>WHATCOM</u>
---	----------------------	---------------------------	-------------------------------------	--------------------------

NE 1/4 NW 1/4

4. DO YOU OWN THE LAND ON WHICH THIS SOURCE IS LOCATED. IF NOT, INSERT NAME & ADDRESS OF OWNER
YES

5. LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

ATTACH A COPY OF THE LEGAL DESCRIPTION OF THE PROPERTY (ON WHICH THE WATER WILL BE USED) TAKEN FROM A REAL ESTATE CONTRACT, PROPERTY DEED OR TITLE INSURANCE POLICY. OR, COPY CAREFULLY IN THE SPACE BELOW.

N. 1/2 & S.W. 1/4 OF N.E. 1/4, S. 1/2 N.E. 1/4 & S.E. 1/4 OF N.W. 1/4, E. 1/2 OF S.W. 1/4 & W. 1/2 OF S.E. 1/4 N. OF LOOMIS TRAIL RD. ALL IN SECTION 17.

OWNER

ARE THERE ANY EXISTING WATER RIGHTS RELATED TO THE LAND ON WHICH THE WATER IS TO BE USED (INCLUDING WATER PROVIDED BY IRRIGATION DISTRICTS OR DITCH COMPANIES.)

YES NO

IF YES, FROM WHAT SOURCE (i.e. SURFACE OR GROUND WATER) AND UNDER WHAT AUTHORITY

6. DESCRIPTION OF SYSTEM PROPOSED OR INSTALLED

(FOR EXAMPLE: SIZE OF PUMP, CAPACITY OF PUMP, PUMP MOTOR HORSE POWER, PIPE DIAMETER, NUMBER OF SPRINKLERS, ETC.)

WELL PUMP: 3", 350 GALLONS PER MINUTE, 15 HP,
3"

IRRIGATION: 6", 800 GALLONS PER MINUTE, (2) 30 HP
(1) 15 HP, VARIES FROM 8" TO 1", 350 HEADS.

*(IRRIGATION PUMPS DRAW WATER FROM HOLDING POND.)

REMARKS

7.

IF 10 ACRE-FEET OR MORE OF WATER IS TO BE STORED AND/OR IF THE WATER DEPTH WILL BE 10 FEET OR MORE AT THE DEEPEST POINT, A STORAGE PERMIT MUST BE FILED IN ADDITION TO THIS PERMIT. THESE FORMS CAN BE SECURED, TOGETHER WITH INSTRUCTIONS, FROM THE DEPARTMENT OF ECOLOGY.

SIGNATURES

RICK DVORAK
LEGAL LANDOWNER'S NAME
(PLEASE PRINT)

Rich Dvorak
APPLICANT'S SIGNATURE

Rich Dvorak
LEGAL LANDOWNER'S SIGNATURE (OWNER OF PROPERTY DESCRIBED IN ITEM NUMBER 5)

4342 Loomis TRAIL Rd. BLAINE 98230
LEGAL LANDOWNER'S ADDRESS

FOR OFFICE USE ONLY

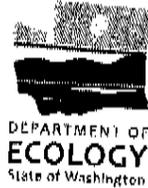
STATE OF WASHINGTON }
DEPARTMENT OF ECOLOGY } ss.

This is to certify that I have examined this application together with the accompanying maps and data, and am returning it for correction or completion as follows:

.....
In order to retain its priority date, this application must be returned to the Department of Ecology, with corrections, on or before....., 19.....

Witness my hand this..... day of....., 19.....

ATTACHMENT 4



STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

ASSIGNMENT OF APPLICATION OR PERMIT TO APPROPRIATE OR STORE WATER

A NON-REFUNDABLE \$50.00 FEE MUST ACCOMPANY THE FILING OF THIS ASSIGNMENT. Please read the instructions on the back of this form

1. I/We, Rick Dyorak the holder(s) of the application or permit number GI-25958 for the appropriation of the waters of Golf Course Well, do assign, transfer and set over to all, that portion described within an attachment to this assignment, of my right, title and interest therein.

2. This assignment is being made for the following reason(s):

SALE OF PROPERTY

3. This assignment relates to the following property identified as all or a portion of the place of use within the application/ permit being assigned: County Parcel Number(s): within Whatcom County, Section 17, Township 40 N., Range 10 E. W. M.

4. The application/permit includes a development schedule. The development schedule can be met.

The development schedule cannot be met and I've included a proposal for a new development schedule.

