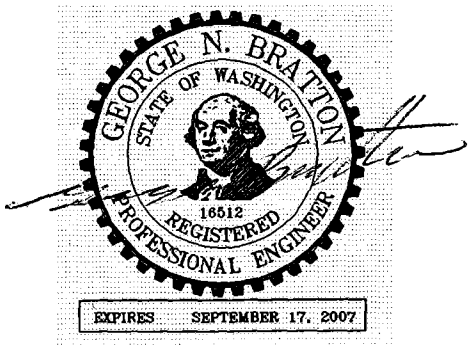
SKAGIT COUNTY
WATER DISTRICT No. 1
C/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, WA 98273

WA DOH ID #00392Q

# 2006 to 2011
# WATER SYSTEM PLAN




Approved
Department of Health
Office of Drinking Water
Nancy Feagin
Engineer
April 20, 2007
Date
Jennifer Kroeck

George Bratton, P.E.
Civil Engineer
1252 S. Farragut Drive
Coupeville, WA 98239
(360) 678-4552

March 2006

06-0315
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NW DRINKING WATER

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# SKAGIT COUNTY WATER DISTRICT No. 1
# 2005 – 2010 WATER SYSTEM PLAN

## I. PURPOSE

The purposes of this *Water System Plan* are to:

1. Document the evaluation of the system.
2. Recommend the improvements necessary for the system to comply with the Washington Department of Health (WA DOH) guidelines.
3. Provide budget-level cost estimates for short-term improvements.

This Plan includes the following:

(1) Standard specifications and construction details for the extension and replacement of water mains.
(2) Cross Connection Control Program
(3) Water Conservation Plan and Water Shortage Response Plan
(4) Wellhead Protection Plan
(5) Water Quality Monitoring Plan (e.g., Coliform Monitoring Plan)
(6) Emergency Plan
(7) Six-year and twenty-year capital improvement programs
(8) Financial Viability Assessment

The above noted operating programs and plans updated for this Water System Plan are also incorporated into the *Management and Operations Manual* for the system.

## II. BACKGROUND

The Skagit County Water District No. 1, WA DOH ID # 00392Q, hereinafter referred to as the Purveyor or District, is a government body formed under Skagit County. The system is located approximately 50 miles east of Sedro Woolley, Washington. The service area is located primarily in Sections 8, 9, 16, 17, 18 and 21 of Township 35 North, Range 7 East, W.M.

The District was formed as a result of ground water contamination affecting a large portion of the private water systems in the middle of what is now the District's service area. Contamination resulted from high levels of EDB, a persistent pesticide. In 1986 the WA Departments of Ecology and Health developed a conceptual design report outlining the requirements for a public water system serving the area. As a result of the report, and with financing from WA DOE and WA DOH, the District water system was installed. The District formally began service in August 1989.

Initially the District served about 650 acres covering portions of Sections 8, 9, 16 and 17 of Township 35 N, Range 7 E, W.M. In conjunction with the Skagit Water Utility Coordination Committee and as part of the Skagit County Coordinated Water System Plan, the District has identified its present service area to be about 1,200 acres. In addition, the Washington State Boundary review Board for Skagit County has approved annexation of approximately 159 acres for the proposed Rasar State Park.

The system currently supplies 112 customers. The WA Department of Health authorized the system to serve 159 connections (see Appendix A).

The previous Water System Plan dated May 1995 was prepared by CHS Engineers.

The District is governed by an elected three-commissioner board. The current commissioners are:

| | | |
|---|---|---|
| Position 1 | Norm Rathvon | Tel. (360) 826-4337 |
| Position 2 | Ben Clark | Tel. (360) 826-5507 |
| Position 3 | Stepthen Stout | Tel. (360) 826-3858 |

The water system day-to-day management and operation is assigned to the following contract operator:

Kelly Wynn (360) 466-4443
Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, WA 98273

The mailing address for the District is the offices of the contract operator.

Further information on the operation of the water system is contained in the Management and Operations Manual.

## III. DESCRIPTION OF SYSTEM

The general configuration of the water system is shown in the drawings in the appendices to this Plan. For the purposes of discussion, the facilities have been grouped into areas of supply; water quality and treatment; storage, pumping and pressure reduction; and distribution.

### Sources of Supply

Water supply is obtained from a well field consisting of two wells located on a District owned 2.9 acre tax parcel P42321 (legal description PTN NW¼SW¼ AKA LT 1 S/P #1-89 REC AF#8902160001).

The parcel also contains two storage reservoirs.

Details on the wells are summarized in the following table.

**Table 1**
**WELLS**

| DESCRIPTION | UNITS | WELL # 1 | WELL # 2 |
|---|---|---|---|
| Casing | inches | 6 | 6 |
| Depth | feet | 202 | 204 |
| Approx. Ground Elevation (MSL) | feet | 310 | 310 |
| Elevation of Top of Screens (MSL) | feet | 108 | 106 |
| Pump Set | feet | 168 | 168 |
| Pumping rate | gpm | 75 | 75 |
| Pump motor | hp | 5 | 5 |
| Pump make | | Jacuzzi | Jacuzzi |

The wells are equipped with the requisite wellhead meter, isolating valve, screened "J" vent, and probe tub. The wells are not equipped with a wellhead check valve (only a foot valve on the column pipe). A sample tap is included on the pipe from the well control building to the reservoir for collection of a combined well field sample. Individual sample taps are not provided at each well.

Copy of the well pump curve is Appendix D.

Copies of the well logs are included in Appendix E.

The 100-foot sanitary control radii for both wells are contained within the District owner property. A Declaration of Covenants for the sanitary control area is included in the Appendix F.

The record of the pump test of the wells was provided in the 1995 Water System Plan and is included in Appendix G.

For security, all wells are located within a cyclone-fenced area.

The District has water rights for 150 gpm and 65.5 acre-feet per year. A copy of the water right certificate is included in Appendix B.

A Wellhead Protection plan is included in the Appendix O.

A water right self-assessment is included in the Appendix R.

A WA DOH "Ground Water Susceptibility Assessment Survey" forms for each well have been completed (first page included Appendix O) and submitted to WA DOH.

**Water Quality and Treatment**

The most recent water quality analyses are included in Appendix P. The major water quality parameters are summarized in the following table.

**Table 2**
**MAJOR WATER QUALITY PARAMETERS**

| PARAMETER | UNITS | MCL | SOURCE |
|---|---|---|---|
| Arsenic (1) | mg/L | 0.05 | 0.002 |
| Fluoride (1) | mg/L | 4.0 | 0.2 |
| Nitrite (1) | mg/L | 1.0 | <0.5 |
| Nitrate (1) | mg/L | 10.0 | 0.7 |
| Total Nitrate/Nitrite (1) | mg/L | 10.0 | NR |
| Iron (2) | mg/L | 0.3 | <0.02 |
| Manganese (2) | mg/L | 0.05 | <0.005 |
| Chloride (2) | mg/L | 250 | 1.1 |
| Sulfate (2) | mg/L | 250 | 7.1 |
| Turbidity (3) | NTU | 1.0 | 0.1 |
| Sodium (3) | mg/L | | <5 |
| Hardness (3) | mg/L | | 86 |
| Electrical Conductivity (3) | uS/cm | 700 | 180 |
| Color (3) | Color Units | 15 | 5 |
| Lead (4) | mg/L | 0.015 | <0.001 |
| Copper (4) | mg/L | 1.3 | <0.005 |

MCL – Maximum Contamination Level ND – Not Detected
(1) Regulated – Primary (2) EPA Regulated – Secondary
(3) State Regulated (4) State Unregulated

All parameters for Synthetic Organic Chemicals were reports as "Not Detected".

All parameters for Volatile Organic Chemicals were reports as "Not Detected".

The sources are not chlorinated.

The water quality monitoring schedule is included in the Appendix P.

The system does not have a recent history of positive (coliform present) bacteriological samples.

The results of the lead and copper monitoring program are below the "action level".

**Storage, Pumping and Pressure Reduction Facilities**

The District has two 26-foot diameter by 20-foot high, 79,400 gallon Mt. Baker Silo concrete reservoirs.

Each reservoir is equipped with a gage board, float, and screened air inlet.

Reservoir No. 1 has a combined 8-inch inlet and outlet pipe.

Reservoir No. 2 has a separate 8-inch outlet and 4-inch inlet pipes, but both pipes terminate slightly above the reservoir floor. The inlet pipe is equipped with a 45-degree bend to help provide circulation in the reservoir.

Reservoir No. 1 has an outside, screened overflow pipe discharging above ground (providing an air gap). Reservoir No. 2 has an outside overflow pipe that connects below ground to the reservoir drain line (no air gap).

Both reservoir drain lines are connected and piped off site. The outlet for the drain line is currently not exposed to daylight.

Reservoir No. 2 has an overflow pipe connected directly to the drain pipe (i.e. without air gap with screened vent).

For security, the reservoirs are included with the wells within a cyclone-fenced area.

Neither reservoir has an earthquake coupling to prevent separation of the connecting outlet pipe from the reservoir during a major earthquake.

Reservoir No. 2 is equipped with a Kupferle "Eclipse" water sample station on the 8-inch discharge pipe.

The well control building does not have an automatic dial-alarm monitoring system to notify the operator of high and low reservoir levels

The entire distribution system is supplied by gravity. Static pressure to the customers at the lowest elevation in the service area is greater than 80 psi.

The residences near the reservoirs are supplied by individual wells. Therefore booster pumps and a distribution system for a high elevation service area is currently not required.

No private individual booster pumps are provided on service connections.

**Distribution System**

The distribution system is shown in the accompanying 1" = 200' drawings.

The following tables summarize the water distribution system inventory.

**Table 3**
**WATER MAINS**

| DIAMETER (inches) | DUCTILE IRON (feet) | PVC (feet) | OTHER [AC, Steel] (feet) | SUB-TOTAL (feet) |
|---|---|---|---|---|
| 8 | 9,700 | 0 | 0 | 9,700 |
| 6 | 14,940 | 0 | 0 | 14,940 |
| 4 | 1,200 | 0 | 0 | 1,200 |
| 3 | 0 | 1,320 | 0 | 1,320 |
| 2 | 0 | 2,530 | 0 | 2,530 |
| < 2 | 0 | 0 | 0 | 0 |
| **Sub-total** | 25,840 | 3,850 | 0 | **29,690** |
| **Percent of total** | 83 % | 17 % | 0 % | |

**Table 4**
**APPURTENANCES**

| DESCRIPTION | NUMBER |
|---|---|
| Gate valves | 16 |
| Fire hydrants c/w gate valves | 16 |
| Blow-off assemblies | 6 |
| Air release valves | 14 |
| Service meters | 112 |
| Pressure reducing valve stations | 0 |
| Backflow assemblies, purveyor system | 0 |
| Backflow assemblies, purveyor owned, premises isolation | 43 |
| Backflow prevention assemblies, customer owned, premises isolation | 0 |

All services are metered.

The 2 and 3-inch mains are assumed to be solvent weld (glued) joint PVC of unknown pressure class.

Services to properties that previously contained wells are isolated with a purveyor owned reduced pressure backflow assembly (RPBA) located in an above ground concrete vault. For dual services (two properties supplied from single service connection off the water main) the vault also contains a "tee" with each service equipped with a meter and (where needed) a pressure reducing valve. The single RPBA is placed upstream of the "tee" to isolate both services.

# IV. PLANNING

## Public Input into Water System Plan

A copy of the notice of the public meeting to discuss the adoption of the Water System Plan is included in Appendix A.

## Present and Future Service Area

The present service area is shown in the drawing *Water Distribution System, Service Area* in the appendices.

Expansion of the service area will be considered within provisions for adequate source of supply and distribution capacity. The service policy is to assess all costs directly related to the supply of a service area expansion or subdivision or rezoning of property within the present service area to the party requesting service. Service will be provided upon approval of all regulatory agencies having jurisdiction, including but not limited to WA DOH (revision of Water System Plan) and within the time frame necessary to comply with bidding and contracting for public works.

## Service Area Agreement

The signed service area agreement is included in the Appendix J.

## County Franchise

The County franchise agreement required for the portion of the water distribution system on County road rights-of-way is included in Appendix H.

## System Interties

An emergency intertie to an adjoining system has not been made. An adjacent system is not available with the source and distribution capacity to supply the District.

## Water Supply and Demand Forecast

All customers within the service area are single-family or duplex residential with the exception of two campgrounds. No commercial or multi-family residential customers are anticipated with the present land use designation.

The District now supplies 197 parcels within the service area, ranging in size from 0.8 acres (Rural Intermediate zoned) to 118 acres (Secondary Forrest-NRL zoned). The 197 parcels exclude private road parcels and the Purveyors well site, and include parcels under common ownership that are considered as one customer (e.g., State Park).

The water supply and demand forecasts are provided in Appendix R. Based on supply, the system has source pumping capacity and water rights withdrawal rate to supply 270 ERUs assuming 800 gpd/ERU (no water conservation). The water right annual withdrawal quantity is the limiting factor in the number of connections the system may supply. Based on the present average day demand and the water right allowed annual withdrawal, the system may supply 241 ERUs.

The water demand forecast utilized the description of the land use shown in drawing *Water Distribution System, Service Area- Land Use* in the appendices.

For the property that may be subdivided in the future, the following density was assumed for the estimate of the number of additional dwelling per acre (ERUs) in the service area:

| | | |
|---|---|---|
| RRV | Rural Reserve | 1 per 10 acres |
| R | Rural Intermediate | 4 per 10 acres |
| OSRSI | Public (State Park) | NA |
| RRc-NRL | Rural Resource - NRL | 4 per 40 acres ( for clustered units) |
| SF-NRL | Secondary Forrest - NRL | 1 per 20 acres |

Based on the subdivision of all of the large parcels of land in the service area, the estimated ultimate number of customers is 269 ERUs. If the long-term water conservation goal is achieved for the average day demand (175 gpd/ERU), the system could supply 334 ERUs. This would allow the service area to be expanded.

Daily source meter readings are made to monitor maximum day demand. Water use records are included in Appendix R.

A water-right self assessment is included in Appendix R.

**Consistency Statement**

A copy of the Consistency Statement Checklist, signed by the County Planning Department is included in Appendix R.

**Water Conservation & Water Shortage Response Plan**

The water conservation program and water shortage response plan are included in Appendices L and M, respectively. The water conservation plan includes the requisite WA DOH "Water Use Data Collection Requirements Checklist" and "Demand Forecast Requirements Checklist".

The short-term and long-term water conservation goals for maximum day demand are 700 and 600 gpd/ERU, respectively. Achieving these goals will provide a reduction in water use compared to the design criterion of 800 gpd/ERU of 12 percent and 25 percent, respectively.

**Emergency Plan**

An emergency plan is included in Appendix Q.

**System Vulnerability**

The most vulnerable system component is the failure of a well.

The second most vulnerable component of the system that could have a major impact on customer service is a water main break.

The wellhead protection plan addresses the potential contamination of a source of supply. Contingency plans are included for the loss or the contamination of the well field. There are large parcels within the service area for locating replacement wells.

The wells are not equipped with an emergency generator. For an extended power outage the storage volume may be depleted.

**State Environmental Policy Act (SEPA)**

Since the system supplies fewer than 1,000 connections, SEPA is not required.

**Service Policies**

The most recent service policies are included in the Appendix T. The policies include provisions for extension of the system.

## V. DESIGN CRITERIA

The major design requirements of the Washington Department of Health (WA DOH) is summarized by the following criteria:

**Distribution**

1) The system shall provide a minimum of 30 psi (preferably higher) operating pressure to all customers during peak hour demand (PHD) conditions, with the equalizing component of storage depleted. The calculation of PHD shall be based on WA DOH guidelines.

2) The system shall provide more than 20 psi residual pressure at all operating fire hydrants during maximum day demand (MDD) plus fire flow conditions. The calculation of MDD shall be based on WA DOH guidelines.

3) The system shall provide more than 20 psi operating pressure to all customers during MDD plus fire flow conditions.

4) All new or expanding water systems shall provide fire hydrants in residential areas at a maximum spacing of 900 ft., or maximum hose lay of 500 ft., whichever is the lesser, and shall provide a basic fire flow from any one hydrant of 500 gpm. This requirement may not apply to rural lots 2.5 acres or larger, or as otherwise provided through alternate fire protection.

5) For new or expanding systems, the minimum water main size shall be 6-inch, except into cul-de-sacs or other locations where further expansion is very improbable, where lines shall not be less than 2-inch.

6) The system shall be equipped with adequate isolating valves, air release valves, blow-off assemblies, etc., for proper system operation and maintenance.

7) An individual service booster pump is allowed as an interim measure (less than six years) where distribution system pressure is deficient.

**Supply**

8) The minimum production capacity shall equal the maximum day demand (MDD).

9) The Municipal Water Law (2003) and County Coordinated Water System Plan establishes the requirement of a water conservation program. The program should follow the latest edition of "Water Conservation Planning Handbook for Public Water Systems", and "Guidelines and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs".

10) A Step-Drawdown Test and a 24-hour Constant-Rate Test conforming to WA DOH guidelines shall be made to support the source's ability to reliably provide a safe yield. Low water demand sources in high production aquifers may continue the Step-Drawdown Test to stabilization, and forego the subsequent 24 hour Constant-Rate Test.

**Storage**

11) The minimum standby (i.e., emergency) storage shall be equal to the maximum day demand (MDD).

Where multiple sources of supply are available, the standby storage may be reduced by the existing pumping capacity of the wells, assuming the highest capacity well is out of service. A minimum standby storage of 200 gpd/ERU, should be provided regardless of the number of, and/or excess capacity of, the sources available.

12) The minimum equalizing storage shall be provided based on the formula: 150 minutes x (PHD-Q), where `Q' is the sum of the capacities of the active sources of supply.

13) The minimum fire protection storage for single-family residences shall be based on a fire flow of 500 gpm for 30 minutes (15,000 gallons). Standby storage may be used for fire protection storage.

**Pressurization of System**

14) The operating cycle of any booster pump shall not exceed 6 cycles per hour.

15) The booster pumps shall have capacity to supply peak hour demand (PHD), with the highest capacity pump out of service.

16) The booster pumps shall have capacity to supply fire flow plus maximum day demand (MDD), with the highest capacity pump out of service.

17) Hydropneumatic tanks shall be ASME approved (labeled) and equipped with a ASME relief valve. Small (up to 120 gallons), non-approved ASME tanks may be used if equipped with a ASME relief valve.

18) Hydropneumatic tanks shall be sized in accordance with WA DOH guidelines.

**Treatment for Manganese & Iron**

19) All iron and manganese facilities must be pilot plant tested at the site (or full scale tested after installation).

20) The maximum filter unit application rate and minimum backwash application rate shall be 5 gpm/sq.ft. and 12 gpm/sq.ft.

21) Documentation must be provided that the method of waste disposal [backwash] is acceptable to the WA Department of Ecology.

22) All treatment media must have NSF approval.

**Chlorination**

23) A WA DOH Hypochlorination Facilities for Small Systems submittal checklist shall be submitted where chlorination is provided.

Equalizing storage is defined as the volume of storage needed to supplement supply of consumers when the peak hourly demand exceeds the total source pumping capacity. Standby storage is defined as the volume of stored water available for use during a loss of source capacity, power or similar short-term emergency.

A reduction in the requirement for production capacity and standby storage may be requested if adequate water use data is available to demonstrate that the actual average per customer maximum day demand is lower than that specified in the WA DOH Design Guidelines, and that conservation measures can be relied upon to limit new customers to this average water usage. Daily source meter data collected over a two-year period is usually adequate, provided the summer months are typical of warm weather patterns.

The provision of standby storage is a recommendation (not a requirement) of the Design Guidelines. The amount of standby storage may be reduced below the recommended level in the Design Guidelines if "community expectations are amenable to a lesser standby storage capacity".

## VI. 1995 WATER SYSTEM PLAN

The 1995 Water System Plan identified the following improvements:

a) When the systems reaches 165 ERUs, constructed additional storage to serve up to 225 ERUs.
b) When the system reaches 179 ERUs, install approximately 1,900 feet of 6-inch main through the Schulze extension to link Lusk Road and Pinelli Road.
c) Install sample stations for collection of water samples for routine monitoring.
d) Install additional fire hydrants for increased hydrant density.
e) To serve the Rasar State Park project, install approximately 2,300 feet of 8-inch main along Cape Horn Road.

Tasks "a" and "e" have been completed.

## VII. SYSTEM EVALUATION

The system evaluation is based on the design criteria given in Section V. Calculations to support the evaluation are provided in the appendices. The major points in the system evaluation are summarized below.

The calculations for the allowable number of connections the system may supply are included in the appendices. The water right annual production is the limiting factor in the number of connections the system may supply.

### Sources of Supply

The water rights and well production are adequate to supply the future population within the service area.

### Water Quality and Treatment

No water treatment is necessary for the wells.

Chlorination is not currently provided. If desired to maintain a precautionary residual in storage and the distribution system, provisions have not been made in the reservoir piping for chlorination.

### Storage, Pumping and Pressure Reduction

For the estimated future demand, the twin 79,400 gallon reservoirs provide adequate operating and equalizing and fire protection storage and the recommended standby storage equal to one maximum day demand or one maximum day demand (nested with fire protection storage).

The present inlet and outlet piping arrangement does not provide good water circulation in the reservoirs. The normal arrangement would be to provide separate inlet pipes to the top of the reservoirs. In addition to providing the best arrangement for maintaining water quality, separate inlet pipes allow for chlorination of the well water, either as a temporary measure to address positive bacteria results, or to provide a precautionary residual. The separate inlet pipe ensures maximum chlorine contact time in the reservoirs for disinfection.

The inlet and outlet pipes at each reservoir are provided with twin flexible couplings separated by a 2-foot section of pipe. This type of connection is normally provided to allow for differential settlement following initial construction between the tank and connecting pipes. This type of connection does not provide the rotation and restrained expansion capability of a purpose designed earthquake coupling, such as an EBAA Iron "flex-tend" coupling. Therefore, there is the risk during a significant earthquake of a separation of the inlet and outlet pipes at the base of each reservoir.

Only one of the two reservoirs has a sampling point (Kupferle "Eclipse" water sample station) to sample water quality in the reservoir. Sampling points should be provided for each reservoir.

No pumping is currently necessary in the system. However, the Purveyor has a duty to serve all customers in the service area, including parcels at an elevation at or near the elevation of the reservoirs. This will require the installation of booster pumps and a dedicated pumped distribution system in the future. The 230-foot elevation contour would be a possible boundary between the gravity and future pump service zones. The gravity supply with the reservoirs near empty would provide a static pressure of 34 psi at the 230-foot elevation.

The proposed pump service zone boundary is shown on the drawing *Water Distribution System, Service Area* in the appendices. The distribution main for the pump service zone would likely follow along the private road running east-west at the north edge of the service area.

Pressure reduction is not provided. For fire flow, the installation of a pressure reduced zone is not desirable.

**Distribution**

Starting at the first fire hydrant on Pinelli Road, the height of the water storage and capacity of the distribution system is adequate to provide greater than 30 psi pressure during peak hour demand conditions and greater than 20 psi throughout the system during fire flow plus maximum day demand conditions.

For system maintenance, additional isolating valves should be added to the distribution system. The spacing between isolating valves on the major distribution mains (6 and 8-inch) ranges from 2,400 to 3,000 feet. Valves at the intersection of Lusk Road and S.R. 20 are omitted. A maximum spacing of 1,000 feet is recommended.

A drive-by inspection of the distribution system showed apparent high points in the mains where an air release valves are not installed. Also the existing air release valves are in above ground concrete chambers with concrete lids that are difficult to remove for air valve inspection and maintenance.

The installation of one reduced pressure backflow assembly (RPBA) on the service pipe to dual services reduced cost and provided protection of the distribution system. However, this allows one customer to contaminate another customer through the Purveyor's owned system (meters and "tee" are the property and responsibility of the Purveyor). The Purveyor is required to provide premises isolation of each service assessed as a high health hazard. The present arrangement does not comply with this requirement and exposes the Purveyor to potential liability should a customer's system become contaminated where the contaminant enters the system through the Purveyor's system (e.g., piping in the vault containing the meters).

To facilitate collection of routine water samples for bacteriological analysis, water sample stations should be utilized rather than collect samples at taps within homes.

For future installation, all ductile iron pipe and fittings should be installed with polyethylene encasement (sleeves) in accordance with A.W.W.A. Standard C105 unless an evaluation is made of the soil (e.g., resistivity measurements) to show that corrosion protection is not needed.

1995 Water System Plan included a computer analysis of the distribution system. The computer analysis included in this plan was done only to provide a check of the previous analysis and to provide a model for future analysis of the system. The computer schematic in the appendices includes a preliminary future high elevation pump service zone. Expansion of the distribution system will likely first occur in the north portion of the service area to supply a residential subdivision.

## VIII. RECOMMENDED IMPROVEMENTS

The following improvements are recommended in order of priority:

**Short-term (six-year plan):**

1) Undertake a detailed inspection of the distribution system for locating air release valves.

2) Modify the piping in the vaults that contain an RPBA to isolate two customers and install a separate RPBA on each service.

3) Modify overflow pipe on Reservoir No.2 to provide a screened discharge with air gap and the common drain pipe to provide a daylight discharge.

4) To improve water circulation in each reservoir, provide a separate inlet to fill Reservoir No. 2 from the top and modify the yard piping accordingly to separate reservoir fill and discharge piping.

5) Modify the wellhead piping to provide the required check valve at the top of the column pipe and sample hose bib for each well.

6) Install additional air release valve and modify or replace enclosures for existing air release valves to facilitate maintenance.

7) Extend the Schulze Road main to connect with Pinelli Road.

8) Install additional distribution valves.

**Long-term plan (20-years):**

9) Install earthquake couplings on each reservoir.

10) Schedule the replacement of the remaining thin wall PVC pipe.

11) Add fire hydrants to provide a maximum spacing between hydrants of 900 feet.

## IX. CAPITAL FACILITIES PLAN

Details of the budget level cost estimates are provided in the appendices.

The following capital improvement budget is provided for the next six-year period. The schedule is based on the anticipated approval of a change in water rights to allow the drilling of a new well. Other projects are scheduled around this priority task.

Deleted in Revised Submittal 2/26/07

**Table 5**
**CAPITAL PLAN**

| Project Description | Year | Budget |
|---|---|---|
| Change vaults with dual meters and RPBA to provide RPBA on each service. | 2007 to 2008 | $ 117,000 |
| Core drill and install separate top fill inlet on Reservoir No. 2, modify yard piping and other related reservoir and wellhead improvements. | 2008 | $25,000 |
| Added air release valves (allowance for 6) and upgrade enclosures for existing AVB. | 2009 | $10,000 |
| Extend Shultze Road main 1,900 feet or 6"Ø to connect with Pinelli Road ($50,000 easement purchase + $35 per foot + 20% contingency) | 2009 | $140,000 |
| Added distribution valves throughout system (allowance) | 2011 | $10,000 |

The total six-year budget is $ 302,000. All costs are in 2005 dollars. The replacement cost for the existing system is $1,800,000.

## X. FINANCES

A financial viability assessment, developed in accordance with the Washington Department of Health Financial Viability Manual, March 1995, is provided in the appendices.

Funding for the operation of the water system is obtained from the water rates and charges established in the Purveyor, copy included in the appendices. The present flat rate (meter fee) is $16.00per month. The present fee for a water share (purchase of equity) is $2,500.

All projects greater than $100,000 were assumed to be funded through a PWTF loan. All other projects were assumed funded on a pay-as-you-go basis.

All revenue from the purchase of water sahres is dedicated to the capital reserve fund.

The District has no debt. The current financial reserves exceed $ 50,000. This is adequate to cover operating and emergency reserve fund requirements.

An increase in the flat rate and commodity charges was assumed in 2007. If the proposed subdivision near the reservoir takes place, the fees from water shares may delay the time or reduce the amount of the needed increase in the flat rate and commodity charges necessary to fund the debt for major capital expenditures.

## XI. OPERATION AND MAINTENANCE

Details on the following operation programs and plans are included in the appendices and in the M. & O. Manual.

- Cross Connection Control Program
- Water Conservation Plan
- Water Shortage response Plan
- Wellhead Protection Program
- Coliform Monitoring Plan
- Lead and Copper Monitoring Plan
- Emergency Plan

A safety program has not been developed. The District relies upon contract certified operator for system maintenance and operation. The contract operator is responsible for the preparation of a safety program, training of personnel, etc.

The following status reports on the implementation and operation of the above noted programs and plans are provided. In addition a summary of the routine distribution system preventative maintenance programs is provided.

### Cross Connection Control Program

All elements for initiation of the program have been competed with the exception of the periodic distribution of the residential survey questionnaire for risk assessment.

### Water Conservation Plan

The water conservation plan education component has not been needed.

The current unaccounted-for water (2004 billing period) is 3.1 percent of production.

### Water Shortage Response Plan

The water shortage response plan has not been needed. With the amount of storage and two wells, there is little likelihood of needing to implement the plan.

### Wellhead Protection Program

The task has not been scheduled to refine the delineation of the wellhead protection areas from the fixed radius method assumed initially. With the land up-gradient (inland) being mostly undeveloped, this task is not needed for the foreseeable future.

**Water Quality Monitoring Plan**

The District is on schedule for sampling for inorganic chemicals, volatile organic compounds and applying for monitoring waivers.

**Emergency Plan**

It has not been necessary to implement the emergency plan in the last three years.

**Routine Distribution System Maintenance Program**

The routine preventative maintenance task schedule for the distribution system is summarized in the following table.

**Table 6**
**ROUTINE DISTRIBUTION SYSTEM MAINTENANCE SCHEDULE**

| Description | Schedule | Status |
|---|---|---|
| Hydrant inspection and exercising | Annual | Completed annually |
| Line valve inspection and exercising | Annual | Completed annually |
| Blow-off inspection and exercising | Annual | Periodic, limited number currently in system |
| Air release valve inspection | Annual | Periodic, not scheduled annually |
| Source meters testing and maintenance /calibration | Every 2 years | Approximately every two years |
| Testing of backflow prevention assemblies | Annual | Completed annually |
| Small customer meter testing and replacement | NA | Not currently scheduled. Meters on 15-year replacement schedule |
| Water main flushing | NA | Not currently scheduled. Iron and manganese not present in water |

## XII. STANDARD SPECIFICATIONS - WATER MAIN

For any future extension or replacement of water mains, the appendices include standard specifications and construction plans for water mains 2 to 12-inch in diameter.

# CALCULATIONS

## ALLOWABLE NUMBER OF CONNECTIONS (ERUs)

**Summary of System Information:**

| | | | | | |
|---|---|---|---|---|---|
| Water rights: | G1-24847C | 150 | gpm | 65.5 | acre-feet |
| Based on | 127 | residential connections | | | |
| | 324 | seasonal camp sites (Skagit River Woods) | | | |
| Well production: | | | | | |
| Well No. 1 | 75 | gpm | 5 hp Jacuzzi pump | | |
| Well No. 2 | 75 | gpm | 5 hp Jacuzzi pump | | |
| | 150 | gpm | 216,000 | gpd | |
| Storage: | | | | | |
| Current | | | | | |
| Tank No. 1 | 79,400 | gallons | Mt. Baker Silo 26' dia x 20' high | | |
| Tank No. 2 | 79,400 | gallons | Mt. Baker Silo 26' dia x 20' high | | |
| | 158,800 | gallons (nominal) | | | |
| Treatment plant capacity: | | 0 | gpm | treatment not required | |
| Treatment plant backwash: | | na | gpd | | |
| WA DOH approval | | | | | |
| Single-family residential | | 159 | ERUs | | |
| Skagit River Woods Campgroun | | 12 | ERUs | | |
| Rasar State Park | | 8 | ERUs | | |
| | | 179 | ERUs | April 2, 2001 letter | |
| Current number of connections: | | | | | |
| Single-family residential | | 112 | | 2005 WFI | |
| Non-S-F residential | | 2 | | | |
| | | 114 | | | |
| Ultimate number of customers: | | | | | |
| Current S-F residential customer | | 191 | ERUs | | |
| and unserved parcels | | | ERUs | | |
| State Park & Skagit River Wood: | | 32 | ERUs | | |
| Subdivision of large parcels | | 40 | ERUs | See Water Supply and Demand Forecast | |
| Growth allowance for State Park & Skagit River Woods | | 6 | ERUs | | |
| | | 269 | ERUs | | |
| Recorded Maximum Day Demand (MDD | | 43,939 | gpd | 2004 | |
| Recorded 2004 demand: | | 12,439,165 | gallons | 38.2 | acre-feet |
| Recorded MDD | | no record | | | |
| MDD without conservation: | | 800 | gpd/ERU assumed without recorded MDD | | |
| MDD short-term goal | | 700 | gpd/ERU | | |
| MDD long-term goal (20-years) | | 600 | gpd/ERU | | |
| Recorded Average Day Demand (ADD) | | 243 | gpd/ERU | | |
| ADD short-term goal | | 200 | gpd/ERU | | |
| ADD long-term goal (20-years) | | 175 | gpd/ERU | | |

The following is a summary of the calculated number of equivalent number of single family residential connections (ERUs) that the system may supply, based on various design criteria.

**Water Rights:**

270 ERUs Based on the current water right rate of production, assuming 800 gpd/ERU Maximum Day Demand (no water conservation).

360 ERUs Based on the current water right rate of production, assuming 600 gpd/ERU MDD (long-term water conservation goal).

241 ERUs Based on the current water right annual withdrawal, assuming recorded ADD

292 ERUs Based on the current water right annual withdrawal, assuming conservation reduces ADD to short-term goal

334 ERUs Based on the current water right annual withdrawal, assuming conservation reduces ADD to long-term goal

**Well Production:**

Well production equals water rights, see above calculations

**Water Treatment:**

not applicable

**Water Storage:**

278 ERUs Based on current storage, assuming 800 gpd/ERU for standby storage and calculation of Peak Hour Demand, reduction for operating and dead storage, allowance for filter backwash, current well production with credit towards standby storage for multiple wells.

374 ERUs Based on above, assuming long-term water conservation goal of 600 gpd/ERU

## [a] RESERVOIR SIZING

**Allowable number of customers based on present storage, assuming no water conservation (MDD of 800 gpd/ERU), credit towards standby storage and criteria in the WA DOH August 2001 "Water System Design Guidelines".**

| | | | |
|---|---|---|---|
| Allowable number of service connections: | | **278** | |
| Number of wells: | | **2** | |
| Well production capacities (current): | | **150** | gpm |
| Peak Hour Demand (PHD): | | 365 | gpm |
| Maximum Day Demand (MDD) based on | **800** gpd/ERU | 222,400 | gal/day |
| Required minimum continuous well production | | 154 | gpm (avg) |
| Minimum standby storage based on MDD<br>**800** gal/connection [D.O.H.] | | 222,400 | gal |
| Credit for multiple well source<br>**75** gpm | less | 108,000 | gal |
| Equalizing storage: whenever source pumping capacity cannot meet peak demands [D.O.H.] | | 32,317 | gal |
| E.S. = (PHD-Q)(150)<br>Q = source production in gpm | | | |
| Added for fire storage (500 gpm for 30 minutes) for single-family residential homes<br>Chapter 11.01 Land Development Stds.<br>Island Co. (May be part of standby storage in Island Co.) | | 0 | gal |
| Add min. standby storage based on | **200** gpd/ERU | 0 | gal |
| Total required storage ..... | [1+2+3] | 146,717 | gal |
| Allowance for filter backwash (not required) ..... | add | na | gal |
| Allowance for operating and dead stora 1.5 feet ..... | add | 11,910 | gal |
| | | ========== | |
| TOTAL | | **158,627** | gal |

Present storage

| | | |
|---|---|---|
| Two Mt. Baker Silo tank | 26 ft diameter x<br>20 ft high | 158,800 gallons |

## [b] RESERVOIR SIZING

**Allowable number of customers based on present storage, assuming long-term goal for water conservation (MDD of 600 gpd/ERU), credit towards standby storage and criteria in the WA DOH August 2001 "Water System Design Guidelines".**

| | | | |
|---|---|---|---|
| Allowable number of service connections: | | **374** | |
| Number of wells: | | **2** | |
| Well production capacities (current): | | **150** | gpm |
| Peak Hour Demand (PHD): | | 351 | gpm |
| Maximum Day Demand (MDD) based on | **600** gpd/ERU | 224,400 | gal/day |
| Required minimum continuous well production | | 156 | gpm (avg) |
| Minimum standby storage based on MDD **600** gal/connection [D.O.H.] | | 224,400 | gal |
| Credit for multiple well source **75** gpm | less | 108,000 | gal |
| Equalizing storage: whenever source pumping capacity cannot meet peak demands [D.O.H.] | | 30,088 | gal |
| E.S. = (PHD-Q)(150) Q = source production in gpm | | | |
| Added for fire storage (500 gpm for 30 minutes) for single-family residential homes Chapter 11.01 Land Development Stds. Island Co. (May be part of standby storage in Island Co.) | | 0 | gal |
| Add min. standby storage based on | **200** gpd/ERU | 0 | gal |
| Total required storage ..... | [1+2+3] | 146,488 | gal |
| Allowance for filter backwash (not required) ..... | add | 0 | gal |
| Allowance for operating and dead stora 1.5 feet ..... | add | 11,910 | gal |
| TOTAL | | **158,398** | gal |

Present storage

| | | |
|---|---|---|
| Two Mt. Baker Silo tank | 26 ft diameter x 20 ft high | 158,800 gallons |

## NETWORK ANALYSIS

**[b] MDD for 225 ERUs plus 500 gpm fire flow at Node 11, reservoirs at 50% full**

Source Reservoirs:

| Node No. | No. of Pumps | Elev. of Pumps | Pumps Flows and Related Heads (height of water in reservoir) | | | |
|---|---|---|---|---|---|---|
| | | | 0 | 100 | 1000 | Reservoir |
| 1 | 1 | 310 | 10 | 10 | 10 | Height of water (full) |

Booster Pumps:

| Pipe No. | No. of Pumps | Pumps Flows and Related Heads (pump curve) |
|---|---|---|
| none | | |

Pipe Flows:

| Pipe Dia. (inches) | Upstrm. Node | Dnstrm. Node | Pipe No. | Flow (gpm) | Head loss (feet) | Velocity (fps) | Upstrm. HGL (feet) |
|---|---|---|---|---|---|---|---|
| 8 | 1 | 2 | 1 | 642.4 | 23.0 | 4.1 | 320.0 |
| 8 | 2 | 3 | 2 | 629.6 | 14.1 | 4.0 | 297.0 |
| 6 | 3 | 4 | 3 | 322.3 | 11.9 | 3.7 | 282.9 |
| 6 | 4 | 5 | 4 | 301.1 | 11.3 | 3.4 | 271.0 |
| 4 | 5 | 6 | 5 | 10.4 | 0.1 | 0.3 | 259.7 |
| 6 | 5 | 7 | 6 | 280.3 | 16.3 | 3.2 | 259.7 |
| 6 | 7 | 8 | 7 | 6.4 | 0.0 | 0.1 | 243.5 |
| 8 | 7 | 9 | 8 | 541.2 | 3.1 | 3.5 | 243.5 |
| 8 | 9 | 10 | 9 | 541.2 | 4.0 | 3.5 | 240.4 |
| 8 | 10 | 11 | 10 | 520.0 | 3.3 | 3.3 | 236.4 |
| 8 | 11 | 12 | 11 | 20.0 | 0.0 | 0.1 | 233.0 |
| 6 | 13 | 7 | 12 | 267.3 | 1.5 | 3.0 | 245.0 |
| 2 | 13 | 14 | 13 | 3.2 | 0.3 | 0.3 | 245.0 |
| 6 | 15 | 13 | 14 | 270.5 | 3.1 | 3.1 | 248.0 |
| 8 | 15 | 16 | 15 | 4.4 | 0.0 | 0.0 | 248.0 |
| 8 | 16 | 17 | 16 | 4.4 | 0.0 | 0.0 | 248.0 |
| 6 | 18 | 15 | 17 | 274.9 | 1.2 | 3.1 | 249.2 |
| 2 | 18 | 19 | 18 | 1.6 | 0.1 | 0.2 | 249.2 |
| 6 | 20 | 18 | 19 | 276.5 | 2.4 | 3.1 | 251.6 |
| 6 | 20 | 21 | 20 | 3.2 | 0.0 | 0.0 | 251.6 |
| 6 | 20 | 22 | 21 | 6.8 | 0.0 | 0.1 | 251.6 |
| 8 | 22 | 23 | 22 | 2.8 | 0.0 | 0.0 | 251.6 |
| 6 | 22 | 24 | 23 | 4.0 | 0.0 | 0.1 | 251.6 |
| 2 | 24 | 25 | 24 | 4.0 | 0.3 | 0.4 | 251.6 |
| 6 | 26 | 20 | 25 | 286.5 | 1.0 | 3.3 | 252.7 |
| 2 | 26 | 27 | 26 | 1.2 | 0.0 | 0.1 | 252.7 |
| 6 | 28 | 26 | 27 | 287.7 | 10.9 | 3.3 | 263.5 |
| 3 | 28 | 29 | 28 | 6.4 | 0.2 | 0.3 | 263.5 |
| 6 | 30 | 28 | 29 | 305.7 | 6.2 | 3.5 | 269.7 |
| 6 | 30 | 31 | 30 | 1.6 | 0.0 | 0.0 | 269.7 |
| 6 | 3 | 30 | 31 | 307.3 | 13.2 | 3.5 | 282.9 |

**[b] MDD + 500 gpm fire flow, 225 ERUs (continued)**

Node Pressures:

| Node No. | Elevation (feet) | Demand (gpm) | HGL (feet) | Pressure (psi) | |
|---|---|---|---|---|---|
| 1 | 310 | -642.4 | 320.0 | 4.3 | Reservoir |
| 2 | 160 | 12.8 | 297.0 | 59.3 | |
| 3 | 130 | 0.0 | 282.9 | 66.2 | |
| 4 | 125 | 21.2 | 271.0 | 63.2 | |
| 5 | 125 | 10.4 | 259.7 | 58.3 | |
| 6 | 125 | 10.4 | 259.6 | 58.3 | |
| 7 | 130 | 0.0 | 243.5 | 49.1 | |
| 8 | 120 | 6.4 | 243.5 | 53.4 | |
| 9 | 130 | 0.0 | 240.4 | 47.8 | |
| 10 | 130 | 21.2 | 236.4 | 46.1 | |
| 11 | 120 | 500.0 | 233.0 | 48.9 | ⇦ Fire flow |
| 12 | 130 | 20.0 | 233.0 | 44.6 | |
| 13 | 130 | 0.0 | 245.0 | 49.8 | |
| 14 | 130 | 3.2 | 244.7 | 49.7 | |
| 15 | 130 | 0.0 | 248.0 | 51.1 | |
| 16 | 130 | 0.0 | 248.0 | 51.1 | |
| 17 | 130 | 4.4 | 248.0 | 51.1 | |
| 18 | 130 | 0.0 | 249.2 | 51.6 | |
| 19 | 130 | 1.6 | 249.2 | 51.6 | |
| 20 | 135 | 0.0 | 251.6 | 50.5 | |
| 21 | 135 | 3.2 | 251.6 | 50.5 | |
| 22 | 135 | 0.0 | 251.6 | 50.5 | |
| 23 | 135 | 2.8 | 251.6 | 50.5 | |
| 24 | 135 | 0.0 | 251.6 | 50.5 | |
| 25 | 130 | 4.0 | 251.4 | 52.5 | |
| 26 | 135 | 0.0 | 252.7 | 50.9 | |
| 27 | 135 | 1.2 | 252.6 | 50.9 | |
| 28 | 140 | 11.6 | 263.52 | 53.47 | |
| 29 | 140 | 6.4 | 263.3 | 53.4 | |
| 30 | 130 | 0.0 | 269.7 | 60.5 | |
| 31 | 130 | 1.6 | 269.7 | 60.5 | |

Maximum unbalanced head in any loop 0.0001 In loop # 1

## PEAK HOUR DEMAND & AVERAGE MAXIMUM DAY DEMAND

| | | |
|---|---|---|
| **ERUs** | **269** | Ultimate buildout |
| **MDD** | **800** | Assumed no conservation |

PHD = (MDD/1440)*(C*N+F)+18 = **356** gpm

| Range of ERUs (N) | C | F | C | F |
|---|---|---|---|---|
| 15 to 50 | 3.0 | 0 | 0.0 | 0 |
| 51 to 100 | 2.5 | 25 | 0.0 | 0 |
| 101 to 250 | 2.0 | 75 | 0.0 | 0 |
| 251 to 500 | 1.8 | 125 | 1.8 | 125 |
| > 500 | 1.6 | 225 | 0.0 | 0 |
| | for calc. | | 1.8 | 125 |

Average MDD = MDD*ERUs/1440 = **149** gpm 42% of PHD

## DEMAND DISTRIBUTION

| Node | ERUs | Demand (gpm) | | Node | ERUs | Demand (gpm) |
|---|---|---|---|---|---|---|
| 1 | 0 | 0 | | 17 | 8 | 11 |
| 2 | 24 | 32 | Fut pumped | 18 | 0 | 0 |
| 3 | 0 | 0 | | 19 | 3 | 4 |
| 4 | 40 | 53 | Fut. Allowance | 20 | 0 | 0 |
| 5 | 20 | 26 | | 21 | 6 | 8 |
| 6 | 20 | 26 | | 22 | 0 | 0 |
| 7 | 0 | 0 | | 23 | 5 | 7 |
| 8 | 12 | 16 | | 24 | 0 | 0 |
| 9 | 0 | 0 | | 25 | 8 | 10 |
| 10 | 40 | 53 | Fut. Allowance | 26 | 0 | 0 |
| 11 | 0 | 0 | | 27 | 2 | 3 |
| 12 | 38 | 50 | Camp Ground | 28 | 22 | 29 |
| 13 | 0 | 0 | | 29 | 12 | 16 |
| 14 | 6 | 8 | | 30 | 0 | 0 |
| 15 | 0 | 0 | | 31 | 3 | 4 |
| 16 | 0 | 0 | | | | |
| | | | | Total | 269 | 356 |

3260

## NETWORK ANALYSIS - COMPUTER PROGRAM DATA
### Initial Input - Current System

Program Input Codes:

| | | | | | | |
|---|---|---|---|---|---|---|
| 0 | 1 | 0.001 | 1 | | | |
| 2 | 1 | 5 | 1 | 1 | 1 | 1 |
| 31 | 31 | | | | | |

Pipe Data:

| Pipe No. | Between Nodes | | Length (feet) | Diameter (inches) | H-W Coeff. |
|---|---|---|---|---|---|
| 1 | 1 | 2 | 3260 | 8 | 140 |
| 2 | 2 | 3 | 2080 | 8 | 140 |
| 3 | 3 | 4 | 1490 | 6 | 140 |
| 4 | 4 | 5 | 1600 | 6 | 140 |
| 5 | 5 | 6 | 1200 | 4 | 140 |
| 6 | 5 | 7 | 2640 | 6 | 140 |
| 7 | 7 | 8 | 1500 | 6 | 140 |
| 8 | 7 | 9 | 600 | 8 | 140 |
| 9 | 9 | 10 | 780 | 8 | 140 |
| 10 | 10 | 11 | 700 | 8 | 140 |
| 11 | 11 | 12 | 670 | 8 | 140 |
| 12 | 13 | 7 | 270 | 6 | 140 |
| 13 | 13 | 14 | 800 | 2 | 140 |
| 14 | 15 | 13 | 530 | 6 | 140 |
| 15 | 15 | 16 | 460 | 8 | 140 |
| 16 | 16 | 17 | 650 | 8 | 140 |
| 17 | 18 | 15 | 200 | 6 | 140 |
| 18 | 18 | 19 | 550 | 2 | 140 |
| 19 | 20 | 18 | 400 | 6 | 140 |
| 20 | 20 | 21 | 680 | 6 | 140 |
| 21 | 20 | 22 | 400 | 6 | 140 |
| 22 | 22 | 23 | 500 | 8 | 140 |
| 23 | 22 | 24 | 400 | 6 | 140 |
| 24 | 24 | 25 | 520 | 2 | 140 |
| 25 | 26 | 20 | 160 | 6 | 140 |
| 26 | 26 | 27 | 660 | 2 | 140 |
| 27 | 28 | 26 | 1680 | 6 | 140 |
| 28 | 28 | 29 | 1320 | 3 | 140 |
| 29 | 30 | 28 | 860 | 6 | 140 |
| 30 | 30 | 31 | 200 | 6 | 140 |
| 31 | 3 | 30 | 1800 | 6 | 140 |

**Initial Input - Current System**

Node Data:

| Node No. | Demand (gpm) | Elevation (feet) | Notes: |
|---|---|---|---|
| 1 | 0 | 310 | Reservoir |
| 2 | 32 | 160 | |
| 3 | 0 | 130 | |
| 4 | 53 | 125 | |
| 5 | 26 | 125 | |
| 6 | 26 | 125 | |
| 7 | 0 | 130 | |
| 8 | 16 | 120 | |
| 9 | 0 | 130 | |
| 10 | 53 | 130 | |
| 11 | 0 | 120 | |
| 12 | 50 | 130 | |
| 13 | 0 | 130 | |
| 14 | 8 | 130 | |
| 15 | 0 | 130 | |
| 16 | 0 | 130 | |
| 17 | 11 | 130 | |
| 18 | 0 | 130 | |
| 19 | 4 | 130 | |
| 20 | 0 | 135 | |
| 21 | 8 | 135 | |
| 22 | 0 | 135 | |
| 23 | 7 | 135 | |
| 24 | 0 | 135 | |
| 25 | 10 | 130 | |
| 26 | 0 | 135 | |
| 27 | 3 | 135 | |
| 28 | 29 | 140 | |
| 29 | 16 | 140 | |
| 30 | 0 | 130 | |
| 31 | 4 | 130 | |
| | 356 | | |

Program Input Codes:

| | | | | |
|---|---|---|---|---|
| 1 | 1 | 0 | 0 | 0 |
| 3 | | | | |

Source Pump Data:

| | | | | |
|---|---|---|---|---|
| 1 | 1 | | | Node No.; No. of Pump Operating as reservoir) |
| | 0 | 100 | 1000 | Flow (gpm) |
| | 19 | 19 | 19 | Head (feet), height of water in reservoir |

## NETWORK ANALYSIS

**[a] PHD for 225 ERUs, no water conservation**

Source Reservoirs:

| Node No. | No. of Pumps | Elev. of Pumps | Pumps Flows and Related Heads (height of water in reservoir) | | | |
|---|---|---|---|---|---|---|
| | | | 0 | 100 | 1000 | Reservoir |
| 1 | 1 | 310 | 19 | 19 | 19 | Height of water (full) |

Booster Pumps:

| Pipe No. | No. of Pumps | Pumps Flows and Related Heads (pump curve) |
|---|---|---|
| none | | |

Pipe Flows:

| Pipe Dia. (inches) | Upstrm. Node | Dnstrm. Node | Pipe No. | Flow (gpm) | Head loss (feet) | Velocity (fps) | Upstrm. HGL (feet) |
|---|---|---|---|---|---|---|---|
| 8 | 1 | 2 | 1 | 356.0 | 7.7 | 2.3 | 329.0 |
| 8 | 2 | 3 | 2 | 324.0 | 4.1 | 2.1 | 321.3 |
| 6 | 3 | 4 | 3 | 175.0 | 3.8 | 2.0 | 317.2 |
| 6 | 4 | 5 | 4 | 122.0 | 2.1 | 1.4 | 313.3 |
| 4 | 5 | 6 | 5 | 26.0 | 0.7 | 0.7 | 311.2 |
| 6 | 5 | 7 | 6 | 70.0 | 1.3 | 0.8 | 311.2 |
| 6 | 7 | 8 | 7 | 16.0 | 0.1 | 0.2 | 310.0 |
| 8 | 7 | 9 | 8 | 103.0 | 0.1 | 0.7 | 310.0 |
| 8 | 9 | 10 | 9 | 103.0 | 0.2 | 0.7 | 309.8 |
| 8 | 10 | 11 | 10 | 50.0 | 0.0 | 0.3 | 309.6 |
| 8 | 11 | 12 | 11 | 50.0 | 0.0 | 0.3 | 309.6 |
| 6 | 13 | 7 | 12 | 49.0 | 0.1 | 0.6 | 310.0 |
| 2 | 13 | 14 | 13 | 8.0 | 1.4 | 0.8 | 310.0 |
| 6 | 15 | 13 | 14 | 57.0 | 0.2 | 0.7 | 310.2 |
| 8 | 15 | 16 | 15 | 11.0 | 0.0 | 0.1 | 310.2 |
| 8 | 16 | 17 | 16 | 11.0 | 0.0 | 0.1 | 310.2 |
| 6 | 18 | 15 | 17 | 68.0 | 0.1 | 0.8 | 310.3 |
| 2 | 18 | 19 | 18 | 4.0 | 0.3 | 0.4 | 310.3 |
| 6 | 20 | 18 | 19 | 72.0 | 0.2 | 0.8 | 310.5 |
| 6 | 20 | 21 | 20 | 8.0 | 0.0 | 0.1 | 310.5 |
| 6 | 20 | 22 | 21 | 17.0 | 0.0 | 0.2 | 310.5 |
| 8 | 22 | 23 | 22 | 7.0 | 0.0 | 0.0 | 310.5 |
| 6 | 22 | 24 | 23 | 10.0 | 0.0 | 0.1 | 310.5 |
| 2 | 24 | 25 | 24 | 10.0 | 1.4 | 1.0 | 310.5 |
| 6 | 26 | 20 | 25 | 97.0 | 0.1 | 1.1 | 310.6 |
| 2 | 26 | 27 | 26 | 3.0 | 0.2 | 0.3 | 310.6 |
| 6 | 28 | 26 | 27 | 100.0 | 1.5 | 1.1 | 312.2 |
| 3 | 28 | 29 | 28 | 16.0 | 1.2 | 0.7 | 312.2 |
| 6 | 30 | 28 | 29 | 145.0 | 1.6 | 1.7 | 313.7 |
| 6 | 30 | 31 | 30 | 4.0 | 0.0 | 0.1 | 313.7 |
| 6 | 3 | 30 | 31 | 149.0 | 3.4 | 1.7 | 317.2 |

**[a] PHD, 225 ERUs (continued)**

Node Pressures:

| Node No. | Elevation (feet) | Demand (gpm) | HGL (feet) | Pressure (psi) | Static Conditions Pressure (psi) | |
|---|---|---|---|---|---|---|
| 1 | 310 | -356.0 | 329.0 | 8.2 | 8.2 | Reservoir |
| 2 | 160 | 32.0 | 321.3 | 69.8 | 73.2 | |
| 3 | 130 | 0.0 | 317.2 | 81.0 | 86.1 | |
| 4 | 125 | 53.0 | 313.3 | 81.5 | 88.3 | |
| 5 | 125 | 26.0 | 311.2 | 80.6 | 88.3 | |
| 6 | 125 | 26.0 | 310.6 | 80.3 | 88.3 | |
| 7 | 130 | 0.0 | 310.0 | 77.9 | 86.1 | |
| 8 | 120 | 16.0 | 309.9 | 82.2 | 90.5 | |
| 9 | 130 | 0.0 | 309.8 | 77.9 | 86.1 | |
| 10 | 130 | 53.0 | 309.6 | 77.8 | 86.1 | |
| 11 | 120 | 0.0 | 309.6 | 82.1 | 90.5 | |
| 12 | 130 | 50.0 | 309.6 | 77.7 | 86.1 | |
| 13 | 130 | 0.0 | 310.0 | 77.9 | 86.1 | |
| 14 | 130 | 8.0 | 308.6 | 77.3 | 86.1 | |
| 15 | 130 | 0.0 | 310.2 | 78.0 | 86.1 | |
| 16 | 130 | 0.0 | 310.2 | 78.0 | 86.1 | |
| 17 | 130 | 11.0 | 310.2 | 78.0 | 86.1 | |
| 18 | 130 | 0.0 | 310.3 | 78.1 | 86.1 | |
| 19 | 130 | 4.0 | 310.0 | 77.9 | 86.1 | |
| 20 | 135 | 0.0 | 310.5 | 76.0 | 84.0 | |
| 21 | 135 | 8.0 | 310.5 | 76.0 | 84.0 | |
| 22 | 135 | 0.0 | 310.5 | 76.0 | 84.0 | |
| 23 | 135 | 7.0 | 310.5 | 76.0 | 84.0 | |
| 24 | 135 | 0.0 | 310.5 | 76.0 | 84.0 | |
| 25 | 130 | 10.0 | 309.1 | 77.5 | 86.1 | |
| 26 | 135 | 0.0 | 310.6 | 76.0 | 84.0 | |
| 27 | 135 | 3.0 | 310.4 | 76.0 | 84.0 | |
| 28 | 140 | 29 | 312.16 | 74.53 | 81.8 | |
| 29 | 140 | 16.0 | 311.0 | 74.0 | 81.8 | |
| 30 | 130 | 0.0 | 313.7 | 79.5 | 86.1 | |
| 31 | 130 | 4.0 | 313.7 | 79.5 | 86.1 | |

Maximum unbalanced head in any loop 0.0001 In loop # 1

# Appendix A

## Correspondence with

## WA Department of Health
## WA Department of Ecology
## Skagit County

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

# WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 2
Updated: 04/19/2005
Printed: 04/27/2005
WFI Printed For: On-Demand
Submission Reason: Non-Periodic update

RETURN TO: Northwest Regional Office, 20435 72nd Ave S STE 200, Kent, WA, 98032

| 1. SYSTEM ID NO. | 2. SYSTEM NAME | 3. COUNTY | 4. GROUP | 5. TYPE |
|---|---|---|---|---|
| 00392 Q | SKAGIT CO WATER DISTRICT #1 | SKAGIT | A | Comm |

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

KELLY WYNN [WATER & WASTE WATER]
14263 CALHOUN RD
MT VERNON, WA 98273

RECEIVED
MAY 03 2005
SKAGIT COUNTY HEALTH DEPT.

