



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

APPROVED
PROTESTED REPORT OF EXAMINATION
PUBLIC HEALTH & SAFETY EMERGENCY APPLICATION

Change approval: Add point of withdrawal, change purpose of use, & change place of use
WRTS File #CG1-26398C

PRIORITY DATE	PERMIT NO.	CERTIFICATE NO.
October 24, 1991		G1-26398C

NAME		
City of Sumas		
MAILING ADDRESS	CITY/STATE	ZIP CODE
433 Cherry Street	Sumas, WA	98295

PUBLIC WATERS TO BE APPROPRIATED

SOURCES	
May Road and Kneuman Road Wellfields	
MAXIMUM GALLONS PER MINUTE (gpm)	MAXIMUM ACRE FEET PER YEAR (ac-ft/yr)
860*	1376.0*

TYPE OF USE, PERIOD OF USE, & QUANTITY ALLOCATIONS

Municipal supply and mitigation, continuously

*Quantities withdrawn under G1-23698 and G1-26398 shall not exceed 1660 gallons per minute and 1825.0 acre-feet per year. Due to hydraulic continuity, the adjacent unnamed spring-fed tributary to Johnson Creek shall be augmented at a rate of 18 gpm for every 100 gpm withdrawn under G1-23698 and G1-26398. Stream augmentation is to occur simultaneously as the water is withdrawn.

LOCATIONS OF POINTS OF WITHDRAWAL

SOURCE NAME	PARCEL #	QTR/QTR	SECTION	TOWNSHIP	RANGE
May Road Wellfield	410433106108	SW1/4 SW1/4	33	41N	4E
Kneuman Road Wellfield	410433441293	Government Lot 1	33	41N	4E

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED
[Attachment 1 shows location of the authorized place of use and locations of wellfields]

The place of use of this water right is the service area described in the latest Water System Plan approved by the Washington State Department of Health. RCW 90.03.386 may have the effect of revising the place of use of this water right if the criteria in RCW 90.03.386(2) are met.

DESCRIPTION OF WATER WORKS

The City of Sumas currently operates the May Road Wellfield (see Attachment 2) consisting of three production wells and the Kneuman Road Wellfield (see Attachment 3) consisting of 5 production wells. Storage is provided by a 500,000 gallon reservoir.

The City of Sumas water system is an approved Washington Department of Health (DOH) Group A Community System. Its system ID number is 84870B. It currently holds a DOH green operating permit. Systems in this category are considered adequate for existing uses and adding new service connections up to the number of approved service connections.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE	COMPLETE PROJECT BY THIS DATE	SUBMIT WRITTEN NOTIFICATION OF USE BY
Begun	January 1, 2020	January 1, 2030

PROVISIONS

1. Meter Installation

An approved measuring device shall be installed and maintained for each 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 Daily, 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, points of withdrawal, measuring devices, and associated distribution systems for compliance with water law.

5. Streamflow Augmentation

The adjacent unnamed spring-fed tributary to Johnson Creek shall be augmented at a rate of 18 gpm for every 100 gpm withdrawn under G1-23698 and G1-26398. Stream augmentation is to occur simultaneously as the water is withdrawn.

6. 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. If impairment does occur, the City will be required to diminish or cease pumping, or mitigate for this impairment.

7. Well Tag

The City's wells shall be tagged with a Department of Ecology unique well identification number. The tags shall remain attached to each well. When submitting water measuring reports, please reference these tag numbers.

8. Issuance of Superseding Certificate

The City shall submit written notification to Ecology's Northwest Regional Office when it has effectuated the approved changes (as needed) and is ready to obtain a superseding certificate. This notification shall include a description of work accomplished to "perfect" each attribute of change (point of withdrawal, and/or place of use, and/or purpose of use) to be included in the superseding certificate. No "re-perfection" of water use is necessary (under this change approval) in order for the City to obtain a superseding certificate.

9. Health Approval Required

Prior to any new construction or alterations of a public water supply system, the State Board of Health rules require public water supply operators to obtain written approval from the Office of Drinking Water of the Washington State Department of Health. Please contact the Office of Drinking Water at Northwest Drinking Water Operations, 20435 72nd Avenue S, Suite 200, K17-12, Kent, WA 98032-2358, (253) 396-6750, prior to beginning (or modifying) your project.

FINDINGS OF FACT AND ORDER

Upon reviewing the investigator's report, I find all facts relevant and material to the subject application have been thoroughly investigated. Furthermore, I find water right G1-26398C is valid and is eligible for change. And, the additional point of withdrawal is within the same body of public groundwater as the original point of withdrawal, the original right will not be enlarged, there will be no impairment of existing rights, the proposed purpose of use will be beneficial, water is physically and legally available, and there will be no detriment to the public interest.

Therefore, I ORDER approval of the recommended change under Change Application No. CG1-26398C, 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
PO Box 40903
Olympia, WA 98504-0903

OR

Deliver your appeal in person to:

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:

The Department of Ecology
Appeals and Application for Relief
Coordinator
PO Box 47608
Olympia, WA 98504-7608

OR

Deliver your appeal in person to:

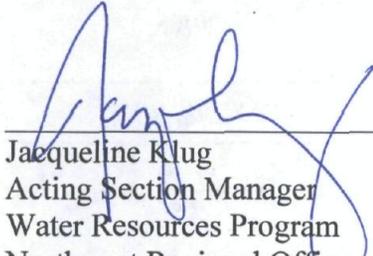
The Department of Ecology
Appeals and Application for Relief
Coordinator
300 Desmond Dr SE
Lacey, WA 98503

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://www1.leg.wa.gov/CodeReviser>.

Signed at Bellevue, Washington, this 12th day of February, 2010.



Jacqueline Klug
Acting Section Manager
Water Resources Program
Northwest Regional Office

INVESTIGATOR'S REPORT
by Buck Smith, LG, LHG - Senior Hydrogeologist
Water Right Control No. CG1-26398C

BACKGROUND

The purpose of this report is to address an application for change filed by the City of Sumas on October 20, 2009. The application is a request to add the Kneuman Road Wellfield as an additional point of withdrawal, change the primary purpose of use to municipal, and to change the place of use to the "municipal" place of use description.

Approval of these requests will allow Sumas to have the operational flexibility needed to provide water in its municipal service area and to an area where the groundwater has been contaminated with high concentrations of nitrate. The nitrate concentration in the impacted area exceeds the primary Maximum Contaminant Level (MCL) of 10 mg/L. The water to be "wheeled" to this area is previously perfected industrial water which is available for redistribution due to conservation and reuse.

Attributes of the existing water right and proposed changes

<i>Attributes</i>	<i>Existing</i>	<i>Proposed</i>
Name	City of Sumas	Same
Water Right Priority Date	October 24, 1991	Same
Instantaneous Rate	860 gallons per minute	Same
Annual Volume	1376.0 acre-feet per year	Same
Period of Use	Continuously	Same
Source(s)	May Road Wellfield	May Road Wellfield & Kneuman Road Wellfield
Point(s) of Withdrawal	SW¼ SW¼ of Section 33, Township 41N, Range 4E	SW¼ SW¼ and Government Lot 1 of Sec. 33, Township 41N, Range 4E
Purpose of Use	Industrial supply & mitigation quantities	Municipal supply & mitigation quantities
Place of Use	Industrial zone within the City of Sumas' 1993 Service Area Boundaries	The place of use of this water right is the service area described in the latest Water System Plan approved by the Washington State Department of Health.