5. Application or permit holder(s):

RICK DYORAK

Address: 1500 EAST AXTON Bellingham, WA 98226

Assignee(s):

SEMIANNOO RESORT COMPANY LLC

Address: 8720 SEMIANNOD PARKWAY BLAINE, WA 98230

Phone: (800) 231-4425

6. Notary Signature:

State of Washington

County of Whatcom

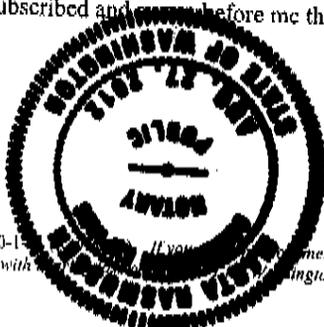
I, Rick Dyorak and [unclear], being first sworn, disposed and say that I have read the above assignment of application or permit to appropriate or store water; that I know the contents thereof; and that the facts therein stated are true.

IN WITNESS WHEREOF, I have hereunto set my hand this ___ day of ___ in the year ___

Applicant(s)/Permittee(s)

[Signature] Applicant(s)/Permittee(s)

Subscribed and sworn before me this 9th day of Oct, in the year 2009



[Signature] Notary Signature

My appointment expires 8/27/2012

ATTACHMENT 5

PHOTOGRAPHS OF WELL IW-3 Loomis Trail Golf Course Report of Examination Blaine, Washington



Photograph 1 General area surrounding well IW-3.



Photograph 2 IW-3 wellhead.

ATTACHMENT 6

RELEVANT WATER RIGHT CLAIMS Loomis Trail Golf Course Report of Examination Blaine, Washington

Owner	Claim	Date of Filing	Initial Use	Depth (ft bgs)	Aquifer	Qi gpm	Qa ac-ft/yr
David E. Wolton ^{1,2}	G1-163295CL	6/27/1974	March 1975	--	--	25	2
Gay Westman	G1-115694CL	6/10/1974	1917	700	Deep Aquifer	10	10
Marjorie Loop ³	G1-104033CL	3/19/1974	1961	71	Intermediate	10	2
Marjorie Loop	G1-104032CL	3/19/1974	1941	126	Intermediate	10	2
Frederick Chesterley ^{1,4}	G1-038750CL	--	--	23	Perched	--	--
Frederick Chesterley ^{1,4}	G1-038750CL	--	--	50	Perched	--	--

Note(s)

1. Unable to contact claim owner.
2. Claim must have been put to initial use prior to 1945 in order to be considered a vested right.
3. Property sold to railroad. It is believed that this water right claim is no longer active.
4. Based upon Washington State Department of Ecology well log records, it appears two wells are associated with this water right claim.

Abbreviation(s)

-- = data unavailable

ac-ft/yr = acre feet per year

bgs = below ground surface

ft = feet

gpm = gallons per minute

Qa = Annual withdrawal claimed

Qi = Instantaneous withdrawal claimed

ATTACHMENT 7

RELEVANT WATER RIGHT CERTIFICATES AND APPLICATIONS

Loomis Trail Golf Course Report of Examination
Blaine, Washington

Owner	Certificate / Application	Priority Date	Depth (ft bgs)	Aquifer	Qi	Qa
					gpm	ac-ft/yr
Patrick Doran	G1-22125CWRIS	9/30/1974	365	Intermediate	15	2.8
Loop	G1-27303	9/1/1993	126	I/D	15	--

Abbreviations

-- = data unavailable

ac-ft/yr = acre feet per year

bgs = below ground surface

ft = feet

gpm = gallons per minute

I/D = Intermediate / Deep

Qa = Annual withdrawal (requested)

Qi = Instantaneous withdrawal (requested)

WATER WELL REPORT

40/1E/17 G
Stat Card No. 073709

STATE OF WASHINGTON

(1) OWNER: Name Loomis Trail Golf, Inc. Address 4342 Loomis Trail Rd.
Water Right Permit No. (51-25958)

(2) LOCATION OF WELL: County Whatcom
(2a) STREET ADDRESS OF WELL (or nearest address) 4342 Loomis Trail Rd., Blaine, Wa. 98230
Sd. & E. 1/4 Sec. 17 T. 40 N., R. 1 E. W.M.

(3) PROPOSED USE: Domestic Irrigation Industrial Municipal
 DeWater Test Well Other

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned New well Method: Dug Bored
Deepened Reconditioned Cable Driven
Rotary Jetted

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 530 feet. Depth of completed well 526 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 diam. from +1 ft. to 493 ft.
Welded Liner installed Threaded

Perforations: Yes No
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
perforations from _____ ft. to _____ ft.
perforations from _____ ft. to _____ ft.
perforations from _____ ft. to _____ ft.

Screens: Yes No
Manufacturer's Name Johnson
Type Stainless Steel
Diam. 6" Slot size 20 from 489 ft. to 500 ft.
Diam. 6" Slot size 30 from 500 ft. to 521 ft.

Gravel packed: Yes No Size of gravel Silica 10-20
Gravel placed from 456 ft. to 526 ft.