STREET ADDRESS IF DIFFERENT FROM ABOVE
ATTN
ADDRESS
CITY STATE ZIP

**7. OWNER NAME & MAILING ADDRESS** — 8. Owner Number: 015153

SKAGIT COUNTY WATER DISTRICT #1
KELLY WYNN TITLE: DISTRICT MANAGER
14263 CALHOUN RD
MT 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) 466-4443 | Owner Daytime Phone: | (360) 466-4443 |
| Primary Contact Mobile/Cell Phone: | (360) 661-0930 | Owner Mobile/Cell Phone: | (360) 661-0930 |
| Primary Contact Evening Phone: | (360) 446-1345 | Owner Evening Phone: | (360) 466-1345 |
| Fax: (360) 466-1713 | E-mail: wwsvc@aol.com | Fax: (360) 466-1713 | E-mail: wwsvc@aol.com |

**WAC 246-290-420(9) requires that water systems provide 24-hour contact information for emergencies.**

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

- [x] Not applicable (Skip to #12)
- [ ] Owned and Managed
- [ ] Managed Only
- [ ] Owned Only

SMA NAME: _____ SMA Number

**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
- [x] Recreational / RV Park
- [x] Residential
- [ ] School
- [ ] Temporary Farm Worker
- [ ] Other (church, fire station, etc.): _____

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

- [ ] Association
- [ ] City / Town
- [ ] County
- [ ] Federal
- [ ] Investor
- [ ] Private
- [x] Special District
- [ ] State

**14. STORAGE CAPACITY (gallons)**: 160,000

| 15. Source Number | 16. SOURCE NAME: LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER. Example: WELL-#-XYZ456. IF SOURCE IS PURCHASED OR INTERTIED LIST SELLER'S NAME. Example: SEATTLE | 17. INTERTIE: INTERTIE SYSTEM ID NUMBER | 18. SOURCE CATEGORY: WELL | WELL FIELD | WELL IN A WELL FIELD | SPRING | SPRING FIELD | SPRING IN SPRINGFIELD | SEA WATER | SURFACE WATER | RANNEY/INF. GALLERY | OTHER | 19. USE: PERMANENT | SEASONAL | EMERGENCY | 20. SOURCE METERED | 21. TREATMENT: NONE | CHLORINATION | FILTRATION | FLORIDATION | IRRADIATION (UV) | OTHER | 22. DEPTH: DEPTH TO FIRST OPEN INTERVAL IN FEET | 23. CAPACITY (GALLONS PER MINUTE) | 24. SOURCE LOCATION: 1/4-1/4 SECTION | SECTION NUMBER | TOWNSHIP | RANGE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | WELL #1 | | | | X | | | | | | | | X | | | Y | X | | | | | | 202 | 75.0 | NW SW | 09 | 35N | 07E |
| 02 | WELL #2 | | | | X | | | | | | | | X | | | Y | X | | | | | | 204 | 75.0 | NW SW | 09 | 35N | 07E |
| 03 | WELLS #1 & 2 WF | | | X | | | | | | | | | X | | | Y | X | | | | | | 202 | 150.0 | NW SW | 09 | 35N | 07E |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# WATER FACILITIES INVENTORY (WFI) FORM - Continued

| 1. SYSTEM ID NO. | 2. SYSTEM NAME | 3. COUNTY | 4. GROUP | 5. TYPE |
|---|---|---|---|---|
| 00392 Q | SKAGIT CO WATER DISTRICT #1 | SKAGIT | A | Comm |

| *Lines 25, 29, 35 and 36 are required to be completed (other lines are optional)* | ACTIVE SERVICE CONNECTIONS | DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS | DOH USE ONLY! APPROVED |
|---|---|---|---|
| **25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)** | 0 | 120 | 159 |
| A. Full Time Single Family Residences (Occupied 180 days or *more* per year) | 120 | | |
| B. Part Time Single Family Residences (Occupied *less than* 180 days per year) | 0 | | |
| **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 (Campsites, RV Sites, Spigots, etc.) | 0 | 0 | 0 |
| B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc. | 2 | 2 | 2 |
| **28. TOTAL SERVICE CONNECTIONS** | | 122 | 161 |

**29. FULL-TIME RESIDENTIAL POPULATION**

A. How many residents are served by this system 180 or *more* days per year? 270

| 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? | 15 | 15 | 19 | 336 | 957 | 896 | 1704 | 1317 | 1370 | 284 | 34 | 15 |
| B. How many days per month is water accessible to the public? | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| 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? | | | | | | | | | | | | |
| B. How many days per month are they present? | | | | | | | | | | | | |

| 33. ROUTINE BOL FORM SCHEDULE Requirement is exception from WAC 246-290 | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**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: _____

# STATE OF WASHINGTON
**Public Water System**

## Operating Permit

The Department of Health Office of Drinking Water issues a permit to operate

SKAGIT CO WATER DISTRICT #1 (ID# 00392 Q )

to owner: SKAGIT COUNTY WATER DISTRICT #1 County: SKAGIT

SKAGIT COUNTY WATER DISTRICT #1
14263 CALHOUN RD
MT VERNON, WA 98273

This permit is valid through Aug 2005

**PERMIT CATEGORY:** **** Green ****

The permit category may be modified or the permit revoked subject to water system compliance with applicable State of Washington drinking water rules and regulations and the following statements:

The system operating permit color category is based on information on file with the Department at the time this permit was printed.

System is substantially in compliance with applicable drinking water requirements

Washington State Department of Health



Report Date: 09/13/2004

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
*20435 72nd Ave. S., Suite 200, K17-12 • Kent, Washington 98032-2358*

April 2, 2001

BOARD OF COMMISSIONERS
SKAGIT COUNTY WATER DISTRICT NO. 1
PO BOX 1958
ANACORTES WA 98221

Subject: Skagit County Water District No. 1 (ID#00392Q)
Skagit County
Reservoir No. 2 - 80,000 Gallon Concrete Reservoir
Service to 179 Equivalent Residential Units
Submittal #99-1102

Dear Members of the Board:

This letter acknowledges receipt of the construction report for the subject water system which was signed by Andrew T. Soule, P.E. The report indicates that the project has been completed according to plans and specifications which were approved by this office and that the system is now adequate to serve a total of 179 equivalent residential unit (ERUs), as follows:

| | |
|---|---|
| 159 Single Family Residences | 159 ERUs |
| Skagit River Woods Campground | 12 ERUs |
| Rasar State Park | 8 ERUs |

All of the provisions of the approval have been met and this project may now be placed into service.

Sincerely,

Nancy Feagin

Nancy Feagin, PE
Regional Engineer
NW Drinking Water Operations
(253) 395-6765

cc: Lorna Parent, Skagit County Health Department
Andy Soule, CHS Engineers
Shasta Guinn, DOH

STATE OF WASHINGTON

# DEPARTMENT OF HEALTH

*1511 Third Ave., Suite 719 • Seattle, Washington 98101-1632*

January 28, 1997

RECEIVED
FEB 0 3 1997
SKAGIT COUNTY
HEALTH DEPT.

BOARD OF DIRECTORS
SKAGIT COUNTY WATER DISTRICT #1
PO BOX 1526
MOUNT VERNON WA 98273

Subject: Skagit County Water District No. 1 (ID# 00392Q)
Skagit County
Water System Plan
Submittal #92-0921

Dear Members of the Board:

The Water System Plan, received in this office on May 22, 1995 and the associated Developer Project Manual have been reviewed and in accordance with the provisions of WAC 246-290 is hereby APPROVED.

The WSP shows that the water system can serve 165 Residential Customer Equivalents (RCE's). The purchasing water system comprise of 20 RCE's: 12 for Skagit River Woods and 8 for Rasar State Park. This leaves capacity for 145 with the District water system.

The water system plan has been developed as an educational tool to assist the purveyor with water system management decisions. The plan combines elements of engineering design together with policies and procedures for operating, maintaining and managing a public water system.

Approval of this water system plan acknowledges that the technical and planning elements contained in the plan comply with the minimum requirements of the State's Drinking Water Program. This approval does not endorse any specific improvement, policy, and/or procedure, as there may be other alternatives which also meet departmental requirements. This approval does not extend to those elements of the plan that are beyond the regulatory authority of this Department.

Approval of this plan is granted through January 27, 2003 and is valid as it relates to current standards outlined in WAC 246-290, revised July 1994. Future revisions in the rules may be more stringent and require facility modifications or corrective action. Approval of the update of this water system plan is required on or before January 27, 2003 .

This water system plan is consistent with the Public Water System Coordination Act (70.116 RCW) and the Skagit County Coordinated Water System Plan.

Standard material and construction specifications for water main extensions within the utility's designated service area have been approved as a part of the water system plan. With this approval, and consistent with WAC 246-290-120 (e), the District may proceed with the installation of distribution main extensions subject to:

> WAC 246-290-120(e)(ii) -
> The purveyor provides documentation to the department that a professional engineer registered in Washington, certified the construction and that said construction complied with the standard specifications found in the current department-approved water system plan; and

WAC 246-290-120(e)(iii) -
The purveyor provides documentation to the department of the pressure test results, disinfection procedures used and tests performed, and water quality sample results obtained prior to placing the distribution pipe into service.

Nothing in this approval shall be construed as satisfying other applicable federal, state, or local statutes, ordinances and regulations.

Thank you for your cooperation. If you have any questions or wish to check our records, please contact Richard Rodriguez at (206) 587-5619.

Sincerely,

Karen Heneghan, P.E.
Regional Engineer
NW Drinking Water Operations

Richard Rodriguez
Regional Planner
NW Drinking Water Operations

cc: Lorna Parent, Skagit County Health Department
Andy Soule, P.E., CHS Engineering
Rich Siffert, DOH Planning Program Manager

CHS

CHS ENGINEERS, INC.

April 4, 1996

RECEIVED
APR 0 9 1996
SKAGIT COUNTY
HEALTH DEPT.

Karen Heneghan, District Engineer
Northwest Drinking Water Operations
Department of Health
1511 Third Avenue, Suite 719
Seattle, WA 98101

**Subject:** **Water System Plan No. 92-0921**
**Skagit County Water District No. 1 (ID # 00392Q)**

Dear Karen:

This letter communicates the remaining items requested as supplementary information to the subject Water System Plan in accordance with your January 31, 1996 letter.

1. Power outage information has been obtained from Puget Power records for the three-year period from summer 1992 through the summer of 1995. During this period, there were a total of eight power outages of 30 minutes or longer duration. Power outages averaged 2.67 per year with a maximum of four recorded outages in 1994. The average length of power outages averaged 3.14 hours with the single longest outage lasting 7.42 hours. In all cases, the analysis shows that outage criteria established in the sizing guidelines for reductions in standby storage have been satisfied. Detailed back-up is provided in Enclosure 1.

2. We have coordinated with Lorna Haycox, Skagit County Health Department, to amend the Service Area Agreement as requested. She directed us to prepare an addendum to the original agreement. This addendum has been prepared, signed and forwarded to Skagit County, attention Ms. Haycox. She has informed us that she will obtain the necessary signatures of the county and return a signed copy to the District. Upon our receipt, the Water District will forward a copy to you for your files. Attached as Enclosure 2 is a copy of the Service Area Agreement addendum.

3. We have developed pro forma operating statements through the year 2000 as requested. This is a modification to Table 6.1 of the report, as recommended. The operating statements are provided in Table 6.1A, attached as Enclosure 3.

We hope this information satisfactorily addresses your remaining concerns. If you need additional information or have questions, please feel free to call.

Sincerely,

**CHS Engineers, Inc.**

Andy Soule

Andy Soulé, P.E.
Associate

:pc

Enclosure

cc: Kelly Wynn, Manager, SCWD #1
Lorna Haycox, Skagit County Health Department



12507 BEL-RED ROAD SUITE 101 BELLEVUE, WA 98005-2500 TEL: (206) 637-3693 FAX: (206) 637-3694

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
*1511 Third Ave., Suite 719 • Seattle, Washington 98101-1632*

January 31, 1996

RECEIVED
FEB 0 5 1996
SKAGIT COUNTY
HEALTH DEPT.

Board of Directors
Skagit County Water District #1
P.O. Box 1526
Mount Vernon, Washington 98273

Subject: Skagit County Water District #1 (ID # 00392Q)
Skagit County
System Adequate for 145 Service Connections
Water System Plan, Submittal # 92-0921

Dear Members of the Board:

This letter describes the few minor items to finish the Water System Plan (WSP) for Water District #1. I originally drafted this letter in June 1995, but it was not mailed. I am sorry if this has caused any inconveniences.

I understand that there has been a recent flurry of requests for water service. We will update our records to show 145 allowed service connections. The WSP shows that the water system can serve 165 Residential Customer Equivalents (RCE's). The purchasing water systems comprise 20 RCE's: 12 for Skagit River Woods and 8 for Rasar State Park. This leaves capacity for 145 within the District water system.

We reviewed the revised WSP that was received on May 22, 1995. Our March 30, 1993 comment letter was the basis for the review. For the most part, the comments were satisfactorily addressed. When the remaining items below are addressed, the District's Operating Permit can be changed from "yellow" to "green." As I discussed with your engineer, I am *not* asking for an update of the entire document. Responses can be submitted as an amendment to the WSP.

1. Please supply documentation that the power supply meets our criteria to allow reduced standby storage.

2. Provide an amended Service Area Agreement that includes the annexed area of the Water District. Because there has been some confusion over how to amend the agreement, the steps are spelled out below:

   a) Attach a map of the revised service area to the form which appears as exhibit III-3 in the Skagit County Coordinated Water System Plan. Contact Lorna Haycox at (360) 336-9380 to get a copy with the names of the current commissioners.

   b) Get the form signed by the appropriate Water District official(s).

   c) Deliver the form and map to Lorna Haycox. She will get the signatures of the County Commissioners and file it with the County.

   d) Submit the revised agreement to our office as an amendment to the District's WSP. Also, please confirm that the revised agreement will be included in any future reprint of the WSP.

3. Our original review letter asked for "pro forma operating statements for 1993 to 1998." This can be satisfied by projecting the type of information in Table 6.1 for the upcoming years. Please try to project to the year 2000, considering that our final approval of the plan will now be affective for at least that long.

We look forward to your response before March 29, 1996 to complete this Water System Plan. If you have any questions, please call me at (206) 464-7672.

Sincerely,

Karen S. Heneghan

Karen S. Heneghan
District Engineer
Northwest Drinking Water Operations

cc: Andy Soule, CHS Engineers, Inc.
Kelly Wynn, Water and Wastewater Management, Inc.
Lorna Haycox, Skagit County Health Department
Ellen Winningham, DOH NW Drinking Water Operations
Richard Rodriguez, DOH NW Drinking Water Operations
Nancy Feagin, DOH NW Drinking Water Operations

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
*1511 Third Ave., Suite 719 • Seattle, Washington 98101-1632*

June 30, 1995

Board of Directors
Skagit County Water District #1
P.O. Box 1526
Mount Vernon, Washington 98273

Subject: Skagit County Water District #1 (ID# 00392Q)
Waterline Extension to Rasar State Park
Submittal# 95-0514

Dear Members of the Board:

The plans and specifications for the above project received in this office May 17, 1995, have been reviewed and, in accordance with the provisions of WAC 246-290 is/are hereby APPROVED. The approval issued herein is only valid as it relates to current standards outlined in WAC 246-290, revised July 1994. Future revisions in the rules may be more stringent and require facility modifications or corrective action.

As required in WAC 246-290-040(2) within sixty days following the completion of and prior to the use of the above project or portions thereof, the enclosed construction report must be completed by a professional engineer and returned to this department.

In addition, complete and submit the enclosed Pressure, Leakage, and Bacteriological Test Report form for applicable portions of this project. This form is necessary to ensure that all distribution facilities have been tested in accordance with the approved specifications and WAC 246-290-120. Notify this office at least 24 hours in advance of any routine construction inspections, pressure tests or bacteriological water quality testing of new construction.

This approval is for a project that has been identified with and is in conformance with the Water System Plan. Therefore, it is not subject to WAC 246-290-990 (Water System Evaluation and Project Review and Approval Fees).

WAC 246-290-120(4) provides that if construction of the project has not been started within two years of the date of this letter, this

approval will become null and void unless you take action at that time to arrange for an extension of the approval in the manner prescribed.

Nothing in this approval shall be construed as satisfying other applicable federal, state, or local statutes, ordinances and regulations.

Yours truly,

Nancy Feagin

Nancy Feagin, P.E.
Regional Engineer
NW Drinking Water Operations

Enclosures

cc: Andy Soule, CHS Engineers, Inc.
Bill Tabor, WA State Parks and Recreation Commission
Margaret Curtis, Wilson Engineering
Lorna Haycox, Skagit County Health Department
Karen Heneghan, DOH NW Drinking Water Operations
Kelly Wynn, Water and Wastewater Management, Inc.

RECEIVED
JUL 0 3 1995
SKAGIT COUNTY
HEALTH DEPT.

DISTRIBUTION
To | Name
Health Officer
Director
Sup.
Sup.

Wilson
ENGINEERING

April 20, 1994

Mr. William J. Tabor, P.E.
Washington State Parks and Recreation Commission
Puget Sound Resources Development Office
1602 29th St. S.E.
Auburn, Washington 98002

Dear Bill:

Re: Rasar State Park - Schematic Design Phase Report

The enclosed plan and this letter report are submitted in compliance with Section 2.1 Schematic Design Phase of our engineering services contract. The schematic plan represents a refinement of concepts identified during the pre-design phase, and accommodation of the concepts to the actual topographical survey of the property. The information presented in the more extensive Preliminary Site Design Report and Preliminary Stormwater Site Plan is generally not repeated here.

**Overall Layout of Roads, Campsites, and Day Use Facilities**
The original layout prepared by Parks and Recreation planning staff can generally be accommodated without major revisions.

The following minor adjustments to the initial plan were made for this schematic design phase. The shape of the west camp loop was adjusted slightly to miss significant large trees. The day use facilities were pulled back to the north and rotated slightly to conform to the alignment of the high bank of the Skagit River. Suitable locations amidst significant trees have been found for the trailer dump station and the septic tank drainfields to be designed by Parks and Recreation staff. The maintenance building and ranger residence complex was shifted slightly to the west to keep the perimeter 200 foot buffer zone free of improvements. The maintenance-only entrance/exit off Cape Horn Road was realigned to avoid crossing a natural drainage course at the northeast corner of the parcel south of Cape Horn Road. In addition to avoiding individual "specimen" trees, the improvements were also placed to avoid the exemplary alder groves identified by Parks and Recreation staff.

The main entrance from Cape Horn Road was left in its originally conceived location which best accommodates the horizontal and vertical curves of Cape Horn Road. Some tree clearing (or possible trimming of lower limbs) will be required along the south side of Cape Horn Road to the east and west of the proposed entrance road in order to

achieve the sight distances identified in the Rasar State Park Traffic Study. At this stage we believe the vertical elevations of the road will not interfere with entrance sight distance.

**Water Supply and Distribution**

As previously described in the Preliminary Site Design Report, total water usage for the southerly parcel is estimated at 8,820 gpd, or 63 equivalent recreational connections at 140 gpd each. From Table 1 of the Department of Health's Sizing Guidelines for Public Water Supplies, we determined a Maximum Instantaneous Demand of 70 gpm for all park uses south of Cape Horn Road. Mr. Andy Soule, P.E. of CHS Engineers informed me that Skagit County Water District No. 1 can supply water at Lusk Road and Cape Horn Road at a dynamic pressure of approximately 75 psi and static pressure of approximately 90 psi. He said the District did not anticipate giving the park fire flow throughout its internal system, so we have sized the internal distribution system for the MID of 70 gpm only. We propose that the first section of line running from Cape Horn Road to the east side of the west camp loop be 4" diameter. All other lines can be 2". Certain lines to individual services or spigots could be 1-1/4", but there are no significant savings for doing this.

**Onsite Sewage Collection and Disposal**

Although these facilities will be designed by Parks and Recreation staff, we have coordinated with you to locate three potential drainfield sites that will not conflict with significant specimen trees, alder groves, or proposed campsites. The total sewage flow estimate we prepared was 6,800 gpd, including the trailer dump station.

With respect to the furnishing of design level detail at the initial permitting stage, in your behalf we communicated with Skagit County officials to verify that the information is not required, but is highly recommended at the initial permitting stage. Previous developments have suffered delays in the permitting process by not having sewage design information of sufficient detail to address citizen concerns voiced at public hearings.

County employee Tom Carsh cautioned that there have previously been public concerns in the County about sending trailer dump waste to drainfields. He advised that the Washington State Department of Transportation had recently performed a study on dump station waste indicating that it was not a serious disposal problem. This information was passed on to you so that you could obtain the study if appropriate.

Stormwater Management

We delivered a copy of our Preliminary Stormwater Site Plan and exhibits informally to Dan Tolliver with the Skagit County Public Works Department to get the County's reaction to the concepts prior to work on the schematic plan. Tim McAllister with the

RECEIVED
JAN 23 1995
SKAGIT COUNTY
HEALTH DEPT.

Wilson
ENGINEERING

SKAGIT COUNTY
PERMIT CNTR.
JAN 18 1995
RECEIVED

DISTRIBUTION
Name
Health Officer
Director
EH Sup.
Nursing Sup.
Clerical Sup.

January 16, 1995

Skagit County Permit Center
Skagit County Administration Building
Mount Vernon, Washington 98273

Re: Proposed Rasar State Park

Ladies and Gentlemen:

The referenced project has previously been issued a required special use permit (No. SPU 94 009), a shoreline substantial development permit (SHL # 94-018), a fill and grade permit (94-1817), and an access road permit (Owner knows number). Due to recent jurisdictional discussions between the State and County Departments of Health, the onsite water distribution system for the proposed Park has not yet been reviewed and approved, even though the water lines are part of the plans previously submitted.

Ms. Karen Heneghan, P.E., State Department of Health engineer has now advised me that Skagit County will have review jurisdiction over the onsite portion of this project. Therefore, we again formally submit the plans to the Permit Center so that the Skagit County Health Department may review and approve them for immediate construction.

The Park will be a single-meter customer of Skagit County Water District No. 1. The construction plans for the necessary offsite water main extension in Cape Horn Road will be prepared by the District's engineering firm, CHS, Inc. The offsite water line design schedule lags behind the onsite work, so we are requesting that the County approve these onsite water system plans, submitted herewith, for immediate construction. Water service and occupancy can, of course, not be accomplished until the offsite line is completed, but at least the construction should be able to proceed on schedule.

The Parks and Recreation Commission is currently advertising to receive public bids on February 8th or thereabouts. I hope that the Skagit County review can be accomplished as quickly as possible, so that if changes are necessary a bid addendum can be issued.

By copy (letter only, no plans) I am notifying Lorna Haycocks at the Skagit County Health Department that these plans have been formally submitted to the Permit Center for review.

CONSULTING ENGINEERS & SURVEYORS • 805 DUPONT STREET BELLINGHAM, WA 98225 • (206) 733-6100 FAX (206) 647-9061

Thank you for your assistance in expediting this review. Please call if additional information is required.

Very Truly Yours,

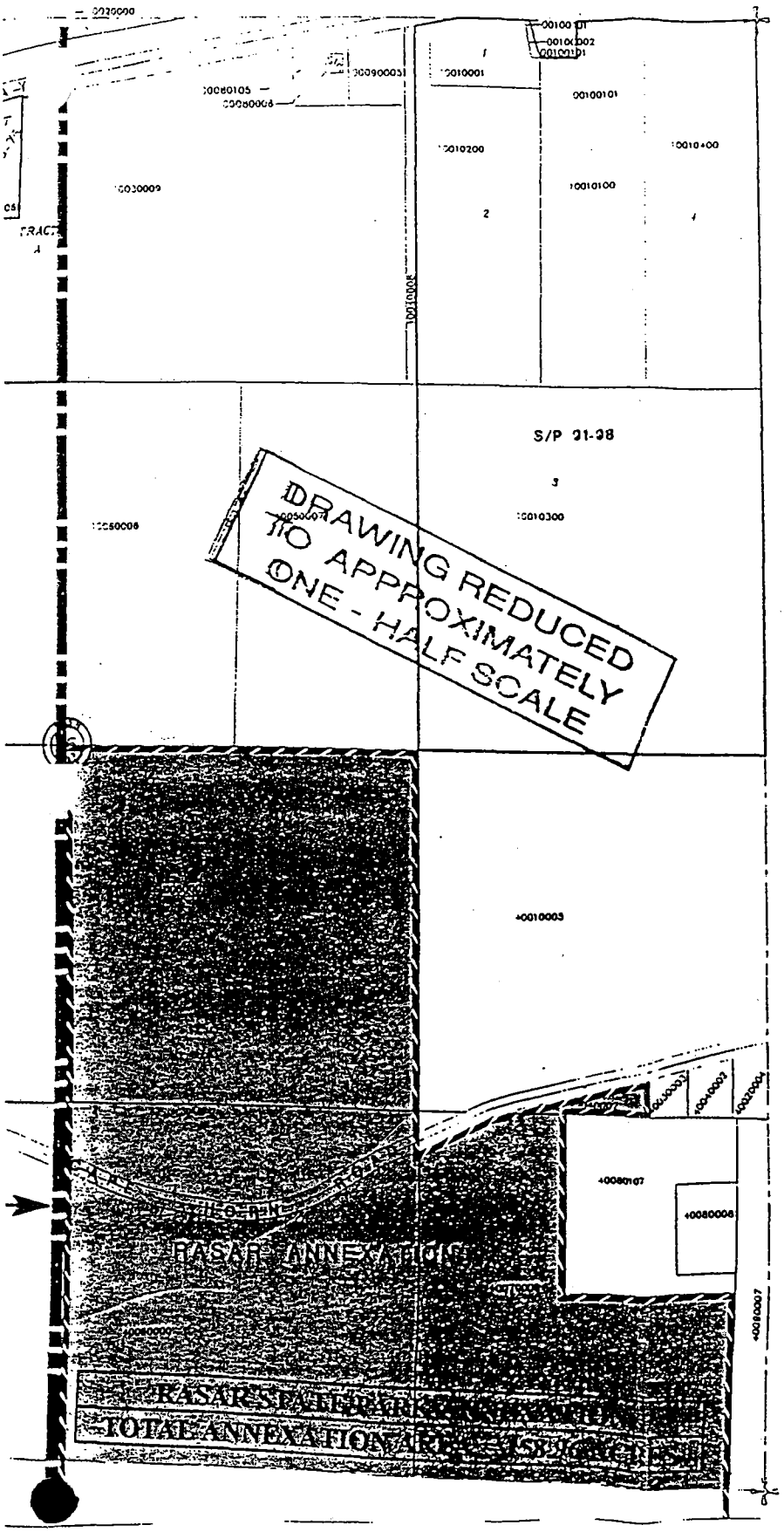
WILSON ENGINEERING

Margaret Curtis

Margaret Curtis, P.E.

cc: Bill Tabor, P.E. - State Parks
Lorna Haycocks - Skagit Co. Health Department

93101\950116.LT1




# SKAGIT COUNTY

| | | | | | |
|---|---|---|---|---|---|
| 6 | 5 | 4 | 3 | 2 | 1 |
| 7 | 8 | 9 | 10 | 11 | 12 |
| 18 | 17 | 16 | 15 | 14 | 13 |
| 19 | 20 | 21 | 22 | 23 | 24 |
| 30 | 29 | 28 | 27 | 26 | 25 |
| 31 | 32 | 33 | 34 | 35 | 36 |

T 35 N R 7 E

N

Scale in feet

0 400

This map is for the purpose of assisting in locating your property and is NOT GUARANTEED to show accurate measurements.

| | DATE | INIT. |
|---|---|---|
| DIGITIZED | 9/19/90 | K.F.W. |
| REVISED | 5/18/93 | K.F.W. |

Section 16

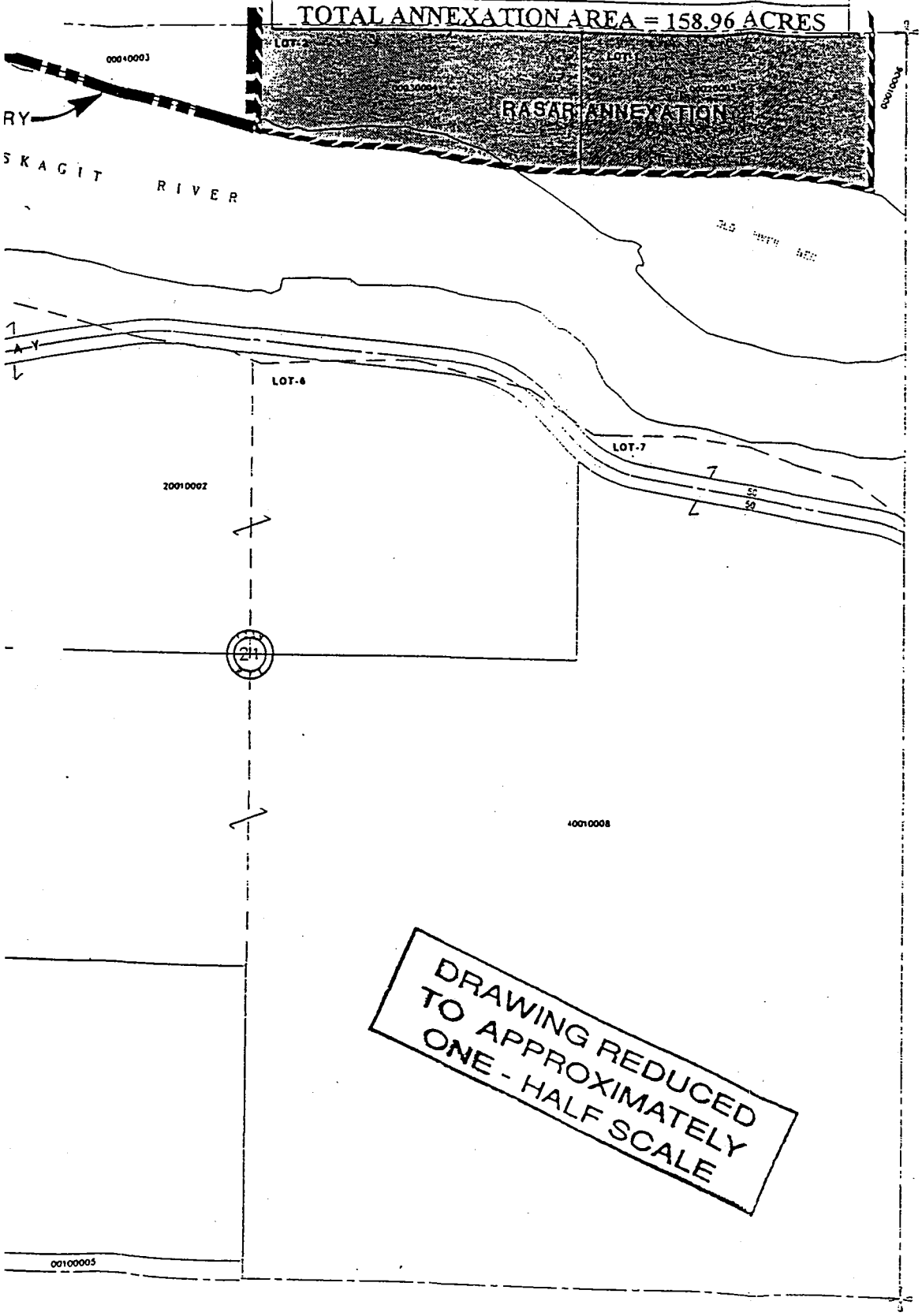
T 35 N R 7 E

EXHIBIT B.1

SHEET 1 OF 2

# RASAR STATE PARK ANNEXATION

## TOTAL ANNEXATION AREA = 158.96 ACRES




SKAGIT COUNTY

| | | | | | |
|---|---|---|---|---|---|
| 6 | 5 | 4 | 3 | 2 | 1 |
| 7 | 8 | 9 | 10 | 11 | 12 |
| 18 | 17 | 16 | 15 | 14 | 13 |
| 19 | 20 | 21 | 22 | 23 | 24 |
| 30 | 29 | 28 | 27 | 26 | 25 |
| 31 | 32 | 33 | 34 | 35 | 36 |

T 35 N R 7 E

N

Scale in feet 0 400

This map is for the purpose of assisting in locating your property and is NOT GUARANTEED to show accurate measurements.

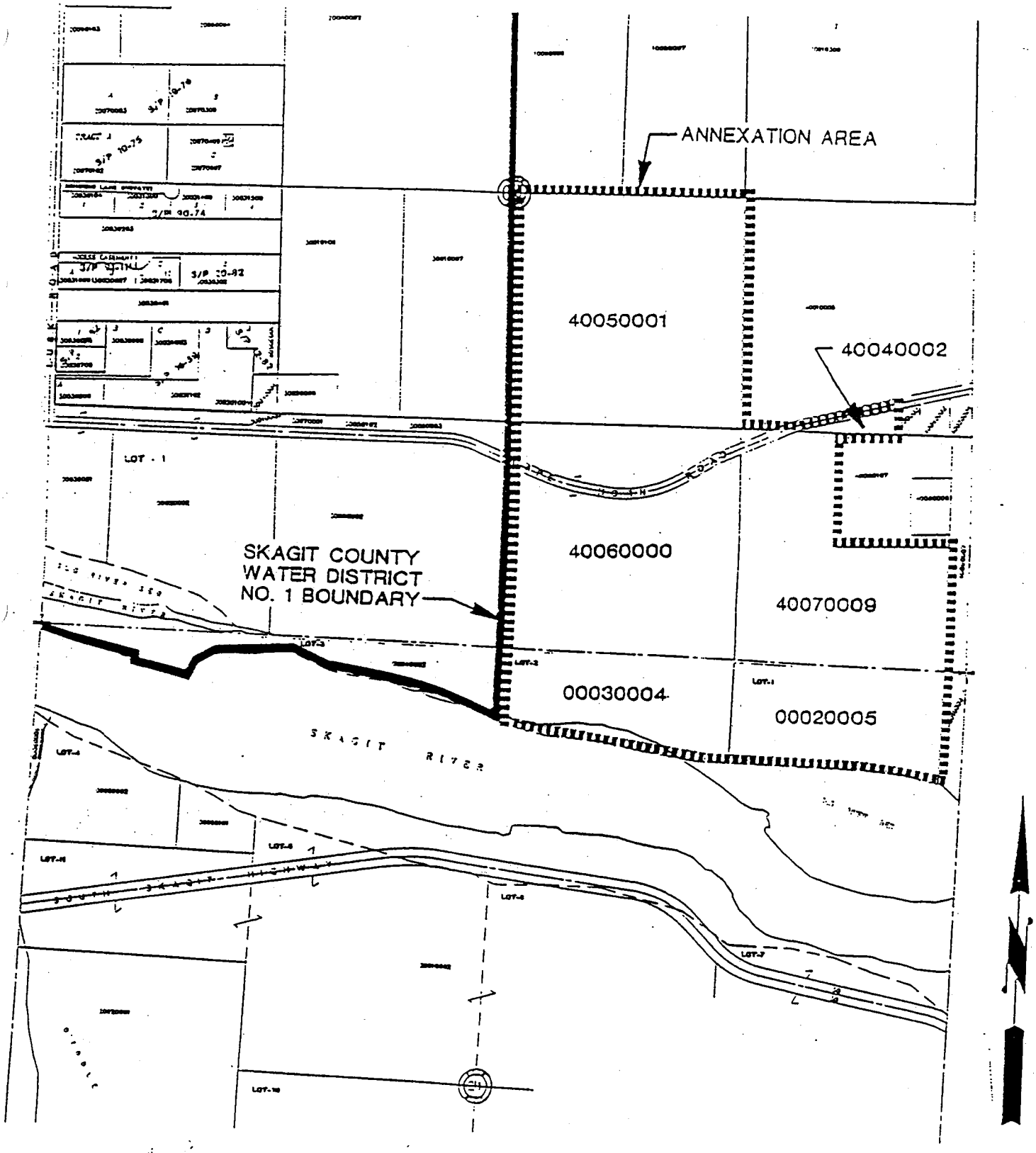
| | DATE | INIT. |
|---|---|---|
| DIGITIZED | 4/5/89 | XL |
| REVISED | 5/2/90 | XL |

Section 21
T 35 N R 7 E

EXHIBIT B.2

SHEET 2 OF 2

PORTION OF SECTIONS 16 AND 21,
T 35 N, R 7 E, W.M.,
SKAGIT COUNTY, WA.




PARCEL IDENTIFICATION
PROPOSED ANNEXATION

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
*1511 Third Ave., Suite 719 • Seattle, Washington 98101-1632*

March 10, 2000

RECEIVED
MAR 1 4 2000
SKAGIT COUNTY
HEALTH DEPT.

BOARD OF DIRECTORS
SKAGIT COUNTY WATER DISTRICT NO 1
PO BOX 1958
ANACORTES WA 98221

Subject: Skagit County Water District No. 1 (ID# 00392Q)
Skagit County
Sanitary Survey

Dear Members of the Board:

On August 9, 1999 I met with Kelly Wynn and conducted a sanitary survey of the referenced water system. The purpose of the sanitary survey program is to identify potential problems and assist you in complying with the drinking water regulations. The attached report contains several recommendations and/or deficiencies, which require your attention. Please call me at (206) 464-7961 if you have any corrections, comments or questions regarding this report.

I apologize for the delay in getting you this written report. I appreciate the time Kelly spent showing me your water system and discuss drinking water issues. I would appreciate a written status report on your progress with the remaining recommendations by April 30, 2000.

Sincerely

Nancy Feagin

Nancy Feagin, PE
Regional Engineer
Northwest Drinking Water Operations

Enclosures

cc (with enclosures):
Lorna Parent, Skagit County Health Department
Sanitary Survey File
Kelly Wynn

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
*1511 Third Ave., Suite 719 • Seattle, Washington 98101-1632*

# SYSTEM INSPECTION/MEETING SUMMARY

DATE OF VISIT: August 9, 1999

NAME OF SYSTEM: Skagit County Water District No. 1 (ID#00392Q)

COUNTY: Skagit

THOSE ATTENDING: Nancy Feagin, Kelly Wynn, Mark Edwards

REASON FOR INSPECTION: Routine Sanitary Survey

---------- OBSERVATIONS ----------

General.

This water system is located along Highway 20 about five miles east of Hamilton. The system serves about 105 homes and two non-residential connections: Skagit River Woods and Raser State Park. The service area is rural residential with little irrigated landscaping. The system was constructed in the late 1980's in response to local groundwater contamination by ethylene di-bromide (EDB), a soil fumigant used in berry farming.

Existing Facilities.

The source of supply consists of two 200 foot-deep wells, each with an installed pump capacity of 75 gpm. The wells are located on high ground north of the highway and are untreated. The susceptibility rating for well #1 is moderate and the rating for well #2 is low. Both wells are metered and have a common sample tap. The Department has evaluated the well logs and inorganic physical and chemical parameters (IOC) test results for the two wells and determined that they meet the Department's well field criteria. A revised water facilities inventory (WFI) form will be mailed to you reflecting this change.

The wells alternate and pump directly to an adjacent 80,000 gallon Mount Baker silo concrete storage reservoir. The well/reservoir site is fenced. Plans for a second reservoir were approved by the Department on November 17, 1999. A construction report has not yet been received for this project.

Water flows by gravity from the storage reservoir to the distribution system by way of a 5200 foot-long, eight-inch diameter ductile iron transmission line. The distribution system is metered and consists primarily of six-inch diameter ductile iron water mains with fire hydrants.

The design of the system has been approved by the Department for service to up to 145 single-family residences and wholesale service to Rasar State Park and Skagit River Woods. The system has a "green" operating permit, indicating that the system is considered by the Department to be adequate.

Water Quality.
The purveyor routinely collects one sample per month for coliform bacteria. In the two years prior to this survey, sample results had been consistently satisfactory. In January 2000, however, the system had a non-acute MCL violation for total coliform bacteria. The department does not have a coliform monitoring plan on file for this system.

The system has completed two rounds of tap sampling for lead and copper with levels below the action levels for both lead and copper. The next round of samples is due in the last half of the year 2002 and must contain results from at least five sites. The system is in compliance with all source monitoring requirements.

During the two years prior to this survey no complaints were logged for this system.

Operations/Cross Connection Control.

Residential services are metered. Due to the risk of EDB contamination through the continued presence of individual irrigation wells in the service area, each service is provided with a reduced pressure principle backflow prevention device. The operator replaces five to six of these per year due to failure.

The distribution system is flushed annually.

Handouts given in the field. None

---------- RECOMMENDATIONS ----------

The following recommendations were made in the field and confirmed as complete by Water and Wastewater Services in a memo dated August 13, 1999: seal the reservoir hatch with a neoprene-type seal; keep the well cap bolted; and removal all chemicals from the well house.

Other recommendations/requirements are as follows:

1. Begin using the new well field source number for source water quality monitoring as soon as you receive the updated water facilities inventory (WFI) form for this system.

2. Please provide a copy of the current coliform monitoring plan for this system.

3. Calculate unaccounted for water by comparing source production with billings. If losses are excessive, leak detection is recommended.

# Appendix B

# Water Right Permits

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

# CERTIFICATE OF WATER RIGHT

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

9310140019

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

| PRIORITY DATE | APPLICATION NUMBER | PERMIT NUMBER | CERTIFICATE NUMBER |
|---|---|---|---|
| June 20, 1986 | G1-24847 | G1-24847 P | G1-24847 C |

NAME
Skagit County Water District #1

| ADDRESS (STREET) | (CITY) | (STATE) | (ZIP CODE) |
|---|---|---|---|
| P.O. Box 1526 | Mt. Vernon | Washington | 98273 |

*This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.*

## PUBLIC WATERS TO BE APPROPRIATED

SOURCE
2 wells

TRIBUTARY OF (IF SURFACE WATERS)

| MAXIMUM CUBIC FEET PER SECOND | MAXIMUM GALLONS PER MINUTE | MAXIMUM ACRE-FEET PER YEAR |
|---|---|---|
| | 150 | 65.5 |

QUANTITY, TYPE OF USE, PERIOD OF USE

Community domestic supply - continuously, for 127 connections
Community domestic supply - seasonally, for 324 campsites

## LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION–WITHDRAWAL

Well No. 1: 300 feet south and 150 feet east of the west quarter corner of Section 9.
Well No. 2: 600 feet south and 150 feet east of the west quarter corner of Section 9.

| LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) | SECTION | TOWNSHIP N. | RANGE, (E. OR W.) W.M. | W.R.I.A. | COUNTY |
|---|---|---|---|---|---|
| NW¼ SW¼ | 9 | 35 | 7E | 3 | Skagit |

## RECORDED PLATTED PROPERTY

| LOT | BLOCK | OF (GIVE NAME OF PLAT OR ADDITION) |
|---|---|---|
| | | |

## LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The SE¼ of Section 8, Township 35 north, Range 7 east, W.M.; the east 200 feet of the SW¼ of the SE¼ of Section 8, Township 35 north, Range 7 east, W.M.; the south ½ of the SW¼ of Section 9, Township 35 north, Range 7 east, W.M.; that portion of the west ½ of Section 16, Township 35 north, Range 7 east, W.M. lying north of the Skagit River; that portion of the east half of Section 17, Township 35 north, Range 7 east, W.M., lying north of the Skagit River; that portion of the east half of the west half of Section 17, Township 35 north, Range 7 east, W.M., lying north of the Skagit River and south of State Highway 20.

RECEIVED
NOV 04 1993
CHS ENGINEERS INC.

'93 OCT 14 AM 10:06
RECORDED ___ FILED ___
REQUEST OF Dept of Ecology
CLERK MONITOR
SKAGIT COUNTY AUDITOR

9310140019

BK 1244 PG 0093

The wells shall be made accessible for measurement of static water level.

Installation and maintenance of an access port as described in Ground Water Bulletin No. 1 is required. An air line and gauge may be installed in addition to the access port.

Static water level (SWL) shall be measured at least once each month. Measurements shall be taken after the pump has been shut off and the water level in the well has been stabilized. The data shall be maintained and made available to Ecology upon request. However, Ecology's Water Resources Section (NWRO) shall be notified if the SWL is determined to be below the level normally recorded at that time of year.

The water source and/or water transmission facilities are not wholly located upon the land owned by the applicant. Issuance of a permit by this department for appropriation of the waters in question does not convey a right of access to, or other right to use land which the applicant does not legally possess. Obtainment of such right is a private matter between applicant and owner of that land.

*The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.*

**This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.**

*Given under my hand and the seal of this office at Bellevue, Washington,*

*this 30th day of September, 1993.*

Department of Ecology

by Stephen J. Hirschey

Stephen J. Hirschey, Section Supervisor, Water Resources

ENGINEERING DATA
OK MK

FOR COUNTY USE ONLY

9310140019

BK 124 PG 0094

# Appendix C

# Well site approval

# SKAGIT COUNTY
# DEPARTMENT of HEALTH

PHONE 336-9380

SKAGIT COUNTY ADMINISTRATION BLDG.
MOUNT VERNON, WASHINGTON 98273

November 6, 1986

Moe Batra, District Engineer
Water Supply and Waste Section
217 Pine Street, Suite #220
Seattle, WA 98101-1549

Subject: Well-site approval for Skagit County Water District #1.

Dear Moe,

I have visited the proposed site, located on DNR land, for wells to serve Skagit County Water District #1, and I find it satisfactory in every respect.

Please feel free to contact me if you have any questions.

Sincerely,

Carolyn Milat
Director of Public Health

Ken Willis/KH

Ken Willis
Environmental Health Specialist II

KW/kh

cc: Marsha Beery

# Appendix D

## Well pump curves

PUD WELL PUMP

#2

Name Skagit County Water Dist. #1 Date 2-13-87

Prop. Address 845 Lusk Rd. Phone 853-8155

Mail Address Concrete WA. 98237

Next to tank. Birdview Well #1

Well Size 6" Depth 200' Static 151'

Screen 1" 2 Slot #20 top #30 bottom Lead Neop.

Started 2-12-87 Finished 2-13-87 Yield 186 GPM DD 12'

Pump Mfg. Jacuzzi HP 5 Type Submersible.

Model 5NS6B4. Serial 6" P.E. - 4" Motor Volts 230v Ø1

Pipe Used 168' Size 2" Galv. Type

Tank Gal New Old

Motor Serial Warranty

Remarks Pump test 2-17-87 75 G.P.M.
Maas 2" Piffless

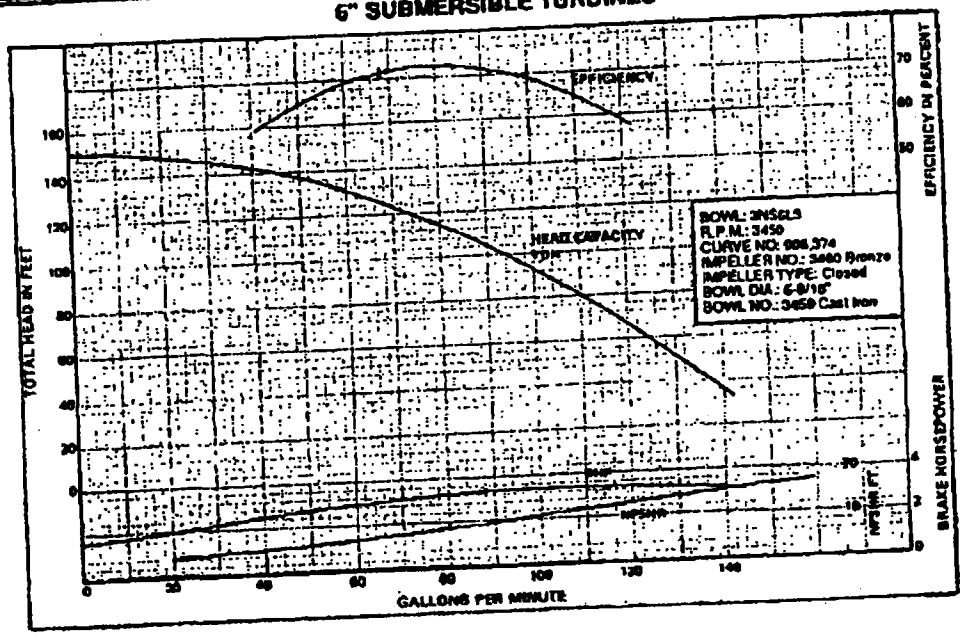
8-21-98 Replaced 2) 5HP Run Capacitor for water waste water

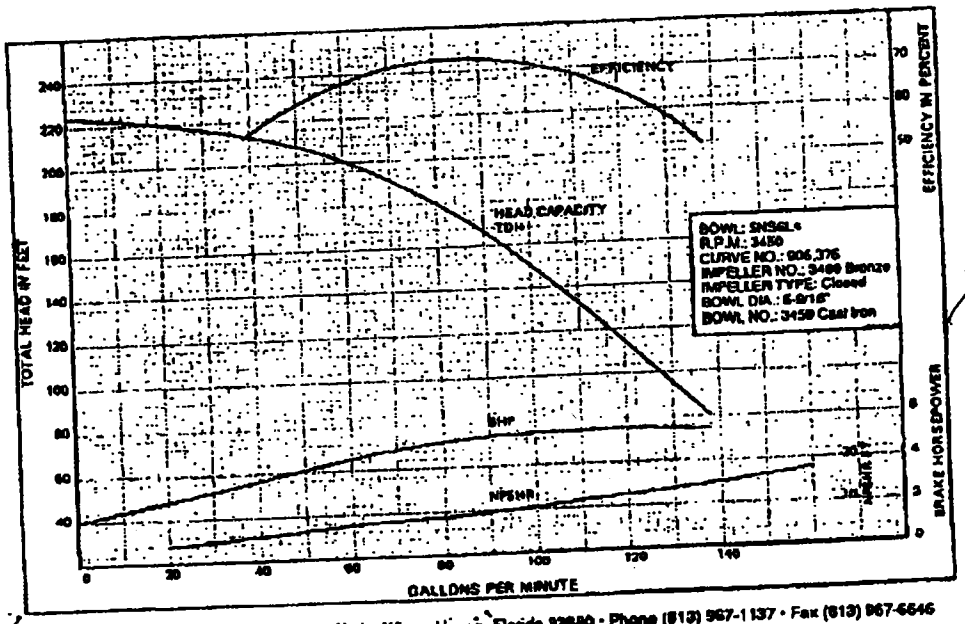
# SUBMERSIBLE TURBINES

## 3NS6L3 - 5NS6L4

**Performance Curve**
**Section 2 Page 4**
June 15, 1991

### 6" SUBMERSIBLE TURBINES




Griswold Pump Co. - 5555 Commerical Blvd., Winter Haven, Florida 33880 - Phone (813) 967-1137 - Fax (813) 967-6646

WELL PUMP

Name Skagit County Water Dist #1 Date 3-28-89

Prop. Address O'Hara Rd. Sedro Woolley Phone 853-8155

Mail Address 3593 Hwy 20 - Concrete WA. 98237

George Theodoratus - 1st one by the Road

Well Size 6" Depth 203' Static 154'

Screen 10" Screen Slot #20 at top #30 on Bottom Lead Neop.

Started 3-27-89 Finished 3-28-89 Yield 40GPM DD 30'

Pump Mfg. Jacuzzi HP 5 Type Submersible

Model 5NS6B5- Serial 6" Pump End 4" Motor Volts 230v.

