# Public Utility District No. 1 of Skagit County

# Satellite Systems
# Wellhead Protection Program

Updated March 2024

## Executive Summary

The Public Utility District PUD No. 1 of Skagit County (Skagit PUD) owns and maintains six groundwater well satellite systems (Alger, Cedargrove, Marblemount, Potlatch Beach, Rockport and Skagit View Village) that use groundwater wells as a source of supply. The Washington State Department of Health requires owners of Group A water systems (with more than 25 connections) to develop and implement a wellhead protection program to help prevent contamination of groundwater used for drinking water. Skagit PUD's Program includes the delineation of wellhead protection areas for each of the wells, with supporting documentation, an inventory of potential contaminants and implementation measures for the program.

## Background

Skagit PUD is the primary Satellite Management Agency for Skagit County (SMA #103). Skagit PUD provides satellite service inside Skagit County to all areas not already designated as the service area of another state-approved water utility. Skagit PUD will provide ownership service to water systems whenever financially feasible and meeting the requirements of the Skagit PUD's Water Policy Manual (Public Utility District PUD No. 1 of Skagit County 2024 Water System Plan). Skagit PUD's Satellite Management System provides customers with high-quality water services at an affordable price throughout the County where water service might not otherwise be available.

Five of the Skagit PUD's six satellite systems draw groundwater from wells, each of which is a Group A water system. The Safe Drinking Water Act requires that every state develop a wellhead protection program; in Washington State, the Department of Health administers this program.

Washington's wellhead protection program requirements are designed to prevent contamination of ground water used for drinking with the following requirements, which apply to all Group A public water systems:

- A completed susceptibility assessment
- A delineated wellhead protection area for each well
- An inventory of potential contaminant sources
- Documentation showing that the water system sent delineation and inventory findings to the required entities
- Contingency plans for providing alternate drinking water sources if contamination does occur
- Coordination with local emergency responders for appropriate spill or incident response measures

## Satellite Systems

Skagit PUD's ground water well satellite systems are protected under this plan. The Skagit PUD holds water rights, in various stages of certification, for each of the satellite wells, with the exception of the Potlatch well which is used for emergency only. A completed Susceptibility Assessment Survey, along with a recent Water Facilities Inventory Form, Well Report, Wellhead Protection Area Zones Map, Inventory of Potential Contaminant Sources and other relevant materials for each of the wells can be found in this plan.

The following is a brief background on the satellite system wells:

- The **Alger** well was drilled in 1960. In 1997, the Skagit PUD agreed to the request by the Alger Water Department and the Alger Water District to perform improvements and assume ownership of the Alger system. Subsequently, Skagit PUD located a new well and treatment system on Skagit County property north of Alger Cain Lake Road. In 2019, an easement was recorded which created a formal 100-ft Sanitary Control Area (SCA).
- The **Cedargrove** well was drilled in 1989 on a Skagit PUD owned parcel south of Concrete Sauk Valley Road for use by the community in the Cedargrove area.
- The **Marblemount** well was drilled in 2003. It is located in an easement off of Tessa Road, north of State Route 20 and is for use in the Marblemount area.
- The **Potlatch Beach** well was drilled in 1983. Located in easement west of West Shore Road, this permit-exempt well is used as an emergency source of water for Guemes Island (RCW 90.44.050). Guemes Island is served by the Potlatch Beach water system (PWSID 69034 L) which uses saltwater from a marine waterbody as a source of supply. As supported by Ecology's Policy POL 1015, a water right permit is not required for the diversion/withdrawal of saltwater from a marine waterbody.
- The **Rockport** well was drilled in 1976. The Washington State Parks and Recreation Commission and Skagit PUD entered into a cooperative water use agreement in 1989 designating mutual use. The well is located in an easement to the Skagit PUD in 2003 within Rockport State Park.
- The **Skagit View Village** well was drilled in 1973. In 2001, the Skagit PUD assumed ownership of the system, previously known as the Wilderness Village Community Association Water System. In 2003, a water treatment facility was added, along with other improvements made with local improvement Skagit PUD funding. The well is located on an easement within the Skagit View Village development.

## Wellhead Protection Area Delineation Method

A wellhead protection area is based on established times of travel. Each management zone in the wellhead protection area corresponds to an established time-of-travel in the aquifer. Each zone represents the interval between the time a particle of water is introduced at the zone boundary and its eventual arrival at the well.

There are four methods of delineating the boundary of the wellhead protection boundary and the time-of-travel zones within which are acceptable to DOH:

- Calculated Fixed Radius
- Analytical Models
- Hydrogeologic Mapping
- Numerical Flow/Transport Models

The Skagit PUD consulted with GeoEngineers to perform hydrogeologic services for two of the satellite wells, Alger (2001) and Marblemount (2004). In both cases, Time-of-Travel Zones were delineated using a numerical ground water computer model (MODFLOW) and a conceptual hydrogeologic model. The

Skagit PUD has adopted the Wellhead Protection Area (and Time-of-Travel Zones) from the associated Wellhead Protection Reports, which are included in this plan.

Per the guidance [DOH 331-636], the following figure outlines the risks associated with using the Calculated Fixed Radius (CFR) Method to delineate the wellhead protection areas. Two of the wells have shallow open intervals (Alger and Skagit View Village, at 20-50ft and 50-100 ft, respectively), which makes them more susceptible to contamination (Susceptibility column, below). However, all of the wells have low production, low to medium production per unit of draw down (Specific capacity), and low to medium risk associated with surrounding land use. Therefore, the Skagit PUD finds the CFR Method to be acceptable at this time for the delineation of the three wells not delineated by GeoEngineers.

## Assessment of Wellhead Delineation Method

| Source | Well Production (Mg/Y) | Specific Capacity (GPM/ft) | Susceptibility (DOH) | Land Use | Total Risk |
|---|---|---|---|---|---|
| **Alger*** | 10 mg/y = 1 | 1.4 gpm/ft = 2 | High = 3 | Low = 1 | 7 moderate |
| **Cedargrove** | 18 mg/y = 1 | 1.5 gpm/ft = 2 | Low = 1 | Low = 1 | 5 low |
| **Marblemount*** | 9 mg/y = 1 | .69 gpm/ft = 1 | Low = 1 | Medium = 2 | 5 low |
| **Potlatch Beach** | .2 mg/y = 1 | .030 gpm/ft = 1 | Medium = 2 | Low = 1 | 5 low |
| **Rockport** | 6 mg/y = 1 | .28 gpm/ft = 1 | Low = 1 | Low = 1 pt | 4 low |
| **Skagit View Village** | 13 mg/y = 1 | 1.4 gpm/ft = 2 | Medium = 2 | Medium = 2 | 7 moderate |

*Wellhead Protection Area delineated by GeoEngineers via numerical flow method

## Wellhead Protection Areas

Four of the six of Skagit PUD's Wellhead Protection Area (WHPAs), including time-of-travel zones, were delineated using the Calculated Fixed Radius (CFR) Method. The maximum Annual Quantity (Qa) allowed by the water right associated with each well is used as the annual volume in the calculation to allow for the largest area of protection. The exception to this is the Potlatch Beach System which is used only as an emergency (permit exempt) well for the system currently served by a reverse osmosis (RO) plant operated by Skagit PUD. It is estimated that any repairs to the RO plant would take a maximum of three months. Thus, the annual volume is based on the system currently utilizing the RO Plant, specifically the three highest use months of 2023 (June – August).

The table below summarizes the area covered by each WHPA.

## Time-of-Travel Zones per Calculated Fix Radius Method (in feet)

| Source | 6-Month | 1-Year | 5-Year | 10-Year |
|---|---|---|---|---|
| **Cedargrove** | 412 | 582 | 1302 | 1841 |
| **Potlatch Beach** | 48 | 67 | 150 | 213 |
| **Rockport** | 245 | 346 | 774 | 1094 |
| **Skagit View Village** | 348 | 492 | 1100 | 1556 |

All WHPAs, including Alger and Marblemount, are depicted on maps in the applicable sections of this plan.

## Inventory of Potential Contaminant Sources

After delineating the WHPAs associated with the Skagit PUD's wells, an inventory of existing and potential sources of groundwater contamination was compiled using maps and data from multiple sources (including Skagit County IMAP, USGS streams, Ecology well and cleanup site tools, Health septic system and SWAP maps). The Skagit PUD's GIS analyst created a web map application which includes the data layers for future use.

The potential contamination sources located near the Skagit PUD's wells include residential septic tanks, the decommissioned Alger dump, a parcel used for forestry and a parcel used as a utility corridor, the latter two which may be susceptible to pesticide and herbicide use.

## Sanitary Control Areas

In addition to the time-of-travel zones, the DOH requires the maintenance of a Sanitary Control Area (SCA) of 100 feet around each well as part of the Wellhead Protection Program. The SCA is the first line of defense to prevent contaminants from entering the drinking water system; potential contaminants may only remain within an SCA after an evaluation by the Skagit PUD [DOH 331-453].

The Skagit PUD maintains legal and physical control over a minimum of 100 feet around four of the six wells of the satellite systems via property ownership or easement rights. The two without known SCAs are Potlatch Beach and Rockport. The Potlatch Beach well is an emergency backup. And the Rockport well is located in the Rockport State Park under the control of the Washington State Department of Parks and Recreation.

## Contingency Plan

The Skagit PUD's contingency plan consists of the following components:

- **Susceptibility Assessments:** In addition to considering the Washington State Department of Health (DOH) ranking of the wells, the Skagit PUD has completed the Ground Water Contamination Susceptibility Assessment Survey Form [DOH 331-274F] for each of the Skagit PUD's wells.
- **Emergency Response:** The Skagit PUD's Operation and Maintenance crew assumes responsibility for emergency response and will contact Skagit County Emergency Management authorities and the Department of Health as needed. The Skagit PUD will respond immediately to shut down well water systems in case of an emergency and determine if the tank storage contents are safe for potable use. The PUD's engineering staff would assist in appropriate follow up and clean up measures.
- **Short-Term and Long-Term Water Supplies:** Assuming the tanks are full at the time of the emergency shut down, and water quality proved acceptable, the tank associated with each of the wells would provide a minimum two-day supply of water to the residents of that area. Due to lack of infrastructure connecting the satellite systems, bottled water and tanker trucks represent the most appropriate alternative water supply for the areas served by satellite wells in an emergency situation. The Skagit PUD owns a "ThirstBuster," a 300-gallon mobile vehicle with 8 water fountains and 8 water bottle dispensers, which may be of assistance in case of an

emergency to a limited capacity. The Skagit PUD also owns and operates three automated bulk water fill stations, located in the Conway area, the Bow Hill area and near the City of Sedro-Woolley. These would be a relatively close locations for customers to fill up bulk containers of water; the Skagit PUD would supply pre-loaded credit cards in this situation.

## Local Management Plan

The Skagit PUD will notify owners of businesses or facilities within the Wellhead Protection Areas when warranted by test results exceeding Department of Health benchmarks. Notification will include a statement of inclusion in the wellhead protection area and measures to be taken accordingly. An example letter follows:

*Dear (Owner/Operator):*

*To protect the drinking water supply for the customers of [satellite system] Water System, we are developing a wellhead protection program as required by state law. As part of our wellhead protection program, we mapped the area overlying the short-term recharge zone of our drinking water supply wells. This is called our wellhead protection area.*

*Following the mapping of the wellhead protection area, we conducted an inventory of potential groundwater contamination sources within the area. The nature of your business and its location within our wellhead protection area means that your activities have the potential to affect our customers' drinking water supply.*

*Should you need technical assistance to help manage your business in a way that will best prevent groundwater contamination, please contact Skagit County Water Resources Department. We realize you are already careful to protect the environment as you conduct your business. We hope that learning that you are in our wellhead protection area will result in more precautions to ensure that your activities will not affect our drinking water quality.*

*Sincerely, Skagit PUD*

The Skagit PUD will also notify Skagit County Planning and Development as land use regulations and development is processed through their agency. An example letter follows:

*Dear Skagit County Planning and Development Department:*

*The Public Utility District No. 1 of Skagit County (Skagit PUD) is the primary Satellite Management Agency for Skagit County. The Skagit PUD currently owns and operates five groundwater well satellite systems (Alger, Cedargrove, Marblemount, Rockport and Skagit View Village). We are required to maintain a Wellhead Protection Plan for reach well.*

*We are writing to let you know that businesses, facilities, and residences you permit and regulate are in our public water system wellhead protection areas. Please take all reasonable steps to ensure that land use activities within this area do not contaminate our drinking water sources.*

*The following table summarizes the Skagit PUD's groundwater well satellite systems:*

| Source | Current Est. Service Connections | DOH Susceptibility Rating | Current Potential Contaminants |
|---|---|---|---|
| **Alger** | 146 | High | Abandoned Alger dump, septic systems, cattle grazing |
| **Cedargrove** | 177 | Low | Septic Systems, herbicides/pesticides |
| **Marblemount** | 32 | Low | Septic Systems, herbicides/pesticides |
| **Potlatch Beach** | 0 | Medium | Septic Systems (in emergency use scenario) |
| **Rockport** | 63 | Low | Septic Systems, Highway Road Runoff |
| **Skagit View Village** | 94 | Medium | Septic Systems |

*The enclosed maps show the 6-month and 1-, 5- and 10-year time-of-travel boundaries for each wellhead protection area. Any groundwater contamination that occurs within these wellhead protection areas has a high potential to reach our wells.*

*Thank you for your support in protecting our drinking water.*

*Sincerely, Skagit PUD*

Residential owners in the WHPA's have septic systems and are notified via the Department of Health. Should a problem arise in one of the WHPA's, a targeted outreach will be initiated.

## Attachments

The remainder of this plan includes the documentation for each well:

- Susceptibility Assessment
- Water Facilities Inventory (WFI) form
- Well Report
- Wellhead Protection Area Map / Easements
- Inventory of Potential Contaminant Sources
- Wellhead Protection Report (for Alger and Marblemount).

Water quality test results, as-builts and other pertinent information is available upon request.

Washington State Department of Health
Environmental Health Programs
Division of Drinking Water

# Ground Water Contamination
# Susceptibility Assessment Survey Form

Complete **one** form for **each** ground water source (well, wellfield, spring) used in your water system (photocopy as necessary).

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**PART I: System Information**

Well owner/manager: Public Utility District No. 1 of Skagit County

Water system name: Alger

County: Skagit

Water system ID number: 01400 K  Source number: S01

Well depth: 51 feet

Source name: Well

WA well identification tag number: AER-350

❑ Well not tagged

Number of connections: 146  Population served: 142 customers

Township: 36N  Range: 04E

Section: 08  ¼ ¼ Section: NW SW

Latitude/longitude (if available): 48.62056 / -122.334367

How was latitude/longitude determined?

_____Global positioning device_____survey_____topographical map
x_____other: Google Earth

*Please refer the instructions for details and explanations of all questions in Parts II through V.

**PART II: Well Construction and Source Information**

1) Date well originally constructed: _09_/___/ 60_month/day/year

last reconstruction: _01_/_12__/_1999__month/day/year

❑ Information unavailable

2) Well driller: Kounkel Well Drilling, Stanwood, WA

❑ Well driller unknown

3) Type of well: _x_ Drilled: ❑ rotary ❑ bored ❑cable (percussion) ❑ Dug

___ other: ❑ spring(s) ❑ lateral collector (Ranney)

❑ driven ❑ jetted ❑ other:

4) Well report available ☑ Yes (attach copy to form) ❑ No

5) Average pumping rate: 50 (gallons/min)

Source of information Distribution Superintendent

If not documented, how was pumping rate determined?

❑ Pumping rate unknown

6) Is this source treated?

If so, what type of treatment:

❑ disinfection ☑ filtration ❑ carbon filter ❑ air stripper ❑ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

ATEC filtration system removes iron and manganese

7) If source is chlorinated, is a chlorine residual maintained: ☑ Yes ❑ No

Residual level: 1.5 ppm (At the point closest to the source.)

**PART III: Hydrogeologic Information**

1) Depth to top of open interval: [check one]

❑ <20 ft ☑ 20-50ft ❑ 50-100ft ❑ 100-200ft ❑ >200ft

❑ information unavailable

2) Depth to ground water (static water level):

❑ <20ft ❑ 20-50ft ❑ 50-100ft ❑ >100ft

☑ flowing well/spring (artesian)

How was water level determined?

☑ well log ☑ other attached well report

❑ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

**8** psi (pounds per square inch) **or**

_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ❑ Yes ☑ No

5) Wellhead elevation (height above mean sea level): 325 feet

How was elevation determined? ❑ topographic map ❑ Drilling/Well Log ❑ altimeter

☑ other: LIDAR BareEarth 2016

❑ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

x evidence of a confining layer in well log

_____ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer**? ☑ Yes ❑ No

❑ information unavailable

7) Sanitary setback:

❑ < 100ft* ☑ 100-120ft ❑ 120-200 ft ❑ >200ft

* If less than 100ft, describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

☑ wellhead enclosed in a wellhouse

❑ controlled access (describe): _____

_____

❑ other uses for wellhouse (describe): _____

_____

❑ no wellhead control

9) Surface seal:

❑ 18 ft

❑ <18 ft (no Department of Ecology approval)

❑ <18 ft (Approved by Ecology, include documentation)

❑ depth of seal unknown

☑ no surface seal

10) Annual rainfall (inches per year):

❑ <10 in/yr ❑ 10-25 in/yr ☑ >25 in/yr

## PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 9,654,597 (gallons)

How was this determined?

☑ meter

❑ estimated: ❑ pumping rate (_____)

❑ pump capacity (_____)

❑ other: _____

2) Estimate of ground water movement:

In 2001, GeoEngineers performed Hydrogeologic Services for the District and produced the attached *Well Testing and Well Head Protection Report for Production Well PW1.* Time of Travel Zones were delineated using a numerical ground water computer model (MODFLOW) and a conceptual hydrogeologic model. The District has adopted the Time of Travel Zones from this report.

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6- month time of travel boundary?

❑ Yes ☑No (mark and identify on map)

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6-month time of travel boundary?

❑ Yes ☑No (mark and identify on map)

Comments: _____

_____

_____

_____

**T V: Assessment of Water Quality**

1) **Regional sources of risk to ground water**:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the **five-year** ground water travel time. If you do not know if one of the following is present, mark the "unknown" space.

| | 6-month | 1-year | 5-year | unknown |
|---|---|---|---|---|
| • likely pesticide application | | | | |
| • stormwater injection wells | | | | |
| • other injection wells | | | | |
| • abandoned ground water well | | | | |
| • landfills, dumps, disposal areas | x | x | x * see note below | |
| • known hazardous materials clean-up site | | | | |
| • water system(s) with known quality problems | | | | |
| • population density >1 house/acre | | | | |
| • residences commonly have septic tanks | | | x | |
| • Wastewater treatment lagoons | | | | |
| • sites used for land application of waste | | | | |

Mark and identify on map any of the risks listed above which are located within the 6-month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

If other recorded or potential sources of ground water contamination exist within the ten-year time of travel circular zone around your water supply, please describe:

*The Alger well is approximately 1,800 feet northeast of the abandoned Alger Dump, which was closed and covered in 1975. The Skagit County IMap shows all time of travel zones to be within the area of the dump's "potential influence." While historical sampling has not shown landfill impact to area drinking water wells or surface water in Silver creek, the landfill is currently in the state cleanup process under the Model Toxics Control Act. The District's testing results at the Alger well have been in compliance with applicable Department of Health standards.

Other potential containments include those associated with cattle grazing and agricultural use.

2) **Source-specific water quality records**: For each type of test below, mark the row that applies to the sample results for this source. Consider all the sample results from the past 12 years. (MCLs are noted next to the specific test or listed in assistance package.)

A. **Nitrate:** (Nitrate MCL = 10 mg/l)

| | |
|---|---|
| Results greater than MCL | _____ |
| <2 mg/liter nitrate | x |
| 2-5 mg/liter nitrate | _____ |
| <5 mg/liter nitrate | _____ |
| Nitrate sampling records unavailable | _____ |

B. **VOCs:** (VOC detection level is 0.5 ug/l or 0.0005 mg/l)

| | |
|---|---|
| Results greater than MCL or SAL | x |
| VOCs detected at least once | x |
| VOCs never detected | _____ |
| VOC sampling records unavailable | _____ |

C. **EDB/DBCP:**
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)

| | |
|---|---|
| EDB/DBCP detected below MCL at least once | _____ |
| EDB/DBCP detected above MCL at least once | _____ |
| EDB/DBCP never detected | x |
| EDB/DBCP tests required but not yet completed | _____ |
| EDB/DBCP tests not required | _____ |

D. **Other SOCs (Pesticides):**

| | |
|---|---|
| Other SOCs detected | |
| (pesticides and other synthetic organic chemicals) | _____ |
| Other SOC tests performed but none detected | |
| (list test methods in comments) | x |
| Other SOC tests not performed | _____ |

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:_____

EPA Method 515.4 for Safe Drinking Water Compliance in 2017 (Herbicides)

E. **Bacterial contamination:**

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records)? no

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source? no

Source sampling records for bacteria unavailable _____

## PART VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10-year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

☑ Yes ❑ No

Describe with references to map produced in Part IV:

Silver Creek intersects all three of the time of travel zone to the west of the well.

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

❑ Yes ☑ No

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

❑ Yes ☑ No

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

❑ Yes ☑ No

4) Are there other high-capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within…

| | YES | NO | unknown |
|---|---|---|---|
| <6-month travel time | | x | |
| 6 month—1 year travel time | | x | |
| 1—5 year travel time | | x | |
| 5—10 year travel time | | x | |

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within…

| | YES | NO | unknown |
|---|---|---|---|
| <1-year travel time | | x | |
| 1—5 year travel time | | x | |
| 5—10 year travel time | | x | |

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

FORM COMPLETED BY:

Wendy LaRocque 02/22/2024
Print Name Date

Signature

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

# WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 1
Updated: 01/26/2024
Printed: 2/27/2024
WFI Printed For: On-Demand
Submission Reason: Pop/Connect Update

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822 or email wfi@doh.wa.gov

| 1. SYSTEM ID NO. | 2. SYSTEM NAME | 3. COUNTY | 4. GROUP | 5. TYPE |
|---|---|---|---|---|
| 01400 K | SKAGIT CO PUD - ALGER | SKAGIT | A | Comm |

**6. PRIMARY CONTACT NAME & MAILING ADDRESS**

MICHAEL R. FOX [MANAGER]
1415 FREEWAY DR
MOUNT VERNON, WA 98273

**7. OWNER NAME & MAILING ADDRESS**

SKAGIT COUNTY PUD 1 MANAGER
MICHAEL R. FOX
1415 FREEWAY DR
MOUNT VERNON, WA 98273

**STREET ADDRESS IF DIFFERENT FROM ABOVE**

ATTN
ADDRESS
CITY STATE ZIP

**STREET ADDRESS IF DIFFERENT FROM ABOVE**

ATTN
ADDRESS
CITY STATE ZIP

**9. 24 HOUR PRIMARY CONTACT INFORMATION**

Primary Contact Daytime Phone: (360) 848-4457
Primary Contact Mobile/Cell Phone: (360) 661-4032
Primary Contact Evening Phone: (xxx)-xxx-xxxx
Fax: (360) 424-5440 E-mail: fxx@skagitpud.org

**10. OWNER CONTACT INFORMATION**

Owner Daytime Phone: (360) 848-4457
Owner Mobile/Cell Phone: (360) 661-4032
Owner Evening Phone: (xxx)-xxx-xxxx
Fax: E-mail: fxx@skagitpud.org

**11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)**

- ☐ Not applicable (Skip to #12)
- ☒ Owned and Managed
- ☐ Managed Only
- ☐ Owned Only

SMA NAME: SKAGIT COUNTY PUD 1 SMA Number: 103

**12. WATER SYSTEM CHARACTERISTICS (mark all that apply)**

- ☐ Agricultural
- ☒ Commercial / Business
- ☒ Day Care
- ☒ Food Service/Food Permit
- ☐ 1,000 or more person event for 2 or more days per year
- ☐ Hospital/Clinic
- ☐ Industrial
- ☐ Licensed Residential Facility
- ☐ Lodging
- ☐ Recreational / RV Park
- ☒ Residential
- ☐ School
- ☐ Temporary Farm Worker
- ☒ Other (church, fire station, etc.):

**13. WATER SYSTEM OWNERSHIP (mark only one)**

- ☐ Association
- ☐ City / Town
- ☐ County
- ☐ Federal
- ☐ Investor
- ☐ Private
- ☒ Special District
- ☐ State

**14. STORAGE CAPACITY (gallons)**

132,000

| 15 | 16 | 17 | 18 SOURCE CATEGORY | | | | | | | | | | 19 USE | | | 20 | 21 TREATMENT | | | | | | 22 | 23 | 24 SOURCE LOCATION | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Source Number | SOURCE NAME<br>LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER.<br>Example: WELL #1 XYZ456<br>IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME<br>Example: SEATTLE | INTERTIE<br>INTERTIE SYSTEM ID NUMBER | WELL | WELL FIELD | WELL IN A WELL FIELD | SPRING | SPRING FIELD | SPRING IN SPRINGFIELD | SEA WATER | SURFACE WATER | RANNEY / INF. GALLERY | OTHER | PERMANENT | SEASONAL | EMERGENCY | SOURCE METERED | NONE | CHLORINATION | FILTRATION | FLUORIDATION | IRRADIATION (UV) | OTHER | DEPTH TO FIRST OPEN TERVAL IN FEET | CAPACITY (GALLONS PER MINUTE) | 1/4, 1/4 SECTION | SECTION NUMBER | TOWNSHIP | RANGE |
| S01 | Well AER350 | | X | | | | | | | | | | X | | | Y | | X | X | | | | 35 | 75 | NW SW | 08 | 36N | 04E |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# WATER FACILITIES INVENTORY (WFI) FORM - Continued

| 1. SYSTEM ID NO. | 2. SYSTEM NAME | 3. COUNTY | 4. GROUP | 5. TYPE |
|---|---|---|---|---|
| 01400 K | SKAGIT CO PUD - ALGER | SKAGIT | A | Comm |

| | ACTIVE SERVICE CONNECTIONS | DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS | DOH USE ONLY! APPROVED CONNECTIONS |
|---|---|---|---|
| **25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)** | | 135 | 219 |
| A. Full Time Single Family Residences (Occupied 180 days or more per year) | 129 | | |
| B. Part Time Single Family Residences (Occupied less than 180 days per year) | 6 | | |
| **26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)** | | | |
| A. Apartment Buildings, condos, duplexes, barracks, dorms | 0 | | |
| B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year | 0 | | |
| C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year | 0 | | |
| **27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)** | | | |
| A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units) | 0 | 0 | 0 |
| B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc. | 14 | 14 | 0 |
| **28. TOTAL SERVICE CONNECTIONS** | | 149 | 219 |

**29. FULL-TIME RESIDENTIAL POPULATION**

A. How many residents are served by this system 180 or more days per year? 315

| 30. PART-TIME RESIDENTIAL POPULATION | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. How many part-time residents are present each month? | | | | | | | | | | | | |
| B. How many days per month are they present? | | | | | | | | | | | | |

| 31. TEMPORARY & TRANSIENT USERS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month? | 3038 | 2744 | 3038 | 2940 | 3038 | 2940 | 3038 | 3038 | 2940 | 3038 | 2940 | 3038 |
| B. How many days per month is water accessible to the public? | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |

| 32. REGULAR NON-RESIDENTIAL USERS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population? | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| B. How many days per month are they present? | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |

| 33. ROUTINE COLIFORM SCHEDULE | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| 34. NITRATE SCHEDULE | QUARTERLY | ANNUALLY | ONCE EVERY 3 YEARS |
|---|---|---|---|
| (One Sample per source by time period) | | | |

**35. Reason for Submitting WFI:**

☐ Update - Change ☐ Update - No Change ☐ Inactivate ☐ Re-Activate ☐ Name Change ☐ New System ☐ Other _____

**36. I certify that the information stated on this WFI form is correct to the best of my knowledge.**

**SIGNATURE:** _____ **DATE:** _____

**PRINT NAME:** _____ **TITLE:** _____

of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

# STATE OF WASHINGTOI
## DEPARTMENT OF CONSERVATION AND DEVELOPMENT

**WELL LOG** No. Appli. 5743

Date 11-22, 1960

Record by well

Source driller's record

*Location:* State of WASHINGTON

County Skagit

Area

Map

NW¼ SW¼ sec. 8 T. 36 N., R. 4 E. W.

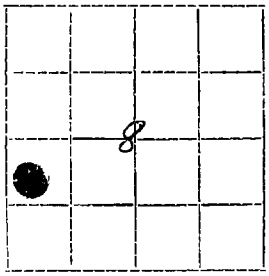


Diagram of Section

*Drilling Co.* A. G. Kaunkel

Address Stanwood, Wash.

Method of Drilling Date Sept., 1960

Owner Alger Community Club, Inc.

Address Rt. 5, Bellingham, Wash.

Land surface, datum ft. above / below

WB 4-8

File number

| CORRELATION | MATERIAL | THICKNESS (feet) | DEPTH (feet) |
|---|---|---|---|
| | Yellow clay | 25 | 25 |
| | Gravel | 1 | 26 |
| | Blue clay | 9 | 35 |
| | Gravel - water | 4 | 39 |
| | Sandstone | 2 | 41 |
| | Coarse Gravel | 10 | 51 |
| | PUMP TEST. | | |
| | Dim. 6"x51' | | |
| | ~~SWkx~~ | | |
| | Flowing Well- | | |
| | Measured discharge 75 g.p.m. | | |
| | on Sept. 15, 1960 | | |
| | Shut-in pressure at ground surface | | |
| | 8 lbs. per sq.in. on Sept.15, 1960 | | |
| | Water is controlled by cap & valve | | |
| | Type and size of pump: 3 h.p. Jet | | |
| | | | |
| | (over) | | |

(Transcribe driller's terminology literally but paraphrase as necessary, in parentheses. If material water-bearing, so state and record static level if reported. Give depths in feet below land-surface datum unless otherwise indicated. Correlate with stratigraphic column, if feasible. Following log of materials, list all casings, perforations, screens, etc.)

Turn up

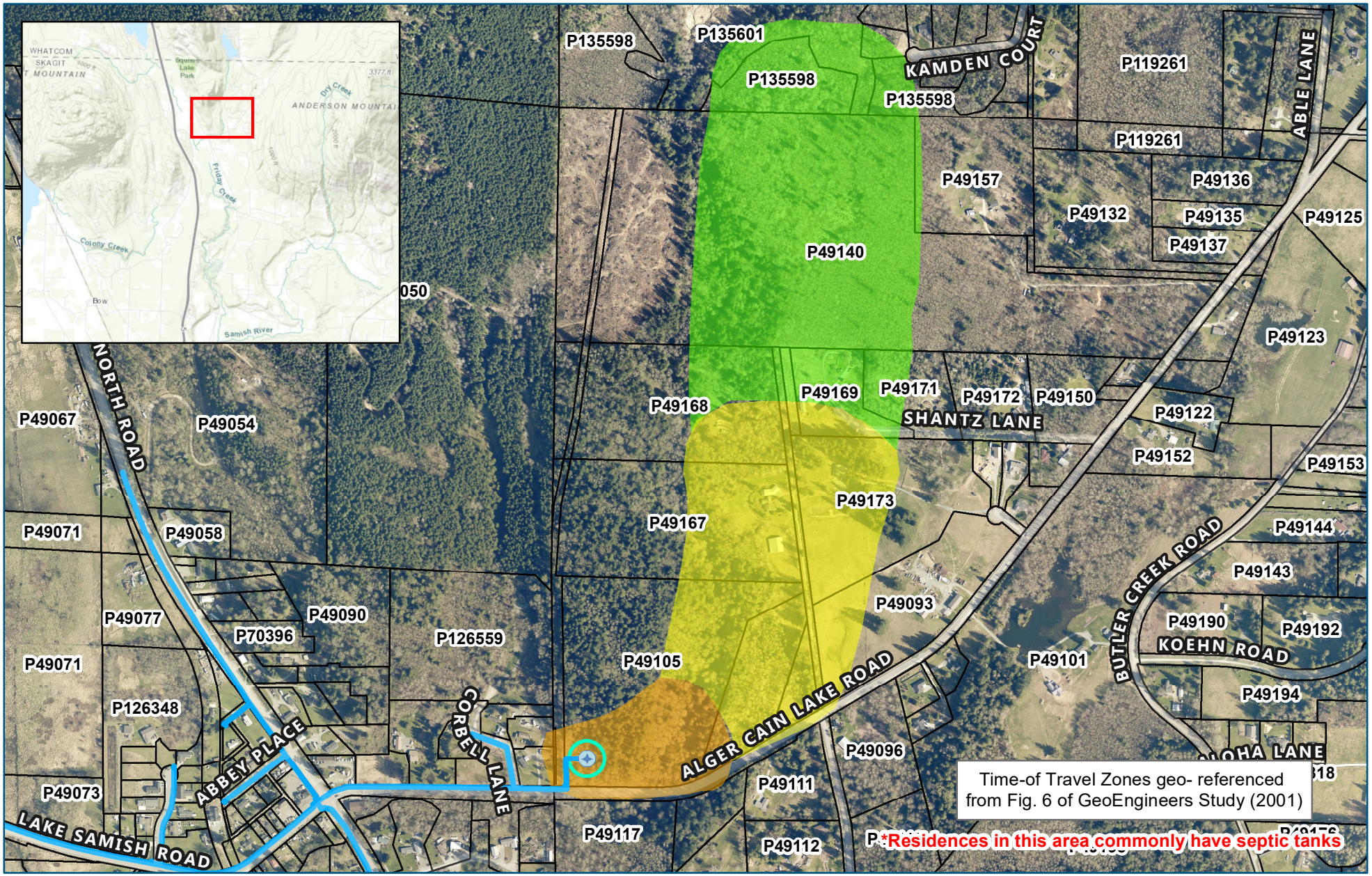
Sheet ... of ... sheets

**WELL LOG.**—Continued No..... ...../.....-.....

| CORRELATION | MATERIAL | THICKNESS (feet) | DEPTH (feet) |
|---|---|---|---|
| | Depth forward | ——— | |
| | CASING: | | |
| | 6" diam. from 0 to 51 ft. | | |
| | PERFORATIONS: | | |
| | 5 perforations per foot ¼"x1" from 35 to 46 ft. | | |

S. F. No. 7410—12-54—3M. 40108.

of Ecology does NOT Warranty the Data and/or the Information on this Well Report.




# Alger Well

## Wellhead Protection Area

0 250 500 1,000 Feet

NAD 1983 StatePlane Washington North FIPS 4601 Feet
Author: wilson
2/22/2024

Wellhead
Water Mains
Parcels

**Time of Travel Zones**

1-Year
5-Year
10-Year
Sanitary Control

This map was created from available public records and existing map sources, not from field surveys. While great care was taken in this process, maps from different sources rarely agree as to the precise location of geographic features. The relative positioning of map features to one another results from combining different map sources without field verification.

The PUD #1 of Skagit County disclaims any warranty of merchantability or warranty of fitness of this map for any particular purpose, either expressed or implied. No representation or warranty is made concerning the accuracy, currency, completeness or quality of data depicted on this map. Any user of this map assumes all responsibility for use thereof, and further agrees to hold the PUD #1 of Skagit County harmless from any damage, loss, or liability arising from the use of this map.

Skagit PUD
PUBLIC UTILITY DISTRICT

Document Path: M:\ProjectMaps\chrisZemp\projectsRequests\Well_Head_Buffers\02-16-2024\Alger_TOT.mxd

## Inventory of Potential Contaminant Sources

## Well: Alger

| Zone 1 (6 month and 1 Year Time of Travel) | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| All zone "area of potential influence" according to Skagit County | Alger Dump | Landfill | II | Inactive / clean up initiated |

| Zone 2 (5 Year Time of Travel) | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| 49116 | Alger Dump | Landfill | II | Inactive / clean up initiated |
| multiple | Septic tanks | sewage | I | Active |

| Zone 3 (10 Year Time of Travel) | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Active |
| All zone "area of potential influence" according to Skagit County | Alger Dump - Landfill | Inorganic and organic conventional containments, metals, solvents, petroleum products | II | Inactive / clean up initiated |
| multiple | Septic tanks | sewage | I | Active |

**Rationale for high susceptibility rating from DOH:**

- Shallow Open Interval (20-50 ft)
- 2000, 2001, 2003 toluene (Volatile Organic Compound (VOC)) detections

**Action Plan:**

- Continue to monitor Alger Dump cleanup. Continue VOC testing. There has been No Detection of VOCs at the Alger Well Site since 2009.
- Continue to monitor septic system tests on DOH website. Continue to test per Coliform Monitoring Plan.

# Report
# Hydrogeologic Services
# Well Testing and Wellhead Protection
# Production Well PW-1
# Skagit County, Washington

February 12, 2001

RECEIVED
FEB 1 3 2001
SKAGIT P.U.D.

For
Public Utility District No. 1
of Skagit County

GeoEngineers

February 12, 2001

Public Utility District No. 1 of Skagit County
P.O. Box 1436
1415 Freeway Drive
Mount Vernon, Washington 98273-1436

Attention: Brad Spangler

Report
Hydrogeologic Services
Well Testing and Wellhead Protection
Production Well PW-1
Skagit County, Washington
File No. 2402-009-00-1180

## INTRODUCTION

This report presents the results of our hydrogeologic services related to well testing and preparation of a wellhead protection study for the Alger Satellite Water System (ASWS) production well PW-1. The well is located in Section 8, Township 36 North, Range 4 East in Skagit County. The general location of PW-1 relative to the surrounding area is shown on the Vicinity Map, Figure 1. Our services were performed in general accordance with our revised proposal dated April 1, 1998.

The ASWS currently obtains its water from a single production well (PW-1) completed in the NW1/4, SW1/4, Section 8, Township 36 North, Range 4 East. The ASWS has water rights (Ground Water Certificate No. 606775) for the annual use of 100 acre-feet per year (ac-ft/y) of water from the existing well, with a maximum withdrawal rate of 100 gallons per minute (gpm). We understand that the Public Utility District No. 1 of Skagit County (District) has installed new distribution lines and a water storage tank for the water system. We further understand that the District is interested in assessing the safe yield of the well and defining wellhead protection areas.

## SCOPE

The purpose of our hydrogeologic services was to determine specific aquifer and well parameters and to provide technical information to aid in the development of a wellhead protection plan for PW-1. Our specific scope of services included the following:

GeoEngineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052
Telephone (425) 861-6000
Fax (425) 861-6050
www.geoengineers.com

1. Record time-drawdown data in PW-1 during one 24-hour constant rate aquifer test. The aquifer test was performed in general accordance with the guidelines provided in the Ecology WRIS Information Bulletin No. 30 Aquifer Testing Procedures.
2. Monitor the temperature, pH, and electrical conductance of ground water pumped from the well during the 24-hour aquifer test.
3. Obtain one water sample from the PW-1 during the last 15 minutes of the constant rate aquifer test. The sample was submitted to a Department of Health certified laboratory for analysis of compounds required for Group A Public Water Systems.
4. Measure and record water level recovery data in PW-1 following the constant rate aquifer test. Recovery data was measured until the well began to flow.
5. Analyze the aquifer test data to evaluate:
   a. Aquifer transmissivity and hydraulic conductivity.
   b. Well specific capacity and safe yield.
6. Evaluate the effect of ground water withdrawal from PW-1 on nearby existing wells in regard to well interference issues.
7. Research existing information to develop an understanding of local/regional hydrogeology. The information include geologic maps, well logs, pumping test results, water quality data, water supply bulletins, and other available information.
8. Map hydrogeologic systems contributing water to the PW-1 based on our literature research, field observations and interpretation of hydrogeologic conditions. Define and map interpreted recharge areas for PW-1 on a 7.5-minute USGS quadrangle map.
9. Evaluate regional flow gradients and flow direction in the aquifer system that supplies the production well based on the collected information.
10. Estimate the ground water flow direction and velocity for the production aquifer using available information, and information gained from the aquifer test.
11. Assess the susceptibility of the water supply system to potential contamination based on the physical and hydrogeologic setting of the well.
12. Assess probable deviation from a circular zone of contribution based on factors including the presence of other wells in the vicinity of the water supply system, hydrogeologic boundaries and topography.
13. Estimate WHPA boundaries for PW-1 using a ground water computer model and a conceptual hydrogeologic model that considers local hydrogeologic conditions, topography and recharge conditions.
14. Map the 1-, 5- and 10-year TOTs on a 7.5-minute USGS quadrangle.
15. Conduct a visual reconnaissance of properties within the WHPA to identify and locate potential sources of contamination.
16. Provide a list of identified potential sources of ground water contamination within the 1- and 5-year TOT boundaries, and high-risk activities/facilities within the 10-year TOT boundary.

17. Assess and rank the relative risks associated with the potential sources of contamination identified during the study.
18. Assist the District in developing recommendations and strategies to protect the ground water resources and in developing contingency plans for alternative water supply sources.

## WELL INSTALLATION, CONSTRUCTION, TESTING

### WELL DRILLING

- Production well PW-1 was drilled and installed in September 1960.
- The land surface in the immediate vicinity of PW-1 is at approximate Elevation 320 feet above mean sea level (MSL). All elevations referenced in this report are relative to MSL
- The elevation of the PW-1 wellhead is approximately 323.4 feet.
- Six-inch-diameter steel casing was installed in PW-1 to a depth of 51 below the ground surface using drilling equipment owned and operated by Kounkel Well Drilling. All depths in referenced in this report are relative to ground surface. A well construction schematic of PW-1 is presented on Figure 2.
- The well generally encountered low permeability yellow and blue clay from the ground surface to a depth of approximately 35 feet, and water-bearing sand and gravel to a depth of approximately 51 feet.
- The six-inch-diameter well casing was perforated between depths of 35 and 46 feet (Figure 2).
- The well flowed at the ground surface at a rate of approximately 75 gpm shortly after installation.
- The well had a reported shut-in pressure of approximately 8 pounds per square inch (psi) in September 1960 which is equal to a static water level approximately 19 feet above ground surface (Elevation 342 feet).
- The aquifer that PW-1 is completed within is confined in nature in that the static water level in the aquifer rises above the upper most confining layer.

### WELL TESTING

- A short-term (24-hour) aquifer pumping test was conducted in PW-1 on July 12 and 13, 2000. A plot of water level drawdown and recovery is presented on Figure 3. Field data sheets completed during the aquifer test are included in Attachment A.
- The well was pumped at a constant rate of approximately 47 gpm during the initial portion of the test. However, the pumping rate slowly decreased to approximately 42 gpm after approximately 1,100 minutes of pumping (Figure 3). The pumping rate was then adjusted up to 49 gpm for approximately 250 minutes. The pumping rate was increased to 57 gpm for approximately 5 minutes roughly 1,410 minutes into the tests. The pumping rate was reduced to 49 gpm for the remainder of the test.

- A maximum of approximately 25 feet of water level drawdown below the casing rim was observed in PW-1 at a pumping rate of 47 gpm (Figure 3).
- The specific capacity of a production well is the volume of water the well is able to produce per unit length of water level drawdown in the well. The static water level in PW-1 was assumed to be approximately 19 feet above the casing rim prior to starting the 24-hour test. The water level dropped to a depth of approximately 25 feet at a pumping rate of 47 gpm. Dividing the pumping rate (47 gpm) by the total drawdown (19 + 25 = 44 feet) results in a calculated specific capacity of 1.1 gpm/foot of water level drawdown.
- The water level in PW-1 recovered to above the casing rim less than 20 minutes after the pump was shut off.
- Transmissivity is a measure of the amount of water that can be transmitted horizontally by the full-saturated thickness of the aquifer under a hydraulic gradient (slope) of 1. The transmissivity value for the upper aquifer was estimated using the modified Cooper-Jacob equation and the water level recovery data. The transmissivity value for the confined aquifer is approximately 480 square feet per day ($ft^2/d$).
- Hydraulic conductivity is a measure of the rate at which water can move through an aquifer and is equal to the transmissivity divided by the aquifer thickness. The confined aquifer is estimated to be approximately 50 feet thick in the immediate vicinity of PW-1 based on existing geologic information. Therefore, the hydraulic conductivity of the aquifer is approximately 10 ft/d based on an aquifer thickness of 50 feet and a transmissivity value of 480 $ft^2/d$.
- Specific storage is the amount of water per unit volume of a saturated formation that is expelled from storage as a result of compression of the aquifer and expansion of water when the aquifer is pumped. Specific storage is dimensionless and for confined aquifers generally ranges from $10^{-5}$ to $10^{-3}$.

## WATER QUALITY

A representative of GeoEngineers measured water quality parameters (temperature, pH, conductivity and salinity) in water samples obtained from the confined aquifer during well testing. A representative of GeoEngineers obtained water samples from the aquifer during the 24-hour constant rate test for parameters pertinent to a Group A water system. Representatives of the District obtained additional water samples from PW-1 on April 13, 2000, November 3, 2000, December 21, 2000 and January 26, 2001. These additional water samples were submitted to Edge Analytical for analysis of volatile organic compounds (VOCs), synthetic organic compounds (SOCs), carbamates, herbicides and ethylene dibromide (EDB). A summary of the water quality parameter data is presented on Table 1. Copies of the chemical analytical data sheets are presented in Attachment B.

- Ground water temperature was approximately 10.7 to 11.9 degrees Celsius ($C^o$) in water samples obtained during the aquifer test.

- Ground water pH ranged from 7.8 to 8.0 in the water samples obtained from PW-1 (Table 1).
- Electrical conductivity ranged from approximately 172 microseimens per centimeter (*u*s/cm) and salinity was 0.1 parts per thousand (ppt) in water samples obtained from the aquifer. Electrical conductivity is a measure of the ability of water to conduct electricity and varies directly with the amount of ionized minerals in the water. The secondary maximum contaminant level (MCL) for conductivity is 700 *u*s/cm.
- Salinity is a relative measure of the amount of inorganic salts present in the ground water. Salinity values typically range from 0.1 to 0.3 ppt in fresh ground water. Elevated values of electrical conductivity and salinity can be indicative of seawater intrusion or other forms of contamination in aquifers.
- Manganese was detected at a concentration of 0.091 milligrams per liter (mg/l) in a water sample obtained from PW-1 near the end of the 24-hour pumping test. The secondary MCL for manganese is 0.05 mg/l.
- Toluene was detected at a concentration of 12 microgram per liter (*u*g/l) in a water sample obtained from PW-1 near the end of the 24-hour pumping test. The primary MCL for toluene is 1,000 *u*g/l. Toluene was not detected in a water sample obtained from the well in December 2000 (Attachment B).
- All other organic and inorganic parameters tested for in PW-1 were either not detected or were detected at concentrations less than applicable primary or secondary MCL for drinking water supplies (Attachment B).

## GEOLOGIC/HYDROGEOLOGIC SETTING

### GENERAL

The PW-1 well site is located within a glacially eroded channel that trends roughly north-south from Lake Whatcom to the Friday Creek valley. The channel was occupied by glacial ice during the final stages of the last glaciation that affected this area of Whatcom County, about 15,000 years ago. The channel presently contains Cain and Reed Lakes and Silver Creek that drains south toward the Friday Creek valley.

Our interpretation of surface and subsurface hydrogeologic conditions in the vicinity of the site was based on a review of available geologic/hydrogeologic information, two consulting reports, water well reports for wells located within the Silver Creek drainage, one relatively short-term aquifer test conducted in PW-1, and our experience. The geology of the site and surrounding area is described and illustrated at a scale of 1:62,500 in Easterbrook, 1976. GeoEngineers monitored the installation and testing of a production well for the Glenhaven Lakes Water Association near Cain Lake in 1995. Details of this previous well evaluation study are presented in GeoEngineers's report dated May 16, 1995. Golder Associates Inc. (Golder) completed a ground water mapping project in the Cain and Reed Lakes area for Whatcom County Water District No. 12. Details of the study are presented in Golder's report titled "Whatcom

County Water District No. 12, Groundwater Mapping-Final Letter Report" dated September 3, 1993.

## GEOLOGIC SETTING

A review of the available information indicates the geologic conditions in the Alger/Silver Creek area are the result of several episodes of interglacial erosion, scour by the glaciers, deposition of glacial and nonglacial sediments, and postglacial deposition and erosion. The Fraser Glaciation is the most recent glaciation of Whatcom County and includes two periods of glacial advance (the Sumas and Vashon stades) separated by a interglacial period (the Everson interstade). Erosion and deposition during and following the Fraser Glaciation have resulted in the modern topography of the Alger/Silver Creek area. Deposits associated with the Vashon stade present in the vicinity of the site include advance outwash and till. Deposits associated with the Everson interstade include the Everson glaciomarine drift.

The advance outwash deposit consists primarily of sand and gravel with interbedded silt and clay lenses; these sediments were deposited by meltwater streams in front of the advancing glacier. The advance outwash was overridden by several thousand feet of glacial ice. The advance outwash deposit appears to be approximately 50 feet thick in the vicinity of PW-1. The advance outwash unit is overlain by Vashon till - a dense, nonsorted, nonstratified deposit of silt, sand, gravel and cobbles that also has been compacted by the weight of several thousand feet of glacial ice. The Vashon till is locally covered with a thin layer of glaciomarine drift deposited during the Everson interstade of the Fraser Glaciation. The glaciomarine drift is primarily composed of silt and clay material that was deposited in a marine environment beneath floating/melting glacial ice. The till and glaciomarine drift can be up to 50 feet thick in the vicinity of the site.