Priority processing

On October 16, 2009, this office received a letter from Robert E. James, Manager, Washington State Department of Health, Northwest Drinking Water Operations. Mr. James requested priority processing of the Sumas change application as per WAC 173-152-050(1)(c) to allow Sumas to provide water to the Northwood Water Association, the Northwood Park System, and potentially several other water associations within the neighboring nitrate contaminated area. This request was approved by Andrew B. Dunn, (former) Section Manager, Water Resources Program, Northwest Regional Office.

Public notice of the application (RCW 90.03.280)

Sumas had a public notice of their application published in the *Lynden Tribune* on November 18 and 25, 2009. One protest was received during the statutory 30 day protest period. In a letter dated December 1, 2009, the Lummi Indian Business Council filed a protest based on their concerns over adverse impacts on the rights of the Lummi Nation.

State Environmental Policy Act (RCW 43.21C & WAC 197-11)

In accordance with RCW 43.21C, WAC 197-11-305, and WAC 197-11-800(4), it was determined the subject water right change application is exempt from the State Environmental Policy Act (SEPA) because the instantaneous withdrawal rate is less than 2250 gallons per minute.

Reference materials used

The following reference materials were used during the course of processing the subject change application:

- Information supplied with the application
- City of Sumas Water System Comprehensive Plan (2000 and draft 2010 revision)
- Information from my site visit on October 28, 2009, with Rod Fadden, Sumas Utilities Superintendent
- Information supplied by Dave Olson, Water System Services, Inc., Cornerstone Management, Inc.
- USGS Sumas Quadrangle 7.5 minute topographic map
- USGS Hydrogeology, Ground-Water Quality, and Sources of Nitrate in Lowland Glacial Aquifers of Whatcom County, Washington, and British Columbia, Canada (Water-Resources Investigations Report 98-4195)
- A database search of existing water rights and water well reports in the area

Legal determinations

RCW 90.03.380 and 90.44.100 give Ecology the statutory authority to change a ground water right to allow the right holder to add additional wells, change the purpose of use, and the place of use. This authority requires Ecology to conduct an investigation and make positive determinations on the following criteria in order for the application for change to be approved:

- The right must be valid
- The additional wells must tap the same body of public groundwater as the original wells
- The combined total withdrawal from the original and additional wells must not enlarge the right conveyed by the original water right
- Other existing rights must not be impaired
- The new purpose of use must be beneficial
- Water must be available at the new point of withdrawal
- The change must not result in detriment to the public interest

In addition, all protests must be evaluated and addressed.

INVESTIGATION

The following topics were investigated in order to make determinations on the above criteria.

History of the water system

Original settlement in Sumas occurred in the late 1800s. It was supported by the presence of springs at the toe of the glacial upland immediately northwest of town, near the site of the current Kneuman Road Wellfield. A diversion box was used to collect spring water and guide it into a ditch heading east along Kneuman Road to town. Eventually a small reservoir was built atop Moe's Hill, and a pump station was used to pump water from the ditch to the reservoir. Over time, a larger 155,000 gallon reservoir was installed and the ditch was replaced by an asbestos-concrete (AC) pipeline.

The early growth of Sumas was dependent upon timber and mining booms in the immediate area. By the early 1900s the population of Sumas swelled to about 2500. Historical turn-of-the-century plats extended over a much wider area than the existing developed town. By the 1920s the mining and timber booms had concluded and Sumas shrank to a size of less than 700 people. Throughout the mid-1900s, Sumas maintained a stable population and thrived upon border-related commerce and agricultural-related services.

Provision of water to surrounding dairy farms began during the middle part of the century. Between 1959 and 1971, four wells (in the Kneuman Road Wellfield) were drilled and water was supplied to the City of Nooksack and the rural area to the south. Sumas and the rural area to the east were also supplied from the wells, and everyday use of the spring diversion box was discontinued. (The spring diversion box can be reactivated in emergency situations.) In 1982, the existing 500,000 gallon reservoir was installed.

In the mid-1980s Sumas began to pursue industrial development. The existence of adequate water, coupled with the border crossing and the confluence of transportation infrastructure (Burlington Northern Railroad, State Route (SR) 9, SR 547, SR 546, British Columbia Highway 11, the Trans-Canada Highway, and two major cross-border natural gas pipelines) fostered the development of several industrial sites, including a truck-rail reload facility, a gas-fired cogeneration plant with associated lumber kiln, and a shingle-manufacturing facility. To support the needs of the new industries, a fifth well was drilled in 1992 at the Kneuman Road Wellfield. And, the May Road Wellfield was purchased from the City of Lynden and outfitted with two new wells (for a total of three production wells and one observation well).

Recent industrial growth has brought increased demand for housing. More industrial growth is expected, and more residential and commercial growth will also follow. The City of Sumas comprehensive plan envisions a town of about 1,600 people by the year 2018.

Current population and service connections

As of April 2009, the population of Sumas was 1326 people. Sumas conducts its own census each spring using the Office of Financial Management's approved methodology, so this number is believed to be very accurate.

As of August 2009, service connections were as follows:

Connection type	Number of connections
Single-family	358
Multi-family	47
Comm., Gov., Ind.	95
Agricultural	0
Total	500

The 47 multi-family connections represent 152 dwelling units, so there are a total of 510 dwelling units in Sumas's direct service area.

In addition, Sumas currently has four wholesale customers: the City of Nooksack, the Nooksack Valley Water Association (NVWA), and the Sumas Rural Water Association (SRWA), all of which purchase potable water, and an electric co-generation facility that purchases non-potable water.

General description of water system

Sources

The main source of potable water is the Kneuman Road Wellfield (aka Sumas Wellfield), which contains five wells. These wells draw water from the Sumas (Abbotsford-Sumas) aquifer, a glacial sand and gravel upland covering the north end of Whatcom County and extending into southern British Columbia. Although artesian flow conditions exist at each well, submersible pumps or booster pumps are installed to achieve adequate volume and pressure. The wells supply two distinct distribution zones. Three of the wells are used to supply wholesale customers south of town, including the NVWA and the City of Nooksack. Two of the wells supply Sumas itself and the SRWA, which is located east of town. The two distribution zones normally operate independently, but an intertie is available to allow emergency supply from one system to another.

Sumas also operates the May Road Wellfield (the original point of withdrawal for the subject water right), which taps the same aquifer as the Kneuman Road Wellfield. There are currently two wells (wells 1 & 3) in use at the May Road Wellfield. One (well 3) serves industrial customers. The other (well 1) is tied into the Sumas distribution system.

Storage

Sumas owns a 500,000 gallon reservoir located at the top of Moe's Hill. A second 500,000 gallon reservoir was built in 2001 next to the existing reservoir and is owned by the SRWA. Storage within the Nooksack/NVWA zone is accomplished at reservoirs jointly owned by those entities.

Distribution

Within the city limits is a distribution system consisting of 94,000 linear feet of pipe ranging from 1 to 12 inches in diameter. Major lines lead from the Kneuman Road Wellfield along the Canadian border to the reservoir and along Barbo Road and Halverstick Road to the south end of Cherry Street. A network of smaller pipes distributes water throughout the developed part of town.

Individual well descriptions

Currently authorized by G1-26398C

- *May Road Wellfield well 1* - This well was drilled in 1992. It is outfitted with a submersible pump capable of pumping 200 gpm against the prevailing head. All components of this well are in good condition. It has a life expectancy of 20+ years.
- *May Road Wellfield well 2* - This well was drilled in 1987 for the City of Lynden. A pump test conducted by Golder showed the well can sustain a yield of 500 gpm, not accounting for interference with other wells. There is currently no pump installed in the well. The 8-inch casing is capable of accommodating a submersible pump rated at 500 gpm.
- *May Road Wellfield well 3* - This well was drilled in 1992. A pump test conducted by Robinson & Noble showed the well can sustain a yield of 800 gpm, not accounting for interference with other wells. The well is outfitted with a submersible pump capable of pumping 800 gpm against the prevailing head. All components of this well are in good condition. It has a life expectancy of 20+ years. Robinson & Noble calculated a maximum of 900 gpm can be withdrawn from wells 2 and 3 in combination, due to interference effects.