Surface seal: Yes No To what depth? 60+ ft.
Material used in seal Puddled blue clay
Did any strata contain usable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata on _____

(7) PUMP: Manufacturer's Name _____
Type: _____ H.P. _____

(8) WATER LEVELS: Land-surface elevation _____ ft.
Static level _____ ft. below top of well Date _____
Artesian pressure 11.5 lbs. per square inch Date 9/25/90
Artesian water is controlled by valve (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

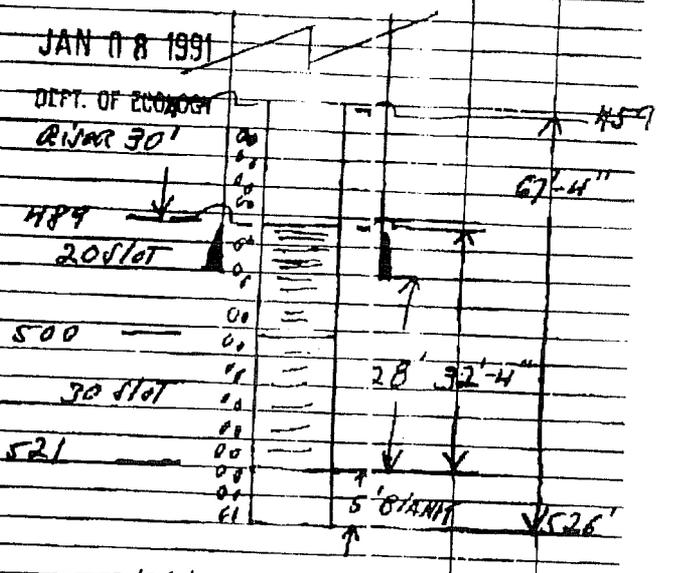
Water has app 700 ppm nitrate salt
Date of test 8/23/90

Batter test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Artest _____ gal./min. with static wt. _____ ft. for _____ hrs.
Artesian flow _____ G.P.M. Date _____
Temperature of water _____ Was a chemical analysis made? Yes No

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness or sguirers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Top soil & fill	0	2
Hard pan	2	12
Blue clay (soft)	12	161
Fine sand & little water	161	162
Blue clay & little sand	161	161
(soft)		459
Very fine sand & water	459	467
Sandy blue clay	467	480
Sand & WATER & some clay	480	
seams		525
Blue clay	525	530



Work started 7/26/90 10. Completed 8/28/90 10.

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Livermore & Son, Inc. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 6053 Portalway, Ferndale

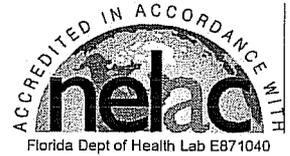
(Signed) D.P. Livermore license No. 272
(WELL DRILLER)

Contractor's Registration No. WV 1993C Date 9/28/90 10.

(USE ADDITIONAL SHEETS IF NECESSARY)



Burlington WA | 1620 S Walnut St - 98233
 Corporate Office | 800.755.9295 • 360.757.1400 • 360.757.1402fax
 Bellingham WA | 805 Orchard Dr Suite 4 - 98225
 Microbiology | 360.671.0688 • 360.671.1577fax



Drinking Water Report

Client Name: **Bill Dierdorff**
 4342 Loomis Trail Road
 Blaine, WA 98230

Reference Number: **08-17798**
 Report Date: **12/31/08**
 Reviewed By:

Project: **G.L. Well**
 Field ID: **Dierdorff**
 Sample Description: **G.L. Well**
 Sample Date: **12/17/08 9:30**

Lab Number: **046-37329**
 Date Received: **12/17/08**
 Sampled By: **Bill Dierdorff**
 Sampler Phone:

WSDOH Number	Analyte	Result	MCL	Pass	SRL	Units
7	CHROMIUM	0.011	0.1	Pass	0.010	mg/L
4	ARSENIC	0.036	0.01	Fail	0.002	mg/L
12	SELENIUM	0.005	0.05	Pass	0.005	mg/L
13	SILVER	ND	0.05	Pass	0.010	mg/L
6	CADMIUM	ND	0.005	Pass	0.002	mg/L
5	BARIUM	ND	2	Pass	0.100	mg/L
9	LEAD	ND	0.015	Pass	0.002	mg/L
11	MERCURY	ND	0.002	Pass	0.0002	mg/L
14	SODIUM	250			1.0	mg/L
19	FLUORIDE	0.27	4	Pass	0.10	mg/L
21	CHLORIDE	290	250	Fail	1	mg/L
20	NITRATE-N	ND	10	Pass	0.10	mg/L

Notation:

MCL = Maximum Contaminant Level, maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
 SRL = State Reporting Limit (WSDOH required detection limit).

ND = Not detected above the listed specified reporting limit (SRL).

An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

These test results meet all the requirements of NELAC, unless otherwise stated in writing, and relate only to these samples.
 If you have any questions concerning this report contact Lawrence Henderson at the above phone number.