## HYDROGEOLOGIC SETTING

### General

The Alger/Silver Creek area receives between 50 and 70 inches of precipitation annually. Roughly 70 percent of this precipitation occurs during the months of November through April. A portion of the precipitation that is not lost directly as evaporation and evapotranspiration runs off into lakes or stream channels and is removed from the area. The remaining precipitation either slowly infiltrates into the relatively impermeable till/glaciomarine drift, or rapidly infiltrates into localized thin deposits of fluvial sand and gravel located within the upper portion of the till/glaciomarine drift.

At least two aquifer systems appear to be present in the Alger/Silver Creek area: (1) a perched unconfined aquifer located in more permeable sand and gravel lenses within the upper portion of the till/glaciomarine drift, and (2) a confined aquifer located in the advance outwash deposits. PW-1 is completed within the confined aquifer. Therefore, the remained of this section will focus on the pertinent characteristics of the confined aquifer.

- The advance outwash aquifer consists of stratified sand and gravel deposits that are interbedded with relatively low-permeability zones of silt and clay.
- The aquifer is generally confined by either the overlying till/glaciomarine unit or the low-permeability zones of silt and clay within the upper portion of the advance outwash unit.
- The total thickness of the water bearing portion of the aquifer is likely between 25 and 75 feet.
- Information presented on the Ecology water well reports, observations reported by Golder (1993) and our on-site observations indicate that static water level elevations in wells completed within the confined aquifer in an approximate 2.0 mile radius of the site appear to be range from approximately 340 feet to 370 feet.
- Ground water recharge to the aquifer is from vertical leakage through the overlying till/glaciomarine drift.
- The aquifer likely discharges to the Friday Creek valley.
- Ground water within the aquifer appears to flow generally from north to south in the Silver Creek drainage as shown on Figure 4.
- The potentiometric surface of the confined aquifer slopes to the south at a hydraulic gradient (slope) of approximately 0.0038 (20 feet per mile).
- Aquifer transmissivity ranges from less than 500 $ft^2/d$ to greater than 2,500 $ft^2/d$ based on aquifer testing results for PW-1, Glenhaven Lakes production wells and Water District 12 well.
- Aquifer hydraulic conductivity ranges between 50 ft/d and 10 ft/d based on an assumed average aquifer thickness of 50 feet.

## WELLHEAD PROTECTION AREA

## GROUND WATER FLOW MODEL

### General

Wellhead protection areas can be delineated using several different methodologies. These methods, in order of increasing sophistication, include the calculated fixed radius (CFR), analytical calculations, hydrogeologic mapping and numerical ground water flow modeling. The WHPA for PW-1 was delineated using a numerical ground water flow model.

### Computer Code Verification

Ground water flow characteristics and the wellhead protection areas delineated for this project were estimated using the three dimensional finite difference code MODFLOW created by the USGS (McDonald and Harbaugh, 1988). The pathlines used to define the preliminary wellhead protection areas were created by MODPATH written by Pollack (1989) of the USGS. The three dimensional modeling platform used for both MODFLOW and MODPATH is VISUAL MODFLOW created by Guiger and Franz (1996) of Waterloo Hydrogeologic, Inc. The regional numerical model of the area in the vicinity of the site simulates steady state conditions in

general accordance with ASTM Standards D5447, D5490, D5609, and D5610. The MODFLOW ground water model has the following capabilities:

- Confined and unconfined systems can be modeled.
- Injection and pumping wells can be simulated.
- Impermeable boundaries can be modeled.
- Variable well pumping scenarios can be simulated.
- River, lakes, and springs can be simulated.
- Multi layered systems can be modeled.
- Aquifer characteristics (hydraulic conductivity, transmissivity, porosity, and storage) can be varied spatially throughout the model domain.
- Variable aquifer recharge can be modeled.
- Surface and ground water interaction can be simulated.

### Confined Aquifer System

The model of the confined aquifer is three dimensional, with one layer, and includes constant head and no-flow boundaries. The layers have various hydraulic conductivity/ transmissivity zones. Parameters that are used as input to the program include: (1) number of pumping wells and locations, (2) well pumping rates, (3) potentiometric surface head values, (4) aquifer effective porosity, (5) aquifer hydraulic conductivity/transmissivity, (6) aquifer thickness, and (7) aquifer boundary conditions. The following is a summary of the assumptions used in the ground water flow model for the confined aquifer system.

- Model domain included the area of approximately 10 square miles in the vicinity of the PW-1.
- It was assumed that PW-1 would be pumped at a production rate of 50 gpm. This assumption is conservative for the current use of the production well because the well is not currently pumped continuously and will likely not be pumped at rates greater than 47 gpm.
- Ground water flows generally from north to south in the aquifer based on water level information presented on water well reports (Figure 4).
- The hydraulic gradient of the confined aquifer potentiometric surface is approximately 0.0038.
- The aquifer effective porosity was assumed to range between 0.10 and 0.25.
- The aquifer transmissivity was assumed to range from approximately 500 $ft^2/d$ to approximately 2,500 $ft^2/d$ based on aquifer information and variations in subsurface conditions described in water well reports for wells completed within the aquifer.
- The total aquifer thickness was assumed to range from approximately 25 feet to approximately 75 feet.
- Annual recharge to the aquifer from the downward migration of water from overlying aquifers ranges from approximately 8 inches to 15 inches within the modeled area.

- Transmissivity, aquifer thickness and recharge were adjusted within the previously described ranges to calibrate the ground water model.

The previously described ground water pumping rates were used in the model to calculate the 1-, 5-, and 10-year TOT for PW-1. The TOT boundaries calculated using the ground water flow model for the production wells are shown in the Wellhead Protection Areas Map, Figure 5.

## POTENTIAL SOURCES OF CONTAMINATION

### General

Representatives of GeoEngineers conducted a survey of the WHPAs in July 2000. Land use within the identified wellhead protection areas included roadways, residential, agricultural, and light cattle ranching. We did not identify any land use activities that were inconsistent with the zoning areas in the delineated WHPAs.

Potential sources of ground water contamination are generally grouped into two categories: point and nonpoint sources. Point sources usually have specific fixed locations, such as underground storage tanks, facilities that store or utilize hazardous substances, landfills and single-family septic systems. The release of contamination from point sources usually occurs during a specific time period. Nonpoint sources usually occur over large areas and can be relatively continuous sources of contamination. Surface water runoff from streets and fertilizer applications are examples of nonpoint sources of contamination.

Land use in the WHPAs is mostly agricultural, ranching, and residential with a minor amount of roadways. Items of concern with regard to potential ground water contamination within the WHPAs include landfills, cattle ranching; septic systems; home heating oil tanks; fertilizer, herbicide, pesticide and/or fungicide use; traffic accidents; contaminated runoff from road pavement and improperly abandoned wells. The following is a brief discussion of the potential sources of contamination identified in the WHPAs.

### Landfill

An abandoned County landfill is located approximately 1,800 feet northeast of PW-1 (Figure 5). Unlined and improperly closed landfills are frequent point sources of ground water contamination. Landfills generally generate their greatest quantities of leachate during the first five years after closure. Contaminants commonly associated with landfills include petroleum hydrocarbons, volatile organic compounds, semi-volatile organic compounds and metals.

### Cattle Ranching

A portion of the WHPA is currently being used for the grazing of cattle. Areas where concentrated populations of cattle have been located over long periods are frequent nonpoint sources of nitrate and coliform bacteria contamination in shallow ground water. The potential buildup of nitrate and coliform bacteria contamination in shallow ground water is the primary concern for this type of land use.

### Septic Systems

The delineated WHPA is currently serviced by on-site sewage systems, primarily septic tanks and drainfields. Domestic and community septic systems are frequent point sources of contaminants in areas of heavy housing density and where shallow ground water is present. Contaminants commonly associated with septic system effluent include nitrate, nitrite, ammonia, chloride, bacteria and viruses.

### Home Heating Oil Tanks

Releases of contaminants from home heating oil tanks can be a significant point source for ground water contamination. We did not identify any home heating oil tanks within the identified WHPAs during our reconnaissance of the areas. However, it is possible that some of the existing homes in the rural areas of the WHPA have small (550-gallons or less) home heating oil tanks. The possibility of a release of contaminants from one or more of the heating oil tanks effecting ground water quality in the vicinity of PW-1 exists.

### Agricultural Products

The areas where agricultural products (fertilizer, pesticides, herbicide and fungicide) are frequently applied can become nonpoint sources of contaminants where shallow ground water is present. Portions of the WHPA are currently used for agricultural purposes where fertilizers, pesticides, herbicides and/or fungicides are likely applied routinely.

### Traffic Accidents

Spills of hazardous materials caused by traffic accidents are a potential source of ground water contamination. It is unlikely there are any statistics available regarding accidents and/or the types and volumes of hazardous materials transported on portions of the roads located within the identified WHPA. However, the possibility of an accident occurring on roads within the WHPA that would result in a release of hazardous material does exist. Furthermore, it is probable that, because of the absence of a storm water runoff containment system over most of the WHPA, the hazardous materials would be released to the ground surface and may run overland to Silver Creek.

### Surface Water Runoff

Surface water runoff from road surfaces is a common nonpoint source of ground water contamination for shallow aquifers. Storm sewers that collect runoff from road surfaces greatly reduce the volume of runoff that can potentially contaminate ground water. Contaminants commonly associated with surface water runoff include petroleum hydrocarbons, volatile organic compounds, semi-volatile organic compounds and metals. It is our understanding that the roads located within the identified WHPA do not have lined drainage ditches and they do not drain to a storm sewer system.

### Improperly Abandoned Wells

Improperly abandoned wells can be conduits for potential surface sources of contamination to reach deep aquifers in a relatively short period of time. Furthermore, if the well is completed within two or more aquifers the well can allow contamination to travel from one aquifer unit to another. We reviewed water well reports on file with Ecology for wells located in the WHPA. The water well reports indicated that the wells were completed within individual water-bearing zones and with proper surface seals.

## CONCLUSIONS AND RECOMMENDATIONS

### WELL SAFE YIELD

The aquifer testing data indicates that PW-1 is capable of producing approximately 47 gpm for at least several days of continuous pumping. The extrapolated time-drawdown data indicates that less than 30 feet of water level drawdown below the casing rim would occur in PW-1 at a pumping rate of 47 gpm after several days of pumping. A maximum water level drawdown of 30 feet would result in a water level approximately 7 feet above the well pump in PW-1.

The 24-hour constant rate test indicated that steady-state water level drawdown was achieved in PW-1 after approximately 100 minutes of pumping at a rate of 47 gpm. However, short-term aquifer tests sometimes do not indicate the presence of aquifer boundaries that may affect the well after weeks or months of use. Therefore, we recommend that water levels in PW-1 be measured and recorded weekly during normal operation or on a daily bases if the well is pumped continuously for longer than one day. The water levels should be measured with an accuracy of 0.1 feet or better and measurement depths should be referenced to the same datum at the well when each measurement is made. Each time a measurement is made, the time, date, water depth and present pumping rate should be recorded. A long-term decline of the water level in the well (for a constant pumping rate) may indicate effects greater than those indicated by the pump test and analysis.

### WATER QUALITY

The in-field measured water quality parameters and chemical analytical data obtained during the constant rate test indicate excellent water quality with the exception of a slightly elevated concentration of manganese. Slightly elevated concentrations of manganese are typical in shallow aquifers located in Skagit County. Manganese is a secondary contaminant and is regulated for aesthetic reasons (taste, odor, etc), not for health reasons. Toluene was detected in PW-1 at a concentration significantly less than the primary MCL in the water sample obtained from the well in April, 2000. It is likely that the toluene detected in PW-1 is related to the installation of a PVC sounding tube installed in the well shortly prior to sampling on April 13, 2000. Several of the fittings on the PVC sounding tube were connected using plastic cement that contains small quantities of toluene. Toluene was not detected in a water sample obtained from PW-1 in December 2000.

## AQUIFER SUSCEPTIBILITY AND RISK ASSESSMENT

The susceptibility of an aquifer to surface sources of potential contamination is directly related to the depth of the aquifer, whether the aquifer is unconfined or confined and the characteristics of the soil or rock overlying the aquifer. For example an unconfined aquifer located at a depth of approximately 10 feet and overlain by highly permeable sand and gravel is far more susceptible to contamination from surface sources than a deep (greater than 100 feet) confined aquifer that is overlain by several zones of low permeability silt/clay or a flowing artesian aquifer that has a significant upward flow rate.

The confined aquifer is separated from the ground surface by at least 35 feet of alternating layers of low permeability silt and clay. The relatively low permeability silt/clay units and the positive artesian flow would significantly inhibit the downward migration of a potential contaminant plume. Based on the surface/subsurface soil conditions and the hydrogeologic setting of the WHPA, it is our opinion that the confined aquifer has a low susceptibility to being affected by surface sources of contamination.

## WELL SUSCEPTIBILITY TO CONTAMINATION

The general susceptibility of the subject aquifer to surface sources of contamination has been discussed in previous sections of this report. However, the construction of the production well has an affect on the susceptibility of the well to contamination. A well without a properly constructed and installed surface seal is more susceptible to surface contamination than one with a proper surface seal. Other factors that influence the susceptibility ranking of the well are well depth, depth to static water level and the hydrogeologic setting of the well.

The WSDOE requires each Group A water system to complete Susceptibility Assessment Forms (SAF) for each water source/well. Based on the information presented on the SAF, the WSDOH assesses whether the well has a low, moderate or high susceptibility to surface sources of contamination. The WSDOH determined that PW-1 was moderately susceptible to surface sources of contamination based on the information presented on the SAF.

## RISK ASSESSMENT

### General

Developing a ranking of risks associated with the identified potential sources of contamination located within the WHPAs is an integral part of the WHPP. However, quantifying risk to public health is difficult from a technical and public acceptance point of view. For the purpose of this study, the risks of the potential contaminant source affecting water quality within the individual wells were assessed based on the following: (1) aquifer susceptibility, (2) well construction, (3) distance from source to the well, (4) contaminant volume, (5) contaminant toxicity and (6) contaminant persistence.

### Risks to the Production Well

Potential contamination from heating oil tanks, agricultural activities, and traffic accidents located within the 1-year TOT were ranked as a moderate risk for PW-1. Potential impacts from cattle ranching, septic systems, and surface water runoff are all considered low risks to water quality in PW-1.

We understand that the County landfill located within the 5-year TOT of PW-1 has been closed for at least 15 years. The landfill is unlined and partially covered with soil. Representatives of the Skagit County are unaware of any ground water related contamination associated with the landfill. Furthermore, Brad Spangler of the District has indicated that historic water quality data for PW-1 has not detected the presence of contaminants typically associated with landfill leachate. It is our opinion that, because the water quality data does not indicate the presence of landfill contaminants and because the landfill has been closed for over 15 years, the potential for contamination, originating at the closed landfill, poses a low risk of affecting water quality in PW-1.

It should be noted that this risk assessment did not address the potential impacts from improperly abandoned wells. Water well reports on file with Ecology indicate that there are several domestic wells located in the delineated WHPA. As noted previously, improperly constructed or abandoned wells can be conduits for surface sources of contamination to rapidly enter an otherwise protected aquifer. The information presented on the available water well reports indicates that the wells are generally shallow, completed within discrete aquifer zones, and that proper surface seals were used during construction. However, there is no information regarding the current status of these wells.

## WHPA MANAGEMENT ACTIONS

Some land use activities in PW-1's WHPA currently result in a moderate risk to water quality. Special-use permit activities or future changes in land use zoning may allow land use activities that could represent a more immediate threat to the confined aquifer within the mapped WHPA. Ultimately, the protection of the ASWS water supply will be accomplished through the education of the public that lives and works within the WHPA rather than through regulatory controls. The following is a list of general management actions that the District has implemented to protect the ground water source.

- The District will review any changes in land use proposed by Skagit County within the designated WHPA with regard to a potential impact on the water quality of the source aquifer.
- The District will not allow the use of the fertilizer, pesticide, herbicide and fungicide within 100 feet of PW-1.
- The District will not allow the grazing of cattle within 100 feet of PW-1.

- The District will conduct a more detailed analysis of contaminant loading and the potential effect on the ground water systems if future residential or commercial development results in a significant septic system density increase in any of the 1- and/or 5-year TOT areas.
- The District will continue to monitor water quality within the subject aquifer to establish trends and detect potential problems.
- The District will continue to encourage the extension of the Judy Reservoir source into the Alger Community area to allow PW-1 to be used for emergency situations only.

## LIMITATIONS

We have prepared this letter report for use by the Public Utility District No. 1 of Skagit County to provide information regarding the use of Production Well No. 1 located in Alger, Washington.

Our interpretations of geologic/hydrogeologic conditions and aquifer conditions and characteristics are based on the review of available information, and the analysis of aquifer testing data from one short-term aquifer test. The information presented in this report is based on the above described research and limited site reconnaissance. Copies may be made available to regulatory agencies such as the Washington State Departments of Health or Ecology. This report is not intended for use by others and the information contained herein is not applicable to other sites.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in this area at the time the report was prepared. No warranty or other conditions, express or implied, should be understood.

We appreciate the opportunity to be of service to you. If you have any questions concerning this report or if we can provide additional services, please call.

Respectfully submitted,

GeoEngineers, Inc.

Charles S. Lindsay, P.G., P.HG.
Principal Hydrogeologist

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Attachments
Two copies submitted

# TABLE 1
# SUMMARY OF WATER QUALITY PARAMETERS FOR PW-1

| Date | Time | Temperature[1] (°C) | pH[2] | Electrical Conductance[1] (µmhos/cm) | Salinity (ppm) |
|---|---|---|---|---|---|
| 07/12/00 | 13:05 | 11.2 | 7.89 | 176.7 | 0.1 |
| | 13:22 | 11.9 | 7.99 | 176.0 | 0.1 |
| | 14:40 | 11.8 | 7.90 | 172.3 | 0.1 |
| 07/13/00 | 08:05 | 10.7 | 7.75 | 179.0 | 0.1 |
| | 09:11 | 11.0 | 7.98 | 220.0 | 0.1 |
| | 10:24 | 11.1 | 7.99 | 195.0 | 0.1 |
| | 11:35 | 11.5 | 7.90 | 212.0 | 0.1 |
| | 12:49 | 11.8 | 8.01 | 235.0 | 0.1 |

Note:

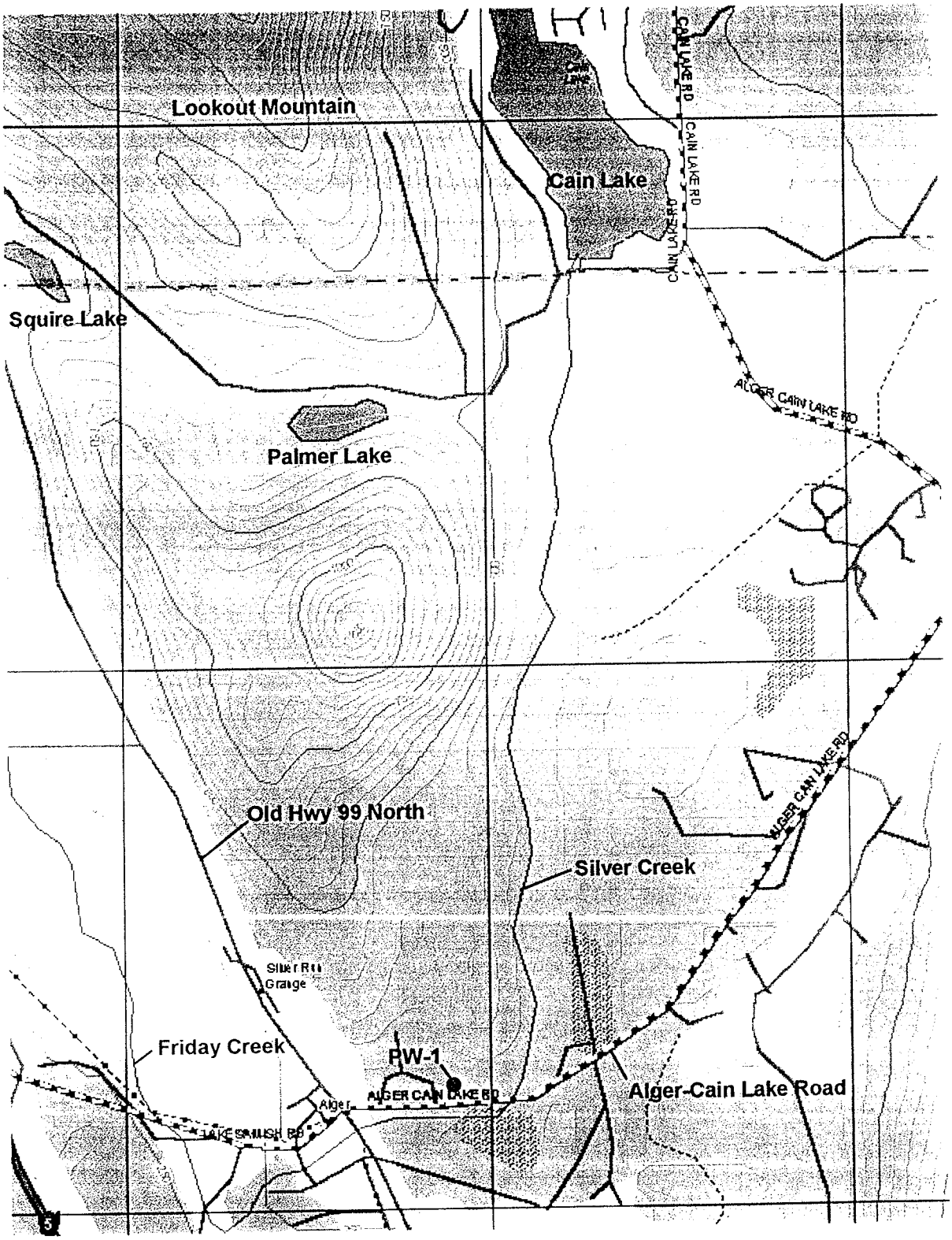
[1]Measurements obtainedusing a YSI SCT meter

[2]Measurements obtained using a pHTESTr2 meter

$^0$C = degrees Centigrade

µmhos/cm = micromohs per centimeter

P:\00\finals\240200900T1.xls




Reference: 3-D TopoQuads Copyright 1999 DeLorme.

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Vicinity Map

FIGURE 1

Flowing or pump well Flowing Water Temp. 50

If PUMP WELL: Type and size of pump is 3 HP Jet

Type and size of motor or engine is 3 HP

Depth from ground surface to water level before pumping _____ feet

After continuous operation for _____ (At least four) hours, the measured discharge of the pump is _____ g.p.m., and the drawdown of water level is _____ (Pumping level minus static water level) feet

Recovery data (taken after pump has been shut off) (time taken as zero when pump turned off) (water level measured from well top to water level).

| Time | Water Level | Time | Water Level |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

Date of test _____

If FLOWING WELL: Measured discharge 75 g.p.m. on Sept 15 1960 (Date)

Shut-in pressure at ground surface 8 lbs. per sq. in. on Sept 15 1960 (Date)

Water is controlled by Cap & Valve (Cap, valve, etc.)

CASING: (Give diameter, commercial specifications and depth below ground surface of each casing size.)

6 in. diameter _____ from 0 to 51 ft.

_____ in. diameter _____ from _____ to _____ ft.

_____ in. diameter _____ from _____ to _____ ft.

_____ in. diameter _____ from _____ to _____ ft.

Perforated casing or screens:

5 Perforations per foot 4" x 10" (Number per foot and size of perforations, or describe screen) from 35' to 46 ft.

_____ from _____ to _____ ft.

_____ from _____ to _____ ft.

_____ from _____ to _____ ft.

_____ from _____ to _____ ft.

LOG OF WELL OR TUNNEL: (Describe each stratum or formation clearly, indicate if water bearing, and give thickness and depth as indicated.)

| MATERIAL | Thickness (Feet) | Depth to bottom (Feet) |
|---|---|---|
| Yellow clay | 25 | 25' |
| Gravel | 1 | 26' |
| Blue clay | 9 | 35' |
| Gravel & Water | 4 | 39 |
| Sandstone | 2 | 41 |
| Coarse Gravel | 10 | 51 |

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**PW-1 WELL CONSTRUCTION LOG**

**FIGURE 2**

2402-009-00-1180 CSL P:\240200900\FIGURE3.ppt 12/20/00

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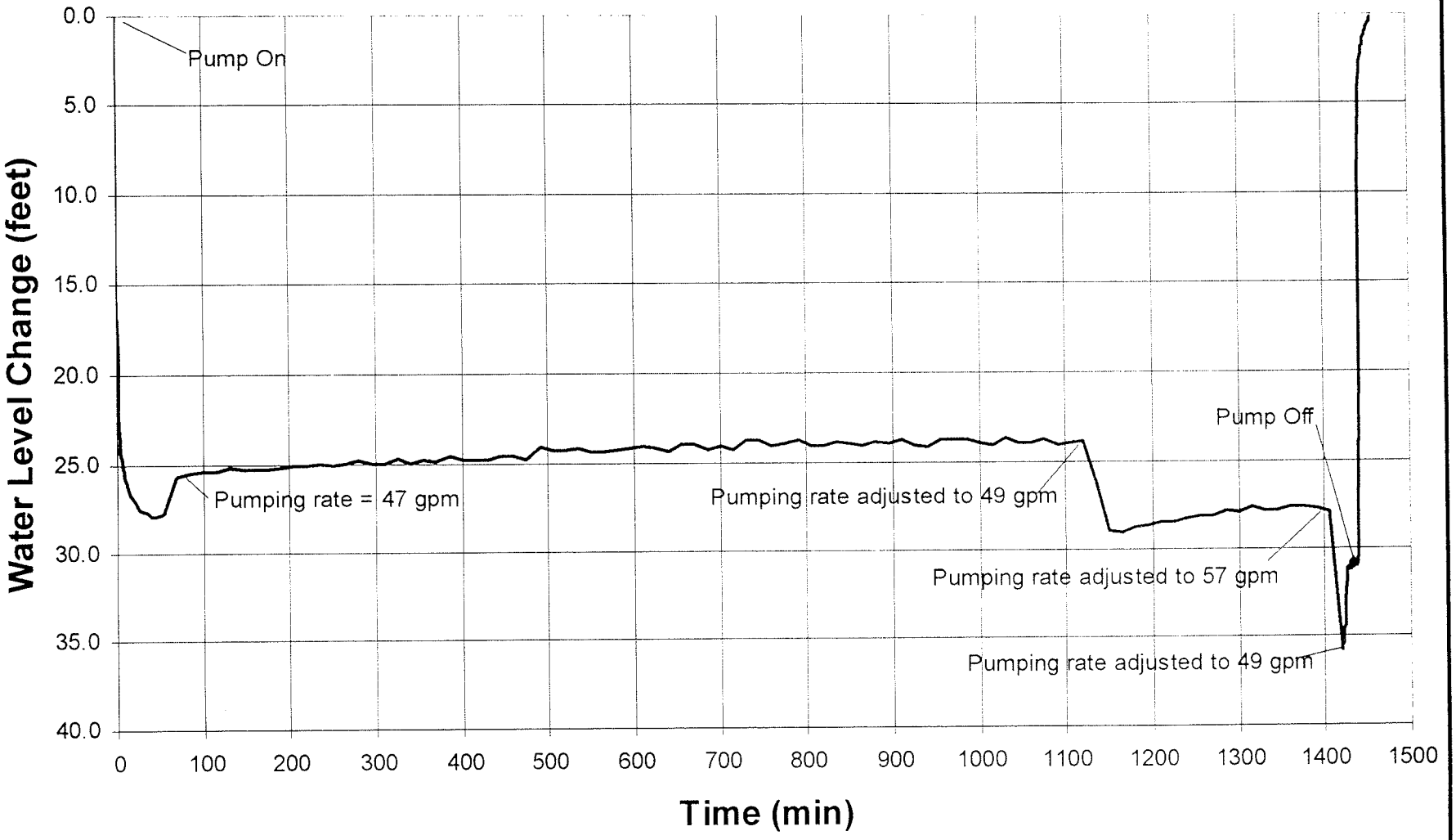
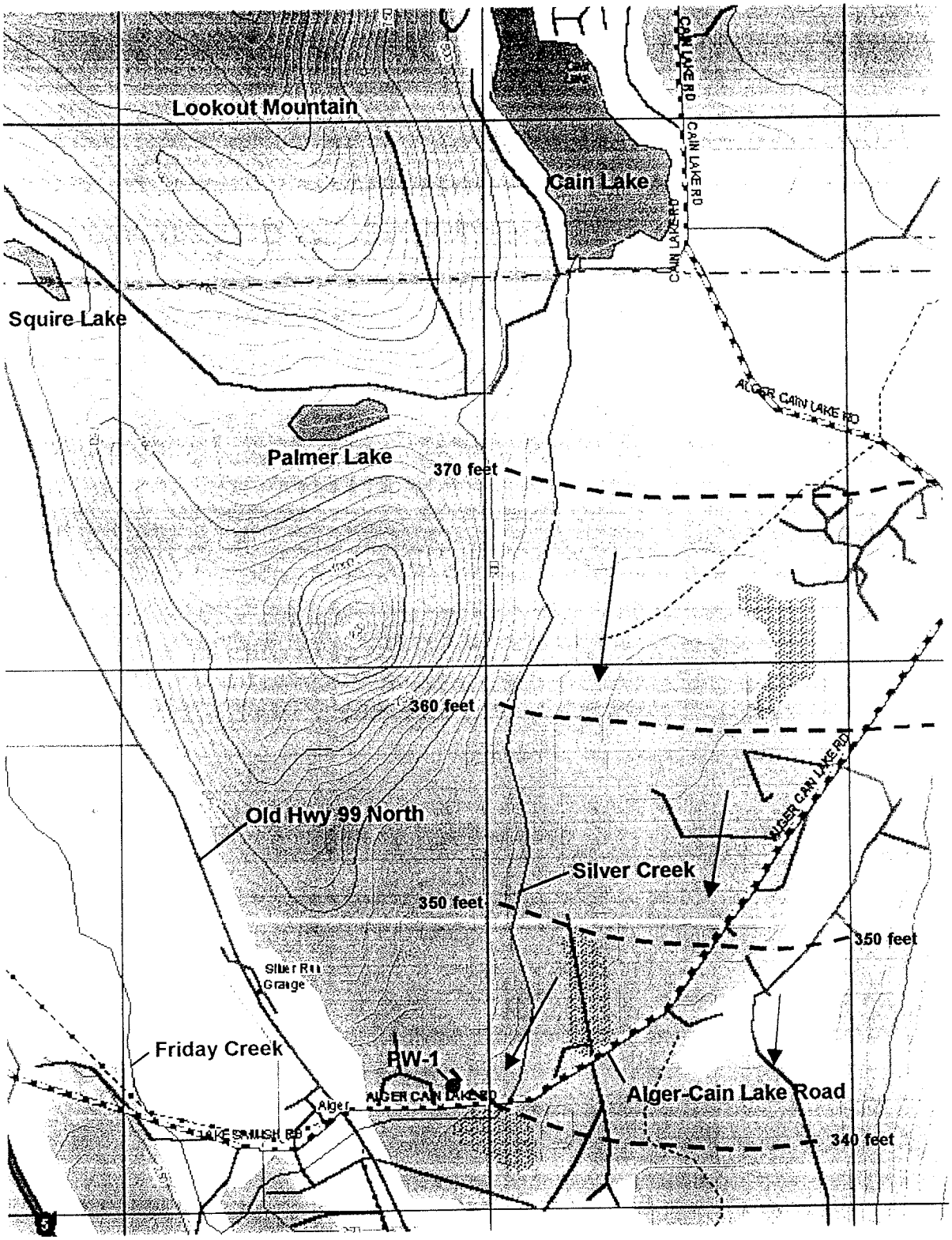



FIGURE 3

Water Level Changes versus Time (PW-1)




Reference: 3-D TopoQuads Copyright 1999 DeLorme.

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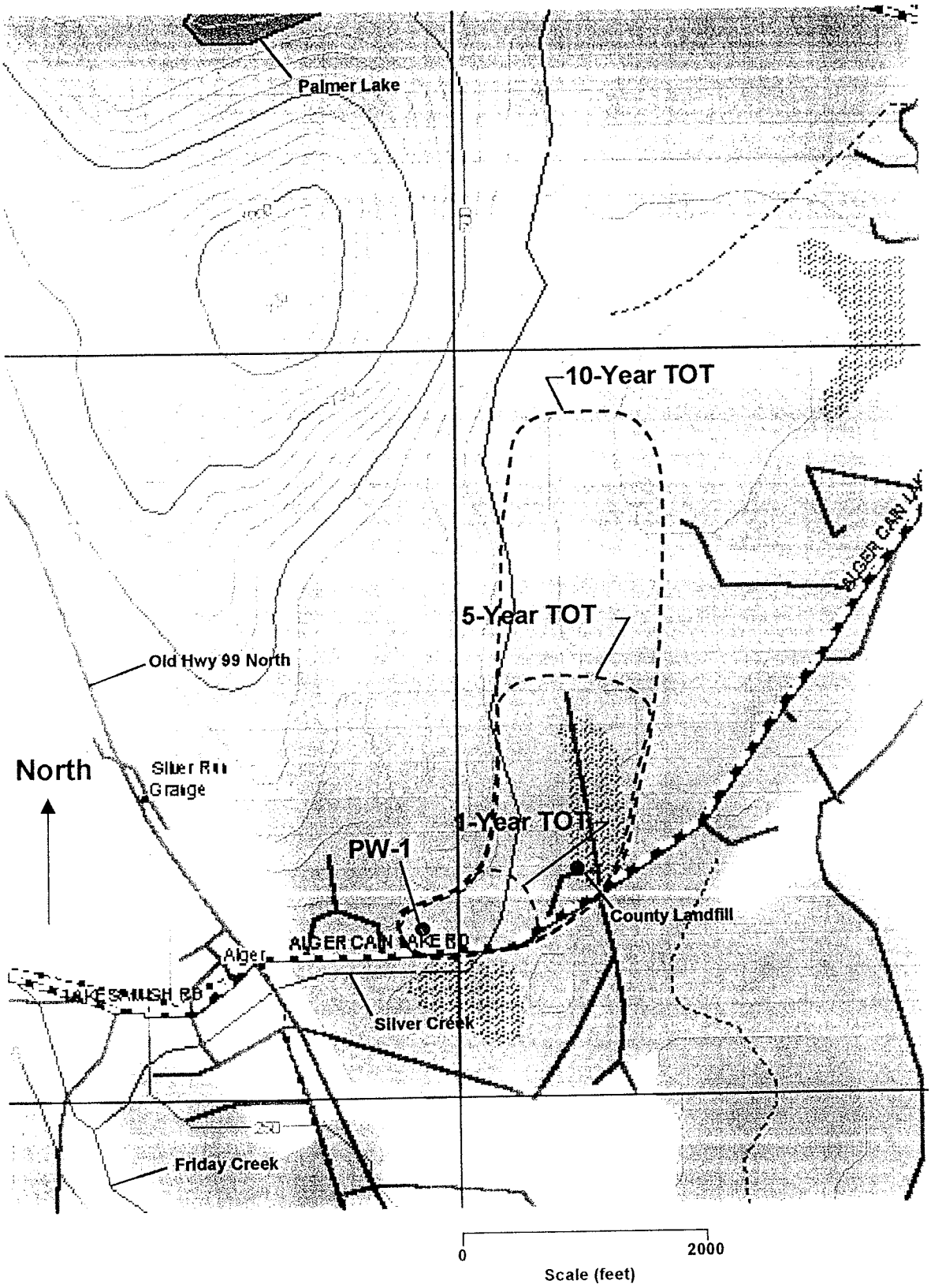
Ground Water Contour Map

FIGURE 4

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Wellhead Protection Area Map

FIGURE 5

ATTACHMENT A

PW-1/Alger Community Well
Skagit PUD No. 1
2402-009-00-1180

PW-1 Transducer =20 psi.
Q = 47 gpm
Pump Set at 37 feet BGS
Static W.L. = 36.69 Data Logger Depth

| Date/Time | Time | Logger | t | t' | delta s | t/t' |
|---|---|---|---|---|---|---|
| 07/12/2000 13:00 | 13:00:00 | 36.69 | 0.00 | | 0.00 | |
| 07/12/2000 13:00 | 13:00:30 | 26.23 | 0.50 | | 10.46 | |
| 07/12/2000 13:01 | 13:01:00 | 20.82 | 1.00 | | 15.87 | |
| 07/12/2000 13:01 | 13:01:30 | 17.89 | 1.50 | | 18.80 | |
| 07/12/2000 13:02 | 13:02:00 | 16.11 | 2.00 | | 20.58 | |
| 07/12/2000 13:03 | 13:03:00 | 14.12 | 3.00 | | 22.57 | |
| 07/12/2000 13:04 | 13:04:00 | 12.99 | 4.00 | | 23.70 | |
| 07/12/2000 13:05 | 13:05:00 | 12.29 | 5.00 | | 24.40 | |
| 07/12/2000 13:06 | 13:06:00 | 11.91 | 6.00 | | 24.78 | |
| 07/12/2000 13:07 | 13:07:00 | 11.55 | 7.00 | | 25.14 | |
| 07/12/2000 13:08 | 13:08:00 | 11.25 | 8.00 | | 25.44 | |
| 07/12/2000 13:09 | 13:09:00 | 10.93 | 9.00 | | 25.76 | |
| 07/12/2000 13:10 | 13:10:00 | 10.60 | 10.00 | | 26.09 | |
| 07/12/2000 13:15 | 13:15:00 | 9.90 | 15.00 | | 26.79 | |
| 07/12/2000 13:20 | 13:20:00 | 9.47 | 20.00 | | 27.22 | |
| 07/12/2000 13:25 | 13:25:00 | 9.11 | 25.00 | | 27.58 | |
| 07/12/2000 13:30 | 13:30:00 | 8.99 | 30.00 | | 27.70 | |
| 07/12/2000 13:35 | 13:35:00 | 8.88 | 35.00 | | 27.81 | |
| 07/12/2000 13:40 | 13:40:00 | 8.72 | 40.00 | | 27.97 | |
| 07/12/2000 13:45 | 13:45:00 | 8.69 | 45.00 | | 28.00 | |
| 07/12/2000 13:50 | 13:50:00 | 8.76 | 50.00 | | 27.93 | |
| 07/12/2000 13:55 | 13:55:00 | 8.91 | 55.00 | | 27.78 | |
| 07/12/2000 14:10 | 14:10:00 | 10.90 | 70.00 | | 25.79 | |
| 07/12/2000 14:25 | 14:25:00 | 11.13 | 85.00 | | 25.56 | |
| 07/12/2000 14:40 | 14:40:00 | 11.22 | 100.00 | | 25.47 | |
| 07/12/2000 14:55 | 14:55:00 | 11.29 | 115.00 | | 25.40 | |
| 07/12/2000 15:10 | 15:10:00 | 11.45 | 130.00 | | 25.24 | |
| 07/12/2000 15:25 | 15:25:00 | 11.36 | 145.00 | | 25.33 | |
| 07/12/2000 15:40 | 15:40:00 | 11.38 | 160.00 | | 25.31 | |
| 07/12/2000 15:55 | 15:55:00 | 11.41 | 175.00 | | 25.28 | |
| 07/12/2000 16:10 | 16:10:00 | 11.49 | 190.00 | | 25.20 | |
| 07/12/2000 16:25 | 16:25:00 | 11.61 | 205.00 | | 25.08 | |
| 07/12/2000 16:40 | 16:40:00 | 11.52 | 220.00 | | 25.17 | |
| 07/12/2000 16:55 | 16:55:00 | 11.62 | 235.00 | | 25.07 | |
| 07/12/2000 17:10 | 17:10:00 | 11.55 | 250.00 | | 25.14 | |
| 07/12/2000 17:25 | 17:25:00 | 11.68 | 265.00 | | 25.01 | |
| 07/12/2000 17:40 | 17:40:00 | 11.84 | 280.00 | | 24.85 | |
| 07/12/2000 17:55 | 17:55:00 | 11.62 | 295.00 | | 25.07 | |
| 07/12/2000 18:10 | 18:10:00 | 11.69 | 310.00 | | 25.00 | |
| 07/12/2000 18:25 | 18:25:00 | 11.93 | 325.00 | | 24.77 | |
| 07/12/2000 18:40 | 18:40:00 | 11.65 | 340.00 | | 25.04 | |

| | | | | |
|---|---|---|---|---|
| 07/12/2000 18:55 | 18:55:00 | 11.91 | 355.00 | 24.78 |
| 07/12/2000 19:10 | 19:10:00 | 11.78 | 370.00 | 24.91 |
| 07/12/2000 19:25 | 19:25:00 | 12.04 | 385.00 | 24.65 |
| 07/12/2000 19:40 | 19:40:00 | 11.88 | 400.00 | 24.81 |
| 07/12/2000 19:55 | 19:55:00 | 11.84 | 415.00 | 24.85 |
| 07/12/2000 20:10 | 20:10:00 | 11.82 | 430.00 | 24.87 |
| 07/12/2000 20:25 | 20:25:00 | 12.04 | 445.00 | 24.65 |
| 07/12/2000 20:40 | 20:40:00 | 12.08 | 460.00 | 24.61 |
| 07/12/2000 20:55 | 20:55:00 | 11.87 | 475.00 | 24.82 |
| 07/12/2000 21:10 | 21:10:00 | 12.58 | 490.00 | 24.12 |
| 07/12/2000 21:25 | 21:25:00 | 12.36 | 505.00 | 24.33 |
| 07/12/2000 21:40 | 21:40:00 | 12.40 | 520.00 | 24.29 |
| 07/12/2000 21:55 | 21:55:00 | 12.46 | 535.00 | 24.23 |
| 07/12/2000 22:10 | 22:10:00 | 12.32 | 550.00 | 24.38 |
| 07/12/2000 22:25 | 22:25:00 | 12.27 | 565.00 | 24.42 |
| 07/12/2000 22:40 | 22:40:00 | 12.39 | 580.00 | 24.30 |
| 07/12/2000 22:55 | 22:55:00 | 12.49 | 595.00 | 24.20 |
| 07/12/2000 23:10 | 23:10:00 | 12.59 | 610.00 | 24.10 |
| 07/12/2000 23:25 | 23:25:00 | 12.45 | 625.00 | 24.25 |
| 07/12/2000 23:40 | 23:40:00 | 12.29 | 640.00 | 24.40 |
| 07/12/2000 23:55 | 23:55:00 | 12.66 | 655.00 | 24.03 |
| 07/13/2000 0:10 | 0:10:00 | 12.69 | 670.00 | 24.00 |
| 07/13/2000 0:25 | 0:25:00 | 12.36 | 685.00 | 24.33 |
| 07/13/2000 0:40 | 0:40:00 | 12.62 | 700.00 | 24.07 |
| 07/13/2000 0:55 | 0:55:00 | 12.37 | 715.00 | 24.32 |
| 07/13/2000 1:10 | 1:10:00 | 12.86 | 730.00 | 23.83 |
| 07/13/2000 1:25 | 1:25:00 | 12.88 | 745.00 | 23.81 |
| 07/13/2000 1:40 | 1:40:00 | 12.56 | 760.00 | 24.13 |
| 07/13/2000 1:55 | 1:55:00 | 12.68 | 775.00 | 24.01 |
| 07/13/2000 2:10 | 2:10:00 | 12.88 | 790.00 | 23.81 |
| 07/13/2000 2:25 | 2:25:00 | 12.63 | 805.00 | 24.06 |
| 07/13/2000 2:40 | 2:40:00 | 12.63 | 820.00 | 24.06 |
| 07/13/2000 2:55 | 2:55:00 | 12.79 | 835.00 | 23.90 |
| 07/13/2000 3:10 | 3:10:00 | 12.68 | 850.00 | 24.01 |
| 07/13/2000 3:25 | 3:25:00 | 12.59 | 865.00 | 24.10 |
| 07/13/2000 3:40 | 3:40:00 | 12.75 | 880.00 | 23.94 |
| 07/13/2000 3:55 | 3:55:00 | 12.66 | 895.00 | 24.03 |
| 07/13/2000 4:10 | 4:10:00 | 12.91 | 910.00 | 23.78 |
| 07/13/2000 4:25 | 4:25:00 | 12.62 | 925.00 | 24.07 |
| 07/13/2000 4:40 | 4:40:00 | 12.52 | 940.00 | 24.17 |
| 07/13/2000 4:55 | 4:55:00 | 12.85 | 955.00 | 23.84 |
| 07/13/2000 5:10 | 5:10:00 | 12.88 | 970.00 | 23.81 |
| 07/13/2000 5:25 | 5:25:00 | 12.86 | 985.00 | 23.83 |
| 07/13/2000 5:40 | 5:40:00 | 12.68 | 1000.00 | 24.01 |
| 07/13/2000 5:55 | 5:55:00 | 12.58 | 1015.00 | 24.12 |
| 07/13/2000 6:10 | 6:10:00 | 12.99 | 1030.00 | 23.70 |
| 07/13/2000 6:25 | 6:25:00 | 12.72 | 1045.00 | 23.97 |
| 07/13/2000 6:40 | 6:40:00 | 12.65 | 1060.00 | 24.04 |
| 07/13/2000 6:55 | 6:55:00 | 12.86 | 1075.00 | 23.83 |
| 07/13/2000 7:10 | 7:10:00 | 12.59 | 1090.00 | 24.10 |
| 07/13/2000 7:25 | 7:25:00 | 12.72 | 1105.00 | 23.97 |
| 07/13/2000 7:40 | 7:40:00 | 12.84 | 1120.00 | 23.86 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 07/13/2000 7:55 | 7:55:00 | 10.50 | 1135.00 | | 26.19 | |
| 07/13/2000 8:10 | 8:10:00 | 7.65 | 1150.00 | | 29.04 | |
| 07/13/2000 8:25 | 8:25:00 | 7.61 | 1165.00 | | 29.08 | |
| 07/13/2000 8:40 | 8:40:00 | 7.91 | 1180.00 | | 28.78 | |
| 07/13/2000 8:55 | 8:55:00 | 7.97 | 1195.00 | | 28.72 | |
| 07/13/2000 9:10 | 9:10:00 | 8.20 | 1210.00 | | 28.49 | |
| 07/13/2000 9:25 | 9:25:00 | 8.17 | 1225.00 | | 28.52 | |
| 07/13/2000 9:40 | 9:40:00 | 8.39 | 1240.00 | | 28.30 | |
| 07/13/2000 9:55 | 9:55:00 | 8.47 | 1255.00 | | 28.22 | |
| 07/13/2000 10:10 | 10:10:00 | 8.52 | 1270.00 | | 28.17 | |
| 07/13/2000 10:25 | 10:25:00 | 8.75 | 1285.00 | | 27.94 | |
| 07/13/2000 10:40 | 10:40:00 | 8.65 | 1300.00 | | 28.04 | |
| 07/13/2000 10:55 | 10:55:00 | 8.95 | 1315.00 | | 27.74 | |
| 07/13/2000 11:10 | 11:10:00 | 8.79 | 1330.00 | | 27.90 | |
| 07/13/2000 11:25 | 11:25:00 | 8.82 | 1345.00 | | 27.87 | |
| 07/13/2000 11:40 | 11:40:00 | 8.97 | 1360.00 | | 27.72 | |
| 07/13/2000 11:55 | 11:55:00 | 9.04 | 1375.00 | | 27.65 | |
| 07/13/2000 12:10 | 12:10:00 | 8.94 | 1390.00 | | 27.75 | |
| 07/13/2000 12:25 | 12:25:00 | 8.66 | 1405.00 | | 28.03 | |
| 07/13/2000 12:40 | 12:40:00 | 0.92 | 1420.00 | | 35.77 | |
| 07/13/2000 12:41 | 12:41:00 | 1.24 | 1421.00 | | 35.45 | |
| 07/13/2000 12:42 | 12:42:00 | 1.34 | 1422.00 | | 35.35 | |
| 07/13/2000 12:43 | 12:43:00 | 2.11 | 1423.00 | | 34.58 | |
| 07/13/2000 12:44 | 12:44:00 | 2.31 | 1424.00 | | 34.38 | |
| 07/13/2000 12:45 | 12:45:00 | 4.01 | 1425.00 | | 32.68 | |
| 07/13/2000 12:46 | 12:46:00 | 4.87 | 1426.00 | | 31.82 | |
| 07/13/2000 12:47 | 12:47:00 | 5.50 | 1427.00 | | 31.19 | |
| 07/13/2000 12:48 | 12:48:00 | 5.46 | 1428.00 | | 31.23 | |
| 07/13/2000 12:49 | 12:49:00 | 5.44 | 1429.00 | | 31.25 | |
| 07/13/2000 12:50 | 12:50:00 | 5.89 | 1430.00 | | 30.80 | |
| 07/13/2000 12:51 | 12:51:00 | 5.46 | 1431.00 | | 31.23 | |
| 07/13/2000 12:52 | 12:52:00 | 6.02 | 1432.00 | | 30.67 | |
| 07/13/2000 12:53 | 12:53:00 | 5.54 | 1433.00 | | 31.15 | |
| 07/13/2000 12:54 | 12:54:00 | 5.57 | 1434.00 | | 31.12 | |
| 07/13/2000 12:55 | 12:55:00 | 5.69 | 1435.00 | | 31.00 | |
| 07/13/2000 12:56 | 12:56:00 | 5.88 | 1436.00 | | 30.81 | |
| 07/13/2000 12:57 | 12:57:00 | 5.79 | 1437.00 | | 30.90 | |
| 07/13/2000 12:58 | 12:58:00 | 5.66 | 1438.00 | | 31.03 | |
| 07/13/2000 12:59 | 12:59:00 | 5.85 | 1439.00 | | 30.84 | |
| 07/13/2000 13:00 | 13:00:00 | 6.09 | 1440.00 | | 30.60 | |
| 07/13/2000 13:01 | 13:01:00 | 16.65 | 1441.00 | 1.00 | 20.04 | 1441.00 |
| 07/13/2000 13:02 | 13:02:00 | 28.34 | 1442.00 | 2.00 | 8.35 | 721.00 |
| 07/13/2000 13:03 | 13:03:00 | 31.23 | 1443.00 | 3.00 | 5.46 | 481.00 |
| 07/13/2000 13:04 | 13:04:00 | 32.57 | 1444.00 | 4.00 | 4.12 | 361.00 |
| 07/13/2000 13:05 | 13:05:00 | 33.41 | 1445.00 | 5.00 | 3.28 | 289.00 |
| 07/13/2000 13:06 | 13:06:00 | 34.00 | 1446.00 | 6.00 | 2.69 | 241.00 |
| 07/13/2000 13:07 | 13:07:00 | 34.45 | 1447.00 | 7.00 | 2.24 | 206.71 |
| 07/13/2000 13:08 | 13:08:00 | 34.81 | 1448.00 | 8.00 | 1.88 | 181.00 |
| 07/13/2000 13:09 | 13:09:00 | 35.00 | 1449.00 | 9.00 | 1.69 | 161.00 |
| 07/13/2000 13:10 | 13:10:00 | 35.33 | 1450.00 | 10.00 | 1.36 | 145.00 |
| 07/13/2000 13:11 | 13:11:00 | 35.53 | 1451.00 | 11.00 | 1.16 | 131.91 |
| 07/13/2000 13:12 | 13:12:00 | 35.66 | 1452.00 | 12.00 | 1.03 | 121.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 07/13/2000 13:13 | 13:13:00 | 35.85 | 1453.00 | 13.00 | 0.84 | 111.77 |
| 07/13/2000 13:14 | 13:14:00 | 35.99 | 1454.00 | 14.00 | 0.70 | 103.86 |
| 07/13/2000 13:15 | 13:15:00 | 36.14 | 1455.00 | 15.00 | 0.55 | 97.00 |
| 07/13/2000 13:16 | 13:16:00 | 36.22 | 1456.00 | 16.00 | 0.47 | 91.00 |
| 07/13/2000 13:17 | 13:17:00 | 36.33 | 1457.00 | 17.00 | 0.36 | 85.71 |
| 07/13/2000 13:18 | 13:18:00 | 36.43 | 1458.00 | 18.00 | 0.26 | 81.00 |
| 07/13/2000 13:19 | 13:19:00 | 36.50 | 1459.00 | 19.00 | 0.19 | 76.79 |

Washington State Department of Health
Environmental Health Programs
Division of Drinking Water

# Ground Water Contamination
# Susceptibility Assessment Survey Form

Complete **one** form for **each** ground water source (well, wellfield, spring) used in your water system (photocopy as necessary).