Requested to be added to G1-26398

- *Kneuman Road Wellfield wells 1, 2, 3 (SO1, SO2, SO3 respectively)* - These three wells flow freely through a manifold to the pumphouse pressurizing the Nooksack/NVWA system. The combined group is identified as wellfield source SO6. They are the oldest and shallowest wells in this field, all drilled to a depth of about 57 feet during the period from 1959 to 1971. A group of three manually operated booster pumps is used to regulate the rate of withdrawal from the wells. The maximum sustainable pumping rate is 500 gpm. If pumped at a greater rate, the cone of depression becomes so deep as to allow excessive air to enter the perforated portions of the casings. Although the wells are 30 to 40 years old, they show no signs of deterioration (e.g., no increase in sanding). The AC manifold pipe and the pumphouse are in good condition and are readily accessible for repair and replacement, so there is no expected date of obsolescence of this source.
- *Kneuman Road Wellfield well 4R (SO8)* - This is the newest well in the field, drilled in 1997. This well pumps to the 10-inch line serving the Sumas/SRWA distribution system, and together with SO5 (described below), comprises wellfield source SO7. A pump test conducted by Robinson & Noble indicates the well can sustain a yield of 1,200 gpm, presuming all other wells in the field are operating under normal production conditions. The well is outfitted with a submersible pump capable of pumping 810 gpm against the prevailing head (i.e., reservoir almost full). The submersible pump is 18 years old but was completely rebuilt in 1997, when it was moved from well 4 to well 4R. Well 4, the predecessor to this well, exhibited sand buildup after 28 years of use. Well 4R has a life expectancy of 20+ years.
- *Kneuman Road Wellfield well 5 (SO5)* - This well was drilled in 1992. It pumps to the 10-inch line serving the Sumas/SRWA distribution system, and together with SO8 (described above), comprises wellfield source SO7. A pump test conducted by Robinson & Noble indicates the well can sustain a yield of 1,100 gpm, presuming all other wells in the field are operating under normal production conditions. The well is outfitted with a submersible pump capable of pumping 860 gpm against the prevailing head (i.e., reservoir almost full). The submersible pump was new in 1992. All components of this well are in good condition. It has a life expectancy of 20+ years.

Ecology unique well numbers

May Road Wellfield

- Well 1 – AGK 351
- Well 2 – AGF 270
- Well 3 – AGK 357
- Observation Well – AGF 252

Kneuman Road Wellfield

- Well 1 – AGK 347
- Well 2 – AGK 373
- Well 3 – AGK 313
- Well 4 – AGK 337 (capped)
- Well 4R – ACR 785
- Well 5 – AGK 361

Validity of certificate G1-26398

The subject certificate issued for 860 gallons per minute, 1376.0 acre-feet per year, from the May Road Wellfield (wells 1, 2, & 3). The purpose of use is industrial supply and stream augmentation. This certificate requires 18% of the entire May Road Wellfield instantaneous quantities (under both G1-26398 and G1-23698) to be used for stream augmentation (as mitigation). Stream augmentation is to occur simultaneously as the water is withdrawn.

This certificate is in good standing at its full face value. This office received a Proof of Appropriation form (attesting to full beneficial use) from the City of Sumas on October 14, 2009. A proof examination was conducted on October 28, 2009, confirming full beneficial use of groundwater permit G1-26398P. On December 7, 2009, a final certificate of water right was issued for the full beneficial use (perfected) quantities.

Conservation

Current conservation measures

- *Source meters* - Sumas has had source meters in place for many years. The 2010 Water System Plan (currently being developed) will establish an updated maintenance schedule, ensuring accuracy of the meters over time.
- *Service meters* - Sumas has had service meters in place for many years. Virtually every residential service meter was replaced in the 1996/97 biennium as part of an upgrade to wand-readable meters. Starting in 1999 with the largest meters, (i.e., the meters at the interties to the neighboring rural associations); Sumas replaced all intertie meters with compound meters to ensure accurate accounting of water use by large users.

Conservation objectives

The objectives of Sumas's 2010 conservation program are:

- *Decrease unaccounted water* - In 2008, 78 acre-feet of water was pumped at the Kneuman Wellfield and not billed to customers. This amounts to approximately 6 percent of supply, as compared to 6.3 percent in 1995. Sumas will seek to reduce unaccounted water to 5 percent or less.
- *No long-term increase in agricultural use* - The bulk of Sumas's potable water is used by dairy farms in the outlying agricultural areas. There is an ongoing trend toward consolidation of small dairy farms into larger operations, combined with an overall increase in the size of the herd. This trend implies an increasing demand for water by the dairy farms. This program will seek to ensure that future demand remains constant, despite the increasing size of herds.
- *Purveyor assistance (agricultural emphasis)* - Sumas will collect information about best management practices for dairies with regard to water conservation. Information sources are expected to be the Agricultural Extension Service, the Conservation District, and the Natural Resource Conservation Service. Sumas will develop a brochure and/or informational packet that will include contacts at appropriate existing technical assistance agencies. The brochure will then be mailed to "large users" in the neighboring water associations. Preceding the mailing, Sumas will contact each large user by phone to alert them of the brochure and encourage their voluntary compliance with suggestions.
- *Conservation pricing* - Sumas will institute conservation pricing.
- *Reuse of industrial water* - Heavy industries are using an increasing amount of nonpotable water for cooling purposes. By reusing water wherever possible, the available supply will support a greater number of users, including supplying water to the systems in the high nitrate area.

Geology/hydrogeology of the area

All of the Sumas wells, in both wellfields, are completed in Quaternary glacial deposits defined locally as the Sumas aquifer. The aquifer is composed largely of Sumas stratified sand and gravel outwash and the coarse-grained alluvium

of the Nooksack and Sumas Rivers, but also includes some locally important fine-grained deposits such as ice-contact deposits, lacustrine silt and clay, and peat.

Although groundwater in most of the Sumas aquifer is unconfined, it becomes confined in places (both wellfields) in the Sumas River Valley where it is overlain by recent lacustrine silt and clay and along the margins of the Sumas Valley where it is overlain by fine-grained ice-contact deposits. Several valley wells (including the wells in both wellfields) flow as a result of artesian (confined) conditions.