Pipe Used 168' Size 2" Galv. Type

Tank Gal New Old

Motor Serial Warranty

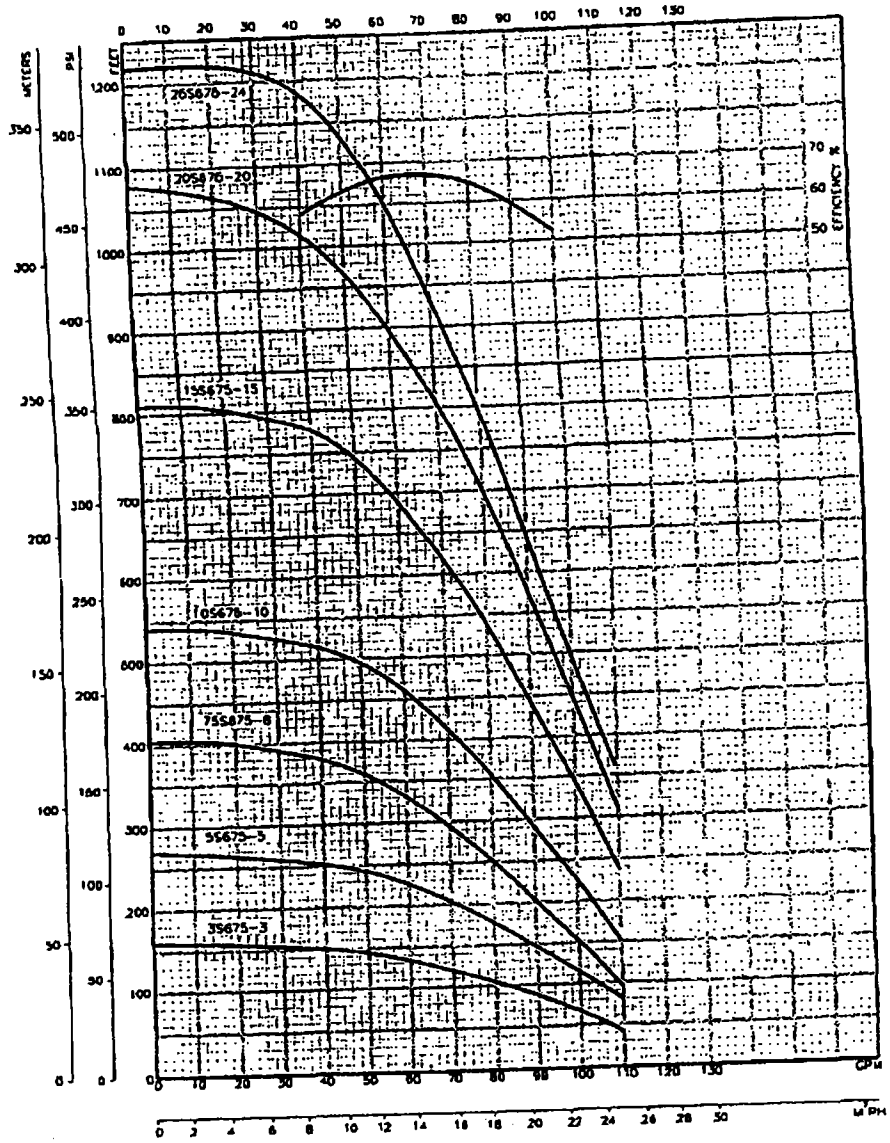
Remarks Pump test 4-4-89 124 GPM 22'DD Mass 2" pipe

Submersibles

"The Most Trusted Name In Water"

# SandHandler™ High Capacity 6" 75 GPM

## Performance Curves



# Appendix E

# Well logs

Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

WELL #2

# WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. [illegible]

Water Right Permit No. _____

(1) OWNER: Name Skagit Water Dist. #1 Address 3593 Hwy 20 Concrete, WA. 98237

2) LOCATION OF WELL: County Skagit ___ ¼ NW ¼ SW Sec 9 T. 35 N., R. 7 W.M.

2a) STREET ADDDRESS OF WELL (or nearest address) _____

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

(4) TYPE OF WORK: Owner's number of well (if more than one) #2

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

(5) DIMENSIONS: Diameter of well 6" inches.

Drilled 203 feet. Depth of completed well 203 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6" Diam. from 0 ft. to 193 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 Johnson

Type Stainless Steel Model No. _____

Diam. 5 5/8 Slot size #20 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 _____ 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 |
|---|---|---|
| Brown Clay - Gravel | 0 | 24 |
| Blue Clay - Gravel | 24 | 32 |
| Brown Clay - Gravel | 32 | 50 |
| Blue Clay | 50 | 56 |
| Brown Clay, Gravel | 56 | 145 |
| Blue Clay | 145 | 175 |
| Water, Clay, Gravel | 175 | 192 |
| Clean Sand, Gravel | 192 | 203 |
| Brown Clay, Gravel | 203 | 204 |

Work started 3-27-89, 19. Completed 3-28-89, 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 DAHLMAN PUMP & WELL DRILLING, INC. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address Box 422, Burlington, WA. 98233

(Signed) Ted Rickus (WELL DRILLER) License No. 0623

Contractor's Registration No. DAHLMPD164M9 Date 3-29-89, 19

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20 (10/87) -1329- 3

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 Skagit County Water Dist. #1 Address 845 Lusk Rd Conorete, WA. 98237

**LOCATION OF WELL:** County Skagit ¼ ¼ Sec. T. N., R. 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 #1
(if more than one)
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

**(5) DIMENSIONS:** Diameter of well 6 inches
Drilled 216.5 ft. Depth of completed well 200 ft.

**(6) CONSTRUCTION DETAILS:**
Casing installed: 6" Diam. from 0 ft. to 185 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. 5 7/8 Slot size 30 from 185 ft. to 195 ft.
Diam. 5 7/8 Slot size 20 from 195 ft. to 200 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 151'4" ft. below top of well Date 2-17-87
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? Dahlman
Yield: 75 gal./min. with 3'9" 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 |
|---|---|---|---|---|---|
| 2 Min | 151 7½" | | | | |
| | 151 7½" | | | | |

e of test 2-17-87
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 ☐
NOE

**(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 |
| Blue Clay & Gravel | 37 | 50 |
| Blue Clay | 50 | 60 |
| Blue Clay & Gravel | 60 | 78 |
| Brown Clay & Gravel | 78 | 162 |
| Gravel | 162 | 170 |
| Water & Gravel | 170 | 200 |
| Brown Gravel & Clay | 200 | 202 |

Work started 2-12-87, 19 Completed 2-13-87, 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] [signature]
(Well Driller)

License No. W 0623 Date 12-18-87, 19

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20

# Appendix F

# Declaration of Covenants and Restrictive Covenants

RETURN ORIGINAL DOCUMENT TO:

NAME: Skagit County Water District #1
MAILING ADDRESS: 14263 Calhoun Road
Mount Vernon, WA 98273

200601200055
Skagit County Auditor
1/20/2006 Page 1 of 3 9:20AM

**Skagit County Water District #1**
**14263 Calhoun Road**
**Mount Vernon, Washington 98273**

**DECLARATION OF COVENANT**
**Site Location of Wells #1 and #2**

Know all men by these presents that, Skagit County Water District #1, in fee simple of the land described herein, hereby declare this covenant and place same on record.

Skagit County Water District #1, the owner in fee simple of the following described real estate situated in Skagit County, State of Washington, to wit:

Lot 1 of Short Plat 1-89, in the NW Quarter of the SW Quarter of Section 9, Township 35 North, Range 9 East, W.M., Skagit County, Washington P42321

On which the grantor owns and operates a well field and waterworks supplying water for public use located on said real estate, at:

See attached Exhibit #1 for detailed location of Wells #1 and #2 showing the 100 foot protection radius

And grantor is required to keep the water supplied from said well field free from impurities which might be injurious to the public health.

It is the purpose of these grants and covenants to prevent certain practices hereinafter enumerated in the use of said grantor's water supply.

*(continued next page)*

NOW, THEREFORE, the grantor agrees and covenants that said grantor, the heirs, successors and assigns will not construct, maintain, or suffer to be constructed or maintained upon the said land of the grantor herein described, so long as the same is operated to furnish water for public consumption, any potential source of contamination, such as septic tanks and drainfields, sewerlines, underground storage tanks, roads, railroad tracks, vehicles, structures, barns, feed stations, grazing animals, enclosures for maintaining fowl or animal manure, liquid or dry chemical storage, herbicides, insecticides, hazardous waste, or garbage of any kind or description.

These covenants shall run with the land and shall be binding to all parties having or acquiring any right, title, or interest in the land described herein or any part thereof, and shall inure to the benefit of each owner thereof.

WITNESS _____ hand _____ this 20th day of January 2006.

_____ (Seal)
Norm Rathvon, President
Skagit Valley Water District #1

State of Washington )
County of Skagit )

I, the undersigned, a Notary Public in and for the above named County and State, do hereby certify that on this 19th day of January, 2006, personally appeared before me Norm Rathvon to me known to be the individual described in and who executed the within instrument, and acknowledge that he (they) signed and sealed the same as free and voluntary act and deed, for the uses and purposes therein mentioned.

GIVEN under my hand and official seal the day and year last above written.

_____
Notary Public in and for the State of Washington, residing

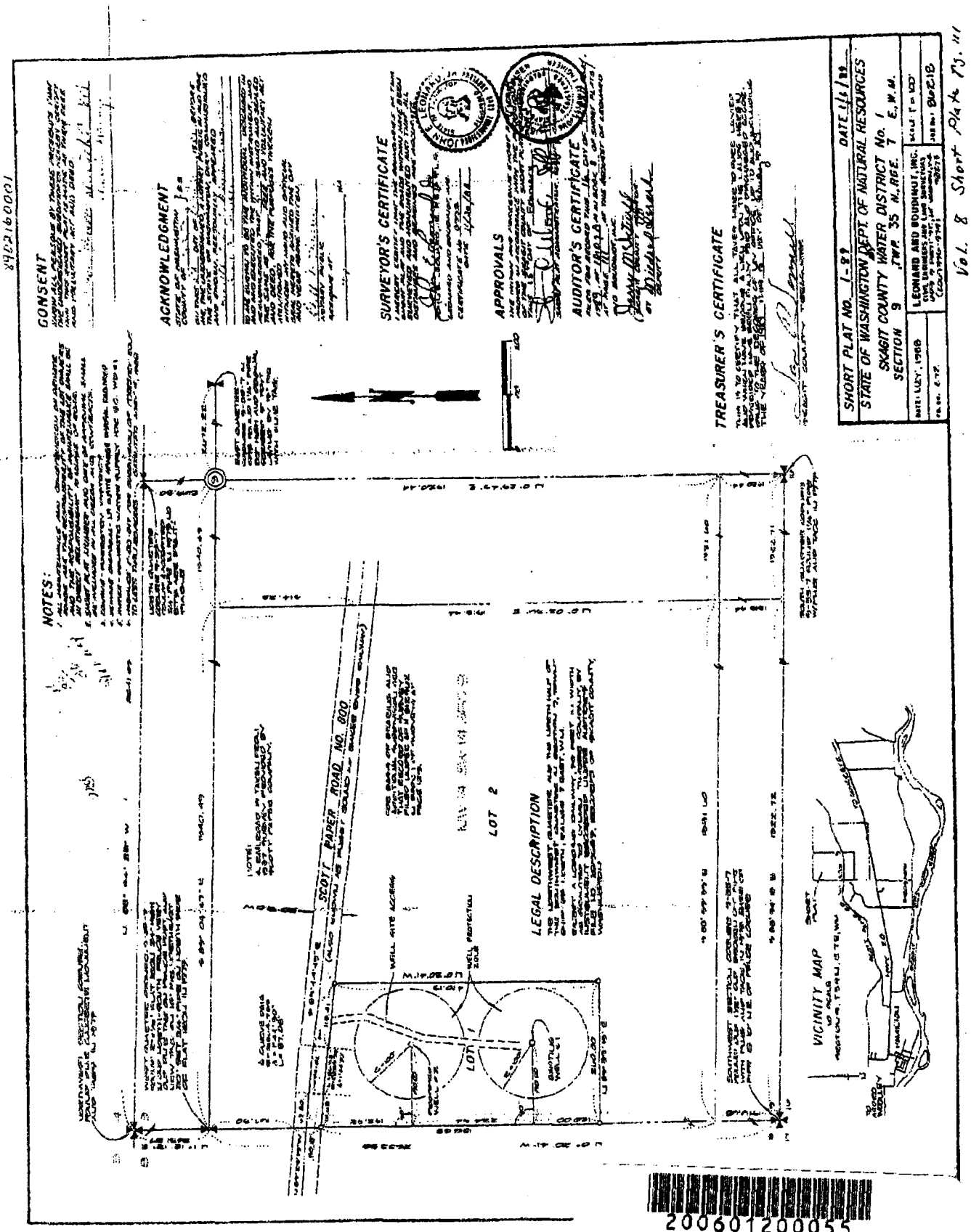
at Sedro Woolley, WA

My Commission Expires: 11-1-06

STEPHANIE L. ARNOLD
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES NOVEMBER 1, 2006

200601200055
Skagit County Auditor
1/20/2006 Page 2 of 3 9:20AM

# EXHIBIT #1


CONSENT
ACKNOWLEDGMENT
SURVEYOR'S CERTIFICATE
APPROVALS
AUDITOR'S CERTIFICATE
TREASURER'S CERTIFICATE
NOTES:
SCOTT PAPER ROAD NO. 800
LOT 2
LOT 1
LEGAL DESCRIPTION
VICINITY MAP
SHORT PLAT NO. 1-89
DATE 11/1/89
STATE OF WASHINGTON DEPT. OF NATURAL RESOURCES
SKAGIT COUNTY WATER DISTRICT No. 1
SECTION 9 TWP. 35 N. RGE. 7 E.W.M.
LEONARD AND BOUDINOT, INC.
Vol. 8 Short Plats Pg. 111

# Appendix G

# Well pump test results

DAHLMPW123LC

**DAHLMAN Pump & Well Drilling, inc**

SALES • PUMPS
SERVICE • WELL DRILLING

P.O. Box 422
1238 Old 99 So.
Burlington, WA 98233
(206) 757-6666

4-4-89

Skagit County Water Dist. #1
3593 Hwy 20
Concrete, WA. 98237

Pump Test: 4-3-89 - 6" HC Turbine
Well #2
203' depth

| Time | Static | GPM |
|---|---|---|
| | 152'10" | Pump Off |
| 9:51 | 157'3" | 130 |
| 10:02 | 154'6" | Pump Off 2 min. |
| 10:09 | 158'8" | 110 |
| 10:30 | | 140 |
| 11:13 | 157'11" | 126 |
| 11:20 | 156'4" | 126 |
| 12:05 | 158'10" | 126 |
| 12:35 | 159'11" | 126 |
| 1:06 | 164'1" | 130 |
| 1:30 | 167'11" | 126 |
| 2:00 | 167'2" | 126 |
| 2:30 | 169'3" | 126 |
| 3:05 | 170'1" | 126 |
| 3:36 | 170'½" | 126 |
| 4:00 | 170'1" | 126 |

Pump Off:

Recovery is instant since water from the turbine column goes directly back into the well when pump is shut off: Approximately 118 gallons, in this case.

Well #1 had a static of 148'3" and was not affected by the test pumping of Well #2.

Sincerely,

Ken Fowler

H. Ken Fowler, President
DAHLMAN PUMP & WELL DRILLING, INC.

# 24 HOUR PUMP TEST FOR SKAGIT COUNTY WATER DISTRICT WELL#1

Test Duration: 9:23 a.m. on 11-5-87 to 9:30 on 11-6-87

Equipment:
- Fairbanks-Morse line shaft turbine pump 35 hp @ 2700 rpms.
- Belt driven by Ford 6 cylinder stationary gas engine
- 4" intake set at 180' down from top of casing
- 4" discharge with a 3" orifice to calculate flow rates
- 2 well probes
- Operator. Ken Fowler of Dahlman Pump and Well Drilling, Inc.

| Time | Measure Down | Water Elevation | *Head of Water in Tube above Centerline of Orifice | | *Yield in GPM |
|---|---|---|---|---|---|
| | (ft.) | (ft.) | (ft.) | (in.) | |
| 9:15 A.M. Test Started | 155.25 | 157.0 | 0 | 0 | |
| 9:28 | 162.60 | 149.60 | 1.61 | 19 | 173 |
| 9:32 | 162.70 | 149.50 | 1.28 | 15 1/2 | 155 |
| 9:35 | 162.50 | 149.70 | 1.56 | 18 3/4 | 172 |
| 9:40 | 163.35 | 148.90 | 1.83 | 22 | 186 |
| 9:48 | 163.92 | 148.30 | 1.71 | 20 1/2 | 180 |
| 9:58 | 163.56 | 148.60 | 1.78 | 21 1/2 | 185 |
| 10:10 | 162.82 | 149.40 | 1.58 | 19 | 173 |
| 10:25 | 164.00 | 148.20 | 2.05 | 24 1/2 | 197 |
| 10:40 | 163.25 | 149.00 | 1.89 | 22 3/4 | 187 |
| 11:00 | 163.33 | 148.90 | 2.06 | 24 3/4 | 198 |
| 11:30 | 164.87 | 147.30 | 2.50 | 30 | 217 |
| The following test results recorded by Ken Fowler | | | | | |
| 11:45 | 163.40 | 148.80 | | 19 | 173 |
| 12:15 P.M. | 163.75 | 148.50 | | 21 | 182 |
| 12:45 | 163.08 | 149.10 | | 20 | 178 |
| 1:15 | 163.40 | 148.80 | | 21 | 182 |
| 1:45 | 163.55 | 148.70 | | 22 | 186 |
| 2:15 | 162.95 | 149.30 | | 18 | 168 |
| 2:50 | 163.80 | 148.40 | | 23 | 194 |
| 3:30 | 163.80 | 148.40 | | 22 | 186 |
| 4:18 | 163.68 | 148.50 | 1.83 | 22 | 186 |

Skagit County Water District No. 1 Well - Page 2

| Time | Measure Down | Water Elevation | *Head of Water in Tube above Centerline of Orifice | *Yield in GPM |
|---|---|---|---|---|
| Dahlman Test Results (Cont.) | | | | |
| 4:30 | 163.60 | 148.60 | 22 | 186 |
| 5:30 | 163.58 | 148.60 | 22 | 186 |
| 6:30 | 163.58 | 148.60 | 22 | 186 |
| 7:30 | 163.33 | 148.90 | 21 | 182 |
| 9:30 | 163.42 | 148.80 | 22 | 186 |
| 11:00 | 163.50 | 148.70 | 22 | 186 |
| 12:00 Midnite | 163.52 | 148.70 | 22 | 186 |
| 4:00 A.M. | 163.58 | 148.60 | 22 | 186 |
| 6:30 | 165.16)Changed | Probes | 22 | 186 |
| 7:30 | 165.16) " | " | 22 | 186 |
| 8:00 | 163.80 | 148.40 | 1.82 22 | 186 |
| 8:42 | 164.10 | 148.10 | 1.78 22 | 186 |
| 9:00 | 164.10 | 148.10 | 22 | 186 |
| 9:29 | 163.90 | 148.30 | 22 | 186 |

* Taken from table of flow rates through circular orifice weirs as found on page 8 of the Johnson National Drillers Journal May-June 1956 (Given to us by Ken Fowler.)

ZEIDNER WELL SITE

Monitor Duration: 9:40 a.m. 11-5-87 to 4:10 P.M. 11-6-87
- 6" casing Estimated depth 160 feet.

November 5, 1987

| Time | Measure Down To Static Level |
|---|---|
| 9:40 A.M. | 142.20 |
| 11:40 | 142.20 |
| 11:48 | 142.20 |
| 3:45 P.M. | 142.25 |

November 6, 1987

| Time | Measure Down to Static Level | |
|---|---|---|
| 8:10 A.M. | 142.55 | NOTE: Mr. Zeidner said that they got up and no water had been run. |
| 8:55 | 142.65 | |
| 9:15 | 142.65 | |
| 9:23 | 143.00 | House Pump On |
| 9:25 | 142.95 | House Pump Off |
| 9:27 | 142.95 | House Pump On |
| 9:29 | 143.10 | House Pump Off |

ZEIDNER WELL SITE (Cont.)

November 6, 1987

| Time | Measure Down to Static Level | |
|---|---|---|
| 9:30 | 142.70 | Pump at S. C. Water District Off |
| 9:32 | 142.55 | |
| 9:35 | 142.50 | |
| 9:37 | 142.55 | |
| 9:40 | 142.55 | House Pump On |
| 9:42 | 144.70 | House Pump Off |
| 9:43 | 142.95 | |
| 9:44 | 142.55 | |
| 9:50 | 142.55 | House Pump On |
| 9:52 | 145.30 | House Pump Off |
| 9:53 | 142.65 | |
| 9:54 | 142.50 | |
| 10:00 | 142.50 | |
| 10:05 | 142.50 | |
| 10:10 | 142.50 | House Pump On |
| 10:12 | 145.00 | House Pump Off |
| 10:13 | 142.60 | |
| 10:15 | 142.50 | |
| 10:20 | 142.50 | |
| 10:25 | 142.50 | |
| 10:30 | 142.50 | |
| == | == | |
| 4:10 P.M. | 142.40 | |

DAHLMAN
Pump & Well
Drilling, inc

SALES • PUMPS
SERVICE • WELL DRILLING

P.O. Box 422
1238 Old 99 So.
Burlington, WA 98233
(206) 757-6666

24 hr. Pump Test For Skagit County Water Dist. #1

9:30 AM 11-5-87 to 9:30 AM 11-6-87

| Time: | Static | Orifice measurement tube - See Flow chart | |
|---|---|---|---|
| 9:23 AM | 155'3" | Pump Off | |
| 9:35 | 162'5½" | 23 | |
| 9:40 | 163'5½" | 22½ | |
| 9:49 | 163'9" | 21 | |
| 10:00 | 164'5½" | 21½ | |
| 10:12 | 162'10" | 19½ | |
| 10:25 | 164'½" | 25 | |
| 10:40 | 163'3" | 23 | |
| 10:55 | 163'4" | 20 | |
| 11:10 | 165'4½" | 29 | |
| 11:28 | 164'10½" | 29 | |
| 11:45 | 163'5" | 19 | |
| 12:15 | 163'9" | 21 | |
| 12:45 PM | 163'1" | 20 | |
| 1:15 | 163'5" | 21 | |
| 1:45 | 163'6½ | 22 | |
| 2:15 | 162'11" | 18 | |
| 2:50 | 163'9½ | 23 | |
| 3:30 | 163'9½ | 22 | |
| 4:30 | 163'7¼ | 22 | |
| 5:30 | 163'7" | 22 | |
| 6:30 | 163'7" | 22 | |
| 7:30 | 163'4" | 21 | |
| 9:30 | 163'5" | 22 | |
| 11:00 | 163'6" | 22 | |
| 12 Midnight | 163'6½" | 22 | |
| 4:00 AM | 163'7" | 22 | |
| 6:30 | 165'2" | 22 | Changed probes |

DAHLMAN
Pump & Well
Drilling, inc

SALES • PUMPS
SERVICE • WELL DRILLING

P.O. Box 422
1238 Old 99 So.
Burlington, WA 98233
(206) 757-6666

Page 2 - Skagit Couty Water Dist #1 - 24 hr. pump test

| Time: | Static | Orifice measurement tube |
|---|---|---|
| 7:30 AM | 165'2" | 22 |
| 8:00 | 163'9" | 22 |
| 9:00 | 164'1" | 22 |
| 9:29 | 163'9" | 22 |
| 9:30 Pump Off | | |
| Recovery: | | |
| 9:31 | 162'8" | |
| 9:35 | 155'0" | |
| 9:36 | 154'10" | |
| 9:38 | 154'9½ | |
| 9:40 | 154'9½ | |
| 9:50 | 154'9½ | |

H Ken Fowler

H.Ken Fowler, President
DAHLMAN PUMP & WELL DRILLING, INC.

# Appendix H

# County Franchise Agreement

BEFORE THE BOARD OF COUNTY COMMISSIONERS OF

SKAGIT COUNTY, WASHINGTON

| | | |
|---|---|---|
| IN THE MATTER OF THE APPLICATION OF | ) | ORDER GRANTING APPLICATION |
| SKAGIT COUNTY WATER DISTRICT NO. 1 | ) | FOR FRANCHISE |
| FOR A FRANCHISE OVER CERTAIN ROADS | ) | NO. 11574 |
| IN SKAGIT COUNTY, WASHINGTON | ) | |

Skagit County Water District No. 1, a Municipal Corporation, having applied for a twenty-five year franchise to construct, erect, alter, improve, renew, replace, repair, operate and maintain a utility system across and along certain roads in Skagit County, Washington, and said application having come on regularly to be heard on the 9th day of May, 1988, at the hour of 10:30 a.m.o'clock, and notice of this hearing having been duly published on the 19th day of April, 1988, and on the 26th day of April, 1988, in the Skagit Argus, a newspaper published in Skagit County having county-wide circulation, and it appearing to the Board that notice of said application and hearing thereon has been given as required by law, and that it is in the public interest to grant the franchise, and the Board having considered said application and being advised in the premises.

The utility system referred to in this franchise is limited to and described as follows:

A potable water distribution facility consisting of pipes, valves, meters and other appurtenances constructed within public road rights-of-way and wells, pumps and reservoirs constructed on private property.

NOW, THEREFORE, IT IS HEREBY ORDERED that the right, privilege, authority and non-exclusive franchise be, and the same are hereby given and granted to Skagit County Water District No. 1, its successors and assigns, hereinafter referred to as the Grantee, for a period of twenty-five years from and after the date of the entry of this order, to construct, alter, improve, renew, replace, repair, operate and maintain a utility system with all convenient appurtenances to said system across and along other county highways, roads, streets, avenues, alleys, and public ways within the boundaries of Skagit County as now laid out, platted, or dedicated and all the county highways, roads, streets, avenues, alleys, and public ways that may hereafter be laid out, platted or dedicated, lying outside of any incorporated town or city, and being situated in the sections, townships and ranges, as follows:

Sections 8, 9, 16, 17 and 18, Township 35 North, Range 7 East, W.M.

Lusk Road, from Cape Horn Road to SR-20., Pinelli Road, from Cape Horn Road to 4250 lineal feet north (as measured along the road) of SR-20, Cape Horn Road, beginning 1320 lineal feet west of Pinelli Road to a point 1320 lineal feet east of Lusk Road. Highway 20 beginning 1320 lineal feet west of Pinelli Road to a point 1320 lineal feet east of Lusk Road.

✓ 2013

This franchise is granted upon the following express terms and conditions, to-wit:

I. Grantee Given Franchise:

That said Grantee, its successors and assigns, shall have the right and authority to enter upon the above-mentioned county roads and rights-of-way as designated hereinbefore for the purpose of constructing its utility system and all convenient appurtenances thereto as described hereinbefore and for altering, improving, renewing, replacing and repairing said utility system and appurtenances, and for operating and maintaining said utility system and appurtenances.

II. Construction Approved by County Engineer:

All construction and installation work along or across the above-mentioned county roads or rights-of-way outside of the corporate limits of any incorporated town shall be subject to the approval and pass the inspection of the County Engineer, and shall conform to all applicable state and federal minimum standards, codes, or regulations, and the county expressly reserves the right to prescribe how and where the utility system shall be installed and may from time to time upon reasonable notice require the removal and replacement thereof in the public interest. The County Engineer may also require the removal of an abandoned installation if necessary to protect the public interest. Such removal or replacement shall be at the sole expense of the Grantee and performed with due diligence by the Grantee.

III. Plans, Specifications, and Map:

Prior to commencement of construction of said utility system or appurtenances, Grantee shall first file with the County Engineer its application for permit to do such work, together with plans and specifications, in duplicate, showing the position and location of said utility system and appurtenances sought to be constructed at that time showing their relative position to existing roads and rights-of-way upon plans drawn to scale hereinafter collectively referred to as the "map of definite location."

The utility system and appurtenances shall be laid in exact conformity with said map of definite location, except in instances in which deviation may be allowed thereafter in writing by the County Engineer pursuant to application by Grantee. The plans and specifications shall specify the class and type of material and equipment to be used, manner of excavation, construction, installation, backfill, erection of temporary structures, erection of permanent structures, traffic control, traffic turnouts and road obstructions, etc. No such construction shall be commenced without the Grantee first securing a written permit from the County Engineer, including approval endorsed on one set of plans and specifications returned to the Grantee. All such work shall be subject to the approval of and shall pass the inspection of the County Engineer. The Grantee shall pay all costs of and expenses incurred in the examination, inspection and approval of such work on account of granting the said permits.

IV. Restoration Guaranteed by Bond:

In any work which requires breaking of soil of the county roads and rights-of-way subject to this franchise for the purpose of constructing and maintaining the said utility system and appurtenances, the Grantee shall be governed by and conform to the general rules adopted by the officers charged with the supervision and care of such county roads, rights-of-way

and other county property; and the Grantee at its own expense and with due diligence shall complete the work for which the soil has been broken and forthwith replace the work and make good the county road and/or rights-of-way, and that the same be left in as good condition as before the work commenced, without leaving any interference to public travel as a result of said construction and with the same grade as before construction or the grade required by the County Engineer; provided, however, that no such breaking of the soil on the county roads and rights-of-way shall be done prior to the obtaining of permit issued by the County Engineer. The expense of necessary road working signs during such work will be borne by the Grantee.

All construction shall be done in a manner that minimizes interference with the use of the road. Applications for such a permit shall be accompanied by specifications for the restoration of the county road and/or rights-of-way to the same condition as it was in prior to such breaking, and such specifications must be approved by the County Engineer before such breaking of the soil is commenced; provided, further, that the Skagit County Engineer may require a performance bond in a sum sufficient to guarantee that such county roads and/or rights-of-way shall be restored to the same condition as they were in prior to such breaking of the soil, the amount of said bond to be fixed by the County Engineer. The Grantee shall pay all costs of and expenses incurred in the examination, inspection and approval of such restoration. The County Engineer may at any time do, order, or have done, any and all work that he considers necessary to restore to a safe condition any such county road and/or rights-of-way left by the Grantee or its agents in a condition dangerous to life or property, and the Grantee upon demand shall pay to the County all costs of such work. Skagit County shall have a lien upon the utility system which may be enforced for the payment of said costs.

V. **Utility Location Preference:**

All construction of said utility system and appurtenances, service, repair, or relocation of the same, performed along or across the county roads and/or rights-of-way subject to the franchise, shall be done in a manner neither to interfere unreasonably with the construction and maintenance of other utilities, lines, public or private, drains, drainage ditches and structures, irrigation ditches and structures, located therein, nor with the grading or improvement of such county roads, rights-of-way, or other county property. The owners of all utilities, public or private, installed in such county roads and/or rights-of-way prior in time to the utility system and facilities of the Grantee shall have preference as to the positioning and location of such utilities so installed with respect to the Grantee. Such preference shall continue in the event of the necessity of relocating or changing the grade of any such county road or rights-of-way.

VI. **Minimum Interference with Public Travel:**

All work done under this franchise shall be done in a thorough and workmanlike manner. In the installation of the utility system and the opening of trenches and the tunneling under county roads and/or rights-of-way, the Grantee shall leave such trenches, ditches and tunnels in such a way as to interfere as little as possible with public travel and shall take all due and necessary precautions to guard the same, so that damage or injury shall not occur or arise by reason of such work.

In the event of an emergency requiring immediate action by Grantee for the protection of its facilities or other persons or property, Grantee may take such action upon such notice to the County Engineer's office or the County Sheriff's office as is reasonable and practicable under the circumstances.

VII. County May Change and Improve Roads Without Liability:

Skagit County, in granting this franchise, does not waive any rights which it now has or may hereafter acquire with respect to county roads and/or rights-of-way and this franchise shall not be construed to deprive the County of any powers, rights or privileges which it now has, or may hereafter acquire, to regulate the use or control of any County roads and/or rights-of-way covered by this franchise.

The laying, construction, operation and maintenance of the Grantee's utility system and facilities authorized by this franchise shall not preclude Skagit County, its agents or its contractors from blasting, grading, excavating, or doing other necessary work contiguous to the said system facilities of the Grantee provided that the Grantee shall be given forty-eight (48) hours notice of said blasting or other work in order that the Grantee may protect its lines and facilities.

VIII. Relocation of Utility:

If at any time Skagit County shall improve or change any county road and/or rights-of-way subject to this franchise by grading or regrading, planking or paving the same, changing the grade, altering, changing, repairing or relocating the same or by constructing drainage facilities, or in the event that such county road and/or rights-of-way subject to this franchise shall become a primary state highway as provided by law, the Grantee upon written notice from the County Engineer, or the Director of Highways, shall at its sole expense and with due diligence, change the location or readjust the utility system so that the same shall not interfere with such county work and so that said utility system and appurtenances shall conform to such new grades or routes as may be established.

All work to be performed by the Grantee under this section shall be under the direction and approval, and shall pass the inspection of the County Engineer. The Grantee shall pay all costs of and expenses incurred in the examination, inspection and approval of such work.

IX. Location of Grantee:

The address of the Grantee is:

c/o Shirley Ammons, Secretary

845 Lusk Road

Concrete, WA 98237

Any notification required to be given to the Grantee may be given to the address above stated, provided that the Grantee may from time to time notify said County in writing of a change of address to which notifications are to be sent.

X. Reference Monuments and Markers:

Before any work is performed under this franchise which may affect any existing monuments or markers of any nature relating to subdivisions, plats, roads and all other surveys, the Grantee shall reference all such monuments and markers. The reference points shall be so located that they will not be disturbed during the Grantee's operations under this franchise. The method of referencing these monuments or other points to be referenced shall be approved by the County Engineer. The replacement of all such monuments or markers disturbed during construction shall be made as expeditiously as conditions permit and as directed by the County Road Engineer. The cost of monuments or other markers lost, destroyed or disturbed, and the expense of replacement by approved monuments shall be borne by the Grantee.

A complete set of reference notes for monuments and other ties shall be filed with the County Engineer's office.

XI. Vacation of County Roads:

If, at any time, Skagit County shall vacate any county road and/or rights-of-way which are subject to the rights granted by this franchise and said vacation shall be for the purpose of acquiring the fee or other property interest in said road and/or rights-of-way for the use of Skagit County, in either its proprietary or governmental capacity, then the Board of County Commissioners may at its option and by giving thirty (30) days' written notice to the Grantee, terminate this franchise with reference to such county road and/or rights-of-way so vacated, and Skagit County shall not be liable for any damages or loss to the Grantee by reason of such termination.

XII. Grantee to Indemnity County:

The Grantee, by acceptance of the privileges granted hereunder, does hereby agree to protect and save harmless Skagit County from all claims, actions or damages of every kind and description which may occur to or be suffered by any person or persons, corporation or property by reason of the construction, operation and maintenance of Grantee's said utility system and appurtenances. In case that suit or action is brought against Skagit County for damages arising out of or by reason of the above-mentioned causes, the Grantee will upon notice to it of the commencement of said action defend the same at its sole cost and expense and will have the right to appeal any judgment rendered therein. The Grantee will fully satisfy and pay any judgment rendered against Skagit County for which it has agreed to protect and save Skagit County harmless hereunder within ninety (90) days after said action or suit shall have been finally terminated.

Acceptance by the County of any work performed by the Grantee at the time of completion shall not be grounds for avoidance of this covenant.

XIII. Franchise Not Exclusive:

This franchise shall not be deemed to be an exclusive franchise. It shall in no manner prohibit Skagit County from granting other franchises of a like nature or franchises for other public or private utilities under, along, across, over and upon any of the county roads and/or rights-of-way subject to this franchise, and shall in no way prevent or prohibit Skagit County from constructing, altering, maintaining, using or vacating any of said roads and/or rights-of-way, drainage structures or facilities, irrigation structures or facilities, or any other county property, or affect its jurisdiction over them or any part of them with full power to make all necessary changes, relocations, repairs, maintenance, etc., the same as the County may deem fit.

XIV. Provisions Bind Successors:

All the provisions, conditions, regulations and requirements herein contained shall be binding upon the successors and assigns of the Grantee, and all privileges, as well as all obligations and liabilities of the Grantee shall inure to its successors and assigns equally as if they were specifically mentioned wherever the Grantee is mentioned.

XV. Consent of County Prior to Transfer:

Neither this franchise nor any interest herein shall be sold, transferred or assigned without the previous consent in writing of the Board of County Commissioners of Skagit County. However, such notice is not required in regard to any mortgage by Grantee to the trustee for its bond holders under its first mortgage indenture. Any sale, transfer or assignment of this franchise in violation of this section shall automatically terminate said franchise.

XVI. Roads Transfered to Cities:

Whenever any of the county roads and/or rights-of-way as designated in this franchise by reason of the subsequent incorporation of any town or city, or extension of the limits of any town or city, shall fall within the city or town limits, this franchise shall continue in force and effect as to all county roads and/or rights-of-way not so included in city or town limits.

XVII. Use of County Standards:

In preparing plans and specifications for the installation of said utility system along or across county roads and rights-of-way, the Grantee shall use as a guide the standards and specifications established by the County Engineer.

XVIII. Revocation for Non-Compliance:

If the Grantee shall willfully violate or fail, through willful or unreasonable neglect, to comply with any of the provisions of this franchise for thirty (30) days after receipt of written notice from the Board of County Commissioners, then said Board shall have the right to declare Grantee's forfeiture of all rights hereunder and to declare this franchise terminated and no further force of effect thereafter.

XIX. Modifications:

Skagit County reserves for itself the right at any time upon thirty (30) days' written notice to the Grantee, to change, amend, modify, or amplify any of the provisions or conditions herein enumerated to conform to any state statute or departmental order or county regulation, relating to the public welfare, health, safety or highway regulation, as may hereafter be enacted, adopted or promulgated.

XX. Insurance:

At the time of granting this franchise, Grantee shall furnish to Skagit County a Certificate of Insurance which provides that Skagit County shall be given ten days' written notice prior to cancellation, expiration or any material changes of the insuring policies and that such policies provide the following minimum coverage limits:

| | |
|---|---|
| Bodily Injury Liability<br>Including Automobile Liability | $1,000,000.00<br>each occurrence |
| Property Damage Liability<br>Including Automobile Property Damage | $ 500,000.00<br>each occurrence |

XXI. Payment:

No privileges or rights granted hereunder shall exempt Grantee from any future uniform rent, license, tax, charge, or import which may hereafter be required by the Grantor for revenue or as reimbursement for use and occupancy of public ways, and failure to timely remit any sums properly due thereby shall be cause for forfeiture of rights hereunder, according to the procedure specified in provision XVIII of this franchise.

All cable television franchises shall be subject to a 3% franchise fee based on gross annual basic subscriber revenues received for cable television operations in the County for the preceding calendar year. No other fee, charge or consideration shall be imposed. Sales tax or other taxes levied directly by the franchise holder shall be deducted from the

gross annual basic subscriber revenues before computation of sums due the County is made. Franchise holder shall provide an annual summary report showing gross annual basic subscriber revenues received during the preceding year. Said franchise fee shall be payable on or before March 31st of each year for the preceding year.

XXII. Grantee to File Acceptance:

The full acceptance of this franchise and all its terms and conditions within thirty (30) days from the date of execution by the Skagit County Board of Commissioners by Skagit County Water District No. 1 in writing is to be filed with the Clerk of the Board of County Commissioners of said county and shall be a condition precedent to its taking effect and, unless the franchise is accepted within such time, this grant shall be null and void.

DATED at Mount Vernon, Washington, this 9th day of May, 1988.

BOARD OF COUNTY COMMISSIONERS
SKAGIT COUNTY, WASHINGTON

W. W. Vary
Chairman

Otto M. Walker Jr.
Commissioner

Dave Rohr
Commissioner

ATTEST: Megan Cheney
Megan Cheney
Clerk of the Board

THIS FORM HAS BEEN PREVIOUSLY APPROVED BY:

John R. Moffat
Skagit County Prosecuting Attorney

The undersigned hereby accepts all the rights and privileges of the above-granted Franchise subject to all the terms, conditions, stipulations and obligations contained herein.

SKAGIT COUNTY WATER DISTRICT NO. 1
GRANTEE

BY: George Theodoratus
George Theodoratus, President

DATED this 30th day of March, 1988.

ENTERED and EXECUTED copy delivered to the Grantee this 9th day of May, 1988.

Megan Cheney
Megan Cheney
Clerk of the Board

[1P:FRANCHIS.DFM4/86]

# Appendix I

# Easements and Deeds

# Skagit County Assessor Parcel Details

| Parcel Number | XrefID | Quarter | Section | Township | Range |
|---|---|---|---|---|---|
| P42321 | 350709-2-001-0107 | 02 | 09 | 35 | 07 |

Zoom to this Parcel on iMap

View Map of this Section

**Owner Information**

SKAGIT CO WATER DIST #1
14263 CALHOUN RD
Mount Vernon, Wa 98273

**Site Addresses**

34711 HAMILTON CEMETERY ROAD
Concrete, WA 98237

***2005 Value Breakdown***

| | |
|---|---|
| **Building Market Value** | $.00 |
| **Land Market Value** | $18,300.00 |
| **Total Market Value** | $18,300.00 |
| **Assessed Value** | $18,300.00 |
| **Taxable Value** | $.00 |

View Value History

***2004 Property Tax Summary***

| | |
|---|---|
| **2004 Taxable Value** | $.00 |
| **General Taxes** | $.00 |
| **Special Assessments** | $.00 |
| **Total Taxes** | $.00 |

View Tax Statement

**Legal Description**

PTN NW1/4 SW1/4 AKA LT 1 S/P #1-89 REC AF#8902160001

| Levy Code | Neighborhood | Land Use Per WAC 458-53-030 |
|---|---|---|
| 3400 | TAX EXEMPT PROPERTIES; NO IMPROVEMENTS | OTHER TRANSPORT/COMMUNI/UTILITIES NOT ELSEWHERE |

| City District | School District | Fire District | Utilities |
|---|---|---|---|
| Skagit County | SD11 | | |

| Year Built | Acres | Living Area | Number Of Rooms | Bdrms |
|---|---|---|---|---|
| | 2.9 | | | |

| Construction Style | Foundation | Exterior Walls | Roof Covering | Roof Style |
|---|---|---|---|---|
| | | | | |

| Interior Finish | Floor Covering | Floor Construction | Plumbing |
|---|---|---|---|
| | | | |

| Appliances | Heat-AirCond | Fireplace |
|---|---|---|
| | | |

| Sale Deed Type | Sale Date | Sale Price |
|---|---|---|
| Q | 9/1/1989 | $.00 |

# EASEMENT

Agreement made April 24, 1989, between Philip E. Zeidner, M.D. and Kathryn J. Zeidner, husband and wife (Grantors), and Water District No. 1 of Skagit County, Washington (Grantee):

For $3046.00, Grantor gives to Grantee and its heirs, successors and assigns, the perpetual right to enter on the real estate hereinafter described, at any time that it may see fit, and construct, maintain, and repair underground pipelines for the purpose of conveying water over, across, through, and under the lands hereinafter described, together with the right to excavate and refill ditches and trenches for the location of such pipelines and mains, and the further right to remove trees, bushes, undergrowth, and other obstructions interfering with the location, construction, and maintenance of said pipelines.

The land affected by the grant of this easement and right of way is located in the County of Skagit, State of Washington, and is more particularly described as follows:*

SEE ATTACHED

The parties agree that the ground will be restored nearly as possible to its original condition upon the completion of the project.

DATED this 24 day of April, 1989.

Philip E. Zeidner

PHILIP E. ZEIDNER, M.D.

Kathryn J. Zeidner

KATHRYN J. ZEIDNER

* To include provisions in the letter dated 3-17-89 from Gilbert & Meyer, Inc. P.S.

K.Z.

# LEGAL DESCRIPTION
## FOR
## WATERLINE EASEMENT

A NON-EXCLUSIVE EASEMENT FOR THE INSTALLATION, MAINTENANCE AND REPAIR OF A WATER LINE AND APPURTENANCES, OVER, UNDER AND UPON A TRACT OF LAND BEING 10 FEET IN WIDTH, LYING 5 FEET ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE, ALL BEING LOCATED IN THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 8, TOWNSHIP 35 NORTH, RANGE 7 EAST, W.M., THE CENTERLINE OF SAID TRACT BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE EAST QUARTER CORNER OF SAID SECTION 8, THENCE SOUTH 0°20'41" EAST ALONG THE EAST LINE OF SAID SUBDIVISION, 599.54 FEET TO THE TRUE POINT OF BEGINNING OF SAID CENTERLINE, THENCE SOUTH 89°39'19" WEST, 11.60 FEET, THENCE SOUTH 0°-09'59" EAST, 448.58 FEET, THENCE NORTH 88°22'18" W, 60.03 FEET, THENCE NORTH 84°88'19" WEST, 141.59 FEET, THENCE SOUTH 71°39'41" WEST, 97.33 FEET, THENCE SOUTH 82°54'41" WEST, 232.71 FEET, THENCE SOUTH 55°40'21" WEST, 182.89 FEET, THENCE SOUTH 78°10'21" WEST, 30.00 FEET, THENCE NORTH 87°41'14" WEST, 134.17 FEET TO THE BEGINNING OF A CURVE TO THE LEFT, THENCE ALONG THE ARC OF SAID CURVE TO THE LEFT HAVING A RADIUS OF 420.98 FEET, THROUGH A CENTRAL ANGLE OF 19°04'35", AN ARC DISTANCE OF 140.16 FEET, THENCE SOUTH 73°14'11" WEST, 202.65 FEET TO THE BEGINNING OF A NON-TANGENT CURVE TO THE LEFT HAVING A RADIAL BEARING OF SOUTH 39°15'49" EAST THENCE IN A SOUTHWESTERLY DIRECTION ALONG THE ARC OF SAID CURVE TO THE LEFT HAVING A RADIUS OF 627.43 FEET, THROUGH A CENTRAL ANGLE OF 2°-28'57" AN ARC DISTANCE OF 27.19 FEET, TO AN INTERSECTION WITH THE SOUTH LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 8, SAID INTERSECTION BEING 102.53 FEET EAST OF THE SOUTHWEST CORNER OF SAID SUBDIVISION AS MEASURED ALONG THE SOUTH LINE, SAID INTERSECTION ALSO BEING THE TERMINUS OF SAID CENTERLINE.

THE EXTERIOR BOUNDARIES OF SAID EASEMENT BEING EITHER LENGTHENED OR SHORTENED ACCORDINGLY TO INTERSECT WITH THE BOUNDARIES OF THE GRANTOR'S PROPERTY.

# POWERLINE EASEMENT

A NON-EXCLUSIVE EASEMENT FOR THE INSTALLATION, MAINTENANCE AND REPAIR OF A POWER LINE AND APPURTENANCES, OVER, UNDER AND UPON A TRACT OF LAND BEING 10 FEET IN WIDTH, LYING 5 FEET ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE, ALL BEING LOCATED IN THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 8, TOWNSHIP 35 NORTH, RANGE 7 EAST, W.M., THE CENTERLINE OF SAID TRACT BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE EAST QUARTER CORNER OF SAID SECTION 8, THENCE SOUTH 0°20'41" EAST ALONG THE EAST LINE OF SAID SUBDIVISION 584.03 FEET TO THE TRUE POINT OF BEGINNING OF SAID CENTERLINE, THENCE SOUTH 89°39'19" WEST 224.99 FEET, THENCE SOUTH 0°09'59" EAST, 447.86 FEET, THENCE NORTH 88°22'18" W, 44.04 FEET, THENCE NORTH 84°88'19" W, 144.25 FEET, THENCE SOUTH 71°39'41" WEST, 74.50 FEET, THENCE NORTH 1°35'03" EAST, 70.99 FEET, THENCE SOUTH 88°24'57" E, 78.50 FEET TO THE CENTER OF AN EXISTING PUGET SOUND POWER & LIGHT COMPANY VAULT, THENCE CONTINUE SOUTH 88°24'57" EAST, 500 FEET TO THE TERMINUS OF SAID CENTERLINE.

# Appendix J

# County Service Area Agreement

#01438

RECEIVED
JUN 13 1996
SKAGIT COUNTY
PUBLIC WORKS ADMIN.

**ADDENDUM NO. 1 to the**
**AGREEMENT FOR ESTABLISHING**
**WATER UTILITY SERVICE AREA BOUNDARIES**
**between**
**Skagit County Water District No. 1 of Skagit County, Washington**
**and**
**Skagit County, Washington**

Attachment A of the Agreement for Establishing Water Utility Service Area Boundaries of October 6, 1992, between Skagit County Water District No. 1 of Skagit County (Water Purveyor) and Skagit County, Washington, is hereby amended per Attachment A of this Addendum. All other terms of the original Agreement remain unchanged.

Board of Commissioners
Skagit County, Washington

Robert Hart, Commissioner

Harvey Wolden, Commissioner

Ted Anderson, Commissioner

June 3, 1996
Date

Skagit County Water District No. 1
Water Purveyor

Kelly Wynn, District Manager

3/20/96
Date

Reviewed By:

Skagit County Fire Marshal

Skagit County Department of Health

Skagit County Review Board

Boundary

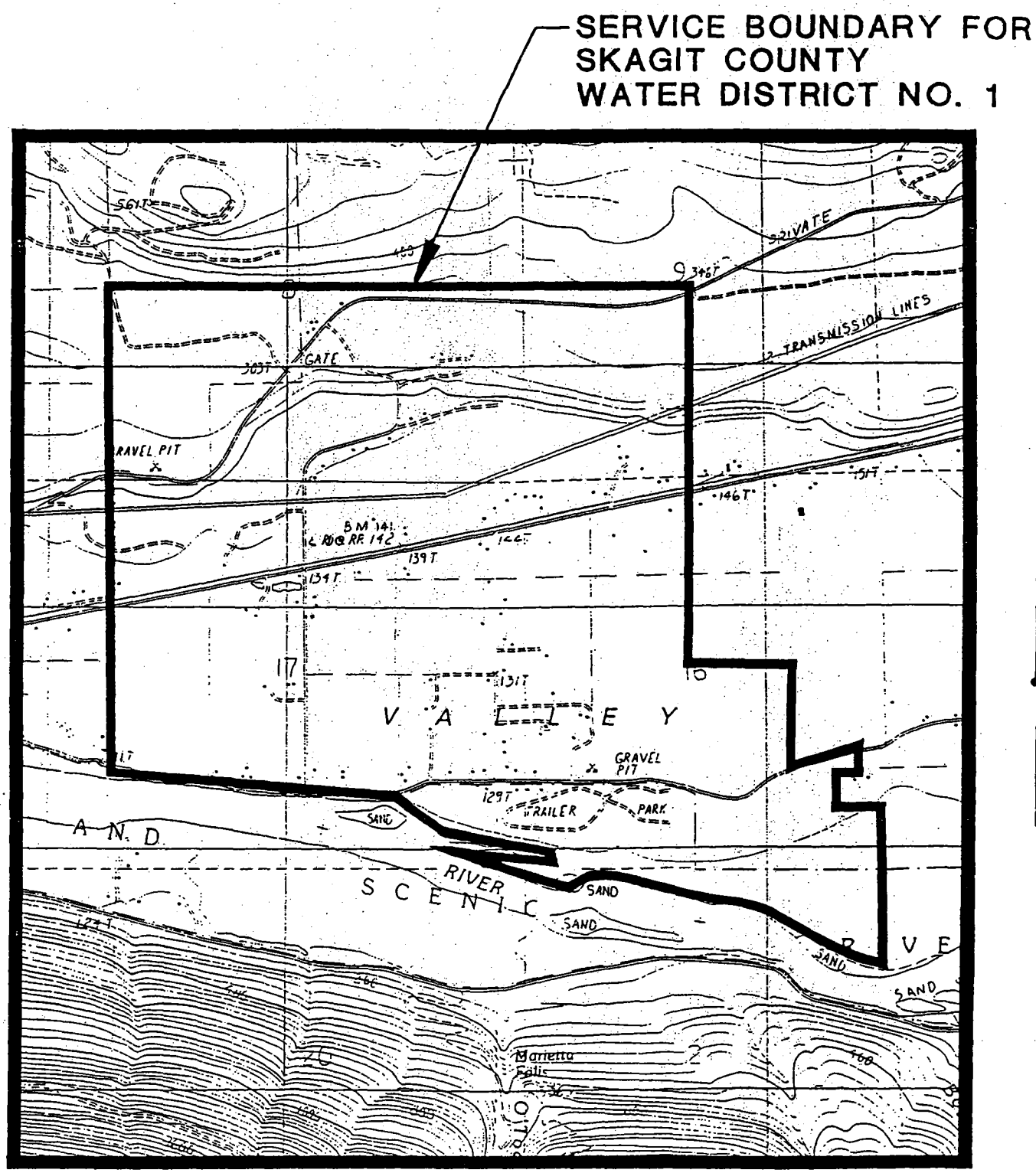
Skagit County Public Works (Franchise)

Skagit County Department of Planning and Community Development

a:\ct\scwsd\addendum.doc\3/13/96\17601

# ATTACHMENT A

# SKAGIT COUNTY WATER DISTRICT NO. 1
# SERVICE AREA MAP




2000 1000 0 2000 4000

SCALE IN FEET

(3/96)

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
*1511 Third Ave., Suite 719 • Seattle, Washington 98101-1632*

**MEMORANDUM**

**To:** Bill Tabor, WA State Parks & Recreation Commission
Peter G. Kramer, WA State Parks & Recreation Commission
Margaret Curtis, Wilson Engineering
Board of Directors, Skagit County Water District #1
Andrew T. Soule, CHS Engineering, Inc.
Kelly Wynn, Water & Wastewater Management, Inc.
Lorna Haycox, Skagit County Health Department

**From:** Karen Heneghan, DOH KSH

**Date:** February 14, 1995

**Subject:** New Purchasing Water System - Rasar State Park
Purchasing from Skagit County WD#1 (ID# 00392Q)
Skagit County

---

The purpose of this memo is to spell out what our office will need from parties involved in the Rasar State Park project. I hope this will facilitate the review process for everyone.

We have determined that the Uniform Plumbing Code and our "Purchasing Systems" policy apply to the distribution system within the Rasar State Park boundaries. For more detail, please see the enclosed policy and June 1994 memo titled "Drinking Water and the Uniform Plumbing Code."

State Park Responsibility

1. Provide a copy of the signed agreement with WD #1 for the purchased water source.

2. Have the County review and approve the design in terms of Uniform Plumbing Code.

3. Fill out a Water Facilities Inventory form and receive a water system ID number from our office.

4. We will expect the State Parks Commission to monitor the distribution system in a manner consistent with its other parks.

What DOH will need from Skagit County Water District #1

1. Provide the signed service area agreement that includes the Rasar State Park property.

2. Verify that the description of place of use in the water right covers the amended service area. If necessary, apply to amend the place of use and extend the deadline for perfecting the water right.