---

**PART I: System Information**

Well owner/manager: Public Utility No. 1 of Skagit County

Water system name: Cedargrove

County: Skagit

Water system ID number: 11917 4 Source number: S02

Well depth: 170 feet

Source name: Well #2

WA well identification tag number: AET-03

❑ Well not tagged

Number of connections: 177 Population served: 168 customers

Township: 35N Range: 8E

Section: 15 ¼ ¼ Section: SWSE

Latitude/longitude (if available): 48.517885 / -121.750571

How was latitude/longitude determined?

_____Global positioning device_____survey_____topographical map
x_____other: Google Earth

*Please refer the instructions for details and explanations of all questions in Parts II through V.

**PART II: Well Construction and Source Information**

1) Date well originally constructed: __6_/_8__/_89__month/day/year

last reconstruction: ___/___/___month/day/year

❑ Information unavailable

2) Well driller: Ted Richardson, Dahlman Pump & Well Drilling Inc.

❑ Well driller unknown

3) Type of well: _x_ Drilled: ☑ rotary ❑ bored ❑ cable (percussion) ❑ Dug

___ other: ❑ spring(s) ❑ lateral collector (Ranney)

❑ driven ❑ jetted ❑ other:

4) Well report available ❑ Yes (attach copy to form) ❑ No

5) Average pumping rate: 115 (gallons/min)

Source of information Distribution Superintendent

If not documented, how was pumping rate determined?

❑ Pumping rate unknown

6) Is this source treated?

If so, what type of treatment:

❑ disinfection ☑ filtration ❑ carbon filter ❑ air stripper ❑ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

ATEC filtration system removes iron and manganese

7) If source is chlorinated, is a chlorine residual maintained: ☑ Yes ❑ No

Residual level: 1.0 ppm (At the point closest to the source.)

**PART III: Hydrogeologic Information**

1) Depth to top of open interval: [check one]

❑ <20 ft ❑ 20-50ft ❑ 50-100ft ☑ 100-200ft ❑ >200ft

❑ information unavailable

2) Depth to ground water (static water level):

❑ <20ft ☑20-50ft ❑ 50-100ft ❑ >100ft

❑ flowing well/spring (artesian)

How was water level determined?

☑ well log ❑ other _____

❑ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch) **or**

_____feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ❑ Yes ❑ No

5) Wellhead elevation (height above mean sea level): 222 feet

How was elevation determined? ❑ topographic map ❑ Drilling/Well Log ❑ altimeter

☑ other: LIDAR BareEarth 2016

❑ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_____x_____ evidence of a confining layer in well log

_____ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer**? ☑ Yes ❑ No

❑ information unavailable

7) Sanitary setback:

❑ < 100ft* ☑ 100-120ft ❑ 120-200 ft ❑ >200ft

* If less than 100ft, describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

☑ wellhead enclosed in a wellhouse

❑ controlled access (describe): _____

_____

❑ other uses for wellhouse (describe): _____

_____

❑ no wellhead control

9) Surface seal:

☑ 18 ft

❑ <18 ft (no Department of Ecology approval)

❑ <18 ft (Approved by Ecology, include documentation)

❑ depth of seal unknown

❑ no surface seal

10) Annual rainfall (inches per year):

❑ <10 in/yr ❑ 10-25 in/yr ☑ >25 in/yr

## PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 17,530,784 (gallons)

How was this determined?

☐ meter

❑ estimated: ❑ pumping rate (_____)

❑ pump capacity (_____)

☑ other: water right Qa max of 53.8 AC-FT per year

2) "Calculated Fixed Radius" estimate of ground water movement:

$r = \sqrt{Q\ t/\pi\ n\ H}$

Q = 17,530,784/ 7.481 = 2,343,375 cubic feet/year = pumping rate of well
n = .22 = aquifer porosity (unless known)
H = 10 feet = length of well screen
t = Time Interval (0.5, 1, 5,10)

6-month ground water travel time: 412 feet

1-year ground water travel time: 582 feet

5-year ground water travel time: 1302 feet

10-year ground water travel time: 1,841 feet

Information available on length of screened/open interval?

☑ Yes ❑ No

Length of screened/open interval: 10 feet

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6- month time of travel boundary?

☑ Yes ❑No (mark and identify on map)

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6-month time of travel boundary?

❑ Yes ☑No (mark and identify on map)

Comments: _____

_____

**PART V: Assessment of Water Quality**

1) **Regional sources of risk to ground water**:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five-year ground water travel time. If you do not know if one of the following is present, mark the "unknown" space.

| | 6-month | 1-year | 5-year | unknown |
|---|---|---|---|---|
| • likely pesticide application | | | | x |
| • stormwater injection wells | | | | |
| • other injection wells | | | | |
| • abandoned ground water well | | | | |
| • landfills, dumps, disposal areas | | | | |
| • known hazardous materials clean-up site | | | | |
| • water system(s) with known quality problems | | | | |
| • population density >1 house/acre | | | | |
| • residences commonly have septic tanks | x | x | x | |
| • Wastewater treatment lagoons | | | | |
| • sites used for land application of waste | | | | |

Mark and identify on map any of the risks listed above which are located within the 6-month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

If other recorded or potential sources of ground water contamination exist within the ten-year time of travel circular zone around your water supply, please describe:

2) **Source-specific water quality records**: For each type of test below, mark the row that applies to the sample results for this source. Consider all the sample results from the past 12 years. (MCLs are noted next to the specific test or listed in assistance package.)

A. **Nitrate:** (Nitrate MCL = 10 mg/l)

| | |
|---|---|
| Results greater than MCL | _____ |
| <2 mg/liter nitrate | x |
| 2-5 mg/liter nitrate | _____ |
| <5 mg/liter nitrate | _____ |
| Nitrate sampling records unavailable | _____ |

B. **VOCs:** (VOC detection level is 0.5 ug/l or 0.0005 mg/l)

| | |
|---|---|
| Results greater than MCL or SAL | x |
| VOCs detected at least once | x |
| VOCs never detected | _____ |
| VOC sampling records unavailable | _____ |

C. **EDB/DBCP:**

(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)

| | |
|---|---|
| EDB/DBCP detected below MCL at least once | _____ |
| EDB/DBCP detected above MCL at least once | _____ |
| EDB/DBCP never detected | x |
| EDB/DBCP tests required but not yet completed | _____ |
| EDB/DBCP tests not required | _____ |

D. **Other SOCs (Pesticides):**

| | |
|---|---|
| Other SOCs detected (pesticides and other synthetic organic chemicals) | _____ |
| Other SOC tests performed but none detected (list test methods in comments) | x |
| Other SOC tests not performed | _____ |

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:

EPA Method 515.4 for State Drinking Water Compliance in 2016 (Herbicides)

E. **Bacterial contamination:**

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records)? no

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source? no

Source sampling records for bacteria unavailable _____

## PART VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10-year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

☑ Yes ❑ No

Describe with references to map produced in Part IV:

The Concrete Sauk Valley Road intersects all time of travel zones; an associated roadside ditch runs approximately 115 feet north of the well (6-month time of travel zone) and extends through all zones. There is an unnamed type II fish bearing stream that runs west of the well about 375 feet, then turns and runs about 315 south of the well (5-year into 10-year time of travel zone).

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

❑ Yes ☑ No

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

☑ Yes ❑ No

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

❑ Yes ☑ No

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within…

| | YES | NO | unknown |
|---|---|---|---|
| <6-month travel time | | x | |
| 6 month—1 year travel time | | x | |
| 1—5 year travel time | | x | |
| 5—10 year travel time | | x | |

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within…

| | YES | NO | unknown |
|---|---|---|---|
| <1-year travel time | | x | |
| 1—5 year travel time | | x | |
| 5—10 year travel time | | x | |

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

FORM COMPLETED BY:

Wendy LaRocque 02/22/2024
Print Name Date

Signature

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

# WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 1
Updated: 02/13/2024
Printed: 2/27/2024
WFI Printed For: On-Demand
Submission Reason: Pop/Connect Update

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822 or email wfi@doh.wa.gov

| 1. SYSTEM ID NO. | 2. SYSTEM NAME | 3. COUNTY | 4. GROUP | 5. TYPE |
|---|---|---|---|---|
| 11917 4 | SKAGIT CO PUD - CEDARGROVE | SKAGIT | A | Comm |

| 6. PRIMARY CONTACT NAME & MAILING ADDRESS | 7. OWNER NAME & MAILING ADDRESS |
|---|---|
| MICHAEL R. FOX [MANAGER]<br>1415 FREEWAY DR<br>MOUNT VERNON, WA 98273 | SKAGIT COUNTY PUD 1<br>MICHAEL R. FOX<br>1415 FREEWAY DR<br>MOUNT VERNON, WA 98273<br>MANAGER |
| **STREET ADDRESS IF DIFFERENT FROM ABOVE** | **STREET ADDRESS IF DIFFERENT FROM ABOVE** |
| ATTN<br>ADDRESS<br>CITY STATE ZIP | ATTN<br>ADDRESS<br>CITY STATE ZIP |

| 9. 24 HOUR PRIMARY CONTACT INFORMATION | | 10. OWNER CONTACT INFORMATION | |
|---|---|---|---|
| Primary Contact Daytime Phone: (360) 848-4457 | | Owner Daytime Phone: (360) 848-4457 | |
| Primary Contact Mobile/Cell Phone: (360) 661-4032 | | Owner Mobile/Cell Phone: (360) 661-4032 | |
| Primary Contact Evening Phone: (xxx)-xxx-xxxx | | Owner Evening Phone: (xxx)-xxx-xxxx | |
| Fax: (360) 424-5440 | E-mail: fxx@skagitpud.org | Fax: | E-mail: fxx@skagitpud.org |

**11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)**

- ☐ Not applicable (Skip to #12)
- ☒ Owned and Managed
- ☐ Managed Only
- ☐ Owned Only

SMA NAME: SKAGIT COUNTY PUD 1 SMA Number: 103

**12. WATER SYSTEM CHARACTERISTICS (mark all that apply)**

- ☐ Agricultural
- ☐ Commercial / Business
- ☐ Day Care
- ☐ Food Service/Food Permit
- ☐ 1,000 or more person event for 2 or more days per year
- ☐ Hospital/Clinic
- ☐ Industrial
- ☐ Licensed Residential Facility
- ☐ Lodging
- ☐ Recreational / RV Park
- ☒ Residential
- ☐ School
- ☐ Temporary Farm Worker
- ☒ Other (church, fire station, etc.):

**13. WATER SYSTEM OWNERSHIP (mark only one)**

- ☐ Association
- ☐ City / Town
- ☐ County
- ☐ Federal
- ☐ Investor
- ☐ Private
- ☒ Special District
- ☐ State

**14. STORAGE CAPACITY (gallons)**

270,000

| 15 | 16 | 17 | 18 SOURCE CATEGORY | | | | | | | | | 19 USE | | | 20 | 21 TREATMENT | | | | | | 22 | 23 | 24 SOURCE LOCATION | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Source Number | SOURCE NAME<br>LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER.<br>Example: WELL #1 XYZ456<br>IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME<br>Example: SEATTLE | INTERTIE SYSTEM ID NUMBER | WELL | WELL FIELD | WELL IN A WELL FIELD | SPRING | SPRING FIELD | SPRING IN SPRINGFIELD | SEA WATER | SURFACE WATER | RANNEY / INF. GALLERY | OTHER | PERMANENT | SEASONAL | EMERGENCY | SOURCE METERED | NONE | CHLORINATION | FILTRATION | FLUORIDATION | IRRADIATION (UV) | OTHER | DEPTH TO FIRST OPEN TERVAL IN FEET | CAPACITY (GALLONS PER MINUTE) | 1/4, 1/4 SECTION | SECTION NUMBER | TOWNSHIP | RANGE |
| S01 | InAct 08/01/1991 WELL #1 | | X | | | | | | | | | X | | | | X | | | | | | 102 | 50 | NE SW | 14 | 35N | 08E |
| S02 | WELL # 2 AET033 | | X | | | | | | | | | X | | | Y | | X | X | | | | 155 | 262 | SW SE | 15 | 35N | 08E |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# WATER FACILITIES INVENTORY (WFI) FORM - Continued

| 1. SYSTEM ID NO. | 2. SYSTEM NAME | 3. COUNTY | 4. GROUP | 5. TYPE |
|---|---|---|---|---|
| 11917 4 | SKAGIT CO PUD - CEDARGROVE | SKAGIT | A | Comm |

| | ACTIVE SERVICE CONNECTIONS | DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS | DOH USE ONLY! APPROVED CONNECTIONS |
|---|---|---|---|
| **25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)** | | 175 | 311 |
| A. Full Time Single Family Residences (Occupied 180 days or more per year) | 166 | | |
| B. Part Time Single Family Residences (Occupied less than 180 days per year) | 9 | | |
| **26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)** | | | |
| A. Apartment Buildings, condos, duplexes, barracks, dorms | 0 | | |
| B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year | 0 | | |
| C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year | 0 | | |
| **27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)** | | | |
| A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units) | 0 | 0 | 0 |
| B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc. | 0 | 0 | 0 |
| **28. TOTAL SERVICE CONNECTIONS** | | 175 | 311 |

**29. FULL-TIME RESIDENTIAL POPULATION**

A. How many residents are served by this system 180 or more days per year? 420

| 30. PART-TIME RESIDENTIAL POPULATION | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. How many part-time residents are present each month? | | | | | | | | | | | | |
| B. How many days per month are they present? | | | | | | | | | | | | |

| 31. TEMPORARY & TRANSIENT USERS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month? | | | | | | | | | | | | |
| B. How many days per month is water accessible to the public? | | | | | | | | | | | | |

| 32. REGULAR NON-RESIDENTIAL USERS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population? | | | | | | | | | | | | |
| B. How many days per month are they present? | | | | | | | | | | | | |

| 33. ROUTINE COLIFORM SCHEDULE | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| 34. NITRATE SCHEDULE | QUARTERLY | ANNUALLY | ONCE EVERY 3 YEARS |
|---|---|---|---|
| (One Sample per source by time period) | | | |

**35. Reason for Submitting WFI:**

☐ Update - Change ☐ Update - No Change ☐ Inactivate ☐ Re-Activate ☐ Name Change ☐ New System ☐ Other _____

**36. I certify that the information stated on this WFI form is correct to the best of my knowledge.**

**SIGNATURE:** _____ **DATE:** _____

**PRINT NAME:** _____ **TITLE:** _____

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

# WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 032130

Water Right Permit No. _____

(1) OWNER: Name Skagit County PUD (Cedargrove) Address 1415 Freeway Dr. Mt Vernon Wa. 98273

(2) LOCATION OF WELL: County Skagit NW ¼ SE ¼ Sec. 15 T. 33 N., R. 8 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) Sauk Valley Rd. Concrete Wa. 98237 (Approx 4380 Sauk Valley

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

(4) TYPE OF WORK: Owner's number of well (if more than one) _____

Abandoned ☐ New well ☑ Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☐ Driven ☐ Reconditioned ☐ Rotary ☑ Jetted ☐

(5) DIMENSIONS: Diameter of well 8" inches. Drilled 185 feet. Depth of completed well 170 ft.

(6) CONSTRUCTION DETAILS: (+3 ft.)

Casing Installed: 8" Diam. from 0 ft. to 165'6" ft.
Welded ☑ _____" Diam. from _____ ft. to _____ ft.
Liner Installed ☐ _____" Diam. from _____ ft. to _____ ft.
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 ☐ 5' Extention Top & Bottom.
Manufacturer's Name Johnson
Type SS Model No. _____
Diam. 7 5/8 Slot size #40 from 155 ft. to 165 ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☑ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☑ No ☐ To what depth? 18' ft.
Material used in seal Concrete & Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

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

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 25' ft. below top of well Date 6-8-89
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (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? Aqua-Flow
Yield: 300 gal./min. with 76 ft. drawdown after 1 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 |
|---|---|---|---|---|---|
| Run. | 42.09 | 10min. | 38.9 | 1Hr. | 35.93 |
| Min. | 41.27 | 15min. | 38.08 | 1½Hr. | 35.54 |
| Min. | 40.47 | 30min. | 37.09 | 2Hr. | 35.4 |

Date of test 6-15-89

Bailer test _____ gal./min. with 100 ft. drawdown after _____ hrs.
Airlest 300+ gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes ☒ No ☐ Converse Engineering.

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers 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 |
|---|---|---|
| Brown Clay & Gravel | 0 | 33 |
| Gravel, Brown Clay-trace of Water | 33 | 55 |
| Cleaner gravel & Water | 55 | 75 |
| Brown Clay-trace of Water | 75 | 91 |
| Coarse Gravel, Water | 91 | 100 |
| Red Color Water | | |
| Grayish Color Water & Gravel | 100 | 140 |
| Brownish Color Water & Gravel | 140 | 180 |
| Silty Sand & Gravel | 180 | 185 |

Work started 6-5- 19 88 Completed 6-8- 19 89

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 Dahlman Pump & Well Drilling Inc. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

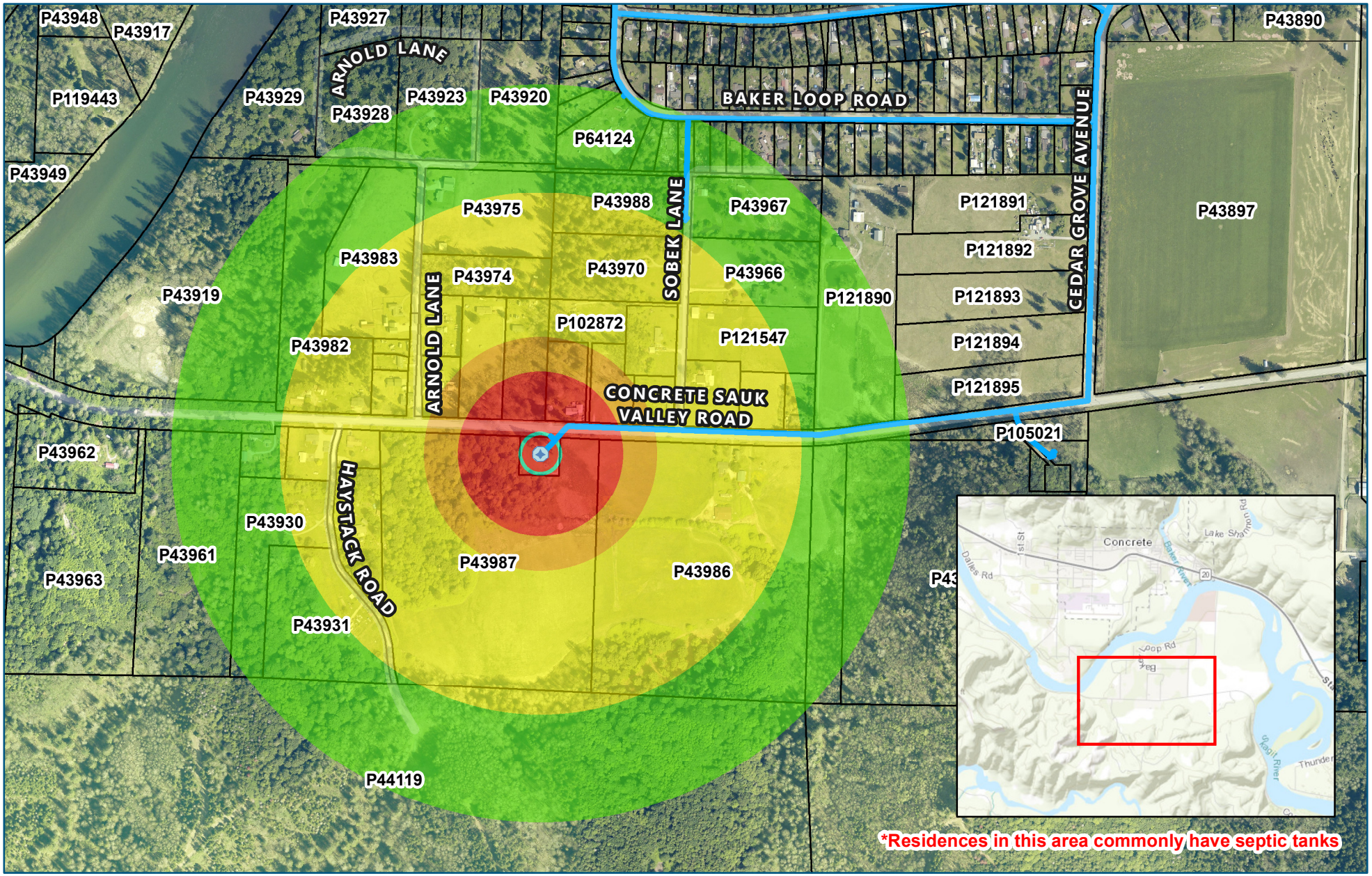
Address P O Box 422 Burlington Wa. 98233

(Signed) _____ (WELL DRILLER) License No. 0623

Contractor's Registration No. DAHLMPW123LC Date 6-9- 19 89

(USE ADDITIONAL SHEETS IF NECESSARY)

FCY 050-1-20 (10/87) -1329-




# Cedargrove Well

## Wellhead Protection Area

0 250 500 1,000 Feet

NAD 1983 StatePlane Washington North FIPS 4601 Feet
Author: wilson
2/16/2024

Wellhead
Water Mains
Parcels

**Time of Travel Zones**

- 6-Month
- 1-Year
- 5-Year
- 10-Year
- Sanitary Control

This map was created from available public records and existing map sources, not from field surveys. While great care was taken in this process, maps from different sources rarely agree as to the precise location of geographic features. The relative positioning of map features to one another results from combining different map sources without field verification.

The PUD #1 of Skagit County disclaims any warranty of merchantability or warranty of fitness of this map for any particular purpose, either expressed or implied. No representation or warranty is made concerning the accuracy, currency, completeness or quality of data depicted on this map. Any user of this map assumes all responsibility for use thereof, and further agrees to hold the PUD #1 of Skagit County harmless from any damage, loss, or liability arising from the use of this map.

Skagit PUD
PUBLIC UTILITY DISTRICT

Document Path: M:\ProjectMaps\chrisZemp\projectRequests\Well_Head_Buffers\02-16-2024\Cedargrove_TOT.mxd

## Inventory of Potential Contaminant Sources

## Well: Cedargrove

| **Zone 1 (6 month and 1 Year Time of Travel)** | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| 43937 | Septic tank | Sewage | I | Active |

| **Zone 2 (5 Year Time of Travel)** | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| | | | | |

| **Zone 3 (10 Year Time of Travel)** | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| P44119 | Sierra Pacific Land & Timber Company | Pesticides and/or herbicides | IV | Unknown |
| multiple | Septic tank | Sewage | I | Active |

**Action Plan:**

- Continue to monitor septic system tests on DOH website. Continue to test per Coliform Monitoring Plan.
- Continue to monitor herbicides and nitrates. 2016 testing did not detect herbicides. 2020 nitrate testing was greater than State Reporting Level (SRL) but far under the Trigger level.

Washington State Department of Health
Environmental Health Programs
Division of Drinking Water

# Ground Water Contamination
# Susceptibility Assessment Survey Form

Complete **one** form for **eac**h ground water source (well, wellfield, spring) used in your water system (photocopy as necessary).

---

**PART I: System Information**

Well owner/manager: Public Utility District No. 1 of Skagit County

Water system name: Marblemount

County: Skagit

Water system ID number: AA642 3 Source number: S01

Well depth: 215 feet

Source name: Well #1

WA well identification tag number: AHB-745

❑ Well not tagged

Number of connections: 32 Population served: 29 customers

Township: 35N Range: 10E

Section: 12 ¼ ¼ Section: SW SW

Latitude/longitude (if available): 48.5329021 / -121.45597

How was latitude/longitude determined?

_____Global positioning device_____survey_____topographical map
x_____other: Google Earth

*Please refer the instructions for details and explanations of all questions in Parts II through V.

**PART II: Well Construction and Source Information**

1) Date well originally constructed: 02_/21_/03_month/day/year

last reconstruction: ___/___/___month/day/year

❑ Information unavailable

2) Well driller: Hayes Drilling Inc., Bow, WA

❑ Well driller unknown

3) Type of well: _x_ Drilled: ☑ rotary ❑ bored ❑ cable (percussion) ❑ Dug

___ other: ❑ spring(s) ❑ lateral collector (Ranney)

❑ driven ❑ jetted ❑ other:

4) Well report available ☑ Yes (attach copy to form) ❑ No

5) Average pumping rate: 140 (gallons/min)

Source of information Distribution Superintendent

If not documented, how was pumping rate determined?

❑ Pumping rate unknown

6) Is this source treated? No

If so, what type of treatment:

❑ disinfection ❑ filtration ❑ carbon filter ❑ air stripper ❑ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is chlorinated, is a chlorine residual maintained: ❑ Yes ❑ No

Residual level:_____ (At the point closest to the source.)

**PART III: Hydrogeologic Information**

1) Depth to top of open interval: [check one]

❑ <20 ft ❑ 20-50ft ❑ 50-100ft ☑ 100-200ft ❑ >200ft

❑ information unavailable

2) Depth to ground water (static water level):

☑ <20ft ❑ 20-50ft ❑ 50-100ft ❑ >100ft

❑ flowing well/spring (artesian)

How was water level determined?

☑ well log ❑ other _____

❑ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch) **or**

_____feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ❑ Yes ❑ No

5) Wellhead elevation (height above mean sea level): 319 feet

How was elevation determined? ❑ topographic map ❑ Drilling/Well Log ❑ altimeter

☑ other: LIDR BareEarth 2016

❑ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_____ evidence of a confining layer in well log

_____x_____ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer**? ❑ Yes ❑ No

❑ information unavailable

7) Sanitary setback:

❑ < 100ft* ☑ 100-120ft ❑ 120-200 ft ❑ >200ft

* If less than 100ft, describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

☑ wellhead enclosed in a wellhouse

❑ controlled access (describe): _____

_____

❑ other uses for wellhouse (describe): _____

_____

❑ no wellhead control

9) Surface seal:

☑ 18 ft

❑ <18 ft (no Department of Ecology approval)

❑ <18 ft (Approved by Ecology, include documentation)

❑ depth of seal unknown

❑ no surface seal

10) Annual rainfall (inches per year):

❑ <10 in/yr ❑ 10-25 in/yr ☑ >25 in/yr

## PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 2,811,743 (gallons)

How was this determined?

☑ meter

❑ estimated: ❑ pumping rate (_____)

❑ pump capacity (_____)

❑ other: _____

2) Estimate of ground water movement:

In 2004, GeoEngineers performed Hydrogeologic Services for the District and produced the attached *Wellhead Protection Plan Report for Marblemount.* Time of Travel Zones were delineated using a numerical ground water computer model (MODFLOW) and a conceptual hydrogeologic model. The District has adopted the Time of Travel Zones from this report.

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6- month time of travel boundary?

☑ Yes ❑No (mark and identify on map)

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6-month time of travel boundary?

❑ Yes ☑No (mark and identify on map)

Comments: _____

PART V: Assessment of Water Quality

1) **Regional sources of risk to ground water**:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five-year ground water travel time. If you do not know if one of the following is present, mark the "unknown" space.

| | 6-month | 1-year | 5-year | unknown |
|---|---|---|---|---|
| • likely pesticide application | x | x | x | x* |
| • stormwater injection wells | | | | |
| • other injection wells | | | | |
| • abandoned ground water well | | | | |
| • landfills, dumps, disposal areas | | | | |
| • known hazardous materials clean-up site | | | | |
| • water system(s) with known quality problems | | | | |
| • population density >1 house/acre | | | | |
| • residences commonly have septic tanks | x | x | x | |
| • Wastewater treatment lagoons | | | | |
| • sites used for land application of waste | | | | |

Mark and identify on map any of the risks listed above which are located within the 6-month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

If other recorded or potential sources of ground water contamination exist within the ten-year time of travel circular zone around your water supply, please describe:

*There is a power line utility corridor starting within all time of travel zones that is likely sprayed with herbicides and mowed.

2) **Source-specific water quality records**: For each type of test below, mark the row that applies to the sample results for this source. Consider all the sample results from the past 12 years. (MCLs are noted next to the specific test or listed in assistance package.)

A. **Nitrate:** (Nitrate MCL = 10 mg/l)

| | |
|---|---|
| Results greater than MCL | _____ |
| <2 mg/liter nitrate | x |
| 2-5 mg/liter nitrate | _____ |
| <5 mg/liter nitrate | _____ |
| Nitrate sampling records unavailable | _____ |

B. **VOCs:** (VOC detection level is 0.5 ug/l or 0.0005 mg/l)

| | |
|---|---|
| Results greater than MCL or SAL | _____ |
| VOCs detected at least once | _____ |
| VOCs never detected | x |
| VOC sampling records unavailable | _____ |

C. **EDB/DBCP:**

(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)

| | |
|---|---|
| EDB/DBCP detected below MCL at least once | _____ |
| EDB/DBCP detected above MCL at least once | _____ |
| EDB/DBCP never detected | x |
| EDB/DBCP tests required but not yet completed | _____ |
| EDB/DBCP tests not required | _____ |

D. **Other SOCs (Pesticides):**

| | |
|---|---|
| Other SOCs detected (pesticides and other synthetic organic chemicals) | _____ |
| Other SOC tests performed but none detected (list test methods in comments) | x |
| Other SOC tests not performed | _____ |

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:

EPA Method 508.1 For State Drinking Water Compliance in 2012 (SOC Report)

E. **Bacterial contamination:**

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records)? yes

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source? no

Source sampling records for bacteria unavailable _____

## PART VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10-year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

☑ Yes ❑ No

Describe with references to map produced in Part IV:

There is a Type 3 stream that runs through all time of travel zones, a few feet northwest of the well.

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

❑ Yes ☑ No

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

☑ Yes ❑ No

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

❑ Yes ☑ No

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within…

| | YES | NO | unknown |
|---|---|---|---|
| <6-month travel time | | x | |
| 6 month—1 year travel time | | x | |
| 1—5 year travel time | | x | |
| 5—10 year travel time | | x | |

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within…

| | YES | NO | unknown |
|---|---|---|---|
| <1-year travel time | | x | |
| 1—5 year travel time | | x | |
| 5—10 year travel time | | x | |

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

See attached Wellhead Protection Plan (2004, GeoEngineers).

FORM COMPLETED BY:

Wendy LaRocque — 02/22/2024

Print Name — Date

Signature

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

# WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 1
Updated: 01/26/2024
Printed: 2/27/2024
WFI Printed For: On-Demand
Submission Reason: Pop/Connect Update

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822 or email wfi@doh.wa.gov

| 1. SYSTEM ID NO. | 2. SYSTEM NAME | 3. COUNTY | 4. GROUP | 5. TYPE |
|---|---|---|---|---|
| AA642 3 | SKAGIT CO PUD - MARBLEMOUNT | SKAGIT | A | Comm |

**6. PRIMARY CONTACT NAME & MAILING ADDRESS**

MICHAEL R. FOX [MANAGER]
1415 FREEWAY DR
MOUNT VERNON, WA 98273

**7. OWNER NAME & MAILING ADDRESS**

SKAGIT COUNTY PUD 1 MANAGER
MICHAEL R. FOX
1415 FREEWAY DR
MOUNT VERNON, WA 98273

**STREET ADDRESS IF DIFFERENT FROM ABOVE**

ATTN
ADDRESS
CITY STATE ZIP

**STREET ADDRESS IF DIFFERENT FROM ABOVE**

ATTN
ADDRESS
CITY STATE ZIP

**9. 24 HOUR PRIMARY CONTACT INFORMATION**

Primary Contact Daytime Phone: (360) 848-4457
Primary Contact Mobile/Cell Phone: (360) 661-4032
Primary Contact Evening Phone: (xxx)-xxx-xxxx
Fax: (360) 424-5440 E-mail: fxx@skagitpud.org

**10. OWNER CONTACT INFORMATION**

Owner Daytime Phone: (360) 848-4457
Owner Mobile/Cell Phone: (360) 661-4032
Owner Evening Phone: (xxx)-xxx-xxxx
Fax: E-mail: fxx@skagitpud.org

**11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)**

- ☐ Not applicable (Skip to #12)
- ☒ Owned and Managed
- ☐ Managed Only
- ☐ Owned Only

SMA NAME: SKAGIT COUNTY PUD 1 SMA Number: 103

**12. WATER SYSTEM CHARACTERISTICS (mark all that apply)**

- ☐ Agricultural
- ☒ Commercial / Business
- ☐ Day Care
- ☒ Food Service/Food Permit
- ☐ 1,000 or more person event for 2 or more days per year
- ☐ Hospital/Clinic
- ☐ Industrial
- ☐ Licensed Residential Facility
- ☐ Lodging
- ☒ Recreational / RV Park
- ☒ Residential
- ☐ School
- ☐ Temporary Farm Worker
- ☐ Other (church, fire station, etc.):

**13. WATER SYSTEM OWNERSHIP (mark only one)**

- ☐ Association
- ☐ City / Town
- ☐ County
- ☐ Federal
- ☐ Investor
- ☐ Private
- ☒ Special District
- ☐ State

**14. STORAGE CAPACITY (gallons)**

57,000

| 15 | 16 | 17 | 18 SOURCE CATEGORY | | | | | | | | | 19 USE | | | 20 | 21 TREATMENT | | | | | | 22 | 23 | 24 SOURCE LOCATION | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Source Number | SOURCE NAME<br>LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER.<br>Example: WELL #1 XYZ456<br>IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME<br>Example: SEATTLE | INTERTIE SYSTEM ID NUMBER | WELL | WELL FIELD | WELL IN A WELL FIELD | SPRING | SPRING FIELD | SPRING IN SPRINGFIELD | SEA WATER | SURFACE WATER | RANNEY / INF. GALLERY | OTHER | PERMANENT | SEASONAL | EMERGENCY | SOURCE METERED | NONE | CHLORINATION | FILTRATION | FLUORIDATION | IRRADIATION (UV) | OTHER | DEPTH TO FIRST OPEN TERVAL IN FEET | CAPACITY (GALLONS PER MINUTE) | 1/4, 1/4 SECTION | SECTION NUMBER | TOWNSHIP | RANGE |
| S01 | Well #1 AHB745 | | X | | | | | | | | | X | | | Y | X | | | | | | 163 | 150 | SW SW | 12 | 35N | 10E |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# WATER FACILITIES INVENTORY (WFI) FORM - Continued

| 1. SYSTEM ID NO. | 2. SYSTEM NAME | 3. COUNTY | 4. GROUP | 5. TYPE |
|---|---|---|---|---|
| AA642 3 | SKAGIT CO PUD - MARBLEMOUNT | SKAGIT | A | Comm |

| | ACTIVE SERVICE CONNECTIONS | DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS | DOH USE ONLY! APPROVED CONNECTIONS |
|---|---|---|---|
| **25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)** | | 24 | 94 |
| A. Full Time Single Family Residences (Occupied 180 days or more per year) | 18 | | |
| B. Part Time Single Family Residences (Occupied less than 180 days per year) | 6 | | |
| **26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)** | | | |
| A. Apartment Buildings, condos, duplexes, barracks, dorms | 0 | | |
| B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year | 0 | | |
| C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year | 0 | | |
| **27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)** | | | |
| A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units) | 0 | 0 | 0 |
| B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc. | 10 | 10 | 12 |
| **28. TOTAL SERVICE CONNECTIONS** | | 34 | 106 |

**29. FULL-TIME RESIDENTIAL POPULATION**

A. How many residents are served by this system 180 or more days per year? 47

| 30. PART-TIME RESIDENTIAL POPULATION | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. How many part-time residents are present each month? | | | | | | | | | | | | |
| B. How many days per month are they present? | | | | | | | | | | | | |

| 31. TEMPORARY & TRANSIENT USERS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month? | 781 | 952 | 789 | 1266 | 2916 | 2850 | 4175 | 5601 | 3570 | 2460 | 770 | 783 |
| B. How many days per month is water accessible to the public? | 31 | 28 | 31 | 30 | 31 | 30 | 31 | 31 | 30 | 31 | 30 | 31 |

| 32. REGULAR NON-RESIDENTIAL USERS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population? | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| B. How many days per month are they present? | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |

| 33. ROUTINE COLIFORM SCHEDULE | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| 34. NITRATE SCHEDULE | QUARTERLY | ANNUALLY | ONCE EVERY 3 YEARS |
|---|---|---|---|
| (One Sample per source by time period) | | | |

**35. Reason for Submitting WFI:**

☐ Update - Change ☐ Update - No Change ☐ Inactivate ☐ Re-Activate ☐ Name Change ☐ New System ☐ Other _____

**36. I certify that the information stated on this WFI form is correct to the best of my knowledge.**

**SIGNATURE:** _____ **DATE:** _____

**PRINT NAME:** _____ **TITLE:** _____

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

129459

10004

# WATER WELL REPORT
STATE OF WASHINGTON

Start Card No W153924
AHB 745

(1) OWNER Name SKAGIT CO PUD Address 1415 FREEWAY DR MT VERNON, WA 98273-

(2) LOCATION OF WELL County SKAGIT - SW 1/4 SW 1/4 Sec 12 T 35 N , R 11E WM
(2a) STREET ADDRESS OF WELL (or nearest address) MARBLEMOUNT

(3) PROPOSED USE MUNICIPAL

(4) TYPE OF WORK Owner's Number of well (If more than one) 1
NEW WELL Method ROTARY

(5) DIMENSIONS Diameter of well 8 inches
Drilled 218 ft Depth of completed well 215 ft

(6) CONSTRUCTION DETAILS
Casing installed 8 " Dia from +3 ft to 189 ft
WELDED " Dia from ft to ft
" Dia from ft to ft

Perforations 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
Manufacturer's Name JOHNSON
Type STAINLESS STEEL Model No
Diam 5 slot size 30 from 184 ft to 215 ft
Diam 5 slot size 0 from 163 ft to 184 ft

Gravel packed YES Size of gravel 8/12
Gravel placed from 166 ft to 215 ft

Surface seal YES To what depth? 18 ft
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water? Depth of strata ft
Method of sealing strata off

(7) PUMP Manufacturer's Name
Type H P

(8) WATER LEVELS Land-surface elevation above mean sea level ft
Static level 19 38 ft below top of well Date 02/25/03
Artesian Pressure lbs per square inch Date
Artesian water controlled by

(9) WELL TESTS Drawdown is amount water level is lowered below static level
Was a pump test made? YES If yes, by whom? HAYES DRILLING
Yield 298 gal /min with 32 8 ft drawdown after 72 hrs

Recovery data

| Time | Water Level | Time | Water Level | Time | Water Level |
|---|---|---|---|---|---|
| | | | | | |

Date of test
Bailer test gal/min ft drawdown after hrs
Air test 250 gal/min w/ stem set at 80 ft for 3 hrs
Artesian flow g p m Date
Temperature of water Was a chemical analysis made? YES

(10) WELL LOG

Formation Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change in formation

| MATERIAL | FROM | TO |
|---|---|---|
| BROWN SAND | 0 | 16 |
| BROWN GRAVEL SAND & WATER | 16 | 33 |
| BROWN SAND GRAVEL & WATER | 33 | 55 |
| BROWN SAND & WATER | 55 | 58 |
| BROWN SAND & SILT & WATER | 58 | 115 |
| BROWN COARSE SAND & WATER | 115 | 125 |
| BROWN GRAVEL SAND & WATER | 125 | 130 |
| BROWN FINE SAND & SILT | 130 | 155 |
| & WATER | 130 | 155 |
| BROWN SAND & WATER | 155 | |

RECEIVED
APR 0 2 2003
DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

'03 MAR 31 P1 05
DEPT OF ECOLOGY
FISCAL & BUDGET

Well site meets all sighting criteria under S.C.C. 12.48.090 and WAC 173-160based on information supplied by the owner or owner's authorized representative.

Work started 02/12/03 Completed 02/21/03

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 HAYES DRILLING, INC
(Person, firm, or corporation) (Type or print)

ADDRESS 5696 ERSHIG RD. BOW, WA

[SIGNED] [signature] License No 2189

Contractor's Registration No HAYESDI106J5 Date 03/20/03

07590

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

# Well Report Change Form

Record any changes made to the well report record on this form.
**Fields marked with an asterisk (*) are required.**
Ecology Well Trackers: Append this form to the well report image and file with the original well report.

This Well Report has been changed on: 10 / 23 / 2017
*Month *Day *Year

**Well Information/Location:**

*☐ Not in Notice of Intent System (NITS) *☒ Notice of Intent System (NITS) Log ID # 129459

*Regional Office: ☐ CRO ☐ ERO ☑ NWRO ☐ SWRO

*Well Type: ☒ Water Well ☐ Resource Protection Well

*Notice of Intent Number: W153924 *Unique Ecology Well ID Tag Number: AHB 745

Original Property Owner Name: Skagit Co. PUD

Well Site Street Address: _____ City: Marblemount County: Skagit Zip: _____

*Tax parcel number _____

*Township 35N *Range 01 *E ☒ or *W ☐ *Section 12 *in the SW ¼ of *SW ¼

Well Head Elevation _____ (feet above mean sea level)

**Reporting Lat/Long Measurements:**

Latitude _____ Decimal Degrees (valid range is 45.33186 to 49.11587)

Longitude _____ West Decimal Degrees (valid range is 116.91148 to 124.70419)

Horizontal Collection Method _____ Vertical Collection Method _____

Horizontal Collection Datum Type _____ Vertical Datum Type _____

**Original Reported Type of Work:**

*Well Construction: ☒ Well Decommissioning: ☐

*New Well ☐ Alteration of existing well ☐

Well Report Received Date: 3/31/2003 Well Completed Date: 2/21/2003

Well Diameter (inches): 8 Well Depth (feet): 215

**Water Level Details**

Static Water Level

Measured Level (below top of well) 19 feet , 38 inches

Date Measured 2/25/03 (e.g. 4/5/2012)

Flowing Artesian

Gallons Per Minute Equal To _____ g.p.m.

Artesian Pressure _____ p.s.i.

Date Measured _____ (e.g. 4/5/2012)

Artesian Water Controlled By _____ (e.g. cap, valve, etc.)

**Driller Information**

Driller License Number: 2189 Trainee License Number: _____ Other (specify): _____

**Change Information**

*Person Requesting Change: Joel Purdy Contact Phone Number: (253) 383-4940

*Reason For Change: Per attached email, well log had incorrect Range

*Tracker Signature: Arlene Kaufy

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

## Harris, Arlene (ECY)

**From:** Lynum, Mary (ECY)
**Sent:** Tuesday, October 23, 2012 11:58 AM
**To:** Joel W. Purdy
**Cc:** Harris, Arlene (ECY)
**Subject:** RE: Well Logs contact

Hello Joel,

I'm forwarding this to Arlene Harris in our Northwest Regional Office, she is the Well Report Tracker for that region and can access the file to make the change.

Thank you,
**Mary Lynum** | Assistant State Coordinator
Well Construction and Licensing Office
Water Resources Program | Department of Ecology
PO Box 47600 Olympia WA 98504-7600 | 360.407.6650

---

**From:** Joel W. Purdy [mailto:jpurdy@geoengineers.com]
**Sent:** Tuesday, October 23, 2012 11:55 AM
**To:** Lynum, Mary (ECY)
**Subject:** Well Logs contact

Hello,
I would like to report a location error for an important well:

Well ID = 356171
Well Unique ID Tag = AHB745
Owner = Skagit Co PUD
Location in database and on Well Log = T35N/R11E-12, SW ¼ of SW ¼

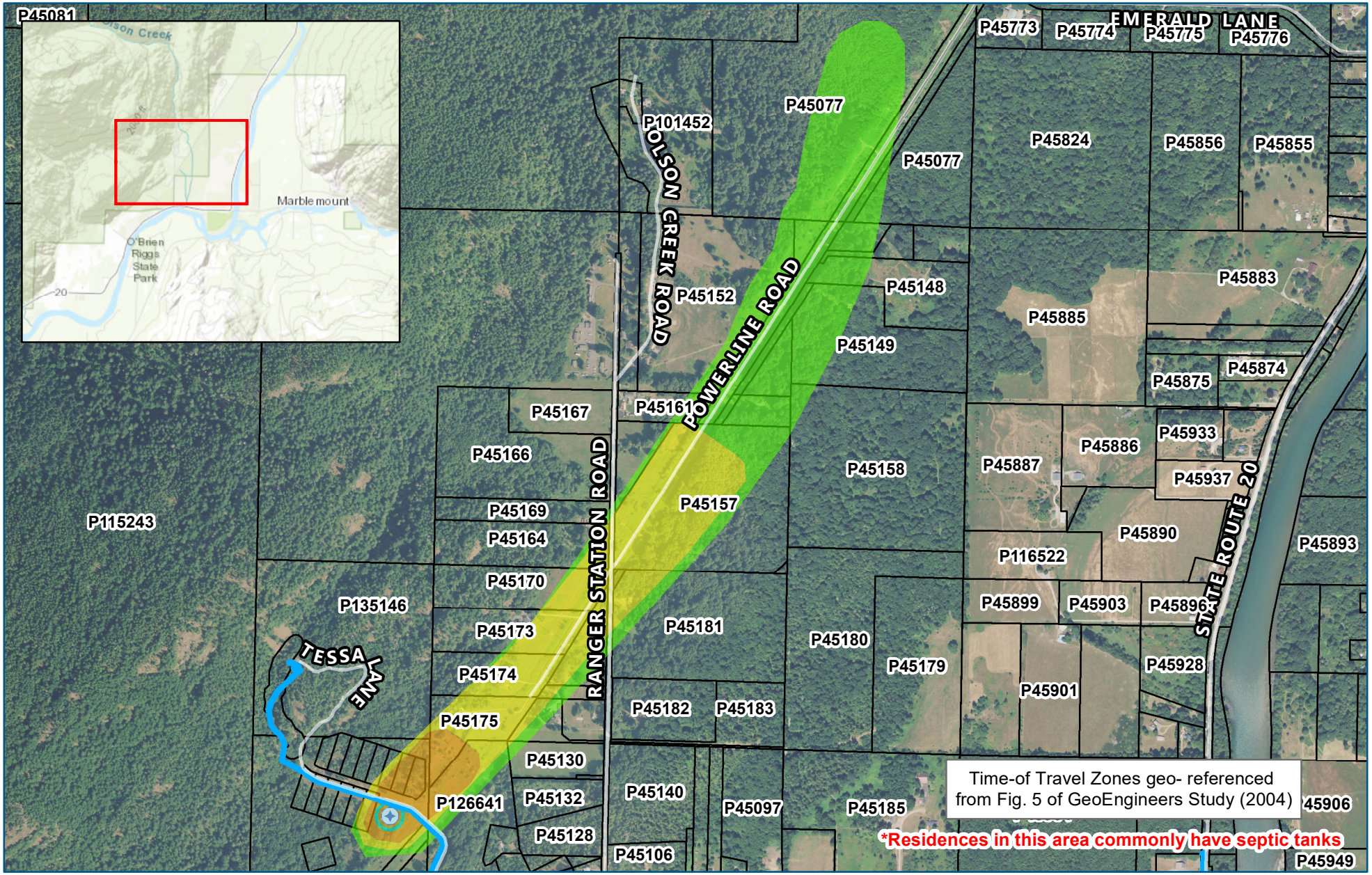
It should be in T35N/R10E-12, SW ¼ of SW ¼

Attached is some information from one of our reports showing the true location.