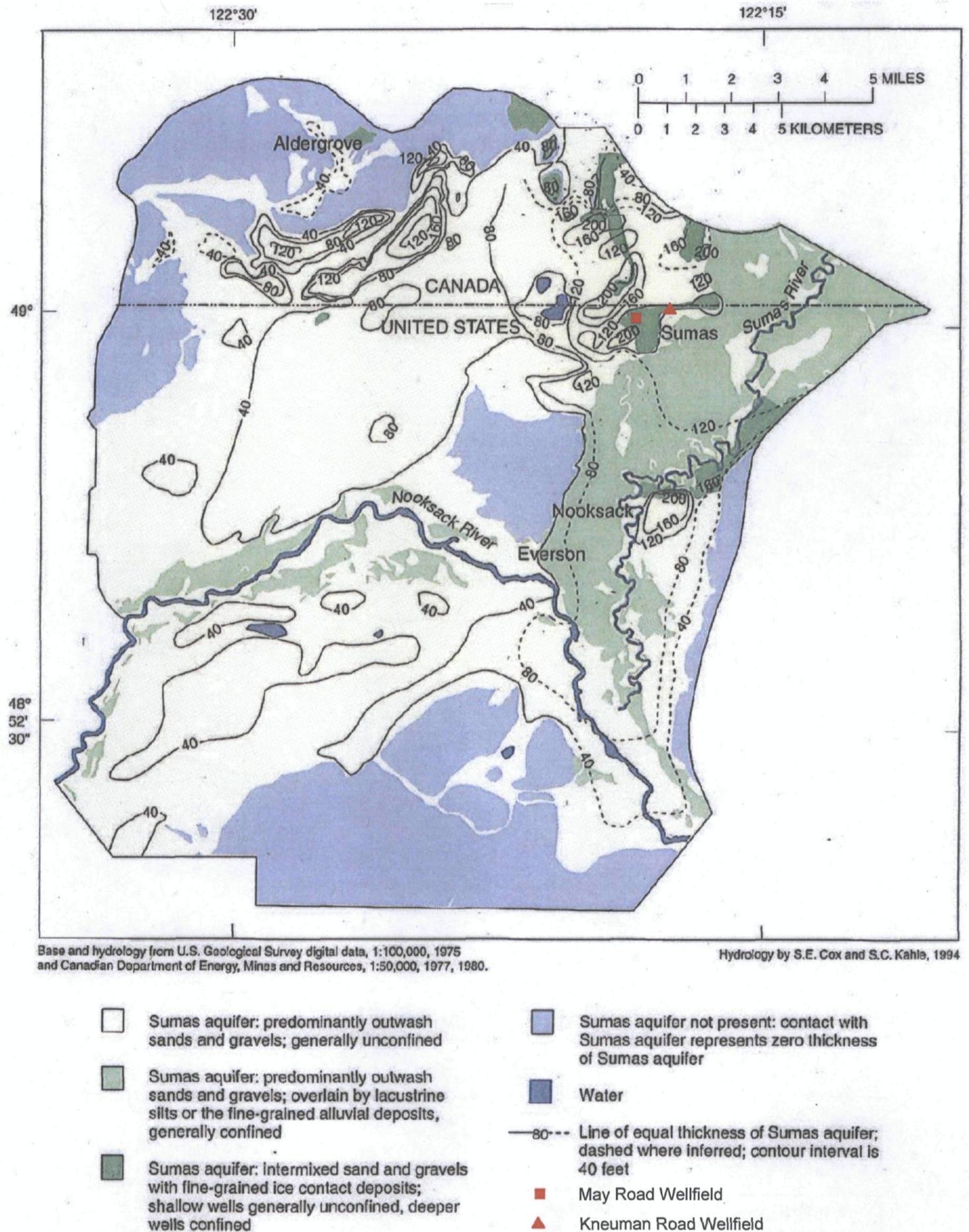
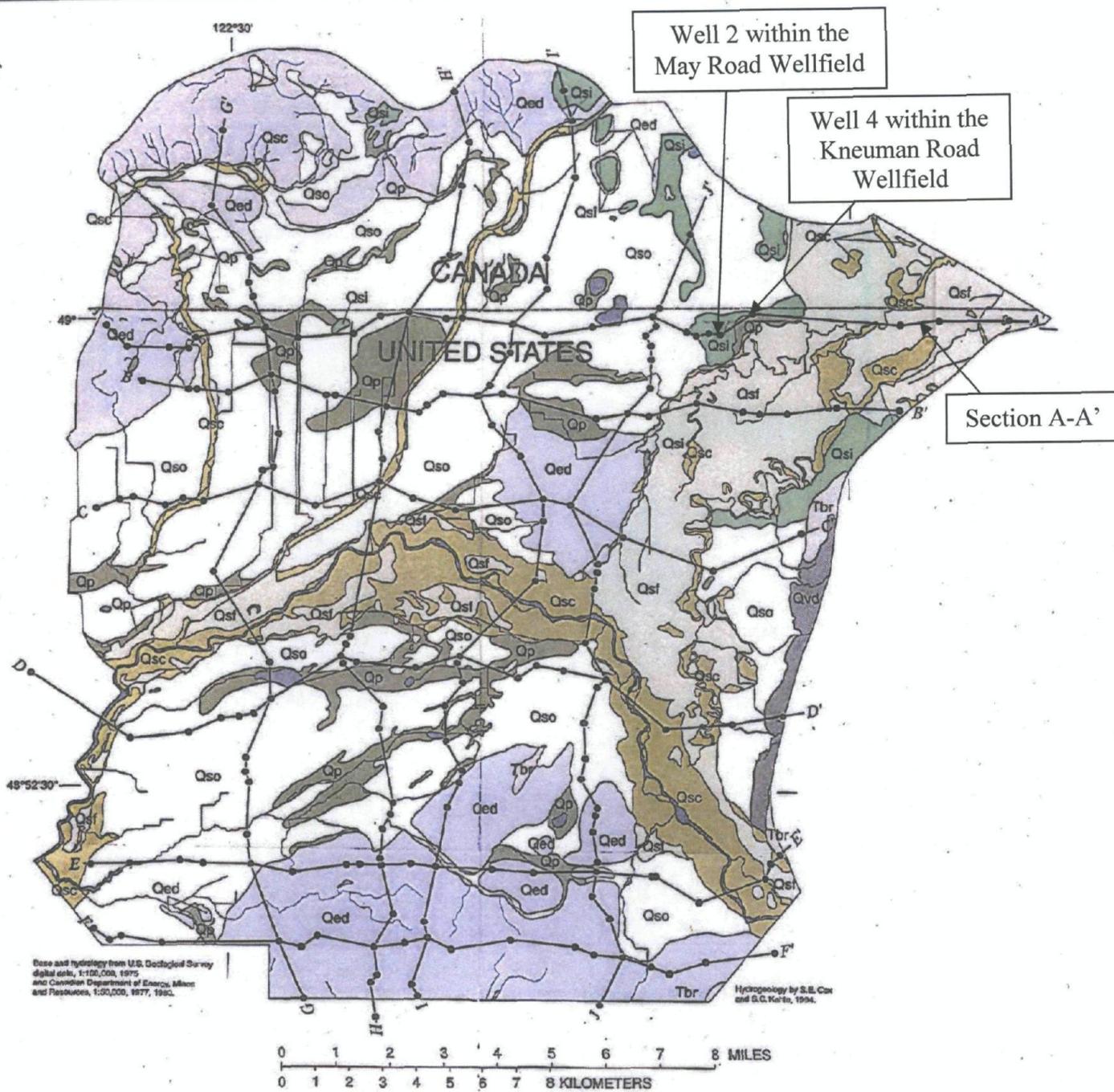


Figure 1: Extent, approximate thickness, and hydrologic condition of the Sumas Aquifer (USGS Report 98-4195).



Base and hydrology from U.S. Geological Survey digital data, 1:100,000, 1975 and Canadian Department of Energy, Mines and Resources, 1:50,000, 1977, 1980.

Hydrogeology by S.E. Cox and G.C. Korte, 1994.