3. Submit design documents for the main extension to the park boundary. This should include engineering justification of pipe sizing. We recommend that the design include a coliform sampling station near the connection to the park.

4. Submit an updated Water Facilities Inventory form reflecting the purchasing systems as non-residential connections.

We accept the hydraulic analysis in the September 1992 Abbreviated Water Plan as demonstration that adequate pressures are available to the service connection for Rasar State Park. We understand that the connection is represented by Node 18 in the hydraulic analysis.

Based on the 1992 Plan, we also accept that existing source capacity and storage are adequate for the two purchasing systems and the existing connections in WD #1. We understand that WD #1 will be finishing its Water System Plan this year. **In the plan, we will expect to see an updated evaluation of the total number of connections that the existing system is considered capable of serving, taking into account the instantaneous, peak day, and annual demands of the purchasing systems.**

For any questions, I can be reached at (206) 464-7672.

cc: Steve Deem, DOH
Ellen Winningham, DOH
Ethan Moseng, DOH

# DIVISION OF DRINKING WATER

# POLICY/PROCEDURE

| | |
|---|---|
| Title: | "Purchasing Systems" |
| References: | WAC 246-294-020 |
| Contact: | Alan Rowe |
| Effective Date: | 9/12/94 |
| Supersedes: | N/A |
| Approved: | Director, Division of Drinking Water |

**BACKGROUND:**

State Board of Health (SBOH) Drinking Water Regulations define **"Public Water System"**, and identify which public water systems are regulated. The definition and its applicability are consistent with the federal Safe Drinking Water Act. However, it is unclear how this definition applies to entities which obtain all their water from, but are not owned by, an approved public water system (hereafter called **"Purchasing Systems"**). This lack of clarity has led to inconsistencies between the three DOH Regional Offices (ROs).

While EPA and other states generally ignore this issue, some direction is provided in the definition itself. The Safe Drinking Water Act and SBOH regulations do **NOT** apply to a purchasing system that:

1. Does not have source or treatment facilities,
2. Is not a passenger-conveying carrier in interstate commerce, and
3. Does not sell water directly to any one person.

Based on DOH input, the SBOH has concluded that there is no documented evidence of a significant public health threat from purchasing systems which meet these criteria, and therefore it is not economically feasible to regulate them unless specific problems can be documented on a case-by-case basis. Their intent is to reduce the total number of systems regulated, allowing increased opportunity for existing staff to focus on concerns of greater health significance.

PURPOSE:

The purpose of this policy is to provide direction to RO staff on when to regulate purchasing systems as separate public water systems, thereby promoting consistent and uniform application of which public water systems are regulated.

POLICY:

SBOH Drinking Water Regulations **SHALL NOT** apply to purchasing systems which meet **ALL** the criteria identified in WAC 246-290-020 and WAC 246-291-020 **UNLESS** regulation as a public water system is necessary to resolve an existing or suspected public health threat (See WAC 246-290-020(3) and WAC 246-291-020(2)). Following is guidance addressing each of the WAC criteria:

1. Does not have source or treatment facilities. Source includes any supply of water physically connected to or utilized by the purchasing system, other than through its connection with an approved public water system. Treatment shall include any process utilized to change the quality of the water supply after the point of purchase. Filtration, disinfection, corrosion control, chemical addition, ion exchange and oxidation processes are all examples of "treatment"; and

2. Is not a passenger-conveying carrier in interstate commerce. Passenger-conveying carriers in interstate commerce include vehicles that are in the business of transporting people across state boundaries, such as ferries, cruise ships, trains, airplanes and buses. International carriers, such as the Port Angeles/Victoria ferry, do not qualify as interstate carriers; and

3. Does not sell water directly to any one person. Sell means to bill separately for drinking water or to include drinking water as part of an itemized listing in a bill delivered to customers, where the amount billed is an increase over what the purveyor pays for water. This criterion would exempt mobile home parks, apartments, condominiums, shopping malls, commercial offices and similar entities. Public entities (such as water districts and PUDs), systems which convey water for profit or as a business, and other entities such as cooperatives, mutuals or associations would NOT be exempted. The presence of centralized source or individual service meters does not affect whether the water is being sold.

If a purchasing system meets ALL THREE of the above criteria, it shall be deregulated unless or until ANY of the following public health criteria apply:

1. DOH has documented evidence, or believes in its best judgement that there is a water quality, quantity or reliability problem related to facilities within the purchasing system; or

2. DOH has received five or more specific complaints about drinking water quality, quantity or reliability from different customers of the purchasing system in any twelve month period and those complaints, in the judgement of DOH, involve an existing or potential threat to public health and are not satisfactorily addressed in a reasonable period of time. The complaints may be individually received or may be registered by a petition signed by five or more customers; or

3. Water quality problems experienced by the public water system providing water to the purchasing system are believed, in the judgement of DOH, to be due to circumstances within the purchasing system; or

4. The purchasing system fails to meet any of the three criteria previously listed.

## IMPLEMENTATION

Any owner who believes their system meets the deregulation criteria listed in this policy may send a letter to the appropriate RO requesting inactive status, and including justification for deregulation. If the RO concurs, the purchasing system shall be re-designated "inactive" and a copy of their updated WFI shall be sent to the purchasing system owner. If the RO does NOT concur, the RO shall mail the system owner a letter containing the reasons for not concurring, and instructions on how he or she may appeal the decision. ROs shall maintain current WFI data for all purchasing systems which have been inactivated.

For new or newly constructed purchasing systems, the same procedure shall apply, except the RO shall make an initial determination whether it meets all the criteria for deregulation. If it does, ROs shall secure a WFI and list the system as "inactive". Note: Newly constructed purchasing systems are subject to Uniform Plumbing Code requirements as identified by Chapters 51-26 and 51-27 WAC. Of particular interest is Chapter 1 (definitions), Chapter 10 (water distribution), Appendix E (mobile home parks) and the IAPMO Installation Standards. Counties and cities are responsible for implementing these Uniform Plumbing Code requirements.

The RO Section Head shall make the decision to activate purchasing systems when he or she determines the system no longer meets any of the deregulation criteria listed in WAC and this policy. No prior notice or waiting period is necessary. The determination shall be clearly documented, sent to the purchasing system owner, and placed in the system file. A system which has been activated shall remain active until such time as the RO Section Head judges that the system meets all criteria for deregulation and has satisfactorily addressed portions of the SBOH Drinking Water Regulations necessary to resolve the public health threat which caused the system to become activated.

# AGREEMENT FOR ESTABLISHING WATER UTILITY SERVICE AREA BOUNDARIES

## PREAMBLE

This Agreement for water utility service area boundaries identifies and establishes between the undersigned parties the external boundary of the service area for which the designated water purveyor has assumed direct retail water service responsibility. The responsibilities accepted by the water purveyor are outlined in the Skagit County Coordinated Water System Plan (CWSP), and as defined by the adopted rules and regulations of the Washington State Department of Health (DOH). Except as specifically provided herein, this Agreement does not give new authorities or responsibilities to any water purveyor or to Skagit County or State regulatory agencies, but acknowledges the geographical area for these designated service responsibilities.

The terms used within this Agreement shall be as defined in the implementing regulations of Chapter 70.116 RCW, except as identified below.

1. Skagit County Critical Water Supply Service Area Map shall mean the map incorporated into this Agreement as Attachment A for the retail service area, except as amended in accordance with the CWSP procedures and with the concurrence of the affected water purveyors.

2. Retail Service Area shall mean the designated geographical area in which a purveyor shall supply water either by direct connection to the existing system, by a remote/detached system, or through interim service by an adjacent utility under agreement with the designated utility.

3. Wholesale Service Area shall mean the designated geographical area in which a purveyor, a group of purveyors, or another organization provides water to other water purveyors on a wholesale basis. A wholesale water supplier shall not provide water to individual customers in another purveyor's retail service area except with the written concurrence of the purveyor responsible for the geographical service area in question.

4. Lead Agency for administering the Agreement For Establishing Water Utility Service Area Boundaries shall be the Skagit County Department of Health, unless otherwise established by amendment to the CWSP.

The authority for this Agreement is granted by the Public Water System Coordination Act of 1977, Chapter 70.116 RCW.

## TERMS OF AGREEMENT

WHEREAS, Such an Agreement is required in WAC 246-293-250, Service Area Agreements-Requirement, of the Public Water System Coordination Act; and

WHEREAS, Designation of retail water service areas, together with the cooperation of utilities, will help assure that time, effort, and money are best used by avoiding unnecessary duplication of service; and

001438

WHEREAS, Definite future service areas will facilitate efficient planning for, and provision of, water system improvements within Skagit County as growth occurs; and

WHEREAS, Responsibility for providing water service through ownership and/or management of water systems in a designated service area is vested in the designated utility; and

WHEREAS, Definite retail and wholesale service areas will help assure that water reserved for public water supply purposes within Skagit County will be utilized in the future in an efficiently planned manner,

NOW, THEREFORE, the undersigned parties, having entered into this Agreement by signature of its authorized representatives, concur with and will abide by the following provisions:

Section 1. Service Area Boundaries. The undersigned parties acknowledge that the Skagit County Critical Water Supply Service Area Map, included as Attachment A to this Agreement and as may be subsequently updated, identifies the purveyor's future water service area. The undersigned further acknowledge that there are no service area conflicts with adjacent water purveyors, or, where such conflicts exist, agrees that no new water service will be extended within disputed areas until such conflicts are resolved.

Section 2. Common Service Area Transfer. It is understood that purveyors may initially continue existing water service within the boundaries of neighboring purveyors, as defined in Attachment A. Such common service areas, if they exist, are described in Attachment B to this agreement. Also included in Attachment B are copies of, or a list of, all resolutions, ordinances, or agreements permitting these uncontested overlays. The undersigned parties agree that any water line for retail service extending outside of the retail service area boundary, as set forth in Attachment A, shall be phased out and service transferred to the designated adjacent purveyor on an economic basis or by mutual agreement.

Economic basis considerations shall include, but are not limited to:

(a) A determination by the present owner of service lines that maintenance, repair, and/or replacement costs exceed attributable income.

(b) Planned or imminent major street improvements or major improvements to either or both water systems which include an opportunity to transfer service.

The terms of the transfer of service area described in this Section shall be established in a separate agreement among the adjacent purveyors whose boundaries are affected.

Section 3. Boundary Streets. Unless separate agreements exist with adjacent purveyors concerning water services or other utility services, the parties agree that the water purveyor which is located to the north or east of boundary streets between this purveyor and adjacent purveyors shall be entitled to provide future water service on both sides of those streets. Depth of service on boundary streets shall be limited to one platted lot or as otherwise agreed by the utilities. Existing services on boundary streets shall remain as connected unless transfer of service is agreed to by both purveyors, as per Section 2. These provisions do not disallow the placement of mains in the same street by adjacent purveyors where geographic or economic constraints require such placement for the hydraulic benefit of both purveyors.

Section 4. Boundary Adjustments. If, at some time in the future it is deemed appropriate by one or both of the undersigned parties to make service area boundary adjustments, such modifications must receive written concurrence (which shall not be unreasonably withheld) of all purveyors that would be directly affected by such a boundary adjustment and the legislative authority(ies) having jurisdiction. These written modifications shall be noted and filed with the designated Skagit County lead agency and DOH. It is understood by the undersigned parties that if, as provided by RCW 70.116.040, the purveyor is unable to provide service within its designated service area boundary it may decline to do so. But, in that case, an applicant will first be referred to adjacent purveyors with an approved water system plan that provides for expansion. An existing system shall be considered "adjacent" to the proposed development if service can be provided with a waterline extension not to exceed one-half mile in length. If service will not be provided by an adjacent purveyor, the developer will be referred to the Skagit County PUD. The original service area boundary will be adjusted accordingly. This provision does not apply where boundary adjustments are made as a result of municipal annexations or incorporations, nor is it intended to modify the provisions of state law.

Section 5. Service Extension Policies. The undersigned parties agree that prior to expanding the purveyor's water service area, other than by addition of retail customers to existing water mains, the purveyor shall have adopted design standards

customers to existing water mains, the purveyor shall have adopted design standards and utility service extension policies. The design standards shall meet or exceed the Skagit County CWSP Minimum Design Standards.

Municipalities further agree that if an individual municipality identifies a service area outside of its existing municipal corporate boundaries, said municipality shall assume full responsibility for providing water service equivalent to (excluding rates and charges) the level of service provided for their inside-city customers. This shall be in conformance with applicable land use policies. 001438

Section 6. Systems Placed in Receivership. RCW 43.70.195 enacted in the 1990 Regular Session of the Washington State Legislature provides that whenever an action is brought in superior court to place a public water system in receivership, the petition to the court shall name candidates for receiver who have consented to assume operation of the water system. The undersigned purveyor agrees to be named as receiver in such actions initiated for systems within its designated service area. By this consent, the undersigned does not waive its rights to appear and participate in the court proceedings to determine acceptable conditions of receivership.

This agreement by reference includes the following attachments:

Attachment A - Skagit County Critical Water Supply Service Area Map. (see Section 1)

Attachment B - Common Service Area Agreement - Optional - Utility may attach copies or list such agreements if relevant. (see Section 2)

IN WITNESS WHEREOF, the undersigned parties have executed this Agreement.

Board of County Commissioners
Skagit County, Washington

W. W. Vaux, ~~Chairman~~ Comm.

Robby Robinson, Commissioner

Ruth Wylie, Commissioner

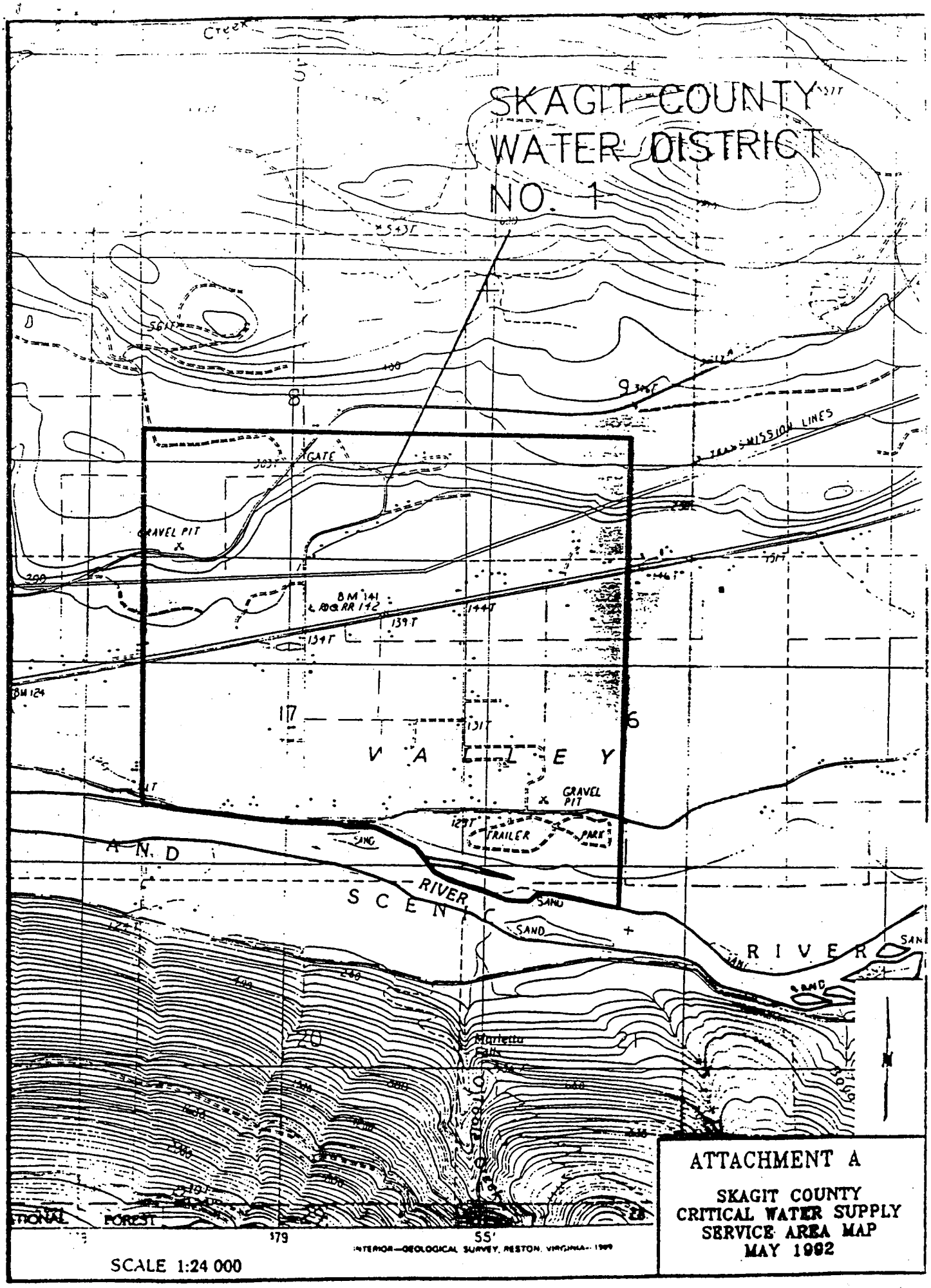
10/6/92
Date

Kevin E. Cashenfelter
Skagit County Water Dist #1
Water Purveyor

Representative

Title

9/10/92
Date




ATTACHMENT A

SKAGIT COUNTY
CRITICAL WATER SUPPLY
SERVICE AREA MAP
MAY 1992

# SUMMARY OF RECEIVERSHIP LEGISLATION

## Objectives of Legislation

Substitute Senate Bill 6447, entitled An Act Relating to Failing Public Water Systems, was enacted by the 1990 State Legislature. The receivership provisions are now codified as RCW 43.70.195 (Public water systems - Receivership actions brought by secretary). Legislative objectives were stated as: to improve coordination between State and local health agencies, to place failing public water systems into receivership to provide continued service under safe and reliable conditions, and to address new operating requirements of the Federal Safe Drinking Water Act.

## Provisions of Statute

- In any action brought by the secretary of health or by a local health officer to place a public water system in receivership, the petition shall include the names of one or more suitable candidates for receiver who have consented to assume operation of the water system.

- If there is no other person willing and able to be named as receiver, the court shall appoint the county in which the water system is located as receiver.

- The county may designate a county agency to operate the system, or it may contract with another individual or public water system to provide management for the system.

- In any petition for receivership, the department shall recommend that the court grant to the receiver full authority to act in the best interests of the customers served by the public water system.

- The receiver shall assess the capability, in conjunction with the department and local government, for the system to operate in compliance with health and safety standards, and shall report to the court its recommendations for the system's future operation.

- If a petition for receivership and verifying affidavit allege an immediate and serious danger to residents constituting an emergency, the court may appoint a temporary receiver upon the strength of such petition and affidavit pending a full evidentiary hearing.

- A bond, if any is imposed upon a receiver, shall be minimal and shall reasonably relate to the level of operating revenue generated by the system.

- The receiver shall not be held personally liable for any good faith, reasonable effort to assume possession of, and to operate, the system in compliance with the court's orders.

- The court shall authorize the receiver to impose reasonable assessments on a water system's customers to recover expenditures for improvements necessary for the public health and safety.

# Appendix K

# Standard Construction Specifications

# STANDARD SPECIFICATION FOR WATER MAIN INSTALLATION

## 1. General:

These specifications cover the minimum standards for the installation of 2 to 12-inch diameter water mains complete with valve, fittings, fire hydrants, appurtenances, etc. These specifications include minimum material specifications for bedding and backfill, pipe valves, fire hydrants and other associated items.

These specifications shall be used in conjunction with the contract documents provided by the Owner or Bidder, and with the other portions of the Project Report containing these specifications. These specifications and accompanying drawings were prepared assuming the work would be done by the system operator, or under the direct supervision of the system manager, this operator or manager having knowledge of the existing plant and equipment, and underground utilities.

Where American Water Works Association Standards (A.W.W.A.), American Society for Testing Materials Standards (ASTM), Washington State Department of Transportation Standard Specifications for Road, Bridges and Municipal Construction, 1991 (DOT Std. Specif.) or other standards are referenced within, any further statement of requirements is for the purpose of either highlighting important details of the Standards or to impose more stringent requirements.

No substitution for the material specified herein or in the engineering drawings shall be made without prior approval of the Owner. No change of the water main alignment, water main diameter, etc. shown on the engineering drawings may be made without the prior approval of the Owner and Engineer.

Where a manufacturer's product is specified by name and model, the intent is to

a) Establish a minimum standard where either a A.W.W.A. Standard is not available, or where the standard of performance exceeding A.W.W.A. Standards is desired,
b) Conform to existing products in the distribution system or to provide inventory uniformity for the purpose of maintenance.

The approval of alternate materials to those specified by manufacturer's name and model, as a "approved equal" shall be at the sole discretion of the Owner.

## 2. Materials:

**Water Mains** - Unless otherwise specified in the drawings, all water mains 4, 6 and 8-inch diameter shall be either ductile iron pipe (D.I.) or polyvinyl chloride (PVC) pressure pipe conforming to the following specifications. All "yard" piping at the reservoir site, or into or under a building or other structural foundation, shall be ductile iron.

All ductile iron pipe shall be class 50 single cement lined, with "Tyton" or mechanical joints, conforming to the following American Water Works Association (A.W.W.A.) Standards:

- C104-85 "Cement Mortar-Lining for Ductile-Iron Pipe and Fittings for Water"
- C111-85 "Rubber-Gasket Joints for Ductile-Iron and Grey-Iron Pressure Pipe and Fittings"
- C151-86 "Ductile-Iron Pipe Centrifugally Cast in Metal Molds or Sand Lined Molds, for Water and Other Liquids"

Ductile iron pipe with screwed flanges, welded restraining rings, or EBAA IRON or similar restraining glands and/or flange adapters shall be minimum thickness class 53, except that EBAA IRON "MEGALUG" and "MEGAFLANGE" restraint may be used on class 50 ductile iron.

Where its use is specified by the Engineer, polyethylene encasement installed on ductile iron pipe, valves and fittings shall conform to A.W.W.A. Standard:

- C105-88 "Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids"

All polyvinyl chloride (PVC) pressure pipe shall be pressure class 150 conforming to A.W.W.A. Standard:

- C900-89 "Polyvinyl Chloride (PVC) Pressure Pipe, 4-Inch Through 12-Inch for Water"

All 2-inch through and including 3-inch mains (e.g., supply pipe from well), shall be polyvinyl chloride (PVC) pressure pipe, class 200, rubber-ring joint, Pacific Western Extruded Plastics Co. (P W Pipe), "Twin Seal" or Engineer approved equal.

**Fittings** - All fitting 4-inch and larger shall be single cement lined ductile iron or grey iron conforming to the following A.W.W.A. Standards:

- C104-90 "Cement Mortar-Lining for Ductile-Iron Pipe and Fittings for Water"
- C110-87 "Ductile-Iron and Grey-Iron Fittings, 3-Inch Through 48-Inch, for Water and Other Liquids"
- C111-90 "Rubber-Gasket Joints for Ductile-Iron and Grey-Iron Pressure Pipe and Fittings"

**Valves** - All valves 4 through 12-inch in diameter shall conform to the following A.W.W.A. Standards:

- C509-87 "Resilient-Seated Gate Valves for Water and Sewerage Systems"
- C111-90 "Rubber-Gasket Joints for Ductile-Iron and Grey-Iron Pressure Pipe and Fittings"

**Fire Hydrants** - All fire hydrants shall be dry barrel, compression type conforming to A.W.W.A Standard C502-85 "Dry-Barrel Fire Hydrants", with 4.5" pumper port and two 2.5" outlets, 6" inlet, and 1 3/16" pentagon operating nut.

**Service Pipe** - All 3/4 to 2-inch water service pipes shall be pressure class 200 psi, iron pipe size polyethylene, PE 3406 resin, conforming to the following A.W.W.A Standard:

- C901-88 "Polyethylene (PE) Pressure Pipe and Tubing, 1/2-Inch Through 3-Inch. for Water Service"

All water services larger than 2-inch shall conform to the standards for water mains in Section 2.1 above.

**Brass Fittings** - All miscellaneous fittings shall be brass conforming to the following A.W.W.A Standard:

- C800-89 "Underground Service Line Valves and Fittings"

No steel or galvanized fittings shall be used.

Fittings shall be of the compression type as manufactured by Mueller, Decatur, Illinois, series 110 Compression Connections; or by Ford Meter Box Co., Wabash, Indiana, Pack Joint Coupling series. The coupling shall be supplied with stainless steel tube liner where required by the manufacturer, and shall be compatible with polyethylene service pipe thickness and diameter (see par. 2.5, above).

Curb stops, where used for blow offs, air valves, etc., shall be o-ring type as manufactured by Mueller, Decatur, Illinois, series Mark II Oriseal c/w tee head, or Engineer approved equal.

Branch connections, where used on a dual service line (two customers supplied from one service connection) shall be 1 x 3/4 x 3/4 inch "Y" style c/w compression fittings (specified as above) as manufactured by Mueller, Decatur, Illinois, series Mark II Oriseal c/w tee head, or Engineer approved equal.

Meter setters shall incorporate compression inlet and outlet fittings, upstream angle ball valve as manufactured by Ford Meter Box Co., Wabash, Indiana, or Engineer approved equal, and outlet fitting with an angle pattern residential dual check valve backflow preventer, complying with ASSE Standard 1024, as manufactured by Watts Regulators Co., Lawrence, MA, Series 7A or Engineer approved equal.

**Valve Boxes** - All valve boxes shall be cast iron slip type with bottom flange and "WATER" cover as manufactured by VanRich Casting Corp., Portland, OR, Model 920 Standard or Engineer approved equal.

**Backflow Prevention Assemblies** - Backflow prevention assemblies shall be State Department of Health approved, and University of Southern California Foundation for Cross Connection Control and Hydraulic Research (USC FCCCHR) approved.

State and USC FCCCHR approval is not required where residential dual check valve backflow preventers are installed with water meters as a voluntary means (i.e., where backflow prevention is not a requirement) of providing premise isolation.

**Marking Tape** - Marking tape for PVC mains and polyethylene services shall be of the detectable type (with metallic foil laminate) with plastic jacket, 6-inch wide, blue color with wording "WATER LINE", as manufactured by Calpico, San Francisco, CA, or Engineer approved equal.

**Air Release Valves** - Unless otherwise specified in the Plans, all air valves shall be 3/4-inch simple lever air release type, as manufactured by Valve-Matic, Elmhurst, Illinois, Model 22, or Engineer approved equal.

**Meter Boxes** - Unless otherwise specified in the Plans, water meter boxes shall be plastic body and cover, as manufactured by Ametek, Sheboygan, Wisconsin, series 17014 and 190109 (corresponding to meter size). or Engineer approved equal. The meter box shall be of adequate size to accommodate both the meter and meter setter, also the dual check valve backflow preventer.

**Water Meters** - Water meters to single family residential customers shall be 3/4 x 3/4 inch displacement type, SENSUS SR II, with registration in gallons, as manufactured by Sensus Technologies, Uniontown, PA meeting A.W.W.A Standard C700, or Owner approved equal.

**Service Saddles** - Service saddles shall be furnished with a ductile iron body and IPS standard tapping, with a neoprene or Buna-N rubber gasket cemented in place. Saddles shall be double strap for PVC pipe (saddles required for all service sizes), as manufactured by Mueller, Decatur, Illinois, or Engineer approved equal. Services may be direct tapped into ductile iron pipe.

**Control Cable** - With the new water mains, should the Owner elect to install new control cable to a reservoirs or well site, the cable shall be 8 wire #14 Type PTN direct burial control cable, laid continuously, without buried splices, from the pump house to the reservoir site.

**3. Installation:**

General - Unless otherwise specified in the Plans or in these specifications, water mains shall be installed in accordance with the manufacturer's printed specifications, to American Water Works Association (A.W.W.A.) Standards and with *1994 Standard Specifications for Road, Bridge and Municipal Construction,* prepared by the Washington State Department of Transportation, or the latest edition thereof. References to *"Section", "Paragraphs",* or *"Divisions"* indicated by number hereinafter pertain to these D.O.T. *Standard Specifications.*

**Trenching/Backfill** - Trenching, foundation, bedding and backfilling for water mains and incidental piping shall conform to D.O.T. Std. Specif. *Section 7-10*, except that backfill for flexible pipe ("initial backfill" in the detail) shall be extended 12 inches over the crown of the pipe.

The requirements for bedding and backfill for ductile iron and PVC pipe are summarized in the Plans, attached hereto.

Unless otherwise specifically approved by the Engineer, only imported material conforming to *Section 9-03.16* shall be used for bedding (layer under the pipe), haunching (layer to spring line) and initial backfill. Native material may be approved by the Engineer if it fully complies with D.O.T. Std. Specif. *Section 9-03.15* and *Section 9-03.16*. PVC pipe shall be considered "Flexible pipe" with respect to this section. Where a request for use of native material is made by the Contractor, the material shall be evaluated prior to use by a qualified material testing lab. and certified that it meets the requirements of the above referenced D.O.T. Sections. The Engineer may require periodic testing to ensure continuing material conformance. The cost of all such testing shall be borne by the Contractor.

In Skagit County right of way, where water mains or services are laid under pavement or in the road shoulder backfill above the initial backfill shall conform to *Section 7-10.3(11)* and *Section 9-03.19*. In other areas native material may be used above the initial backfill. In ditches, the backfill shall comply with any additional requirements imposed by Skagit County, such as the use of quarry stone for erosion control.

Unless otherwise specified in the Plans all water main excavations shall be made by open cut. All trenches shall be excavated to true and smooth bottom grades in accordance with the lines given in the Plans. The trench bottom shall provide uniform bearing and support for each length of pipe.

Bell holes shall be excavated to the extent necessary to permit accurate work in making and inspecting the joints. The banks of the trenches shall be kept as nearly vertical as soil conditions will permit, and where required to control trench width or to protect adjacent structures, the trench shall be sheeted and braced.

Care shall be taken not to excavate below the depth specified, unless to remove unsuitable materials. Excavation below the grade of the pipe shall be backfilled with select backfill material and compacted as specified herein.

**Pipe Laying** - Except as noted below, water mains and services shall be laid in accordance with the procedures outlined in D.O.T. Std. Specif. *Section 7-11*.

Water mains shall be laid to provide minimum cover of three feet. The depth of the water main may be increased as necessary to pass under other utilities, culverts, etc. Whenever possible, grade changes for passing other utilities shall be made by gradually varying trench depth.

Unless otherwise approved by the Engineer, water mains shall be laid with at least 10 foot horizontal and 18 inch vertical separation from sanitary or storm sewer, and 3 foot horizontal and 12 inch vertical separation from all other utilities.

Where the water main crosses a sanitary or storm sewer, but cannot be laid within a minimum 18-inch vertical separation,

a) One 18 foot length of water pipe shall be laid so joints are equal distance from the sewer, and
b) The sewer pipe shall be either replaced with ductile iron pipe with joints equally spaced from the water pipe or encased in concrete.

here the water main must be installed below the sewer, the water main shall be installed with a minimum 18 inch vertical separation and the sewer pipe replaced with ductile iron pipe as detailed in (b), above.

Ductile iron water mains shall be installed in accordance with A.W.W.A Standard

- C600-87 "Installation of Ductile Iron Water Mains and Their Appurtenances"

PVC water mains shall be installed in accordance with the Uni-Bell Plastic Pipe Association's publication "Handbook of PVC Pipe", **except as noted below**, where more stringent requirements are specified.

All PVC pipe shall be installed without deflection at the pipe joint of more than 2 degrees, or 80 percent of the maximum allowable by the pipe manufacturer, whichever is the lesser. **All PVC pipe shall be installed without bending of the pipe lengths.** All additional changes in both horizontal and vertical alignment shall be made by the deflection of mechanical joints (M.J.) at fittings; additional M.J. sleeves shall be installed as necessary.

Ductile iron pipe joint deflection shall be limited to 4 degrees (80 percent of maximum allowable under A.W.W.A. C600).

On road curves, either short lengths of pipe or mechanical joint sleeves shall be used as needed to limit the pipe joint deflection to within the above noted values. Short lengths and/or fittings shall be utilized on curves of radius less than 280 feet for ductile iron pipe, and 570 feet for PVC pipe.

All PVC pipe and polyethylene services shall be installed with detectable marking (warning) tape installed one foot above the PVC pipe or PE service and brought up to the surface within all valve boxes and fire hydrants.

Unless otherwise specified in the Plans, all cast iron or ductile iron fittings used on A.W.W.A C-900 PVC pipe shall have mechanical joint ends.

Where more than one pipe is installed in a trench, special care shall be taken to provide adequate bedding at and below the spring of the larger pipe. Provide a minimum of 4-inch clearance between pipes. Where an electrical telemetry cable is also installed in the trench, the cable shall be installed at the spring line elevation of the largest pipe.

All buried galvanized steel pipe fittings, and all exposed steel pipe or ductile iron pipe threads shall be tightly wrapped with two layers of PVC tape.

**Thrust Blocks** - All thrust blocks shall be capable of resisting the thrust created from the application of a 225 psi hydrostatic test pressure (i.e., 1.5 times the rated working pressure of the water main material). The minimum bearing area and placement of thrust blocks shall conform to the Plans, attached hereto.

All concrete thrust blocks, fitting support, etc., shall be Class 3000 per D.O.T. Std. Specif. *Section 7-11.*

**Fire Hydrants** - Fire hydrants shall be installed in accordance with the Plans, attached hereto.

**Blow-offs** - Blow offs shall be installed in accordance with the Plans, attached hereto.

**Service Tapping** - The tapping of a water main under pressure ("wet" tapping) shall only be done by a Contractor approved by the Engineer. the "wet" tapping of PVC or Asbestos Cement pipe shall only be done after the Owner has partly closed the mains isolating valves to reduce flooding damage should the pipe rupture during tapping.

Service connections 3/4 to 2-inch in diameter shall be installed in accordance with the Plans, attached hereto. Services shorter than 60 feet in length shall be installed without splices.

Details of service connections over 2-inch in diameter shall be shown in the Plans for the water main installation or site servicing.

**Water Meters** - Meters 3/4 to 2-inch in diameter shall be installed in accordance with the Plans, attached hereto.

Installation details for meters larger than 2-inch in diameter shall be shown on the Plans for the water main installation or site servicing. Meters shall be installed with isolating valves and bypass in accordance with the Plans, attached hereto.

**Backflow Prevention Assemblies** - All backflow prevention assemblies shall be installed in accordance with the recommendations outlined in *Cross Connection Control Manual, Accepted Procedures and Practices,* December 1995 or latest edition thereof, published by the Pacific Northwest Section, American Water Works Association.

Installation details for backflow prevention assemblies larger than 2-inch in diameter shall be shown on the Plans for the water main installation or site servicing.

**Air Release Valves** - All air valves shall be vented above ground level to prevent the backflow of groundwater. The air valve shall be installed in accordance with the Plans, attached hereto.

**4. Disinfection:**

All new mains and repaired portions or, or extensions to, existing mains shall be disinfected in accordance with:

- A.W.W.A. Standard C651-86 "Disinfecting Water Mains"

The placing of calcium hypochlorite granules in each pipe section during laying, as outlined in Section 5.1 "Tablet Method" of A.W.W.A. Standard C651, without the additional placement of calcium hypochlorite tablets, shall be done only on mains and services less than 100 feet in length, unless otherwise approved by the Engineer.

Where water is encountered in the trench, care shall be taken to insure that no water or other deleterious materials enter the pipe at any time. Under all conditions, care shall be taken in handling pipe and appurtenances to insure to insure that no deleterious materials enter the pipe, fittings, valves, etc. Special care shall be taken during the installation to ensure that dirt or other foreign matter does not enter a push-on or mechanical joint of a pipe, valve, fitting, etc.

During the laying of a water main, should dirt or other foreign material enter any pipe, fitting, valve, etc., the main shall be removed, cleaned and relaid. Should sewage enter a main or portion thereof, the main or portion thereof, shall be rejected and all pipe, fittings, valves, etc. discarded.

All water supplied from the existing water system or other approved potable supply shall be connected to the new main through a State of Washington Department of Health "APPROVED" double check valve assembly (DCVA). Such DCVA shall be tested immediately prior to its use by a State Certified backflow prevention assembly tester to verify that it meets State performance requirements. The Contractor shall submit a copy of the tester's test report to the Engineer prior to use of DCVA.

Existing service shall not be transferred to a new water main until a satisfactory bacteriological test report is obtained for the new construction and approval is given by the Engineer.

The final connection to the existing system shall not be made until specifically authorized by the Engineer. Such authorization shall not be made until a satisfactory bacteriological test report is obtained by the Engineer.

All water main components used to make the final closure between the existing and new water main shall be disinfected immediately prior to the installation in accordance with Section 9.2 of A.W.W.A. Standard C651. All equipment used to supply water for water main flushing and disinfection, e.g., standpipe, portable pumps, hose, etc., shall disinfected immediately prior to use in accordance with Section 9.2 of A.W.W.A. Standard C651.

## 5. Leakage and Hydrostatic Pressure Test:

Except as noted below, all water mains (ductile iron or polyvinyl chloride (PVC) pressure pipe) shall be subject to a hydrostatic pressure test and leakage test in accordance with the following A.W.W.A. Standard:

- C600-87 "Installation of Ductile Iron Water Mains and Their Appurtenances"

All equipment used by the Contractor for the hydrostatic pressure test and leakage test shall have prior approval of the Engineer.

The test pressure shall be 225 psi (i.e., 1.5 times the rated working pressure of the water main material) applied at the lowest point in the pipeline. The duration of the hydrostatic pressure test shall be 2 hours, during which time the hydrostatic pressure shall not vary by more than 5 psi.

Where in the opinion of the Engineer a 2 hour pressure test is impractical, the duration of the test may be reduced to 15 minutes, as specified in D.O.T. Std. Specif. *Section 7-11.3 (11),* provided no leakage is detected, (i.e, no loss of pressure). Should leakage occur, the test duration shall be 2 hours.

The leakage test shall be performed only after the Engineer's acceptance of the hydrostatic pressure test. The completion of the pressure test without loss of pressure (i.e., without the need for makeup water), shall be considered as completion of the leakage test.

No water main installation shall be accepted if the leakage is greater than that determined by the formula:

$$L = \frac{SD\,[P]^{0.5}}{133{,}200}$$

where

L = allowable leakage, in gallons per hour
S = total length of main tested, in feet
D = nominal diameter of the main, in inches
P = average test pressure during leakage test, in psi

The leakage test pressure shall be applied at the location of the hydrostatic pressure test and shall be the same pressure and duration as the hydrostatic pressure test.

For acceptance of the new water main installation, any visible leakage detected shall be repaired regardless of the allowable leakage specified above.

## 6. Pavement Repair and Surface Restoration:

**General** - All existing asphalt and Portland cement concrete pavement, gravel or crushed rock surface treatments, sidewalks, curbs, gutters, and landscaped surfaces cut or damaged by the installation of sub-surface facilities shall be restored with like materials to original levels, flush, well bonded to adjacent sound material along neat, continuous straight or curved joint lines. Where indicated in the Plans or required by the Engineer for dust or erosion control, or reasons of safety, temporary surface treatments shall be provided.

**Materials** - Materials used and methods of construction shall be as shown in the plans and details as specified in D.O.T. Std. Specif. *Division 9.*

## 7. List of Standard Drawings

The following attached drawings shall be used in conjunction with these Standard Specifications:

| | | | |
|---|---|---|---|
| W-1 | Trench Details | W-2 | Thrust Block Details |
| W-3 | Fire Hydrant Details | W-4 | Gate Valve Details |
| W-5 | Disinfection & Flushing | W-6 | Blow-off Details |
| W-7 | Residential Service Details | W-8 | Air Valve Details |
| W-9 | Casing Pipe Road Crossing | | |
| E-1 to 3 | Erosion Control – Water Main Installation | | |

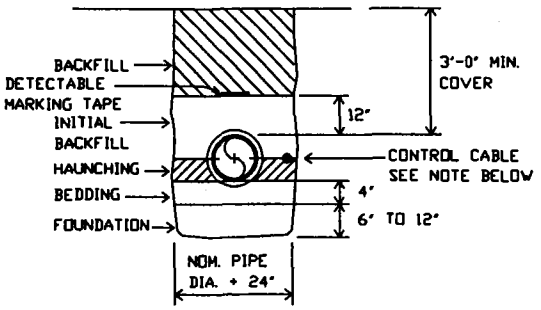
## 8. Engineer's Inspection

Pursuant to WAC 246-290-040, the Owner/Contractor shall be aware of the requirements for Engineer's inspection and certification of the work and completion of the Department of Health forms "Construction Report for Public Water System Projects" and "Pressure, Leakage and Bacteriological Test Results". Where a specific phase of the work is to be inspected by the Engineer, as noted in the attached specifications, the Owner/Contractor shall ensure that the work remains accessible until the Engineer's inspection is complete.

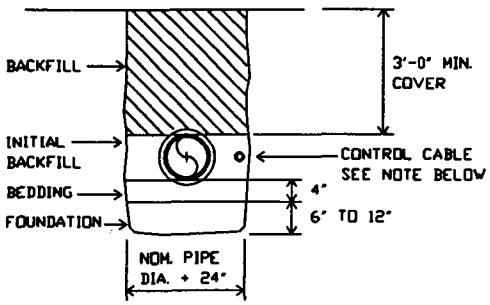
In general, the following engineer's inspections shall be scheduled:

- Start of construction to evaluate construction practice.
- During disinfection and pressure testing.

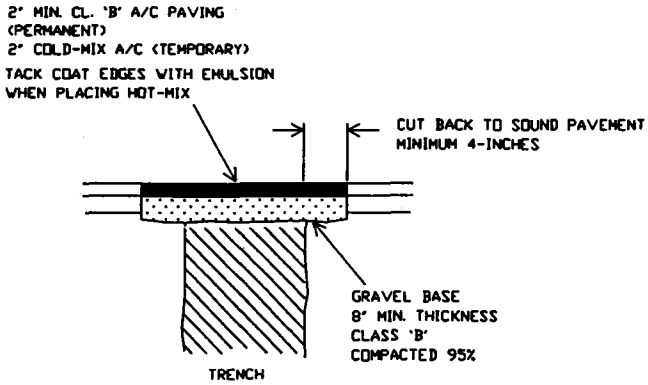
## TRENCH DETAILS - P.V.C. PIPE




## TRENCH DETAILS - DUCTILE IRON PIPE




## PAVEMENT REPLACEMENT




NOTES:

1) Trenching, foundation, bedding and backfill shall conform to D.O.T. Std. Specif. 1991, Section 7-10. P.V.C. pipe shall be considered 'flexible pipe' with respect to this section.

2) Only imported material shall be used for bedding, haunching and initial backfill of P.V.C. pipe.

3) Native material may be used for bedding and initial backfill of D.I. pipe if it fully complies with D.O.T. Stds. and the prior approval of the Engineer is obtained.

4) Foundation material is intended only for overcut or unsuitable native material replacement.

5) If control cable is specified, lay at springline of pipe.

6) Trench width may be reduced to nom. pipe dia. plus 7" each side with prior approval of compaction method.

7) If two pipes are laid in same ditch, provide 6" min. separation for placing and compacting haunching and initial backfill.

8) Refer to the project's Technical Specifications for the complete material requirements.

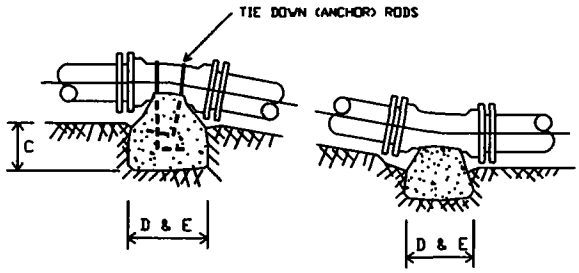
| | | | |
|---|---|---|---|
| Date: Oct. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plan – Water Mains<br>Trench Details | Plan # W-1 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |

ALSO SEE SPECIFICATIONS

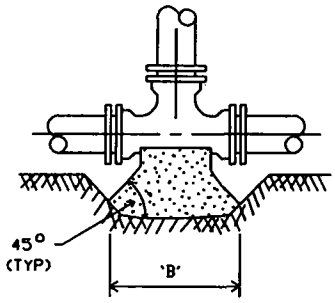
| BEARING AREA (SQ. FT.) FOR HORIZONTAL THRUST 225 PSI TEST PRESSURE 2000 PSF SOIL BEARING | PIPE DIAMETER 2" & 3" | 4" | 6" | 8" | 10" | 12" |
|---|---|---|---|---|---|---|
| TEE, CAP & PLUG A × B | 1.5 | 2.5 | 5.0 | 8.5 | 13.5 | 19.0 |
| 90 DEGREE BEND | 2.0 | 3.0 | 7.0 | 12.0 | 19.0 | 27.0 |
| 45 DEGREE BEND | 1.0 | 2.0 | 4.0 | 6.5 | 10.5 | 15.0 |
| 22.5 DEGREE BEND | 1.0 | 1.0 | 2.0 | 3.5 | 5.5 | 7.5 |
| 11.25 DEGREE BEND | 1.0 | 1.0 | 1.0 | 2.0 | 3.0 | 4.0 |
| VALVE (ON PVC PIPE) | 1.5 | 2.5 | 5.0 | 8.5 | 13.5 | 19.0 |
| FITTING WEIGHT SUPPORT (FOR PVC PIPE) | NA | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| VOLUME / WEIGHT (CU. YD.) FOR VERTICAL THRUST | | | | | | |
| 11.25 DEGREE BEND C × D × E | NA | 2.0 | 4.0 | 7.0 | 11.0 | 15.0 |

NOTES:

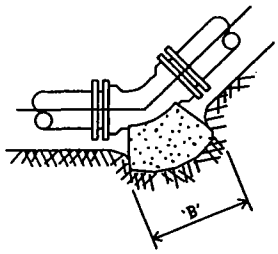
All concrete blocks shall be poured against dry, undisturbed subgrade. Keep concrete clear of joints and accessories. For tie down of vertical bends and valves, use 3/4" diameter steel rods ( in corrosive soil , use 301 stainless steel ), 2 per fitting or valve. Bearing area / volume in table includes 1.5 safety factor.



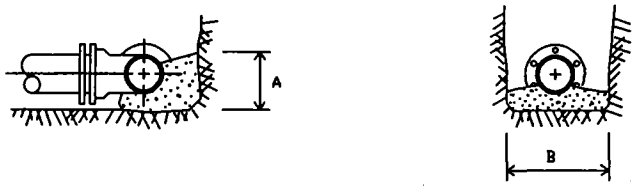

VERTICAL BENDS




TEES

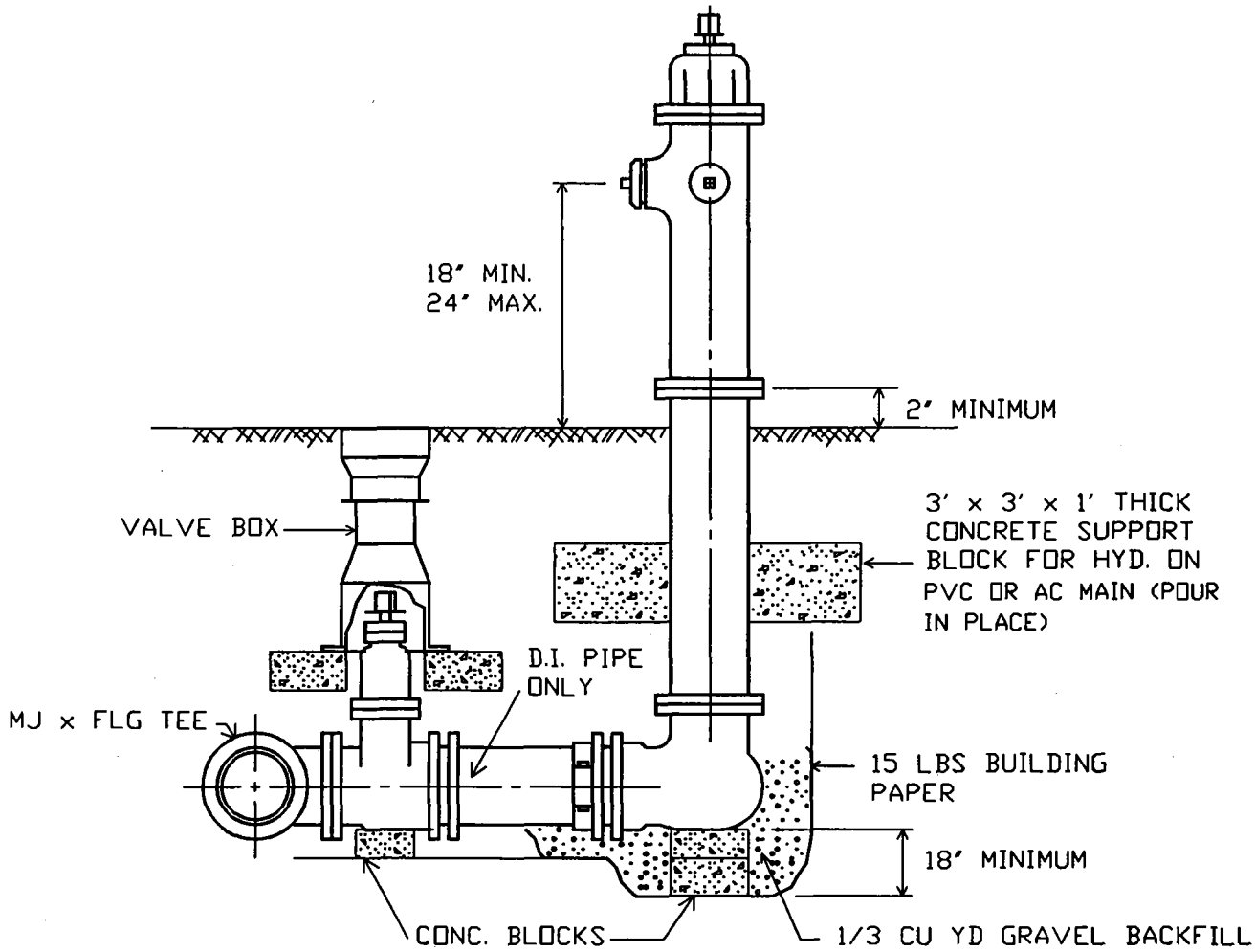



BENDS




SECTION (ALL FITTINGS)

| Date: Oct. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1 | Plan # |
|---|---|---|---|
| By: GEORGE BRATTON, P.E. CIVIL ENGINEER | | Standard Plan – Water Mains Thrust Block Details | W-2 |

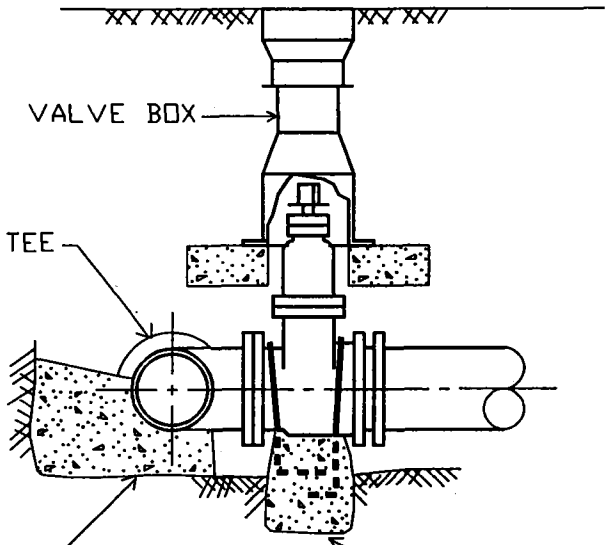



NOTES:

Hydrant restraint to be provided by ductile iron class 53 connecting piece with integrally cast MJ restraining glands or EBAA IRON thrust restrants, series 1000

Concrete support is to reduce shock to PVC or AC pipe if hydrant is struck by vehicle.

| | | | |
|---|---|---|---|
| Date: Oct. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plan – Water Mains<br>Fire Hydrant Details | Plan #<br>W-3 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |

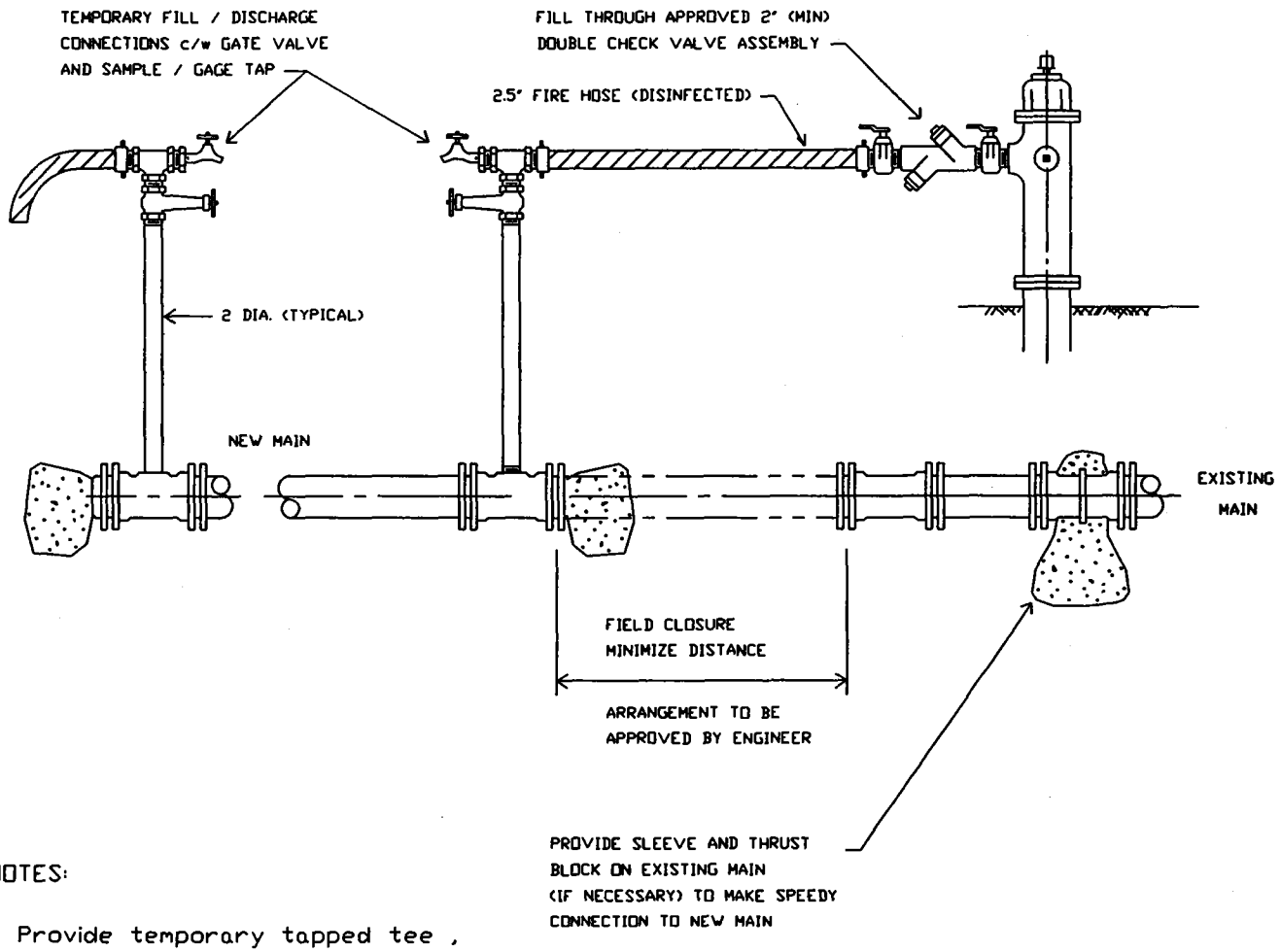



WEIGHT OF FITTING SHALL NOT BE CARRIED BY PVC PIPE. POUR CONCRETE UNDER ALL FITTINGS AND VALVES. KEEP CONCRETE CLEAR OF JOINTS AND ACCESSORIES