Thanks,
Joel

**Joel W. Purdy**
**Senior Hydrogeologist | GeoEngineers, Inc.**
**Telephone:** 253.383.4940
**Fax:** 253.383.4923
**Email:** jpurdy@geoengineers.com

1101 Fawcett Avenue, Suite 200
Tacoma, WA 98402
www.geoengineers.com




# Marblemount Well

## Wellhead Protection Area

0 250 500 1,000 Feet

NAD 1983 StatePlane Washington North FIPS 4601 Feet
Author: wilson
2/22/2024

Wellhead
Water Mains
Parcels

**Time of Travel Zones**

1-Year
5-Year
10-Year
Sanitary Control

This map was created from available public records and existing map sources, not from field surveys. While great care was taken in this process, maps from different sources rarely agree as to the precise location of geographic features. The relative positioning of map features to one another results from combining different map sources without field verification.

The PUD #1 of Skagit County disclaims any warranty of merchantability or warranty of fitness of this map for any particular purpose, either expressed or implied. No representation or warranty is made concerning the accuracy, currency, completeness or quality of data depicted on this map. Any user of this map assumes all responsibility for use thereof, and further agrees to hold the PUD #1 of Skagit County harmless from any damage, loss, or liability arising from the use of this map.

Skagit PUD
PUBLIC UTILITY DISTRICT

Document Path: M:\ProjectMaps\chrisZemp\projectsRequests\Well_Head_Buffers\Marblemount_TOT_V2.mxd

## Inventory of Potential Contaminant Sources

## Well: Marblemount

| Zone 1 (6 month and 1 Year Time of Travel) | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| P44119 | Rly Seattle Mun. powerline corridor | Pesticides and/or herbicides | IV | Unknown / presumed |
| multiple | Septic tank | Sewage | I | Active |

| Zone 2 (5 Year Time of Travel) | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| P45113 | Rly Seattle Mun. powerline corridor | Pesticides and/or herbicides | IV | Unknown / presumed |
| multiple | Septic tank | Sewage | I | Active |

| Zone 3 (10 Year Time of Travel) | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| P44119 | Rly Seattle Mun. powerline corridor | Pesticides and/or herbicides | IV | Unknown / presumed |
| multiple | Septic tank | Sewage | I | Active |

**Action Plan:**

- Continue to test per Coliform Monitoring Plan.
- Continue to monitor herbicides and nitrates. 2012 testing did not detect herbicides. 2020 nitrate testing was slightly greater than State Reporting Level (SRL) but far under the Trigger level.

# WELLHEAD PROTECTION PLAN
# MARBLEMOUNT, WASHINGTON

JULY 15, 2004

FOR
PUBLIC UTILITY DISTRICT NO. 1 OF
SKAGIT COUNTY

GeoEngineers

File No. 2402-012-03

GeoEngineers

July 15, 2004

Public Utility District No. 1 of Skagit County
415 Freeway Drive
Mount Vernon, Washington 98273

Attention: Greg Peterka

We are pleased to submit five copies of our "Wellhead Protection Plan, Marblemount, Washington." Our services were provided to the Public Utility District No. 1 of Skagit County (District) in general accordance with our services agreement dated October 16, 2001. Kenneth Kukuk of the District authorized our proposal on December 12, 2001.

We appreciate the opportunity to provide these services to the Public Utility District No. 1 of Skagit County. Please contact us if you have questions regarding this report.

Yours very truly,

GeoEngineers, Inc.

James A. Miller, PE, LHG
Principal Hydrogeologist

CSL:JAM:akf
ORCH:\2\2402012\03\FINALS\240201203WHP.doc

Attachment



8410 154th Avenue NE
Redmond, WA 98052
telephone 425.861.6000
facsimile 425.861.6050
website www.geoengineers.com

# Wellhead Protection Plan
# File No. 2402-012-03

## July 15, 2004

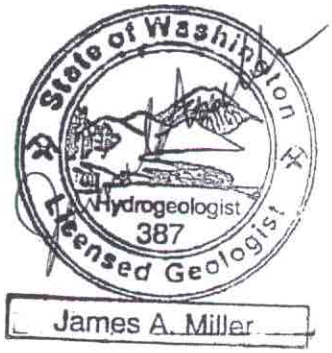
Prepared for:

Public Utility District No. 1 of Skagit County
415 Freeway Drive
Mount Vernon, Washington 98273
Attention: Greg Peterka

Prepared by:

GeoEngineers, Inc.
2924 Colby Avenue
Everett, Washington 98201

James A. Miller, PE, LHG
Principal Hydrogeologist

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# WELLHEAD PROTECTION PLAN
# MARBLEMOUNT, WASHINGTON
# FOR
# PUBLIC UTILITY DISTRICT NO. 1 OF SKAGIT COUNTY

## INTRODUCTION

### GENERAL

This report presents a Wellhead Protection Plan (WHPP) for the Public Utility District No. 1 of Skagit County's (herein referred to as the District) production well PW-1 located near the Town of Marblemount (Town), Washington. The location of PW-1 relative to surrounding physiographic features and nearby water supply wells is shown on the Vicinity Map, Figure 1. The approximate location of PW-1 in relationship to physical site features is shown on the Site Plan, Figure 2.

We understand that the District is currently in the process of constructing a Group A water system that will provide service for most of the Town and a proposed park to be located within the Marblemount Rural Village area. The proposed park will be located immediately south of the main commercial area of the Town, adjacent to the Skagit River. The water system will include a single production well (PW-1), a water storage tank and a limited distribution system to the Town and park.

GeoEngineers, Inc. previously provided hydrogeologic services to the District regarding the development of a preliminary groundwater flow model for the area in the vicinity of the Town. The preliminary groundwater flow model was used to evaluate potential production well locations with regard to wellhead protection issues. The details of our previous services are presented in our report to the District dated October 23, 1998. GeoEngineers also provided hydrogeologic services to the District regarding the installation and testing of PW-1. The details of our well installation and testing services are presented in our report to the District dated April 16, 2003. The information presented in this WHPP is based primarily on the research and field activities described in detail in the two reports referenced above.

Wellhead protection is required under Section 1428 of the 1986 Safe Drinking Water Act Amendments. The implementation of the Wellhead Protection Program in Washington State is the responsibility of the Washington State Department of Health (WSDOH). The intent of the wellhead protection program is to utilize resource management plans with an emphasis on pollution prevention to protect potable ground water-based drinking water systems. The Wellhead Protection Program operates in conjunction with other state and local programs, such as the Ground Water Management Program, Aquifer Protection Program, Critical Aquifer Recharge Area (CARA) Program, and point and non-point pollution control programs. The District's WHPP for PW-1 will form a part of future updates to the District's Comprehensive Water System Plan (WSP), and several portions of this report will be referenced or included in the updated WSP.

### PURPOSE AND SCOPE OF SERVICES

The purpose of wellhead protection is to protect drinking water sources in a proactive manner. This report provides technical information for the development of a wellhead protection plan for the District's well PW-1. The portion of the study presented in this report consisted of three tasks: (1) characterize the hydrogeologic setting of the water supply systems including areas of recharge, (2) delineate boundaries of the wellhead protection areas (WHPAs), and (3) identify existing and potential sources of groundwater

contamination within the boundaries of the WHPAs. Specifically, the scope of services completed for each task of this project is described below.

### *TASK 1. Hydrogeologic Setting*

1. Research existing information to develop an increased understanding of local/regional hydrogeology. The information included geologic maps, well logs, aquifer test results, water quality data, water supply bulletins, and other available information.
2. Conduct a hydrogeologic/geologic reconnaissance of the area in the vicinity of the production well.
3. Identify several nearby wells completed in the same aquifer(s) as the production well. The elevations of the wells were estimated relative to elevations presented on the 7.5-minute United States Geological Survey (USGS) quadrangle maps of the area.
4. Map hydrogeologic systems contributing water to the production wells based on literature research, field observations and interpretation of hydrogeologic conditions. Define and map interpreted recharge areas for the production wells on appropriately scaled maps of the area.
5. Evaluate regional flow gradients and flow directions in the aquifer system that supply the production well based on the collected information.
6. Use the existing hydrogeologic and aquifer testing data to evaluate the following:
   a. Aquifer transmissivity, hydraulic conductivity and specific storage/yield.
   b. Well specific capacity and radius of influence.
7. Estimate the groundwater flow direction and velocity for the production aquifer using available information, and information gained from previously completed aquifer tests.
8. Assess and rank the susceptibility of production well to potential contamination based on the physical and hydrogeologic setting of the well.
9. Assess probable deviation from a circular zone of contribution based on factors including the presence of other wells in the vicinity of the water supply systems, hydrogeologic boundaries and topography.

### *TASK 2. Boundary Delineation*

1. Estimate WHPA boundaries for the production wells using a numerical ground water computer model (MODFLOW) and a conceptual hydrogeologic model that considers local hydrogeologic conditions, topography and recharge conditions. One-year, five-year and ten-year time-of-travel (TOT) boundaries were evaluated based on the information obtained in Task 1.
2. Map the 1-, 5- and 10-year TOTs for the wells on appropriately scale USGS base maps.

### *TASK 3. Potential Contaminant Sources Inventory*

1. Conduct a visual reconnaissance of properties within the WHPA to identify and locate potential sources of contamination.
2. Provide a list of identified potential sources of groundwater contamination within the 1-year and 5-year TOT boundaries, and high-risk activities/facilities within the 10-year TOT boundary.

3. Assess and rank the relative risks associated with the potential sources of contamination identified during the study.

4. Notify appropriate regulatory agencies, government agencies, property owners and business operators regarding the locations of potential and actual sources of contamination.

## DESCRIPTION OF STUDY AREA

The study area includes portions of the Skagit and Cascade River Valleys near Marblemount, Washington. The study area begins approximately one mile southwest of the Town, near where Rocky Creek enters the Skagit River Valley, and extends to the northeast approximately three miles. The Skagit River flows from the northeast to the southwest through the study area. The Cascade River flows to the west and drains into the Skagit River approximately 0.5 miles southeast of the Town. The Skagit and Cascade River Valleys generally slope downward to the southwest and west, respectively, and range in elevation from about 300 feet above mean sea level (MSL) in the southern portion of the study area to approximately 400 feet near the northern and eastern limits of the study area.

Land use in the portion of the study area located outside of the Marblemount Rural Village consists of single-family residences on fairly large tracts of property, small business enterprises, farm and ranch land and undeveloped property. Land use within the Marblemount Rural Village, which is the main business area of the Town, is developed with several small businesses, including restaurants, grocery stores and gasoline service stations.

## WATER SYSTEM DESCRIPTION

### GENERAL

The District's water supply system consists of one production well (PW-1), a 60,000 gallon storage tank, and several miles of transmission and distribution lines. It is our understanding that the source and individual services will be metered. The water tank will be located on hillside approximately 1,500 feet north of PW-1.

We identified 37 wells located within an approximate one-mile radius of PW-1 based on our reconnaissance of the area and our review of water well reports on file with the Washington State Department of Ecology (Ecology). The Jones well (OW-1) is the closest well to PW-1 and is located approximately 310 feet south of PW-1 (Figure 2). The approximate locations of other nearby wells are shown on Figure 1. A construction schematic for PW-1 is presented on Figure 3. Information (water well reports, etc.) regarding the construction of the other nearby wells is presented in Appendix A. A brief description of the construction details for PW-1 follows.

### PW-1 INSTALLATION, CONSTRUCTION AND PERFORMANCE

- PW-1 was drilled to a total depth of 217 feet (elevation 99 feet) in February 2003 using drilling equipment owned and operated by Hayes Drilling of Bow, Washington.
- The wellhead is located at a ground surface elevation of approximately 316 feet as determined from a site survey completed by Azimuth Northwest, Inc.
- The completed steel casing rim of PW-1 is located approximately 1.5 feet above the ground surface (approximate elevation 317.5 feet).

- Eight-inch-diameter steel casing was installed to a depth of 195 feet.
- The boring encountered gray, fine gravel from the ground surface to a depth of approximately 20 feet. The gravel was underlain by predominately sand with some minor lenses of gravel and silt to a depth of approximately 122 feet.
- An approximately 20-foot-thick layer of water-bearing gravel and sand was encountered at a depth of approximately 122 feet.
- The gravel was underlain by relatively low permeability fine sand with silt to a depth of approximately 158 feet.
- An aquifer consisting of water-bearing fine to medium sand was encountered below a depth of 158 feet to the completion depth of the boring at 217 feet. The aquifer appears to be semi-confined by the overlying fine sand and silt unit (Figure 3).
- A 40-foot-long, 5-inch-diameter steel screen assemblage consisting of 10 feet of riser pipe, 30 feet of 30-slot well screen and a steel base plate was installed in the well between depths of 175 feet and 215 feet (Figure 3).
- The annulus space between the 8-inch-casing and the well screen assemblage was sand packed with 8/12 Colorado silica sand (Figure 3).
- The 8-inch-diameter steel casing was pulled up to a depth of approximately 185 feet, exposing the well screen.
- Static water was measured at a depth of approximately 18 feet shortly after the well was completed on February 25, 2003.
- GeoEngineers conducted a 3-day constant-rate pumping test in PW-1 in February 2003. Approximately 33 feet of water level drawdown was observed in the well after 3 days of pumping at a rate of approximately 300 gallons per minute (gpm). Details of the PW-1 pumping testing program are presented in our report to the District dated April 16, 2003.

## GEOLOGIC SETTING

### GENERAL

A detailed description of the geologic and hydrogeologic setting of the project area is presented in GeoEngineers' report dated October 23, 1998. The following is a summary of the information presented in that report.

### REGIONAL GEOLOGY

The Town is situated near the confluence of the Skagit and Cascade Rivers (Figure 1). The Skagit and Cascade Rivers are located within deeply eroded valleys in the western portion of the Cascade Range. The Skagit River extends from southern British Columbia, south and westward into the Puget Lowland. The Puget Lowland is a portion of a regional north-south trending topographic trough that extends from the Fraser River Valley in British Columbia to northern Oregon. Both the Skagit and Cascade River Valleys are contained by steep mountains that rise above the river valley bottoms to elevations greater than 3,000 feet in most locations. Bedrock is at or near the ground surface in most of the valley wall area located at elevations higher than 500 feet. The mountains that form the valley walls consist of a complex assemblage of volcanic, metamorphic, igneous and sedimentary rocks. The valley bottoms are underlain

by 200 to 400 feet of glaciofluvial deposits and recent river alluvium. Relatively impermeable bedrock underlies the glaciofluvial/alluvium at depth.

### GEOLOGIC HISTORY

The complex geologic conditions in the Skagit and Cascade River Valleys are the result of several episodes of mountain building, volcanism, interglacial erosion, scour by the glaciers, deposition of glacial and nonglacial sediments, and postglacial deposition and erosion. Several periods of glacial advance, alternating with nonglacial intervals, have occurred in the Puget Lowland during the past two million years. During each period of glacial advance, an ice sheet, originating in southwestern British Columbia, coalesced with ice from Vancouver Island and flowed south into the Puget Lowland (Crandell, 1965). Near the same periods of regional glaciation, alpine ice sheets flowed westward out of the ancestral Cascade Mountains and into the Skagit and Cascade River basins.

The last regional glaciation of the Marblemount area was known as the Fraser Glaciation. The last period of glacial advance in the study area was known as the Vashon Stade of the Fraser Glaciation. The Vashon ice sheet flowed south from Canada through the Puget Lowland and locally extended into and across various major drainages, including the Skagit River. At its maximum extent, approximately 15,000 years ago, the glacial ice was likely more than 2,000 feet thick in the vicinity of the study area. The Vashon ice sheet likely receded from the area approximately 12,000 to 13,000 years ago. Erosion and deposition during and following the Vashon Stade have resulted in the modern topographic features of the Skagit River Valley.

### GEOLOGIC UNITS

The prevalent geologic units in the study area include recent alluvial sand and gravel and glaciofluvial sand and gravel. The alluvial material within the study area predominately consists of moderately sorted cobbles, gravel and sand recently deposited by the nearby rivers and streams. The recent fluvial material is likely on the order of 100 feet thick in the study area. The fluvial material is likely underlain by glaciofluvial outwash consisting of sandy and silty gravel that was deposited by meltwater streams flowing off the glacial ice sheets.

## HYDROGEOLOGIC SETTING

### GENERAL

Our review of available information for the study area, site observations and our experience in the area indicate that the regional aquifer present in the study area is an unconfined to semi-confined aquifer with static water level typically located at depths from approximately 20 to 50 feet below ground surface. Other water-bearing zones may exist within the deeper sediments of the valleys and bedrock margins. However, most of the wells completed within the study area, including PW-1, appear to be completed within the unconfined to semi-confined aquifer. The discussions in the remaining sections of this report focus on evaluating the hydrogeologic characteristics of the unconfined to semi-confined alluvial aquifer system with regard to groundwater supply development and wellhead protection issues.

## REGIONAL ALLUVIAL AQUIFER

### *General*

The regional aquifer in the vicinity of Marblemount is an unconfined to semi-confined aquifer located within the alluvium and glaciofluvial sediments. The aquifer consists of sand and gravel deposits that are interbedded with minor lenses of silt and clay. The aquifer appears to be present in at least the upper 200 feet of the Skagit and Cascade River Valleys. The aquifer appears to be locally confined by overlying less permeable zones in areas near the margins of the valley like in the immediate vicinity of PW-1. The general direction of groundwater flow within the aquifer is shown on Figure 4.

### *Aquifer Hydraulic Boundaries and Groundwater Flow Direction*

Hydrogeologic boundaries define the physical or hydraulic limits of an aquifer system. Hydrogeologic boundaries can be low permeability units such as clay and silt that restrict flow, or relatively impermeable bedrock. The boundaries also can be stream channels that intersect the aquifer or topographic conditions that separate aquifers into independent hydrogeologic basins. Defining the boundaries of an aquifer requires locating aquifer recharge and discharge areas. The following is a brief description of the boundaries and groundwater flow direction of the aquifer in the study area.

- The aquifer is bounded on the margins of the valleys by the relatively impermeable bedrock.
- Subsurface information presented in water well reports for wells completed in the aquifer and geologic mapping indicate that the saturated portion of the aquifer is likely at least 200 feet in most of the study area.
- The aquifer appears to have some degree of hydraulic continuity with the Skagit and Cascade Rivers. The rivers likely act as barriers to shallow groundwater flow within the aquifer.
- Groundwater appears to flow generally to the south and southwest in the Skagit River Valley and from east to west in the Cascade River Valley, based on measured and estimated static water levels in wells completed within the aquifer. Groundwater may locally flow away from the margins of the valleys in areas where a significant amount of groundwater recharge is occurring from stream flow into the valley. However, it is likely that groundwater flowing away from the margins of the valleys turns and flows down valley in a relatively short distance.
- The water table surface of the aquifer has a hydraulic gradient (slope) of approximately 0.002 (11 feet per mile) in the Skagit River Valley north of the Town, 0.004 (21 feet per mile) in the Cascade River Valley, and 0.003 (16 feet per mile) in the Skagit River Valley southwest of the Town.
- The aquifer likely receives most of its recharge directly from precipitation (rain and snow) falling on the valley bottoms and a less amount from the infiltration of surface water runoff off the nearby hills and mountains.
- The aquifer likely discharges to the Skagit and Cascade Rivers.

### *Aquifer Hydraulic Conductivity and Transmissivity*

Hydraulic conductivity (K) is a measure of the rate at which water can move through an aquifer and is dependent on the size, shape and arrangement of soil particles in the aquifer. Aquifer transmissivity (T) is a measure of the amount of water that can be transmitted horizontally by the full saturated thickness of the aquifer under a hydraulic gradient of 1 and is related to hydraulic conductivity by the following equation.

$$T = Kb$$

Where:

K = Hydraulic Conductivity (ft/d)
T = Transmissivity ($ft^2$/d)
b = Aquifer thickness (ft)

An estimate of hydraulic conductivity and/or transmissivity is useful in determining an aquifer's potential productivity. As described in our October 23, 1998 report, a review of well pumping information present on water well reports for wells is the project area indicates that the aquifer transmissivity ranges between roughly 5,000 square feet per day ($ft^2$/d) and 70,000 $ft^2$/d and hydraulic conductivity ranges between 5 feet per day (ft/d) and roughly 1,000 ft/d. Aquifer parameter testing of PW-1 indicated a transmissivity value of approximately 2,500 $ft^2$/d and a hydraulic conductivity value of approximately 50 ft/d (GeoEngineers, April 16, 2003).

### *Groundwater Flow Velocity*

The average linear velocity of groundwater in the immediate vicinity of PW-1 was estimated using the following formula:

$$Vx = \frac{1}{Ne} Ki$$

Where:

Vx = average linear velocity of groundwater (ft/d)
Ne = effective porosity of the aquifer (dimensionless)
K = aquifer hydraulic conductivity (ft/d)
i = aquifer hydraulic gradient or water table slope (dimensionless)

The average linear groundwater velocity in the vicinity of PW-1 is approximately 1.6 feet per day based on an average K value of 150 ft/d, average hydraulic gradient of 0.0026 and average effective porosity of 0.25. Groundwater velocities would be slightly higher near the production wells during pumping resulting from a corresponding increased hydraulic gradient.

## WHPA DELINEATION METHOD

### GENERAL

WHPAs can be delineated using several different methodologies. These methods, in order of increasing sophistication, include the calculated fixed radius (CFR), analytical calculations, hydrogeologic mapping and numerical groundwater flow modeling. The WHPAs for the District's production well were delineated using a numerical groundwater flow model. This modeling approach in the context of defining a WHPA will represent the aquifer systems as closely and as conservatively as possible given the amount of geologic and hydrogeologic information currently available.

### GROUNDWATER FLOW MODEL

Groundwater flow characteristics and the various preliminary wellhead protection areas delineated for this project were estimated using the three dimensional finite difference code MODFLOW created by the USGS (McDonald and Harbaugh, 1988). The pathlines used to define the preliminary wellhead

protection areas were created by MODPATH written by Pollack (1989) of the USGS. The three-dimensional modeling platform used for both MODFLOW and MODPATH is VISUAL MODFLOW created by Guiger and Franz (1996) of Waterloo Hydrogeologic, Inc. The regional numerical model of the upper Skagit River Valley simulates steady state conditions in general accordance with ASTM Standards D 5447, D 5490, D 5609, and D 5610. The model is three-dimensional, with one layer, and includes constant head, river, general head and no-flow boundaries. The aquifer layer has various hydraulic conductivity zones. Parameters that are used as input to the program include: (1) number of pumping wells and locations, (2) well pumping rates, (3) groundwater head values, (4) aquifer effective porosity, (5) aquifer hydraulic conductivity, (6) aquifer thickness, and (7) aquifer boundary conditions. The following is a summary of the assumptions used in the groundwater flow model. A more detailed description of the groundwater flow model is presented in Appendix B.

- PW-1 is completed at a depth of approximately 215 feet and would be pumped at a maximum continuous rate of 150 gpm. These assumptions are conservative because it is likely the production well will normally be pumped at an average rate less than 100 gpm for approximately 6 to 8 hours per day.
- Groundwater flows in roughly the same direction as the slope of the surface topography in the valleys based on water level information presented on water well reports for the area.
- The hydraulic gradient of the aquifer ranges from approximately 0.002 to 0.004.
- The aquifer effective porosity was assumed to be 0.25.
- The aquifer hydraulic conductivity was assumed to range from approximately 50 ft/d to approximately 1,200 ft/d based on aquifer test information and variations in subsurface conditions described in water well reports for wells completed within the aquifer.
- The total aquifer thickness was assumed to range from less than 50 feet on the margins of the valleys to a maximum thickness of approximately 300 feet in the middle portion of the Skagit River Valley.
- The aquifer is bounded by valley walls comprised of impermeable bedrock that constitutes a no-flow boundary.
- The aquifer is in hydraulic continuity with and discharges to the Skagit and Cascade Rivers within the study area.
- The aquifer is mainly recharged from the direct infiltration of precipitation and to a lesser extent from infiltrated surface water runoff. Annual recharge to the aquifer from the infiltration of precipitation ranges from approximately 50 inches to 70 inches within the study area.

For model calibration purposes, the model output was compared with groundwater head values estimated in several wells that were field located and had available water well reports during the course of this study. A relatively good correlation was obtained between observed and calculated head values under steady-state conditions indicating a reasonable degree of calibration for the model (Appendix B.).

The previously described groundwater pumping rate was used in the calibrated model to calculate the 1-, 5-, and 10-year TOT for the production well. The TOT boundaries calculated using the groundwater flow model for the production wells are shown in the Wellhead Protection Area Map, Figure 5.

It should be noted that the groundwater model domain for this project encompasses an area greater than 40 square miles. The limited calibration data for this study indicates that the model is a reasonable

representation of regional groundwater flow through the study area. However, because of the size of the model domain and the limited information on groundwater levels and aquifer characteristics, the model may not reflect minor local variations in groundwater flow direction. The construction of a more detailed model that attempts to consider potential local variations in groundwater flow direction and velocity was beyond the scope of this project. However, the groundwater flow model constructed and calibrated for this project is sufficient to delineate WHPAs for the production well, in our opinion.

## REGULATORY REVIEW AND LAND USE/CONTAMINANT INVENTORY

### GENERAL

The purpose of regulatory review and land use/contaminant inventory is to identify the presence or likely presence of hazardous substances or land use activities that could result in a release of hazardous substances or otherwise cause an adverse impact to the water quality of the aquifer within the WHPAs. A search of available environmental records was conducted to meet the specific requirements of the ASTM Standard Practice for Environmental Site Assessments. The regulatory review did not identify any potential sources of chemical contamination within the identified WHPAs.

Current land use in the vicinity of Marblemount includes single-family residences located on generally acre or larger parcels of property, small farms/ranches and forested/undeveloped property. Land use within the Marblemount Rural Village area includes light commercial and residential. Highway 20, which passes through the study area, is the most heavily traveled road in the area. Potential contamination sources in the study area include: underground storage tanks (UST), traffic accidents, septic drainfields, home heating oil tanks, agricultural/ranching activities, runoff, and improperly abandoned wells. A further discussion of these potential sources of contamination with regard to the District well is presented in later sections of this report.

### SANITARY SURVEY OF WELL SITE

#### *General*

A survey of the District's PW-1 well site was conducted in February 2003 by a representative of GeoEngineers to evaluate the condition of the well and the susceptibility of the well to contamination related to well construction deficiencies. The survey consisted of the following activities:

- A visual inspection of the well site to document well construction details.
- A review of construction information for the well to evaluate proper construction and the presence/absence of surface seals.
- A visual inspection of the area within an approximate 100-foot radius of the wellhead to identify any potential surface sources of contamination.

#### *Site Survey*

Production well PW-1 is located approximately 1,400 feet northwest of the Skagit River as shown on Figure 1. The southwest-northeast trending Seattle City Light Company power transmission line easement is located approximately 120 feet south of the wellhead (Figure 2). The area in the immediate vicinity of the well was undeveloped and generally forested at the time of our site visit. Well construction

information for PW-1 indicates that the well was constructed with an 18-foot sanitary surface seal (Figure 3). The PW-1 wellhead will be contained within a small, lockable wellhouse when construction is completed and prior to the water system being put into use. Furthermore, the area within 100 feet of the well will be generally covered with grass and/or gravel and sloped in a manner that allows surface water runoff to drain away from the wellhead.

We understand that a 14-lot residential development is planned to be constructed just north and west of the well site (Figure 2). Domestic water will be supplied to the development by the District's water system and each lot will have an individual septic system/drainfield. Access to the development and the District's production well will be via a small gravel road that will pass no closer than 100 feet to PW-1 on the east and north (Figure 2).

## LAND USE

The delineated wellhead protection area for the District's well includes portions of Skagit County. Permitted land use within the County is described in the Skagit County Zoning Code. The delineated wellhead protection area for PW-1 is zoned rural residential.

## VISUAL SURVEY

Representatives of GeoEngineers conducted a visual survey of the WHPA in February 2003. Land use within the identified wellhead protection areas included roadways, residential, agricultural, and power transmission lines. We did not identify any land use activities that were inconsistent with the zoning areas in the delineated WHPAs.

## POTENTIAL SOURCES OF CONTAMINATION

### *General*

Potential sources of groundwater contamination are generally grouped into two categories: point and nonpoint sources. Point sources usually have specific fixed locations, such as USTs, facilities that store or utilize hazardous substances, landfills and single-family septic systems. The release of contamination from point sources usually occurs during a specific time period. Nonpoint sources usually occur over large areas and can be relatively continuous sources of contamination. Surface water runoff from streets and fertilizer applications are examples of nonpoint sources of contamination.

Land use in the WHPA is mostly undeveloped property with some agricultural, power transmission lines and residential. Items of concern with regard to potential groundwater contamination within the WHPA include septic systems; USTs, home heating oil tanks; agricultural product (fertilizer, herbicide, pesticide and/or fungicide) use; traffic accidents; contaminated runoff from road pavement and improperly abandoned wells. The District has notified various groups, agencies and property owners affected by the WHPA regarding the WHPA boundaries in accordance with WAC-246-290-135 (4)(c). A list of the groups, agencies and property owners notified by the District and copies of sample notification letters are presented in Appendix D. The following is a brief discussion of the potential sources of contamination identified in the WHPA.

### *Septic Systems*

Information provided by the District and our reconnaissance of existing land use indicates that the identified WHPA is serviced by on-site sewage systems, primarily septic tanks and drainfields. Domestic

and community septic systems are frequent point sources of contaminants in areas of heavy housing density and where shallow groundwater is present. Contaminants commonly associated with septic system effluent include nitrate, nitrite, ammonia, chloride, bacteria and viruses.

### *Underground Storage Tanks*

Ecology UST and Leaking UST lists indicate that several USTs are located at the North Cascade Park Service facility near the northern end of Ranger Station Road, approximately one mile northeast of PW-1. The USTs present a significant potential source of petroleum contamination to nearby, downgradient wells. It should be noted that petroleum hydrocarbons degrade readily in shallow aquifer systems similar to the regional aquifer located beneath the study area. In our experience, it is unlikely that a release of petroleum hydrocarbons from the USTs would affect water quality approximately 1,000 to 2,000 feet downgradient of the release, based on the hydrogeologic setting of the study area. Ken Willis of the SCDH indicated that at least one of the USTs located at the Park Service facility has had a confirmed release of petroleum hydrocarbons in the past.

### *Home Heating Oil Tanks*

Releases of contaminants from home heating oil tanks can be a significant point source for groundwater contamination. We did not identify any existing home heating oil tanks within the identified WHPA during our reconnaissance of the areas. However, it is possible that some of the existing homes in the rural areas of the WHPA have small (550 gallons or less) home heating oil tanks. The possibility of a release of contaminants from one or more of the heating oil tanks effecting groundwater quality in the vicinity of the wells exists.

### *Agricultural Products*

The areas where agricultural products (fertilizer, pesticides, herbicide and fungicide) are frequently applied can become nonpoint sources of contaminants where shallow groundwater is present. Minor portions of the WHPA are currently used for agricultural purposes where fertilizers, pesticides, herbicides and/or fungicides are likely applied routinely. Furthermore, it is possible the Seattle City Light uses agricultural products to control vegetation within the nearby power line right-of-way.

### *Traffic Accidents*

Spills of hazardous materials caused by traffic accidents are a potential source of groundwater contamination. It is unlikely there are any statistics available regarding accidents and/or the types and volumes of hazardous materials transported on portions of the roads located within the identified WHPA. However, the possibility of an accident occurring on roads within the WHPA that would result in a release of hazardous material does exist. Furthermore, it is probable that, because of the absence of a storm water runoff containment system in the WHPA, the hazardous materials would be released to the relatively permeable ground surface.

### *Surface Water Runoff*

Surface water runoff from road surfaces is a common nonpoint source of groundwater contamination for shallow aquifers. Storm sewers that collect runoff from road surfaces greatly reduce the volume of runoff that can potentially contaminate groundwater. Contaminants commonly associated with surface water runoff include petroleum hydrocarbons, volatile organic compounds, semi-volatile organic compounds

and metals. It is our understanding that the roads located within the identified WHPA do not have lined drainage ditches and they do not drain to a storm sewer system.

### *Improperly Abandoned Wells*

Improperly abandoned wells can be conduits for potential surface sources of contamination to reach deep aquifers in a relatively short period of time. Furthermore, if the well is completed within two or more aquifers the well can allow contamination to travel from one aquifer unit to another. We reviewed water well reports on file with Ecology for wells located in the vicinity of the WHPA. The water well reports indicated that the wells were completed within individual water-bearing zones and with proper surface seals.

## CONCLUSIONS

### AQUIFER SUSCEPTIBILITY

### *General*

The regionally extensive unconfined to semi-confined aquifer is separated from the ground surface in the vicinity of PW-1 by approximately 20 feet of relatively permeable sand and gravel with minor amounts of silt. The moderate to high permeability of the overlying soils results in a rapid travel time for potential sources of contamination to the aquifer. Based on the present land use activities in the WHPA, surface/subsurface soil conditions and the hydrogeologic setting of the aquifer, it is our opinion that the aquifer has a moderate susceptibility to be affected by surface sources of contamination.

The relatively high permeability of the aquifer and the resultant high velocities of groundwater flow through the aquifer would act to significantly dilute an infiltrating plume of potential contaminants. Therefore, it is likely that only significant releases of potential contaminants would be detectable in groundwater within a few hundred feet from the source of the release. This opinion is supported by the failure of Skagit County Department of Health to detect significant concentrations of potential contaminants in groundwater samples obtained from shallow wells located in proximity to potential contaminant sources in the study area over the past several years (Violante, 1992). The following is a brief discussion of the susceptibility of the aquifer to the identified potential contaminant sources.

### WELL SUSCEPTIBILITY TO CONTAMINATION

The general susceptibility of the subject aquifer to surface sources of contamination has been discussed in previous sections of this report. However, the construction of the production well has an effect on the susceptibility of the well to contamination. A well without a properly constructed and installed surface seal is more susceptible to surface contamination than one with a proper surface seal. Other factors that influence the susceptibility ranking of the well are well depth, depth to static water level and the hydrogeologic setting of the well. Production well PW-1 as assumed to have a low susceptibility to surface sources of contamination based on its surface seal and well construction details.

### RISK ASSESSMENT

### *General*

Developing a ranking of risks associated with the identified potential sources of contamination located within the WHPA is an integral part of the WHPP. However, quantifying risk to public health is difficult

from a technical and public acceptance point of view. For the purpose of this study, the risks of the potential contaminant source affecting water quality within PW-1 were ranked based on the following: (1) aquifer susceptibility, (2) well construction, (3) distance from source to the well, (4) contaminant volume, (5) contaminant toxicity and (6) contaminant persistence. A summary of the risk ranking criteria used in this study is presented in Table 1. A brief discussion of the risk ranking procedure used for this risk assessment is presented below.

**Table 1 – Summary of Risk Ranking Criteria**

| Aquifer Susceptibility[1] | | Well Construction[2] | | Source Distance | | Contaminant Characteristics | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Volume[3] | | Toxicity[4] | | Persistence[5] | |
| Low | 1 | Good | 1 | 10-year TOT | 1 | Low | 1 | Low | 1 | Low | 1 |
| Moderate | 5 | Moderate | 5 | 5-year TOT | 5 | Moderate | 5 | Moderate | 5 | Moderate | 5 |
| High | 10 | Poor | 10 | 1-year TOT | 10 | High | 10 | High | 10 | High | 10 |

| Total Score | Risk |
|---|---|
| 0-25 | Low |
| 26-44 | Moderate |
| >45 | High |

Notes:

(1) See text for description of aquifer susceptibility

(2) Good indicates well with at least an 18-foot surface seal and well screen depth greater than 75 feet. Moderate indicates wells with nor surface seal and well screen depths greater than 75 feet. Poor indicates shallow wells with no surface seal.

(3) Low indicates volumes generally less than 600 gallons. Moderate indicates volumes between 600 and 2,000 gallons. High indicates volumes greater than 2,000 gallons.

(4) Low indicates non-carcinogenic compounds. Moderate indicates suspected carcinogenic compounds. High indicates carcinogenic compounds

(5) Low indicated compound are generally biodegradable. Moderate indicates compounds are moderately biodegradable. High indicates compounds are generally not biodegradable.

### *Risks to the Production Well*

**Ranking Criteria.** For the purposes of this assessment, wells completed with properly designed surface seals and screened at depths greater than 75 feet are considered to be in good condition with a low susceptibility to surface contamination. Wells that do not have surface seals and screened at depths greater than 75 feet are considered to be moderately susceptible to surface sources of contamination. Shallow wells with no surface seals are considered to be highly susceptible to surface sources of contamination.

The distance between the potential source of contamination and the wellhead was also considered in the risk assessment. Contamination sources located in the 1-year TOT areas were given a higher risk score than those located in the 5-year, 10-year and buffer areas.

The potential volume of the contaminant either applied to the ground intentionally (septic discharge, agricultural products, etc.) or as an unintentional release (spill, accident, etc.) was considered in the risk assessment by estimating the potential volume of the contaminant. This was relatively easy to do for

point sources such as traffic accidents but became fairly arbitrary when used for non-point sources such as contamination from septic systems and fertilizer applications. For the purposes of this risk assessment, the potential volume of sewage disposal was considered to low in the wellhead protection due to the relatively low residential development potential. The volume of agricultural products (fertilizers, pesticides and herbicides) was considered to be low in the WHPA. The volume of surface water runoff was considered to be low because of a relatively low amount of impervious cover.

If the potential contaminant source likely contained compounds that are known carcinogens such as gasoline (benzene) then the source was ranked high in potential toxicity. If the potential contaminant source likely contained compounds that are suspected carcinogens, then it was given a moderate ranking. If the contaminate likely does not contain carcinogenic compounds it was given a low ranking. If the potential contaminant source is generally biodegradable and is highly susceptible to chemical adsorption in the subsurface environment (diesel, heating oil, gasoline), then the source was ranked low in chemical persistence. If the potential contaminant was moderately biodegradable and had some adsorption characteristics, then the source was given a moderate ranking. If the biodegradable/adsorption characteristics of the source were high or unknown, the source was given a high ranking in persistence. A summary of the relative risks associated with the identified potential contamination sources is presented in Table 2. A brief description of the risks associated with each identified potential source of contamination is presented below.

**Septic Systems.** Our research indicates that there are currently no septic systems located within the identified 1-year TOT boundary. However, there appears to be several septic systems located within the 5-year TOT on Ranger Station Road (Figure 5). Furthermore, the residential development being constructed just to the north and west of PW-1 will result in approximately 14 septic systems located with the 1-year TOT of the well. Domestic and community septic systems can be sources of contaminants in areas of heavy housing density and where shallow groundwater is present.

The top of the aquifer is located at an average depth of approximately 20 feet below the ground surface. Properly constructed, operated and maintained septic systems are a very effective means of treating effluent. Based on the hydrogeologic setting of the aquifer and the current zoning of the WHPAs, it is our opinion that existing single-family septic systems located within the identified WHPA, completed, operated and maintained according to current regulations, poses a low risk to the water quality in PW-1. If future rezoning of the WHPA allows a significantly higher housing density or large community drainfields within the identified 1-year TOT, a more detailed analysis of contaminant loading and the potential effect on the groundwater system may be necessary.

**Underground Storage Tanks.** The USTs located at the North Cascade Park facility on Ranger Station Road are shown to be just outside the 5- and 10-year TOT areas delineated for PW-1 (Figure 5). However, it is likely that some groundwater flow near this portion of the margin of the valley is locally to the south and southeast. It is our opinion that the USTs located at the north end of Ranger Station Road present a moderate risk to water quality in PW-1 based on their distance from this potential source of contamination and the hydrogeologic setting of the area (Table 2).

**Home Heating Oil Tanks.** Our research was not specifically directed at identifying home heating oil tanks within the WHPAs. However, it is possible that some of the single-family residences located along Ranger Station Road within the WHPA have heating oil tanks. Residential heating oil tanks typically contain less than 500 gallons of product. Furthermore, leaks in the tanks are relatively obvious and generally are not allowed to continue for a long period of time. Because of the relatively small volume of product typically contained in heating oil tanks and the hydrogeologic setting of the aquifer, it is our opinion that existing residential heating oil tanks located within the WHPAs pose a low risk to water

quality at the wells because any contamination originating at the tanks would undergo significant dilution and biodegradation (Table 2).

**Agriculture Products.** Historically, only minor portions of the WHPA have been utilized for light agricultural purposes. However, it is possible that some fertilizer, pesticide, herbicide and/or fungicide compounds have been used in the past on the Seattle City Light Company power line transmission right-of-way located south of PW-1. Potential impacts to groundwater from agricultural practices include the leaching of fertilizer, pesticide, herbicide and/or fungicide compounds, increased nitrate concentrations and coliform bacteria. The aquifer in the study area has a moderate susceptibility to nonpoint source groundwater contamination resulting from the light agriculture activities that are typically conducted in the study area due to the hydrogeologic setting of the aquifer in this area (Table 2).

**Traffic Accidents.** Groundwater contamination from spills of hazardous materials caused by traffic accidents are a potential source of groundwater contamination. There are no records regarding accidents and/or the types/volumes of hazardous materials transported on the portion of Ranger Station Road located within the delineated WHPA. However, the possibility of an accident occurring that would result in a release of hazardous material does exist. Large volumes of fuel may be released from accidents involving trucks and cargo vans and there is an additional threat from the cargo that is being transported.

Because of the absence of a stormwater runoff containment system in the study area, it is our opinion that a significant release of hazardous material resulting from a traffic accident on Ranger Station Road, within the 5-year TOT boundaries, poses a moderate risk to water quality in the production well (Table 2).

**Surface Water Runoff.** Surface water runoff from road surfaces is a common nonpoint source of groundwater contamination for some shallow aquifers. Storm sewers that collect runoff from road surfaces greatly reduce the volume of runoff that can potentially contaminate groundwater. Contaminants commonly associated with surface water runoff include petroleum hydrocarbons, volatile organic compounds, semi-volatile organic compounds and metals. It is our understanding that the roads located within the identified WHPA do not have lined drainage ditches and they do not drain to a storm sewer system.

In our opinion, surface water runoff represents a low risk of contamination to the aquifer within the WHPA based on the present state of development, the current land-use zoning and the hydrogeologic setting of shallow aquifer (Table 2).

**Abandoned Wells.** The methods used to construct and abandon water supply wells can have a significant impact on groundwater quality. Unless a well is sealed properly the casing can act as a conduit for surface sources of contamination to travel directly to the underlying aquifer. It was beyond the scope of this study to attempt to identify the number of abandoned wells located in the identified WHPA. The risk of the potential for abandoned wells to affect water quality in any of the identified existing or potential production wells will be dependent on the distance of the abandoned well to the production well and the volume and type of the potential contaminant.

**Table 2 – Summary of Potential Risk**

| Contaminant Source | Aquifer Suscept | Well Construction | Source Distance | Contaminant Characteristics | | | Score | Risk |
|---|---|---|---|---|---|---|---|---|
| | | | | Volume | Toxicity | Persistence | | |
| Septic System | 5 | 1 | 10 | 1 | 1 | 5 | 23 | Low |
| USTs | 5 | 1 | 1 | 5 | 10 | 5 | 27 | Moderate |
| Home Heating Oil Tanks | 5 | 1 | 5 | 1 | 1 | 5 | 18 | Low |
| Agricultural Products | 5 | 1 | 10 | 1 | 5 | 5 | 27 | Moderate |
| Traffic Accidents | 5 | 1 | 5 | 1 | 10 | 5 | 27 | Moderate |
| Surface Water Runoff | 5 | 1 | 5 | 1 | 1 | 1 | 14 | Low |

## CONTINGENCY AND EMERGENCY SPILL RESPONSE PLANS

The District has developed a contingency plan that can be implemented if the production well becomes contaminated or temporarily not useable as per WAC-246-290-135(4)(c)(vi). The Town has also developed an emergency spill response plan. Copies of the Contingency and Spill Response Plans are presented in Appendix C.

## WHPA MANAGEMENT ACTIONS

Some land use activities in the District's WHPA currently result in a moderate risk to water quality in the well. Special-use permit activities or future changes in land use zoning may allow land use activities that could represent a more immediate threat to the aquifer within the mapped WHPA.

Ultimately, the protection of the District's water supply will be accomplished through the education of the public that lives and works within the WHPAs rather than through regulatory controls. Public education/outreach is an important component of the District's efforts to protect the production well. Public outreach efforts such as door-to-door surveys or mailing questionnaires can be an effect way to identify potential contaminant sources as well as educate the public regarding the cause and effect relationship between land use and ground water quality.

The following is a list of general management actions that the District has implemented to protect their groundwater source.

- The District will review any changes in land use proposed by Skagit County within the designated WHPAs with regard to a potential impact on the water quality of the source aquifer.
- The District will avoid the use of the fertilizer, pesticide, herbicide and fungicide within 100 feet of PW-1. Furthermore, the District will work with Seattle City Light to restrict the use of fertilizer, pesticide, herbicide and fungicide within the power line transmission corridor located just southeast of the well.
- The District will work with the developer of the proposed adjacent residential subdivision to require that no underground heating oil tanks be installed within 200 feet of PW-1.

- The District will inform future residents located within 200 feet of PW-1 of the potential for well contamination. Specifically, these residents will be advised against disposing of any chemicals, fuels, or other hazardous substances in their septic tanks or on the ground.
- The District will conduct a more detailed analysis of contaminant loading and the potential effect on the groundwater systems if future residential development results in a significant septic system density increase in the 1- and/or 5-year TOT areas.
- The District has developed a list of potential property owners located within the identified WHPA and has sent them a notification letter regarding the WHPA. A copy of the notification letter is included in Appendix D.
- The District will continue to monitor water quality within the subject aquifer to establish trends and detect potential problems.

## LIMITATIONS

We prepared this report for use by the District in support of a WHPP for their production well (PW-1). The information presented in this report is based on the above-described research and limited reconnaissance. GeoEngineers has relied upon information provided by others in our description of historical conditions. The available data do not provide definitive information with regard to all past uses, operations or incidents in the study area. There is always a potential that areas with contamination that were not identified during this study exist in the study area.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in this area at the time the report was prepared. No other warranty or conditions, express or implied, should be understood.