EXPLANATION

Surficial Geologic Map Units	Principal Hydrogeologic Units	Hydrogeologic Section Units
<p>Qp Peat</p> <p>Qsf Fine-grained lacustrine or alluvial deposits</p> <p>Qsc Coarse-grained alluvial deposits</p> <p>Qso Sumas glacial outwash, advance and recessional</p> <p>Qsi Sumas ice-contact deposits</p>	<p>SUMAS AQUIFER, Qs</p> <p>Stratified sand and gravel outwash with minor clay lenses. Unit includes river alluvium; till and ice-contact deposits; lacustrine and floodplain silt and clay; and peat. Highly productive unconfined aquifer. Lenses of clay, till, or peat cause locally confined or perched ground-water conditions. In much of the Sumas Valley, the unit is confined by overlying lacustrine silt and clay and underlying clay presumed to be glaciomarine drift</p>	<p>Qp Sumas aquifer, peat</p> <p>Qsf Sumas aquifer, fine-grained and ice-contact deposits</p> <p>Qsa Sumas aquifer; includes geologic units Qsc, Qso, and Qsi</p>
<p>Qed Everson glaciomarine drift</p>	<p>EVERSON-VASHON SEMICONFINING UNIT, Qev</p> <p>Glaciomarine drift consisting of unsorted pebbly-clay and sandy silt with occasional coarse-grained lenses as thick as 30 feet. Unit may include till and sand at its base. Generally a confined bed but coarse-grained lenses yield usable amounts of water to numerous wells</p>	<p>Qevf Everson-Vashon fine-grained deposits</p> <p>Qevc Everson-Vashon coarse-grained deposits</p> <p>Qevu Undifferentiated unconsolidated deposits overlying bedrock, presumed to be part of the Everson-Vashon unit</p>
<p>Qvd Vashon drift</p>	<p>VASHON SEMICONFINING UNIT, Qv</p> <p>Glacial till and gravel. Limited areal extent. Water yield variable</p>	<p>Qvd Vashon glacial till and gravel</p>
<p>Tbr Tertiary bedrock</p> <p>Surface water or lake</p> <p>Well location</p> <p>A-A-A' Trace of sections</p>	<p>BEDROCK SEMICONFINING UNIT, Tbr</p> <p>Sandstone, mudstone, and conglomerate with some coal-bearing strata. Water yield controlled primarily by secondary fracture permeability. Water yield is low where the rocks are unfractured</p>	<p>Tbr Tertiary bedrock</p> <p>Well used in hydrogeologic section</p> <p>Contact, dashed where approximately located, queried where uncertain</p> <p>Intersection of two hydrogeologic sections</p>

Figure 2: Well locations, surficial geology, and trace of sections (USGS Report 98-4195, excerpt of plate 2).

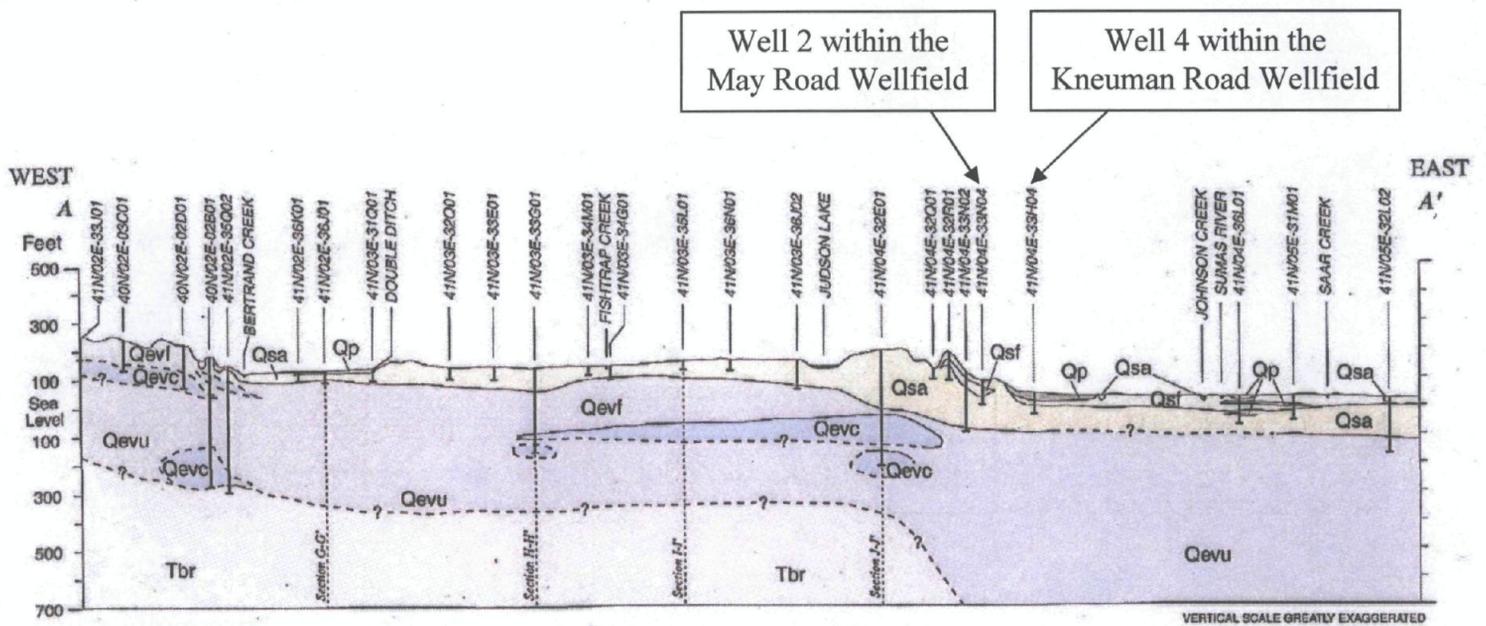


Figure 3: Hydrogeologic section A-A' showing the locations of the May Road Wellfield (well 2) and the Kneuman Road Wellfield (well 4). All wells within both wellfields are completed in the Sumas aquifer. (USGS Report 98-4195, excerpt of plate 2).

Geography

The May Road and the Kneuman Road Wellfields are located within the Johnson Creek sub-basin, which is tributary to the Sumas River. The wellfields are both in a hilly, mostly forested, rural residential and agricultural area. Both wellfields are located within less than one-half mile of the Canadian border.

The only geographic boundaries affecting the Sumas service area are the jurisdictional limits of neighboring purveyors. There are no natural features or man-made structures presenting significant barriers to provision of water service in the vicinity of Sumas. As discussed immediately below, Sumas directly or indirectly provides water to a large area extending about 7 miles south of town. The international border with Canada generally prevents northward extension of the service area, although Sumas did historically provide water to the nearby community of Huntingdon, B.C. This service was largely discontinued in 1989, and only two Canadian customers remain.

Neighboring purveyors

There are three water systems abutting Sumas. To the north is the water system of the City of Abbotsford, B.C. To the south and southwest is the Nooksack Valley Water Association, and to the southeast and east is the Sumas Rural Water Association. The latter two associations are wholesale customers that rely upon Sumas for their entire supply. Together with the City of Nooksack, which is a nonadjacent wholesale customer, the rural associations account for about 85 percent of the water pumped from the Kneuman Road Wellfield and occupy a 25-square mile region in the north-central part of Whatcom County.

Other existing rights held by Sumas

Kneuman Road Wellfield (Total of the following rights is 2250 gpm and 1919 ac-ft/yr)

Surface Water Certificate (SWC) 3427 – This certificate was issued for the diversion of 1.78 cubic feet per second, from an unnamed spring, tributary to the Sumas Creek (River) drainage. No annual quantity was specified. The purpose of use is for domestic supply. The priority date is March 14, 1946. The place of use is described as the Town of Sumas, Section 33, Township 41 North, Range 4 East.