VALVES ON PVC PIPE SHALL BE ANCHORED BY 3/4" DIA. STEEL RODS TO PREVENT THRUST ONTO PIPE

NOTE:
VALVES TO BE ATTACHED AT TEES AND CROSSES UNLESS OTHERWISE STATED

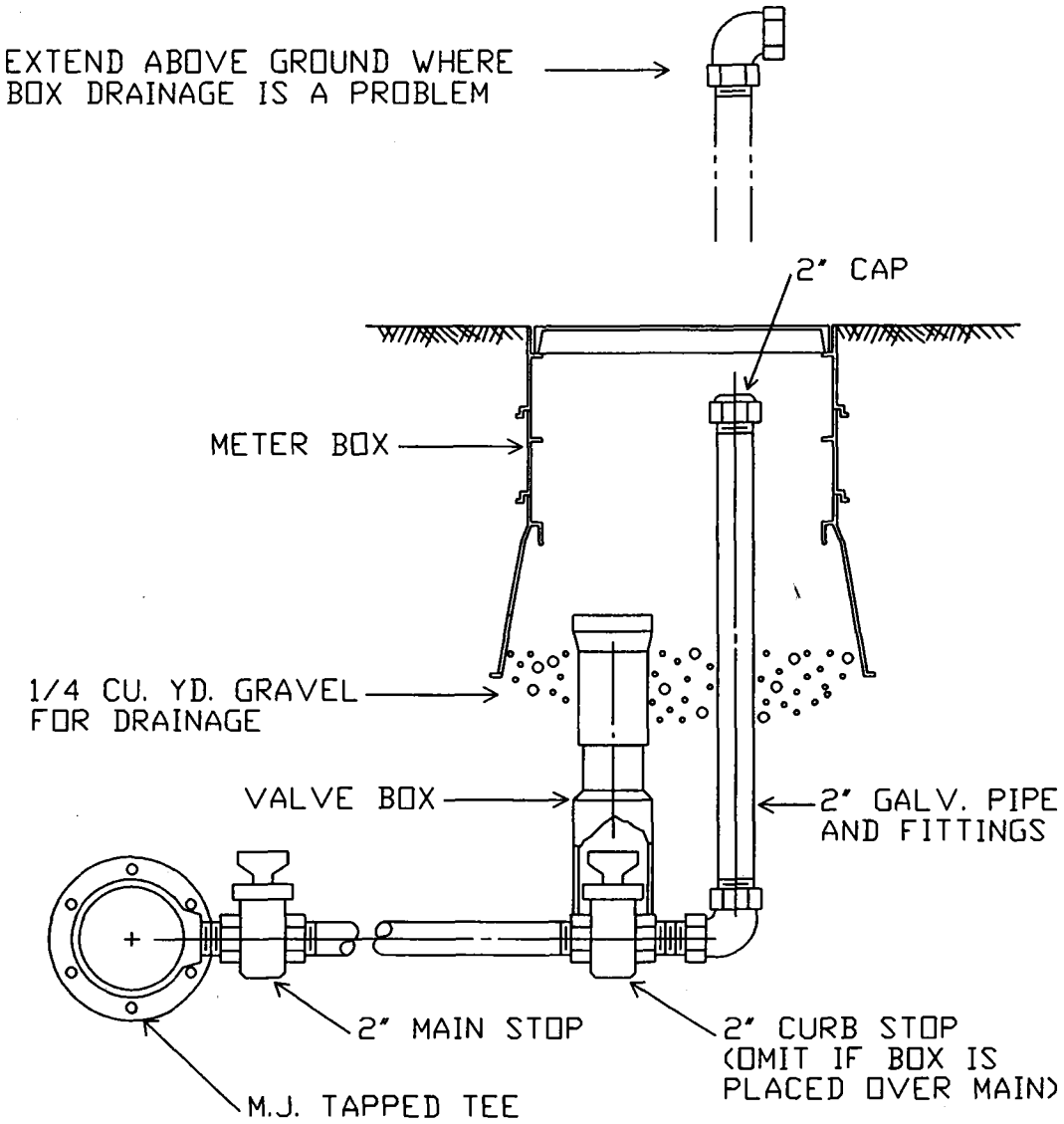
| | | | |
|---|---|---|---|
| Date: Oct. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plan – Water Mains<br>Gate Valve Details | Plan #<br>W-4 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |




NOTES:

Provide temporary tapped tee , plug and thrust block. Excavate 1 foot below main (min.) and provide gravel working floor for field closure. Field closure shall not be installed until approved by Engineer (after a satisfactory bacteriological report)

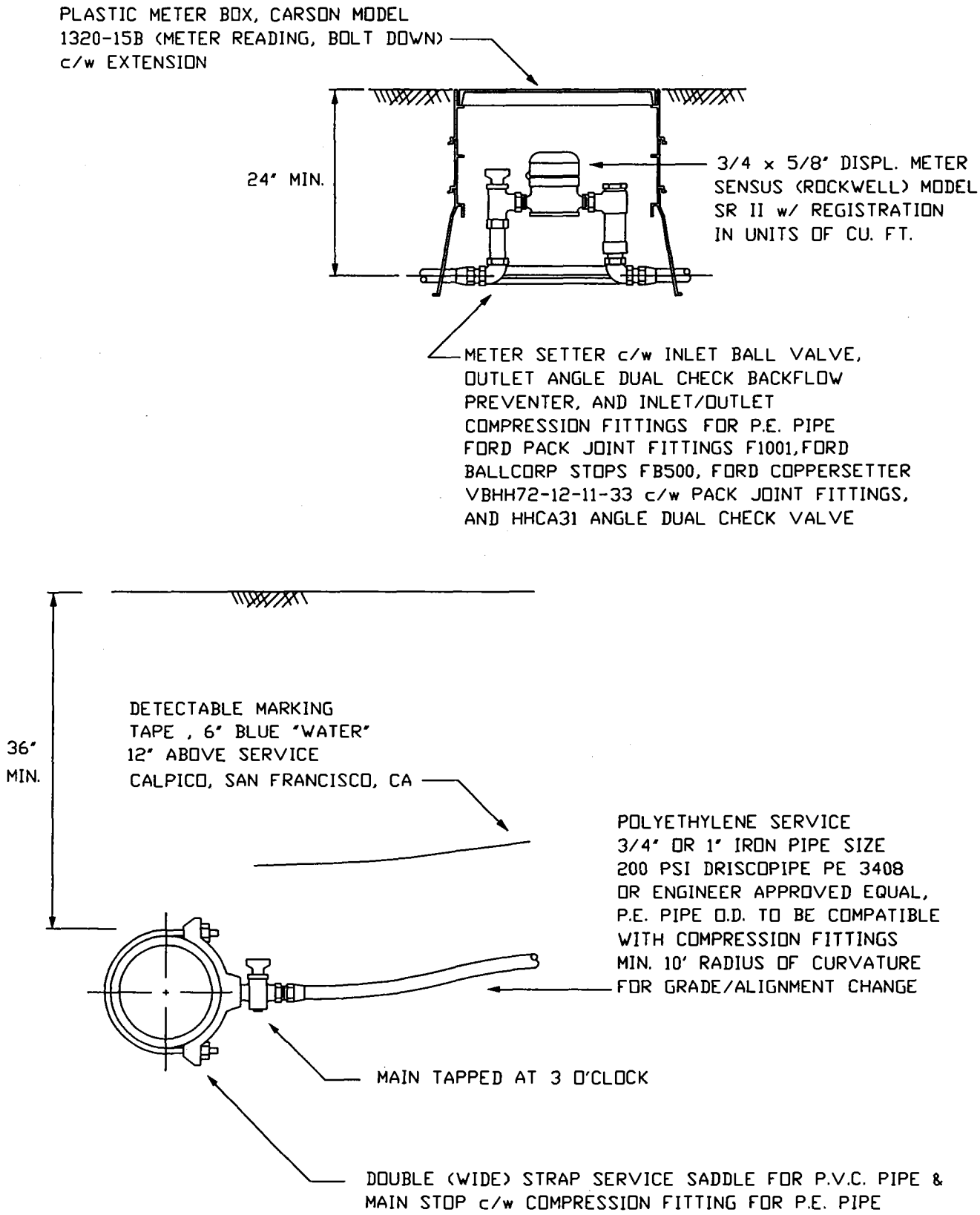
| | | | |
|---|---|---|---|
| Date: Oct. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plan – Water Mains<br>Disinfection & Flushing | Plan #<br>W-5 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |



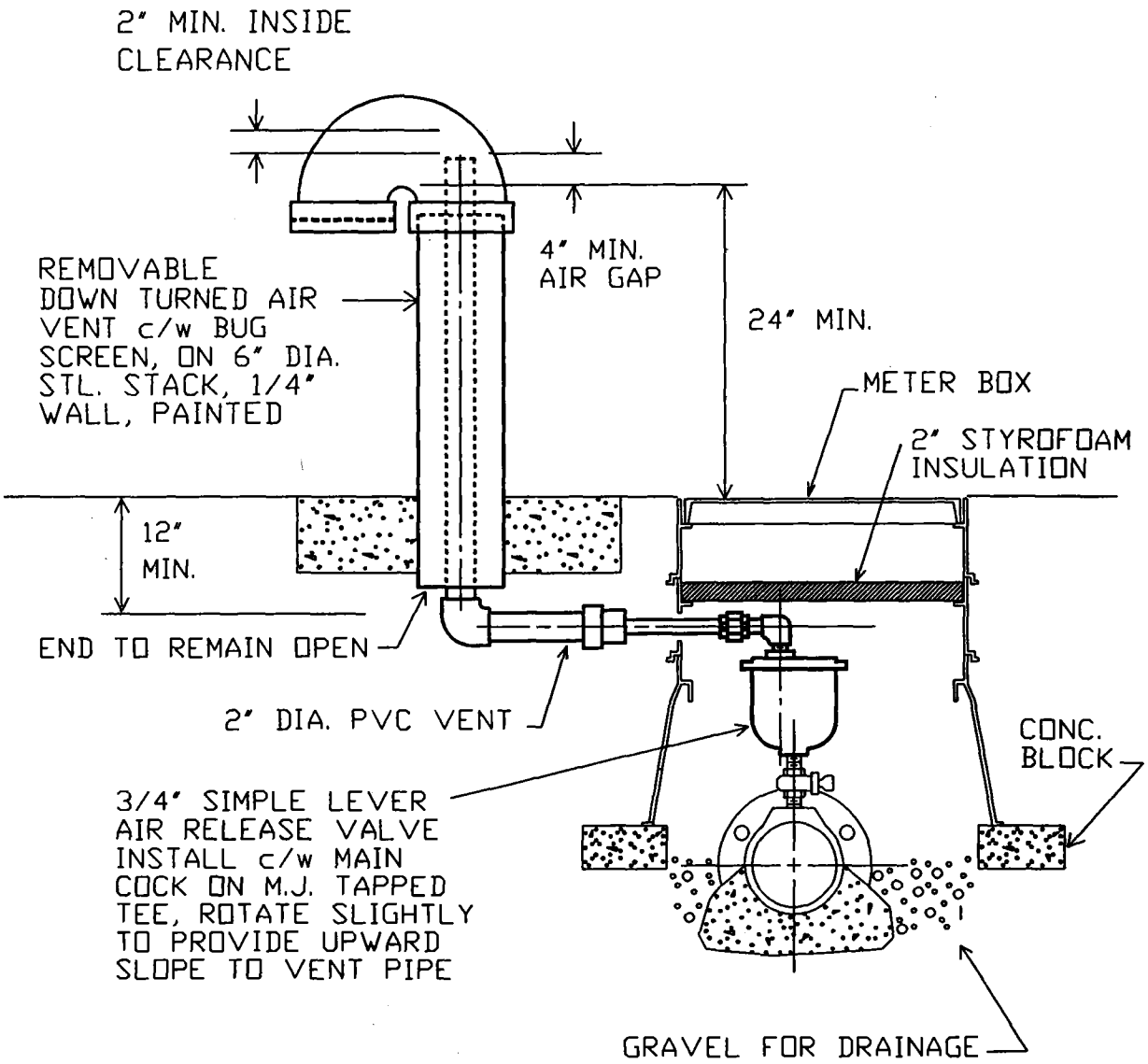

NOTES:

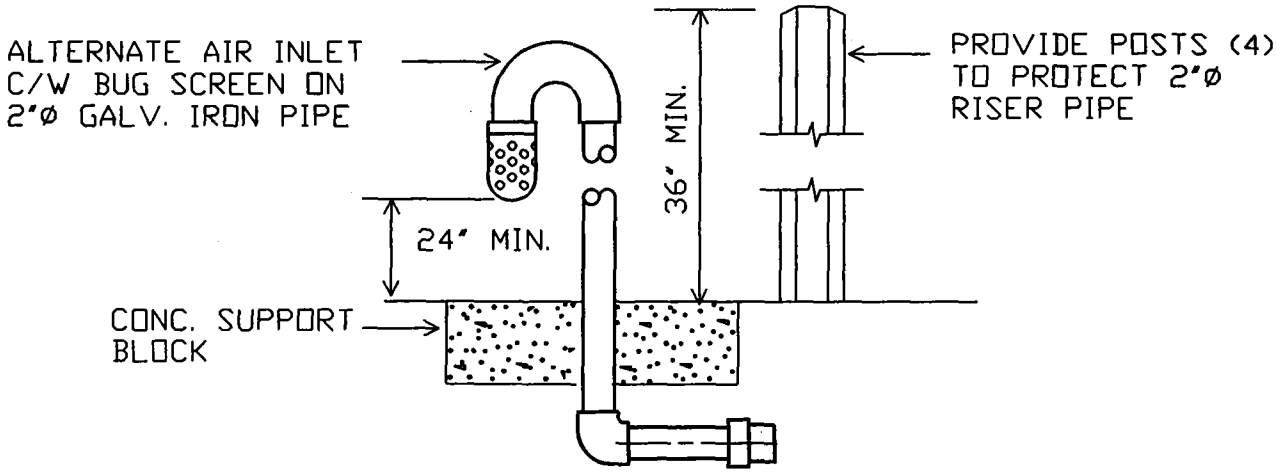
All underground galvanized pipe and fittings shall be tape wrapped for corrosion protection with a double wrapping of cold applied tape meeting A.W.W.A. Std. C209 or Engineer approved equal.

| | | | |
|---|---|---|---|
| Date: Oct. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plan – Water Mains<br>Blow-Off Details | Plan # W-6 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |

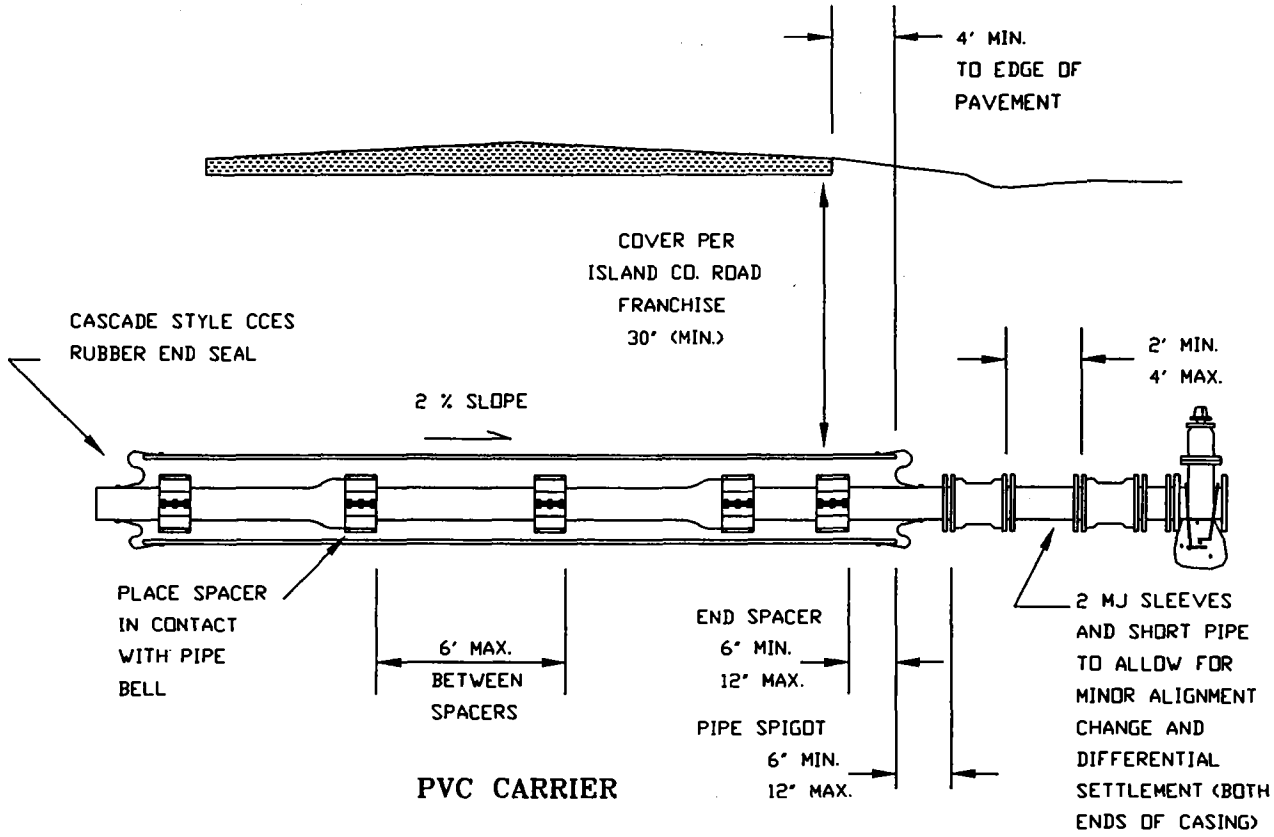



| | | | |
|---|---|---|---|
| Date: Oct. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plan – Water Mains<br>Residential Service Details | Plan #<br>W-7 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |

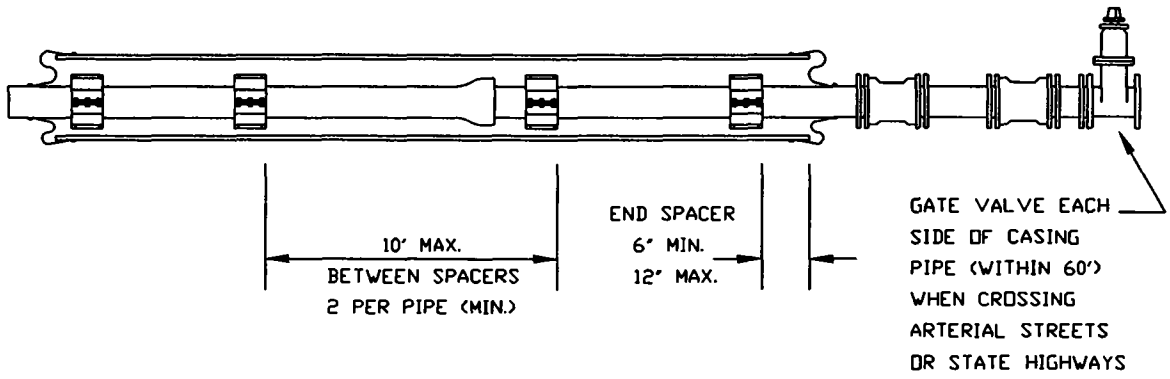


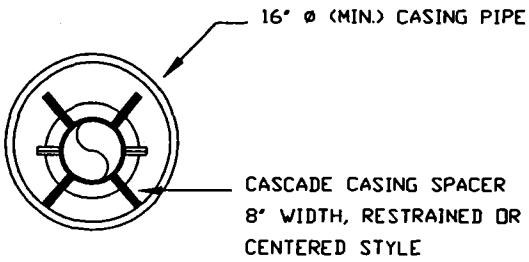

| | | | |
|---|---|---|---|
| **Date:** Oct. 03 | **Scale:** N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plan – Water Mains<br>Air Valve Details | **Plan #**<br>**W-8** |
| **By:** GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |




PVC CARRIER




DUCTILE IRON CARRIER



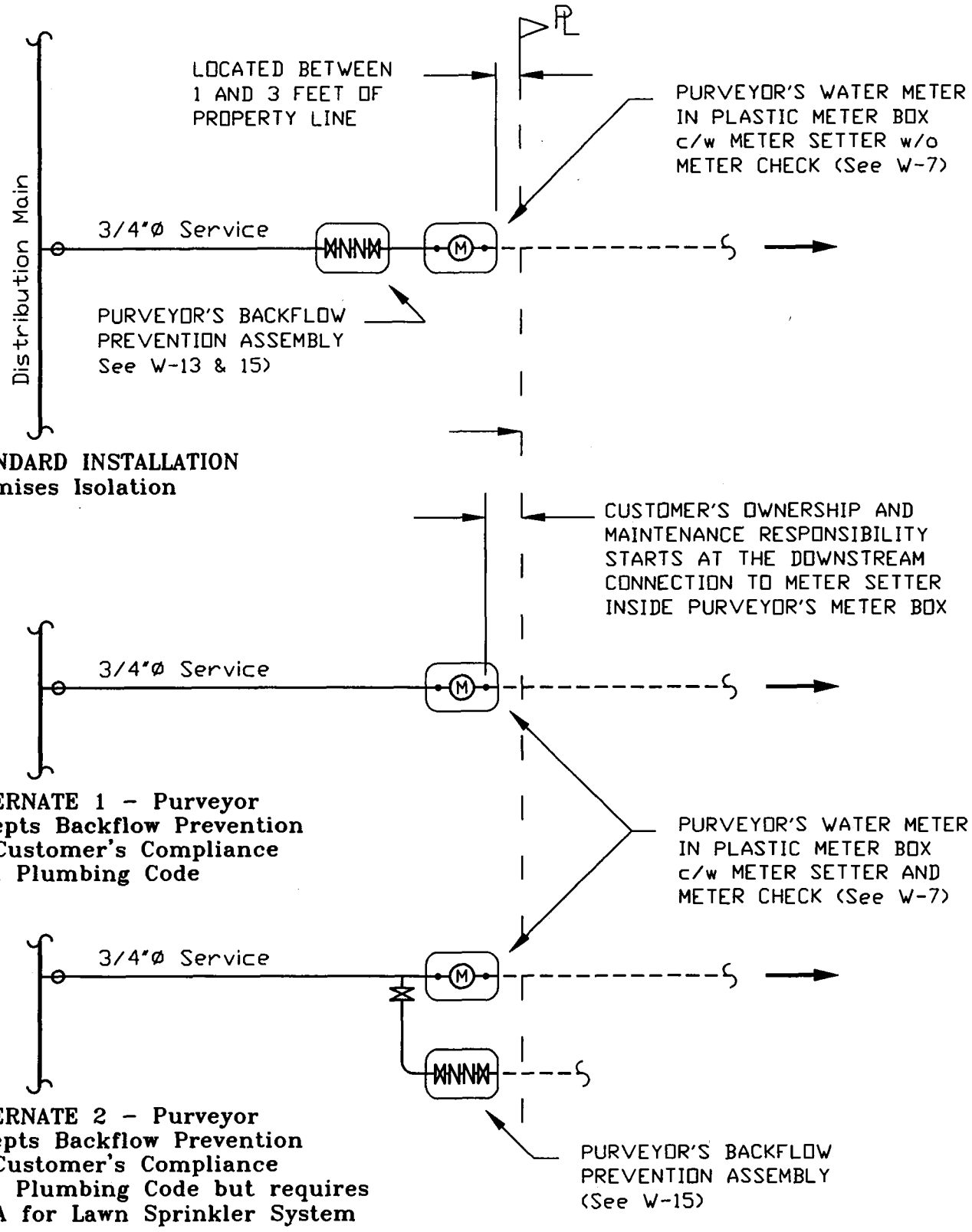

## Notes:

FOR JACKED INSTALLATION, USE 1/4' MIN. WALL, 16' O.D., STRAIGHT SEAM, ASTM A-135 STEEL PIPE JOIN BY BUTT WELDING

FOR OPEN CUT INSTALLATION, USE CORRUGATED STEEL PIPE OR OTHER COUNTY APPROVED CASING MATERIAL. BACKFILL WITH CONTROLLED DENSITY FILL

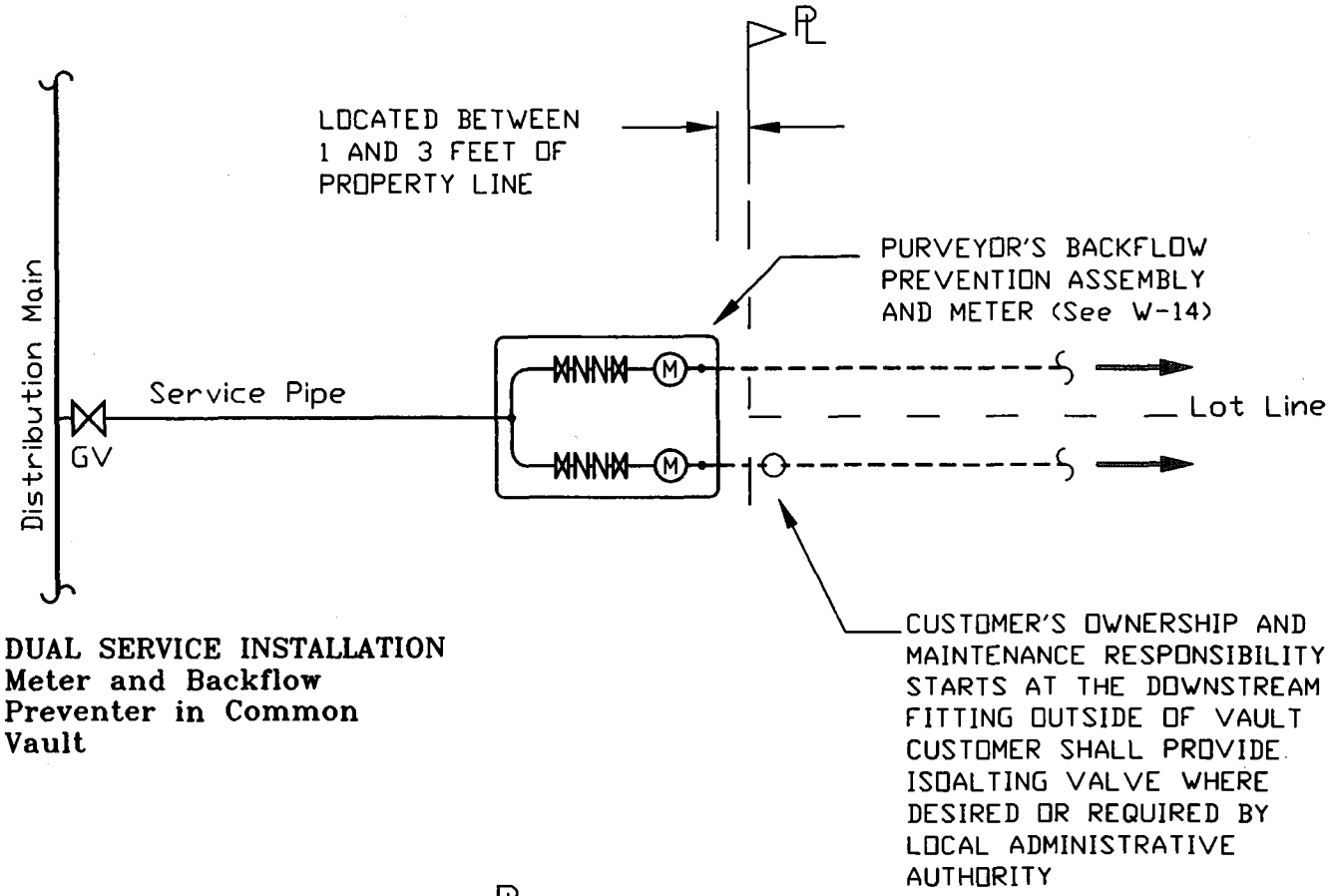
INSTALL ANCHOR BLOCKS ON ALL VALVES PER DETAIL W-4 UNLESS VALVE OTHERWISE RESTRAINED

| | | | |
|---|---|---|---|
| Date: Oct. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>STANDARD PLAN<br>Casing Pipe Road Crossing Detail - 6" & 8"ø Mains | Plan #<br>W-9 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |

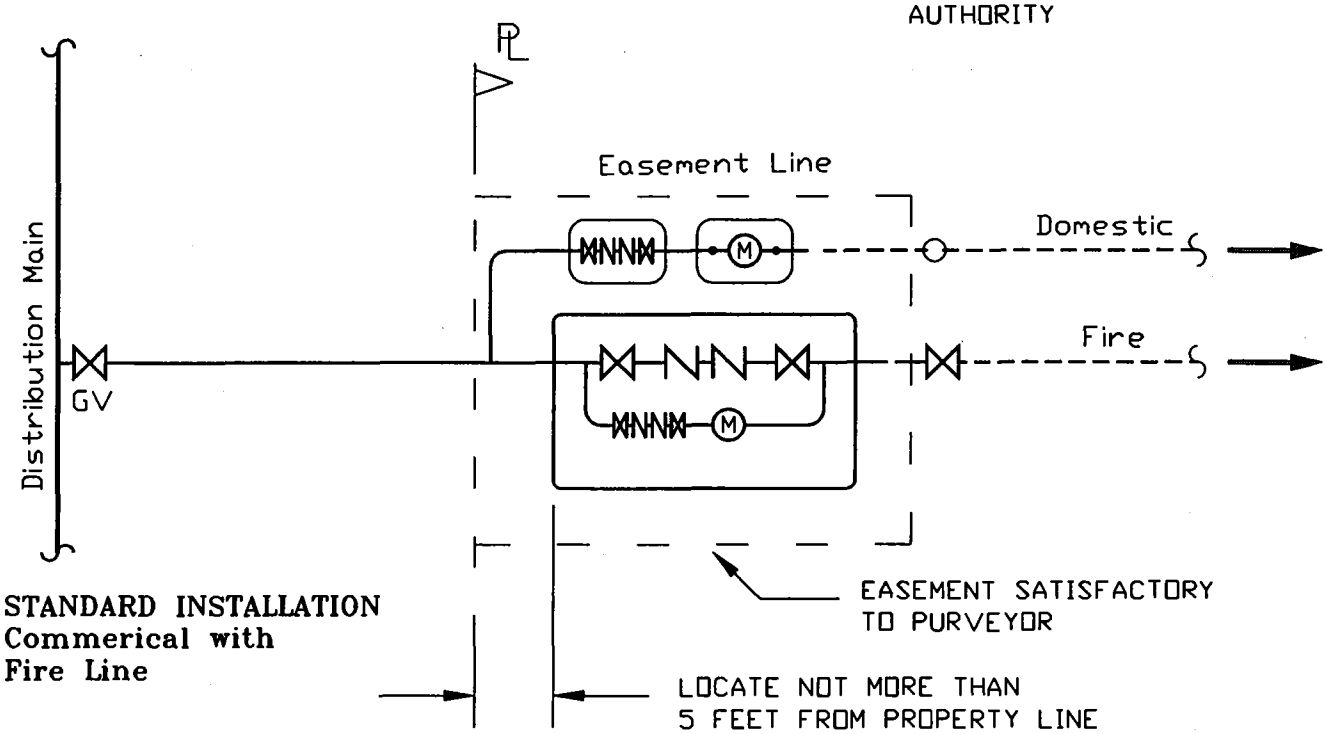



**Note:** Purveyor's distribution main and service pipe shall not be used as ground for Customer's electrical system.

| | | | |
|---|---|---|---|
| **Date:** Dec. 03 | **Scale:** N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plans - Water Mains<br>**Service Connections - Residential** | **Plan #**<br>**W-10** |
| **By:** | GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | |




**DUAL SERVICE INSTALLATION**
**Meter and Backflow Preventer in Common Vault**

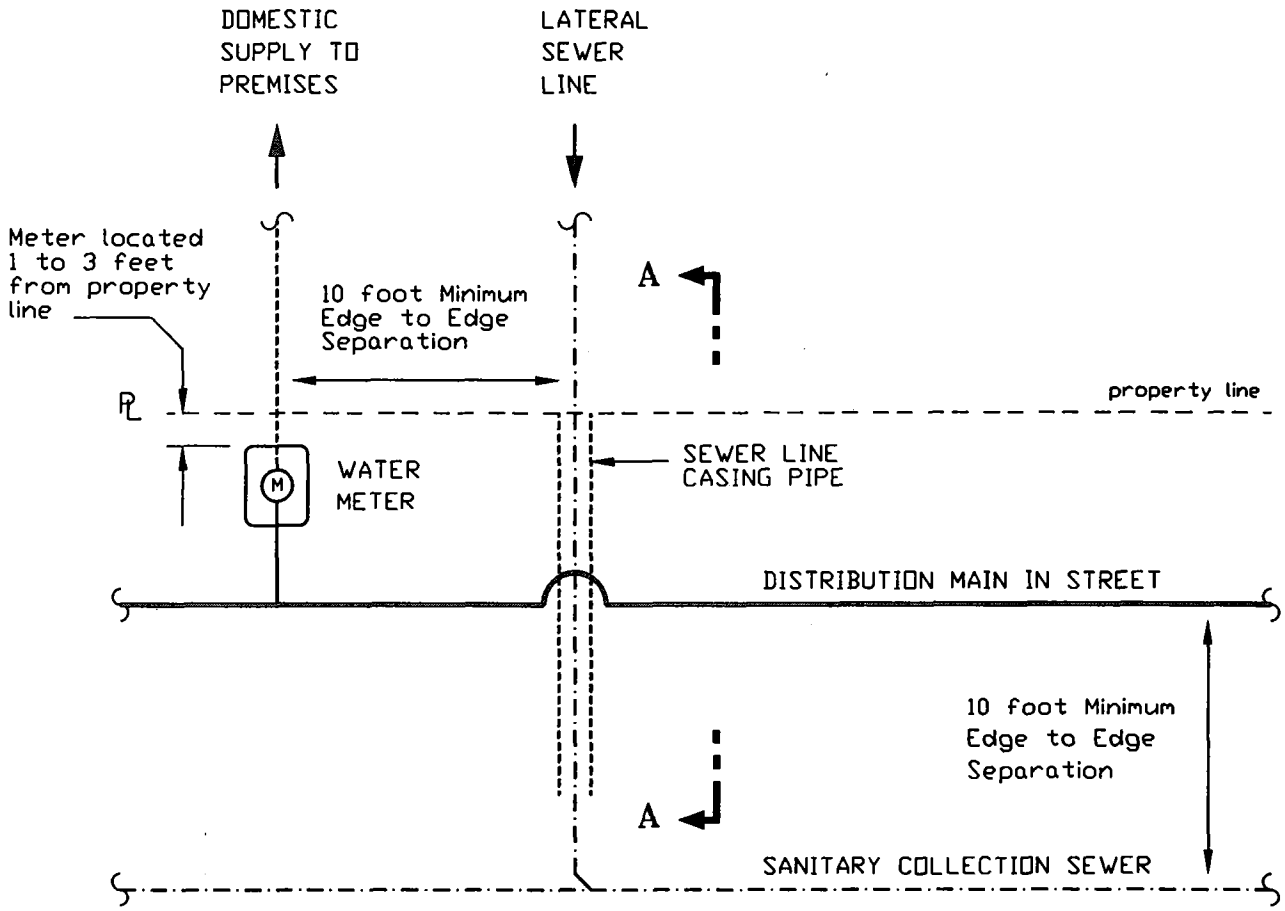



**STANDARD INSTALLATION**
**Commerical with Fire Line**

**Note:** The category 'Commercial Customer' shall include all non-single family or duplex residential customers.

For security, Purveyor's vaults are locked, and thus, a shut-off valve is not accessable to customer for mainteance of plumbing.

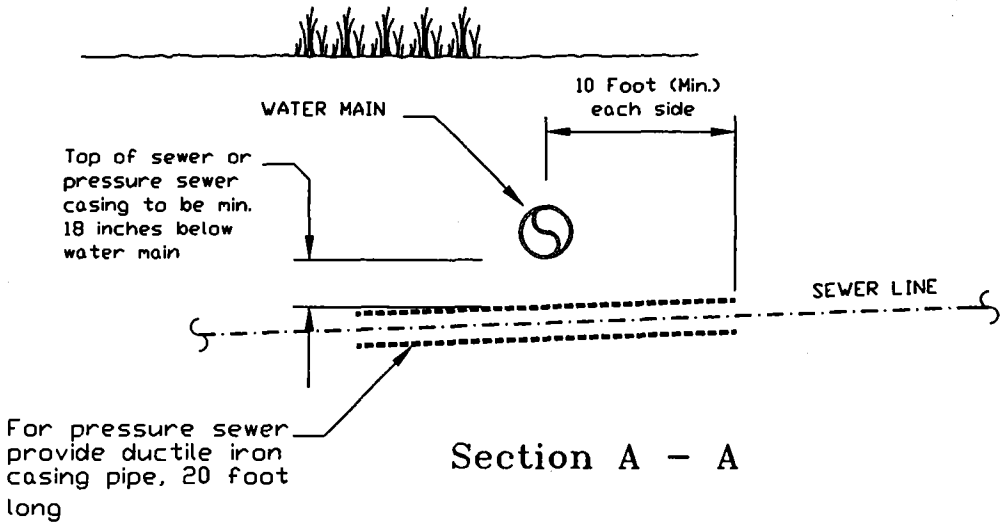
| | | | |
|---|---|---|---|
| **Date:** Dec. 03 | **Scale:** N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plans – Water Mains<br>**Service Connections – Commercial/Dual Residential** | **Plan #**<br>**W-11** |
| **By:** | GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | |




## Notes:

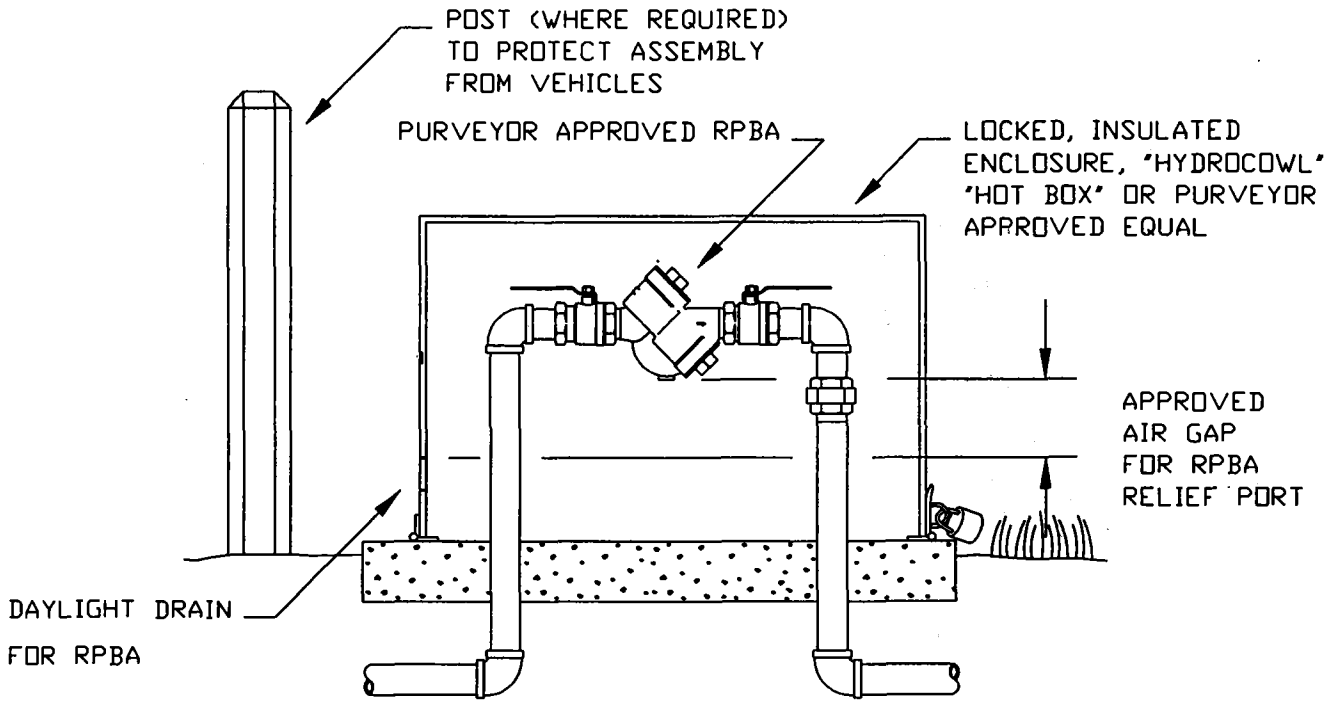
GRAVITY SEWER LATERAL SHALL BE INSTALLED 18-INCHES BELOW WATER MAIN UNESS OTHERWISE APPROVED BY PURVEYOR.

PRESSURE SEWER LATERAL AND PRESSURE COLLECTION SEWER SHALL BE INSTALLED IN DUCTILE IRON CASING PIPE 18-INCHES BELOW WATER MAIN.




Section A – A

| | | | |
|---|---|---|---|
| Date: Oct. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plans – Water Mains<br>Separation of Service Connections | Plan # W-12 |
| By: GEORGE BRATTON, P.E. CIVIL ENGINEER | | | |

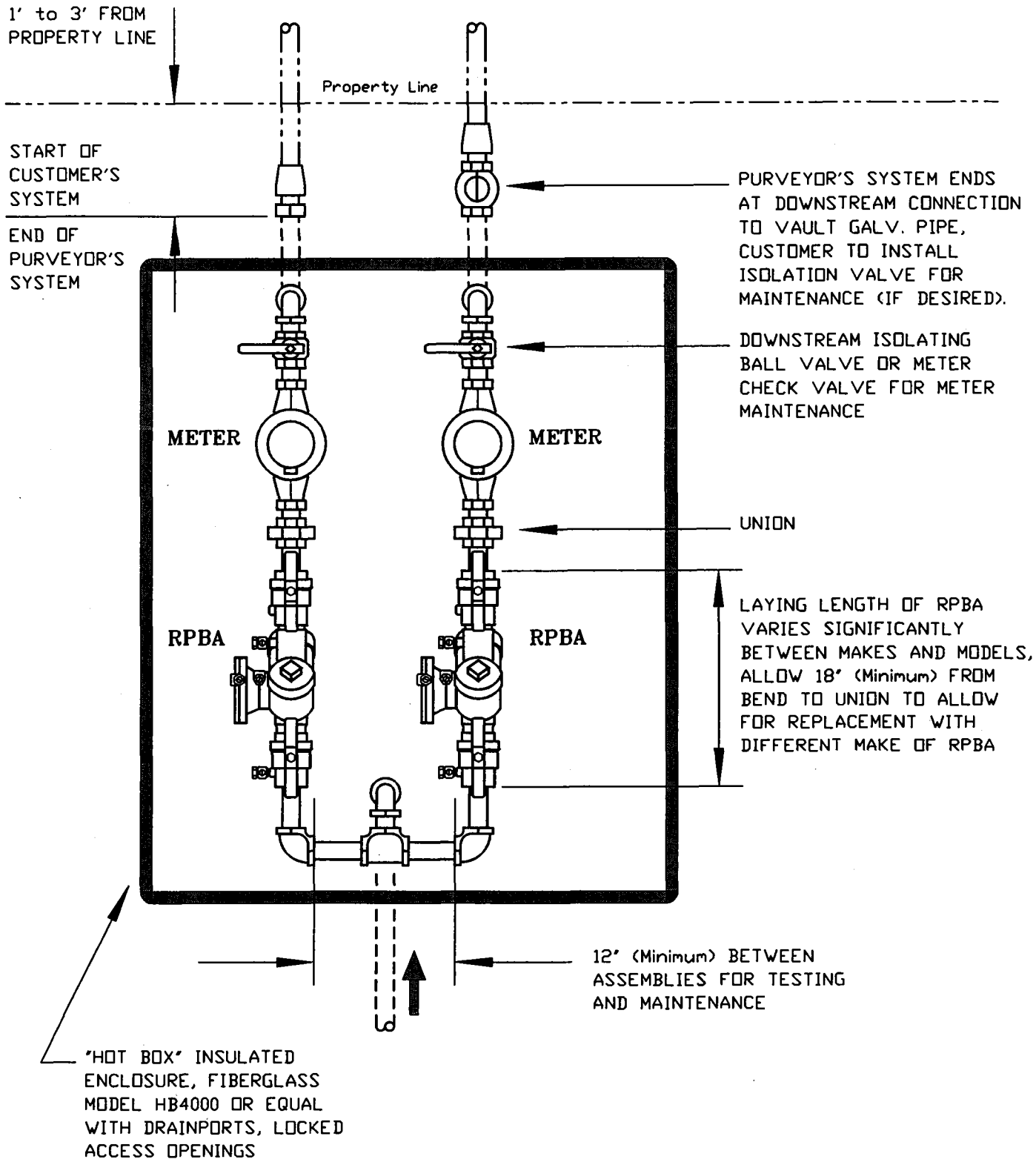



**INSULATED ENCLOSURE INSTALLATION**
**REDUCED PRESSURE BACKFLOW ASSEMBLY**

**Note:**

All installations to comply with assembly manufacturer's recommendations, AND the USC FCCCHR Assembly Approval, AND the 6th Edition of the PNWS-AWWA 'CROSS CONNECTION CONTROL MANUAL', whichever more stringent.

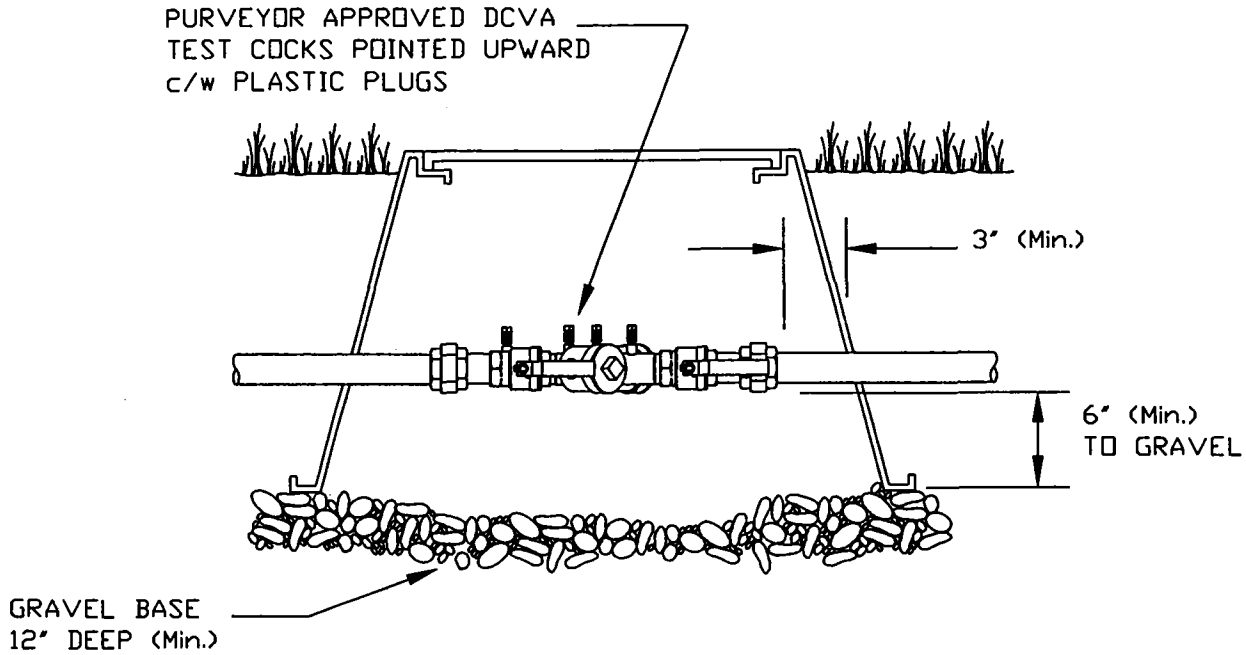
| | | | |
|---|---|---|---|
| **Date:** Oct. 03 | **Scale:** N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plans – Water Mains<br>Service Connection – RPBA | **Plan #**<br>**W–13** |
| **By:** | GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | |




**NOTE:**

SEE DRAWING W-13 FOR OTHER INSTALLATION REQUIREMENTS FOR RPBA

| | | | |
|---|---|---|---|
| Date: Dec. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plans – Water Mains<br>3/4" & 1" Dual Service Connections with RPBA | Plan #<br>W-14 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |



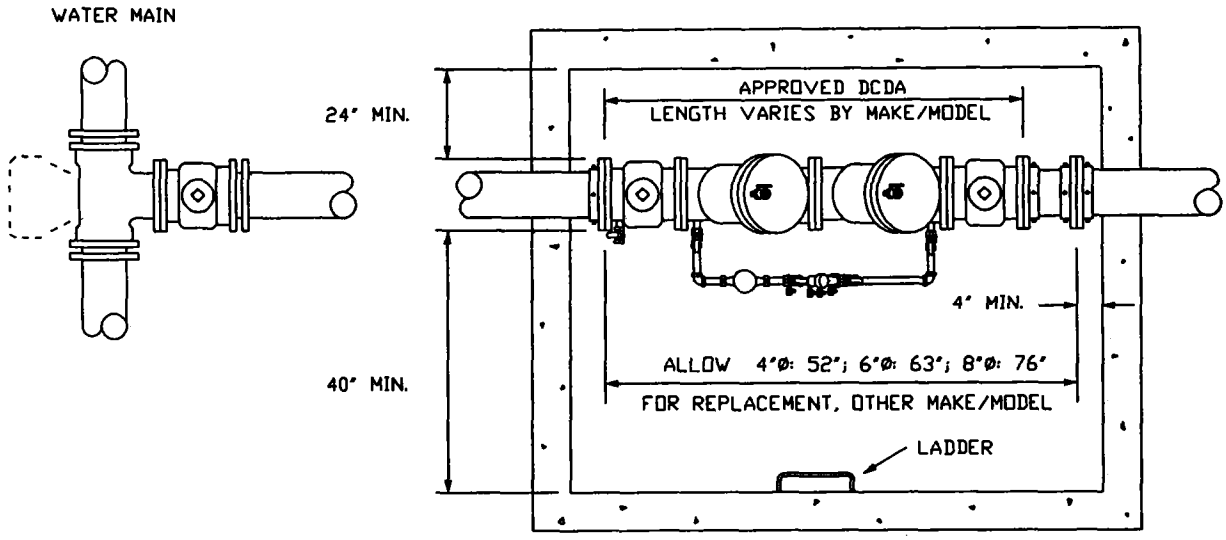

**METER BOX ENCLOSURE INSTALLATION**
**DOUBLE CHECK VALVE ASSEMBLY**

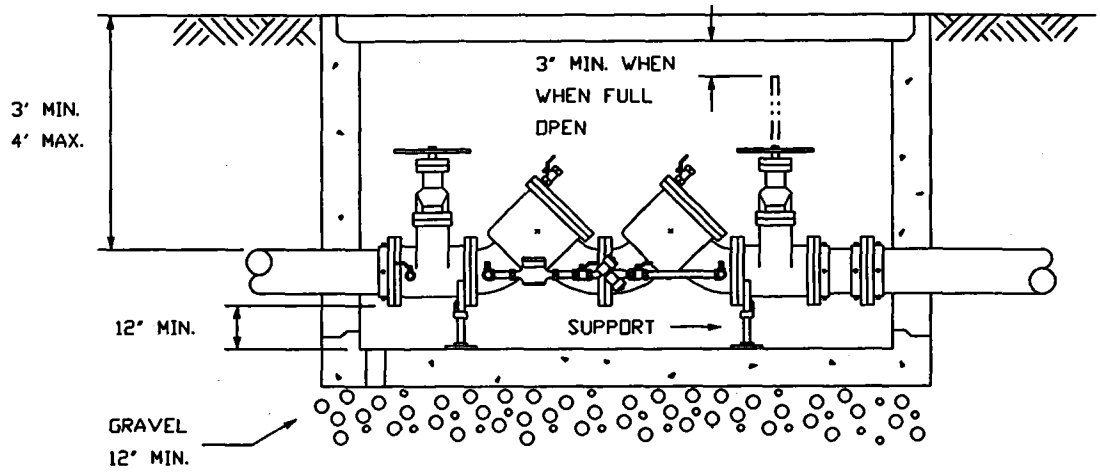
**Note:**

All installations to comply with assembly manufacturer's recommendations, AND the USC FCCCHR Assembly Approval, AND the 6th Edition of the PNWS-AWWA 'CROSS CONNECTION CONTROL MANUAL', whichever more stringent.