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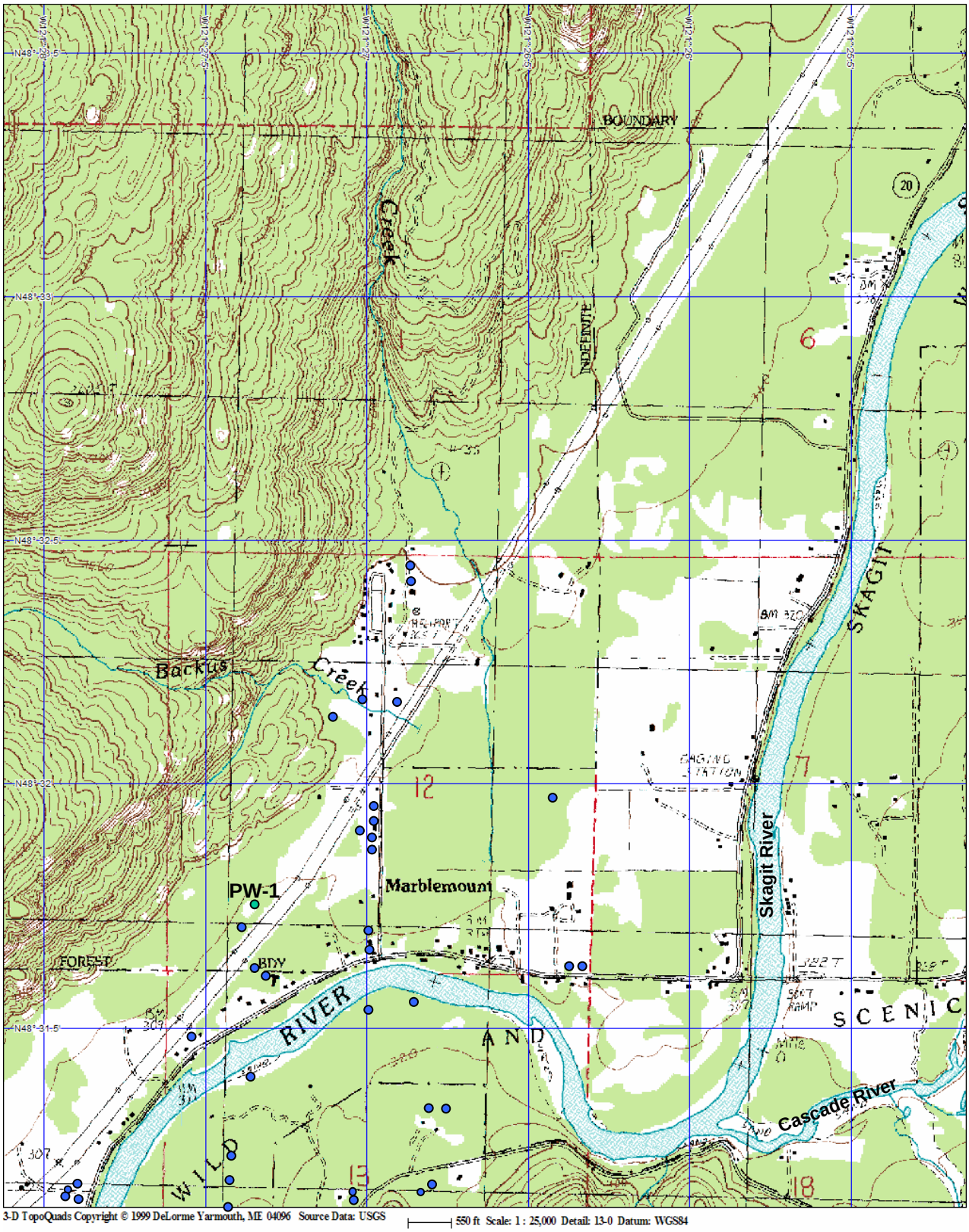


ORCH:\2\2402012\03\FINALS\240201203_FIGURE1WHP.PPT CSL:JAM:akf 07/13/04

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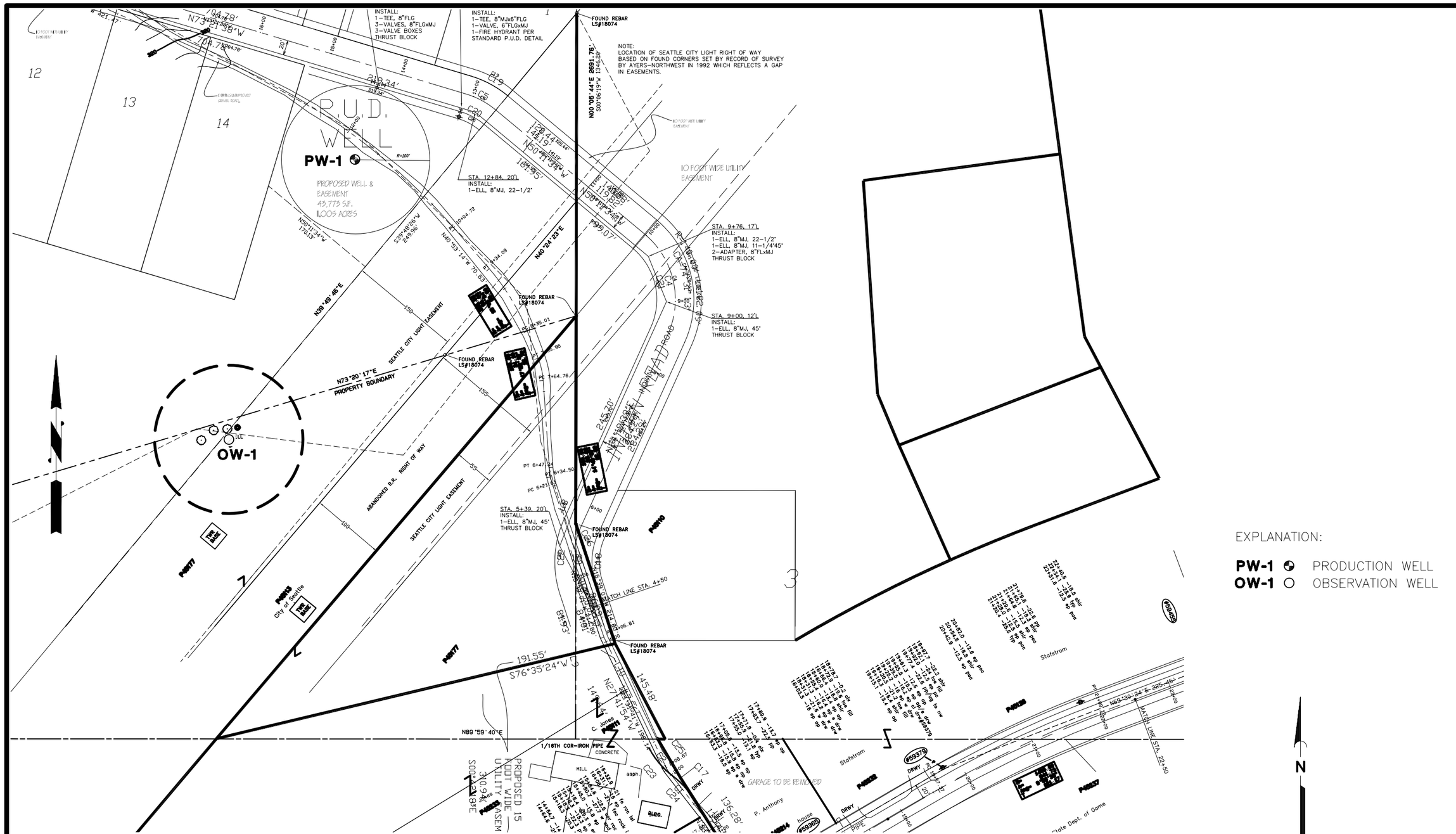
**VICINITY AND WELL LOCATION MAP**

**FIGURE 1**




Notes: 1. The locations of all features shown are approximate.
2. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

Reference: Drawing entitled "Marblemount L.U.D. #28, Shoreline Conditional Use/Special Use Permit Application," dated 1/15/03 by Skagit County Public Utility District No. 1

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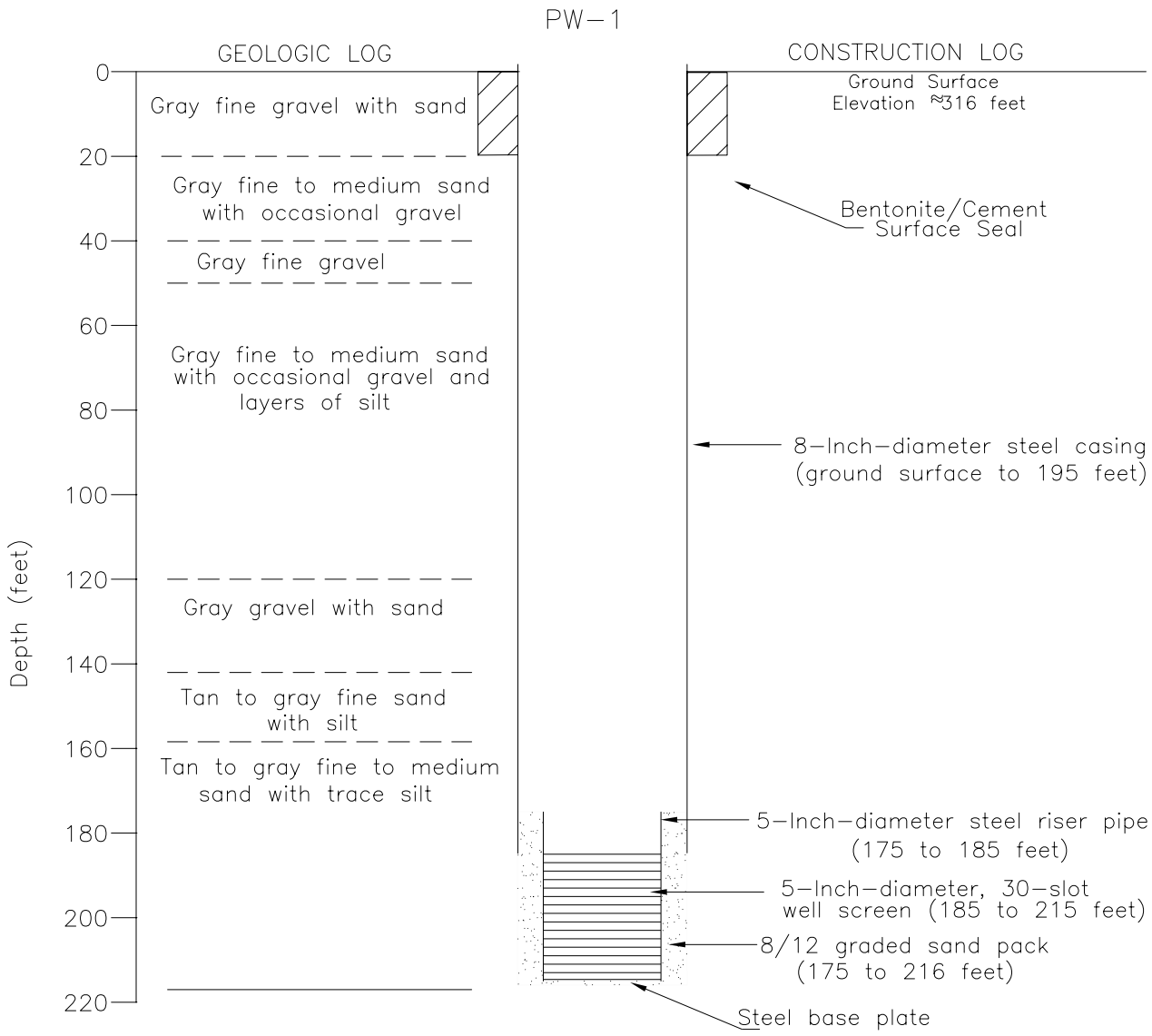
**SITE PLAN**

**FIGURE 2**

ORCH\P:\2402012\03\CAD\2402012013A.DWG CSL:AKF 07/13/04




Boring completed at 217 feet on February 14, 2003
Maximum screen capacity is approximately 600 gpm

Notes: 1. The locations of all features shown are approximate.

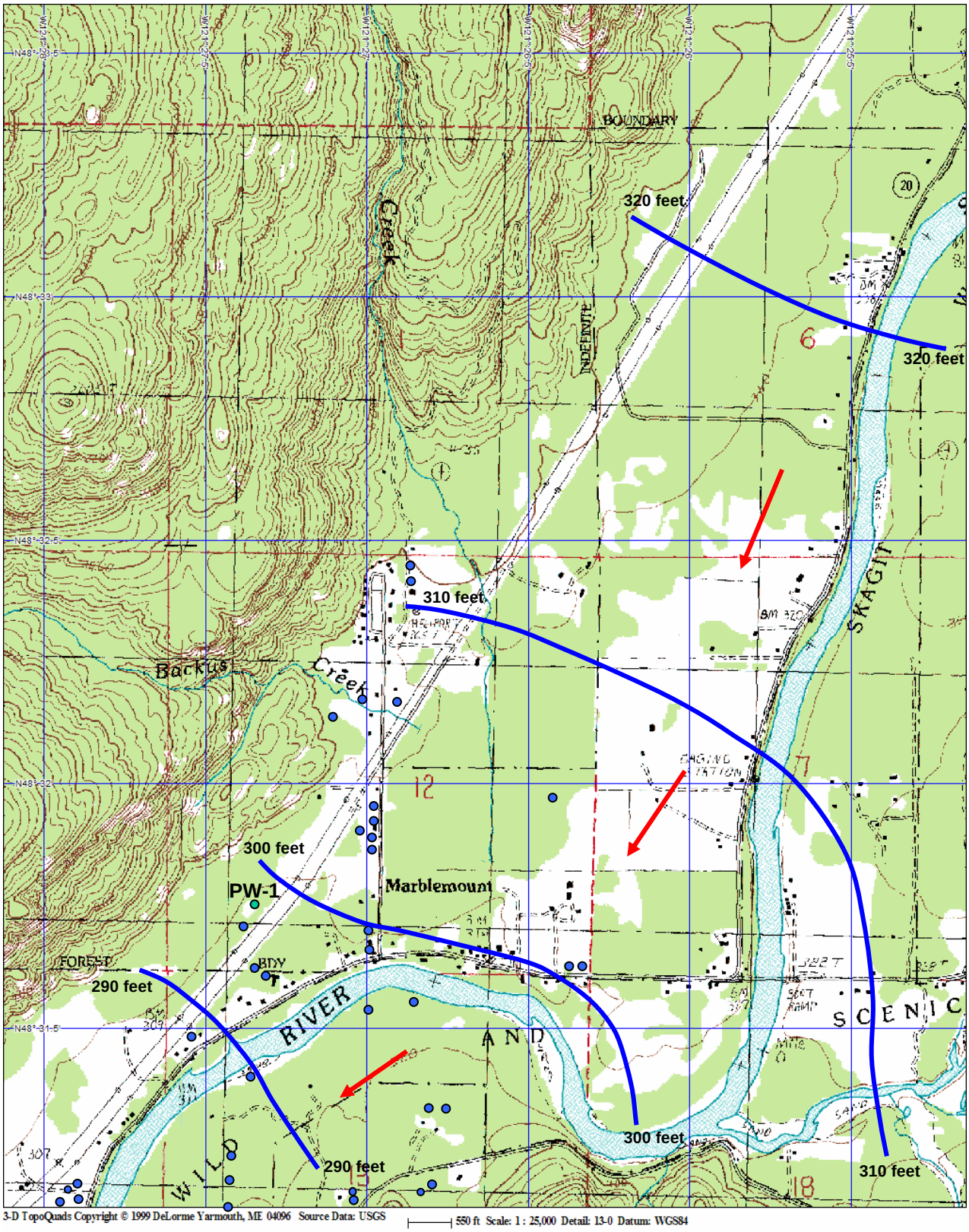
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

ORCH/2/2402012/03/CAD/240201203B.DWG CSL:AKF 07/13/04

GeoEngineers

**PW-1 CONSTRUCTION SCHEMATIC**

**FIGURE 3**




ORCH:\2\2402012\03\FINALS\240201203_FIGURE4WHP.PPT CSL:JAM:akf 07/13/04

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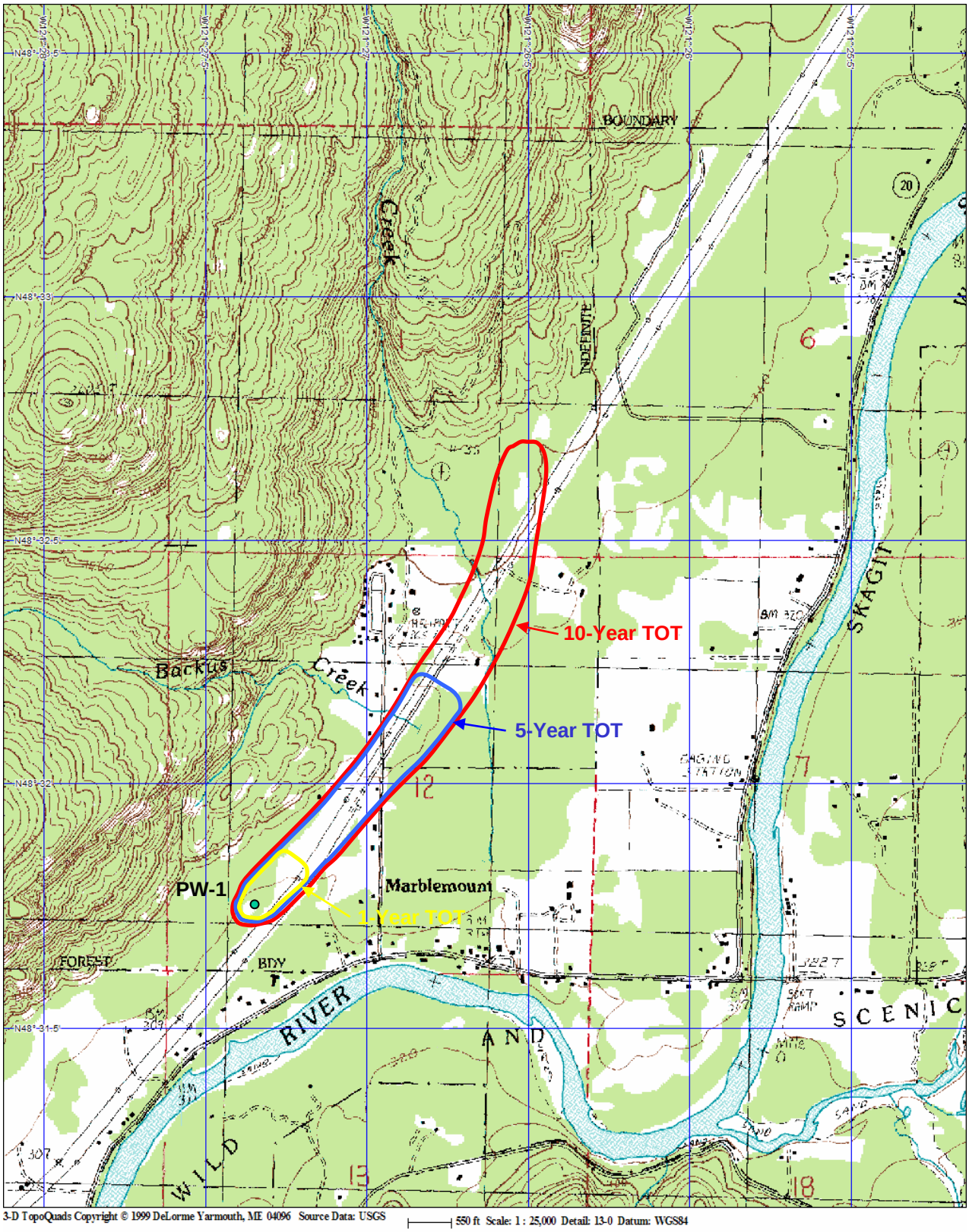
**GROUNDWATER CONTOUR MAP**

**FIGURE 4**




PW-1 Approximate District Well Location

Wellhead Protection Areas

North

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**WELLHEAD PROTECTION AREA MAP**

**FIGURE 5**

ORCH:\2\2402012\03\FINALS\240201203_FIGURE5WHP.PPT CSL:JAM:akf 07/13/04

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# APPENDIX A
## WATER WELL REPORTS

11 R 21

35/10E-11 R

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT

**STATE OF WASHINGTON**

Application No. 072420

Permit No. .....

**(1) OWNER:** Name Robert Bangert & John Edwards Address P O Box 97-Rockport Wa. 98283-0097

**(2) LOCATION OF WELL:** County Skagit — SE ¼ SE ¼ Sec. 11 T. 35 N., R 10 W.M.

Bearing and distance from section or subdivision corner Marblemount Hwy 20

**(3) PROPOSED USE:** Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

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

**(5) DIMENSIONS:** Diameter of well 6 inches.
Drilled 39 ft. Depth of completed well 39 ft.

**(6) CONSTRUCTION DETAILS:**

**Casing installed:** 6 " Diam. from 0 ft. to 39 ft.
Threaded ☐ ..... " Diam. from ..... ft. to ..... ft.
Welded ☑ ..... " Diam. from ..... ft. to ..... ft.

**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 .....
Type ..... Model No. .....
Diam. ..... Slot size ..... from ..... ft. to ..... ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

**Gravel packed:** Yes ☐ No ☑ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

**Surface seal:** Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

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

**(8) WATER LEVELS:** Land-surface elevation above mean sea level ..... ft.
Static level 20 ft. below top of well Date 5-12-90
Artesian pressure ..... lbs. per square inch Date .....
Artesian water is controlled by ..... (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test .....
Bailer test 25 GPM gal./min. with 10 ft. drawdown after ..... hrs.
Artesian flow ..... g.p.m. Date .....
Temperature of water ..... Was a chemical analysis made? Yes ☐ No ☑

**(10) WELL LOG:**

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

| MATERIAL | FROM | TO |
|---|---|---|
| Brown Clay | 0 | 13 |
| Gravel & Sand | 13 | 27 |
| Gravel Sand & Water | 27 | 39 |

RECEIVED

MAY 18 1990

DEPT. OF ECOLOGY

Work started 5-12- , 1990 Completed 5-12- , 1990

**WELL DRILLER'S STATEMENT:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Dahlman Pump & well Drilling Inc.
(Person, firm, or corporation) (Type or print)

Address P O Box 422 Burlington Wa. 98233

[Signed] Bruce M Dahlman
(Well Driller)

License No. 1810 Date 5-12- , 1990

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20

12801 35/10 — 12 E

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT

## STATE OF WASHINGTON

Application No.

Permit No.

(1) **OWNER:** Name USDI- North Cascades Natl. Park Address 800 State St. SW. 98284

(2) **LOCATION OF WELL:** County Skagit NW¼ NE¼ Sec 12 T. 35 N. R 10 W M

Bearing and distance from section or subdivision corner Dist. Office- Marblemount

(3) **PROPOSED USE:** Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

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

(5) **DIMENSIONS:** Diameter of well 8" inches.
Drilled 78' ft. Depth of completed well 77 ft.

(6) **CONSTRUCTION DETAILS:**
Casing installed: 8 " Diam. from 0 ft. to 68 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

**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 ☐ Johnson Stainless
Manufacturer's Name
Type Model No.
Diam. 8 Slot size .40 from 68 ft. to 73 ft.
Diam. 8 Slot size .40 from 73 ft. to 78 ft.

**Gravel packed:** Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

**Surface seal:** Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

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

(8) **WATER LEVELS:** Land-surface elevation above mean sea level ft.
Static level 48' ft. below top of well Date 4-26-85
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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? Driller
Yield: 65 gal./min. with / ft. drawdown after / hrs.
65 " / " 2 "
" " " "

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 |
|---|---|---|---|---|---|
| Minute | back up to Static | | | | |

Date of test 4-29-85
Bailer test 65+ gal./min. with / ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) **WELL LOG:**

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

| MATERIAL | FROM | TO |
|---|---|---|
| Dirty Sand & Gravel | 0 | 37 |
| Water, Sand & Gravel | 37 | 40 |
| Brown Clay & Gravel | 40 | 65 |
| Gravel & Water | 65 | 78 |

RECEIVED MAY 13 1985 DEPARTMENT OF ECOLOGY NORTHWEST REGION

Elev = 390

b = 30

Work started 4-25 19 85 Completed 4-26 19 85

**WELL DRILLER'S STATEMENT:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP & WELL DRILLING, INC.
(Person, firm, or corporation) (Type or print)

Address Box 422, Burlington, WA. 98233

[Signed] H Ken Fowler
(Well Driller)

License No. 1192 Date 5-2-85 19

Second Copy — Owner's Copy
Third Copy — Driller's Copy

STATE OF WASHINGTON

Permit No.

(1) OWNER: Name National Park Service Address Marblemount, Wa

(2) LOCATION OF WELL: County SKAGIT — NW¼ NE¼ Sec 12 T 35 N. R 10 W

Bearing and distance from section or subdivision corner

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

(4) TYPE OF WORK: Owner's number of well (if more than one) 1
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 162 ft. Depth of completed well 162 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 " Diam. from +2 ft. to 143-9 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

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
Type Model No
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal Cement
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level ft. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Bailer test 16 gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

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

| MATERIAL | FROM | TO |
|---|---|---|
| Top soil | 0 | 4 |
| Silt w/gravel lenses | 4 | 28 |
| Silt w/some gravel & sand all the way | 28 | 137 |
| Granite | 137 | 162 |

Elevation = 400

Work started 8/16/82 19 Completed 8/17/82 19

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Bartholomew Drilling, Inc.
(Person, firm, or corporation) (Type or print)

Address N. 11525 Nine Mile Rd., Nine Mile Falls Wa 99026

[Signed] Gary Bartholomew
(Well Driller)

License No. 0051 Date 11/10 19 82

(USE ADDITIONAL SHEETS IF NECESSARY)

S. F. No. 7356—C3—(Rev. 4-71)
ECY-070-28

ue Original and First Copy with
epartment of Ecology
econd Copy — Owner's Copy
hird Copy — Driller's Copy

# WATER WELL REPORT

STATE OF WASHINGTON

Application No. 0-E01.

Permit No.

(1) OWNER: Name National Park Service Address Marblemount, Wa

(2) LOCATION OF WELL: County SKAGIT SW¼ NW¼ Sec 12 T 35 N. R 10 W.M.

Bearing and distance from section or subdivision corner

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

(4) TYPE OF WORK: Owner's number of well (if more than one) 2
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 123 ft. Depth of completed well 123 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 " Diam. from +2 ft. to 99-5 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

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
Type Model No
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal Cement
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level ft. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Bailer test 1/4 gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

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

| MATERIAL | FROM | TO |
|---|---|---|
| Top soil | 0 | 2 |
| Silt with gravel lenses | 2 | 23 |
| Gravel & silt | 23 | 67 |
| Clay | 67 | 78 |
| Gravel and silt | 78 | 99 |
| Granite | 99 | 123 |

Elev 480

RECEIVED
NOV 22

Work started 8/17/82 19 Completed 8/18/82 19

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Bartholomew Drilling, Inc.
(Person, firm, or corporation) (Type or print)

Address N. 11525 Nine Mile Rd., Nine Mile Falls, Wa 99026

[Signed] Gary Bartholomew
(Well Driller)

License No. 0051 Date 11/10 19 82

Field Location 12F01

NOV 30 1992

DEPT. OF ECOLOGY

35/10/12F

WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. [redacted]
Water Right Permit No.

(1) OWNER: Name LESTER, BILL & KATHRYN Address PINNACLES NATL MONUMENT PAICINES, CA 95043-

(2) LOCATION OF WELL: County SKAGIT - SE 1/4 NW 1/4 Sec 12 T 35 N., R 10 W.M.
(2a) STREET ADDRESS OF WELL (or nearest address) 733 RANGER STA RD MBLEMT

(3) PROPOSED USE: DOMESTIC

(4) TYPE OF WORK: Owner's number of well (if more than one)
NEW WELL Method: ROTARY

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 52 ft. Depth of completed well 52 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Dia. from 0 ft. to 52 ft.
WELDED " Dia. from ft. to ft.
" Dia. from ft. to ft.

Perforations: 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: NO
Manufacturer's Name
Type Model No.
Diam. slot size from ft. to ft.
Diam. slot size from ft. to ft.

Gravel packed: NO Size of gravel
Gravel placed from ft. to ft.

Surface seal: YES To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water? Depth of strata ft.
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft.
Static level 33 ft. below top of well Date 11/23/92
Artesian Pressure lbs. per square inch Date
Artesian water controlled by

(9) WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data
Time Water Level Time Water Level Time Water Level

Date of test / /
Bailer test gal/min. 9 ft. drawdown after hrs.
Air test 30 gal/min. w/ stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made?

(10) WELL LOG

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

| MATERIAL | From | To |
|---|---|---|
| TOPSOIL | 0 | 13 |
| BROWN CLAY | 13 | 21 |
| GRAVEL & CLAY | 21 | 42 |
| WATER & GRAVEL | 42 | 52 |

Elev 360

Well Located According to Ordinance 10463 Skagit County

Work started 11/23/92 Completed 11/23/92

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 DAHLMAN PUMP & WELL DRILL
(Person, firm, or corporation) (Type or print)

ADDRESS PO BOX 422, BURLINGTON, WA

[SIGNED] [signature] License No. 0623

Contractor's Registration No. DAHLMPW123LC Date 11/25/92

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

ENTF

# WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W107910
UNIQUE WELL I.D. # ACS056
Water Right Permit No. 35-10-12G DL

(1) **OWNER:** Name Debra Larson Address

(2) **LOCATION OF WELL:** County Skagit Co. - SW 1/4 NE 1/4 Sec 12 T 35 N. R 10 W.M.

(2a) **STREET ADDRESS OF WELL** (or nearest address) Ranger Station Rd Marblemount Wash

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

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

(5) **DIMENSIONS:** Diameter of well 6 inches. Drilled 48 feet. Depth of completed well 48 ft.

(6) **CONSTRUCTION DETAILS:**
Casing Installed: 6 " Diam. from -2 ft. to 48 ft.
Welded ☐ Liner installed ☐ Threaded ☐ " Diam. from ft. to ft.
" Diam. from ft. to ft.

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
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☑ Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? Depth of strata
Method of sealing strata off

(7) **PUMP:** Manufacturer's Name Grundfos
Type: Submersible H.P. 1/2

(8) **WATER LEVELS:** Land-surface elevation above mean sea level ft.
Static level 35 ft. below top of well Date Nov 2
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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: 10 gal./min. with 31 ft. drawdown after 2 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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Airtest gal./min. with stem set at 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 of aquifers 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 |
|---|---|---|
| Sand & gravel | 1 | 22 |
| Clay | 22 | 35 |
| Sand & gravel & water | 35 | 48 |

Well site must Standard Set at 18" to 48" accordance to info provided by owner

RECEIVED
DEC 3 1998
DEPT OF ECOLOGY

Work Started Nov 1 19. Completed Nov 2 19

**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 Pioneer Well Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 7940 NE Cape Horn Rd Conc
(Signed) (WELL DRILLER) License No. 1698
Contractor's Registration No. Pioneed098** Nov 10, 19 98

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

ECY 050-1-20 (9/93) * * *

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ment of Ecology
Copy — Owner's Copy
Copy — Driller's Copy

# WATER WELL REPORT
## STATE OF WASHINGTON

12501

Application No. .....

Permit No. .....

O ER: Name Jerry Cook Address P O Box 35, Marblemount Wa. 98267

OCATION OF WELL: County Skagit ¼ SW ¼ Sec 12 T 35 N, R 10 W M

and distance from section or subdivision corner

**PROPOSED USE:** Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

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

**DIMENSIONS:** Diameter of well 6 inches.
Drilled 40 ft. Depth of completed well 40 ft.

**CONSTRUCTION DETAILS:**
Casing installed: 6 " Diam. from 0 ft. to 40 ft.
Threaded ☐ " Diam. from ..... ft. to ..... ft.
Welded ☑ " Diam. from ..... ft. to ..... ft.

**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 .....
Type ..... Model No .....
Diam. ..... Slot size ..... from ..... ft. to ..... ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

**Gravel packed:** Yes ☐ No ☑ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

**Surface seal:** Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

**PUMP:** Manufacturer's Name .....
Type: ..... H.P. .....

**WATER LEVELS:** Land-surface elevation above mean sea level .... ft.
20 ft. below top of well Date 10-10-83
..... lbs. per square inch Date .....
Artesian water is controlled by ..... (Cap, valve, etc.)

**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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test .....
Bailer test 50 gal./min. with 10 ft. drawdown after ..... hrs.
Artesian flow ..... g.p.m. Date 10-10-83
Temperature of water ..... Was a chemical analysis made? Yes ☐ No ☑

**(10) WELL LOG:**

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

| MATERIAL | FROM | TO |
|---|---|---|
| Top Soil | 0 | 12 |
| Sand Gravel | 12 | 30 |
| Water Gravel | 30 | 40 |
| Elev 320 | | |

RECEIVED
OCT 19 1983
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

Work started 10-10- , 19 83 Completed 10-10- , 19 83

**WELL DRILLER'S STATEMENT:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP & DRILLING INC.
(Person, firm, or corporation) (Type or print)

Address P O BOX 422- BURLINGTON WA 98233

[Signed] H Ken Fowler
(Well Driller)

License No. 1192 Date 10-11-83 , 19

# WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. 074586
Water Right Permit No.

(1) OWNER: Name WENICK, RICK Address 916 JENNINGS RD SEDRO WOOLLEY, WA 98284-

LOCATION OF WELL: County SKAGIT - NE 1/4 SW 1/4 Sec 12 T 35 N., R 10 WM
STREET ADDRESS OF WELL (or nearest address) POWERLINE RD

(3) PROPOSED USE: DOMESTIC

(4) TYPE OF WORK: Owner's Number of well (If more than one)
NEW WELL Method: ROTARY

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 40 ft. Depth of completed well 38 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Dia. from +2 ft. to 38 ft.
WELDED " Dia. from ft. to ft.
" Dia. from ft. to ft.

Perforations: 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: NO
Manufacturer's Name
Type Model No.
Diam. slot size from ft. to ft.
Diam. slot size from ft. to ft.

Gravel packed: NO Size of gravel
Gravel placed from ft. to ft.

Surface seal: YES To what depth? 18 ft.
Material used in seal PUDDELING CLAY
Did any strata contain unusable water? NO
Type of water? Depth of strata ft.
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft.
Static level 20 ft. below top of well Date 05/16/90
Artesian Pressure lbs. per square inch Date
Artesian water controlled by

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

Recovery data

| Time | Water Level | Time | Water Level | Time | Water Level |
|---|---|---|---|---|---|
| | | | | | |

Date of test / /
Bailer test gal/min. ft. drawdown after hrs.
Air test 35 gal/min. w/ stem set at 37 ft. for .5 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? NO

(10) WELL LOG

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

| MATERIAL | FROM | TO |
|---|---|---|
| BROWN TOPSOIL | 0 | 2 |
| BROWN CLAY | 2 | 5 |
| BROWN GRAVEL & CLAY | 5 | 9 |
| BROWN CLAY | 9 | 20 |
| BROWN GRAVEL SAND & WATER | 20 | |

Elev 330

RECEIVED
JUN 19 1990
DEPT. OF ECOLOGY

Work started 05/16/90 Completed 05/16/90

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 HAYES DRILLING, INC.
(Person, firm, or corporation) (Type or print)

ADDRESS ~~556~~ ERSHIG RD.

[SIGNED] License No. 1825

Contractor's Registration No. HAYESDI106J5 Date 06/08/90

1064

12L02 35/10-12 L

# WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. 074588
Water Right Permit No.

OI Name CROCKETT, PAUL Address P.O. BOX 159 MARBLEMOUNT, WA 98267-

LOCATION OF WELL: County SKAGIT - NE 1/4 SW 1/4 Sec 12 T 35 N., R 10 WM
STREET ADDRESS OF WELL (or nearest address) 5727 POWERLINE RD

PROPOSED USE: DOMESTIC

TYPE OF WORK: Owner's Number of well (If more than one) 1
NEW WELL Method: ROTARY

DIMENSIONS: Diameter of well 6 inches
Drilled 40 ft. Depth of completed well 37.5 ft.

CONSTRUCTION DETAILS:
Casing installed: 6 " Dia. from +2.5 ft. to 37.5 ft.
WELDED " Dia. from ft. to ft.
" Dia. from ft. to ft.

Perforations: 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: NO
Manufacturer's Name
Type Model No.
Dia. slot size from ft. to ft.
Dia. slot size from ft. to ft.

Gravel packed: NO Size of gravel
Gravel placed from ft. to ft.

Surface seal: YES To what depth? 18 ft.
Material used in seal PUDDELING CLAY
Did any strata contain unusable water? NO
Type of water? Depth of strata ft.
Method of sealing strata off

PUMP: Manufacturer's Name
Type H.P.

WATER LEVELS: Land-surface elevation above mean sea level ... ft.
Static level 20 ft. below top of well Date 05/17/90
Artesian Pressure lbs. per square inch Date
Artesian water controlled by

(10) WELL LOG

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

| MATERIAL | FROM | TO |
|---|---|---|
| TOPSOIL | 0 | 3 |
| BROWN SANDY CLAY & GRAVEL | 3 | 20 |
| BROWN GRAVEL & WATER | 20 | |

Elev 320

RECEIVED
JUN 19 1990
DEPT. OF ECOLOGY

Work started 05/17/90 Completed 05/17/90

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

Recovery data
Time Water Level Time Water Level Time Water Level

Date of test / /
Bailer test gal/min. ft. drawdown after hrs.
Air test 35 gal/min. w/ stem set at 35 ft. for .5 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? NO

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 HAYES DRILLING, INC.
(Person, firm, or corporation) (Type or print)

ADDRESS ~~556~~ ERSHIG RD.

[SIGNED] [signature] License No. 1825

Contractor's Registration No. HAYESDI106J5 Date 06/08/90

1063

hird Copy — Driller's Copy  K 1060  STATE OF WASHINGTON  12603  Permit No. .....

(1) OWNER: Name Dan & Carol Heidal  Address 772 Ranger Sta. Rd. Darrlemount Wa. 98235

(2) LOCATION OF WELL: County Skagit  NE ¼ SW ¼ Sec 12 T 35 N., R 10 W.M.

...ng and distance from section or subdivision corner

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

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

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 46 ft. Depth of completed well 46 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Diam. from 0 ft. to 40 ft.
Threaded ☐ ..... " Diam. from ..... ft. to ..... ft.
Welded ☑ ..... " Diam. from ..... ft. to ..... ft.

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 .....
Type ..... Model No. .....
Diam. ..... Slot size ..... from ..... ft. to ..... ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

...avel packed: Yes ☐ No ☑ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

Surface seal: Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

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

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
...tatic level 25 ft. below top of well Date 8-18-87
...rtesian pressure ..... lbs. per square inch Date .....
Artesian water is controlled by ..... (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? .....
...ield: ..... gal./min. with ..... ft. drawdown after ..... hrs.
" " " " "
" " " " "

...ecovery 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 |
|---|---|---|---|---|---|
| | | | | | |

...ield 25 GPM gal./min. with ..... ft. drawdown after ..... hrs.
...rtesian flow ..... G.P.M. Date .....
Temperature of water ..... Was a chemical analysis made? Yes ☐ No ☑

(10) WELL LOG:

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

| MATERIAL | FROM | TO |
|---|---|---|
| Top Soil | 0 | 3 |
| Sand | 3 | 14 |
| Sand & Gravel | 14 | 32 |
| Water & Gravel | 32 | 40 |
| | | |
| | | |
| | | |
| | | |
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| Elev 320 | | |
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Copy — Owner's Copy
Copy — Driller's Copy

Field Locate

# WATER WELL REPORT 12C04

STATE OF WASHINGTON

Application No. .....

Permit No. .....

**OWNER:** Name Bob Bunting Address 2830 Bank of Calif. Center Seattle

**LOCATION OF WELL:** County Skagit NE ¼ SW ¼ Sec 12 T 35 N. R 10 W.M.

g a... distance from section or subdivision corner: 775 Ranger Station Rd. Marblemount, WA.

**PROPOSED USE:** Domestic X Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

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

**DIMENSIONS:** Diameter of well 6 inches.
Drilled 38 ft. Depth of completed well 38 ft.

**CONSTRUCTION DETAILS:**
Casing installed: 6 " Diam. from 0 ft. to 38 ft.
Threaded ☐ ..... " Diam. from ..... ft. to ..... ft.
Welded X ..... " Diam. from ..... ft. to ..... ft.

**Perforations:** Yes ☐ No X
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 X
Manufacturer's Name .....
Type ..... Model No. .....
Dia. ..... Slot size ..... from ..... ft. to ..... ft.
Dia. ..... Slot size ..... from ..... ft. to ..... ft.

**Gravel packed:** Yes ☐ No X Size of gravel .....
Gravel placed from ..... ft. to ..... ft.

**Surface seal:** Yes X No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No X
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

**PUMP:** Manufacturer's Name .....
Type: ..... H.P. .....

**WATER LEVELS:** Land-surface elevation above mean sea level ..... ft.
Static level 20 ft. below top of well Date 4-7-87
Artesian pressure ..... lbs. per square inch Date .....
Artesian water is controlled by ..... (Cap, valve, etc.)

**WELL TESTS:** Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No X If yes, by whom? .....
..... 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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test .....
Bailer test 30 gal./min. with 5' ft. drawdown after ..... hrs.
Airlift ..... gal./min. with ..... ft. drawdown after ..... hrs.
Artesian flow ..... g.p.m. Date .....
Temperature of water ..... Was a chemical analysis made? Yes ☐ No X

**(10) WELL LOG:**

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

| MATERIAL | FROM | TO |
|---|---|---|
| Top Soil | 0 | 3 |
| gravel & clay | 3 | 32 |
| Water & Gravel | 32 | 38 |

Section 12

320

RECEIVED
APR 24 1987
DEPT. OF ECOLOGY

Work started 4-6-87, 19..... Completed 4-7-87, 19.....

**WELL DRILLER'S STATEMENT:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP & WELL DRILLING, INC.
(Person, firm, or corporation) (Type or print)

Address Box 422, Burlington, WA. 98233

[Signed] Theodore Richter
(Well Driller)

License No. 0623 Date 4-7-87, 19.....

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT

STATE OF WASHINGTON

Application No. 33-10/12 [illegible]

Permit No. Property Ranger Sta. Road, Marblemount

(1) OWNER: Name George Florence Address 1617 - 35th St., Bellingham 98225

(2) LOCATION OF WELL: County Skagit NE ¼ SW ¼ Sec. 12 T. 35 N., R. 10E W.M.

Bearing and distance from section or subdivision corner Portion of Gov. Lot 2

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

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

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 40 ft. Depth of completed well 40 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Diam. from 0 ft. to 40 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

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
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Cement
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 17 ft. below top of well Date 7-7-76
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Bailer test 10 gal./min. with 5 ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

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

| MATERIAL | FROM | TO |
|---|---|---|
| Topsoil | 0 | 3 |
| Dirty Brown Sand & Gravel | 3 | 26 |
| Fine Sand | 26 | 28 |
| Clean Sand & Gravel | 28 | 40 |

Work started 7-6-76, 19.... Completed 7-7-76, 19....

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP & DRILLING, INC.
(Person, firm, or corporation) (Type or print)

Address Burlington 98233

[Signed] R C Johnson
(Well Driller)

License No. 223-02-7387 Date 7-12-76, 19....

(USE ADDITIONAL SHEETS IF NECESSARY)

F. No. 7356—OS—(Rev. 4-71).

ENTERED 12 NO1 Local

# WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W 064499
Unique Well I.D. #
Water Right Permit No.

(1) OWNER: Name JONES, CLARENCE Address 5783 HWY 20 MARBLEMOUNT, WA 98267- 35-10E-12N01

(2) LOCATION OF WELL: County SKAGIT SW 1/4 SW 1/4 Sec 12 T 35 N., R 10E WM
(2a) STREET ADDRESS OF WELL (or nearest address) 5783 HWY 20, MARBLEMOUNT

(3) PROPOSED USE: OTHER (CAFE)

(4) TYPE OF WORK: Owner's Number of well (If more than one)
NEW WELL Method: ROTARY

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 70 ft. Depth of completed well 58 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 • Dia. from 0 ft. to 53 ft.
WELDED • Dia. from ft. to ft.
• Dia. from ft. to ft.

Perforations: 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
Manufacturer's Name JOHNSON
Type STAINLESS STEEL Model No. TELESCOPING
Diam. 6 slot size 15 from 53 ft. to 58 ft.
Diam. slot size from ft. to ft.

Gravel packed: NO Size of gravel
Gravel placed from ft. to ft.

Surface seal: YES To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water? Depth of strata ft.
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft.
Static level 20 ft. below top of well Date 08/20/96
Artesian Pressure lbs. per square inch Date
Artesian water controlled by

(9) WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? If yes, by whom?
Yield: gal./min with ft. drawdown after hrs.

Recovery data

| Time | Water Level | Time | Water Level | Time | Water Level |
|---|---|---|---|---|---|
| | | | | | |

Date of test / /
Bailer test gal/min. 33 ft. drawdown after hrs.
Air test 20 gal/min. w/ stem set at ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made?

(10) WELL LOG

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

| MATERIAL | FROM | TO |
|---|---|---|
| TOPSOIL | 0 | 3 |
| BROWN CLAY & BOULDERS | 3 | 21 |
| GRAVEL | 21 | 30 |
| GRAVEL & WATER | 30 | 52 |
| SAND & GRAVEL & WATER | 52 | 64 |
| FINE SAND & WATER | 64 | |

Elev 310
Group A. System
WELL LOCATED ACCORDING TO SKAGIT COUNTY ORDINANCE #12.48
10 gpm pumping rate
No water rights

RECEIVED
DEC 17 1996
SKAGIT COUNTY HEALTH DEPT.

RECEIVED
SEP 05 1996
Dept. of Ecology

Work started 08/19/96 Completed 08/20/96

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 DAHLMAN PUMP & WELL DRILL
(Person, firm, or corporation) (Type or print)

ADDRESS PO BOX 422

[SIGNED] Bruce Dahlman License No. 1810

Contractor's Registration No. DAHLMPW123LC Date 08/22/96

12P01 35/10-12 1

Original and First Copy with
rtment of Ecology
nd Copy — Owner's Copy
d Copy — Driller's Copy

# WATER WELL REPORT
## STATE OF WASHINGTON

Application No. .....
Permit No. .....

NER: Name Rudy Clark Address Rockport, Wa/ 98283

LOCATION OF WELL: County Skagit SW – SE ¼ SW ¼ Sec 12 T 35 N. R 10 E W.M.

ing and distance from section or subdivision corner

**PROPOSED USE:** Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

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

**DIMENSIONS:** Diameter of well 6 inches.
Drilled 40 ft. Depth of completed well 40 ft.

**CONSTRUCTION DETAILS:**
Casing installed: 6 " Diam. from 0 ft. to 40 ft.
Threaded ☐ ..." Diam. from ..... ft. to ..... ft.
Welded ☐ ..." Diam. from ..... ft. to ..... ft.

**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 .....
Type ..... Model No .....
Diam. ..... Slot size ..... from ..... ft. to ..... ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

**Gravel packed:** Yes ☐ No ☒ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

**Surface seal:** Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

**PUMP:** Manufacturer's Name .....
Type: ..... H.P. .....

**WATER LEVELS:** Land-surface elevation above mean sea level ..... ft.
Static level 24' ft. below top of well Date 6-12-80
Artesian pressure ..... lbs. per square inch Date .....
Artesian water is controlled by ..... (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)

| Water Level | Time | Water Level | Time | Water Level |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

Date of test .....
Bailer test 50 gal./min. with 5 ft. drawdown after ..... hrs.
Airtest ..... g.p.m. Date .....

**(10) WELL LOG:**
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

| MATERIAL | FROM | TO |
|---|---|---|
| Top Soil | 0 | 5 |
| Gravel | 5 | 27 |
| Gravel and water | 27 | 40 |
| Elev 320 | | |

Received JUN 23 1980
AUG 6 1980
SKAGIT CO. HEALTH DEPT.

Work started June 12, 1980. Completed June 12, 1980

**WELL DRILLER'S STATEMENT:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP AND DRILLING
(Person, firm, or corporation) (Type or print)

Address P.O. Box 422 Burlington, 98233

[Signed] R C Johnson
(Well Driller)

License No. 0222 Date June 17, 1980

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

# WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 072647

Water Right Permit No. _____

**OWNER:** Name Craig A. Holmquist Address P O Box 112, Marblemount Wa. 98267

**(2) LOCATION OF WELL:** County Skagit SE ¼ SW ¼ Sec 12 T 35 N. R 10 W M

**(2a) STREET ADDRESS OF WELL** (or nearest address) 5755 Hwy 20 Marblemount Wa. 98267

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

**(4) TYPE OF WORK:** Owner's number of well (if more than one) _____

Abandoned ☐ New well ☑ Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☐ Driven ☐ Reconditioned ☐ Rotary ☑ Jetted ☐

**(5) DIMENSIONS:** Diameter of well 6 inches. Drilled 40 feet. Depth of completed well 40 ft.

**(6) CONSTRUCTION DETAILS:**

Casing installed: 6 " Diam. from 0 ft. to 40 ft.
Welded ☑ _____ " Diam. from _____ ft. to _____ ft.
Liner installed ☐
Threaded ☐ _____ " Diam. from _____ ft. to _____ ft.