Ground Water Certificate (GWC) 3485 – This certificate issued for 2250 gpm, 405 ac-ft/yr, from a well (now known as well 1). The annual quantity is based on a per capita consumption of 200 gallons a day (average of 0.9 ac-ft/yr per home) or a withdrawal of 405 ac-ft/yr for 450 homes, less any quantity diverted under the existing rights on the spring. The purpose of use is for municipal supply. The priority date is June 22, 1959. The place of use is described as the Town of Sumas; Town of Nooksack; Rural Nooksack; Rural Sumas; Whatcom County, Washington.

Ground Water Certificate G1-00063C – This certificate issued for 2250 gpm, 672 ac-ft/yr, from wells 2, 3, & 4. This right issued as a supplemental supply to SWC 3427 and GWC 3485. The total withdrawal from all sources was not to exceed 672 ac-ft/yr. The annual quantity was calculated at 0.224 ac-ft/yr per person (200 gallons per

day per person) for the estimated 1990 population of 3,000. The purpose of use is for municipal supply. The priority date is July 15, 1971. The place of use is described as the Area served by City of Sumas.

Ground Water Certificate G1-24025C – This certificate issued for 2250 gpm, 598.8 ac-ft/yr, from wells 1-4. The instantaneous quantity was not increased above the 2250 gpm previously allocated. The annual quantity was increased by 598.8 ac-ft/yr, for a system total of 1270.8 ac-ft/yr (613.2 ac-ft/yr for domestic, 657.6 ac-ft/yr for dairy farms). The annual quantity was based on 0.1333 ac-ft/yr per person (119 gallons per day) for a population of 4600 and 4.8 ac-ft/yr per dairy (for 137 dairies) in the year 2000. The purpose of use is for municipal supply/dairy farming. The priority date is January 15, 1982. The place of use is described as the City of Sumas service area.

Ground Water Certificate G1-25171C – This certificate issued for 2250 gpm, 1919.0 ac-ft/yr, from wells 1-4. The instantaneous and annual quantities are supplemental to all previously existing rights (648.2 ac-ft/yr of the 1919.0 ac-ft/yr is new water). The new (additional) annual quantity was granted so the City of Sumas could supply water to the City of Everson. The purpose of use is for municipal supply/dairy farming. The priority date is January 20, 1988. The place of use is the City of Sumas service area. Well 5 has been added to this water right through the submittal of a showing of compliance form consistent with RCW 90.44.100(3).

May Road Well Field (Total of the following right and G1-26398C is 1660 gpm and 1825.0 ac-ft/yr)

Ground Water Certificate G1-23698C – This certificate issued for 800 gpm, 449.0 ac-ft/yr, from the May Road wells 1 & 3. The annual quantity was calculated at 224 ac-ft/yr for domestic use (0.224 ac-ft/yr per person x 1000), plus 225 ac-ft/yr for dairy farming (4.5 ac-ft/yr per dairy x 50). The purpose of use is for municipal supply. The priority date is July 30, 1980. The place of use is the City of Sumas and area served by the City in Section 33, Township 41 North, Range 4 East.

Other rights in the vicinity of the proposed additional point of withdrawal

A search of Ecology's Water Rights Tracking System indicates there are two water right claims on file within Section 33: Elvin Johnson, short form claim number 77832, for stockwatering, from springs and creek; and Donald May, short form claim number 42066, for domestic, stockwatering, and irrigation, from a well. Both of these claims are for points of diversion/withdrawal located more than ½ mile up-gradient of the proposed Sumas additional point of withdrawal (Kneuman Road Wellfield).

There are no state-issued permits or certificates within Section 33, except those held by the City of Sumas.

There is one water well report on file for Section 33 (other than those for the City of Sumas). It is under the name of Bob Samms. It is for the same property (parcel #410433029066) as the Donald May claim.

There are no exempt water well reports, claims, permits, or certificates on file for the adjoining down-gradient section (Section 34).

Availability of water at the additional point of withdrawal

Legal availability

In accordance with WAC 173-501-040, Johnson Creek is closed year-round to new appropriations. The requested additional point of withdrawal is hydraulically connected to a tributary of Johnson Creek, but is located down-gradient of the original (hydraulically connected) point of withdrawal. The subject change is not a request for additional water from the source, therefore the legal availability of water will not change.

In addition, the original water right required (as mitigation) that the nearby unnamed spring-fed tributary to Johnson Creek be augmented at a rate of 18 gpm for every 100 gpm withdrawn under G1-23698 and G1-26398. Stream augmentation is required to occur simultaneously as water is withdrawn. This requirement must remain in place so as not to affect the legal availability of water under this right.

Physical availability

The five wells within the Kneuman Road Wellfield, in conjunction with the May Road Wellfield, have the physical capacity to pump the Qi and Qa authorized by this right.

DETERMINATIONS

Based on the above investigation, the following determinations have been made:

Validity of the right

The subject right is valid and is eligible for change.

Same body of public groundwater

The geography, geology, and hydrogeology of the May Road and Kneuman Road Wellfields show:

- The wellfields are in close proximity (same section) within the Johnson Creek sub-basin.
- The wells in both wellfields are completed in the Sumas aquifer.
- Aquifer recharge is from infiltration of precipitation that has fallen within the Johnson Creek sub-basin or up-gradient in the aquifer.

Based on the above, I have determined the May Road and Kneuman Road Wellfields tap the same body of public groundwater.

The right conveyed by the original water right will not be enlarged

No additional instantaneous rate or annual volume of water was requested or approved. Approval of the requested change will give Sumas operational flexibility in order to serve the neighboring high nitrate systems. Water to be used for these systems has already been fully appropriated, however through conservation and reuse, previously allocated industrial water can be redistributed to other municipal uses.

Based on the above, I have determined the right conveyed by the original water right will not be enlarged.

Potential for impairment of other rights

As referenced in the Investigation section of this report, there are no nearby right holders located down-gradient of the proposed additional point of withdrawal (the Kneuman Road Wellfield). The points of withdrawal/diversion for up-gradient right holders are so distant, and the quantities are so small, they will not be affected. And, no additional water will be withdrawn from the source (the Sumas aquifer). Therefore, no impairment of other rights is anticipated.

Beneficial use

One of the requests is to change the main purpose of use from industrial supply to municipal supply. This is allowable. Municipal supply is considered a beneficial use in accordance with RCW 90.54.020.

Availability of water

Water is physically available from the May Road and Kneuman Road Wellfields. No new impacts to Johnson Creek are anticipated, therefore, water is also legally available. In addition, the existing mitigation requirement must remain intact.

No detriment to the public interest

No potential for detriment to the public interest was identified during the investigation of this application.

Protest

This application was protested by the Lummi Indian Business Council. Their letter of protest expressed concern about impacts on tribal rights. This concern is understandable, but the subject water right is an existing right that is legally eligible for change. No additional withdrawals over and above the currently authorized quantities will be allowed.

In addition, the following will be included in the provisions section of this report and any subsequent documents issued under this water right:

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. If impairment does occur, the City will be required to diminish or cease pumping, or mitigate for this impairment.

CONCLUSIONS

In accordance with chapters 90.03 and 90.44 RCW, I conclude water right G1-26398 is valid and is eligible for change, the additional point of withdrawal is within the same body of public groundwater as the original point of withdrawal, the original right will not be enlarged, there will be no impairment of existing rights, the proposed purpose of use will be beneficial, water is physically and legally available, and there will be no detriment to the public interest.

RECOMMENDATIONS

Based on the above investigation, determinations, and conclusions, I recommend the request for change be approved in the amounts and within the limitations listed below and subject to the provisions on page 2.