Double check valve assembly may be installed in above-ground 'Hot Box' See Plan W-13

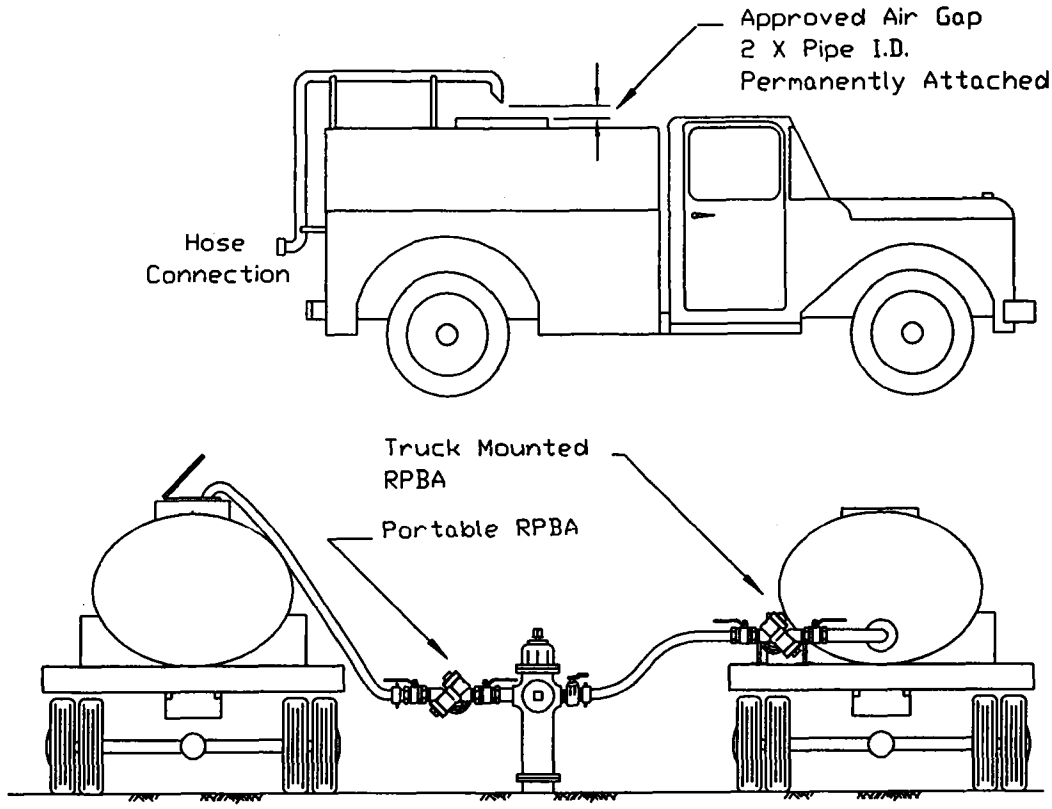
| | | | |
|---|---|---|---|
| **Date:** Dec. 03 | **Scale:** N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plans – Water Mains<br>**Service Connection / Lawn Irrigation – DCVA** | **Plan #**<br>**W-15** |
| **By:** | **GEORGE BRATTON, P.E.**<br>**CIVIL ENGINEER** | | |



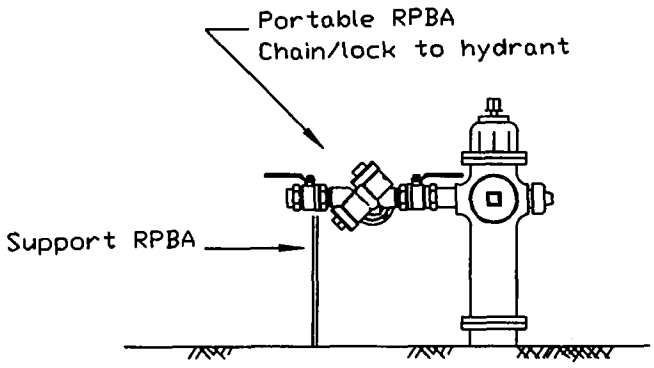




Vaults shall be UTILITY VAULT CO., Style 676 or approved equal.

| | | | |
|---|---|---|---|
| Date: Dec. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plans – Water Mains<br>4" to 8" Double Check Detector Assembly | Plan #<br>W-16 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |




## Water Tanker Trucks




**NOTES:**

Construction water is not allowed for sewer related work: all water to be supplied by water tank trucks (see above).

RPBA to be tested by BAT before installation, when moved, or every two months (minimum).

Hydrant to be full open to ensure drain port is closed tight.

RPBA to be Purveyor approved.

Construction hydrant meter may also be required.

## Construction Work on Street R-O-W

| | | | |
|---|---|---|---|
| Date: Dec. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plans – Water Mains<br>Fire Hydrants Use – Construction Water | Plan #<br>W-17 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |

# BACKFLOW PREVENTER REQUIRED FOR PREMISES (SERVICE) ISOLATION

## COMMERCIAL CUSTOMERS

CATERGORY OF PREMISES INCLUDES ALL CUSTOMERS OTHER THAN SINGLE-FAMILY AND DUPLEX RESIDENCES.

| Category of Customer / Water Use | Assembly |
|---|---|
| AGRICULTURAL (FARMS AND DARIES) | RPBA |
| BEVERAGE BOTTLING PLANTS, BREWERIES | RPBA |
| CAR WASHES | RPBA |
| CHEMICAL PLANTS | RPBA |
| LAUNDRIES AND DRY CLEANERS | RPBA |
| PREMISES WHERE BOTH RECLAIMED WATER & POTABLE WATER ARE PROVIDED | RPBA |
| FILM PROCESSING FACILITIES | RPBA |
| FOOD PROCESSING PLANTS, CANNERIES, SLAUGHTER HOUSES, RENDERING PLANTS | RPBA |
| HOSPITALS, MEDICAL CENTERS, NURSING HOMES, VETERINARY, MEDICAL AND DENTAL CLINICS, AND BLOOD PLASMA CENTERS | RPBA |
| IRRIGATION SYSTEMS WITH CHEMICAL ADDITION | RPBA |
| LABORATORIES | RPBA |
| METAL PLATING INDUSTRIES | RPBA |
| MORTUARIES | RPBA |
| PETROLEUM PROCESSING OR STORAGE PLANTS | RPBA |
| PIERS AND DOCKS | RPBA |
| WASTEWATER OR STORMWATER PUMPING STATIONS, WASTEWATER TREATMENT PLANTS | RPBA + AG |
| PREMISES WITH AN AUXILIARY WATER SUPPLY (CONNECTED OR UNCONNECTED) | RPBA |
| FIRE SPRINKLER SYSTEMS OR DEDICATED FIRE LINES WITH CHEMICAL ADDITION | RPDA |
| FIRE SPRINKLER SYSTEMS OR DEDICATED FIRE LINES WITHOUT CHEMICAL ADDITION | DCDA |
| ALL OTHER COMMERCIAL SERVICES | DCVA |

## RESIDENTIAL CUSTOMERS

CATERGORY OF PREMISES INCLUDES SINGLE-FAMILY AND DUPLEX RESIDENCES.

| Category of Water Use Includes | Assembly |
|---|---|
| UNDERGROUND LAWN SPRINKLER SYSTEM | DCVA |
| SOLAR HEATING SYSTEM | DCVA |
| FIRE SPRINKLER SYSTEM OTHER THAN FLOW-THROUGH TYPE | DCVA |
| PRIVATE WELL (CONNECTED OR NOT CONNECTED TO PLUMBING) | RPBA |
| GRAY WATER SYSTEM (CISTERNS) OR OTHER AUXILIARY SUPPLY | RPBA |
| LIVESTOCK WATERING | DCVA |
| WATER SUPPLY TO DOCK OR SMALL BOAT MOORAGE, SUBMERGED WATER LINES | RPBA |
| GRINDER PUMP (SEWAGE PUMPED TO OFF-SITE SEPTIC OR SEWER) | RPBA |
| WATER SOFTENER OR REVERSE OSMOSES TREAMENT SYSTEM | DCVA + AG |

**Abbrev.:**

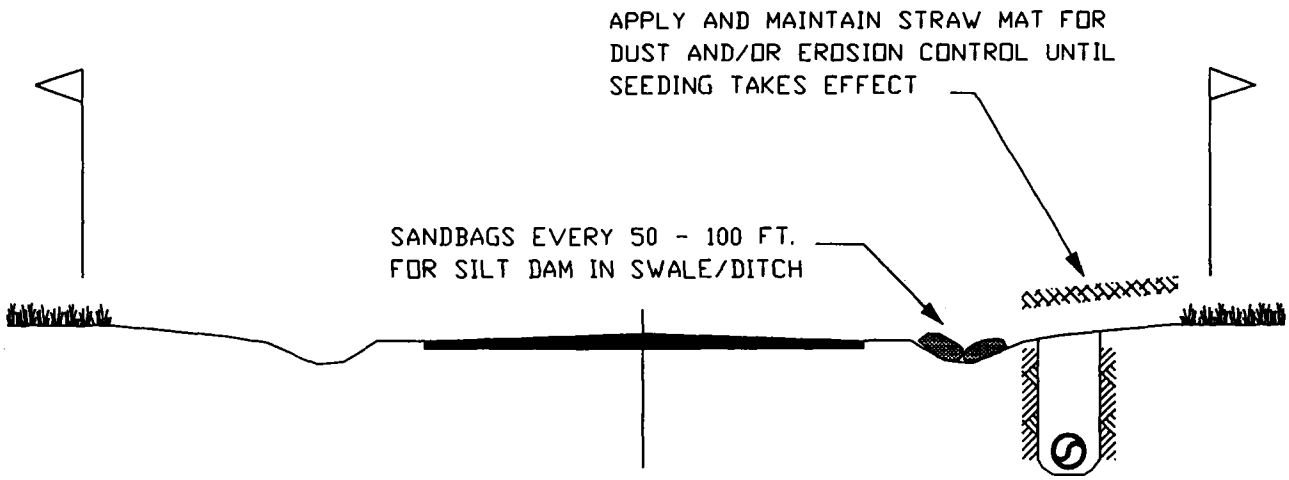
| | |
|---|---|
| AG | Approved Air Gap per Plumbing Code in addition to RPBA/DCVA |
| RPBA | Reduced Pressure Backflow Assembly |
| RPDA | Reduced Pressure Detector Assembly |
| DCVA | Double Check Backflow Assembly |
| DCDA | Double Check Detector Assembly |
| DCV | Dual Check Valve device in purveyor's water meter setter. |

**Notes:**

1) For explaination of premises categories see PNWS-AWWA 'CROSS CONNECTION CONTROL MAUNAUL', 1995 or latest edition thereof.

2) All assemblies, except DCV, are to be located as shown in W-10 and W-11, unless otherwise permitted in Service Agreement.

| | | | |
|---|---|---|---|
| Date: Dec. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>STANDARD PLAN<br>General Cross Connection Control Requirements | Plan # W-18 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |




# TYPICAL UTILITY CONSTRUCTION - STREET R-O-W

## NOTES:

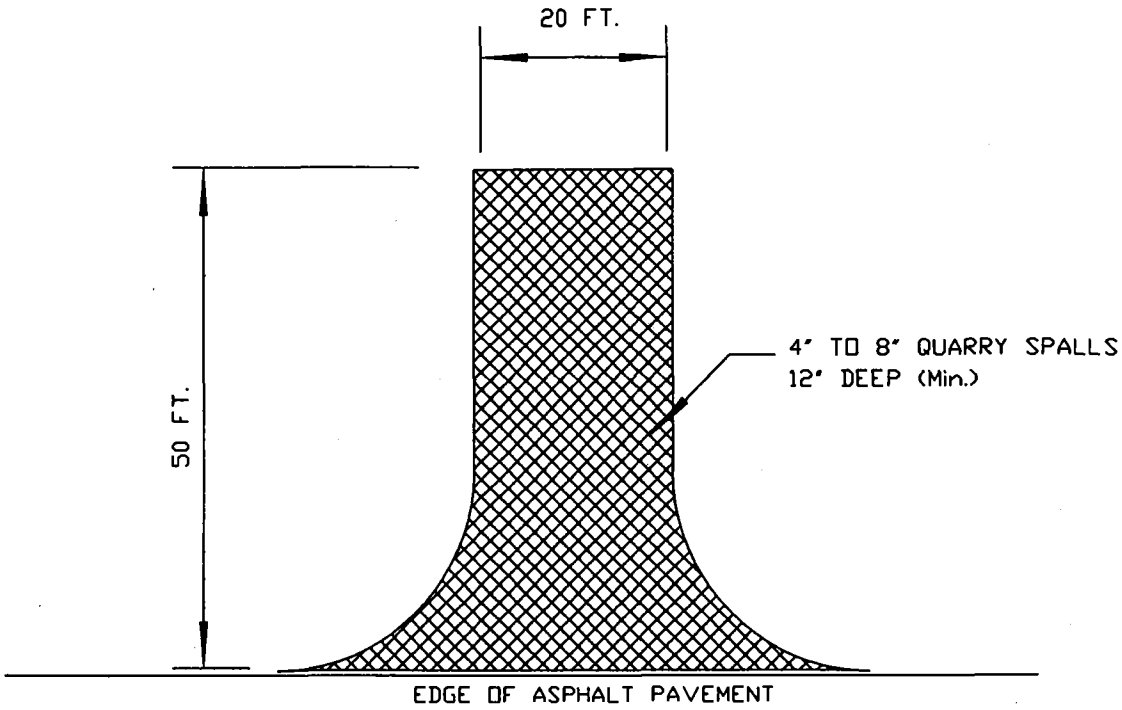
1) PROVIDE SANDBAGS IN SWALE/DITCH LINE FOR SILT DAM. IF NEEDED, PROVIDE STRAW BALES OR FILTER FABRIC FENCE TO PREVENT RUNOFF FROM BY-PASSING SILT DAMS.

   PROVIDE SANDBAGS IN DITCH LINE ON OPPOSITE SIDE OF ROAD IF NEEDED, FOR CONTAINMENT OF EXCAVATION MATERIALS WASHED OFF STREET SURFACE.

2) AT END OF EACH WORKING DAY, COMPLETE TRENCH BACKFILLING AND SURFACE RESTORATION TO EXTENT POSSIBLE, LEAVING ONLY PIPE END, FITTINGS FOR BLOCKING, ETC., EXPOSED.

3) SWEEP STREETS AT END OF EACH WORK DAY.

| | | | |
|---|---|---|---|
| Date: Oct. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plan - Water Mains<br>Erosion Control | Plan #<br>E-1 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |




## CONSTRUCTION ENTRANCE

## NOTES:

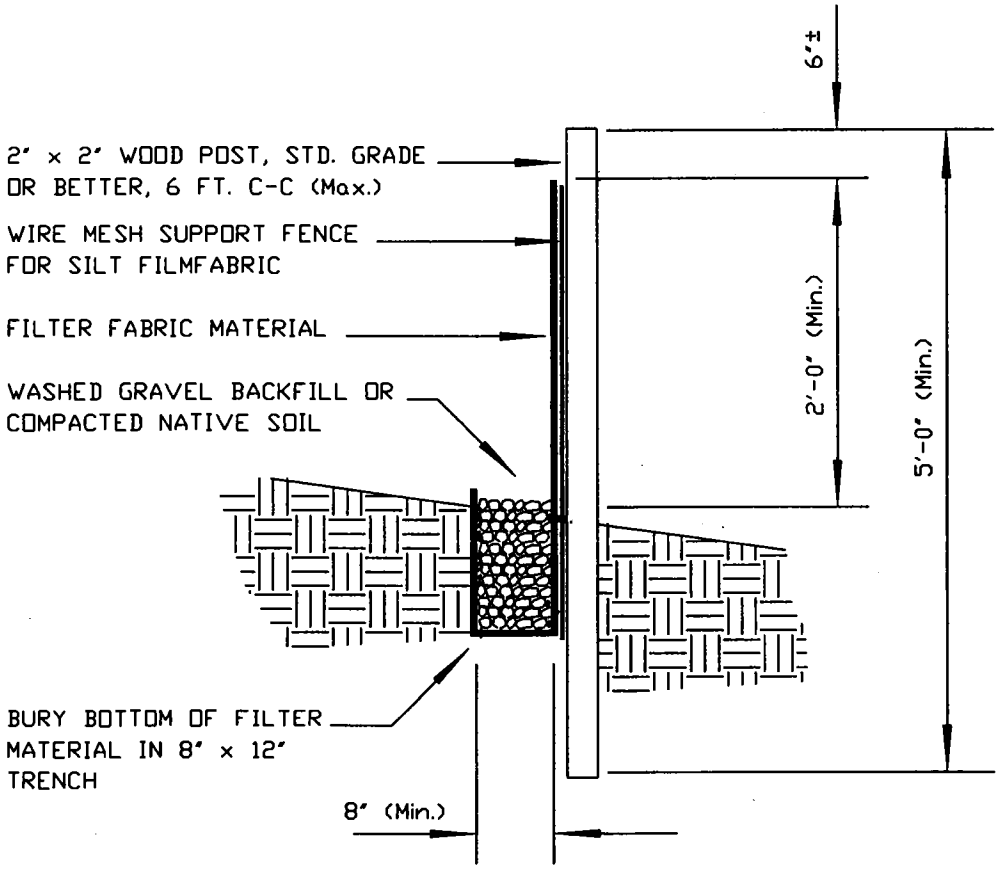
1) APPLY TO CONTRACTOR'S TEMPORARY WORKS YARD(S)

2) DELINEATE CONSTRUCTION AREA ON GROUND WITH READILY VISIBLE FLAGS, CONFINE EQUIPMENT, MATERIAL STORAGE AND OPERATIONS TO CONTRUCTION AREA.

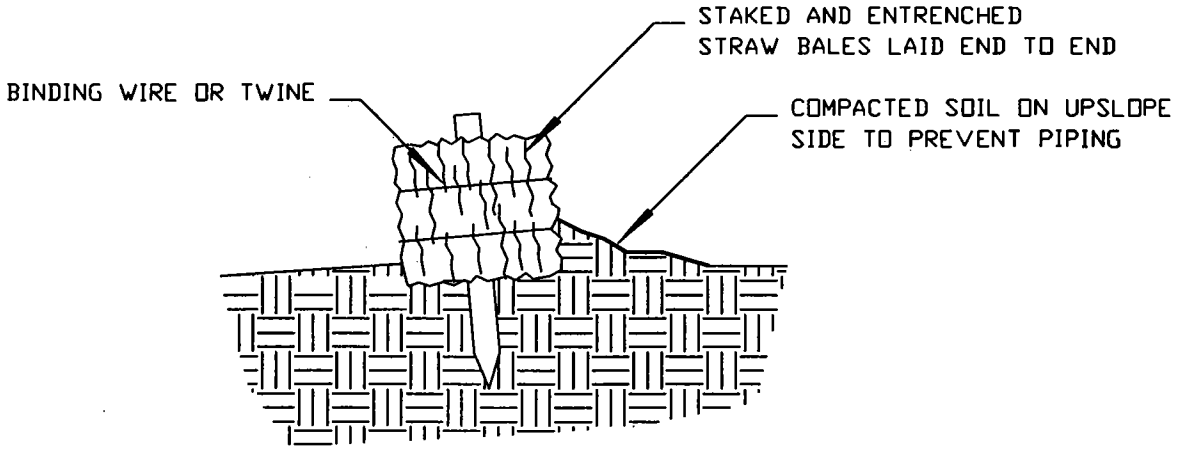
3) FIRST CONSTRUCT SWALE FOR SEDIMENT SUMP, WITH DITCHES AS NECESSARY TO CONVEY RUNOFF TO SUMP.

4) MAINTAIN SWALE (SUMP), DITCHES AND SILT BARRIERS DURING CONSTRUCTION PERIOD.

| | | | |
|---|---|---|---|
| Date: Oct. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plan – Water Mains<br>Erosion Control | Plan #<br>E-2 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |




## FILTER FABRIC FENCE DETAIL




## TEMPORARY STRAW BALE BARRIER

FOR GENERAL NOTES, SEE DETAIL E-2

| | | | |
|---|---|---|---|
| Date: Oct. 03 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>Standard Plan – Water Mains<br>Erosion Control | Plan #<br>E-3 |
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |

# Appendix L

# Water Conservation Plan

# WATER CONSERVATION PLAN

## A. OVERVIEW

The following water conservation plan is incorporated into the water system design and the operation and management of the system. Additional long-term water conservation measures may be required in the future. Such requirements will be framed in accordance with the Washington State Department of Ecology publication, Water Conservation Planning Handbook for Public Water Systems. For short-term water conservation measures needed to respond to drought conditions, system operation problems, etc., refer to the Water Shortage Response Plan included herein (Appendix N)

Attached to this conservation plan are completed Washington Department of Health's "Water Use Data Collection Requirements Checklist", "Demand Forecasting Requirements Checklist", and "Water Conservation Program Requirements Checklist".

## B. COMPONENTS OF PLAN

**Metering:**

To minimize unaccounted for water, the system has a meter at each well source, and has included in the Water System Plan a program of installing meters at each service connection. ?

**Water Rate Structure:**

Water rates, starting when residential meters installation is complete, will include a surcharge for excess use to encourage conservation.

**Water Audit:**

Periodically, or at those billing periods when the surcharge for excess water use is applied, a comparison will be made between the source (well) meter and the sum of residential consumption, and fire hydrant usage. Should unaccounted for water exceed 9 percent of the source production, a cursory water audit should be performed to determine if the difference is due to an unusual occurrence, such as a water main break. If the unaccounted for water exceeds 9 percent of production in a subsequent comparison review, the water audit should be extended to include a check of meter calibration, and a leak detection survey. If the water loss cannot be accounted for by a cursory audit, a full audit should be conducted as outlined in the American Water Works Association publication, Water Resources Audit, 1988.

To permit the customers to assess individual water use, the water bills will be changed to show consumption history. Any abnormal increase in the customer's consumption should initiate an inquiry into a possible leak in the customer's plumbing system. Any major ongoing increase should initiate a check into the accuracy of the water meter. ?

To facilitate the water audit procedures, all meters will be tested or replaced at the interval recommended by the American Water Works Association standards C-700 Cold Water Meters - Displacement Type, and C-701 Cold Water Meters - Turbine Type. The source meter should be tested for accuracy at a maximum interval of four years, residential meters at a maximum interval of eight years.

**Low Water Use Plumbing Fixtures:**

For new construction, all plumbing and related fixtures shall comply with current state and local laws and regulations establishing water conservation performance standards, including the water efficiency standards established in Chapter 51-18 of the Washington Administrative Code and Chapter 19.27 of the Revised Code of Washington.

**Water for Lawn Irrigation:**

Customers are encouraged to adopt landscaping schemes with this end in view. The use of drip or mechanically-timed irrigation systems, drought tolerant plantings, and small lawn areas is encouraged.

**Lawn Sprinkling and other Water Use Restrictions:**

Through the insert of a notice with the water bill, and/or during periods of warm, dry weather, customers will be requested to comply voluntarily with restricting lawn irrigation and car washing to once per week, watering lawns to mornings and later evenings, etc. as outlined in public education materials described below.

**Public Education:**

The Washington State Department of health publications, Water Saving Guideline 1, 2, and 3 shall be distributed to all new customers at the time of application for water service and periodically thereafter with the water bills. Future similar AWWA, state and county publications, may also be distributed.

**Watering Restrictions:**

Until service meters are installed, the water conservation program includes the following:

1. Promotion of voluntary conservation at community meetings.
2. Prohibition on lawn watering.
3. Odd-Even day schedule for plant watering.

**Reclaimed Water:**

No private sources of reclaimed or gray water were identified for irrigation use.

*CONSERVATION PLANNING REQUIREMENTS FOR PUBLIC WATER SYSTEMS WITH FEWER THAN 1,000 SERVICE CONNECTIONS LOCATED IN CRITICAL WATER SUPPLY SERVICE AREAS*

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The checklists below are for use by public water systems in their efforts to develop a water conservation plan in accordance with the Guidelines and Requirements for Public Water Systems regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs (Conservation Planning Requirements). These checklists will also be used by Ecology and Health staff in reviewing conservation plans required from public water systems. Conservation plans consist of three elements: data collection and reporting; demand forecasting for future water needs, and; conservation program development and implementation. THESE CHECKLISTS IDENTIFY THE REQUIREMENTS FOR EACH OF THESE THREE COMPONENTS OF A CONSERVATION PLAN FOR PUBLIC WATER SYSTEMS WITH FEWER THAN 1,000 SERVICES LOCATED IN AREAS COVERED BY A COORDINATED WATER SYSTEM PLAN DEVELOPED PURSUANT TO CHAPTER 70.116 RCW. Please refer to the Conservation Planning Requirements for additional details.

CONSERVATION PLANS ARE REQUIRED COMPONENTS OF WATER SYSTEM PLANS REQUIRED BY THE DEPARTMENT OF HEALTH (HEALTH), AND ARE REQUIRED BY THE DEPARTMENT OF ECOLOGY (ECOLOGY) PRIOR TO THE ISSUANCE OF WATER RIGHTS TO PUBLIC WATER SYSTEMS. Implementation of conservation plans may be conditions of approval of water system plans and for water right permits. Where water system plans are required, Health will be the lead agency in reviewing conservation plans. Health will coordinate review of conservation plans with Ecology. If you have any questions about the Conservation Planning Requirements contact the Health Regional Office Planner or Ecology regional office for your area.

For additional resources to assist in the development of your conservation plan please refer to the Water Conservation Handbook for Public Water Systems developed by Ecology and Health. Additionally, the Planning Handbook - A Guide for Preparing Water System Plans is available from Health to assist in the development of your overall water system plan. Finally, the Water Conservation Bibliography for Public Water Systems published by Health provides references to additional water conservation information and literature which can be obtained from the library and other sources. All of these documents are available from Ecology or Health.

NOTE: The information in this handout provides an overview of the specific requirements in the Conservation Planning Requirements. You should not rely on this handout exclusively to prepare your conservation plan. Please refer to the Conservation Planning Requirements to determine the specific guidelines and requirements for your conservation plan.

# WATER USE DATA COLLECTION REQUIREMENTS CHECKLIST

This checklist summarizes the water use data reporting requirements in the Conservation Planning Requirements. Unless otherwise noted, data should be reported in cubic feet. The Conservation Planning Requirements establish 1991 as the initial year for water use data collection and reporting. If available, data should be shown for the past 5 years. Systems are encouraged to collect more than the minimum required data.

To meet the minimum requirements of the Conservation Planning Requirements, plans must contain currently available data on water usage for the categories of use listed below. If the data has not been collected for any of the categories below, you will be required to make a commitment in your conservation plan to begin collecting the data as required. This commitment must include a schedule for when the data will begin to be collected, and what improvements if any will be made to ensure the data is collectable. Systems which make this commitment to collect data, but do not follow through and collect the information may be unable to receive subsequent water system plan approval or approval for additional water rights, until data consistent with the checklist below is collected.

All data elements must be reported or a commitment must be made (for each data element not collected) to collect and report the data prior to the next water system plan update. Where available, daily, monthly and annual totals must be reported, not averages. Please read the footnotes to obtain additional important information.

A. Are you a new public water system which has not yet collected any water use data? __ Yes ✓ No

If yes skip to number 13

| Water Use Data | Data Collected? |
|---|---|
| 1. Source of Supply Meter (monthly totals from each source) | ✓ Yes __ No |
| 2. Total Annual Use - Each source (annual totals) | ✓ Yes __ No |
| 3. Emergency Interties - Amount Imported (monthly totals from each intertie) | __ Yes __ No ✓ None Imported |
| 4. Wholesale - Amount Purchased (annual totals from each wholesaler) | __ Yes __ No ✓ None Purchased |
| 5. Peak Month Usage (peak monthly totals) | ✓ Yes __ No |

6. Unaccounted for Water (annual totals) ✓ Yes __ No

7. Accounted for Non-Revenue Water (annual totals)[2] __ Yes __ No ✓ None

8. Service Meter Usage (monthly totals)[3]

| | | | |
|---|---|---|---|
| Single-Family | ✓ Yes | __ No | __ Not Served |
| Multi-Family | __ Yes | __ No | ✓ Not Served |
| Commercial/Governmental/Industrial | ✓ Yes | __ No | __ Not Served |
| Agricultural | __ Yes | __ No | ✓ Not Served |

9. Emergency Interties - Amount Exported (monthly totals provided to each intertie) __ Yes __ No ✓ None Exported

10. Wholesale - Amount Sold (monthly totals provided to each wholesale customer) __ Yes __ No ✓ None Sold

11. Population Served (required to be reported - annual totals)[4] ✓ Yes __ No

12. Conservation Data (report the type of measure, level of implementation, duration and date begun - to be included in conservation plan, not reported with other data)[5] ✓ Yes __ No

13. Existing Rate Schedules ✓ Yes __ No

Data Collection Commitment?

14. Unreported Data Elements (for all data elements where data was not collected, the system is required to make a commitment to initiate and continue to collect data)[6] __ Yes __ No ✓ All Reported

1. Those systems which do not have source meters will be required to estimate source production.

2. Accounted for non-revenue water includes uses which can be accounted for, but where revenue is not collected. Examples include fire protection, system flushing and other designated uses.

3. Those systems required to collect data which do not have service meters will be required to estimate how much each of these users has consumed. Include the number of connections in each category of user. Data may be collected through normal billing procedures. Monthly data may be estimated if customers are billed less frequently.

4. Report the number of connections and customers in the residential class, and number of connections for the other customer classes. Population served must be reported, a commitment to include the information in the next water system plan update is inadequate. Data on population per household is available from the State Office of Financial Management.

5. If no previous conservation efforts have been undertaken, development of a conservation plan consistent with the Conservation Planning Requirements will be acceptable.

6. Systems must either have collected all data or made a written commitment to initiate and continue data collection or the conservation plan can not be approved.

## DEMAND FORECASTING REQUIREMENTS CHECKLIST

This checklist summarizes the demand forecasting factors which must be considered when forecasting future water needs. Demand forecasts must include demands from wholesale customers. To meet the minimum requirements of the Conservation Planning Requirements demand forecasts must incorporate the four factors listed below. Other factors determined to be appropriate by the system may be included as is appropriate. Demand forecasts must show demand for 6 and 20 year projections for both average daily demand and peak day demand, which depict future usage with and without conservation savings obtained from the conservation program (i.e. that factor in target water saving projections identified in the conservation program).

| Factors Required to be Included | Included? | |
|---|---|---|
| 1. Projected Population (based on information from local government and/or Office of Financial Management) | ✓ Yes | __ No |
| 2. Land Use/Zoning/Capacity (adopted land use and zoning regulations) | ✓ Yes | __ No |
| 3. Conservation Savings (water projected to be saved through the water conservation program must be factored into demand projection) | ✓ Yes | __ No |
| 4. Per Capita water use and Other Non-Residential Water Use (based on documented water usage - when available) | ✓ Yes | __ No |

# WATER CONSERVATION PROGRAM REQUIREMENTS CHECKLIST

Conservation programs must include conservation objectives, evaluation of conservation measures, identification of selected conservation activities, and target water saving projections as discussed below. Please refer to the Conservation Planning Requirements for additional details.

**Conservation Objectives.** Goals and objectives of the conservation program shall be identified. These objectives should be designed to meet the needs of the specific water system (e.g., attain maximum utilization of current supplies, reduce peak daily consumption, reduce peak monthly consumption, reduce total annual consumption, promote long term efficiency with accelerated conservation on a short term basis, reduce usage from a specific customer class, develop public education and awareness, etc.). EACH WATER SYSTEM WILL NEED TO DEVELOP CONSERVATION OBJECTIVES WHICH LOGICALLY MEET ITS NEEDS.

**Evaluation of Conservation Measures.** Public water systems must evaluate all recommended conservation measures identified in the Conservation Planning Requirements and implement those that are required and those that meet the public water systems' needs. The specific measures to be evaluated depend upon the size of the system. However, systems are encouraged to evaluate measures above the minimum requirements. The system must explain decisions not to implement measures it is required to evaluate.

**Identification of Selected Conservation Activities**

- **Description.** Description of conservation measures being implemented (including required measures).
- **Schedule.** Schedule of when the conservation measures will be implemented (emphasis on 6 year implementation schedule).
- **Budget.** Projected budget for each selected conservation measure. Schedule and budget information should be shown together.
- **Monitoring Requirements.** Description of how the system will monitor the success of its conservation measures (e.g., documented reduction in water usage, distribution of conservation materials, implementation of specific measures).

**Target Water Savings Projections.** Each system will identify a percentage savings goal, based on the measures chosen for implementation, which the entire water conservation program will attempt to save. Because different systems may have already implemented different levels of conservation, and the conservation needs of each system are different, no percentage savings goal has been established in the Conservation Planning Requirements. This percentage savings goal must be factored into the demand forecast.

To meet the minimum requirements of the Conservation Planning Requirements all <u>required measures must be planned to be implemented within six years</u>, and all recommended measures must be evaluated and implemented if cost effective.

The following checklist summarizes the water conservation measures which are required to be implemented, and measures which are required to be evaluated and implemented where cost effective. In the absence of clear evidence to the contrary, estimates on the costs and benefits of conservation measures (i.e. selection of non-mandatory measures for implementation) will not be challenged. Please refer to the footnotes for additional important information.

| Required Conservation Measures[1] | Measure Implemented? |
|---|---|
| 1. Program Promotion | ✓ Yes _ No |
| 2. Install Source Meters | ✓ Yes _ No |

All recommended measures listed below must be evaluated for implementation in the conservation plan to meet the minimum requirements in the Conservation Planning Requirements.

| Recommended Conservation Measures | Measure Evaluated? |
|---|---|
| 3. Install Service Meters | ✓ Yes _ No |
| 4. Conservation Pricing | ✓ Yes _ No |

1. Program promotion is required to be implemented for all public water systems. Source metering is required to be implemented by all systems prior to receiving additional water rights. If additional water rights are not being sought, this measure must be evaluated and implemented if cost effective. If unaccounted for water is greater than 20 percent a leak detection and repair program must be initiated.

## OTHER REQUIREMENTS CONTAINED IN THE CONSERVATION PLANNING REQUIREMENTS

In addition to developing a conservation plan as delineated above, the Conservation Planning Requirements also require that all public water systems preparing a water system plan identify existing rate schedules (include schedules for various customers classes if they are different), and inventory major potential sources and uses for reclaimed water.

| Other Requirements | Information Included? |
|---|---|
| 1. Inventory of Sources and Uses for Reclaimed Water[1] | ✓ Yes _ No |

1. A list of potential sources and uses of reclaimed water is contained in the Conservation Planning Requirements. Only those systems with more than 25,000 service connections will be required to evaluate water reuse as a conservation measure.

# Appendix M

# Water Shortage Response Plan

# WATER SHORTAGE RESPONSE PLAN

## A. PLAN OVERVIEW

This plan shall be used in conjunction with the Water Conservation Plan and Emergency Response Plan included herein (Appendix M and Appendix R, respectively).

## B. IMPLEMENTATION

This plan shall be implemented based on the following two degrees of short-term water shortage: moderate (supply deficiency), and severe (operating emergency). With the present service area, well capacity, and pump operating characteristics, it is not anticipated that any additional steps to those included in the Water Conservation Plan would be implemented to address a minor shortage as defined in the Washington Department of Health publication, Guidelines for the Preparation of Water Shortage Response Plans, June 1988.

**Moderate Supply Deficiency:**

A supply deficiency shall be considered to exist when:

(1) The static water depth, as adjusted for barometric pressure changes in the well falls by more than 24-inches from the average winter reading,

(2) The well supply is unable to meet fully the maximum day demand as indicated by the failure of the storage reservoir to recover to the "full" mark over a three day period, or

(3) The County declares the area to be under the influence of a prolonged drought and requests stringent water conservation measures.

The response to a supply deficiency shall be to implement a 2-stage water conservation program as outlined below. The Stage-1 program is assumed to be in place as part of an ongoing Water Conservation Program [when fully implemented in the future].

**Severe Operating Emergency:**

An operational emergency shall be defined by:

a) Multiple well pump failure, multiple booster pump failure, other major component failure, or

b) An extended period without availability of electrical power, or

c) The depletion of stored water by more than 60 percent by high water use, water main break, or other occurrence.

The response to an operating emergency shall be to implement a Stage-3 water conservation program as outlined below. Portions or all of a Stage-3 water conservation program may be implemented if a Stage-2 program is ineffective.

## STAGE-2 WATER CONSERVATION PROGRAM

1) Restrict lawn sprinkling and car washing to a maximum of one day per week. Special allowance may be made for new lawns or landscaping such as twice per week watering. Restrict lawn watering to early morning or late evening. If the duration of the supply deficiency is expected to be only a few days, ban lawn watering and car washing for a fixed period.

2) Restrict water main flushing to emergency purposes, e.g. a water quality problem.

3) Monitor lawn watering to prevent wastage, e.g. runoff into the street. Monitor use of automatic lawn sprinkler systems to ensure once per week operation and minimum application time.

4) Perform special water audit to detect system leaks.

5) Perform a cursory water use inspection of customer premises to determine if water is being wasted. Inspection may be initiated in response to the complaints of other customers about water wastage. Inspection may be limited to conversation with the homeowner about water use and conservation practices.

6) If a prolonged period of water shortage is anticipated or encountered, institute a temporary water rate surcharge to encourage conservation.

## STAGE-3 WATER CONSERVATION PROGRAM

1) Ban all water use not required for public health: the ban would include all lawn sprinkling and car washing.

2) Suspend all water main flushing.

3) Suspend all filling of swimming pools, i.e., use of make-up water.

4) Reduce system pressure by adjusting booster pump on and off settings, and pressure regulating valve settings.

5) Perform a water use inspection of all customers to determine if water is being wasted. Inspection should be based on conversation with the resident and an observation of outdoor water use.

**Public Notification:**

Notification of the implementation of a Stage-2 Water Conservation Program shall be by mail. The letter shall include an explanation of the reason for the program, the anticipated duration of the program, and a list of conservation actions.

Notification of a Stage-3 Water Conservation Program shall be first by telephone or door-to-door contact with residents, followed by a hand-delivered or mailed letter that includes an explanation of the reason for the program, the anticipated duration of the program, a list of conservation actions, and the fine for wastage.

**Enforcement:**

Enforcement of the Stage-2 Water Conservation Program will be primarily through an appeal for voluntary compliance.

Enforcement of a Stage-3 Water Conservation Program will first be through an appeal for voluntary compliance, then through shut-off of the service. The decision to shut off service should consider the need to protect the system from potential contamination by preventing loss of water system pressure resulting from supply inadequacy.

# Appendix N

# Cross Connection Control Program

# CROSS CONNECTION CONTROL PROGRAM

## Table of Contents

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D. REQUIRED ELEMENTS OF PROGRAM ..... Page 1
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F. PROGRAM SCHEDULES ..... Page 8
G. PROGRAM REFERENCE DOCUMENTS ..... Page 8

## Attachments

Resolution – Cross Connection Control

Application for Water Service

Hazard Assessment Forms
- Water Use Questionnaire – Residential Customers
- Survey Report – Commercial Customers

Record Forms
- BPA Test Report (from PNWS AWWA Manual)
- BPA File Record (sample spreadsheet)
- Backflow Incident Report (from PNWS AWWA Manual)

WA DOH List of Approved Assemblies (list available from WA DOH or CCS)

BPA Installation – Standard Plans (see Water System Plan standard drawings)
- W-10 Service Connections - Residential
- W-11 Service Connections – Commercial/Dual Residential
- W-12 Separation of Service Connections (with sewer)
- W-13 Service Connection – RPBA
- W-14 ¾" & 1" Dual Service Connection with RPBA
- W-15 Service Connection / Lawn Irrigation - DCVA
- W-16 4" to 8" DCDA
- W-17 Fire Hydrant Use – Construction Water
- W-18 General Cross Connection Control Requirements

Backflow Incident Response Plan (PNWS-AWWA form and WA DOH form)

Inventory of Assemblies (sample spreadsheet)

WA DOH Annual Summary Report forms (when available from WA DOH)

Sample Education Brochures (sample PNWS-AWWA brochures)

# CROSS CONNECTION CONTROL PROGRAM

## A. OVERVIEW

The cross connection control program was prepared for a Group A public water system. The program is based on premises isolation for all non-single family residential customers and all single-family residential customers with special plumbing (e.g., lawn irrigation systems). This program is based on the public water system's installation and ownership of all backflow prevention assemblies relied upon to protect its distribution system.

## B. REQUIREMENTS FOR PROGRAM

The *Skagit County Water District No. 1*, hereinafter referred to as the Purveyor, has the responsibility to protect public water systems from contamination due to cross connections. A cross connection may be defined as "Any actual or potential physical connection between a potable water line and any pipe, vessel, or machine that contains or has a probability of containing a non-potable gas or liquid, such that it is possible for a non-potable gas or liquid to enter the potable water system by backflow".

## C. PROGRAM OBJECTIVES

The objectives of the cross connection control program are to:

1. Reasonably reduce the risk of contamination of the public water distribution system, and

2. Reasonably reduce the Purveyor's exposure to legal liability arising from the backflow of any contaminant originating from the customer's plumbing system and then supplied to other customers.

## D. REQUIRED ELEMENTS OF PROGRAM

The following are excerpts from the Washington Administrative Code (WAC) 246-290-490:

Element 1: The purveyor shall adopt a local ordinance, resolution, code, bylaw, or other written legal instrument that:

a) Establishes the purveyor's legal authority to implement a cross-connection control program;

b) Describes the operating policies and technical provisions of the purveyor's cross-connection control program;

c) Describes the corrective actions used to ensure that consumers comply with the purveyor's cross-connection control requirements.

Element 2: The purveyor shall develop and implement procedures and schedules for evaluating new and existing service connections to assess the degree of hazard posed by the consumer's premises to the purveyor's distribution system and notify the consumer within a reasonable time frame of the hazard evaluation results. At minimum, the program shall meet the following:

a) For new connections made on or after the effective date of these regulations, procedures shall ensure that an initial evaluation is conducted before service is provided;

b) For existing connections made prior to the effective date of these regulations, procedures shall ensure that an initial evaluation is conducted in accordance with a schedule acceptable to the department {WA DOH}; and

c) For all service connections, once an initial evaluation has been conducted, procedures shall ensure that periodic reevaluations are conducted in accordance with a schedule acceptable to the department and whenever there is a change in the use of the premises.

Element 3: The purveyor shall develop and implement procedures and schedules for ensuring that:

a) Cross-connections are eliminated whenever possible;

b) When cross-connections cannot be eliminated, they are controlled by installation of approved backflow preventers commensurate with the degree of hazard; and

c) Approved backflow preventers are installed in accordance with the requirements of subsection (6) of this section {of WAC 246-290}

Element 4: The purveyor shall ensure that personnel, including at least one person certified as a CCS, are provided to develop and implement the cross-connection control program.

Element 5: The purveyor shall develop and implement procedures to ensure that approved backflow preventers are inspected and/or tested (as applicable) in accordance with subsection (7) of this section {of WAC 245-290}.

Element 6: The purveyor shall develop and implement a backflow prevention assembly testing quality control assurance program including, but not limited to documentation of tester certification and test kit calibration, test report contents, and time frames for submitting completed test reports.

Element 7: The purveyor shall develop and implement (when appropriate) procedures for responding to backflow incidents.

Element 8: The purveyor shall include information on cross-connection control in the purveyor's existing program for educating consumers about water system operations. Such a program may include periodic bill inserts, public service announcements, pamphlet distribution, notification of new consumers and consumer confidence reports.

Element 9: The purveyor shall develop and maintain cross connection control records including, but not limited to, the following:

a) A master list of service connections and/or consumer's premises where the purveyor relies upon approved backflow preventers to protect the public water system from contamination, the assessed hazard level of each, and the required backflow preventer(s);

b) Inventory information on:

   i. Approved air gaps installed in lieu of approved assemblies including exact air gap location, assessed degree of hazard, installation date, history of inspections, inspection results, and person conducting inspections;

   ii. Approved backflow assemblies including exact assembly location, assembly description (type, manufacturer, model, size, and serial number), assessed degree of hazard, installation date, history of inspections, tests and repairs, test results, and person performing tests; and

   iii. Approved AVBs used for irrigation system applications including location, description (manufacturer, model, and size), installation date, history of inspections, and person performing inspections.

Element 10: Purveyors who distribute and/or have facilities that receive reclaimed water within their water service area shall meet any additional cross-connection control requirements imposed by the department under a permit issued in accordance with chapter 90.46 RCW.

## E. PROGRAM OPERATION

**Authority** - The attached resolution establishes the authority for the program. The attached service contract referred to in the resolution shall be the primary enforcement authority for all new customers.

For customers supplied prior to the adoption of the attached resolution, an implied service contract allows the Purveyor to protect the distribution system from contamination through a Purveyor installed backflow preventer on a customer's service.

The written and implied contract terms are discussed further hereinafter under the section "Policy".

**Program Administration** - The responsibility for administration rests with the board of directors (e.g., Commissioners), either as a body or to an individual director or employee, hereinafter referred to as the Director.

The administration of the program shall be undertaken or periodically audited by a WA Department of Health certified cross connection control specialist (CCS) employed by the Purveyor. At a minimum, the audit will occur every six years. For systems required to update a water system plan, the audit should be part of water system plan update. When requested, the CCS shall also advise the Director on cross connection control matters.

The current CCS employed by the Purveyor is:

Kelly Wynn, Water/Wastewater Services (contract operator)

**Policy** - The following service policy shall apply to all new and existing customers:

Water services to all non-single family or duplex residential customers, hereinafter referred to as "commercial customers", shall be isolated at the meter by a Purveyor approved double check valve assembly (DCVA) or reduced pressure backflow assembly (RPBA). All customers described in Table 9 of WAC 246-290-490 shall be isolated with a RPBA. All other commercial customers shall be isolated with a DCVA.

Water services to all single family or duplex residential customers, hereafter referred to as "residential customers", shall be isolated at the meter by a Purveyor installed meter check valve (single or dual), except where the customer has special plumbing that increases the risk to the Purveyor's distribution system, such as, but not limited to, the following:

1) Lawn irrigation system
2) Solar heating system
3) Auxiliary source of supply, e.g., well
4) Piping for hobby farming, etc.
5) Residential fire sprinkler system
6) Property containing small boat moorage

All residential customers described in Table 9 of WAC 246-290-490 shall be isolated with a RPBA. All other residential customers with special plumbing as described above, shall be isolated with a DCVA.

For new customers, water shall not be turned on at the meter until the customer complies with the above requirements.

The Purveyor shall install and own all backflow prevention assemblies it relies upon for protection of the public water system. The cost of installation, maintenance, testing and replacement shall be recovered from the customer through specified water rates established by the Purveyor applicable to backflow prevention.

The policy to install and own all backflow prevention assemblies is adopted in part for better quality assurance and quality control, and due to the limited pool of certified backflow assembly testers, to provide a service to the customer.

The Purveyor has no regulatory responsibility or authority over the installation and operation of the customer's plumbing system. The customer is solely responsible for compliance with all applicable regulations, and for prevention of contamination of his plumbing system from sources within his premises. Any action taken by the Purveyor to survey plumbing, inspect or test backflow prevention assemblies, or to install premises isolation (DCVA or RPBA on service) is solely for the purposes of reducing the risk of contamination of the Purveyor's distribution system.

No action by the Purveyor shall be construed by the customer to provide guidance to the customer on the safety or reliability of the plumbing system. Other than the general public education program discussed hereinafter, the Purveyor will provide no advice to the customer on the design and installation of plumbing.

Except for easements containing the Purveyor's distribution system, including meter and backflow prevention assembly, the Purveyor will not undertake work on the customer's premises.

**Cross Connection Surveys** - The procedures for evaluating the backflow prevention requirements for new and existing customers are:

1. For all new commercial services, the customer shall submit with the application for water service an evaluation by a purveyor pre-approved, WA Department of Health certified cross connection control specialist (CCS) of the hazard posed by the proposed plumbing system, with recommendations for the installation at the meter of either a DCVA or RPBA. The Purveyor, at the discretion of the Director, may accept the recommendation or submit the recommendations to a CCS employed by the Purveyor for peer review and concurrence, before acceptance.

2. For all new residential services, the customer shall submit with the application for water service a completed "Water Use Questionnaire", copy attached hereto. If the customer's reply indicate special plumbing, such as a lawn sprinkler system, the customer shall submit an evaluation by a purveyor pre-approved, WA Department of Health certified cross connection control specialist (CCS) of the hazard posed by the proposed special plumbing system, with recommendations for the installation at the meter of either a DCVA or RPBA.

For all existing commercial services, the customer shall be requested to submit within two years an evaluation by a purveyor pre-approved, WA Department of Health certified cross connection control specialist (CCS) of the hazard posed by the proposed plumbing system, with recommendations for the installation at the meter of either a DCVA or RPBA. The Purveyor, at the discretion of the Director, may accept the recommendation or submit the recommendations to a CCS employed by the Purveyor for peer review and concurrence, before acceptance.

For all existing residential services, the customer shall be requested to submit within four months a completed "Water Use Questionnaire". If the customer's reply indicate special plumbing, the customer shall submit an evaluation by a purveyor pre-approved, WA Department of Health certified cross connection control specialist (CCS) of the hazard posed by the proposed special plumbing system, with recommendations for the installation at the meter of either a DCVA or RPBA.

As an alternative to the above requirement for a survey by a customer employed CCS, at the discretion of the Director, the Purveyor may conduct the survey and specify the backflow preventer required to be installed as a condition of service.

For premises not isolated by a RPBA, subsequent cross connection surveys shall follow the procedure for the initial survey noted above. The frequency of subsequent surveys is provided in the "Schedule for Program Implementation and Operation" included hereinafter.

**Testing of Assemblies** - The following requirements apply to all backflow prevention assemblies and air gaps relied upon by the Purveyor to protect its public water system.

The DCVA or RPBA installed on the service for premises isolation shall be inspected and tested by a WA DOH certified backflow assembly tester (BAT) upon installation and at least annually thereafter, after repair, replacement or relocation, and upon the specific request of the Purveyor as a spot quality assurance check.

The BAT shall be an employee of the Purveyor or a contractor employed by the Purveyor.

All assemblies shall be test in accordance with WAC 246-290-490. In addition, the DCVA, DCDA, RPBA and RPDA, shall be tested in accordance with the test performance criteria outlined in Chapter 8 "Assembly Test Procedures" in the PNWS-AWWA CROSS CONNECTION CONTROL MANUAL, Sixth Edition, 1995.

The Purveyor's test report, copy attached hereto, shall be completed by the BAT and retained by the Purveyor for at least five years.

**Quality Assurance** - The following requirements apply to all backflow prevention assemblies and air gaps relied upon by the Purveyor to protect its public water system.

The test report forms submitted by the BAT shall be reviewed upon receipt by the Director, and periodically by a CCS employed by the Purveyor to audit the cross connection control program. Test reports should be reviewed by the CCS at least annually.

The equipment used to test assemblies shall be checked for calibration annually. A report on the verification of the calibration of test equipment shall be retained for five years.

**Approved Backflow Assemblies** - The Purveyor shall rely upon the Washington Department of Health's published list of "Approved" backflow prevention assemblies. This list shall be obtained from the State of Washington annually.

**Records** - The Director shall maintain copies of all records, including but not limited to, correspondence, survey results, and backflow assembly test reports. The record form "Record of Backflow Prevention Assemblies" (Form B-1), included herewith, shall be used to record the location of all backflow prevention assemblies required by the Purveyor.

**List of Certified Testers** - The certified backflow assembly testers (BAT) employed by the Purveyor shall be currently certified by the WA Department of Health.

**Coordination with Plumbing Authority** - A copy of this cross connection control program is provided to Skagit County Plumbing Inspector, hereinafter referred to as the local administrative authority, via a copy of the Purveyor's water system plan submitted to the Skagit County Health Department.

The Director shall provide information to the local administrative authority in a timely manner of:

1. Any requirement imposed on a residential customer for the installation of a DCVA or RPBA on the service, with a description of the cross-connection hazard identified,

2. Any upgrade of the premises isolation from a DCVA to a RPBA,

3. Any action taken to discontinue water supply, and

4. Any backflow incident.

The Purveyor's survey of a customer's premises, whether by a representative of the Purveyor or through the evaluation of a questionnaire completed by the customer, is for the sole purpose of establishing the Purveyor's minimum requirements for the protection of the public water supply system, commensurate with the Purveyor's assessment of the degree of hazard. It shall not be assumed by the customer or any regulatory agencies that the Purveyor's survey, requirements for the installation of backflow prevention assemblies, lack of requirements for the installation of backflow prevention assemblies, or other actions by Purveyor personnel or agent constitutes an approval of the customer's plumbing system, or an assurance to the customer or any regulatory agency, of the absence of cross connections therein.

**Backflow Incident Response** - The Purveyor's emergency procedures (cross connection control section attached hereto) include a backflow incident response plan. The response plan is supplemented by the PNWS-AWWA BACKFLOW INCIDENT INVESTIGATION PROCEDURES, First Edition, 1996.

**Public Education** - The public education program for the Purveyor shall consist mainly of the distribution with water bills of information brochures describing the cross connection hazards in homes and the recommended devices that should be installed by the homeowner to reduce the hazard. The education program emphasizes the responsibility of the customer in preventing the contamination of his water supply. The information brochures may be obtained from Pacific Northwest Section, American Water Works Association, P. O. Box 19581, Portland, Oregon, 97280, telephone 877-767-2992 (toll free), other backflow prevention associations and other water utilities.

The information brochure on thermal expansion shall be included as part of the education program. This information brochure shall be given to a customer prior to the Purveyor's installation of a backflow prevention assembly.

In addition, all customers shall be notified that services have a check valve feature, either as a backflow assembly or a meter check, or will have one installed as part of routine meter maintenance, and that the customer should take all necessary steps to protect its plumbing from thermal expansion damage.

Information brochures shall be periodically distributed to all customers; the period between distributions of a brochure on the topic of cross connection control shall not exceed three years.

Copies of all of the brochures distributed by the Purveyor within the last six years shall be provided to all new customers at the time the new customer signs a service agreement. Additional copies will be provided to customers upon request.

**Installation Standards** - All DCVA and RPBA on the customer's service shall be installed in accordance with the recommendations outlined in the PNWS-AWWA CROSS CONNECTION CONTROL MANUAL, Sixth Edition, 1995, and in the Purveyor's "standard detail" drawings.

## F. PROGRAM SCHEDULE

The table on the following page shows the schedule for program implementation and operation.

## G. PROGRAM REFERENCE DOCUMENTS

The following publications shall be utilized for the operation of the program:

PNWS-AWWA CROSS CONNECTION CONTROL MANUAL, Sixth Edition, 1995, or latest edition thereof.

PNWS-AWWA BACKFLOW INCIDENT INVESTIGATION PROCEDURES, First Edition, 1996, or latest edition thereof.

WA DOH CROSS-CONNECTION CONTROL GUIDANCE MANUAL FOR SMALL WATER SYSTEMS, 2000, or latest edition thereof.

## SCHEDULE FOR PROGRAM IMPLEMENTATION AND OPERATION

| TASK | SCHEDULE |
|---|---|
| Adoption of policy and administrative authority | Completed with WSP |
| Assess purveyor's system hazards (e.g., air valves) | With system installation |
| BPAs installed in water distribution system | With system installation |
| New customer hazard assessment | Upon application |
| BPAs installed on new customers | Before service provided |
| Existing customer hazard assessment:<br>Single family – questionnaire<br>Commercial – survey | 2004 |
| Notification of assessment:<br>High hazard (table 9)<br>All others | Within 3 months of assessment |
| BPAs installed on existing customers:<br>High hazard (table 9)<br>Commercial<br>Residential<br>Commercial/residential fire systems | Within 6 months of assessment |
| Re-assessment of hazard:<br>Commercial<br>Residential | Every 2 years<br>Every 2 years |
| Distribution of education brochures | July each year |
| Annual BPA testing notification | March each year |
| CCS review of program | April each year |

## CONDITIONS FOR PROVIDING SERVICE:

Water service is provided based on the following terms and limitations:

1) The customer agrees to take all measures necessary to prevent the contamination of the plumbing system within his premises and the Purveyor's distribution system that may occur from backflow through a cross connection. These measures shall include the prevention of backflow under any back pressure or backsiphonage condition, including the disruption of supply from the Purveyor's system that may occur by reason of routine system maintenance or during emergency conditions, such as a water main break.