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 _____
Type _____ Model No _____
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☑ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

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

**(8) WATER LEVELS:** Land-surface elevation above mean sea level _____ ft.
Static level 23' ft. below top of well Date 11-2-90
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test _____
Bailer test _____ gal./min. with 15' ft. drawdown after _____ hrs.
Airtest 60GPM gal./min. with stem set at 35 ft. for 1 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 of aquifers 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 | 0 | 4 |
| Gravel Sand | 4 | 30 |
| Water & Gravel | 30 | 40 |

Elev 320

RECEIVED
NOV 09 1990
DEPT. OF ECOLOGY

RECEIVED
DEC 6 1990
SKAGIT CO. HEALTH DEPT

Work started 11-2- 19 90 Completed 11-2- 19 90

**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 Dahlman Pump & Well Drilling Inc. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address P O Box 422 M Burlington Wa. 98233

(Signed) Brian M Gould (WELL DRILLER) License No. 1810

Contractor's Registration No. DAHLMPW123LC Date 11-2- 1990

(USE ADDITIONAL SHEETS IF NECESSARY)

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT

STATE OF WASHINGTON 32482

Application No. [illegible] - 1212

Permit No.

(1) OWNER: Name P & W Cedar Products Address Box 278 Concrete, Wash.

(2) LOCATION OF WELL: County Skagit — SE¼ SE¼ Sec. 12 T. 35 N., R. 10E W.M.

Bearing and distance from section or subdivision corner 360 ft W 405 S. 420 ft from E line

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

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

(5) DIMENSIONS: Diameter of well 8 1/2 inches.
Drilled 48 ft. Depth of completed well 47 1/2 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8 " Diam. from 0 ft. to 42 1/2 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☐ " Diam. from ft. to ft.

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 Houston Well Screen
Type Stainless Model No. 1
Diam. 5 Slot size 30 from 42 1/2 ft. to 47 1/2 ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☐ No ☒ To what depth? ft.
Material used in seal
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name Jacuzzi
Type: Submersible H.P. 3

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 20 ft. below top of well Date 2-26-73
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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: 60 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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Bailer test 60 gal./min. with NO ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

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

| MATERIAL | FROM | TO |
|---|---|---|
| Foamy Clay | 0 | 17 |
| Compacted Gravel | 17 | 34 |
| Gravel - Water Bearing | 34 | 48 |

Work started 2-19, 1973 Completed 2-26, 1973

## WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Dahlman Pump & Drilling (Person, firm, or corporation) (Type or print)

Address Burlington, Wash. 98233

[Signed] R. C. Johnson (Well Driller)

License No. 223-02-7387 Date 3-26, 1973

(USE ADDITIONAL SHEETS IF NECESSARY)

S. F. No. 7356—OS—(Rev. 4-71).

35/10-12RUC Start Card No. 032157

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

# WATER WELL REPORT

STATE OF WASHINGTON

Water Right Permit No. _____

(1) OWNER: Name Merv Peterson Address 5993 Hiway 20 Marblemount Wa. 98267

(2) LOCATION OF WELL: County Skagit SE ¼ SE ¼ Sec 12 T 35 N., R 10 W.M.

(2a) STREET ADDDRESS OF WELL (or nearest address) 5795 Hwy 20 Marblemount

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

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

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 50 feet. Depth of completed well 50 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed: 6 " Diam. from 0 ft. to 50 ft.
Welded ☑ _____ " Diam. from _____ ft. to _____ ft.
Liner installed ☐ _____ " Diam. from _____ ft. to _____ ft.
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 _____ Model No. _____
Type _____ Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Gravel packed: Yes ☐ No ☑ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.
Surface seal: Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

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

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 20 ft below top of well Date 4-11-89
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test _____
Bailer test _____ gal./min. with 10 ft. drawdown after _____ hrs.
Airtest 40 GPM gal./min. with stem set at 45 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 of aquifers 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 |
|---|---|---|
| Sandy Loam | 0 | 20 |
| Gravel & Brown Clay | 20 | 32 |
| Water Gravel Dirty (RED) | 32 | 44 |
| Water & Gravel Cleaner | 44 | 50 |

RECEIVED
APR 20 1989
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

Work started 4-11- 19 89 Completed 4-11- 19 89

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 DAHLMAN Pump & Well Drilling Inc. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address P O Box 422 Burlington Wa. 98233
(Signed) Leo Richter (WELL DRILLER) License No. 0623
Contractor's Registration No. DAHLMPW123LC Date 4-11- 19 89

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1 20 (10/87) -1329-

Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

STATE OF WASHINGTON

Water Right Permit No. 52 110E/130

(1) OWNER: Name Charlie Stansell Address 4014 - 149th Ave SE Bellevue Wash

LOCATION OF WELL: County Skagit NW¼ NE¼ Sec. 13 T. 35 N., R. 10 W.M.

(2a) STREET ADDDRESS OF WELL (or nearest address) Marblegate Marblemount West 9

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

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

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 30 feet. Depth of completed well 30 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed: 6 " Diam. from 1 ft. to 30 ft.
Welded ☐ " Diam. from ____ ft. to ____ ft.
Liner installed ☐ " Diam. from ____ ft. to ____ ft.
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 ____ Model No. ____
Type ____
Diam. ____ Slot size ____ from ____ ft. to ____ ft.
Diam. ____ Slot size ____ from ____ ft. to ____ ft.
Gravel packed: Yes ☐ No ☑ Size of gravel ____
Gravel placed from ____ ft. to ____ ft.
Surface seal: Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal Bent Nit
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? ____ Depth of strata ____
Method of sealing strata off ____

(7) PUMP: Manufacturer's Name McDonald
Type: Submer. H.P. ½

(8) WATER LEVELS: Land-surface elevation above mean sea level ____ ft.
Static level 22 ft. below top of well Date oct 4
Artesian pressure ____ lbs. per square inch Date ____
Artesian water is controlled by ____ (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? Wayne Prince
Yield: 10 gal./min with 1 ft drawdown after 1 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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test oct 7
Bailer test 30 gal./min. with 2 ft. drawdown after 1 hrs.
Airtest ____ gal./min. with stem set at ____ 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 of aquifers 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 |
|---|---|---|
| Silt Top Soil | 1 | 6 |
| Sand & Gravel with clay | 6 | 18 |
| Boulder + Sand + Gravel | 18 | 22 |
| Sand + gravel | 22 | 30 |

Elev 320

OCT 11 1981

Work started Oct 4, 19. Completed Oct 7, 19

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 Prince Well Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 794 NE Cape Horn Rd Concrete

(Signed) Wayne C. Prince (WELL DRILLER) License No. 1698

Contractor's Registration No. PRINCWD075KP Date oct 7, 19

(USE ADDITIONAL SHEETS IF NECESSARY)

13C1

35/10/13C
Application No.

# WATER WELL REPORT

STATE OF WASHINGTON

Permit No.

le Original and First Copy with
epartment of Ecology
econd Copy — Owner's Copy
hird Copy — Driller's Copy

WNER: Name Donald Lucinger Mail: 4006 225th Pl. S.W., Mountlake Terrace
Prop. Address Marblegate Development Lot 22

, LOCATION OF WELL: County Skagit NE ¼ NW ¼ Sec 13 T 35 N., R 1E W.M.

ing and distance from section or subdivision corner

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

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

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 47 ft. Depth of completed well 47 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Diam. from 0 ft. to 42 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

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 VOP Johnson
Type Stainless Model No
Diam. 6 Slot size 30 from 42 ft. to 47 ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name Jacuzzi Bros.
Type: Submersible HP 1/2

(8) WATER LEVELS: Land-surface elevation above mean sea level.... ft.
Static level 18 ft. below top of well Date 10-19-77
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Bailer test 45 gal./min. with 7 ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☒

RECEIVED

(10) WELL LOG:

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

| MATERIAL | FROM | TO |
|---|---|---|
| Topsoil | 0 | 1 |
| Fine brown sand | 1 | 16 |
| Sand & Gravel | 16 | 27 |
| Fine sand & wood | 27 | 36 |
| Fine Sand | 36 | 40 |
| Water bearing sand & gravel | 40 | 47 |
| Elev 310 | | |

Work started 10-17-77 19 Completed 10-19-77 19

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP & DRILLING, INC.
(Person, firm, or corporation) (Type or print)

Address Burlington 98233

[Signed] R C Johnson
(Well Driller)

License No. 223-02 Date 10-28-77 19

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

Free locate

# WATER WELL REPORT

STATE OF WASHINGTON

Application No. .....

Permit No. .....

(1) OWNER: Name Jones Shake Mill Address Star Rt Rockport Wa. 98283

LOCATION OF WELL: County Skagit NW¼ NW¼ Sec. 13 T. 35 N. R. 10 W.M.

ing and distance from section or subdivision corner

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

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

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 50 ft. Depth of completed well 50 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Diam. from 0 ft. to 50 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☑ " Diam. from ft. to ft.

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 .....
Type ..... Model No .....
Diam. ..... Slot size ..... from ..... ft. to ..... ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☑ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

Surface seal: Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

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

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 23 ft. below top of well Date 7-20-85
Artesian pressure ..... lbs. per square inch Date .....
Artesian water is controlled by ..... (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

ate of test .....
Bailer test 50 GPM gal./min. with 17 ft. drawdown after ..... hrs.
Artesian flow ..... g.p.m. Date .....
Temperature of water ..... Was a chemical analysis made? Yes ☐ No ☑

(10) WELL LOG:

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

| MATERIAL | FROM | TO |
|---|---|---|
| Gravel Rocks | 0 | 35 |
| Gravel Sand Water | 35 | 50 |

ELEVA 310

RECEIVED
AUG 14 1985
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

RECEIVED
AUG 27 1985
SKAGIT CO. HEALTH DEPT.

Work started 7-----20-, 19 85 Completed 7-----20-, 19 85

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP & WELL DRILLING INC.
(Person, firm, or corporation) (Type or print)

Address P O Box 422 Burlington Wa. 98233

[Signed] # Ken Fowler
(Well Driller)

License No. 1192 Date 7-22-85, 19

(USE ADDITIONAL SHEETS IF NECESSARY)

65595

ENTERED

Start Card No. 100946

UNIQUE WELL I.D. # GCS053

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT

STATE OF WASHINGTON

Water Right Permit No. _____

(1) OWNER: Name Richard E R Hart Address Marblegate Marble mount

(2) LOCATION OF WELL: County Skagit NW 1/4 NW 1/4 Sec. 13 T. 35 N. R. 10 W.M.

35.10E-13D

(2a) STREET ADDRESS OF WELL (or nearest address) _____

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

(4) TYPE OF WORK: Owner's number of well (if more than one) _____

Abandoned ☐ New well ☑ Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☐ Driven ☐ Reconditioned ☐ Rotary ☑ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 51 feet. Depth of completed well 51 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6" Diam from +2 ft to 51 ft.
Welded ☐ _____" Diam from _____ ft. to _____ ft
Liner installed ☐ Threaded ☐ _____" Diam. from _____ ft to _____ ft.

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 _____

Type _____ Model No _____

Diam. ____ Slot size _____ from _____ ft to _____ ft.

Diam. ____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☑ Size of gravel _____

Gravel placed from _____ ft to _____ ft.

Surface seal: Yes ☑ No ☐ To what depth? 18 ft.

Material used in seal Bentonite

Did any strata contain unusable water? Yes ☐ No ☐

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

(7) PUMP: Manufacturer's Name Cornells

Type: Submersible 10GPM H.P. ½

(8) WATER LEVELS: Land surface elevation above mean sea level _____ ft

Static level 21 ft below top of well Date Sept 29

Artesian pressure _____ lbs. per square inch Date _____

Artesian water is controlled by _____ (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: 10 gal./min. with 3 ft. drawdown after 2 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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test _____

Bailer test _____ gal./min with _____ ft. drawdown after _____ hrs.

Airtest _____ gal./min with stem set at _____ 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 of aquifers 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 | 1 | 4 |
| Silt & Sand | 4 | 7 |
| Sand gravel | 7 | 35 |
| Sand Water Silt | 35 | 48 |
| Sand gravel Water | 48 | 51 |

Well Site meets Standards set in SC 12 48 according to info provided by owner

RECEIVED

AUG 12 1999

DEPT OF ECOLOGY

Work Started Sept 29 19 Completed Sept 29 19 99

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 Prince Well Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 7940 NE Cape Horn Rd Concrete

(Signed) Wayne C Prince (WELL DRILLER) License No 1898

Contractor's Registration No. PRINCWD095KU Date _____, 19 ____

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

ECY 050-1-20 (9/93) * * *

13E1

# WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. 28065
Water Right Permit No.

HDI #2888

35/10E/13E

(1) OWNER: Name ROBERTS, RICK & LISA Address 818 29TH AVE SEATTLE, WA 98122-

(2) LOCATION OF WELL: County SKAGIT - SW 1/4 NW 1/4 Sec 13 T 35 N., R 10E WM

(2a) STREET ADDRESS OF WELL (or nearest address) 5709 W MARBLEGATE

(3) PROPOSED USE: DOMESTIC

(4) TYPE OF WORK: Owner's Number of well (If more than one) 1
NEW WELL Method: ROTARY

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 38 ft. Depth of completed well 37.5 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Dia. from +3 ft. to 37.5 ft.
WELDED " Dia. from ft. to ft.
" Dia. from ft. to ft.

Perforations: 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: NO
Manufacturer's Name
Type Model No.
Diam. slot size from ft. to ft.
Diam. slot size from ft. to ft.

Gravel packed: NO Size of gravel
Gravel placed from ft. to ft.

Surface seal: YES To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water? Depth of strata ft.
Method of sealing strata off

(7) PUMP: Manufacturer's Name GRUNDFOS
Type SUBMERSIBLE H.P. 1/2

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft.
Static level 15.5 ft. below top of well Date 01/04/94
Artesian Pressure lbs. per square inch Date
Artesian water controlled by

(9) WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? YES If yes, by whom? JERRY BACUS
Yield: 19 gal./min with 1.8 ft. drawdown after 2 hrs.

Recovery data

| Time | Water Level | Time | Water Level | Time | Water Level |
|---|---|---|---|---|---|
| | | | | | |

Date of test / /
Bailer test gal/min. ft. drawdown after hrs.
Air test 60 gal/min. w/ stem set at 36 ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? YES

(10) WELL LOG

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

| MATERIAL | FROM | TO |
|---|---|---|
| TOPSOIL | 0 | 1 |
| BROWN SAND SILT & SCATRD. GRAV. | 1 | 9 |
| BROWN GRAVEL SAND COBBLES | 9 | 15.5 |
| BROWN GRAVEL SAND & WATER | 15.5 | |

Elev 310

RECEIVED
JAN 31 1994
DEPT. OF ECOLOGY

Work started 01/04/94 Completed 01/04/94

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 HAYES DRILLING, INC.
(Person, firm, or corporation) (Type or print)

ADDRESS 556 ERSHIG RD. BOW, WA

(SIGNED) Ryan Wilhoun License No. 2190

Contractor's Registration No. HAYESDI106J5 Date 01/21/94

WELL SITE MEETS ALL SIGHTING CRITERIA UNDER S.C.C. 12.48.090 AND WAC 173-160 BASED ON INFORMATION SUPPLIED JBY THE OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE.

3421

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT

STATE OF WASHINGTON

Application No

Permit No

(1) OWNER: Name Tom Harville Mail: 17905 Talbot Rd. Edmonds, 98020 Address Lot 18 Marblegate Marblemount, 98267

LOCATION OF WELL: County Skagit SW ¼ NW ¼ Sec. 5 T. 35 N. R. 7 W.M.

Bearing and distance from section or subdivision corner

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

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

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 40 ft. Depth of completed well 40 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 " Diam. from 0 ft. to 40 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☐ " Diam. from ft. to ft.

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
Type Model No
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 15 ft.
Material used in seal: CEMENT
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 6 ft. below top of well Date 6-21-82
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Bailer test 50 gal./min. with 30 ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

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

| MATERIAL | FROM | TO |
|---|---|---|
| Sand and gravel | 0 | 20 |
| Water and gravel | 20 | 40 |

ELEV=305

Work started June 21 19 82 Completed June 21 19 82

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP AND DRILLING (Person, firm, or corporation) (Type or print)

Address P.O. Box 422 Burlington, 98233

[Signed] (Well Driller)

License No. 0222 Date June 22 1982

13F1

Start Card No. WP022917

# WATER WELL REPORT

STATE OF WASHINGTON

UNIQUE WELL I.D. # AAX 452

Water Right Permit No. _____

Original and First Copy with Department of Ecology
2nd Copy — Owner's Copy
3rd Copy — Driller's Copy

OWNER: Name Robert Lloyd Address 16903 NE 106th Redmond West 98052

LOCATION OF WELL: County Skagit SE 1/4 NW 1/4 Sec 13 T. 35 N. R. 6 W.M.

STREET ADDRESS OF WELL (or nearest address) Lot 26 Marble Gate Marblemount West

PROPOSED USE: ☑ Domestic ☐ Industrial ☐ Municipal ☐ ☐ Irrigation ☐ Test Well ☐ Other ☐ ☐ DeWater

TYPE OF WORK: Owner's number of well (if more than one) _____

Abandoned ☐ New well ☑ Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☐ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

DIMENSIONS: Diameter of well 6 inches. Drilled 38 feet. Depth of completed well 31 ft.

CONSTRUCTION DETAILS:

Casing Installed: 6 " Diam. from 1 ft. to 31 ft.
Welded ☐ _____ " Diam. from _____ ft. to _____ ft.
Liner installed ☐ _____ " Diam. from _____ ft. to _____ ft.
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 _____
Type _____ Model No. _____
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☑ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

PUMP: Manufacturer's Name Grundfos
Type: Submer turbine H.P. 1/2

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 14 ft. below top of well Date Oct 1
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☑ No ☐ If yes, by whom? _____
Yield: 10 gal./min. with 1 ft. drawdown after 2 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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test _____
Bailer test 30 gal./min. with 3 ft. drawdown after 1 hrs.
Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers 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 | 1 | 8 |
| Hardpan Clay Sand Gravel Cemented | 8 | 25 |
| Sand gravel Water | 25 | 31 |
| Elev 320 | | |
| Well meets Standards Set in SC 12-48 according to info provided by owner wcp | | |

RECEIVED
OCT 08 1993
DEPT. OF ECOLOGY

Work Started Sept 26 19. Completed Oct 1 19

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 Prince Well Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 794 NE Cape Horn Concrete

(Signed) Wayne E Prince (WELL DRILLER) License No. 1898

Contractor's Registration No. PRINCWD095K4 Date Oct 1 19 93

(USE ADDITIONAL SHEETS IF NECESSARY)

# WATER WELL REPORT

STATE OF WASHINGTON

UNIQUE WELL I.D. # ACG 104

Water Right Permit No. AUG 29 1996 W96-0134

and First Copy with
of Ecology
Copy — Owner's Copy
Copy — Driller's Copy

OWNER: Name Harold Desilmore Address ~~Community Development~~

(2) LOCATION OF WELL: County Skagit 1/4 1/4 Sec 13 T. 35 N. R 10 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 5737 Rockport Cascade Rd.

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

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

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 40 feet. Depth of completed well 40ft ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Diam. from 1 ft. to 40 ft.
Welded ☒ " Diam. from ft. to ft.
Liner installed ☐ " Diam. from ft. to ft.
Threaded ☐
Perforations: Yes ☐ No ☒
Type of perforator used in. by in.
SIZE of perforations ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
Screens: Yes ☐ No ☒
Manufacturer's Name Model No.
Type from ft. to ft.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.
Gravel packed: Yes ☐ No ☒ Size of gravel
Gravel placed from ft. to ft.
Surface seal: Yes ☒ No ☐ To what depth? 18ft ft.
Material used in seal Cement + Bentonite
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name Cmdfo H.P. ½
Type: Jagon Submersible

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 22 ft. below top of well Date Aug 13 96
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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: 10 gal./min. with 6 ft. drawdown after 2 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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Airtest gal./min. with stem set at 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 of aquifers 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 |
|---|---|---|
| Sand + Big gravel | 1 | 23 |
| Sand + gravel + clay | 23 | 28 |
| Sand gravel | 28 | 34 |
| Sand gravel + water | 34 | 40 |

Elev 340

Well site meets Standard at WAC 173-160-240 according to info provided by owner WGP

Work Started Aug 11 19. Completed Aug 11 19 96

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 Prince Well Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 794 NE Cap Horn Concrete

(Signed) Wayne C Prince (WELL DRILLER) License No. 1898

Contractor's Registration No. PRINCWD065KJ Date Aug 12 19 96

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

Quad ?? → 13G2

Original and First Copy with
artment of Ecology
nd Copy — Owner's Copy
d Copy — Driller's Copy

# WATER WELL REPORT

STATE OF WASHINGTON

Application No. 35/10-13 G
Permit No. ....

Mail: 708 N. W. 60th, Seattle

OWNER: Name James Porch Address Prop: Marblemount 98267

LOCATION OF WELL: County Skagit SW ¼ NE ¼ Sec 13 T 35 N., R 10E W.M.

ring and distance from section or subdivision corner

**PROPOSED USE:** Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

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

**DIMENSIONS:** Diameter of well 6 inches.
Drilled 28 ft. Depth of completed well 28 ft.

**CONSTRUCTION DETAILS:**
Casing installed: 6 " Diam. from 0 ft. to 28 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

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
Type Model No
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

**PUMP:** Manufacturer's Name
Type: H.P

**WATER LEVELS:** Land-surface elevation above mean sea level .... ft.
Static level 17 ft. below top of well Date 5-5-78
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

**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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Bailer test 40 gal./min. with 0 ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☒

**(10) WELL LOG:**

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

| MATERIAL | FROM | TO |
|---|---|---|
| Sandy Loam | 0 | 5 |
| Coarse Gravel | 5 | 24 |
| Gravel & Water | 24 | 28 |

Elev 340

Work started 5-4-78, 19 Completed 5-5-78, 19

**WELL DRILLER'S STATEMENT:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP & DRILLING, INC.
(Person, firm, or corporation) (Type or print)

Address Burlington 98233

[Signed] R. C. Johnson
(Well Driller)

License No. 222 Date 5-16-78, 19

15 KGH

35/10-13K

Start Card No. 02494

UNIQUE WELL I.D. # AAX 461

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT

STATE OF WASHINGTON

Water Right Permit No. _____

OWNER: Name Richard Watson Address _____

LOCATION OF WELL: County Skagit NW 1/4 SE 1/4 Sec 13 T. 35 N. R 10 W

(2a) STREET ADDRESS OF WELL (or nearest address) _____

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

(4) TYPE OF WORK: Owner's number of well (if more than one) _____

Abandoned ☐ New well ☑ Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☑ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 46 feet. Depth of completed well 46 ft.

(6) CONSTRUCTION DETAILS:

Casing Installed: 6" Diam. from 1 ft. to 46 ft.
Welded ☐ Liner installed ☐ Threaded ☐ _____" Diam. from _____ ft. to _____ ft.
_____" Diam. from _____ ft. to _____ ft.

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 _____
Type _____ Model No. _____
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☑ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

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

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 28 ft. below top of well Date Oct 3
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test _____
Bailer test 20 gal./min. with 3 ft. drawdown after 2 hrs.
Airtest _____ gal./min. with stem set at _____ 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 of aquifers 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 | 1 | 4 |
| F. Nc Sand | 4 | 21 |
| Clay Sand + gravel | 21 | 35 |
| Sand + gravel | 35 | 40 |
| Sand gravel water | 40 | 46 |

ELEV 360

RECEIVED
OCT 08 1993
DEPT. OF ECOLOGY

Well meets Standards Set in WAC 173 160 according to info provided by owner WCG

Work Started Sept 28 19. Completed Oct 2 19 93

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 Prince Well Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 7944 NE Cook Hood Concrete

(Signed) Wayne C. Prince (WELL DRILLER) License No. 1698

Contractor's Registration No. PRINCWD095KQ Date Oct 3 19 93

(USE ADDITIONAL SHEETS IF NECESSARY)

Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT

STATE OF WASHINGTON

Application No. 15 N UK

Permit No.

**(1) OWNER:** Name Simpson Properties, Inc. Address 2000 Washington Bldg., Seattle, Wash. 98101

**LOCATION OF WELL:** County Skagit NW ¼ SE ¼ Sec. 13 T. 35 N., R. 10 E. W.M.

Bearing and distance from section or subdivision corner Marblegate Project, near Marblemount

**PROPOSED USE:** Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

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

**DIMENSIONS:** Diameter of well 6 inches.
Drilled 58 ft. Depth of completed well 58 ft.

**(5) CONSTRUCTION DETAILS:**
Casing installed: 6 " Diam. from +1 ft. to 58 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

**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
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

**Gravel packed:** Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

**Surface seal:** Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal Clay
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

**(7) PUMP:** Manufacturer's Name Fabtrol
Type: submersible H.P. 1

**(8) WATER LEVELS:** Land-surface elevation above mean sea level ft.
Static level 32 ft. below top of well Date 5/5/74
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☒

**(10) WELL LOG:**

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

| MATERIAL | FROM | TO |
|---|---|---|
| Gravely brown loam | 0 | 2 |
| Gravel, rock clay | 2 | 8 |
| Tan gravel hardpan | 8 | 25 |
| Brown clay, sand & geavel | 25 | 32 |
| Brown gravel & sand, some water | 32 | 35 |
| Gray clay, sand & geavel | 35 | 50 |
| Gray sand & gravel - water | 50 | 55 |
| Gray coarse gravel & sand - water | 55 | 58 |
| Gravel base | 58 | 59 |

350

Work started Apr. 28, 19 74 Completed May 5, 19 74

**WELL DRILLER'S STATEMENT:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME HAYES WELL DRILLING & PUMPS, Inc.
(Person, firm, or corporation) (Type or print)

Address Bow, Wash. 98232

[Signed] (Well Driller)

License No. 0178 Date Dec. 1, 19 74

(USE ADDITIONAL SHEETS IF NECESSARY)

# WATER WELL REPORT

STATE OF WASHINGTON

OWNER: Name Joe Brown Address 13L01-

2) LOCATION OF WELL: County Skagit NE ¼ SW ¼ Sec 13 T 35 N. R 10 W.

(2a) STREET ADDDRESS OF WELL (or nearest address) [illegible]

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

(4) TYPE OF WORK: Owner's number of well (if more than one) ____

Abandoned ☐ New well ☑ Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☐ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 100 feet. Depth of completed well 50 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 " Diam. from 1 ft. to 50 ft.

Welded ☐ Liner installed ☐ Threaded ☐ ____ " Diam. from ____ ft. to ____ ft.

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 ____

Type ____ Model No. ____

Diam. ____ Slot size ____ from ____ ft. to ____ ft.

Diam. ____ Slot size ____ from ____ ft. to ____ ft.

Gravel packed: Yes ☐ No ☐ Size of gravel ____

Gravel placed from ____ ft. to ____ ft.

Surface seal: Yes ☑ No ☐ To what depth? 18 ft.

Material used in seal Bentonite

Did any strata contain unusable water? Yes ☐ No ☐

Type of water? ____ Depth of strata ____

Method of sealing strata off ____

(7) PUMP: Manufacturer's Name Grundfos

Type: S.P. H.P ½

(8) WATER LEVELS: Land-surface elevation above mean sea level ____ ft.

Static level 34 ft. below top of well Date June 19

Artesian pressure ____ lbs. per square inch Date ____

Artesian water is controlled by ____ (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test ____

Bailer test 30 gal./min. with 2 ft. drawdown after 2 hrs.

Airtest ____ gal./min. with stem set at ____ 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 DESCRIPTIO

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

| MATERIAL | FROM | TO |
|---|---|---|
| Sand & gravel [illegible] | 1 | 40 |
| [illegible] | 40 | 45 |
| Fine Sand w/ | 45 | 100 |
| Pull [illegible] | | |
| [illegible] | 1 | 50 |
| Elev 330 | | |

Work started June 15 19. Completed June 17 19 9

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 Pump well Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address Fune Cape Horn Wash

(Signed) [signature] (WELL DRILLER) License No. 1815

Contractor's Registration No. PUMPWD895KU Date June 19 19 9

(USE ADDITIONAL SHEETS IF NECESSARY)

13L02

4/10-13L

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT

## STATE OF WASHINGTON

Application No.

Permit No

(1) OWNER: Name Anita Albright Address 2439 S 312 306 Pl., Federal Way Wa 98003

(2) LOCATION OF WELL: County Skagit — NE¼ ¼ SW¼ ¼ Sec 13 T. 35 N., R 10E W

Bearing and distance from section or subdivision corner

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

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

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 40 ft. Depth of completed well 40 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Diam. from 0 ft. to 40 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☑ " Diam. from ft. to ft.

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
Type Model No
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☑ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 24 ft. below top of well Date 4-18-84
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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)

| T | Water Level | Time | Water Level | Time | Water Level |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Bailer test 40 GPM gal./min. with 10 ft. drawdown after hrs.
Artesian flow g.p.m. Date

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, a show thickness of aquifers and the kind and nature of the material in ea stratum penetrated, with at least one entry for each change of formati

| MATERIAL | FROM | TO |
|---|---|---|
| Top Soil | 0 | 4 |
| Gravel | 4 | 34 |
| Gravel & Water | 34 | 40 |
| Elev 330 | | |

Work started 4-18- 19 84 Completed 4-18- 19 84

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP & DRILLING INC.
(Person, firm, or corporation) (Type or print)

Address P O BOX 422 Burington Wa. 98233

[Signed] H Ken Fowler
(Well Driller)

No. 1192 Date 4-18 19 84

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W107917
UNIQUE WELL I.D. # ACS082
Water Right Permit No. _____

(1) OWNER: Name [illegible] Address Marbleyate Marble mount Wash

(2) LOCATION OF WELL: County Skagit NW 1/4 SW 1/4 Sec 13 T 35 N. R 10 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) Same 35-10E-13M

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

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

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 40 feet. Depth of completed well 36 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed: 6" Diam. from +3' ft. to 36 ft.
Welded ☐ Liner installed ☐ Threaded ☐ _____" Diam. from _____ ft. to _____ ft.
_____" Diam. from _____ ft. to _____ ft.

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 _____
Type _____ Model No. _____
Diam. ____ Slot size _____ from _____ ft. to _____ ft.
Diam. ____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☒ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Grout
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

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

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 15 ft. below top of well Date July 28
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (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: 10 gal./min. with 3½ ft. drawdown after 2 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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test _____
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest _____ gal./min. with stem set at _____ 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 of aquifers 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 | 1 | 8 |
| Sand Gravel | 8 | 20 |
| Clay Water - Mud | 20 | 25 |
| Clay | 25 | 29 |
| Sand gravel Water | 29 | 36 |
| Sand | 36 | 40 |
| Pull Casing back to | 36 | |
| Well Site meets Standard Set in SE 12, 35 according to info provided by owner | | |

AUG 31 1998

Work Started July 27 19 Completed July 28 19 98

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 Princewell Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 7940 NE Cape Horn Rd Concrete

(Signed) Wayne C Prince (WELL DRILLER) License No. 1898

Contractor's Registration No. PRINCWD893AQ Date July 28 19 98

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

ECY 050-1-20 (9/93)

14A01 -

35/10-14J

Start Card No. 015493

e Original and First Copy with
partment of Ecology
cond Copy—Owner's Copy
ird Copy—Driller's Copy

# WATER WELL REPORT

STATE OF WASHINGTON

Water Right Permit No. _____

OWNER: Name Helen Peterson Address P O Box 8 Marblemount Wa. 98267

(2) LOCATION OF WELL: County Skagit NE ¼ NE ¼ Sec. 14 T. 35 N. R. 10 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) Hwy 20 Marblemount Wa.

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

(4) TYPE OF WORK: Owner's number of well (if more than one) _____

Abandoned ☐ New well ☒ Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☐ Driven ☐ Reconditioned ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 40 feet. Depth of completed well 40 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6" Diam. from 0 ft. to 40 ft. Welded ☒ Liner installed ☐ Threaded ☐

_____" Diam. from _____ ft. to _____ ft.

_____" Diam. from _____ ft. to _____ ft.

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 _____

Type _____ Model No. _____

Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☒ Size of gravel _____

Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.

Material used in seal BENTONITE

Did any strata contain unusable water? Yes ☐ No ☒

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____

Type: _____ H.P. _____

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.

Static level _____ ft. below top of well Date _____

Artesian pressure _____ lbs. per square inch Date _____

Artesian water is controlled by _____ (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 |
|---|---|---|---|---|---|
| | | | | | |

Date of test _____

Bailer test _____ gal./min. with 10 ft. drawdown after _____ hrs.

Airtest 20 GPM gal./min. with stem set at 35 ft. for _____ hrs.

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers 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 | 0 | 6 |
| Dirty Sand & Gravel | 6 | 32 |
| Water & Gravel | 32 | 40 |

Elev 310

[illegible] 1989

DEPARTMENT OF ECOLOGY
NORTHWEST REGION

Work started 3-24- 19 89 Completed 3-24- 19 89

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.

Dahlman Pump & Drilling Inc.

NAME XXXXXXXXXXXXX (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address P O Box 422 Burlington Wa. 98233

(Signed) Jed Richey (WELL DRILLER) License No. 0623

Contractor's Registration No. DAHLMPW123LC Date 3-24-89 19

Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

F Local

# WATER WELL REPORT

## STATE OF WASHINGTON

Application No.

Permit No.

**(1) OWNER:** Name Mike Estes Address 5715 Hwy. 20 Marblemount, 98267

**LOCATION OF WELL:** County Skagit Gov. Lot 3 - 4 1/4 1/4 Sec 7 T. 35 N. R. 10 W.M.

ing and distance from section or subdivision corner NW 1/4 SE 1/4 14-35-10

**(3) PROPOSED USE:** Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

**(4) TYPE OF WORK:** Owner's number of well (if more than one) #1

New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

**(5) DIMENSIONS:** Diameter of well 6 inches.
Drilled 40 ft. Depth of completed well 40 ft.

**(6) CONSTRUCTION DETAILS:**

**Casing installed:** 6 " Diam. from 1 ft. to 14 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☐ " Diam. from ft. to ft.

**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
Type Model No
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

**Gravel packed:** Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

**Surface seal:** Yes ☒ No ☐ To what depth? 14 ft.
Material used in seal Cement
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

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

**(8) WATER LEVELS:** Land-surface elevation above mean sea level ft.
Static level 5 ft. below top of well Date 4-19-82
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Bailer test 5 gal./min. with 6 ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☒

**(10) WELL LOG:**

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

| MATERIAL | FROM | TO |
|---|---|---|
| Brown clay | 0 | 14 |
| Gravel and clay | 14 | 30 |
| Water and gravel | 30 | 40 |

Elev 305

Work started April 19, 19 82 Completed April 19, 19 82

**WELL DRILLER'S STATEMENT:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP AND DRILLING
(Person, firm, or corporation) (Type or print)

Address P.O. Box 422 Burlington, 98233

[Signed] [illegible]
(Well Driller)

License No. 0222 Date April 22, 19 82

(USE ADDITIONAL SHEETS IF NECESSARY)

Field located 14K02 35/10E/14m

# WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. W 09683
Water Right Permit No.

NER: Name MCMILLAN, RICHARD Address P O BOX 142 MARBLEMOUNT, WA 98267-

OCATION OF WELL: County SKAGIT - NW 1/4 SW 1/4 Sec 14 T 35 N., R 10 WM
TREET ADDRESS OF WELL (or nearest address) 5707 HWY 20 MARBLEMOUNT

OPOSED USE: DOMESTIC

PE OF WORK: Owner's Number of well (If more than one)
W WELL Method: ROTARY

MENSIONS: Diameter of well 6 inches
illed 39 ft. Depth of completed well 39 ft.

NSTRUCTION DETAILS:
sing installed: 6 " Dia. from 0 ft. to 39 ft.
WELDED " Dia. from ft. to ft.
" Dia. from ft. to ft.

rforations: 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.

reens: NO
Manufacturer's Name
Type Model No.
Dia slot size from ft. to ft.
Di slot size from ft. to ft.

avel packed: NO Size of gravel
Gravel placed from ft. to ft.

rface seal: YES To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water? Depth of strata ft.
Method of sealing strata off

MP: Manufacturer's Name
Type H.P.

TER LEVELS: Land-surface elevation above mean sea level ... ft.
atic level 25 ft. below top of well Date 07/02/93
tesian Pressure lbs. per square inch Date
tesian water controlled by

LL TESTS: Drawdown is amount water level is lowered below static level.
s pump test made? If yes, by whom?
ld: gal./min with ft. drawdown after hrs.

very data
me Water Level Time Water Level Time Water Level

Date of test / /
er test gal/min. 13 ft. drawdown after hrs.
tes gal/min. w/ stem set at 38 ft. for 1 hrs.
ild gpm g.p.m. Date
erature of water Was a chemical analysis made?

(10) WELL LOG

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

| MATERIAL | FROM | TO |
|---|---|---|
| TOPSOIL | 0 | 6 |
| SAND GRAVEL COBBLES | 6 | 30 |
| WATER SAND & GRAVEL | 30 | 39 |

RECEIVED
JUL 30 1993
DEPT. OF ECOLOGY

elev 310

Well Located According
Ordinance 12.48 Skagit County

Work started 07/02/93 Completed 07/02/93

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 DAHLMAN PUMP & WELL DRILL
(Person, firm, or corporation) (Type or print)

ADDRESS PO BOX 422, BURLINGTON, WA

[SIGNED] Ralph W. Dahlman License No. 2043

Contractor's Registration No. DAHLMPW123LC Date 07/06/93

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT

**STATE OF WASHINGTON**

14203 Application No. 35/10-14K

Permit No.

**(1) OWNER:** Name Mike Estes Address 5715 Hwy. 20 Marblemount, 98267

**(2) LOCATION OF WELL:** County Skagit ~~Bg. S.E. ¼ S.E.~~ ¼ Sec. 14 T. 35 N. R. 6 W.M.

Bearing and distance from section or subdivision corner Govt Lot 3 NW SE 14 35 10

**(3) PROPOSED USE:** Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

**(4) TYPE OF WORK:** Owner's number of well (if more than one) #1
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

**(5) DIMENSIONS:** Diameter of well 6 inches.
Drilled 46 ft. Depth of completed well 46 ft.

**(6) CONSTRUCTION DETAILS:**

**Casing installed:** 6 " Diam. from 0 ft. to 41 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☐ " Diam. from ft. to ft.

**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 U.O.P. Johnson
Type S' STAINLESS Model No.
Diam. 6 Slot size .30 from 41 ft. to 46 ft.
Diam. Slot size from ft. to ft.

**Gravel packed:** Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

**Surface seal:** Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal CEMENT
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata.
Method of sealing strata off

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

**(8) WATER LEVELS:** Land-surface elevation above mean sea level ft.
Static level 30' ft. below top of well Date 4-22-82
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Bailer test 30 gal./min. with 10 ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☒

**(10) WELL LOG:**

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

| MATERIAL | FROM | TO |
|---|---|---|
| Brown clay | 0 | 17 |
| Brown clay | 17 | 35 |
| Water and gravel | 35 | 46 |

Work started April 19, 19 82 Completed April 19, 19 82

**WELL DRILLER'S STATEMENT:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP AND DRILLING (Person, firm, or corporation) (Type or print)

Address P.O. Box 422 Burlington, 98233

[Signed] (Well Driller)

License No. 0222 Date April 22, 19 82

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20

1404

# WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W 107095
Unique Well I.D. # AEN120
Water Right Permit No.

(1) OWNER: Name ROGERS, DAVID Address 3831 KROMER AVENUE EVERETT, WA 98201-

(2) LOCATION OF WELL: County SKAGIT NE 1/4 SE 1/4 Sec 14 T 35 N., R 10E WM

(2a) STREET ADDRESS OF WELL (or nearest address) 58752 WILLOW LANE, MARBLEMOUNT

35-10E-14

(3) PROPOSED USE: DOMESTIC

(4) TYPE OF WORK: Owner's Number of well (If more than one)
NEW WELL Method: ROTARY

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 32 ft. Depth of completed well 32 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Dia. from 0 ft. to 32 ft.
WELDED " Dia. from ft. to ft.
" Dia. from ft. to ft.

Perforations: 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: NO
Manufacturer's Name
Type Model No.
Diam. slot size from ft. to ft.
Diam. slot size from ft. to ft.

Gravel packed: NO Size of gravel
Gravel placed from ft. to ft.

Surface seal: YES To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water? Depth of strata ft.
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft.
Static level 10.5 ft. below top of well Date 04/27/99
Artesian Pressure lbs. per square inch Date
Artesian water controlled by

(9) WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? If yes, by whom?
Yield: gal./min with ft. drawdown after hrs.

Recovery data

| Time | Water Level | Time | Water Level | Time | Water Level |
|---|---|---|---|---|---|
| | | | | | |

Date of test / /
Bailer test gal/min. ft. drawdown after hrs.
Air test 50 gal/min. w/ stem set at 30 ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made?

(10) WELL LOG

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

| MATERIAL | FROM | TO |
|---|---|---|
| BROWN SILTY SAND | 0 | 6 |
| GRAVEL COBBLES & SAND | 6 | 10.5 |
| WET GRAVEL COBBLES | 10.5 | 20 |
| & SAND | 10.5 | 20 |
| WATER SAND & GRAVEL | 20 | |

WELL LOCATED ACCORDING TO SKAGIT COUNTY ORDINANCE #12.48

RECEIVED
MAY 07 1999
Department of Ecology

Work started 04/27/99 Completed 04/27/99

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 DAHLMAN PUMP & WELL DRILL
(Person, firm, or corporation) (Type or print)

ADDRESS PO BOX 422

[SIGNED] [signature] License No. 2043

Contractor's Registration No. DAHLMPW123LC Date 04/28/99

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# Appendix B
## Groundwater Flow Model

# APPENDIX B
# GROUNDWATER FLOW MODEL

## INTRODUCTION

### GENERAL

A groundwater flow model was constructed to simulate aquifer conditions within the study area. The purpose of the groundwater flow model was to estimate WHPA boundaries and to develop the 1-, 5- and 10-year TOT boundaries for the installed production well PW-1. The model is intended to be relatively simple and was based on a limited data set. The model could be improved if more precise and more recent hydrogeologic data was obtained

It is important to note that the groundwater flow model constructed for this project is only a representation of hydrogeologic conditions, which are substantially more complex than could be represented using the best available methods. It is probable that slightly different parameters or boundary assignments will allow for a slightly improved fit to the observed conditions. However, it is our opinion that the parameters and boundary conditions employed are sufficiently detailed and the model is sufficiently well-calibrated in order to provide a good estimate of WHPA and TOT considerations.

The process used to develop the groundwater flow model followed the applicable ASTM standards for groundwater modeling (D 5447-93 through D 5718-95 ASTM, 1996). Specifically, the process used to develop the groundwater flow model included formulating a model grid, assigning parameters and boundary conditions and calibrating the model. A steady-state calibration was performed using the groundwater level data derived from water well reports obtained from Ecology. A sensitivity analysis was conducted on the calibrated groundwater model to evaluate the effects of uncertainty within specified model parameters.

### MODEL CODE

The USGS groundwater flow model MODFLOW was used to simulate steady-state and transient groundwater conditions within the study area (Harbaugh and McDonald, 1996). MODFLOW was chosen as the code for the project because it is flexible, well-documented and has become one of the industry standards for groundwater modeling. MODFLOW is a numerical groundwater flow model that simulates groundwater elevation and flow using the finite-difference method. The finite-difference equations and the operation of MODFLOW are presented in Harbaugh and McDonald (1996) and McDonald and Harbaugh (1988). The preprocessing program Visual MODFLOW (version 2.82) was used to assist with creating, executing and processing of the model results.

### MODEL SOLVER

The WHS solver was used to obtain a solution by iteration of the finite-difference equation in the MODFLOW code (Waterloo Hydrogeologic, 2001). The head change criteria for convergence were specified at 0.1 feet and the residual criteria for convergence were specified at 0.01 feet.

### MODEL DOMAIN AND GRID

The model domain is shown on Figure B-1. The model domain included the lowland areas located to the north, east and southwest of the Town of Marblemount. The model domain is the active portion of the model. This included the sedimentary glacial and fluvial deposits of the Skagit River and Cascade River

Valleys. The bedrock uplands and mountains that flank either side of the Skagit River and Cascade River Valleys were specified as no-flow zones and were not part of the active model domain. This is because the bedrock exposed within these highlands is largely composed of low permeability metamorphic rocks. These formations are expected to have little groundwater interaction with the sedimentary aquifers of the watershed and it is our opinion that it is appropriate to specify these as no-flow zones.

The model finite-difference grid is composed of 200 rows and 200 columns with a uniform spacing of about 180 feet. This grid design allows for sufficiently detailed assignment of hydraulic properties in areas where detailed data is available regarding aquifer properties.

The model was constructed using one model layer, which was simulated in MODFLOW under unconfined conditions. The top of the model layer was assigned the same elevation as surface topography as presented on the USGS *Geologic Map of the Marblemount Quadrangle, Washington*, GM-23, dated 1979. The bottom of the model layer was interpreted from well log data from the Ecology.

## MODEL PARAMETERS

The aquifer parameters assigned for this project were based on the results of our review of available geologic and hydrogeologic information and consisted of hydraulic conductivity distribution. Specific yield and specific storage estimates were not required because this was a steady-state model. Hydraulic conductivity values were adjusted within the range of field-measured conditions, or within the range of reasonably expected values where field data was lacking, during the model calibration process. The values discussed below are the final calibrated parameters used in the model. A uniform hydraulic conductivity distribution of 700 feet per day (ft/d) was assigned to the majority of the model layer. A lower hydraulic conductivity zone, 60 ft/d, was assigned to the area immediately surrounding well PW-1. The hydraulic conductivity distribution was based on aquifer test information described in water well reports from Ecology.

## MODEL BOUNDARY CONDITIONS

Boundary conditions were applied to simulate the influence of water input or output from the groundwater flow system. It is important that boundaries are specified in a manner which does not create unrealistic conditions or incorrectly influence the simulation of groundwater conditions within the area of interest (Anderson and Woessner, 1992). Boundaries were assigned and were examined to determine the relative influence on the model simulations during a water budget and sensitivity analyses. Boundary conditions included rivers, recharge and constant heads, shown on Figure B-1.

### *River Boundaries (Head-Dependent Flux)*

The river boundaries are shown on Figure B-1 and include the Skagit and Cascade Rivers. The conductance values applied to the river boundaries were based on the width of the river or creek and the expected vertical hydraulic conductivity and thickness of the riverbed sediments. Since no riverbed sampling data was available, we assumed a riverbed thickness of 1 foot and vertical hydraulic conductivity values ranging of 1 feet/day. Riverbed conductance was calculated according to the equation:

$$C = (L * W * Kz)/X \qquad \text{Eq. C-1}$$

Where

C = Conductance ($ft^2/d$)
L = Length of stream segment (182 feet)
W = Width of stream segment (ranging from 91 to 182 feet)
Kz = vertical hydraulic conductivity (1 ft/d)
X = Streambed thickness (1 feet)

Riverbed conductance is largely a calibrated value in the model due to the lack of detailed field data; this value ranged from about 17,000 ft/d for the Cascade River and about 33,000 ft/d for the Skagit River.

### *Constant Head Boundary*

Constant head boundaries were assigned to valley regions at the margins of the model domain and are shown in Figure B-1. Values were based on river elevations presented in the USGS *Geologic Map of the Marblemount Quadrangle, Washington*, GM-23, dated 1979. At the upstream margin of the Cascade River, a constant head elevation of 490 feet was selected. At the upstream margin of the Skagit River, a constant head elevation of 370 feet was selected. At the downstream margin of the Skagit River, head values ranged from 275 feet at the bedrock margin to 265 feet at the river margin.

### *Recharge Boundary*

Recharge is applied as a surface boundary condition (water-table flux) by a direct specified rate in MODFLOW. Recharge is generally specified as a percentage of precipitation based on soil type and topography (Anderson and Woessner, 1992). For this project, a uniform recharge rate of 20 inches per year was input for each model cell except for those that bordered the bedrock highlands. For each of these cells, the recharge rate was increased to 30 inches per year to simulate recharge contribution derived from upland runoff.