Authorized quantities and purpose of use

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:

- 860 gallons per minute
- 1376.0 acre-feet per year
- Municipal supply and mitigation - continuously

Points of withdrawal

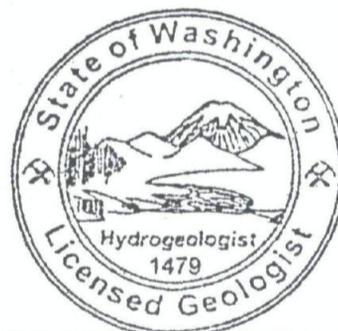
SW1/4 SW1/4, Section 33, Township 41 North, Range 4 East, W.M. (May Road Wellfield)
Government Lot 1, Section 33, Township 41 North, Range 4 East, W.M. (Kneuman Road Wellfield)

Place of use

The place of use of this water right is the service area described in the latest Water System Plan approved by the Washington State Department of Health. RCW 90.03.386 may have the effect of revising the place of use of this water right if the criteria in RCW 90.03.386(2) are met.

Report by: Buck Smith
Buck Smith, LG, LHG

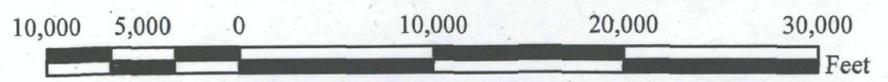
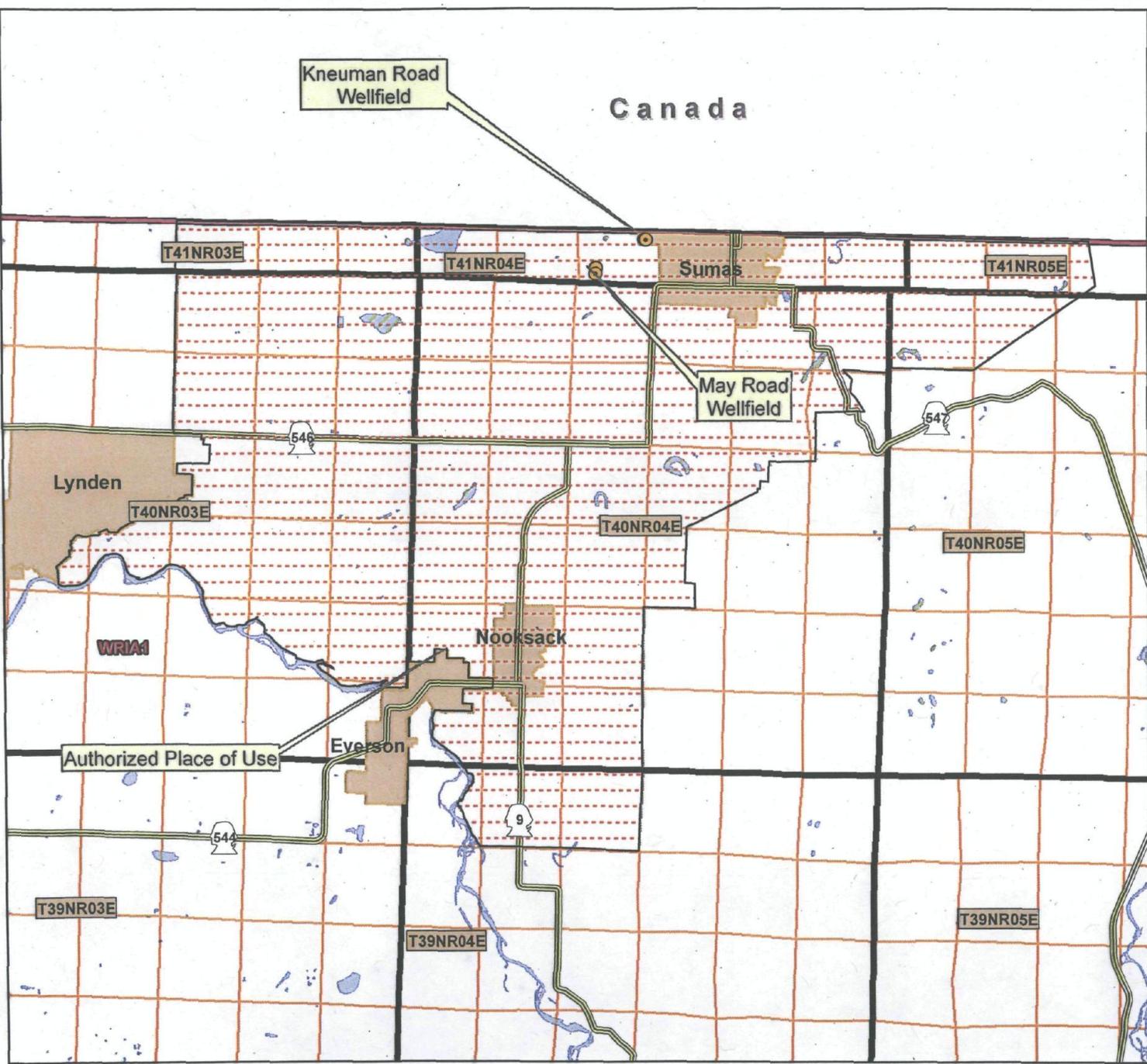
February 12, 2010
Date



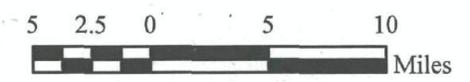
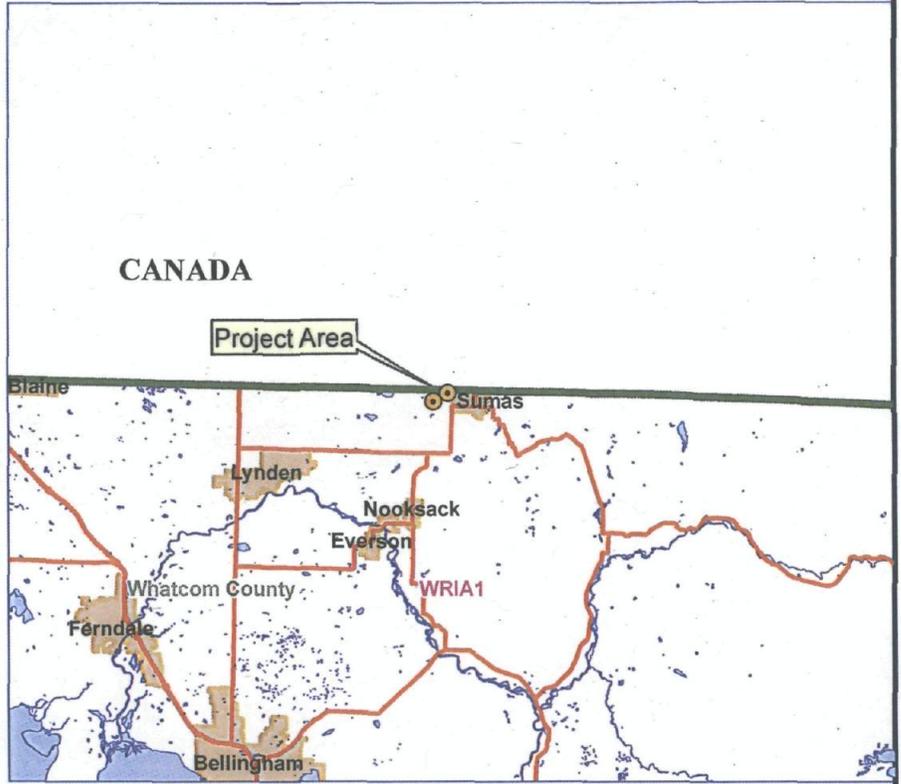
J. R. "BUCK" SMITH