2) The customer agrees to install, operate and maintain at all times his plumbing system in compliance with the current edition of the Plumbing Code having jurisdiction as it pertains to the prevention of contamination, and protection from thermal expansion due to a closed system that could occur with the present or future installation of backflow preventers on the Purveyor's service pipe.

3) For cross connection control or other public health related surveys, the customer agrees to provide free access for the employees or agents of the Purveyor to all parts of the premises during reasonable working hours of the day for routine surveys, and at all times during emergencies.

Where agreement for free access for the purveyor's survey is denied, water service will only be supplied though a Purveyor installed and maintained reduced pressure backflow assembly (RPBA).

4) The customer agrees to bear all costs for the installation, testing, repair, maintenance and replacement of the RPBA or DCVA or derivative thereof installed to protect the Purveyor's distribution system through the installation fee, monthly meter fees and other charges established by the Purveyor. The failure of the customer to pay these fees and charges may result in termination of service in accordance with the Purveyor's water billing policies.

5) At the time of application for service, if required by the Purveyor, the customer agrees to submit plumbing plans and/or a cross connection control survey of the premises by a Purveyor approved and Washington Department of Health certified Cross Connection Control Specialist (CCS). The survey shall assess the cross connection hazards and list the backflow prevention provided within the premises. The results of the survey shall be submitted prior to the Purveyor turning on water service to a new customer. The cost of the survey shall be borne by the customer.

6) For classes of customers other than single family residential, when required by the Purveyor, the customer agrees to submit a cross connection control re-survey of the premises by the persons described above. The Purveyor may require the re-survey to be performed in response to changes in customer's plumbing, or performed periodically (annual or less frequent) where the Purveyor considers the customer's plumbing system to be complex or subject to frequent changes in water use. The cost

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7) Within 30 days of a request by the Purveyor, a residential customer shall agree to complete and submit to the Purveyor a "Water Use Questionnaire" for the purpose of surveying the health hazard posed by the customer's plumbing system on the Purveyor's distribution system. Further, the residential customer agrees to provide with 30 days of a request by the Purveyor a cross connection control survey of the premises by a Purveyor approved and Washington Department of Health certified Cross Connection Control Specialist (CCS).

8) The customer agrees to obtain the prior approval from the Purveyor for all changes in water use, and alterations and additions to the plumbing system, and shall comply with any additional requirements imposed by the Purveyor for cross connection control.

9) The customer agrees to immediately notify the Purveyor and the local public health inspection jurisdiction of any backflow incident occurring within the premises, (i.e., entry into the potable water of any contaminant or pollutant) and shall cooperate fully with the Purveyor to determine the reason for the incident.

10) The customer acknowledges the right of the Purveyor to discontinue water supply within 72 hours of giving notice, or a lesser period of time if required to protect the public health, if the customers fails to cooperate with the Purveyor in the survey of premises, in the installation, maintenance, repair, inspection or testing of backflow prevention assemblies or air gaps required by the Purveyor, or in the Purveyor's effort to contain a contaminant or pollutant that is detected in the customer's system.

Without limiting the generality of the foregoing, in lieu of discontinuing water service the Purveyor may install a reduced pressure backflow assembly (RPBA) on its service pipe to provide premises isolation

11) The customer agrees to indemnify and hold harmless the Purveyor for all contamination of the customer's plumbing system or the Purveyor's distribution system that results from an unprotected or inadequately protected cross connection within his premises. This indemnification shall pertain to all backflow conditions that may arise from the Purveyor's suspension of water supply or reduction of water pressure, recognizing that the air gap separation otherwise required would require the customer to provide adequate facilities to collect, store and pump water for his premises.

12) The customer agrees that, in the event legal action is required and commenced between the Purveyor and the customer to enforce the terms and conditions herein, the substantially prevailing party shall be entitled to reimbursement of all its costs and expenses including but not limited to reasonable attorney's fees as determined by the Court.

13) The customer acknowledges that the Purveyor's survey of a customer's premises is for the sole purpose of establishing the Purveyor's minimum requirements for the protection of the public water supply system, commensurate with the Purveyor's assessment of the degree of hazard.

It shall not be assumed by the customer or any regulatory agency that the Purveyor's survey, requirements for the installation of backflow prevention assemblies, lack of requirements for the installation of backflow prevention assemblies, or other actions by Purveyor personnel constitutes an approval of the customer's plumbing system, or an assurance to the customer of the absence of cross connections therein.

14) The customer acknowledges the right of the Purveyor, in keeping with changes to State regulations, industry standards, or the Purveyor's risk management policies, to impose retroactive requirements for additional cross connection control measures.

The Purveyor shall record the customer's agreement to the above terms for service on an "Application for Water Service", "Application for Change of Water Service" or other such form prepared by the Purveyor and signed by the customer.

The definition of technical terms given in the "Cross Connection Control Manual, Accepted Procedures and Practice", Sixth Edition, December 1995 published by the Pacific Northwest Section, American Water Works Association, or latest edition thereof, shall apply herein.

## APPLICATION FOR WATER SERVICE

OWNER'S NAME: _____ TELEPHONE: _____
MAILING ADDRESS: _____
LOCATION ADDRESS: _____
LEGAL DESCRIPTION: _____

The undersigned applicant hereby applies for a water connection to the above-described property. The applicant is the owner of the described property or the authorized agent of the owner. By signing this application, the property owner agrees, as a condition of the Skagit County Water District No. 1, hereinafter referred to as the Purveyor, providing and continuing service to the above described property, to comply with all provisions of the attached Resolution or latest revision thereof, and other such attached rules and regulations now existing or which may be established from time to time governing the Purveyor's water system. The property owner specifically agrees:

a) To install and maintain at all times his plumbing system in compliance with the most current edition of the Skagit County Plumbing Code as it pertains to the prevention of potable water system contamination, prevention of pressure surges and thermal expansion in his water piping (for thermal expansion, it shall be assumed that a check valve is installed by the Purveyor on the water service pipe);

b) Not to make a claim against the Purveyor or its agents or employees for damages and/or loss of production, sales or service, in case of water pressure variations, or the disruption of the water supply for water system repair, routine maintenance, power outages, and other conditions normally expected in the operation of a water system.

c) To pay his water billing within the period established in the Purveyor's service policies.

After thirty (30) days of the Purveyor mailing a written notice to the property owner of his breach of this agreement, the Purveyor may terminate water service.

In the event legal action is required and commenced between the parties to this agreement to enforce the terms and conditions herein, the substantially prevailing party shall be entitled to reimbursement of all its costs and expenses including but not limited to reasonable attorney's fees as determined by the Court.

_____ _____
Applicant's Signature Date

Attachments received:

Water rates & charges
Water service connection information
Water Service Policy

# CROSS CONNECTION CONTROL
# SURVEY REPORT - RESIDENTIAL QUESTIONAIRE

TO: _____ Date: _____
_____
_____

The attached brochure describes a "cross connection" and the potential for contamination of the water system through unprotected cross connections. The purpose of this questionnaire is to help determine if you have any special plumbing or activities that may pose an increased risk of contamination of the water distribution system. Please respond by checking the appropriate box below:

| YES | NO | |
|---|---|---|
| ☐ | ☐ | Underground lawn sprinkler system |
| ☐ | ☐ | Water treatment system (e.g., water softener) |
| ☐ | ☐ | Solar heating system |
| ☐ | ☐ | Residential fire sprinkler system |
| ☐ | ☐ | Private well, including those not connected to your plumbing system |
| ☐ | ☐ | Grey water system or cistern for irrigation water |
| ☐ | ☐ | Piping for livestock watering |
| ☐ | ☐ | Water supply to dock or small boat moorage |
| ☐ | ☐ | Grinder pump and/or off-site septic field |

BY: _____ Date: _____
Resident's signature

Please return the completed questionnaire to the address on the letterhead.

If you have checked any of the above, we will contact you to request further information. Your cooperation in completing this questionnaire is most appreciated.

If you have any questions, please contact the undersigned.

# CROSS CONNECTION CONTROL
# SURVEY REPORT – COMMERCIAL CUSTOMERS

Date of Survey: _____

## CUSTOMER INFORMATION

Premises name: _____, Telephone: _____

Address: _____

_____ ZIP: _____

Contact person: _____ Title: _____

Description of customer: _____

Description of water use: _____

Water Service and Backflow Prevention Assembly (BPA) Size / Type:

| | Service Size | Meter Size | BPA Size | BPA Type |
|---|---|---|---|---|
| Domestic | | | | |
| Fire line | | | | |
| Irrigation | | | | |
| Other | | | | |

## CROSS CONNECTION CONTROL SPECIALIST (CCS) INFORMATION

Name: _____, Telephone: _____

Company's name: _____

Address: _____

_____ ZIP: _____

WA DOH Certif. #: _____ Year certified: _____

CROSS CONNECTION CONTROL
SURVEY REPORT - COMMERCIAL CUSTOMERS

**SURVEY RESULTS**

| Item | Location & Description of Cross Connection | Backflow Prevention Provided/Required |
|---|---|---|
| | | |

Attach additional sheets if needed

CROSS CONNECTION CONTROL
SURVEY REPORT - COMMERCIAL CUSTOMERS

**SURVEYOR'S COMMENTS**

**SURVEYOR'S RECOMMENDATIONS**

I certify that this survey accurately reflects the overall risk posed to the Purveyor's distribution system by the customer's plumbing system and that the backflow prevention assembly is properly installed. Based on the above survey, I find that (check one):

__ The present _____ (RPBA or DCVA) is commensurate with the degree of hazard.

__ The premises isolation assembly or assemblies should be changed for the reasons stated under "Surveyor's Comments", above.

_____ _____
Signature of CCS Date

This certifies receipt of this completed survey report and its submittal to the Harbor Hills Water System.

_____ _____
Signature of the Customer or authorized agent Date

It shall not be assumed by the customer or any regulatory agencies that this requirement by the Purveyor for this survey, or for the installation of a specific backflow prevention assembly on a service pipe constitutes an approval of the customer's plumbing system, compliance with the customer's plumbing system with the plumbing code, or an assurance to the customer of the absence of cross connections therein.

The completed survey report shall be first signed by the CCS conducting the survey, then counter-signed by the owner of the premises surveyed or his agent.

The survey shall include the inspection of the assembly installed on a service for premises isolation to verify its correct installation and status as a currently listed Approved assembly by the WA DOH.

SKAGIT Co. WATER DISTRICT No. 1
P. O. Box 1526
Mt. Vernon, WA 9273

# BACKFLOW ASSEMBLY TEST / AG INSPECTION REPORT

| | |
|---|---|
| Name of Premise: | |
| Premise Address: | |
| Location of Assembly: | |
| Type of Hazard Isolated: | |
| Assembly Size: (inches) | Assembly Type: |
| Make: | Model: |
| Serial No.: | Line Pressure: (psi) |
| RPBA / RPDA / DCVA / DCDA Horizontal? | yes___, no___ |
| Adequate Freeze Protection and/or Drainage? | yes___, no___ |
| Date of test or Date of retest after repairs: | |
| Tester's Name (print): | |
| Certification No.: | Issue Date: |
| Company Name: | |
| Company Address:<br>Company Telephone: | |
| Make/model of test equipment: | |
| Test procedures followed: | |
| Check of test equipment calibration accuracy:<br>Date: | By: |

Assembly test procedures must comply with Chapter 8 in the PNWS-AWWA "CROSS CONNECTION CONTROL MANUAL", Sixth Edition **and** WAC 246-290-490.

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**RPBA/RPBA**

| | | |
|---|---|---|
| Relief Valve<br>[ > 2.0 psid ] | Dripped at:<br>or failed to open?<br>Continued to open? | __ __ . __ psi<br>____ (check)<br>yes ____, no ____ |
| Check Valve #1<br>[ >1.0 psid ] | Pressure drop:<br>Valve Tight? | __ __ . __ psi<br>yes ____, no ____ |
| Check Valve #1<br>Buffer [ >3.0 psi ] minus relief valve psid | C V #1 pressure drop | __ __ . __ psi |
| Check Valve #2<br>[ >1.0 psid ] | Pressure drop:<br>Valve Tight,<br>Flow direction?<br>Backpressure? | __ __ . __ psi<br><br>yes ____, no ____<br>yes ____, no ____ |
| Air Gap distance adequate? | | yes ____, no ____ |
| Test Cock # 4 opened, meter moved?<br>Detector Meter Reading: _____ | | yes ____, no ____ |

**DCVA/DCDA**

| | | |
|---|---|---|
| Check Valve # 2<br>[>1.0 psid ] | Pressure drop:<br>Valve Tight<br>Flow direction? | __ __ . __ psi<br><br>yes ____, no ____ |
| Check Valve # 1<br>[ >1.0 psid ] | Pressure drop:<br>Valve Tight<br>Flow direction? | __ __ . __ psi<br><br>yes ____, no ____ |
| Test Cock # 4 opened, metered moved?<br>Detector Meter Reading: _____ | | yes ____, no ____ |

**PVBA/SVBA**

| | | |
|---|---|---|
| Check Valve # 1<br>[ >1.0 psid ] | Pressure drop:<br>Valve Tight? | __ __ . __ psi<br>yes ____, no ____ |
| Air Inlet<br>[ >1.0 psid ] | Opened at:<br>Air Inlet opened? | __ __ . __ psi<br>yes ____, no ____ |

This certifies that the above test results accurately reflect the performance of the assembly and/or condition of the air gap at the time of the test / inspection.

_____ _____
Signature of Tester Date

This certifies receipt of this completed test report and its submittal to Skagit County Water District No. 1, as required by the conditions for continuing to supply water service..

_____ _____
Signature of Owner (customer) or authorized agent Date

## INVENTORY OF BACKFLOW ASSEMBLIES / RECORD OF TESTS

For year 2005

| Item | | No. of Customers within Category | No. of Assemblies: Premise Isolation | Relied upon Inside Premises | Others Inside Premises ** |
|---|---|---|---|---|---|
| 1a All categories - high health hazard per WAC 246-290-490 Table 9 | | | | | |
| Agricultural | 1 | | | | |
| Beverage bottling plants (e.g., brewery) | 2 | | | | |
| Car washes | 3 | | | | |
| Commercial laundries/dry cleaners | 4 | | | | |
| Premises with reclaimed water | 5 | | | | |
| Film processing | 6 | | | | |
| Food processing | 7 | | | | |
| Hospitals, medical clinics, etc. | 8 | | | | |
| Laboratories (commercial) | 9 | | | | |
| Metal plating, petroleum & chemical plants | 10 | | | | |
| Piers and docks | 11 | | | | |
| Wastewater lift stations | 12 | | | | |
| Wastewater treatment plants | 13 | | | | |
| Premises with unapproved auxiliary supply* | 14 | 42 | 42 | | |
| Exemptions granted to Table 9 isolation | 15 | | | | |
| Sub-total | | 42 | 42 | | |
| 2a Commercial, industrial & institutional categories other than above | 16 | 2 | 1 | | |
| 3a Single-family & duplex residential category other than above | 17 | 70 | 0 | | |
| 4a Fire lines | 18 | 0 | 0 | | |
| **TOTAL NUMBER OF CUSTOMERS** | 19 | **114** | **43** | | |

| Item | | No. of Assemblies by Type / No. of Tests: Approved Air Gap | RPBA or RPDA | DCVA or DCDA | PVBA or SVBA |
|---|---|---|---|---|---|
| 1b Premises isolation, table 9 (item 3,above) | | | | | |
| No. of assemblies | 20 | | 42 | | |
| No. of test reports (initial report counted) | 21 | | 42 | | |
| No. of assemblies failing first test | 22 | | 7 | | |
| 2b Commercial, industrial & institutional categories 3b and single-family & duplex residential categories | | | | | |
| No. of assemblies | 23 | | 1 | | |
| No. of test reports (initial report counted) | 24 | | 1 | | |
| No. of assemblies failing first test | 25 | | 0 | | |
| 4a Fire lines | | | | | |
| No. of assemblies | 26 | | | | |
| No. of test reports (initial report counted) | 27 | | | | |
| No. of assemblies failing first test | 28 | | | | |
| **TOTAL NUMBER OF ASSEMBLIES** | 29 | | **43** | | |
| **TOTAL NUMBER OF BPA TESTS** | 30 | | **43** | | |
| **NUMBER OF ASSEMBLIES FAILING** | 31 | | **7** | | |
| **PERCENT ASSEMBLIES FAILING** | 32 | | **16%** | | |

Notes * Includes customers with unconnected unapproved supplies per PNWS-AWWA Manual
** Assemblies not relied upon by purveyor, but data maintained for LAA (plumbing inspector)

## ASSEMBLY DATABASE

Summary pages (not all of spreadsheet information displayed).

| CUSTOMER INFORMATION | ASSEMBLY LOCATION | HAZARD ASSESSMENT | ASSEMBLY INFORMATION | TESTER INFORMATION | TEST RESULTS | | 2003 | 2002 |
|---|---|---|---|---|---|---|---|---|
| | | | Type: | Name: | Date of test: | | | |
| | | | Make: | Company: | RP drip point | [psi] | | |
| | | | Model: | Address: | RP Openned | [Y/N] | | |
| | | | Ser. # | City: | #1 CV Drop: | [psi] | | |
| | | | Size: | Tel. #: | #2 CV Drop: | [psi] | | |
| | | | | BAT #: | Buffer: | [psi] | | |
| | | | | CCS # | Air Inlet: | [psi] | | |
| | | | | | Air Gap: | [in.] | | |
| | | | | | Detector meter | [moved} | | |
| | | | | | CCS Survey | [Y/N] | | |
| Code 1 | Code 1 | Code 1 | Code 1 | | Pass/Fail: | [Y/N] | | |
| | | | Type: | Name: | Date of test: | | | |
| | | | Make: | Company: | RP drip point | [psi] | | |
| | | | Model: | Address: | RP Openned | [Y/N] | | |
| | | | Ser. # | City: | #1 CV Drop: | [psi] | | |
| | | | Size: | Tel. #: | #2 CV Drop: | [psi] | | |
| | | | | BAT #: | Buffer: | [psi] | | |
| | | | | CCS # | Air Inlet: | [psi] | | |
| | | | | | Air Gap: | [in.] | | |
| | | | | | Detector meter | [moved} | | |
| | | | | | CCS Survey | [Y/N] | | |
| Code 1 | Code 1 | Code 1 | Code 1 | | Pass/Fail: | [Y/N] | | |
| | | | Type: | Name: | Date of test: | | | |
| | | | Make: | Company: | RP drip point | [psi] | | |
| | | | Model: | Address: | RP Openned | [Y/N] | | |
| | | | Ser. # | City: | #1 CV Drop: | [psi] | | |
| | | | Size: | Tel. #: | #2 CV Drop: | [psi] | | |
| | | | | BAT #: | Buffer: | [psi] | | |
| | | | | CCS # | Air Inlet: | [psi] | | |
| | | | | | Air Gap: | [in.] | | |
| | | | | | Detector meter | [moved} | | |
| | | | | | CCS Survey | [Y/N] | | |
| Code 1 | Code 1 | Code 1 | Code 1 | | Pass/Fail: | [Y/N] | | |

SKAGIT Co. WATER DISTRICT No. 1
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# BACKFLOW INCIDENT REPORT FORM

This form is based on the Backflow Incident Report Form provided in the PNWS AWWA *Cross Connection Control Manual*, Sixth Edition.

WAC 246-290-490 states that the purveyor shall notify the WA Department of Health, local administrative authority, and local health jurisdiction as soon as possible, but no later than the end of the next business day, when a backflow incident is known by the purveyor to have (i) Contaminated the public water system, or (ii) Occurred within the premises of a consumer served by the purveyor. The purveyor shall document details of backflow incidents on a form acceptable to the WA DOH.

Reporting Agency: _____ Report Date: _____

Reported By: _____ Title: _____

Mail Address: _____ City: _____

State: _____ Zip Code: _____ Telephone: _____

Date of Incident: _____ Time of Occurrence: _____

General Location (Street, etc.): _____

Backflow Originated From:

Name of Premise: _____

Street Address: _____ City: _____

Contact Person: _____ Telephone: _____

Type of Business: _____

Description of Contaminants:
(Attach Chemical Analysis or MSDS if available)

_____

_____

Distribution of Contaminants:

Contained within customer's premise: Yes: _____ No: _____

Number of persons affected: _____

Effect of Contamination:

Illness Reported : _____

Physical irritation reported: _____

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**Backflow Incident Report Form**
Page 2

Cross Connection Source of Contaminant
(boiler, chemical pump, irrigation system, etc.)

_____

_____

Cause of Backflow:
(main break, fire flow, etc.)

_____

_____

Corrective Action Taken to Restore Water Quality:
(main flushing, disinfection, etc.)

_____

_____

Corrective Action Ordered to Eliminate or Protect from Cross Connection:
(type of backflow preventer, location, etc.)

_____

_____

Previous Cross Connection Survey of Premise:

Date: _____ By: _____

Types of Backflow Preventer Isolating Premise:

RPBA: _____ RPDA: _____ DCVA: _____ DCDA: _____ PVBA: _____ SVBA: _____

AVB: _____ Air Gap: _____ None: _____ Other Type: _____

Date of Latest Test of Assembly: _____

Notification of State [Provincial] Health Department:

Date: _____ Time: _____ Person Notified: _____

Attach sheets with additional information, sketches, and/or media information.

Office of Drinking Water

# Cross-Connection Control Program
# BACKFLOW INCIDENT REPORT FORM

*Note: This form is intended to be used for compliance with WAC 246-290-490(8)(g).*

## Part 1: Public Water System (PWS) Information

| PWS ID: | PWS Name: | County: |
|---|---|---|

## Part 2: Backflow Incident Information

### A. Incident Identification

| Incident Date: | Time of Incident: | Incident ID (DOH Use): |
|---|---|---|

### B. Information on Premises where Backflow Originated

| | | | |
|---|---|---|---|
| Name of Premises: | | | Type: |
| Contact Name: | | | Title: |
| Address: | | | Phone: |
| City: | St: WA | Zip: | Email: |
| Type or Description of Premises (Table 9 Type*, if applicable): | | | |
| Most Recent Hazard Evaluation Prior to Incident<br>Date: None ☐ | | | Hazard Level:<br>Premises Isolation Required by PWS?: |
| PWS Relies on *In-premises Protection* for this Service ☐ | | | Type of Backflow Preventer Required: |
| Other Evaluation Information: | | | |

*See WAC 246-290-490(4)(b)(i)

### C. Method of Discovery of Backflow

| | |
|---|---|
| **How was the backflow discovered? (Check all that apply.)** | Direct Observation ☐ Meter Running Backwards ☐ Water Use Decrease ☐<br>Water Quality Monitoring ☐ Disinfectant Residual ☐<br>Water Quality Complaint ☐ Illness Complaint ☐ Result of Investigation ☐<br>Other (Describe): |
| **Incident Reported By** | PWS Personnel ☐ Premises Owner ☐ Backflow Assembly Tester ☐ |

### D. Contaminant Information

| | |
|---|---|
| **Type of Contaminant (check all that apply):** | Microbiological ☐ Chemical ☐ Physical ☐ |
| **Describe (name of organism, chemical, etc.):** | Description (Attach lab analysis or MSDS, if available): |

## E. Extent and Effects of Contamination

| | |
|---|---|
| Extent of contamination: | |
| No. of connections affected: Residential: | Non-Residential: |
| Population affected or at risk: Residential: | Non-Residential: |
| No. of water quality complaints: | Describe water quality complaints: |
| No. of illnesses reported: | Describe illness or irritation (Specific illnesses, if known): |
| Physical irritation cases reported: | |

## Part 3: CCC Information at Backflow Site

### A. Source of Contaminant

| | | |
|---|---|---|
| **Source of contaminant or fixture type (check all that apply):** | Air conditioner/heat exchanger ..... ☐<br>Auxiliary water supply ..... ☐<br>Beverage machine ..... ☐<br>Boiler, hot water system ..... ☐<br>Chemical injector/aspirator ..... ☐<br>Fire protection system ..... ☐<br>Irrigation system (PWS supplied) ..... ☐ | Industrial/commercial process water/fluid..... ☐<br>Medical/dental fixture ..... ☐<br>Reclaimed water system..... ☐<br>Swimming pools, spa ..... ☐<br>Wastewater (sewage) system ..... ☐<br>Other (specify): ..... ☐<br>..... ☐ |

### B. Water System Distribution Main Status in Vicinity of Backflow Incident

| | |
|---|---|
| **Pressurization (check all that apply):** | Gravity ☐ Pump ☐ Emergency generator available ☐<br>Normal pressure at vicinity psi (if range, enter lower end of range) |
| **Pipe material and size:** | Duct. iron ☐ Cast iron ☐ PVC ☐ A/C ☐<br>Other (Specify) Size (Inches) |
| **Main/pressure status at time of incident (check all that apply):** | Normal ☐ Main break ☐ Scheduled water shutoff by PWS ☐<br>Unscheduled/emergency shutoff by PWS ☐ Fire fighting ☐<br>Power outage ☐ Source/plant outage ☐ Other high usage ☐<br>Unknown ☐ Other (Specify)<br>Pressure at time of incident, if known psi |
| **Other information:** | |

### C. Cause of Backflow

| | |
|---|---|
| **Underlying cause of backflow:** | |
| Describe causes and circumstances leading to backflow: | |

## D. Backflow Preventer Installation Status at Site of Backflow

Note:

- If the premises identified in Part 2 A was protected by a premises isolation backflow preventer, AND the contaminant entered the distribution system, complete the table for the premises isolation preventer.
- In all other cases, complete the table for the backflow preventer installed at the fixture or for in-premises protection.

| | |
|---|---|
| **Installation status (check one box):** | None installed ☐ Installed for:<br>Type installed (if any): |
| **Installation condition (check all that apply):** | N/A (None installed) ☐ Approved correct assembly properly installed ☐<br>Not commensurate with degree of hazard ☐ Improperly installed ☐<br>Unapproved assembly ☐ Improperly protected bypass present ☐<br>Not inspected/tested/maintained within last 12 months prior to incident ☐ |
| **Other information on installation condition:** | |

## E. Backflow Preventer Condition at Site of Backflow

| | |
|---|---|
| **Backflow preventer information:** | None installed ☐<br>Make: Model: Size:<br>Serial no.: Date installed:<br>DOH or USC-approved when installed? |
| **Backflow preventer working status *after* backflow incident. Inspection and test information [required by WAC 246-290-490(7)(b)]. Attach test report.** | No backflow preventer installed ☐<br>None performed ☐ Date of test/inspection:<br>Passed test or inspection ☐ Failed test or inspection ☐<br>Did failure allow backflow to occur through preventer?<br>If "yes," please explain: |
| **Preventer failure information, if applicable (check all that apply)** | Fouled Check ☐ Debris ☐ Warped Seat ☐ Weather-related damage ☐ Other |
| **Backflow preventer working status *prior* to backflow incident. Most recent information inspection and test information. Attach test report(s), if available.** | No backflow preventer installed ☐<br>None on record ☐ Date of test/inspection:<br>Passed test or inspection (whether or not repaired) ☐<br>Failed test or inspection, no repairs made ☐<br>Other information: |

## Part 4: Corrective Action

| | |
|---|---|
| **Action taken to restore water quality (check all that apply):** | No action ☐ Flushed/cleaned mains ☐ Flushed/cleaned plumbing ☐<br>Disinfection ☐ Other treatment ☐ Describe:<br>Replaced mains ☐ Replaced plumbing ☐ Other: |
| **Action ordered to correct cross-connection situation (check all that apply): Check if accomplished ☐** | No action ☐ Eliminate cross-connection ☐ Remove by-pass ☐<br>Type of **new** backflow preventer to be installed:<br>To be installed for:<br>Type of **replacement** preventer to be installed:<br>Repair or re-plumb existing preventer ☐ Other: |
| **Required notifications* (check all that apply):** | DOH ☐ Local Health Agency ☐ Local Administrative Authority ☐<br>Issued by end of next business day: |
| **Other notifications (check all that apply):** | Population at risk ☐ Public notification (per DOH regs) ☐<br>Boil Water Advisory ☐ Other (describe): |
| **Other enforcement or corrective actions:** | Describe: |

*These are required in accordance with WAC 246-290-490(8)(f).

## Part 5: Cost of Backflow Incident

| Item | PWS Personnel Hours Expended | Cost to PWS ($) | Cost to Premises Owner ($) |
|---|---|---|---|
| **Investigation** | | | |
| **Restoration of water quality** | | | |
| **Correction of cross-connection situation** | | | |
| **Litigation and/or settlement** | | | |
| **Other not included in above** | | | |

## Part 6: Further Narrative and Comments

Public Water Systems may attach a more extensive report on this incident. Information such as pictures, sketches, newspaper or journal articles, epidemiological reports, water quality analyses, etc., will be greatly appreciated. Information may also be submitted in electronic form.

## Part 7: Form Completion Information

**Note** Form should be completed by a person certified as a Cross-Connection Control Specialist

| | | |
|---|---|---|
| I certify that the information provided in this Backflow Incident Report is complete and accurate to the best of my knowledge. | | |
| CCC Program Mgr Name (print): | | Title: |
| Signature: | CCS. Cert No: | Date: |
| Phone: | E-mail: | |
| I certify that the information provided in this report accurately represents the information available pertaining to this backflow incident. | | |
| PWS Mgr Name (Print): | | Title: |
| Signature: | Op. Cert No: | Date: |

***Send completed form to:***

Washington State Department of Health
Office of Drinking Water – CCC Program Manager
P O Box 47822
Olympia, WA 98504-7822

***By email to:*** terri.Notestine@doh.wa.gov or cccprogram@doh.wa.gov

**Thank you for completing this report.**

**If you have any questions, comments or suggestions regarding this form, please send them to DOH at cccprogram@doh.wa.gov**

## Supplement for Additional Backflow Preventers at Backflow Incident Site

**Note:**
If there are more than one backflow preventer at the backflow incident site, use these tables to enter information for these preventers. See next page for another set of tables.

### D-1. Backflow Preventer Installation Status at Site of Backflow

| | |
|---|---|
| **Description, Location or other identification of backflow preventer** | |
| **Installation status (check one box):** | None installed ☐ Installed for:<br>Type installed (if any): |
| **Installation condition (check all that apply):** | N/A (None installed) ☐ Approved correct assembly properly installed ☐<br>Not commensurate with degree of hazard ☐ Improperly installed ☐<br>Unapproved assembly ☐ Improperly protected bypass present ☐<br>Not inspected/tested/maintained within last 12 months prior to incident ☐ |
| **Other information on installation condition:** | |

### E-1. Backflow Preventer Condition at Site of Backflow

Enter condition information for backflow preventer identified in table D-1

| | |
|---|---|
| **Backflow preventer information:** | None installed ☐<br>Make: Model: Size:<br>Serial no.: Date installed:<br>DOH or USC-approved when installed? |
| **Backflow preventer working status *after* backflow incident. Inspection and test information [required by WAC 246-290-490(7)(b)]. Attach test report.** | No backflow preventer installed ☐<br>None performed ☐ Date of test/inspection:<br>Passed test or inspection ☐ Failed test or inspection ☐<br>Did failure allow backflow to occur through preventer?<br>If "yes," please explain: |
| **Preventer failure information, if applicable (check all that apply)** | Fouled Check ☐ Debris ☐ Warped Seat ☐ Weather-related damage ☐ Other |
| **Backflow preventer working status *prior* to backflow incident. Most recent information inspection and test information. Attach test report(s), if available.** | No backflow preventer installed ☐<br>None on record ☐ Date of test/inspection:<br>Passed test or inspection (whether or not repaired) ☐<br>Failed test or inspection, no repairs made ☐<br>Other information: |

## Supplement for Additional Backflow Preventers at Backflow Incident Site (Continued)

### D-2. Backflow Preventer Installation Status at Site of Backflow

| | |
|---|---|
| **Description, Location or other identification of backflow preventer** | |
| **Installation status (check one box):** | None installed ☐ Installed for:<br>Type installed (if any): |
| **Installation condition (check all that apply):** | N/A (None installed) ☐ Approved correct assembly properly installed ☐<br>Not commensurate with degree of hazard ☐ Improperly installed ☐<br>Unapproved assembly ☐ Improperly protected bypass present ☐<br>Not inspected/tested/maintained within last 12 months prior to incident ☐ |
| **Other information on installation condition:** | |

### E-2. Backflow Preventer Condition at Site of Backflow

Enter condition information for backflow preventer identified in table D-2

| | |
|---|---|
| **Backflow preventer information:** | None installed ☐<br>Make: Model: Size:<br>Serial no.: Date installed:<br>DOH or USC-approved when installed? |
| **Backflow preventer working status *after* backflow incident. Inspection and test information [required by WAC 246-290-490(7)(b)]. Attach test report.** | No backflow preventer installed ☐<br>None performed ☐ Date of test/inspection:<br>Passed test or inspection ☐ Failed test or inspection ☐<br>Did failure allow backflow to occur through preventer?<br>If "yes," please explain: |
| **Preventer failure information, if applicable (check all that apply)** | Fouled Check ☐ Debris ☐ Warped Seat ☐ Weather-related damage ☐ Other |
| **Backflow preventer working status *prior* to backflow incident. Most recent information inspection and test information. Attach test report(s), if available.** | No backflow preventer installed ☐<br>None on record ☐ Date of test/inspection:<br>Passed test or inspection (whether or not repaired) ☐<br>Failed test or inspection, no repairs made ☐<br>Other information: |

# BACKFLOW INCIDENT RESPONSE PLAN
## (supplement to the Emergency Plan)

A. General

This backflow incident response plan is a supplement to the Emergency Plan of the Skagit County Water District No. 1, hereinafter referred to as the Purveyor.

Whenever the initial evaluation of a water quality complaint indicates that a backflow incident has occurred (potable water supply has been contaminated/polluted), may have occurred, or the reason for the complaint can not be explained as a "normal" aesthetic problem, a backflow incident investigation should be immediately initiated. Whenever a water main break or power outage (pumped systems) causes a widespread loss of water pressure (backsiphonage conditions) it is prudent to initiate a check of distribution water quality as a precursor to the need for a backflow incident investigation. It is wise to be conservative when dealing with public health matters.

Within 24 hours of knowledge of any incident of possible contamination of the potable water supply, both in the distribution system and/or in the customer's plumbing system, the state and local county personnel should be notified (see list of emergency telephone numbers at the beginning of the M. & O. Manual).

A backflow incident investigation is often a team effort. The investigation should be made or (initially) lead by the certified Cross Connection Control Specialist employed by the Purveyor. The investigation team should include local health and plumbing inspectors.

General guidance on how to respond to a backflow incident may be obtained from the manual BACKFLOW INCIDENT INVESTIGATION PROCEDURES, First Edition, 1996, published by the Pacific Northwest Section, American Water Works Association, P. O. Box 19581, Portland, Oregon, 97280, telephone (877) 767-2992 (toll free).

B. Short-List of Tasks

The following points are included for initial guidance for dealing with a backflow incident; the above referenced manual BACKFLOW INCIDENT INVESTIGATION PROCEDURES should be consulted as soon as possible.

1) As soon as possible, notify customers not to consume or use water. Start the notification with the customers nearest the assumed source of contamination (usually the customer(s) making the water quality complaint).

   The customer should be informed about the reason for the backflow incident investigation, and the Purveyor's efforts to restore water quality as soon as possible. State that the customer will be informed when he may use water, the need to boil water used for consumption until a satisfactory bacteriological test result is obtained from the lab, etc.

Where a customer cannot be contacted immediately, the Purveyor shall place a written notice on the front door handle, and a follow-up visit will be made to confirm that the customer received notice about the break and possible contamination of the water supply.

2) Give consideration to the distribution system as a potential source of the contaminant (e.g., air valve inlet below ground).

3) Do not start flushing the distribution system until the source of contamination is identified. Flushing may aggravate the backflow situation, and will likely remove the contaminant before a water sample can be collected to fully identify the contaminant.

4) Conduct a house-to-house survey to search for the source of contamination and the extent that the contaminant has spread through the distribution system. A check of water meters may show a return of water (meter running backward).

5) Isolate the portions of the system that are suspected of being contaminated by closing isolating valves; leave one valve open to ensure that positive water pressure is maintained throughout the isolated system.

6) Be sure to notify all affected customers in the isolated area, then the other customers in the system.

7) The public health and plumbing authorities should deal with all customers that may have consumed the contaminant, or had their plumbing systems contaminated.

8) Develop and implement a program for cleaning the contaminated distribution system.

9) For the customer where a cross-connection responsible for the system contamination is located, the Purveyor should discontinue water service until the Purveyor ordered corrective action is completed by the customer.

Identification of the source and type of contaminant, and cleaning of a distribution system could take several days.

Most chemical or physical contaminants can be flushed from the water distribution system or customer's plumbing system with adequate flushing velocity. This may not be the case where scale and corrosion deposits (e.g., tuberculation on old cast iron mains) provides a restriction to obtaining adequate flushing velocity, or a chemical deposit or bacteriological slime (biofilm) on which the chemical contaminant may adhere.

To remove a chemical or physical contaminant, it may be necessary to provide a physical cleaning, using foam swabs (pigs), and/or to alter the form or the chemical contaminant, e.g., through oxidation using chlorination, or addition of detergents.

When adding any chemical (including chlorine) to remove a contaminant, it is essential that the chemistry of the contaminant is fully understood. The wrong chemical reaction could make the contaminant more toxic, more difficult to remove, or both.

Where both a chemical and bacteriological contamination has occurred, disinfection should follow the removal of the chemical contaminant.

Where any bacteriological contamination is suspected, field disinfection should be done. To disinfect water mains using the "slug" or "continuous flow" method, a field unit should be used for chlorine injection, such as a chemical feed - metering or proportioning pump for sodium hypochlorite.

**INVENTORY OF BACKFLOW ASSEMBLIES / RECORD OF TESTS** **For year _____**

| Item | | No. of Customers within Category | No. of Assemblies: Premise Isolation | Relied upon Inside Premises | Others Inside Premises ** |
|---|---|---|---|---|---|
| 1a All categories - high health hazard per WAC 246-290-490 Table 9 | | | | | |
| Agricultural | 1 | | | | |
| Beverage bottling plants (e.g., brewery) | 2 | | | | |
| Car washes | 3 | | | | |
| Commercial laundries/dry cleaners | 4 | | | | |
| Premises with reclaimed water | 5 | | | | |
| Film processing | 6 | | | | |
| Food processing | 7 | | | | |
| Hospitals, medical clinics, etc. | 8 | | | | |
| Laboratories (commercial) | 9 | | | | |
| Metal plating, petroleum & chemical plants | 10 | | | | |
| Piers and docks | 11 | | | | |
| Wastewater lift stations | 12 | | | | |
| Wastewater treatment plants | 13 | | | | |
| Premises with unapproved auxiliary supply* | 14 | | | | |
| Exemptions granted to Table 9 isolation | 15 | | | | |
| Sub-total | | | | | |
| 2a Commercial, industrial & institutional categories other than above | 16 | | | | |
| 3a Single-family & duplex residential category other than above | 17 | | | | |
| 4a Fire lines | 18 | | | | |
| TOTAL NUMBER OF CUSTOMERS | 19 | | | | |

| Item | | No. of Assemblies by Type / No. of Tests: Approved Air Gap | RPBA or RPDA | DCVA or DCDA | PVBA or SVBA |
|---|---|---|---|---|---|
| 1b Premises isolation, table 9 (item 3,above) | | | | | |
| No. of assemblies | 20 | | | | |
| No. of test reports (initial report counted) | 21 | | | | |
| No. of assemblies failing first test | 22 | | | | |
| 2b Commercial, industrial & institutional categories 3b and single-family & duplex residential categories | | | | | |
| No. of assemblies | 23 | | | | |
| No. of test reports (initial report counted) | 24 | | | | |
| No. of assemblies failing first test | 25 | | | | |
| 4a Fire lines | | | | | |
| No. of assemblies | 26 | | | | |
| No. of test reports (initial report counted) | 27 | | | | |
| No. of assemblies failing first test | 28 | | | | |
| TOTAL NUMBER OF ASSEMBLIES | 29 | | | | |
| TOTAL NUMBER OF BPA TESTS | 30 | | | | |
| NUMBER OF ASSEMBLIES FAILING | 31 | | | | |
| PERCENT ASSEMBLIES FAILING | 32 | | | | |

Notes * Includes customers with unconnected unapproved supplies per PNWS-AWWA Manual
** Assemblies not relied upon by purveyor, but data maintained for LAA (plumbing inspector)

## Protection from Thermal Expansion

Protection from thermal expansion is provided in a plumbing system by the installation of a ***thermal expansion tank*** in the hot water system piping downstream of the hot water tank and a ***temperature and pressure relief valve*** (T & P Valve) at the top of the tank.

The thermal expansion tank controls the increased pressure generated within the normal operating temperature range of the water heater. The small tank with a sealed compressible air cushion provides a space to store and hold the additional expanded water volume.

The T & P Valve is the primary safety feature for the water heater. The ***temperature*** portion of the T & P Valve is designed to open and vent water to the atmosphere whenever the water temperature within the tank reaches approximately 210° F (99° C). Venting allows cold water to enter the tank.

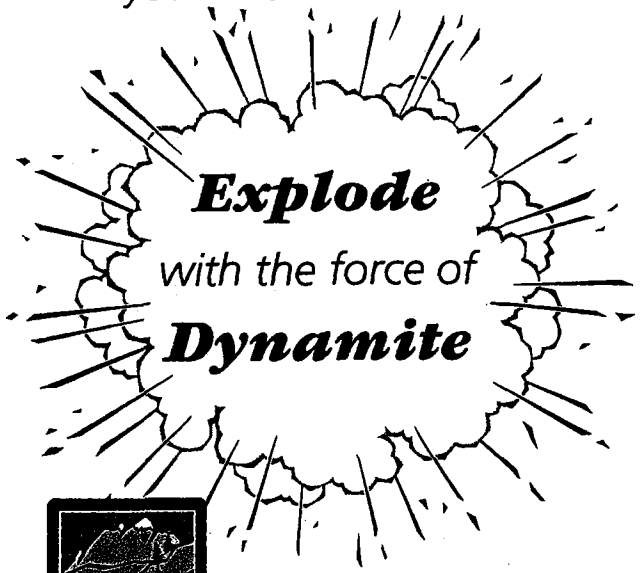
The ***pressure*** portion of a T & P Valve is designed to open and vent to the atmosphere whenever water pressure within the tank exceeds the pressure setting on the valve. The T & P Valve is normally pre-set at 125 psi or 150 psi.

Water heaters installed in compliance with the current plumbing code will have the required T & P Valve and thermal expansion tank. For public health protection, the water purveyor may require the installation of a check valve or backflow preventer downstream of the water meter. In these situations, it is essential that a T & P Valve and thermal expansion tank be properly installed and maintained in the plumbing system.

For further information contact your local water purveyor, City or County building department, licensed plumber or the PNWS/AWWA Cross-Connection Control Committee through the PNWS office at (877) 767-2992

# *Protect Your* ***Water Heater*** *from*

*Without a functioning Temperature & Pressure Relief Valve your water heater can*

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## Thermal Expansion Danger

Most homes are supplied with hot water from an electric or gas heated tank. Until the heating element stops working, and one is faced with a cold shower, the water heater is usually taken for granted. However, if not properly maintained, a water heater may become a safety hazard.

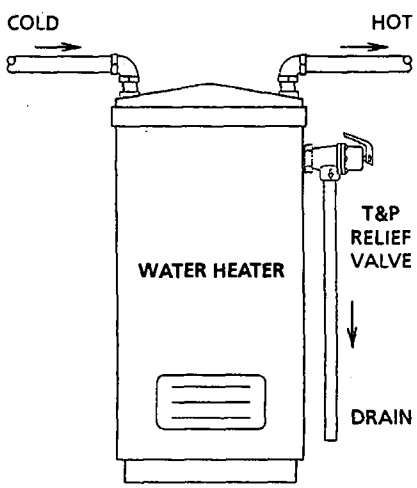
Water expands in volume as its temperature rises. The extra volume caused by thermal expansion must go somewhere. If not, the heated water creates an increase in pressure. This is the principle of a steam engine.

The temperature and pressure in the water heater is reduced when hot water is withdrawn from a faucet and cold water enters the tank. The increase in pressure from thermal expansion can also be reduced by water flowing back into the public water system. However, when a check valve, pressure-reducing valve or backflow preventer is installed in the service pipe a "closed system" is created. Provisions must be made for thermal expansion in these cases.

The thermostat of the water heater normally maintains the water temperature at about 130° F (54° C). However, if the thermostat fails to shut off the heater, the temperature of the water will continue to increase.

If the water temperature increases to more than 212° F (100° C), the water within the tank becomes "super heated". When this super heated water is suddenly exposed to the atmosphere when a faucet is opened, it instantly flas hes into steam and a violent reaction may result. As the pressure within the tank continues to build up under super heated conditions, the tank may explode.

**T&P Valve Location**




## Why the Installation of a Backflow Preventer is Required on a Water Service

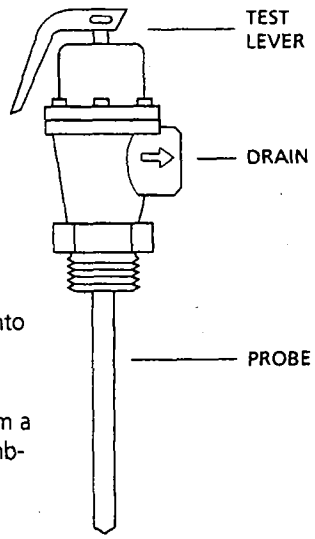
Water normally flows in one direction, from the public water system through the customer's cold or hot water plumbing to a sink tap or other plumbing fixture. The plumbing fixture is the end of the potable water system and the start of the waste disposal system.

Under certain conditions water can flow in the reverse direction. This is known as ***backflow***. Backflow occurs when a backsiphonage or backpressure condition is created in a water line.

***Backsiphonage*** may occur due to a loss of pressure in the water distribution system during a high withdrawal of water for fire protection, a water main or plumbing system break, or a shutdown of a main or plumbing system for repair. A reduction of pressure below atmospheric pressure creates a vacuum in the piping. If a hose bib was open and the hose was submerged in a wading pool were flowing during these conditions, the non-potable water in the pool would be siphoned into the house plumbing then back into the public water system.

***Backpressure*** may be created when a source of pressure, such as a pump, creates a pressure greater than that supplied from the distribution system. If a pump supplied from a non-potable source, such as a landscape pond, were accidentally connected to the plumbing system, the non-potable water could be pumped into the potable water supply.

**Typical T&P Valve**




## What the Homeowner Should Do to Ensure Protection from Thermal Expansion

- The homeowner should check to see that an expansion tank and T & P Valve are in place. If there is any doubt, the homeowner should contact a licensed plumber.
- The T & P Valve should be periodically inspected to ensure that is properly operating. Some T & P Valves are equipped with a test level. Manually lifting the lever unseats the valve, allowing water to discharge. If water continues to leak from the T & P Valve after closing, the valve may need to be replaced. A drain line must be installed to avoid water damage and scalding injury when the valve operates.
- The T & P Valve should be periodically removed and visually inspected for corrosion deposits and to insure it has not been improperly altered or repaired.
- The above work can best be done by a licensed plumber.

## Common Household Hazards

### *Chemical Spray Applicators*

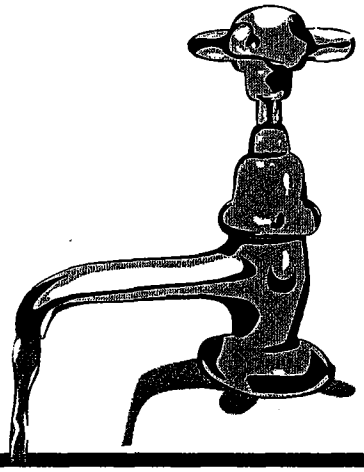
The chemicals used on your lawn and garden can be toxic or fatal if ingested. These chemicals include pesticides, herbicides, and fertilizers. Even strong cleaning chemicals sprayed on cars, house siding, etc., may cause health problems if ingested.

### *Submerged Hoses*

Water held in pools, ponds or other vats open to the air and exposed to humans or animals may contain microbiological contaminants. Hoses submerged in buckets or containers can act as a conduit for contaminants under backflow conditions.

### *Underground Lawn Irrigation Systems*

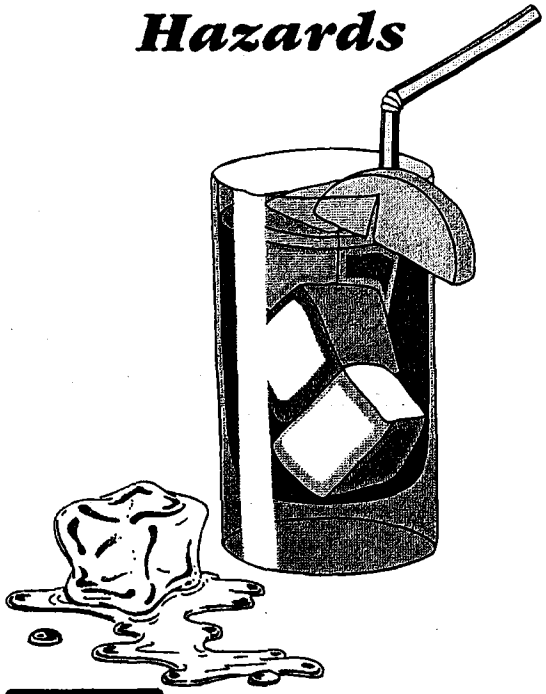
Underground irrigation systems often have puddles of standing water around the ground-level sprinkler heads. The sprinkler heads **are not** designed to be drip-tight under backflow conditions. The puddles of water may contain microbiological contaminants, such as excrement from animals or chemical residue from fertilizer and herbicides sprayed on the lawn.



For further information contact your local water purveyor or the PNWS/AWWA Cross-Connection Control Committee through the PNWS office at (877) 767-2992

*Help protect your*
***Drinking Water***
*from*
***Contamination***

# *Household Hazards*



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## How Contamination Occurs

Water normally flows in one direction, from the public water system through the customer's cold or hot water plumbing to a sink tap or other plumbing fixture. The plumbing fixture is the end of the potable water system and the start of the waste disposal system.

Under certain conditions water can flow in the reverse direction. This is known as ***backflow***. Backflow occurs when a backsiphonage or backpressure condition is created in a water line.

***Backsiphonage*** may occur due to a loss of pressure in the water distribution system during a high withdrawal of water for fire protection, a water main or plumbing system break, or a shutdown of a water main or plumbing system for repair. A reduction of pressure below atmospheric pressure creates a vacuum in the piping. If a hose bib was open and the hose was submerged in a wading pool during these conditions, the non-potable water in the pool would be siphoned into the house's plumbing and back into the public water system.

***Backpressure*** may be created when a source of pressure, such as a pump, creates a pressure greater than that supplied from the distribution system. If a pump supplied from a non-potable source, such as a landscape pond, were accidentally connected to the plumbing system, the non-potable water could be pumped into the potable water supply.

## How to Prevent Contamination of Your Drinking Water

**Protect your drinking water by taking the following precautions:**

***Don't:***

- Submerge hoses in buckets, pools, tubs, sinks, ponds, etc.
- Use spray attachments without a backflow prevention device.
- Connect waste pipes from water softeners or other treatment systems to the sewer, submerged drain pipe, etc.
- Use a hose to unplug blocked toilets, sewers, etc.

***Do:***

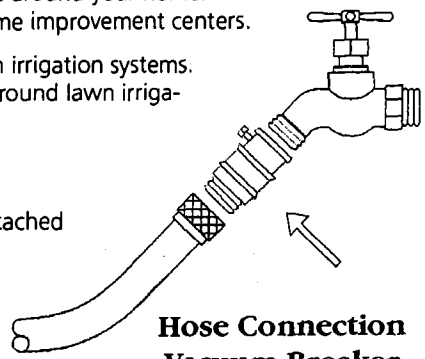
✔ Keep the ends of hoses clear of all possible contaminants.

✔ If not already equipped with an integral (built-in) vacuum breaker, buy and install hose bib type vacuum breakers (see reverse side of this pamphlet) on all threaded faucets around your home. These devices are inexpensive and are available at hardware stores and home improvement centers.

✔ Install an approved backflow prevention assembly on all underground lawn irrigation systems. Remember, a plumbing permit is required for the connection of an underground lawn irrigation system to your plumbing system.

## Hose Connection Vacuum Breaker

Hose connection vacuum breakers are specifically made for portable hoses attached to hose thread faucets. Their purpose is to prevent the flow of contaminated water back into the drinking water. These devices screw directly to the faucet outlet. They can be used on a wide variety of installations, such as service sinks, hose faucets near a wading pool, laundry tub faucets, etc.



**Hose Connection Vacuum Breaker**

Some units are designed for manual draining for freezing conditions. Some are furnished with breakaway set screws as a tamper proof feature.

These device are not intended for operation under continuous pressure.

## Protection of the Water Purveyor's Distribution System

In general, the installation of plumbing in compliance with the plumbing code will provide adequate protection for your plumbing system from contamination.

However, the water purveyor may require (as a condition of service) the installation of a backflow prevention assembly on the water service to provide additional protection for the public water system. A backflow prevention assembly will normally be required where a single-family residence has special plumbing that increases the hazard above the normal level found in residential homes, or where a hazard survey cannot be completed.

To help determine if a backflow prevention assembly is required, the water purveyor may send residential customers a Cross Connection Control Survey Questionnaire. The water purveyor will evaluate the returned questionnaires to assess the risk of contamination to the public water system. Based on the results of the evaluation, the installation of backflow prevention assemblies may be required on services to some customers.

## What is a Cross Connection?

A cross connection is a point in a plumbing system where the potable water supply is connected to a non-potable source. Briefly, a cross connection exists whenever the drinking water system is or could be connected to any non-potable source (plumbing fixture, equipment used in any plumbing system). Pollutants or contaminants can enter the safe drinking water system through uncontrolled cross connections when backflow occurs.

Backflow is the unwanted flow of non-potable substances back into the consumer's plumbing system and/or public water system (i.e., drinking water).