## MODEL CALIBRATION

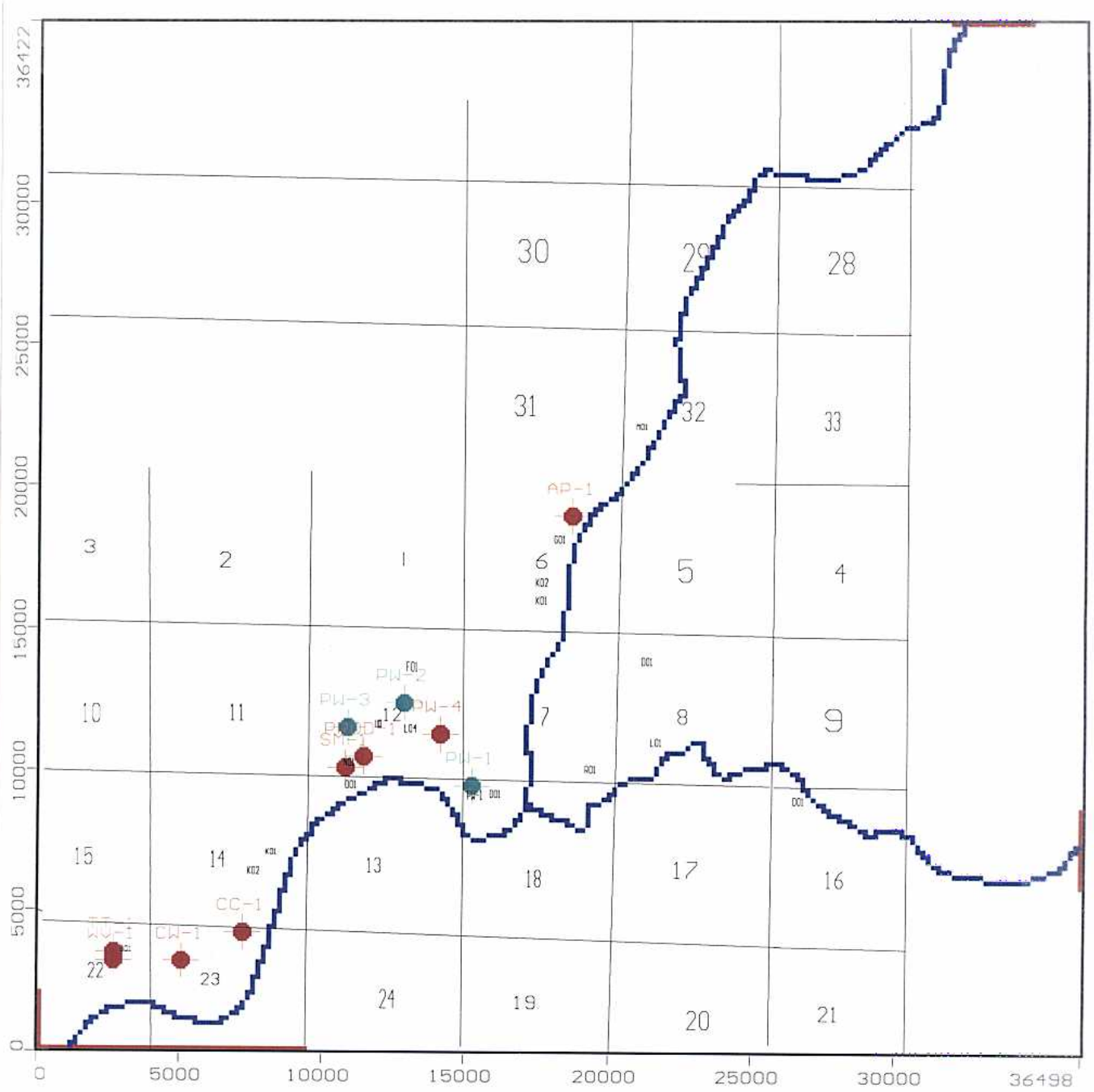
Model calibration is the process of adjusting properties and boundary conditions within the range of the field-measured or literature-determined values so that the model achieves a better approximation of the field-measured groundwater data. It is important to note that model calibration involves some degree of uncertainty because there is no one unique model solution and it is always possible to achieve a better approximation of the prototype aquifer system (Zheng and Bennett, 1995). For the purposes of our analyses, we attempted to achieve an adequate representation of the regional aquifer conditions. For this project, data used to evaluate the calibration included groundwater level measurements from water well reports from Ecology.

A steady-state calibration was completed for the model. Steady-state conditions are those representative of an average condition where model boundaries (such as well pumping, river stage or recharge) do not change over time. An iterative process was employed for the steady-state calibration where calibrations proceeded through approximately 24 steady-state calibration steps until the model was determined to fit the observed field conditions.

All model parameters, except layer elevations, were tested during the model calibration process. Model parameters were adjusted and fine-tuned during each successive model execution in order to achieve a better fit to the observed calibration data.

### *Simulated Groundwater Elevations*

The groundwater elevation measurements obtained from water well reports from Ecology were used to calibrate the model to static groundwater surface. A total of 17 points were used for the calibration. The differences between the observed and simulated groundwater elevations (residuals) are summarized in Figure B-2. The mean difference in observed versus simulated elevations was 0.27 feet and the absolute mean residual was 2.49 feet. The root mean squared (RMS) was 3.40 feet and the normalized RMS was 4.36 percent.




**BOUNDARIES**

Constant Head

River

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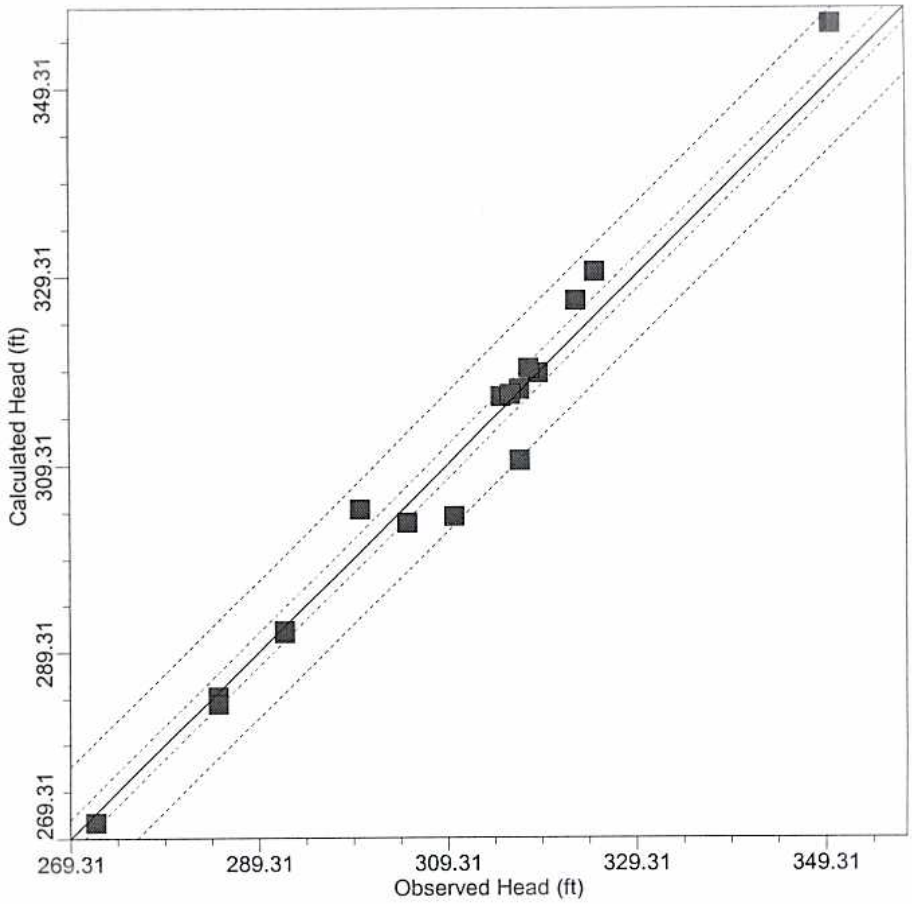
**MODEL DOMAIN**

**FIGURE B-1**

ORCH:\2\240201203\FINALS\240201203_FIGURE B-1.PPT CSL:JAM:akf 07/13/04




ORCH:\2\240201203\FINALS\240201203_FIGURE B-2.PPT CSL:JAM:akf 07/13/04

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CALIBRATION PLOT

FIGURE B-2

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# Appendix C
## Contingency And Emergency Spill Response Plans

# APPENDIX C
# CONTINGENCY AND EMERGENCY SPILL RESPONSE PLANS

## WATER SUPPLY CONTINGENCY PLAN

### *General*

The District's Emergency Water Supply Contingency Plan (WSCP) is designed to be implemented if PW-1 is taken out of service due to operational problems such as the loss of a production pump or a break in a main distribution line. It should be noted that the District's Marblemount water system has enough storage for up to five days of rationed water used if needed. For the purposes of this contingency plan it is assumed that any operational problem will be corrected within approximately 2 to 4 days. The WSCP includes:

- ***District Actions***. Includes information on actions, which can be taken and are controllable by the District.
- ***Customer Conservation Actions.*** Includes conservation actions that will be requested or required of Water Utility customers in order to meet needed reductions in consumption**.**
- ***Public Information Actions.*** A summary of the various means used to inform the public of current water supply situation and actions that are requested of the public.

Unfortunately, there are no water purveyors located close enough to the District's Marblemount system to make interties practical. Following is a description of actions that could be implemented if the District's Marblemount water system suffered a total loss of water due to operational failure.

- ***Districts Actions.*** The District will eliminate all non-essential operating system water uses including hydrant flushing, pipeline flushing, and other uses. Water system pressure may be reduced due to a lower availability of water in the storage reservoir. Local fire department would be advised of any changes in system pressure that could impact fire flows.
- ***Customer Conservation Actions.*** Water rationing would be required of all water system customers. When rationing is put into effect, user categories would be established and maximum water allocations would be set for each category. Commercial/Industrial customers would be asked to curtail use except for essential services. All customers would be required to reduce water use to the minimum amount possible.
- ***Public Information Actions.*** Public information would play a key role in maintaining people's incentive to reduce water consumption. The seriousness of the situation would be reflected in all public information efforts. Once rationing is in place, public information would be used to inform customers of effective means of reducing water consumption while still maintaining personal health and safety. Public information efforts will utilize the mass media as much as possible.

## EMERGENCY SPILL RESPONSE PLAN

An affective emergency response plan has to be flexible enough to be implemented under a wide range of circumstances. The most common types of emergencies that are relevant to the District's wellhead

protection areas are: (1) spills of hazardous material during a traffic accident, and (2) failure of tanks storing hazardous materials.

The Marblemount Fire Department would assume command at most emergencies that would threaten the District's water supply. Other agencies that may be contacted, as needed, include the, Washington State Department of Transportation (WSDOT) Emergency Response Team, County Health Department and Ecology. A list of emergency contact phone numbers is shown below.

1. Fire Department (911)
2. Public Utility District No. 1 of Skagit County, Greg Peterka (360-424-7104)
3. WSDOT (425-649-7000)
4. Washington State Department of Health, Nancy Fagin (253-395-6765)
5. Skagit County Department of Health, Lorna Parnet (360-336-9380 )
6. Washington State Department of Ecology (425-649-7000)

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# Appendix D
## Notification Letter

## APPENDIX D
## NOTIFICATION LETTER

Date

Property Owner
Address
Marblemount, Washington 98267

Dear Property Owner

In order to protect the drinking water supply for the Town of Marblemount, the Public Utility District No. 1 of Skagit County (District) is developing a Wellhead Protection Program in accordance with Washington State Department of Health requirements (WAC 246-290-135). As part of the Wellhead Protection Program, the District has mapped the area overlying the short-term recharge zone of their drinking water supply well. This area is referred to as the wellhead protection area. A map of the wellhead protection area is shown on the attached figure.

We trust that informing you of your location within this wellhead protection area will result in an increase in precautions to ensure that activities on your property will not impact the Town of Marblemount's drinking water supply. For further information regarding the Wellhead Protection Program for the Town of Marblemount water supply well please contact me at 360-424-7104.

Sincerely,

Greg Peterka, P.E.
Engineering Manager

Washington State Department of Health
Environmental Health Programs
Division of Drinking Water

# Ground Water Contamination
# Susceptibility Assessment Survey Form

Complete **one** form for **each** ground water source (well, wellfield, spring) used in your water system (photocopy as necessary).

**PART I: System Information**

Well owner/manager: Public Utility District No. 1 of Skagit County

Water system name: Potlatch Beach

County: Skagit

Water system ID number: 69034 Source number: Well 1 AAE874

Well depth: 168 feet

Source name: Well 1

WA well identification tag number: AAE847

❑ Well not tagged

Number of connections: x Population served: Emergency well

Township: 36 Range: 01E

Section: 35 ¼ ¼ Section: SESE

latitude/longitude (if available): 48.5659025 / -122.6446852

How was latitude/longitude determined?

_____Global positioning device_____survey_____topographical map
x_____other: Google Earth

*Please refer the instructions for details and explanations of all questions in Parts II through V.

**PART II: Well Construction and Source Information**

1) Date well originally constructed: 11 / 7 / 83 _month/day/year

last reconstruction: ___/___/___month/day/year

❑ Information unavailable

2) Well driller: Dahlman Pump and Drilling Inc.

❑ Well driller unknown

3) Type of well: X Drilled: ☑ rotary ❑ bored ❑cable (percussion) ❑ Dug

___ other: ❑ spring(s) ❑ lateral collector (Ranney)

❑ driven ❑ jetted ❑ other:

4) Well report available ☑ Yes (attach copy to form) ❑ No

5) Average pumping rate: 5 (gallons/min)

Source of information Distribution Superintendent

If not documented, how was pumping rate determined?

❑ Pumping rate unknown

6) Is this source treated? no

If so, what type of treatment:

❑ disinfection ❑ filtration ❑ carbon filter ❑ air stripper ❑ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is chlorinated, is a chlorine residual maintained: ❑ Yes ❑ No

Residual level:_____ (At the point closest to the source.)

**PART III: Hydrogeologic Information**

1) Depth to top of open interval: [check one]

❑ <20 ft ❑ 20-50ft ❑ 50-100ft ☑ 100-200ft ❑ >200ft

❑ information unavailable

2) Depth to ground water (static water level):

❑ <20ft ❑ 20-50ft ❑ 50-100ft ☑ >100ft

❑ flowing well/spring (artesian)

How was water level determined?

☑ well log ❑ other _____

❑ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch) **or**

_____feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ❑ Yes ❑ No

5) Wellhead elevation (height above mean sea level): 157 feet

How was elevation determined? ❑ topographic map ❑ Drilling/Well Log ❑ altimeter

☑other:_____LIDAR BareEarth 2016_____

❑ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_____x_____ evidence of a confining layer in well log

_____ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer**? ☑ Yes ❑ No

❑ information unavailable

7) Sanitary setback:

☑ < 100ft* ❑ 100-120ft ❑ 120-200 ft ❑ >200ft

* If less than 100ft, describe the site conditions:

At this time there is not a formal sanitary setback recorded or in easement; however, the typical annual volume of water pumped is so low that the 10 year travel time is less than 20 feet.

8) Wellhead construction:

☑ wellhead enclosed in a wellhouse

❑ controlled access (describe): _____

❑ other uses for wellhouse (describe): _____

❑ no wellhead control

9) Surface seal:

☑ 18 ft

❑ <18 ft (no Department of Ecology approval)

❑ <18 ft (Approved by Ecology, include documentation)

❑ depth of seal unknown

❑ no surface seal

10) Annual rainfall (inches per year):

❑ <10 in/yr ❑ 10-25 in/yr ☑ >25 in/yr

## PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 234,903 (gallons)

How was this determined?

☐ meter

❑ estimated: ❑ pumping rate (_____)

❑ pump capacity (_____)

☑ other: This is an emergency well and is only used when the reverse osmosis (RO) plant is out of commission. It is estimated that any repairs to the RO plant would take a maximum of three months. Thus, the annual volume is based on the system currently utilizing the RO plant, specifically the three highest use months of 2023 (June – August) (314 CCF = 234,903 gallons).

2) "Calculated Fixed Radius" estimate of ground water movement:

$r = \sqrt{Q\ t/\pi\ n\ H}$

Q = 234,903 / 7.481 = 31,400 cubic feet/year = pumping rate of well
N = .22 = aquifer porosity (unless known)
H = 10 feet = length of well screen
t = Travel Time to Well (0.5, 1 5, 10 years)

6-month ground water travel time: 48 feet

1-year ground water travel time: 67 feet

5-year ground water travel time: 150 feet

10-year ground water travel time: 213 feet

Information available on length of screened/open interval?

☑Yes ❑ No

Length of screened/open interval: 10 feet

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6- month time of travel boundary?

❑ Yes ☑No (mark and identify on map)

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6-month time of travel boundary?

❑ Yes ☑No (mark and identify on map)

Comments: _____

_____

_____

**PART V: Assessment of Water Quality**

1) **Regional sources of risk to ground water**:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five-year ground water travel time. If you do not know if one of the following is present, mark the "unknown" space.

| | 6-month | 1-year | 5-year | unknown |
|---|---|---|---|---|
| • likely pesticide application | | | | |
| • stormwater injection wells | | | | |
| • other injection wells | | | | |
| • abandoned ground water well | | | | |
| • landfills, dumps, disposal areas | | | | |
| • known hazardous materials clean-up site | | | | |
| • water system(s) with known quality problems | | | | |
| • population density >1 house/acre | | | | |
| • residences commonly have septic tanks | x | x | x | |
| • Wastewater treatment lagoons | | | | |
| • sites used for land application of waste | | | | |

Mark and identify on map any of the risks listed above which are located within the 6-month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

If other recorded or potential sources of ground water contamination exist within the ten-year time of travel circular zone around your water supply, please describe:

2) **Source-specific water quality records**: For each type of test below, mark the row that applies to the sample results for this source. Consider all the sample results from the past 12 years. (MCLs are noted next to the specific test or listed in assistance package.)

A. **Nitrate:** (Nitrate MCL = 10 mg/l)

| | |
|---|---|
| Results greater than MCL | _____ |
| <2 mg/liter nitrate | x |
| 2-5 mg/liter nitrate | x |
| <5 mg/liter nitrate | _____ |
| Nitrate sampling records unavailable | _____ |

B. **VOCs:** (VOC detection level is 0.5 ug/l or 0.0005 mg/l)

| | |
|---|---|
| Results greater than MCL or SAL | x |
| VOCs detected at least once | x |
| VOCs never detected | _____ |
| VOC sampling records unavailable | _____ |

C. **EDB/DBCP:**

(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)

| | |
|---|---|
| EDB/DBCP detected below MCL at least once | _____ |
| EDB/DBCP detected above MCL at least once | _____ |
| EDB/DBCP never detected | x |
| EDB/DBCP tests required but not yet completed | _____ |
| EDB/DBCP tests not required | _____ |

D. **Other SOCs (Pesticides):**

| | |
|---|---|
| Other SOCs detected (pesticides and other synthetic organic chemicals) | _____ |
| Other SOC tests performed but none detected (list test methods in comments) | x |
| Other SOC tests not performed | _____ |

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:_____

EPA Test Method – EPA 515.3

E. **Bacterial contamination:**

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records)? no

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source? no

Source sampling records for bacteria unavailable _____

## PART VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10-year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

❑ Yes ☑ No

Describe with references to map produced in Part IV:

_____

_____

_____

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

❑ Yes ☑ No

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

❑ Yes ☑No

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

❑ Yes ☑ No

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within…

| | YES | NO | unknown |
|---|---|---|---|
| <6-month travel time | | x | |
| 6 month—1 year travel time | | x | |
| 1—5 year travel time | | x | |
| 5—10 year travel time | | x | |

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within…

| | YES | NO | unknown |
|---|---|---|---|
| <1-year travel time | | x | |
| 1—5 year travel time | | x | |
| 5—10 year travel time | | x | |

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

FORM COMPLETED BY:

Wendy LaRocque 02/22/2024
Print Name Date

Signature

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT
**STATE OF WASHINGTON**

36/1 [illegible]
Application No

Permit No. ....

**(1) OWNER:** Name Pot Latch Beach Water Assoc Address 430 W. Shore Rd. Guemes, Anacortes

**(2) LOCATION OF WELL:** County Skagit SW ¼ NE ¼ Sec 35 T 36 N., R. 1 W.M

Bearing and distance from section or subdivision corner

**(3) PROPOSED USE:** Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

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

**(5) DIMENSIONS:** Diameter of well 6" inches.
Drilled 168 ft. Depth of completed well 168 ft.

**(6) CONSTRUCTION DETAILS:**
**Casing installed:** 6" Diam. from 0 ft. to 158 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

**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 Model No
Diam. 6 Slot size #15 from 158 ft. to 168 ft.
Diam. Slot size from ft. to ft.

**Gravel packed:** Yes ☐ No ☑ Size of gravel:
Gravel placed from ft. to ft.

**Surface seal:** Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? Depth of strata
Method of sealing strata off

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

**(8) WATER LEVELS:** Land-surface elevation above mean sea level ft.
Static level 147 ft. below top of well Date 11-7-83
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test
Air Bailer test 8 gal./min. with 10 ft. drawdown after hrs.
Artesian flow g.p.m. Date 11-7-83
Temperature of water Was a chemical analysis made? Yes ☑ No ☐

For Salt & iron only -

**(10) WELL LOG:**

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

| MATERIAL | FROM | TO |
|---|---|---|
| Top Soil | 0 | 5 |
| Brown Clay | 5 | 17 |
| Blue Clay | 17 | 46 |
| Blue Clay-Gravel | 46 | 50 |
| Brown Clay | 50 | 55 |
| Brown Clay-Gravel | 55 | 110 |
| Brown Sand-Clay | 110 | 160 |
| Water & Sand | 160 | 168 |

DEC 21 1983
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

Work started 11-4-83 19 Completed 11-7-83 19

**WELL DRILLER'S STATEMENT:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP & DRILLING INC.
(Person, firm, or corporation) (Type or print)

Address BOX 422, BURLINGTON WA 98233

[Signed] H Ken Dahlman
(Well Driller)

License No. 1192 Date 11-8-83, 19

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

UNIQUE WELL I.D. NUMBER A AE847
X Y Z 1 2 3

# WELL TAGGING FORM

Date of Field Visit 7-22-93 By Alice Kelly

## ADDITIONAL WELL IDENTIFIERS

Department of Health System ID Number _____ Source Number SO 1

USGS Site Identification _____

## RECORD VERIFICATION

☒ Well Report available *(please attach)* Potlatch Well #1
☐ Well Report not available
☐ Verification inconclusive

## WELL OWNERSHIP, IF DIFFERENT FROM WELL REPORT

Name Potlatch Beach Water Assoc.

Street address c/o Barney Killoran, 432 West Shore Rd.

City Anacortes State WA. 98221

## LOCATION OF WELL, IF DIFFERENT FROM WELL REPORT

Well Address _____

City Guemes Island County Skagit

T. 36 N. R. 1 E W.M. Sec. 35 SW ¼ of the NE ¼

Latitude _____ ° _____ ' _____ "
Longitude _____ ° _____ ' _____ "

☐ GPS (raw data)
☐ GPS (corrected)
☐ Topographic Map
☐ Survey
☐ Computer generated
☐ Other _____

Elevation at land surface 150 (feet)/meters *(circle one)*

☐ Digital Altimeter
☐ Topographic Map
☒ Other _____

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

**Additional information, if available:**

☐ Location marked on topographic map *(please attach)*

☐ Location marked on air photo *(please attach)*

Water Right # G1-24396 Priority Date 10-17-93

*Circle one:* Application (Permit) Certificate Claim Exempt

## WELL CHARACTERISTICS

Physical Description of Well (size of casing, type of well, housing, etc.): _____

Location of Well Identification Tag: _____

**Was Supplemental Tag needed for ease of identifying well?**
☐ NO ☐ YES

***If yes, where was tag placed?*** _____

Scale 1:24,000 (1"=2,000')

| | | | |
|---|---|---|---|
| D | C | B | A |
| E | F | G | H |
| M | L | K | J |
| N | P | Q | R |

no (X) yes (●)

Indicate the location of the well within the Section by drawing a dot at that point.

SECTION 35

**COMMENTS:** _____

***Please attach this form to the Well Report and submit it to the Department of Ecology Water Resources Program Headquarters, Well Identification Program, P.O. Box 47600, Olympia, WA 98504-7600***

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT
STATE OF WASHINGTON

#1 AAE847

Application No 26171 - 354

Permit No

(1) OWNER: Name Pot Latch Beach Water Assoc Address 430 W. Shore Rd. Guemes, Anacortes

(2) LOCATION OF WELL: County Skagit SW ¼ NE ¼ Sec 35 T 36 N, R 1 WM

Bearing and distance from section or subdivision corner

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

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

(5) DIMENSIONS: Diameter of well 6" inches
Drilled 168 ft. Depth of completed well 168 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6" Diam. from 0 ft. to 158 ft.
Threaded ☐ " Diam from ft. to ft.
Welded ☒ " Diam from ft. to ft.

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 Model No
Diam. 6 Slot size 15 from 158 ft. to 168 ft.
Diam. Slot size from ft. to ft.

10 1 —

Gravel packed: Yes ☐ No ☑ Size of gravel:
Gravel placed from ft. to ft

Surface seal: Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? Depth of strata
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ft
Static level 147 ft. below top of well Date 11-7-83
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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 |
|---|---|---|---|---|---|
| | | | | | |

Date of test
Air Bailer test 8 gal/min. with 10 ft. drawdown after hrs.
Artesian flow g.p.m. Date 11-7-83
Temperature of water Was a chemical analysis made? Yes ☑ No ☑
for Sulf & iron only —

(10) WELL LOG:

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

| MATERIAL | FROM | TO |
|---|---|---|
| Top Soil | 0 | 5 |
| Brown Clay | 5 | 17 |
| Blue Clay | 17 | 46 |
| Blue Clay-Gravel | 46 | 50 |
| Brown Clay | 50 | 55 |
| Brown Clay-Gravel | 55 | 110 |
| Brown Sand-Clay | 110 | 160 |
| Water & Sand | 160 | 168 |

DEC 21 1983
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

Work started 11-4-83, 19 Completed 11-7-83, 19

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME DAHLMAN PUMP & DRILLING INC.
(Person, firm, or corporation) (Type or print)

Address BOX 422, BURLINGTON WA 98233

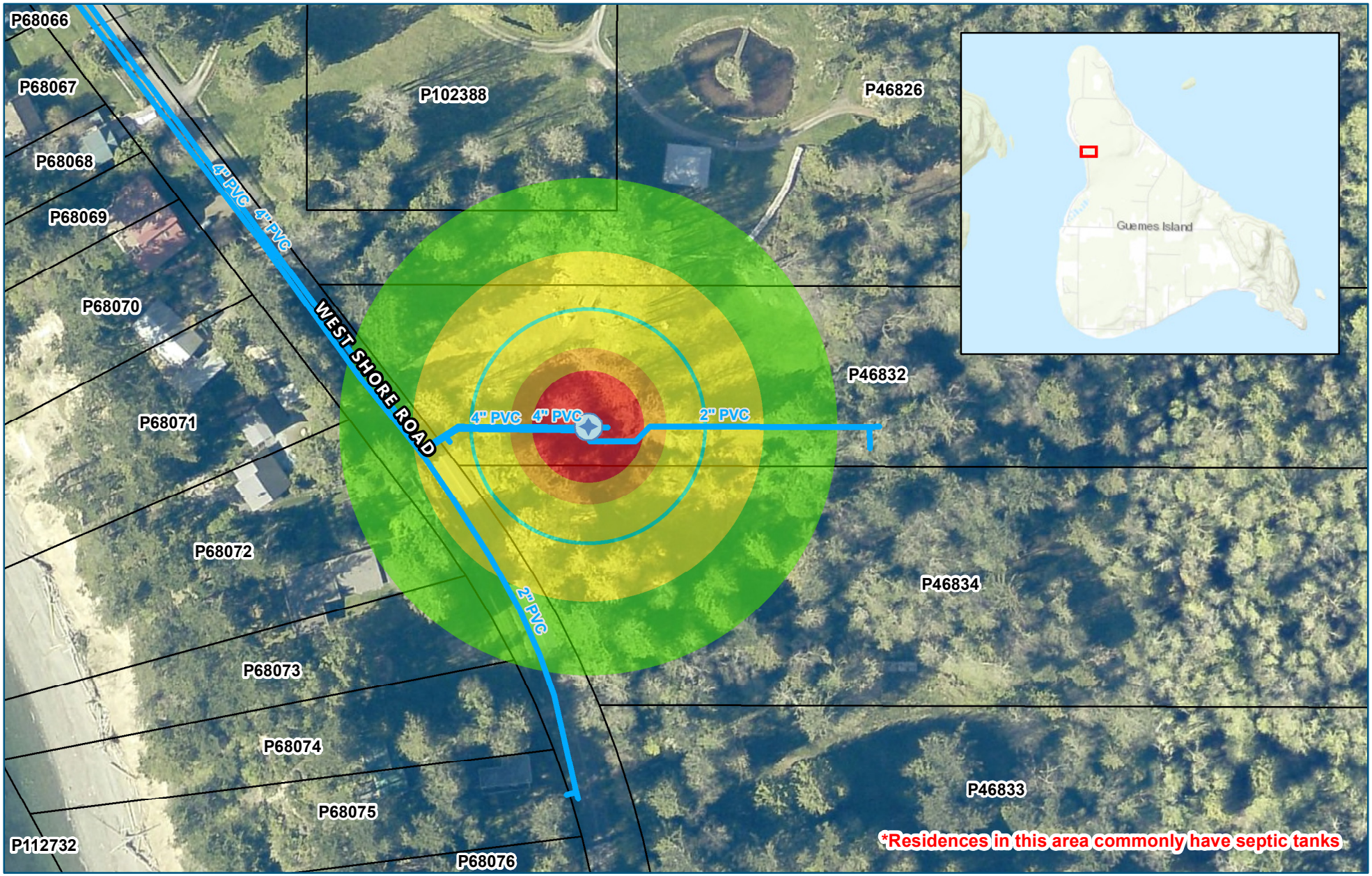
[Signed] Ken Dahlman
(Well Driller)

License No 1192 Date 11-8-83, 19

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1 20

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.




# Potlatch Well

## Wellhead Protection Area

0 50 100 200 Feet

NAD 1983 StatePlane Washington North FIPS 4601 Feet
Author: wilson
2/16/2024

Wellhead
Water Mains
Parcels

**Time of Travel Zones**

- 6-Month
- 1-Year
- 5-Year
- 10-Year
- Sanitary Control

This map was created from available public records and existing map sources, not from field surveys. While great care was taken in this process, maps from different sources rarely agree as to the precise location of geographic features. The relative positioning of map features to one another results from combining different map sources without field verification.

The PUD #1 of Skagit County disclaims any warranty of merchantability or warranty of fitness of this map for any particular purpose, either expressed or implied. No representation or warranty is made concerning the accuracy, currency, completeness or quality of data depicted on this map. Any user of this map assumes all responsibility for use thereof, and further agrees to hold the PUD #1 of Skagit County harmless from any damage, loss, or liability arising from the use of this map.

Skagit PUD
PUBLIC UTILITY DISTRICT

Document Path: M:\ProjectMaps\chrisZemp\projectRequests\Well_Head_Buffers\02-16-2024\Potlatch_TOT.mxd

## Inventory of Potential Contaminant Sources

## Well: Potlach Beach

| **Zone 1 (6 month and 1 Year Time of Travel)** | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| | Septic | Sewage | 1 | Active |

| **Zone 2 (5 Year Time of Travel)** | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| | Septic | Sewage | 1 | Active |

| **Zone 3 (10 Year Time of Travel)** | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| | Septic | Sewage | 1 | Active |

**Action Plan:**

- Continue to test per Coliform Monitoring Plan.
- Continue to monitor Volatile Organic Compounds.

Washington State Department of Health
Environmental Health Programs
Division of Drinking Water

# Ground Water Contamination
# Susceptibility Assessment Survey Form

Complete **one** form for **each** ground water source (well, wellfield, spring) used in your water system (photocopy as necessary).

---

**PART I: System Information**

Well owner/manager: Public Utility District No. 1 of Skagit County

Water system name: Rockport @ Rockport State Park

County: Skagit

Water system ID number: 736006 Source number: S04

Well depth: 344 feet

Source name: SP740H / Well @ Rockport SP

WA well identification tag number: AET-032

❑ Well not tagged

Number of connections: 63 Population served: 59 customers

Township: 35N Range: 09E

Section: 27 ¼ ¼ Section: NE SE

Latitude/longitude (if available): 48.490071 / -121.618082

How was latitude/longitude determined?

_____Global positioning device_____survey_____topographical map
x_____other: Google Earth

*Please refer the instructions for details and explanations of all questions in Parts II through V.

**PART II: Well Construction and Source Information**

1) Date well originally constructed: _03__/_22__/_76__month/day/year

last reconstruction: ___/___/___month/day/year

❑ Information unavailable

2) Well driller: Richardson Well Drilling Co., Tacoma WA

❑ Well driller unknown

3) Type of well: _x_ Drilled: ☑ rotary ❑ bored ❑ cable (percussion) ❑ Dug

___ other: ❑ spring(s) ❑ lateral collector (Ranney)

❑ driven ❑ jetted ❑ other:

4) Well report available ☑ Yes (attach copy to form) ❑ No

5) Average pumping rate: 40 (gallons/min)

Source of information Distribution Superintendent

If not documented, how was pumping rate determined?

❑ Pumping rate unknown

6) Is this source treated? Yes

If so, what type of treatment:

❑ disinfection ☑ filtration ❑ carbon filter ❑ air stripper ❑ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

ATEC filtration system removes iron and manganese

7) If source is chlorinated, is a chlorine residual maintained: ☑ Yes ❑ No

Residual level: .85 ppm (At the point closest to the source.)

**PART III: Hydrogeologic Information**

1) Depth to top of open interval: [check one]

❑ <20 ft ❑ 20-50ft ❑ 50-100ft ❑ 100-200ft ☑ >200ft

❑ information unavailable

2) Depth to ground water (static water level):

❑ <20ft ❑ 20-50ft ❑ 50-100ft ☑ >100ft

❑ flowing well/spring (artesian)

How was water level determined?

☑ well log ❑ other _____

❑ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch) **or**

_____feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ❑ Yes ❑ No

5) Wellhead elevation (height above mean sea level): 506 feet

How was elevation determined? ❑ topographic map ❑ Drilling/Well Log ❑ altimeter

☑ other: LIDAR BareEarth 2016

❑ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_____x_____ evidence of a confining layer in well log

_____ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer**? ☑ Yes ❑ No

❑ information unavailable

7) Sanitary setback:

❑ < 100ft* ☑ 100-120ft ❑ 120-200 ft ❑ >200ft

* If less than 100ft, describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

☑ wellhead enclosed in a wellhouse

❑ controlled access (describe): _____

_____

❑ other uses for wellhouse (describe): _____

_____

❑ no wellhead control

9) Surface seal:

☑ 18 ft

❑ <18 ft (no Department of Ecology approval)

❑ <18 ft (Approved by Ecology, include documentation)

❑ depth of seal unknown

❑ no surface seal

10) Annual rainfall (inches per year):

❑ <10 in/yr ❑ 10-25 in/yr ☑ >25 in/yr

## PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 6,191,169 (gallons)

How was this determined?

❑ meter

❑ estimated: ❑ pumping rate (_____)

❑ pump capacity (_____)

☑ other: Water Right Qa Max 19.0 AC-FT per year

2) "Calculated Fixed Radius" estimate of ground water movement:

$r = \sqrt{Q\ t/\pi\ n\ H}$

Q = 6,191,169 / 7.481 = 827,586 cubic feet/year = pumping rate of well
n = .22 = aquifer porosity (unless known)
H = 10 feet = length of well screen
t = Time Interval (.5, 1, 5, ,10)

6-month ground water travel time: 245 feet

1-year ground water travel time: 346 feet

5-year ground water travel time: 774 feet

10-year ground water travel time: 1094 feet

Information available on length of screened/open interval?

☑ Yes ❑ No

Length of screened/open interval: 10 feet

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6- month time of travel boundary?

☑ Yes ❑No (mark and identify on map)

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6-month time of travel boundary?

❑ Yes ☑No (mark and identify on map)

Comments: An unnamed Type II fish bearing stream runs north south just east of the well through all time of travel zones.

**PART V: Assessment of Water Quality**

1) **Regional sources of risk to ground water**:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five-year ground water travel time. If you do not know if one of the following is present, mark the "unknown" space.

| | 6-month | 1-year | 5-year | unknown |
|---|---|---|---|---|
| • likely pesticide application | _____ | _____ | _____ | _____ |
| • stormwater injection wells | _____ | _____ | _____ | _____ |
| • other injection wells | _____ | _____ | _____ | _____ |
| • abandoned ground water well | _____ | _____ | _____ | _____ |
| • landfills, dumps, disposal areas | _____ | _____ | _____ | _____ |
| • known hazardous materials clean-up site | _____ | _____ | _____ | _____ |
| • water system(s) with known quality problems | _____ | _____ | _____ | _____ |
| • population density >1 house/acre | _____ | _____ | _____ | _____ |
| • residences commonly have septic tanks | _____ | _____ | _____ | _____ |
| • Wastewater treatment lagoons | _____ | _____ | _____ | _____ |
| • sites used for land application of waste | _____ | _____ | _____ | _____ |

Mark and identify on map any of the risks listed above which are located within the 6-month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

If other recorded or potential sources of ground water contamination exist within the ten-year time of travel circular zone around your water supply, please describe:

The Rockport State Park Ranger Station and some of the campground area are within the 10-year time of travel zone. The State Park has septic systems. State Route 20 is also at the south end of the 10-year time of travel zone, which could produce run off or vehicular related spills.

2) **Source-specific water quality records**: For each type of test below, mark the row that applies to the sample results for this source. Consider all the sample results from the past 12 years. (MCLs are noted next to the specific test or listed in assistance package.)

A. **Nitrate:** (Nitrate MCL = 10 mg/l)

| | |
|---|---|
| Results greater than MCL | _____ |
| <2 mg/liter nitrate | x |
| 2-5 mg/liter nitrate | _____ |
| <5 mg/liter nitrate | _____ |
| Nitrate sampling records unavailable | _____ |

B. **VOCs:** (VOC detection level is 0.5 ug/l or 0.0005 mg/l)

| | |
|---|---|
| Results greater than MCL or SAL | x |
| VOCs detected at least once | x |
| VOCs never detected | _____ |
| VOC sampling records unavailable | _____ |

C. **EDB/DBCP:**

(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)

| | |
|---|---|
| EDB/DBCP detected below MCL at least once | _____ |
| EDB/DBCP detected above MCL at least once | _____ |
| EDB/DBCP never detected | x |
| EDB/DBCP tests required but not yet completed | _____ |
| EDB/DBCP tests not required | _____ |

D. **Other SOCs (Pesticides):**

| | |
|---|---|
| Other SOCs detected (pesticides and other synthetic organic chemicals) | _____ |
| Other SOC tests performed but none detected (list test methods in comments) | _____ |
| Other SOC tests not performed | x |

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:_____

_____

_____

_____

E. **Bacterial contamination:**

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records)? yes

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source? no

Source sampling records for bacteria unavailable _____

## PART VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10-year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

☑ Yes ❑ No

Describe with references to map produced in Part IV:

_____

_____

_____

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

❑ Yes ☑ No

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

☑ Yes ❑ No

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

❑ Yes ☑ No

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within…

| | YES | NO | unknown |
|---|---|---|---|
| <6-month travel time | | x | |
| 6 month—1 year travel time | | x | |
| 1—5 year travel time | | x | |
| 5—10 year travel time | | x | |

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within…

| | YES | NO | unknown |
|---|---|---|---|
| <1-year travel time | | x | |
| 1—5 year travel time | | x | |
| 5—10 year travel time | | x | |

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

An unnamed Type II fish-bearing stream runs north - south just east of the well through all time of travel zones.

FORM COMPLETED BY:

Wendy LaRocque — Print Name

02/22/2024 — Date

Signature

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

# WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 1
Updated: 01/26/2024
Printed: 2/27/2024
WFI Printed For: On-Demand
Submission Reason: Pop/Connect Update

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822 or email wfi@doh.wa.gov

| 1. SYSTEM ID NO. | 2. SYSTEM NAME | 3. COUNTY | 4. GROUP | 5. TYPE |
|---|---|---|---|---|
| 73600 6 | SKAGIT CO PUD ROCKPORT | SKAGIT | A | Comm |

**6. PRIMARY CONTACT NAME & MAILING ADDRESS**

MICHAEL R. FOX [MANAGER]
1415 FREEWAY DR
MOUNT VERNON, WA 98273

**STREET ADDRESS IF DIFFERENT FROM ABOVE**

ATTN
ADDRESS
CITY STATE ZIP

**7. OWNER NAME & MAILING ADDRESS**

SKAGIT COUNTY PUD 1 MANAGER
MICHAEL R. FOX
1415 FREEWAY DR
MOUNT VERNON, WA 98273

**STREET ADDRESS IF DIFFERENT FROM ABOVE**

ATTN
ADDRESS
CITY STATE ZIP

| 9. 24 HOUR PRIMARY CONTACT INFORMATION | | 10. OWNER CONTACT INFORMATION | |
|---|---|---|---|
| Primary Contact Daytime Phone: (360) 848-4457 | | Owner Daytime Phone: (360) 848-4457 | |
| Primary Contact Mobile/Cell Phone: (360) 661-4032 | | Owner Mobile/Cell Phone: (360) 661-4032 | |
| Primary Contact Evening Phone: (xxx)-xxx-xxxx | | Owner Evening Phone: (xxx)-xxx-xxxx | |
| Fax: (360) 424-5440 | E-mail: fxx@skagitpud.org | Fax: | E-mail: fxx@skagitpud.org |

**11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)**

☐ Not applicable (Skip to #12)
☒ Owned and Managed
☐ Managed Only
☐ Owned Only

SMA NAME: SKAGIT COUNTY PUD 1 SMA Number: 103

**12. WATER SYSTEM CHARACTERISTICS (mark all that apply)**

☐ Agricultural
☒ Commercial / Business
☒ Day Care
☒ Food Service/Food Permit
☐ 1,000 or more person event for 2 or more days per year
☐ Hospital/Clinic
☐ Industrial
☐ Licensed Residential Facility
☐ Lodging
☒ Recreational / RV Park
☒ Residential
☐ School
☐ Temporary Farm Worker
☐ Other (church, fire station, etc.):

**13. WATER SYSTEM OWNERSHIP (mark only one)**

☐ Association ☐ County ☐ Investor ☒ Special District
☐ City / Town ☐ Federal ☐ Private ☐ State

**14. STORAGE CAPACITY (gallons)**

60,000

| 15 | 16 | 17 | 18 SOURCE CATEGORY | | | | | | | | | 19 USE | | | 20 | 21 TREATMENT | | | | | | 22 | 23 | 24 SOURCE LOCATION | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Source Number | SOURCE NAME<br>LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER.<br>Example: WELL #1 XYZ456<br>IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME Example: SEATTLE | INTERTIE<br>INTERTIE SYSTEM ID NUMBER | WELL | WELL FIELD | WELL IN A WELL FIELD | SPRING | SPRING FIELD | SPRING IN SPRINGFIELD | SEA WATER | SURFACE WATER | RANNEY / INF. GALLERY | OTHER | PERMANENT | SEASONAL | EMERGENCY | SOURCE METERED | NONE | CHLORINATION | FILTRATION | FLUORIDATION | IRRADIATION (UV) | OTHER | DEPTH TO FIRST OPEN TERVAL IN FEET | CAPACITY (GALLONS PER MINUTE) | 1/4, 1/4 SECTION | SECTION NUMBER | TOWNSHIP | RANGE |
| S01 | InAct 08/25/1991 SURFACE #1 | | | | | | | | | X | | | X | | | | X | | | | | | | 0 | | | 35N | 09E |
| S02 | InAct 08/25/1991 SURFACE #2 | | | | | | | | | X | | | X | | | | X | | | | | | | 0 | | | 35N | 09E |
| S03 | InAct 08/25/1991 WELL #1 | | X | | | | | | | | | | X | | | | X | | | | | | 100 | 45 | NE SE | 27 | 35N | 05E |
| S04 | SP740H/WELL @ ROCKPORT SP AET032 | | X | | | | | | | | | | X | | | Y | | X | X | | | | 334 | 95 | NE SE | 27 | 35N | 09E |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# WATER FACILITIES INVENTORY (WFI) FORM - Continued

| 1. SYSTEM ID NO. | 2. SYSTEM NAME | 3. COUNTY | 4. GROUP | 5. TYPE |
|---|---|---|---|---|
| 73600 6 | SKAGIT CO PUD ROCKPORT | SKAGIT | A | Comm |

| | ACTIVE SERVICE CONNECTIONS | DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS | DOH USE ONLY! APPROVED CONNECTIONS |
|---|---|---|---|
| **25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)** | | 61 | 100 |
| A. Full Time Single Family Residences (Occupied 180 days or more per year) | 53 | | |
| B. Part Time Single Family Residences (Occupied less than 180 days per year) | 8 | | |
| **26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)** | | | |
| A. Apartment Buildings, condos, duplexes, barracks, dorms | 0 | | |
| B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year | 0 | | |
| C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year | 0 | | |
| **27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)** | | | |
| A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units) | 0 | 0 | 0 |
| B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc. | 6 | 6 | 6 |
| **28. TOTAL SERVICE CONNECTIONS** | | 67 | 106 |

**29. FULL-TIME RESIDENTIAL POPULATION**

A. How many residents are served by this system 180 or more days per year? 135

| 30. PART-TIME RESIDENTIAL POPULATION | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. How many part-time residents are present each month? | | | | | | | | | | | | |
| B. How many days per month are they present? | | | | | | | | | | | | |

| 31. TEMPORARY & TRANSIENT USERS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month? | 300 | 300 | 400 | 400 | 600 | 1500 | 1500 | 1500 | 1500 | 400 | 300 | 300 |
| B. How many days per month is water accessible to the public? | 31 | 28 | 31 | 30 | 31 | 30 | 31 | 31 | 30 | 31 | 30 | 31 |

| 32. REGULAR NON-RESIDENTIAL USERS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population? | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| B. How many days per month are they present? | 31 | 28 | 31 | 30 | 31 | 30 | 31 | 31 | 30 | 31 | 30 | 31 |

| 33. ROUTINE COLIFORM SCHEDULE | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| 34. NITRATE SCHEDULE | QUARTERLY | ANNUALLY | ONCE EVERY 3 YEARS |
|---|---|---|---|
| (One Sample per source by time period) | | | |

**35. Reason for Submitting WFI:**

☐ Update - Change ☐ Update - No Change ☐ Inactivate ☐ Re-Activate ☐ Name Change ☐ New System ☐ Other _____

**36. I certify that the information stated on this WFI form is correct to the best of my knowledge.**

**SIGNATURE:** _____ **DATE:** _____

**PRINT NAME:** _____ **TITLE:** _____

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

Rockport S.P.

# WATER WELL REPORT
STATE OF WASHINGTON 35/05E-27P

Application No. -1
Permit No. G1-22623P

(1) OWNER: Name Wn. State Parks & Recreation Commission Address P. O. Box 1128, Olympia, Wn. 98504

(2) LOCATION OF WELL: County Skagit SW ¼ SE ¼ Sec. 27 T. 35 N., R. 5E W.M.

Bearing and distance from section or subdivision corner 1000' (SW) FROM E 1/4 COR SEC. 27.

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

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

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 344 ft. Depth of completed well 344 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Diam. from 0 ft. to 334 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☐ " Diam. from ft. to ft.

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 Model No
Diam. 6" Slot size 30XXX from 334 ft. to 339 ft.
Diam. Slot size 50 from 339 ft. to 344 ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation above mean sea level.... ft.
Static level 291 ft. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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? Richardsons
Yield: 45 gal./min. with 17 ft. drawdown after 4 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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Date of test 3-22-76
Baller test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

| MATERIAL | FROM | TO |
|---|---|---|
| Silty clay & top soil | 0 | 4 |
| Brown sand | 4 | 12 |
| Silty sand & some gravel | 12 | 42 |
| Silty fine sand & water | 42 | 62 |
| Silty fine sand & clay | 62 | 80 |
| Silty clay | 80 | 90 |
| Fine grain till | 90 | 325 |
| Sand & gravel water bearing clay | 325 | 344 |

Work started Feb. 26, 19 76 Completed March 22, 19 76

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Richardson Well Drilling Co.
(Person, firm, or corporation) (Type or print)
Address P. O. Box 44408, Tacoma, Wn. 98444

[Signed] (Well Driller)

License No. 223 02 6500 Date April 16, 19 76

(USE ADDITIONAL SHEETS IF NECESSARY)

S. F. No. 7356—OS—(Rev. 4-71)

# Rockport

## WELLHEAD AREA PROTECTION MAP

0 250 500 1,000 Feet

NAD 1983 StatePlane Washington North FIPS 4601 Feet
Author: zemp
5/27/2021

**Legend**

- Well
- Existing Main
- River
- Water Body

**Time of Travel Zones**

- Sanitary Control
- 1-Year
- 5-Year
- 10-Year

| SEC: | TWP: | RGE: | C.O. | P.N. |
|---|---|---|---|---|

This map was created from available public records and existing map sources, not from field surveys. While great care was taken in this process, maps from different sources rarely agree as to the precise location of geographic features. The relative positioning of map features to one another results from combining different map sources without field verification.

The PUD #1 of Skagit County disclaims any warranty of merchantability or warranty of fitness of this map for any particular purpose, either expressed or implied. No representation or warranty is made concerning the accuracy, currency, completeness or quality of data depicted on this map. Any user of this map assumes all responsibility for use thereof, and further agrees to hold the PUD #1 of Skagit County harmless from any damage, loss, or liability arising from the use of this map.

Skagit PUD
PUBLIC UTILITY DISTRICT

Document Path: C:\ArcGIS\Projects\Well_Head_Buffers\Rockport_TOT.mxd

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Skagit County Auditor
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RETURN TO:
*Public Utility District No. 1 of Skagit County*
*1415 Freeway Drive*
*P.O. Box 1436*
*Mount Vernon, WA 98273-1436*

## PUD UTILITY EASEMENT

THIS AGREEMENT is made this 20th day of June, 2003, between Clarence Jones, a single man, as his separate property, hereinafter referred to as "Grantor", and **PUBLIC UTILITY DISTRICT NO. 1 OF SKAGIT COUNTY, WASHINGTON**, a Municipal Corporation, hereinafter referred to as "District". Witnesseth:

WHEREAS, Grantors are the owners of certain lands and premises situated in the County of Skagit, and

WHEREAS, the District wishes to acquire certain rights and privileges along, within, across, under, and upon the said lands and premises.