Licensed Geologist/Hydrogeologist No. 1479

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City of Sumas
 Water Right Number CG1-26398P
 Sec.33, T 41N, R 04E W.M.
 WRIA 1 - Whatcom County



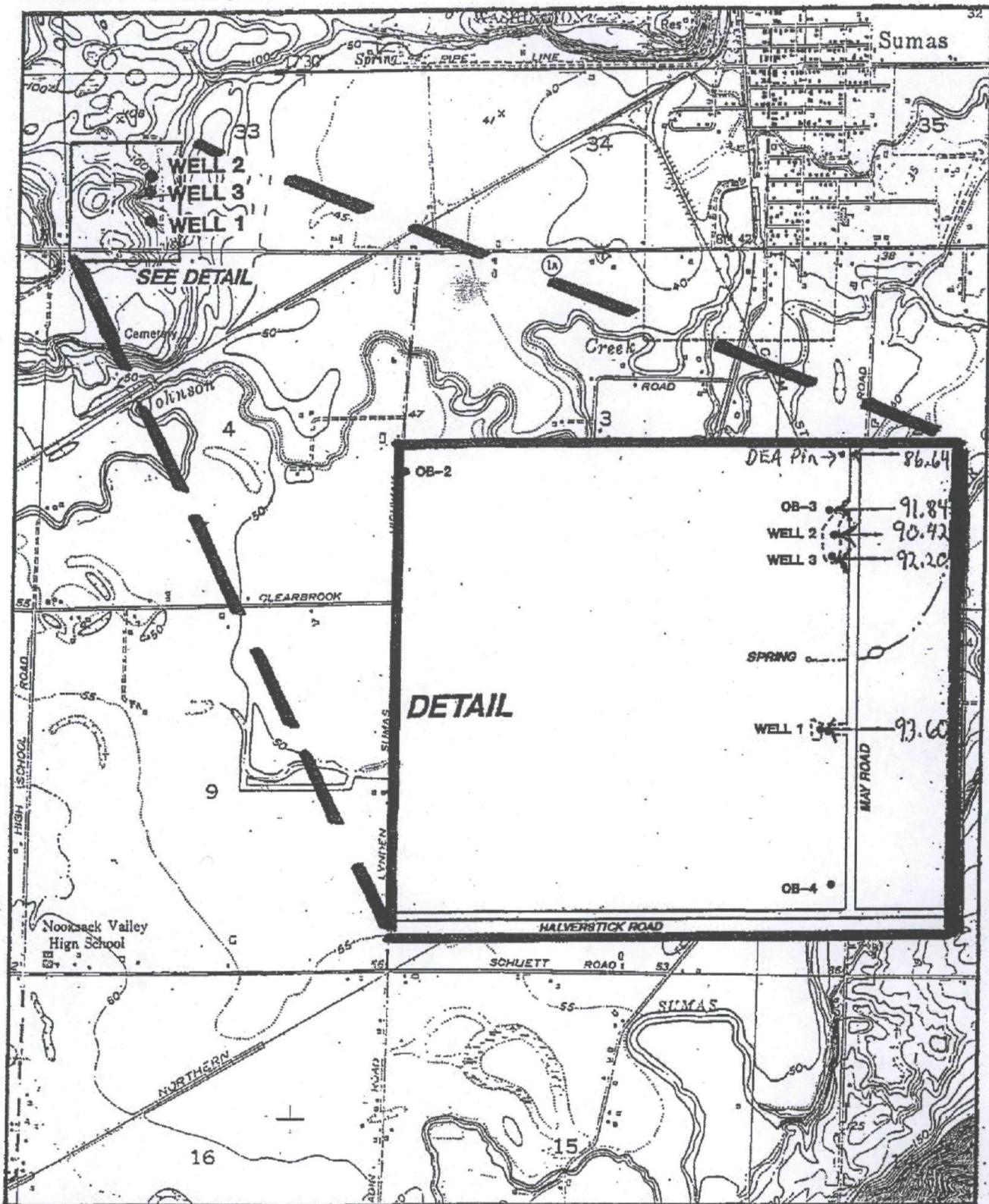
- Legend**
- County
 - WRIA
 - Highways
 - Townships
 - cities
 - Sections
 - Authorized Point of Withdrawal
 - Authorized Place of Use

Place of use and point(s) of diversion/withdrawal are as defined on the cover sheet under the headings, 'LOCATION OF DIVERSION/WITHDRAWAL' and 'LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED.'

Attachment 1

Attachment 2 – May Road Wellfield

ROBINSON & NOBLE, INC.



BASE TAKEN FROM USGS SUMAS QUAD.

SCALE 1:24000

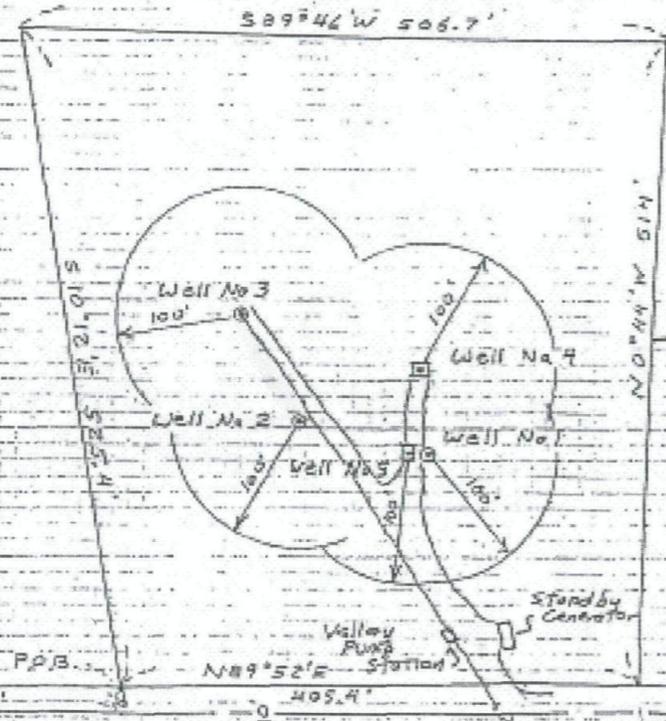
Figure 8
CITY OF SUMAS
MAY ROAD WELL SITE
LOCATION MAP

LEGAL DESCRIPTION

Beginning at a point 30 feet North and 211.4 feet East of the Northwest corner of the Northeast Quarter of the Southeast Quarter of Section 33, Township 41 North, Range 4, East of the Willamette Meridian, thence North 89°52' East 406.4 feet, thence North 0°44' West 514 feet, thence South 89°46' West 506.7 feet, thence South 10°12' East 525.4 feet to the point of beginning;

DECLARATION OF COVENANT

ATTACHMENT 'A'



City of Sumas Well Field Site

Scale 1"=100'

NW 208' of NE 1/4 SE 36 1/4 of Sec. 33, T41N, R4E

Kneuman Road No. 719

E 1/4 Cor Sec. 33, T41N, R4E

NOTES

1. Property Lines based on Whitcom Co. Records. Facility Locations are from aerial photograph.
2. Wells No. 1, 2 & 3 are artesian supplying the Valley Pump Station.
3. Wells No. 4 & 5 pump to the City of Sumas system.

Rev. 3/22/93	Dimensions
2/19/93	Attachment for Plat. of Covenant

Kramer, Chin & Mayo, Inc. KCM	City of Sumas CLIENT	03124	MAT	✓	Sumas Well Field Map	2/15/93	1
		JOB NO.	BY	CHECK		SUBJECT	DATE

Attachment 3 - Kneuman Road Wellfield