NOW, THEREFORE, Grantors, for and in consideration of mutual benefits and other valuable consideration, receipt of which is hereby acknowledged, conveys and grants to the District, its successors or assigns, the perpetual right, privilege, and authority enabling the District to do all things necessary or proper in the construction and maintenance of a water, sewer and communication, lines or other similar public services related facilities, including the right to construct, operate, maintain, inspect, improve, remove, restore, alter, replace, relocate, connect to and locate at any time a pipe or pipes, line or lines or related facilities, along with necessary appurtenances for the transportation and control of water, sewer and electronic information on facilities over, across, along, in and under the following described lands and premises in the County of Skagit, State of Washington, to wit:

**P45111**
**Legal description attached as Exhibit A**

**P117914**
**Legal description attached as Exhibit B**

**P45176 & P45178**
**Legal description attached as Exhibit C**

together with the right of ingress to and egress from said lands across adjacent lands of the Grantor; also, the right to cut and/or trim all timber, trees, brush, or other growth standing or growing upon the lands of the Grantor which, in the opinion of the District, constitutes a menace or danger to said line or to persons or property by reason of proximity to the line. The Grantor agrees that title to all brush, other vegetation

or debris trimmed, cut, and removed from the easement pursuant to this Agreement is vested in the District.

Grantors, their heirs, successors, or assigns hereby conveys and agrees not to construct or permit to be constructed structures of any kind on the easement area without written approval of the General Manager of the District. Grantors shall conduct their activities and all other activities on Grantor's property so as not to interfere with, obstruct or endanger the usefulness of any improvements or other facilities, now or hereafter maintained upon the easement or in any way interfere with, obstruct or endanger the District's use of the easement.

The Grantors also agree to and with the District that the Grantors lawfully own the land aforesaid, has a good and lawful right and power to sell and convey same, that same is free and clear of encumbrances except as indicated in the above legal description, and that Grantors will forever warrant and defend the title to said easement and the quiet possession thereof against the lawful claims and demands of all persons whomsoever.

Any mortgage on said land held by a mortgagee is hereby subordinated to the rights herein granted to the District; but in all other respects the mortgage shall remain unimpaired.

In Witness Whereof, the Grantor hereunto sets his hand and seal this 20 day of June, 2003.

CLARENCE JONES, Grantor

STATE OF WASHINGTON
COUNTY OF SKAGIT

I certify that I know or have satisfactory evidence that CLARENCE JONES is the person who appeared before me, and said person acknowledged that he signed this instrument and acknowledged it to be his free and voluntary act for the uses and purposes mentioned in the instrument.

Date: 6-20-03

Bonnie Kilsholm
Notary Public in and for the State of Washington
My appointment expires: 9-15-03

BONNIE M. KILSHOLM NOTARY PUBLIC COMMISSION EXPIRES 9-15-03 STATE OF WASHINGTON

Easement
SKAGIT COUNTY WASHINGTON
Real Estate Excise Tax
EXEMPT
MAY 06 2004
Amount Paid $ -0-
Skagit County Treasurer
By: Mark Deputy

200405060157
Skagit County Auditor
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Skagit Surveyors & Engineers LLC
806 Metcalf St., Sedro-Woolley, WA 98284 Phone: (360) 855-2121 FAX: (360) 855-1658

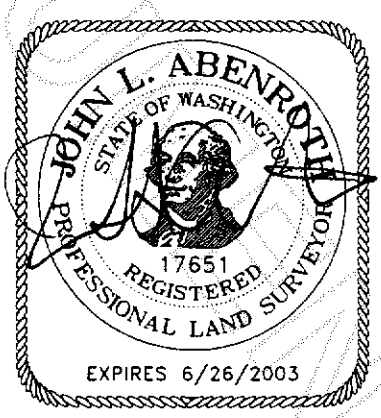
LEGAL DESCRIPTION
FOR
CLARENCE JONES
OF
AN ACCESS AND UTILITY EASEMENT THROUGH PARCEL A OF
QUIT CLAIM DEED UNDER AUDITOR'S FILE NUMBER 200104050086
AND THROUGH THE STRIP OF LAND ACQUIRED FROM ANTHONY

May 29, 2002

A 50 foot wide easement for ingress, egress and utilities over, under and through a portion of Government Lot 4, Section 13, Township 35 North, Range 10 East, W.M. and a portion of Government Lot 2, Section 12, Township 35 North, Range 10 East, W.M. the centerline of which is described as follows:

Commencing at the southwest corner of said Government Lot 2; thence S89°58'41"E along the south line of said Government Lot 2, a distance of 121.23 feet to the east line of Indian Road; thence N27°41'54"W along the east line of Indian Road, a distance of 145.48 feet to the northeast corner of Parcel A described in Quit Claim Deed to Clarence Jones recorded under Auditor's File Number 200104050086; thence S76°35'24"W along the north line of said Parcel A, a distance of 25.09 feet to the initial point of this centerline description; thence S18°10'01"E, a distance of 4.16 feet; thence S27°41'54"E, a distance of 148.49 feet to point of curvature of a curve to the left having a radius of 115.00 feet; thence southeasterly along said curve through a central angle of 24°43'21" and an arc distance of 49.62 feet to the point of reverse curvature with a curve to the right having a radius of 115.00 feet; thence southeasterly along said curve through a central angle of 20°38'07" and an arc distance of 41.42 feet; thence S32°14'55"E, a distance of 135.47 feet to the north line of State Route 20 and the terminal point of this centerline description.

Situate in Skagit County, Washington.




5/29/2002



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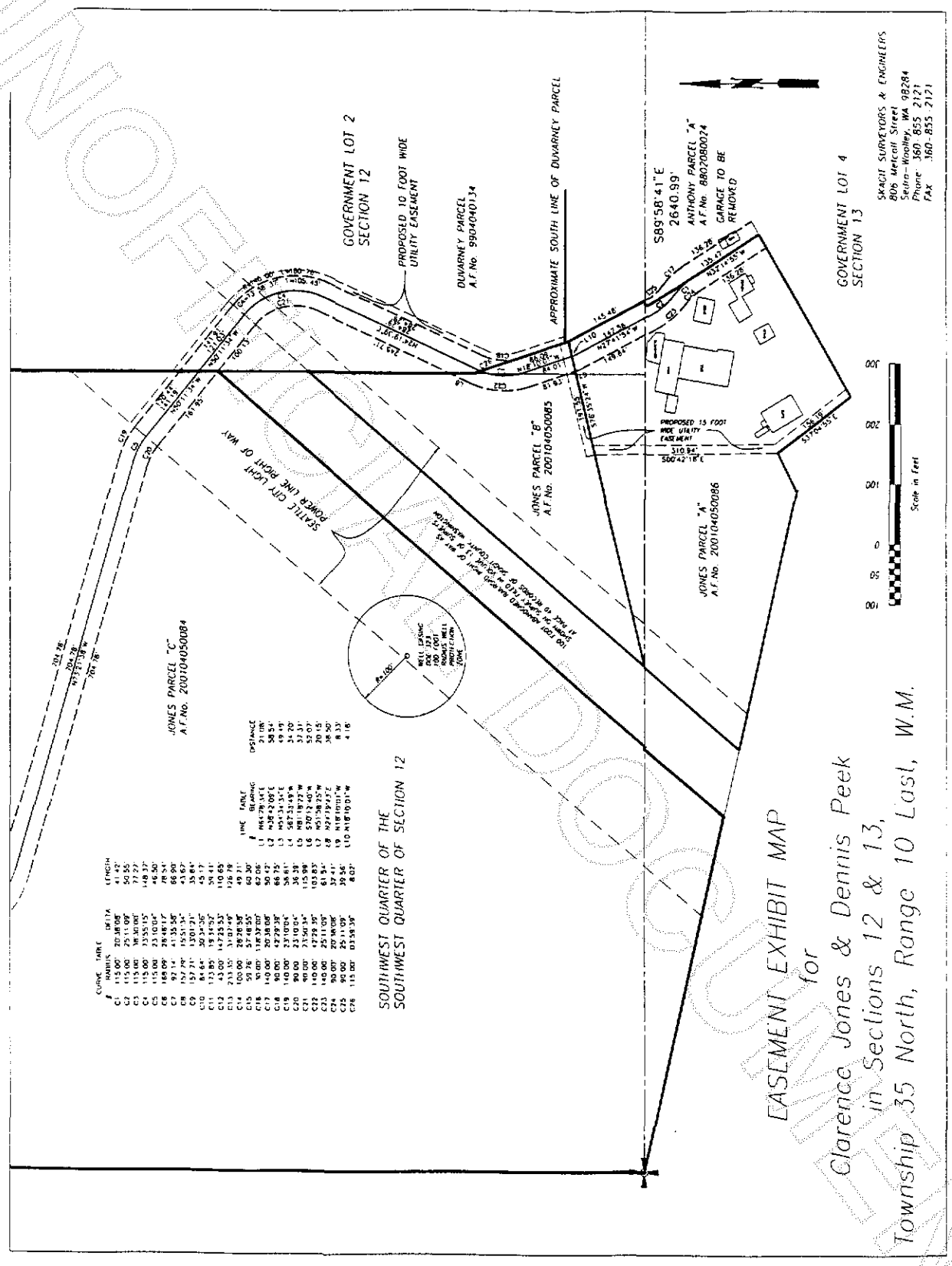


EXHIBIT A, pag

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Skagit County Auditor
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Skagit Surveyors & Engineers LLC
806 Metcalf St., Sedro-Woolley, WA 98284 Phone: (360) 855-2121 FAX: (360) 855-1658

LEGAL DESCRIPTION
FOR
CLARENCE JONES
OF
AN ACCESS AND UTILITY EASEMENT THROUGH PARCEL B
DESCRIBED IN QUIT CLAIM DEED UNDER AUDITOR'S FILE NUMBER 200104050085

May 29, 2002

A 50 foot wide easement for ingress, egress and utilities over, under and through a portion of the southwest quarter of the southwest quarter and a portion of Government Lot 2, Section 12, Township 35 North, Range 10 East, W.M. the centerline of which is described as follows:

Commencing at the southwest corner of said Government Lot 2; thence S89°58'41"E along the south line of said Government Lot 2, a distance of 121.23 feet to the east line of Indian Road; thence N27°41'54"W along the east line of Indian Road, a distance of 145.48 feet to the southeast corner of Parcel B described in Quit Claim Deed to Clarence Jones recorded under Auditor's File Number 200104050085; thence S76°35'24"W along the south line of said Parcel B, a distance of 25.09 feet to the initial point of this centerline description; thence N18°10'01"W, a distance of 84.01 feet to the point of curvature of a curve to the right having a radius of 115.00 feet; thence northerly along said curve through a central angle of 38°30'00" and an arc distance of 77.27 feet to a point on the east line of said Parcel B which lies N18°10'01"W, a distance of 157.68 feet from the southeast corner of said Parcel B and the terminal point of this centerline description.

Situate in Skagit County, Washington.

JOHN L. ABENROTH
STATE OF WASHINGTON
17651
REGISTERED
PROFESSIONAL LAND SURVEYOR
EXPIRES 6/26/2003

5/29/2002

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EXHIBIT B, page

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Skagit Surveyors & Engineers
806 Metcalf St., Sedro-Woolley, WA 98284 Phone: (360) 855-2121 FAX: (360) 855-1658

(REVISED)
LEGAL DESCRIPTION
FOR
CLARENCE JONES
OF
AN ACCESS AND UTILITY EASEMENT THROUGH PARCEL C
DESCRIBED IN QUIT CLAIM DEED UNDER AUDITOR'S FILE NUMBER 200104050084

April 22, 2003

A 50 foot wide easement for ingress, egress and utilities over, under and through a portion of the west half of the southwest quarter in Section 12, Township 35 North, Range 10 East, W.M. the centerline of which is described as follows:

Commencing at the southeast corner of the west half of the southwest quarter of said Section 12; thence N00°06'19"E along the east line of said subdivision, a distance of 757.46 feet to the initial point of this centerline description; thence N50°11'34"W, a distance of 141.20 feet to the point of curvature of a curve to the left having a radius of 115.00 feet; thence northwesterly along said curve through a central angle of 23°10'04" and an arc distance of 46.50 feet; thence N73°21'38"W, a distance of 704.78 feet to the point of curvature of a curve to the right having a radius of 190.00 feet; thence northwesterly and northerly along said curve through a central angle 111°01'54" and an arc distance of 368.20 feet; thence N37°40'17"E, a distance of 90.77 feet to the point of curvature of a curve to the right having a radius of 168.09 feet; thence northeasterly along said curve through a central angle of 26°46'17" and an arc distance of 78.54 feet; thence N64°26'34"E, a distance of 21.08 feet to the point of curvature of a curve to the left having a radius of 92.14 feet; thence northeasterly along said curve through a central angle of 41°35'58" and an arc distance of 66.90 feet to the point of reverse curvature with a curve to the right having a radius of 157.79 feet; thence northeasterly along said curve through a central angle of 15°51'34" and an arc distance of 43.67 feet; thence N38°42'09"E, a distance of 58.54 feet to the point of curvature of a curve to the left having a radius of 157.71 feet; thence northeasterly along said curve through a central angle of 13°01'21" and an arc distance of 35.84 feet; thence N25°40'48"E, a

JOHN L. ABENROTH
STATE OF WASHINGTON
17651
REGISTERED
PROFESSIONAL LAND SURVEYOR
EXPIRES 6/26/2003

4/24/03



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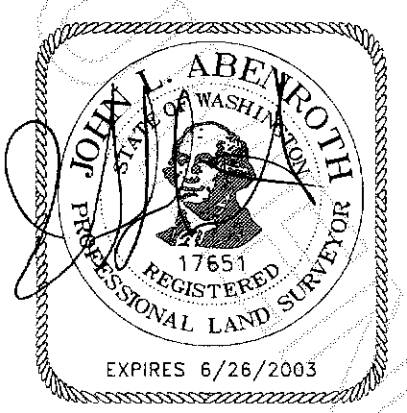
UNOFFICIAL DOCUMENT

Skagit Surveyors & Engineers
806 Metcalf St., Sedro-Woolley, WA 98284 Phone: (360) 855-2121 FAX: (360) 855-1658

distance of 2.48 feet to the point of curvature of a curve to the right having a radius of 84.64 feet; thence northeasterly along said curve through a central angle of 30°34'36" and an arc distance of 45.17 feet; thence N54°34'34"E, a distance of 49.49 feet to the point of curvature of a curve to the left having a radius of 173.85 feet; thence northeasterly along said curve through a central angle of 19°34'52" and an arc distance of 59.41 feet; thence N34°59'42"E, a distance of 111.96 feet to the point of curvature of a curve to the left having a radius of 43.00 feet; thence northerly and westerly along said curve through a central angle of 147°25'53" and an arc distance of 110.65 feet; thence S67°33'49"W, a distance of 34.20 feet to the point of curvature of a curve to the right having a radius of 233.35 feet; thence westerly along said curve through a central angle of 31°07'49" and an arc distance of 126.79 feet; thence N81°18'22"W, a distance of 37.31 feet to the point of curvature of a curve to the left having a radius of 100.00 feet; thence westerly along said curve through a central angle of 28°28'58" and an arc distance of 49.71 feet; thence S70°12'41"W, a distance of 52.07 feet to the point of curvature of a curve to the right having a radius of 59.76 feet; thence westerly and southerly along said curve through a central angle of 57°48'55" and an arc distance of 60.30 feet; thence N51°58'25"W a distance of 20.15 feet to the point of curvature of a curve to the left having a radius of 30.00 feet; thence along said curve through a central angle of 118°32'00 and an arc length of 62.06 feet to the terminal point of this centerline description.

Situate in Skagit County, Washington.




4/24/03

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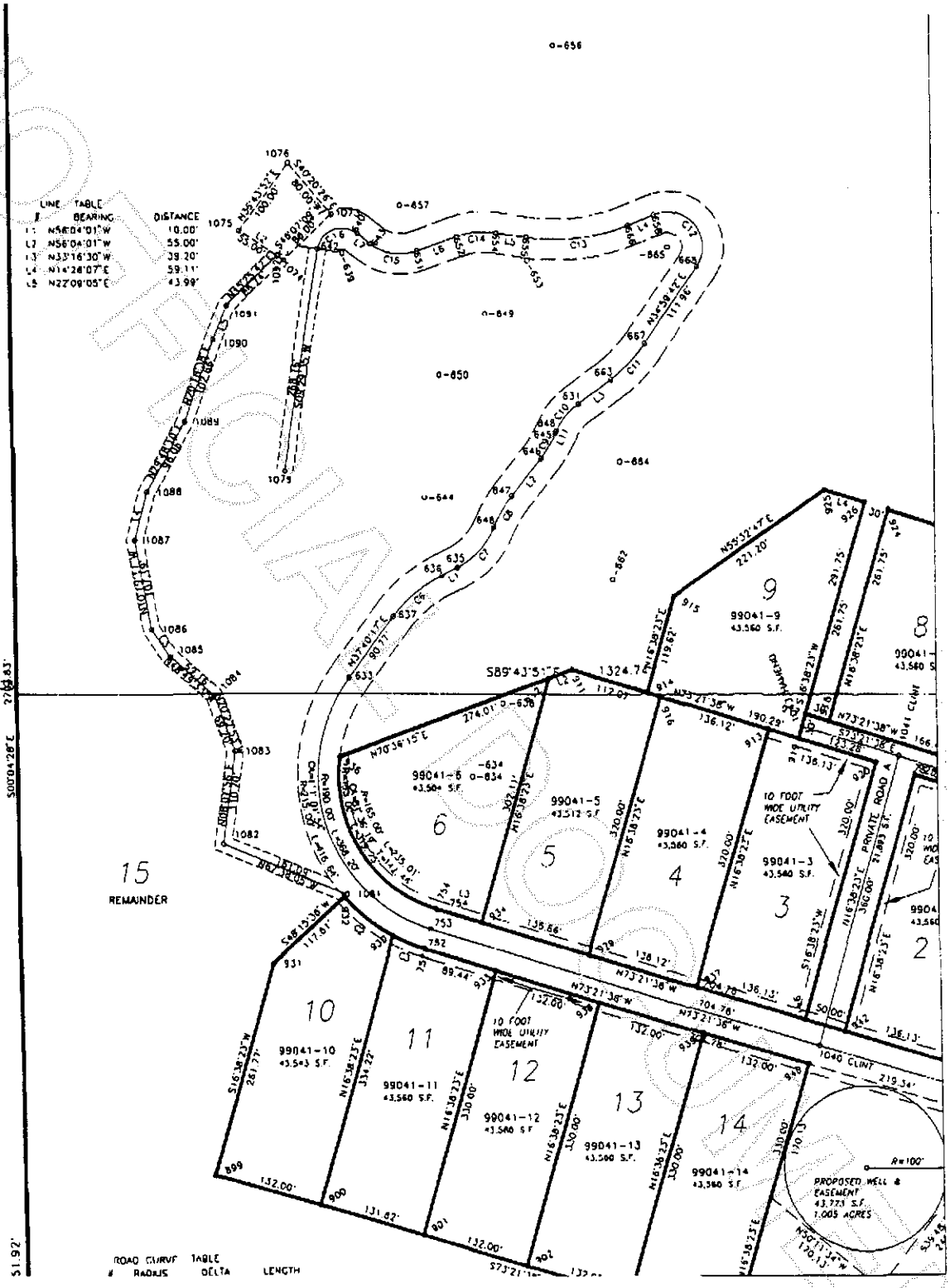


EXHIBIT C, page three

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## Inventory of Potential Contaminant Sources

## Well: Rockport

| Zone 1 (6 month and 1 Year Time of Travel) | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| | | | | |

| Zone 2 (5 Year Time of Travel) | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| | | | | |

| Zone 3 (10 Year Time of Travel) | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Status |
| | Septic | Sewage | I | Active |
| | Highway 20 | Petroleum products, run off, de-icing salt applications | IV | Active |

**Action Plan:**

- Continue to monitor septic system tests on DOH website. Continue to test per Coliform Monitoring Plan.
- Continue to monitor Volatile Organic Compounds.

Washington State Department of Health
Environmental Health Programs
Division of Drinking Water

# Ground Water Contamination
# Susceptibility Assessment Survey Form

Complete **one** form for **each** ground water source (well, wellfield, spring) used in your water system (photocopy as necessary).

---

**PART I: System Information**

Well owner/manager: Public Utility District No. 1 of Skagit County

Water system name: Skagit View Village

County: Skagit

Water system ID number: 96879 Source number: S01

Well depth: 69 feet

Source name: Well 1

WA well identification tag number: AET-015

❑ Well not tagged

Number of connections: 94 Population served: 90 customers

Township: 35N Range: 08E

Section: 08 ¼ ¼ Section: SE NE

Latitude/longitude (if available): 48.537235 / -121.793379

How was latitude/longitude determined?

_____Global positioning device_____survey_____topographical map
x_____other: Google Earth

*Please refer the instructions for details and explanations of all questions in Parts II through V.

**PART II: Well Construction and Source Information**

1) Date well originally constructed: _7_/_9__/_1973__month/day/year

last reconstruction: ___/___/___month/day/year

❑ Information unavailable

2) Well driller: A. C. Kounkel Well Drilling,

❑ Well driller unknown

3) Type of well: _x_ Drilled: ❑ rotary ❑ bored ☑ cable (percussion) ❑ Dug

___ other: ❑ spring(s) ❑ lateral collector (Ranney)

❑ driven ❑ jetted ❑ other:

4) Well report available ☑ Yes (attach copy to form) ❑ No

5) Average pumping rate: 60 (gallons/min)

Source of information Distribution Superintendent

If not documented, how was pumping rate determined?

❑ Pumping rate unknown

6) Is this source treated?

If so, what type of treatment:

❑ disinfection ☑ filtration ❑ carbon filter ❑ air stripper ❑ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

AETC filtration system removes iron and manganese

7) If source is chlorinated, is a chlorine residual maintained: ☑ Yes ❑ No

Residual level: .85 ppm (At the point closest to the source.)

**PART III: Hydrogeologic Information**

1) Depth to top of open interval: [check one]

❑ <20 ft ❑ 20-50ft ☑ 50-100ft ❑ 100-200ft ❑ >200ft

❑ information unavailable

2) Depth to ground water (static water level):

❑ <20ft ☑ 20-50ft ❑ 50-100ft ❑ >100ft

❑ flowing well/spring (artesian)

How was water level determined?

☑ well log ❑ other _____

❑ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch) **or**

_____feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ❑ Yes ❑ No

5) Wellhead elevation (height above mean sea level): 172 feet

How was elevation determined? ❑ topographic map ❑ Drilling/Well Log ❑ altimeter

☑ other: LIDAR BareEarth 2016

❑ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_____x_____ evidence of a confining layer in well log

_____ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer**? ☑ Yes ❑ No

❑ information unavailable

7) Sanitary setback:

❑ < 100ft* ☑ 100-120ft ❑ 120-200 ft ❑ >200ft

* If less than 100ft, describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

☑ wellhead enclosed in a wellhouse

❑ controlled access (describe): _____

_____

❑ other uses for wellhouse (describe): _____

_____

❑ no wellhead control

9) Surface seal:

☑ 18 ft

❑ <18 ft (no Department of Ecology approval)

❑ <18 ft (Approved by Ecology, include documentation)

❑ depth of seal unknown

❑ no surface seal

10) Annual rainfall (inches per year):

❑ <10 in/yr ❑ 10-25 in/yr ☑ >25 in/yr

## PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 12,512,678 (gallons)

How was this determined?

❑ meter

❑ estimated: ❑ pumping rate (_____)

❑ pump capacity (_____)

☑ other: Water Right max 38.4 AC-FT per year

2) "Calculated Fixed Radius" estimate of ground water movement:

$r = \sqrt{Q\ t/\pi\ n\ H}$

Q = 12,512,678 / 7.481 = 1,672,594 cubic feet/year = pumping rate of well
N = .22 = aquifer porosity (unless known)
H = 10 feet = length of well screen

6-month ground water travel time: 348 feet

1-year ground water travel time: 492 feet

5-year ground water travel time: 1,100 feet

10-year ground water travel time: 1,556 feet

Information available on length of screened/open interval?

☑ Yes ❑ No

Length of screened/open interval: 15 feet

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6- month time of travel boundary?

❑ Yes ☑No (mark and identify on map)

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6-month time of travel boundary?

❑ Yes ☑No (mark and identify on map)

Comments: _____

## PART V: Assessment of Water Quality

1) **Regional sources of risk to ground water**:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five-year ground water travel time. If you do not know if one of the following is present, mark the "unknown" space.

| | 6-month | 1-year | 5-year | unknown |
|---|---|---|---|---|
| • likely pesticide application | | | | |
| • stormwater injection wells | | | | |
| • other injection wells | | | | |
| • abandoned ground water well | | | | |
| • landfills, dumps, disposal areas | | | | |
| • known hazardous materials clean-up site | | | | |
| • water system(s) with known quality problems | | | | |
| • population density >1 house/acre | | | | |
| • residences commonly have septic tanks | | x | x | |
| • Wastewater treatment lagoons | | | | |
| • sites used for land application of waste | | | | |

Mark and identify on map any of the risks listed above which are located within the 6-month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

If other recorded or potential sources of ground water contamination exist within the ten-year time of travel circular zone around your water supply, please describe:

_____

_____

_____

_____

_____

_____

2) **Source-specific water quality records**: For each type of test below, mark the row that applies to the sample results for this source. Consider all the sample results from the past 12 years. (MCLs are noted next to the specific test or listed in assistance package.)

A. **Nitrate:** (Nitrate MCL = 10 mg/l)

| | |
|---|---|
| Results greater than MCL | |
| <2 mg/liter nitrate | x |
| 2-5 mg/liter nitrate | |
| <5 mg/liter nitrate | |
| Nitrate sampling records unavailable | |

B. **VOCs:** (VOC detection level is 0.5 ug/l or 0.0005 mg/l)

| | |
|---|---|
| Results greater than MCL or SAL | x |
| VOCs detected at least once | x |
| VOCs never detected | |
| VOC sampling records unavailable | |

C. **EDB/DBCP:**
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)

| | |
|---|---|
| EDB/DBCP detected below MCL at least once | |
| EDB/DBCP detected above MCL at least once | |
| EDB/DBCP never detected | x |
| EDB/DBCP tests required but not yet completed | |
| EDB/DBCP tests not required | |

D. **Other SOCs (Pesticides):**

| | |
|---|---|
| Other SOCs detected (pesticides and other synthetic organic chemicals) | |
| Other SOC tests performed but none detected (list test methods in comments) | x |
| Other SOC tests not performed | |

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:

EPA Method 515.4 for State Drinking Water Compliance in 2015 (Herbicides)

E. **Bacterial contamination:**

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records)? yes

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source? no

Source sampling records for bacteria unavailable _____

**PART VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution**

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10-year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

❑ Yes ❑ No

Describe with references to map produced in Part IV:

_____

_____

_____

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

❑ Yes ☑ No

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

☑ Yes ❑ No

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

❑ Yes ☑ No

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within…

| | YES | NO | unknown |
|---|---|---|---|
| <6-month travel time | | x | |
| 6 month—1 year travel time | | x | |
| 1—5 year travel time | | x | |
| 5—10 year travel time | | x | |

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within…

| | YES | NO | unknown |
|---|---|---|---|
| <1-year travel time | | x | |
| 1—5 year travel time | | x | |
| 5—10 year travel time | | x | |

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

FORM COMPLETED BY:

Wendy LaRocque 02/22/2024
Print Name Date

Signature

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

# WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 1
Updated: 01/26/2024
Printed: 2/27/2024
WFI Printed For: On-Demand
Submission Reason: Pop/Connect Update

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822 or email wfi@doh.wa.gov

| 1. SYSTEM ID NO. | 2. SYSTEM NAME | 3. COUNTY | 4. GROUP | 5. TYPE |
|---|---|---|---|---|
| 96879 5 | SKAGIT VIEW VILLAGE WATER SYSTEM | SKAGIT | A | Comm |

**6. PRIMARY CONTACT NAME & MAILING ADDRESS**

MICHAEL R. FOX [MANAGER]
1415 FREEWAY DR
MOUNT VERNON, WA 98273

**7. OWNER NAME & MAILING ADDRESS**

SKAGIT COUNTY PUD 1 MANAGER
MICHAEL R. FOX
1415 FREEWAY DR
MOUNT VERNON, WA 98273

**STREET ADDRESS IF DIFFERENT FROM ABOVE**

ATTN
ADDRESS
CITY STATE ZIP

**STREET ADDRESS IF DIFFERENT FROM ABOVE**

ATTN
ADDRESS
CITY STATE ZIP

| 9. 24 HOUR PRIMARY CONTACT INFORMATION | | 10. OWNER CONTACT INFORMATION | |
|---|---|---|---|
| Primary Contact Daytime Phone: (360) 848-4457 | | Owner Daytime Phone: (360) 848-4457 | |
| Primary Contact Mobile/Cell Phone: (360) 661-4032 | | Owner Mobile/Cell Phone: (360) 661-4032 | |
| Primary Contact Evening Phone: (xxx)-xxx-xxxx | | Owner Evening Phone: (xxx)-xxx-xxxx | |
| Fax: (360) 424-5440 | E-mail: fxx@skagitpud.org | Fax: | E-mail: fxx@skagitpud.org |

**11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)**

- ☐ Not applicable (Skip to #12)
- ☒ Owned and Managed
- ☐ Managed Only
- ☐ Owned Only

SMA NAME: SKAGIT COUNTY PUD 1 SMA Number: 103

**12. WATER SYSTEM CHARACTERISTICS (mark all that apply)**

- ☐ Agricultural
- ☐ Commercial / Business
- ☐ Day Care
- ☐ Food Service/Food Permit
- ☐ 1,000 or more person event for 2 or more days per year
- ☐ Hospital/Clinic
- ☐ Industrial
- ☐ Licensed Residential Facility
- ☐ Lodging
- ☐ Recreational / RV Park
- ☒ Residential
- ☐ School
- ☐ Temporary Farm Worker
- ☐ Other (church, fire station, etc.):

**13. WATER SYSTEM OWNERSHIP (mark only one)**

- ☐ Association
- ☐ City / Town
- ☐ County
- ☐ Federal
- ☐ Investor
- ☐ Private
- ☒ Special District
- ☐ State

**14. STORAGE CAPACITY (gallons)**

157,000

| 15 | 16 | 17 | 18 SOURCE CATEGORY | | | | | | | | | | 19 USE | | | 20 | 21 TREATMENT | | | | | | 22 | 23 | 24 SOURCE LOCATION | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Source Number | SOURCE NAME<br>LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER.<br>Example: WELL #1 XYZ456<br>IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME<br>Example: SEATTLE | INTERTIE<br>INTERTIE SYSTEM ID NUMBER | WELL | WELL FIELD | WELL IN A WELL FIELD | SPRING | SPRING FIELD | SPRING IN SPRINGFIELD | SEA WATER | SURFACE WATER | RANNEY / INF. GALLERY | OTHER | PERMANENT | SEASONAL | EMERGENCY | SOURCE METERED | NONE | CHLORINATION | FILTRATION | FLUORIDATION | IRRADIATION (UV) | OTHER | DEPTH TO FIRST OPEN TERVAL IN FEET | CAPACITY (GALLONS PER MINUTE) | 1/4, 1/4 SECTION | SECTION NUMBER | TOWNSHIP | RANGE |
| S01 | Well 1 AET015 | | X | | | | | | | | | | X | | | Y | | X | X | | | X | 54 | 100 | SE NE | 08 | 35N | 08E |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# WATER FACILITIES INVENTORY (WFI) FORM - Continued

| 1. SYSTEM ID NO. | 2. SYSTEM NAME | 3. COUNTY | 4. GROUP | 5. TYPE |
|---|---|---|---|---|
| 96879 5 | SKAGIT VIEW VILLAGE WATER SYSTEM | SKAGIT | A | Comm |

| | ACTIVE SERVICE CONNECTIONS | DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS | DOH USE ONLY! APPROVED CONNECTIONS |
|---|---|---|---|
| **25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)** | | 95 | 128 |
| A. Full Time Single Family Residences (Occupied 180 days or more per year) | 90 | | |
| B. Part Time Single Family Residences (Occupied less than 180 days per year) | 5 | | |
| **26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)** | | | |
| A. Apartment Buildings, condos, duplexes, barracks, dorms | 0 | | |
| B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year | 0 | | |
| C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year | 0 | | |
| **27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)** | | | |
| A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units) | 0 | 0 | 0 |
| B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc. | 0 | 0 | 0 |
| **28. TOTAL SERVICE CONNECTIONS** | | 95 | 128 |

**29. FULL-TIME RESIDENTIAL POPULATION**

A. How many residents are served by this system 180 or more days per year? 220

| 30. PART-TIME RESIDENTIAL POPULATION | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. How many part-time residents are present each month? | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| B. How many days per month are they present? | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |

| 31. TEMPORARY & TRANSIENT USERS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month? | | | | | | | | | | | | |
| B. How many days per month is water accessible to the public? | | | | | | | | | | | | |

| 32. REGULAR NON-RESIDENTIAL USERS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population? | | | | | | | | | | | | |
| B. How many days per month are they present? | | | | | | | | | | | | |

| 33. ROUTINE COLIFORM SCHEDULE | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| 34. NITRATE SCHEDULE | QUARTERLY | ANNUALLY | ONCE EVERY 3 YEARS |
|---|---|---|---|
| (One Sample per source by time period) | | | |

**35. Reason for Submitting WFI:**

☐ Update - Change ☐ Update - No Change ☐ Inactivate ☐ Re-Activate ☐ Name Change ☐ New System ☐ Other _____

**36. I certify that the information stated on this WFI form is correct to the best of my knowledge.**

**SIGNATURE:** _____ **DATE:** _____

**PRINT NAME:** _____ **TITLE:** _____

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

File Original and First Copy with the Division of Water Resources
Second Copy — Owner's Copy
Third Copy — Driller's Copy

# WATER WELL REPORT
## STATE OF WASHINGTON

5100

Application No. .....
Permit No. 01-20763

(1) OWNER: Name Wilderness Village Water Ass'n Address Concrete, WA

(2) LOCATION OF WELL: County Skagit — SE ¼ NE ¼ Sec. 8 T. 35 N., R. 8E W.M.

Bearing and distance from section or subdivision corner

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

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

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 69 ft. Depth of completed well 69 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Diam. from 0 ft. to 54 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☑ " Diam. from ft. to ft.

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 Stl Model No.
Diam. 6 Slot size 20 from 54 ft. to 64 ft.
Diam. 6 Slot size 125 from 64 ft. to 69 ft.

Gravel packed: Yes ☐ No ☑ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal Bentonite Clay
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 27 ft. below top of well Date 7/9/93
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (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? Driller
Yield: 240 gal./min. with 10 ft. drawdown after 4 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 |
|---|---|---|---|---|---|
| 0 sec | 37 | | | | |
| 0 01 | 32 | | | | |

Date of test July 9 1993
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water 52 Was a chemical analysis made? Yes ☑ No ☐

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

| MATERIAL | FROM | TO |
|---|---|---|
| Clayey Sand - Clay | 0 | 40 |
| Med. gravel | 40 | 69 |

RECEIVED
JAN 27 1993
DEPT. OF ECOLOGY

Work started July 5 19 93 Completed July 9 19 93

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report true to the best of my knowledge and belief.

NAME A C Kuenkel Well Drilling
(Person, firm, or corporation) (Type or print)

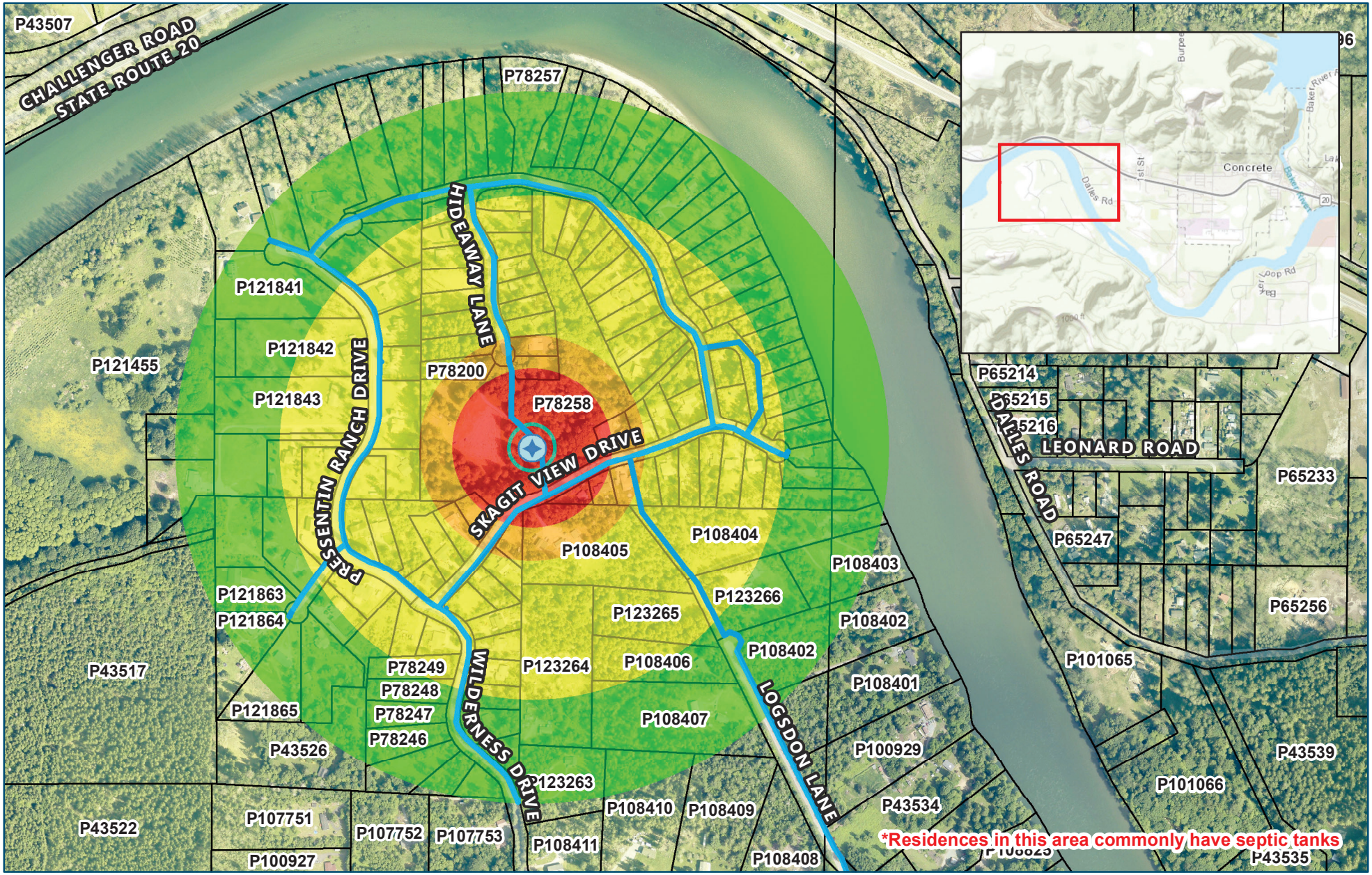
Address 757 N Hemlock Rd Cannon Dale Ore 97

[Signed] A C Kuenkel
(Well Driller)

License No. Date July 9 19

(USE ADDITIONAL SHEETS IF NECESSARY)

S. F. No. 7905—(Rev. 3-69)—3-85—6M. 6810.




# Skagit View Village Well

## Wellhead Protection Area

0 250 500 1,000 Feet

NAD 1983 StatePlane Washington North FIPS 4601 Feet
Author: wilson
2/20/2024

Wellhead
Water Mains
Parcels

**Time of Travel Zones**

- 6-Month
- 1-Year
- 5-Year
- 10-Year
- Sanitary Control

This map was created from available public records and existing map sources, not from field surveys. While great care was taken in this process, maps from different sources rarely agree as to the precise location of geographic features. The relative positioning of map features to one another results from combining different map sources without field verification.

The PUD #1 of Skagit County disclaims any warranty of merchantability or warranty of fitness of this map for any particular purpose, either expressed or implied. No representation or warranty is made concerning the accuracy, currency, completeness or quality of data depicted on this map. Any user of this map assumes all responsibility for use thereof, and further agrees to hold the PUD #1 of Skagit County harmless from any damage, loss, or liability arising from the use of this map.

Skagit PUD
PUBLIC UTILITY DISTRICT

Document Path: M:\ProjectMaps\chrisZemp\projectRequests\Well_Head_Buffers\02-16-2024\SkagitView Village_TOT.mxd

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**RETURN TO:**
*Public Utility District No. 1 of Skagit County*
*1415 Freeway Drive*
*P.O. Box 1436*
*Mount Vernon, WA 98273-1436*

## PUD UTILITY EASEMENT

THIS AGREEMENT is made this 7th day of June, 2005, between **WILDERNESS VILLAGE COMMUNITY ASSOCIATION**, hereinafter referred to as "Grantor(s)", and **PUBLIC UTILITY DISTRICT NO. 1 OF SKAGIT COUNTY, WASHINGTON**, a Municipal Corporation, hereinafter referred to as "District". Witnesseth:

WHEREAS, Grantor(s) are the owners of certain lands and premises situated in the County of Skagit, and

WHEREAS, the District wishes to acquire certain rights and privileges along, within, across, under, and upon the said lands and premises.

NOW, THEREFORE, Grantor(s), for and in consideration of mutual benefits and other valuable consideration, receipt of which is hereby acknowledged, conveys and grants to the District, its successors or assigns, the perpetual right, privilege, and authority enabling the District to do all things necessary or proper in the construction and maintenance of a water, sewer and communication, lines or other similar public services related facilities, including the right to construct, operate, maintain, inspect, improve, remove, restore, alter, replace, relocate, connect to and locate at any time a pipe or pipes, line or lines or related facilities, along with necessary appurtenances for the transportation and control of water, sewer and electronic information on facilities over, across, along, in and under the following described lands and premises in the County of Skagit, State of Washington, to wit:

**SEE LEGAL DESCRIPTION: ATTACHMENT "A"** P78258

together with the right of ingress to and egress from said lands across adjacent lands of the Grantor(s); also, the right to cut and/or trim all timber, trees, brush, or other growth standing or growing upon the lands of the Grantor(s) which, in the opinion of the District, constitutes a menace or danger to said line or to persons or property by reason of proximity to the line. The Grantor(s) agrees that title to all brush, other vegetation or debris trimmed, cut, and removed from the easement pursuant to this Agreement is vested in the District.

Grantor(s), their heirs, successors, or assigns hereby conveys and agrees not to construct or permit to be constructed structures of any kind on the easement area without written approval of the General Manager of the District. Grantor(s) shall conduct their activities and all other activities on Grantor's property so as not to interfere with, obstruct or endanger the usefulness of any improvements or other facilities, now or hereafter maintained upon the easement or in any way interfere with, obstruct or endanger the District's use of the easement.

The Grantor(s) also agree to and with the District that the Grantor(s) lawfully own the land aforesaid, has a good and lawful right and power to sell and convey same, that same is free and clear of encumbrances except as indicated in the above legal description, and that Grantor(s) will forever warrant and defend the title to said easement and the quiet possession thereof against the lawful claims and demands of all persons whomsoever.

Any mortgage on said land held by a mortgagee is hereby subordinated to the rights herein granted to the District; but in all other respects the mortgage shall remain unimpaired.

SKAGIT COUNTY WASHINGTON
REAL ESTATE EXCISE TAX

JUN 16 2005

Amount Paid $ 0
Skagit Co. Treasurer
By Deputy



C.O. 4242
W.O. 02--2881

In Witness Whereof, the Grantor(s) hereunto sets his hand and seal this 07 day of June, 2005.

**WILDERNESS VILLAGE COMMUNITY ASSOCIATION:**

**Vice President** | **President**

DONALD H Reese
**Print Name**

**Sign Name**

RAY E. MEARS
**Print Name**

**Sign Name**

STATE OF WASHINGTON
COUNTY OF SKAGIT

I certify that I know or have satisfactory evidence that Donald H. Reese President and Ray Elliot Mears Vice Pres. are the persons who appeared before me, and said person acknowledged that they signed this instrument, on oath stated that they were authorized to execute the instrument and acknowledged it as the **Vice President and President** of **WILDERNESS VILLAGE COMMUNITY ASSOCIATION** to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Date: June 07, 2005

Notary Public in and for the State of Washington
My appointment expires: 03-09-05

STATE OF WASHINGTON
COUNTY OF SKAGIT

I certify that I know or have satisfactory evidence that_____ is the person who appeared before me, and said person acknowledged that (he/she) signed this instrument, on oath stated that (he/she) was authorized to execute the instrument and acknowledged it as the_____ of_____ to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Date: _____

Notary Public in and for the State of Washington
My appointment expires: _____

STATE OF WASHINGTON
COUNTY OF SKAGIT

I certify that I know or have satisfactory evidence that_____ is the person who appeared before me, and said person acknowledged that (he/she) signed this instrument, on oath stated that (he/she) was authorized to execute the instrument and acknowledged it as the_____ of_____ to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Date: _____

Notary Public in and for the State of Washington
My appointment expires: _____



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# Attachment "A":

AN EASEMENT FOR WATER PIPE AND COMMUNICATION LINES DESCRIBED AS FOLLOWS:

A STRIP OF LAND 20 FEET IN WIDTH, LYING 15 FEET WESTERLY AND 5 FEET EASTERLY OF THE FOLLOWING DESCRIBED LINE:

COMMENCING AT THE CENTER OF A 50-FOOT RADIUS CUL-DE-SAC AT THE SOUTHERLY END OF HIDEAWAY LANE AS SHOWN IN THE PLAT OF WILDERNESS VILLAGE DIVISION NO. 1, IN SECTION 8, TOWNSHIP 35 NORTH, RANGE 8 EAST, W.M., RECORDED ON JULY 20, 1973 IN VOLUME 10 OF PLATS, AT PAGES 48 THROUGH 50; THENCE SOUTH 27 DEGREES 00'19" EAST A DISTANCE OF 50.00 FEET TO THE NORTHERLY MARGIN OF TRACT "C" OF SAID PLAT, BEING THE TRUE POINT OF BEGINNING; THENCE SOUTH 23 DEGREES 00'56" EAST A DISTANCE OF 34.07 FEET; THENCE SOUTH 1 DEGREE 41'44" WEST A DISTANCE OF 135.38 FEET; THENCE SOUTH 2 DEGREES 54'05" EAST A DISTANCE OF 65.27 FEET; THENCE SOUTH 43 DEGREES 50'59" EAST A DISTANCE OF 185.66 FEET; THENCE SOUTH 6 DEGREES 31'18" EAST A DISTANCE OF 174.28 FEET TO THE NORTHERLY RIGHT-OF-WAY MARGIN OF SKAGIT VIEW DRIVE IN SAID PLAT, BEING THE TERMINUS OF SAID LINE DESCRIPTION AND SAID POINT LYING NORTH 54 DEGREES 21'52" EAST A DISTANCE OF 110.96 FEET FROM THE SOUTHEAST CORNER OF GOVERNMENT LOT 9 OF SAID SECTION 8.

TOGETHER WITH A CIRCULAR WELL PROTECTION ZONE IN SAID PLAT OF WILDERNESS VILLAGE, HAVING A RADIUS OF 120 FEET, OF WHICH THE CENTER POINT IS DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF GOVERNMENT LOT 9 IN SECTION 8, TOWNSHIP 35 NORTH, RANGE 8 EAST, W.M.; THENCE NORTH 0 DEGREES 21'52" WEST ALONG THE EAST LINE OF SAID GOVERNMENT LOT 9, A DISTANCE OF 248.20 FEET; THENCE NORTH 89 DEGREES 38'08" EAST A DISTANCE OF 58.98 FEET TO THE CENTER POINT OF SAID CIRCULAR WELL PROTECTION ZONE.

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C.O. 4242
W.O. 02--2881

## Inventory of Potential Contaminant Sources

## Well: Skagit View Village

| Zone 1 (6 month and 1 Year Time of Travel) | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Active |
| | | | | |

| Zone 2 (5 Year Time of Travel) | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Active |
| multiple | Septic tanks | sewage | I | Active |

| Zone 3 (10 Year Time of Travel) | | | | |
|---|---|---|---|---|
| Parcel No. | Source | Potential Contaminant | Category | Active |
| multiple | Septic tanks | sewage | I | Active |

**Rationale for medium susceptibility rating from DOH:**

- Shallow Open Interval (50-100 ft)

**Action Plan:**

- Continue to monitor septic system tests on DOH website. Continue to test per Coliform Monitoring Plan.