There are two types of backflow: ***backsiphonage*** and ***backpressure***. ***Backsiphonage*** is caused by a negative pressure in the supply line to a facility or plumbing fixture. Backsiphonage may occur during waterline breaks, when repairs are made to the waterlines, when shutting off the water supply, etc.

***Backpressure*** can occur when the potable water supply is connected to another system operated at a higher pressure or has the ability to create pressure, etc. Principal causes are booster pumps, pressure vessels, elevated plumbing, etc.

Backflow preventers are mechanical devices designed to prevent backflow through cross connections. However, for backflow preventers to protect as designed, they must meet stringent installation requirements.

For further information contact your local water purveyor or the PNWS/AWWA Cross-Connection Control Committee through the PNWS office at (877) 767-2992

# *Cross Connections can create*

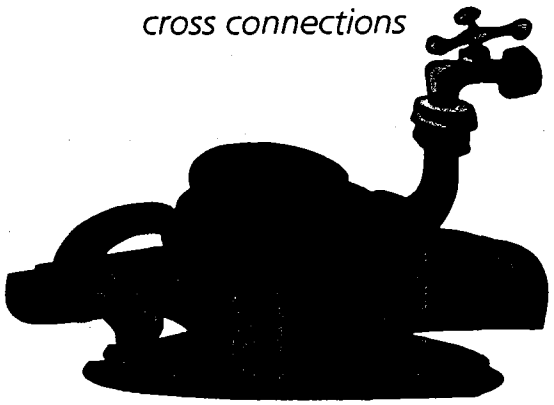
*Drinking water systems may become*

***Polluted***

***or***

***Contaminated***

*through uncontrolled cross connections*



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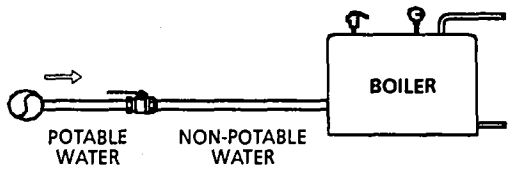
## Why Be Concerned?

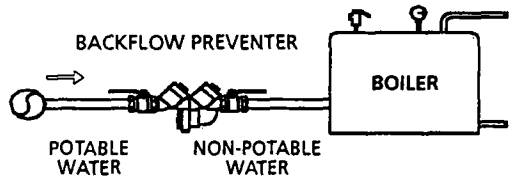
Most water systems in the United States and Canada have good sources of water and/or sophisticated treatment plants to convert impure water to meet drinking water standards. Millions of dollars are spent to make the water potable before it enters the distribution system so most water purveyors think that their supplies are not in jeopardy from this point on. Studies have proven this to be wrong. Drinking water systems may become polluted or contaminated in the distribution system through uncontrolled cross connections.

Cross connections are installed each day in the United States because people are unaware of the problems they can create. Death, illness, contaminated food products, industrial and chemical products rendered useless are some of the consequences of such connections. As a result, many hours and dollars are lost due to ***cross connections***.

**Wrong:**
***Uncontrolled Cross Connection***



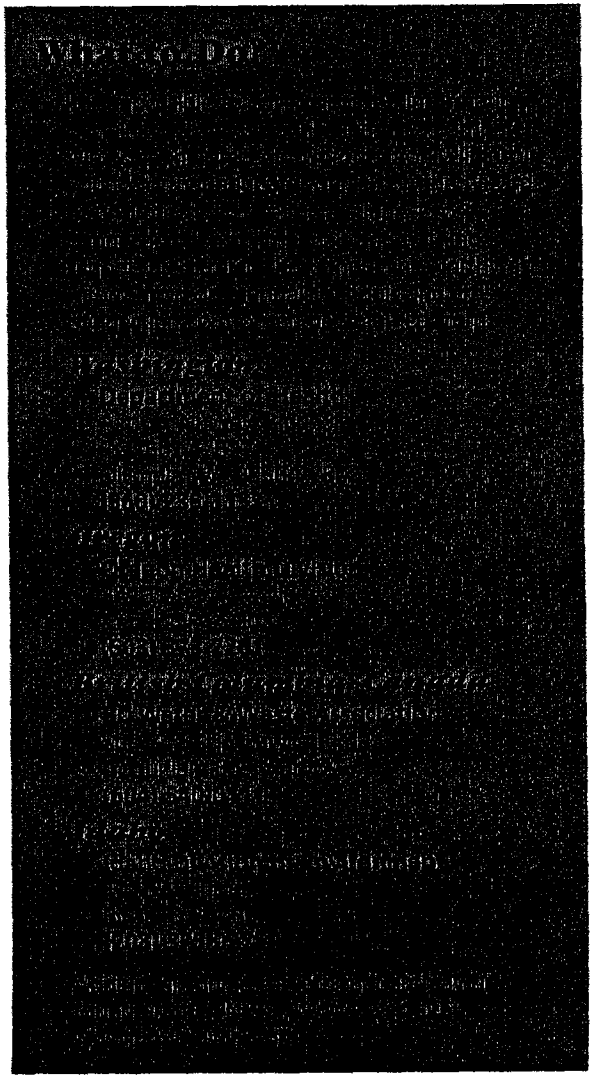

**Right:**
***Controlled Cross Connection***




## Where are Cross Connections Found?

Cross connections are found in all plumbing systems. It is important that each cross connection be identified and evaluated as to the type of backflow protection required to protect the drinking water supply. Some plumbing fixtures have built-in backflow protection in the form of a physical air gap. However, most cross connections will need to be controlled through the installation of an approved mechanical backflow prevention device or assembly. Some common cross connections found in plumbing and water systems include:

1. Wash basins and service sinks.
2. Hose bibs.
3. Irrigation sprinkler systems.
4. Auxiliary water supplies.
5. Laboratory and aspirator equipment.
6. Photo developing equipment.
7. Processing tanks.
8. Boilers.
9. Water recirculating systems.
10. Swimming pools.
11. Solar heat systems.
12. Fire sprinkler systems.



Every water system has cross connections. Plumbing codes and State drinking water regulations require cross connections to be controlled by approved methods (physical air gap) or approved mechanical backflow prevention devices or assemblies. The various types of mechanical backflow preventers include: reduced pressure backflow assembly (RPBA), reduced pressure detector assembly (RPDA), double check valve assembly (DCDA), double check detector assembly (DCDA), pressure vacuum breaker assembly (PVBA), spill resistant vacuum breaker assembly (SVBA) and atmospheric vacuum breaker (AVB).

For a backflow preventer to provide proper protection, it must be approved for backflow protection, designed for the degree of hazard and backflow it is controlling, installed correctly, tested annually by a State certified tester, and repaired as necessary. Some States require mandatory backflow protection on certain facilities where high health-hazard-type cross connections are normally found. The following is a partial list of those facilities:

1. Hospitals, mortuaries, clinics.
2. Laboratories.
3. Food and beverage processing.
4. Metal plating and chemical plants.
5. Car washes.
6. Petroleum processing and storage plants.
7. Radioactive processing plants and nuclear reactors.
8. Piers and docks.
9. Sewage treatment plants.

## Approved Backflow Assemblies

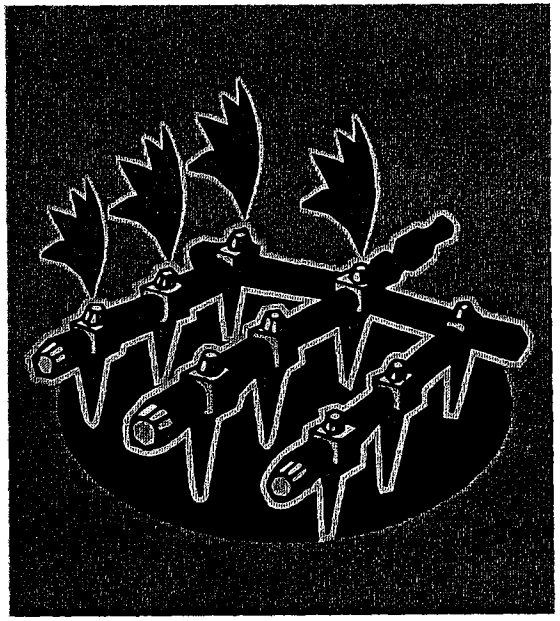
The water purveyor relies on approved backflow prevention assemblies to protect the public water system. Approved assemblies are manufactured with isolation valves and test cocks to permit field-testing to demonstrate that the assemblies are properly functioning to prevent backflow.

In addition to the above assemblies, plumbing codes also allow the use of atmospheric vacuum breakers (AVB) on lawn irrigation systems without chemical addition. Because an atmospheric vacuum breaker is not designed to be tested, some water purveyors require the installation of approved, testable assemblies. Contact your water purveyor regarding the requirements for isolation of your lawn irrigation system.

***Note:***
All irrigation piping should be considered as a non-potable water system due to an actual or potential health hazard.

For further information contact your local water purveyor or the PNWS/AWWA Cross-Connection Control Committee through the PNWS office at (877) 767-2992

# *Lawn Irrigation Systems and* ***Backflow Prevention***



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**Pacific Northwest Section**

## Lawn (Turf) Irrigation Systems

For the protection of the water purveyor's distribution system, all irrigation systems must have an approved backflow prevention assembly that is commensurate with the degree of hazard. Irrigation systems are categorized as high health hazard or moderate health hazard as defined below.

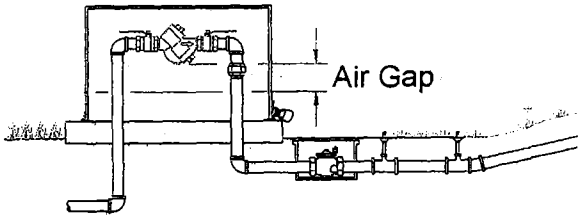
Any irrigation system that contains pumps or injectors for the addition of chemicals and/or fertilizers is considered a high hazard. This risk assessment is also based on the additional hazard posed by bacterial contaminants found on lawns, and on the possibility of changes being made to the irrigation system by the customer. An approved reduced pressure backflow assembly (RPBA), or an approved air gap separation, should be required in all cases where chemicals or herbicides may be injected into the irrigation system, or where an auxiliary water supply is also provided for irrigation water.

All irrigation systems that are not classified as high health hazard are considered to be moderate health hazards. This risk assessment is based on the hazard posed by bacterial and chemical contaminants found on lawns, and on the possibility of changes being made to the irrigation system by the customer. An approved double check valve assembly (DCVA), or pressure vacuum breaker assembly (PVBA), should be required.

However, an approved PVBA does not provide adequate protection if it is subjected to flooding, backpressure, elevated piping, or if compressed air is used to winterize the irrigation systems. In these situations, an approved DCVA should be required as a minimum level of protection.

## Reduced Pressure Backflow Assembly for Isolation of Lawn Irrigation System

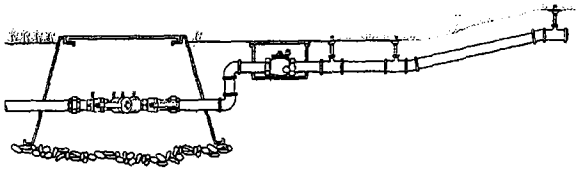
- The reduced pressure backflow assembly (RPBA) should be installed to isolate irrigation systems using injectors or pumps to apply fertilizer and other agricultural chemicals.
- The RPBA must be installed above ground to prevent the relief valve opening from becoming submerged.
- The RPBA should be installed in an insulated enclosure to provide freeze protection.
- The RPBA should be tested by a certified backflow assembly tester upon installation, after repair of relocation, and at least annually.




***Reduced Pressure Backflow Assembly in Above-Ground Enclosure***

## Double Check Valve Assembly for Isolation of Lawn Irrigation System

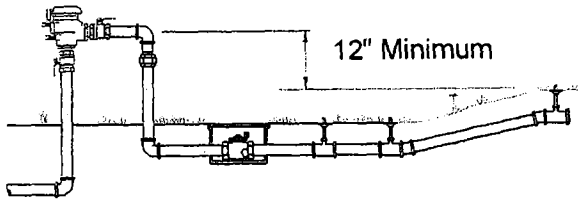
- The double check valve assembly (DCVA) may be installed to isolate all irrigation systems that do not use injectors or pumps to apply fertilizer and other agricultural chemicals.
- The DCVA may be installed in a below ground enclosure provided the assembly test cocks are plugged; the test cocks are pointed up; adequate space is provided for maintenance and testing, and any compressed air connections are installed only downstream of the DCVA.
- The DCVA shall be tested by a certified backflow assembly tester upon installation, after repair of relocation, and at least annually.



***Double Check Valve Assembly in Below-Ground Box***

## Pressure Vacuum Breaker Assembly for Isolation of Lawn Irrigation Systems

- The pressure vacuum breaker assembly (PVBA) may be installed to isolate all irrigation systems that do not use injectors or pumps to apply fertilizer and other agricultural chemicals.
- The PVBA shall be installed at least 12 inches above the highest point in the irrigation piping.
- The PVBA shall be tested by a certified backflow assembly tester upon installation, after repair of relocation, and at least annually.




***Pressure Vacuum Breaker Assembly***

***Flow-through protection systems*** are those systems that do not have fire department pumper connections. They are constructed of approved potable water piping and materials to which sprinkler heads are attached. The system terminates at a connection to a toilet or other plumbing fixture to prevent the water from becoming stagnant.

***Combination protection systems*** also do not have fire department pumper connections and are constructed of approved potable water piping and materials that serve both the fire sprinkler system and the consumer's potable water system.

Both of the above two systems do not require backflow preventers because they are connected directly to the potable water and the inherently designed to potable water standards.

***Closed fire protection systems*** are separated from the potable water system by the minimum use of a Double Check Valve Assembly (DCVA) as long as no chemicals are used and a Reduced Pressure Backflow Assembly (RPBA) if chemicals are used. Closed system may have a fire department pumper connection.

***Note:***

1. The water purveyor must be consulted for proper backflow prevention requirements.
2. It is important to have the system engineered hydraulically. The NFPA standards 13 and/or 13D must be considered when designing the fire system.
3. Flow and pressure may not be adequate for fire protection.
4. A plumbing and/or fire permit may be required prior to starting the project.
5. A system is less expensive to install at initial house construction.
6. Some water purveyor's requirements may be more stringent than others – consult you local purveyor for requirements.

For further information contact your local water purveyor or the PNWS/AWWA Cross-Connection Control Committee through the PNWS office at (877) 767-2992

# *Residential and*

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# Residential Fire Sprinkler Systems

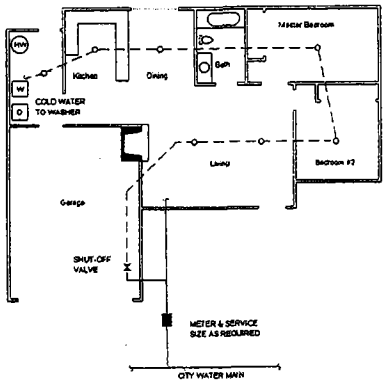
Residential fire sprinklers are in greater demand today than ever before. Personal fire safety is such a trend that in many areas ordinances or resolutions require fire sprinklers on all new residential construction.

Residential fire sprinkler systems help save lives and reduce property damage. However, from the water purveyor's point of view, the residential fire sprinkler system presents a potential pollutant and/or contaminant source to the potable water system from cross-connections. Both homeowners and the public may be exposed to health hazards from residential fire sprinkler systems. Such hazards include stagnant water, non-potable piping, heterotrophic bacteria, and chemicals. Therefore these systems must be evaluated for health and system hazards.

The following minimal information should be considered in the selection of backflow protection on residential fire sprinkler systems.

Residential fire sprinkler systems are categorized as ***flow-through***, ***combination***, and ***closed*** fire protection systems. Each of these systems has their advantages and disadvantages. It should also be noted that what the local fire departments, local administrative authorities and water purveyors allow will determine which of these systems can be found in any particular jurisdiction. It is imperative that the water purveyor, local administrative authority, fire department, and other agencies coordinate their efforts in the design and operation of these systems.

# Flow-Through Fire Protection Systems




### *Advantages*

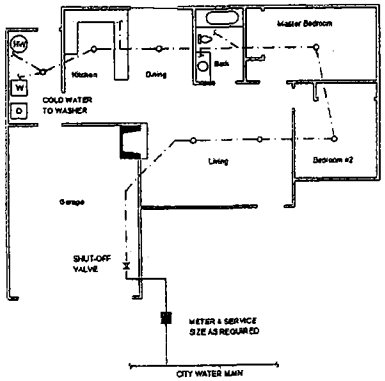
1. Contains no standing or stagnant water.
2. No backflow protection is required.
3. Usually requires a single meter.

### *Disadvantages*

1. Service line, meter and plumbing system must be designed hydraulically to supply both domestic and fire flow requirements.

Sprinkler system must have connection at the end to a clothes washer, dishwasher, toilet or other fixture to prevent water from becoming stagnant.

# Combination Protection Systems



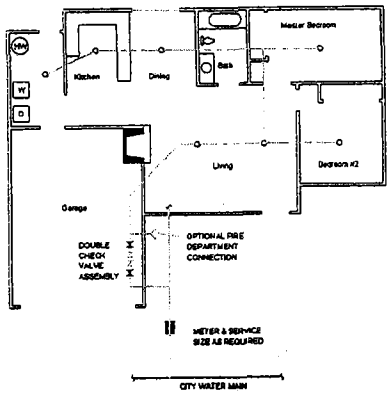

### *Advantages*

1. Contains no standing or stagnant water.
2. No backflow protection is required.
3. Usually requires a single meter.
4. Water use throughout the potable water system eliminates need for water use at the end of the system.

### *Disadvantages*

The service line, meter and plumbing system must be designed hydraulically to supply both domestic and fire flow requirements.

# Closed Fire Protection Systems




### *Advantages*

1. Installing a separately metered service line may be cheaper than upgrading an existing service.
2. A fire service rate is usually cheaper than a residential service rate.

### *Disadvantages*

1. Approved backflow preventers must be installed, thereby increasing the homeowner's cost by its initial installation, and thereafter for annual testing and maintenance.
2. When chemicals are added to the fire sprinkler system to prevent freezing, a high health hazard exists. This requires a higher, more expensive, level of protection, i.e., a Reduced Pressure Backflow Assembly (RPBA).

If the fire service and domestic service are combined, the fire service may not be turned off because of safety reasons.

# Appendix O

# Wellhead Protection Plan

# WELLHEAD PROTECTION PLAN

## A. REQUIREMENT FOR PROGRAM

Section 1428 of the 1986 Amendments to the Federal Safe Drinking water Act mandates that every state develop a wellhead protection program. The Washington Department of Health is designated lead agency for wellhead protection program development and administration. The Safe Drinking Water Act requires that all federally defined public water systems (Group A systems) using ground water as their source implement a wellhead protection program. The minimum elements of a program required by the Washington Department of Health are:

- A delineated wellhead protection area for each well, well field, or spring.
- An inventory within the wellhead protection area of all potential sources of ground water contamination.
- A management plan to reduce the likelihood that potential contaminant sources will pollute the drinking water supply.
- Contingency plans for providing alternate sources of drinking water in the event that contamination does occur.
- Inclusion of public participation while the program is developing.

## B. DESCRIPTION OF GROUNDWATER SOURCES

The Skagit County Water District No. 1, hereinafter referred to as the Purveyor, has two well sites located on Purveyor's owned lots. One lot also contains the primary reservoir. The wells can be described as follows:

| DESCRIPTION | UNITS | WELL # 1 | WELL # 2 |
|---|---|---|---|
| **Casing** | inches | 6 | 6 |
| **Depth** | feet | 202 | 204 |
| **Approx. Ground Elevation (MSL)** | feet | 310 | 310 |
| **Elevation of Top of Screens (MSL)** | feet | 108 | 106 |
| **Pump Set** | feet | 168 | 168 |
| **Pumping rate** | gpm | 75 | 75 |
| **Pump motor** | hp | 5 | 5 |
| **Pump make** | | Jacuzzi | Jacuzzi |

The 100-foot sanitary control radii for the wells are within the District's owned or controller property.

## C. PROGRAM OBJECTIVE

The objectives of the wellhead protection program are:

1) To reasonably reduce the risk of contamination of the ground water supplying the Purveyor's well sources, and
2) With other utilities, cooperated and support the Island County aquifer protection program.

## D. RELATED PROGRAMS

The disposal of hazardous chemicals in general, is regulated by the County through the exercise of the Board of Health function established through Chapter 70.05 of the Revised Code of Washington. The regulations include collection and storage household hazardous waste and moderate-risk waste.

Groundwater resource (aquifer) protection regulations are enforced by the County.

On-site sewerage disposal systems are regulated by the County.

Transportation of hazardous waste is overseen by the local fire department.

## E. PROGRAM OPERATION

The responsibility for program administration is delegated to the Directors.

The Directors will undertake, or will employ qualified persons to undertake the elements of the program described hereafter.

## F. ELEMENTS OF PROGRAM

The standard elements of a wellhead protection program are incorporated as follows:

### 1. Wellhead Protection Area

The wellhead protection areas are delineated using the "Calculated Fixed Radius" method set forth in the DOH "Ground Water Contamination Susceptibility Assessment Survey Forms", and attached herewith.

Because of the limited size of the delineation wellhead protection area initially calculated by the fixed radius method, and the predominant single family residential land use within and surrounding the area, a more detailed delineation (e.g., using the EPA analytical model GPTRAC to define the capture zone) was not scheduled for the foreseeable future. A more detailed delineation is planned only when the surrounding land use changes in a manner that would increase the potential risk of contamination.

## 2. Potential Sources of Contamination

The initial inventory of potential sources of ground water contamination in and around the delineated wellhead protection areas was made using the WA DOH "Ground Water Contamination Susceptibility Assessment Survey Forms" previously submitted to the WA DOH (copy of first page of completed form attached herewith). ***{PLEASE CONFIRM, PROVIDE COPY OF FORMS}***

The WA Department of Health susceptibility rating for the wells *is* ... ***{PLEASE PROVIDE COPY OF ASSESSMENT}***

## 3. Management Plan

The Purveyor does not have regulatory authority over land use. Such regulatory authority rests with the Island County aquifer protection program.

The inventory of potential sources of contamination indicates a relatively low risk for potential groundwater contamination. Therefore, the utility's management plan shall consist of:

a) Notification of the County Health Department and/or Solid Waste Department of any potential sources of contamination in the "high risk" category, identified Washington State publication "Wellhead Protection program", December 1993, Tables 2, except those activities related to residential land use.
b) Public education, as described hereafter.
c) Monitoring of water quality, to give a warning of ground water contamination.
d) Survey of properties where restrictive covenants govern the sanitary control radius for the utility's wells, and enforcement of the covenants when necessary.
e) Encourage voluntary water conservation, to reduce the radius of influence of the drawdown curve, and thus, to reduce the potential for drawing in contaminated ground water.

## 4. Contingency Plan

Both wells withdraw water from the same aquifer.

If an operating source becomes contaminated, the Purveyor will:

a) If necessary, implement the Purveyor's Water Shortage Response Plan to reduce water demand.
b) Assess the impact of the contaminant on water quality; determine if water treatment will allow the continued use of the contaminated well.
c) And if needed, proceed with the acquisition of a replacement well site, using condemnation procedures if necessary.

There are large parcels of land in the service area for locating replacement wells.

5. **Public Participation and Education**

A small community of permanent residents is supplied by the system. The opportunity for direct public involvement is provided in the monthly meeting of the District.

Public education will be divided into the following tasks:

- Distribution of Notification Letters - All property owners in the wellhead protection area boundaries and all property owners in the subdivision will receive a letter notifying them of the presence of the wells and the need to prevent groundwater contamination. (see sample letter, Attachment `A'). The County Health Department, and the local fire department will be notified at the same time.

- Consumers Confidence Report - Include information in the annual consumers confidence report about wellhead protection and disposal of hazardous waste products.

6. **Spill Response Plan**

The Purveyor relies upon the local fire department, and the County Solid Waste Department (hazardous material coordinator) to be the lead agencies in spill response. It is assumed that the qualifications of these agencies incident and spill response plans will be suitable for the protection of the wells.

## E. REFERENCE MATERIAL

The following publications should be retained by the utility as references for its wellhead protection program:

"Wellhead Protection Program", December 1993, Washington Department of Health

"Protecting Local Ground-Water Supplies Through Wellhead Protection", May 1991, US Environmental Protection Agency (publication EPA 570/9-91-007)

## F. PROGRAM SCHEDULE

| Task | Scheduled Completion |
|---|---|
| Public participation | completed for 1995 WSP |
| Susceptibility assessment | completed |
| Initial delineation of WHPA | completed |
| Refined delineation of WHPA | not scheduled until land use changes to create increased risk of contamination |
| Initial vulnerability assessment | completed |
| Detailed vulnerability assessment | completed |
| Education program development and notification letters | in progress |
| Monitoring | ongoing |
| Contingency plan | completed |
| Development of regulations | na |
| Spill response | completed |

***{PLEASE CONFIRM ABOVE SCHEDULE COMPLETION}***

Attachment A

*... sample form letter ...*

Dear Water Customer,

PROTECTION OF WELLS

The Skagit County Water District No. 1 is dependent upon the wells north of Pinelli Road for your water supply. To prevent contamination of the groundwater supplying the wells, it is important that residents take care to properly dispose of all hazardous wastes. Hazardous wastes include household cleaning products, paint, anti-freeze, weed and bug killers, old batteries, to name a few.

To reduce the risk of chemicals contaminating groundwater:

Avoid applying hazardous chemicals outside during rainy weather,

Follow the instructions on the use of chemicals, and use only enough to get the job done,

Try to use non-toxic alternatives whenever possible,

Properly store all chemicals to prevent spillage, and

Properly dispose of all containers and unused portions.

Your care in the use and disposal of household chemicals will help protect the water you drink, and will also help reduce the pollution of the stormwater runoff into Puget Sound.

For more information about our wellhead protection program, please feel free to call the undersigned at (360) ___-____.

Your cooperation will be most appreciated.

_____

Mr. ___

Bratton {2/8/2005}

## LornaParent

**From:** LornaParent
**Sent:** Tuesday, September 06, 2005 5:29 PM
**To:** KimBerry
**Subject:** Skagit County Water District #1 (Birdsview) Wellhead Protection

Dear Kim,

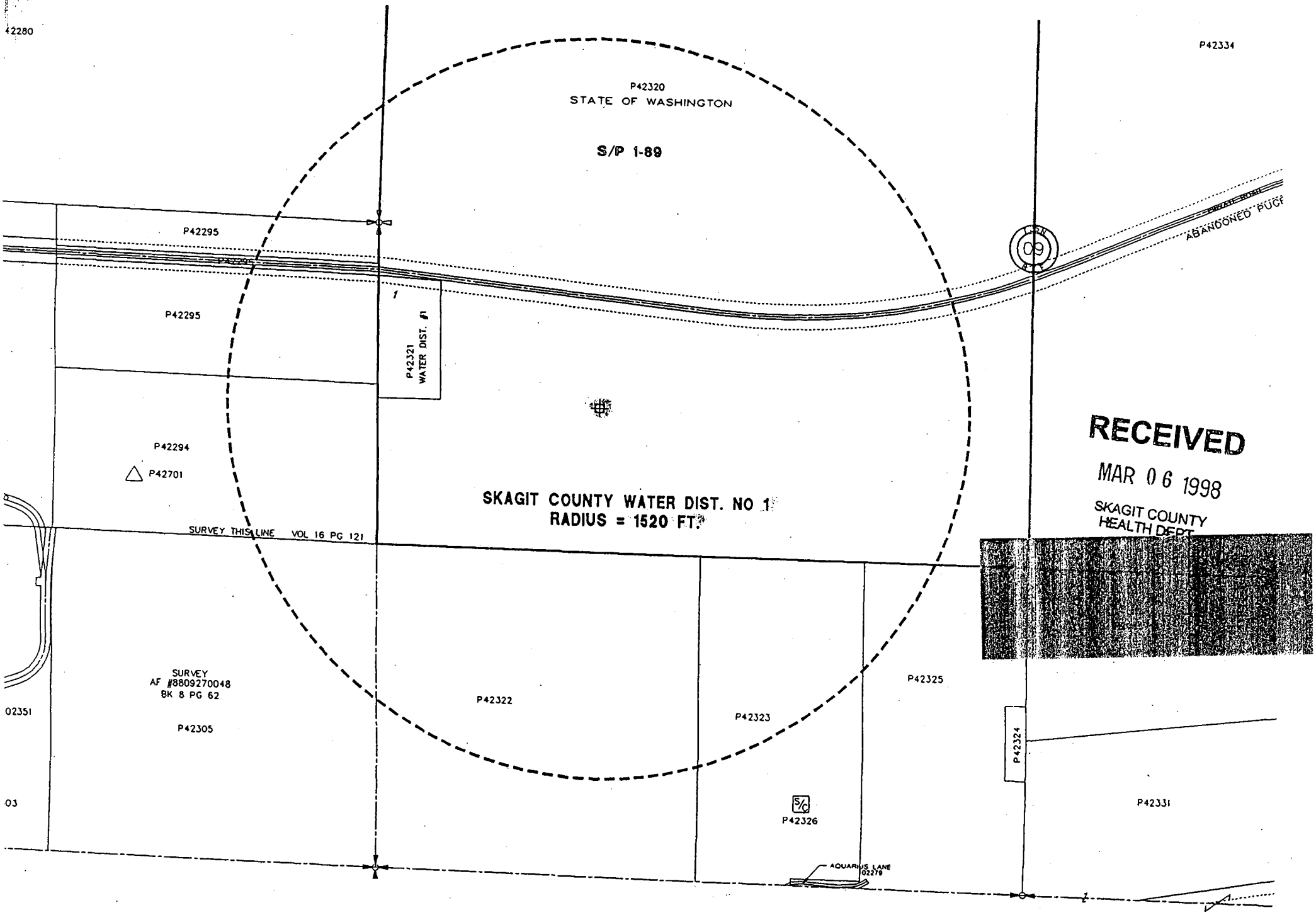
I was going through some records with an engineer. We looked into the Wellhead Protection file for Skagit County Water District #1 (Birdsview) and I noticed an error. I can't explain it but I want to fix it. The radius for Skagit County Water District #1 should be 1390 feet and not 1520 feet. Let me know when I can pick up the new map or maybe you can email to me these days.

As always, thank you so much!

*Cheers!*

*Lorna*

*Always working for a safer and healthier Skagit County!*




RECEIVED
MAR 06 1998
SKAGIT COUNTY
HEALTH DEPT

## System Identification

| ID # | County | Source # | Name | Region |
|---|---|---|---|---|
| 00392 | Snohomish | S01 | SKAGIT CO WATER DISTRICT #1 | NW |

| VOC Code→ | | Q Rating→ | Q3 |
|---|---|---|---|

## Susceptibility Assessment Routing Information

| | | | |
|---|---|---|---|
| ✓ | ENTER ADMIN | | Return to Water System Incomplete |
| ✓ | ENTER SURVEY | | Check WFI Data Base |
| | Contact Water System to Clarify | | Check Water Quality |

× or ✓ indicates a Yes answer

| | | | |
|---|---|---|---|
| Y | System Information Complete | N | Evidence of Confined Aquifer |
| Y | Map Included | Y | Appropriate Well Log Included |
| Y | TOT Included w/ Map | Y | Static Water Level Included |
| Y | Source # Correct | Y | Open Interval Included |

## Record of Action

### Explanation of Changes

| Date | S1 WELL #1 ACTIVE WELL PERMANENT Y NW/SW - 09 - 35N - 07E | Initials |
|---|---|---|
| 6/1/95 | | Jp |
| | | |
| | ENTER ADMIN, ENTER SURVEY | |
| 6/14/95 | Entered Admin Survey [illegible] Rate | TC |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | Q Rating = Q3 | |
| | | |

# Ground Water Contamination
# Susceptibility Assessment Survey Form
Version 2.2

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

RECEIVED
MAR 16 1995
N.W. DRINKING WATER

**PART I:** System Information

Well owner/manager : Skagit County Water District #1

Water system name : Skagit County Water District #1

County: Skagit

Water system number: 00392Q Source number: S01

Well depth: 202 (ft.) (*From WFI form*)

Source name: Well #1

WA well identification tag number: A B R - 3 1 1

_____ well not tagged

Number of connections: 108 Population served: 292

Township: 35 N Range: 07E

Section: 9 1/4 1/4 Section: NW SW

Latitude/longitude (if available): N/A /

How was lat./long. determined?

____ global positioning device ____ survey ____ topographic map
____ other: _____

Depth - 200'
O.I. - 185-200
Confined - NO
Seal - Yes
$NO_3$ - O.K.
VOC - O.K.

Q3

* Please refer to Assistance Packet 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 / 17 / 87 month/day/year

last reconstruction: __ / __ / __ month/day/year

_____ information unavailable

2) Well driller: Dahlman Pump & Well Drilling, Inc.
P.O. Box 422, Burlington, WA 98233

___ well driller unknown

3) Type of well:

___Drilled: X rotary ___ bored ___ cable (percussion) ___ Dug

___ Other: ___ spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: _____

Additional comments: _____

4) Well report available? X YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 75 (gallons/min)

Source of information: WFI

If not documented, how was pumping rate determined? _____

___ Pumping rate unknown

6) Is this source treated? ___ YES X 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]

___ (less than) 20 ft ___ 20-50 ft ___ 50-10 ft X 100-200 ft ___ (greater than) 200 ft

___ information unavailable

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

___ (less than) 20 ft ___ 20-50 ft ___ 50-100 ft X (greater than) 100 ft

___ flowing well/spring (artesian)

How was water level determined?

X 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): _____ (ft)

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

___ other: _____

X 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?

X YES ✓ NO

___ information unavailable

7) Sanitary setback:

___ (less than) 100 ft* X 100-120 ft ___ 120-200 ft ___ (greater than) 200 ft

* if less than 100 ft describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

___ wellhead enclosed in a wellhouse

X controlled access (describe): Vault with Fence

_____

X other uses for wellhouse (describe): _____

_____

___ no wellhead control

9) Surface seal:

X 18 ft

___ (less than) 18 ft (no Department of Ecology approval)

___ (less than) 18 ft (Approved by Ecology, include documentation)

___ (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ (less than) 10 in/yr ___ 10-25 in/yr X (greater than) 25 in/yr

## PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 6,265,398 (gallons)

How was this determined?

X meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 310 (ft)

1 year ground water travel time : 440 (ft)

5 year ground water travel time: 980 (ft)

10 year ground water travel time: 1,390 (ft)

Information available on length of screened/open interval?

___ YES X NO

Length of screened/open interval: 15 (ft)

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

| | 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 (greater than) 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:

_____

_____

_____

_____

_____

_____

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

| A. Nitrate: (Nitrate MCL = 10 mg/l ) | YES |
|---|---|
| Results greater than MCL | |
| (less than) 2 mg/liter nitrate | X |
| 2-5 mg/liter nitrate | |
| (greater than) 5 mg/liter nitrate | |
| Nitrate sampling records unavailable | |

| B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.) | YES |
|---|---|
| Results greater than MCL or SAL | |
| VOCs detected at least once | |
| VOC test performed but 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.) | YES |
|---|---|
| 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 and other synthetic organic chemicals): | YES |
|---|---|
| Other SOCs detected | |
| Other SOC tests performed but none detected* | ~~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: _____

E. Bacterial contamination: YES

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

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source. ___

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 theses 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 X 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 X 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?

X 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  X NO

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

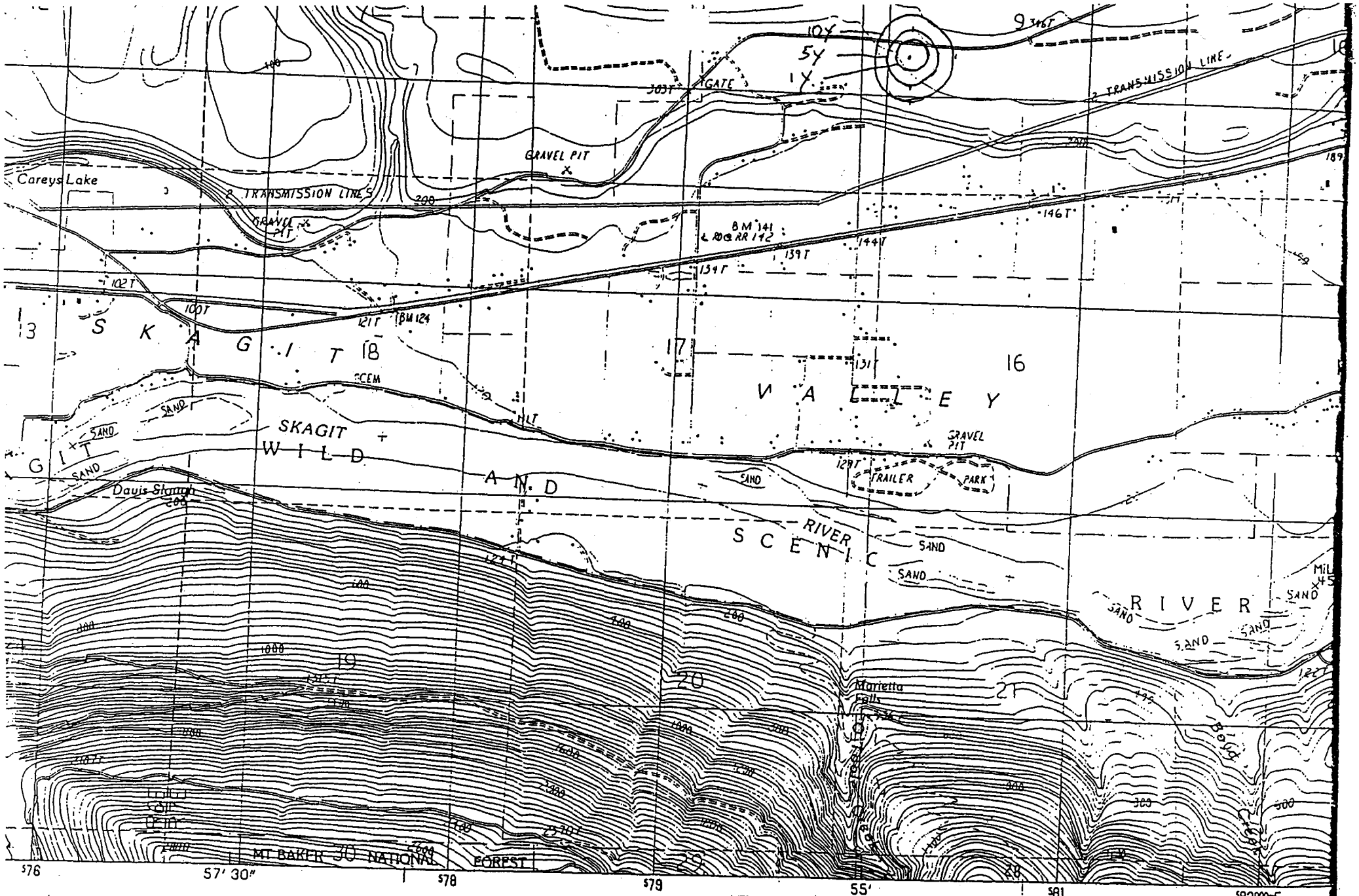
a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

| | 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.




INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1989

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. .....

**OWNER:** Name Skagit County Water Dist. 1 Address 745 Lusk Rd Concrete, WA. 98237

**LOCATION OF WELL:** County Skagit — ..... ¼ ..... ¼ Sec ..... T ..... N., R ..... 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) .... #1

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

**(5) DIMENSIONS:** Diameter of well 6 inches.
Drilled 202 ft. Depth of completed well 200 ft.

**(6) CONSTRUCTION DETAILS:**

Casing installed: 6" Diam. from 0 ft. to 185 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 [illegible]
Type Stainless Steel Model No. .....
Diam. 5 7/8 Slot size 30 from 185 ft. to 195 ft.
Diam. 5 7/8 Slot size 30 from 195 ft. to 200 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 151'4" ft. below top of well Date 2-17-87
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? [illegible]
Yield: 75 gal./min. with 3'4" 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 |
|---|---|---|---|---|---|
| [illegible] | 151'4" | | | | |
| | | | | | |
| | 151'4" | | | | |

Date of test 2-17-87
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 |
|---|---|---|
| Dirty Sand & Gravel | 0 | 37 |
| Blue Clay & Gravel | 37 | 50 |
| Blue Clay | 50 | 60 |
| Blue Clay & Gravel | 60 | 78 |
| Brown Clay & Gravel | 78 | 162 |
| Gravel | 162 | 170 |
| Water & Gravel | 170 | 200 |
| Brown Gravel & Clay | 200 | 202 |

151 SWL
185 open

Work started 2-12-87, 19..... Completed 2-13-87, 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] ..... (Well Driller)

License No. 11 0623 Date 12-18-87, 19.....

(USE ADDITIONAL SHEETS IF NECESSARY)

CY 050-1-20

## System Identification

| ID # | County | Source # | Name | Region |
|---|---|---|---|---|
| 00392 | Skagit | S02 | SKAGIT CO WATER DISTRICT #1 | NW |

| VOC Code→ | | Q Rating→ | Q1 |
|---|---|---|---|

## Susceptibility Assessment Routing Information

| | | | |
|---|---|---|---|
| ✓ | ENTER ADMIN | | Return to Water System Incomplete |
| ✓ | ENTER SURVEY | | Check WFI Data Base |
| | Contact Water System to Clarify | | Check Water Quality |

✗ or ✓ indicates a Yes answer

| | | | |
|---|---|---|---|
| Y | System Information Complete | Y | Evidence of Confined Aquifer |
| Y | Map Included | Y | Appropriate Well Log Included |
| Y | TOT Included w/ Map | Y | Static Water Level Included |
| Y | Source # Correct | Y | Open Interval Included |

## Record of Action

### Explanation of Changes

| Date | S2 WELL #2 ACTIVE WELL PERMANENT | Initials |
|---|---|---|
| 6/1/95 | | lp |
| 6/14/95 | Entered Admin Survey & Trial Rate | [illegible] |
| | | |
| | [illegible] | |
| | ENTER ADMIN ENTER SURVEY | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | Q Rating = Q1 | |
| | | |

# Ground Water Contamination
# Susceptibility Assessment Survey Form
Version 2.2

RECEI
MAR 1 6
NW DRINKING

IMPORTANT! Please 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 : Skagit County Water District #1

Water system name : Skagit County Water District #1

County: Skagit

Water system number: 003920 Source number: S02

Well depth: 204 (ft.) (*From WFI form*)

Source name: Well #2

WA well identification tag number: A B R - 3 1 2

_____ well not tagged

Number of connections: 108 Population served: 292

Township: 35N Range: 07E

Section: 9 1/4 1/4 Section: NW SW

Latitude/longitude (if available): N/A /

How was lat./long. determined?

____ global positioning device ____ survey ____ topographic map
____ other: _____

Q!

Depth - 203
O.I. - ?190
Confined
Seal - Yes
$NO_3$ - O.K.
VOC - O.K.

* Please refer to Assistance Packet 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 / 29 / 89 month/day/year

last reconstruction: ___ / ___ / ___ month/day/year

_____ information unavailable

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

P.O. Box 422, Burlington, WA 98233

___ well driller unknown

3) Type of well:

___Drilled: _X_ rotary ___ bored ___ cable (percussion) ___ Dug

___ Other: ___ spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: _____

Additional comments: _____

4) Well report available? _X_ YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 126 (gallons/min)

Source of information: WFI

If not documented, how was pumping rate determined? _____

___ Pumping rate unknown

6) Is this source treated? ___ YES _X_ 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]

___ (less than) 20 ft ___ 20-50 ft ___ 50-10 ft X 100-200 ft ___ (greater than) 200 ft

___ information unavailable

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

___ (less than) 20 ft ___ 20-50 ft ___ 50-100 ft X (greater than) 100 ft

___ flowing well/spring (artesian)

How was water level determined?

X 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): _____ (ft)

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

___ other: _____

X 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? X YES ___ NO

___ information unavailable

7) Sanitary setback:

___ (less than) 100 ft* X 100-120 ft ___ 120-200 ft ___ (greater than) 200 ft
* if less than 100 ft describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

___ wellhead enclosed in a wellhouse

X controlled access (describe): Vault with Fence

_____

___ other uses for wellhouse (describe): _____

_____

___ no wellhead control

9) Surface seal:

X 18 ft

___ (less than) 18 ft (no Department of Ecology approval)

___ (less than) 18 ft (Approved by Ecology, include documentation)

___ (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ (less than) 10 in/yr ___ 10-25 in/yr X (greater than) 25 in/yr

## PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 6,583,746 (gallons)

How was this determined?

X meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 310 (ft)

1 year ground water travel time : 440 (ft)

5 year ground water travel time: 980 (ft)

10 year ground water travel time: 1,390 (ft)

Information available on length of screened/open interval?

___ YES X NO

Length of screened/open interval: _____ (ft)

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

| | 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 (greater than) 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:

_____

_____

_____

_____

_____

_____

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

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

| | YES |
|---|---|
| Results greater than MCL | |
| (less than) 2 mg/liter nitrate | |
| 2-5 mg/liter nitrate | X |
| (greater than) 5 mg/liter nitrate | |
| Nitrate sampling records unavailable | |

4/4/89

1.2

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

| | YES |
|---|---|
| Results greater than MCL or SAL | |
| VOCs detected at least once | |
| VOC test performed but never detected | |
| VOC sampling records unavailable | X |

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.)

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

D. Other SOCs (pesticides and other synthetic organic chemicals):

| | YES |
|---|---|
| Other SOCs detected | |
| Other SOC tests performed but none detected * | 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: _____

E. Bacterial contamination:

| | YES |
|---|---|
| Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records). | ___ |
| Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source. | ___ |
| 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 theses 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 X 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 X 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?

X 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  X 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.

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. 015485

Water Right Permit No. _____

(1) OWNER: Name Skagit Water Dist. #1 Address 3593 Hwy 20 Concrete, WA. 98237

LOCATION OF WELL: County Skagit NW SW ¼ ¼ Sec 9 T. 35 N., R. 7 W.M.

(2a) STREET ADDDRESS OF WELL (or nearest address) _____

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

(4) TYPE OF WORK: Owner's number of well (if more than one) #2

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

(5) DIMENSIONS: Diameter of well 6" inches.
Drilled 203 feet. Depth of completed well 203 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" Diam. from 0 ft. to 193 ft.
Welded ☒ " Diam. from ft. to ft.
Liner installed ☐ " Diam. from ft. to ft.
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 Johnson
Type Stainless Steel Model No. _____
Diam. 5 3/8 Slot size #20 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 132.10 ft. below top of well Date 4-3-89
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? D.P.W. Drilling
Yield: 150 gal./min. with 19½ ft. drawdown after 6 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 |
|---|---|---|---|---|---|
| | | | | | |

Turbine Pump - Water in Column
to drift back in 6 hrs.

Date of test 4-3-89

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 |
|---|---|---|
| Brown Clay - Gravel | 0 | 24 |
| Blue Clay - Gravel | 24 | 32 |
| Brown Clay - Gravel | 32 | 50 |
| Blue Clay | 50 | 56 |
| Brown Clay, Gravel | 56 | 145 |
| Blue Clay | 145 | 175 |
| Water, Clay, Gravel | 175 | 192 |
| Clean Sand, Gravel | 192 | 203 |
| Brown Clay, Gravel | 203 | 204 |

175 - 152 = 23

193 open

Work started 3-27-89, 19. Completed 3-28-89, 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 DAHLMAN PUMP & WELL DRILLING, INC. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address Box 422, Burlington, WA. 98233

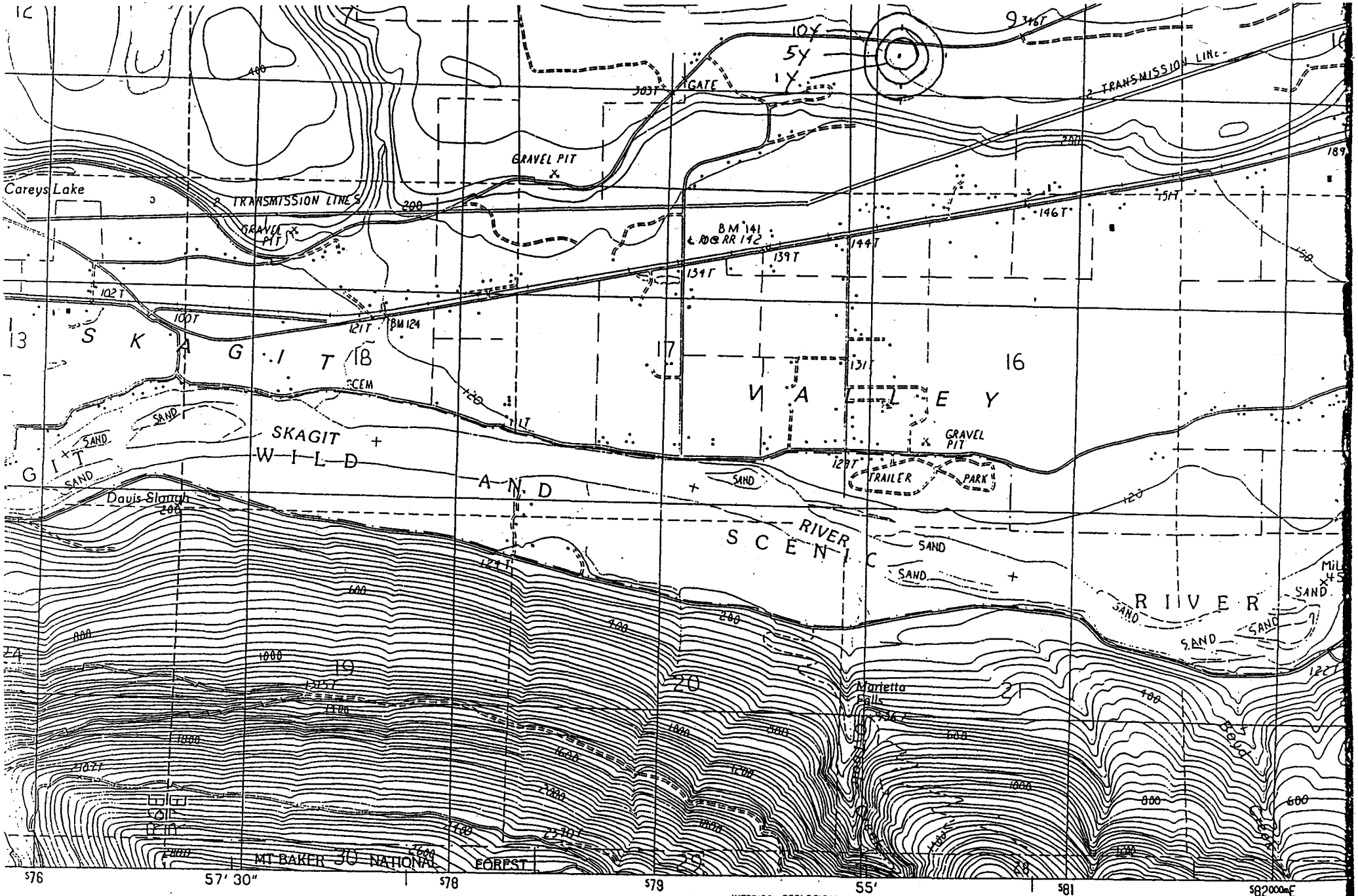
(Signed) Ted Dahlman (WELL DRILLER) License No. 0623

Contractor's Registration No. DAHLMPD164M9 Date 3-29-89, 19

(USE ADDITIONAL SHEETS IF NECESSARY)

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

by Engineer




SCALE 1:24 000

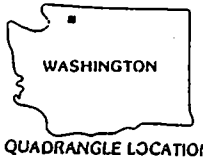
NORTH

KILOMETERS 1 .5 0 1 2

METERS 1000 0 1000 2000

MILES 1 .5 0 1

FEET 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10 000




QUADRANGLE LOCATION

Improved Road
Unimproved Road
Trail .....

# Appendix P

# Water Quality Monitoring Plan

Washington State Department of Health

# Water Quality Monitoring Report for the Year 2004

System: SKAGIT CO WATER DISTRICT #1 PWSID: 00392 Q Report Date: 03/26/2004
Contact: KELLY WYNN Group: A - Comm County: SKAGIT Region: NORTHWEST

## Part 1: List of Active Sources with Water Quality Monitoring Requirements

| DOH Source# | Name | Type | Use | Susceptibility Rating | Treated? |
|---|---|---|---|---|---|
| S03 | WELLS #1 & 2 WF | Well Field | Permanent | Moderate | N |

## Part 2: Sampling Schedule for the Year 2004

| Coliform Sampling (Routine) | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 |

- If the coliform (bacteriological) sampling schedule listed at the bottom of the current Water Facilities Inventory (WFI) form for your system is different from the schedule listed above, follow the schedule on the current WFI.
  Samples must be collected from representative points within the distribution system.
- Repeat samples are required following an unsatisfactory sample.
- A minimum of 5 routine samples are required the month following one or more unsatisfactory samples in accordance with your system's Coliform Monitoring Plan.

**Chemical Sampling Requirements**

- Source water chemical samples must be taken from a location as near to the source as possible, after any treatment.
- Nitrate and nitrite are included as part of a complete IOC.

| Month | Source | Monitoring Group | Test Method |
|---|---|---|---|
| January | | *No chemical sampling required this month* | |
| February | | *No chemical sampling required this month* | |
| March | | *No chemical sampling required this month* | |
| April | | *No chemical sampling required this month* | |
| May | | *No chemical sampling required this month* | |
| June | S03 | RADIUM 228 | RAD |
| July | | *No chemical sampling required this month* | |
| August | S03 | EDB AND OTHER SOIL FUMIGANTS | SOC - 504 |
| August | S03 | IOC | IOC |
| [illegible]t | S03 | VOLATILE ORGANIC CONTAMINANTS | VOC - 524.2 |
| September | | *No chemical sampling required this month* | |
| October | | *No chemical sampling required this month* | |
| November | | *No chemical sampling required this month* | |

# Water Quality Monitoring Report for the Year 2004

| | | | |
|---|---|---|---|
| mber | S03 | RADIUM 228 | RAD |

## Part 3: Water Quality Monitoring Waivers:

State Waivers

- Automatically granted to all sources based on DOH assessment of conditions within the state.
- No source-specific assessment, waiver application, or fee required.
- State waivers granted for the 2002 - 2004 compliance period are listed in Part 4.

## Part 4: Water Quality Monitoring Frequency

- Although waivers may be granted for your system, there may be some monitoring required as a condition of the waiver your system was granted.

| Monitoring Group | (Test Method) | Sample Location | Schedule/Status |
|---|---|---|---|
| Asbestos | ASB | Distribution | 1 sample(s) every 9 years |
| Bacteriological | Coli | Distribution | See routine sample schedule in part 2 |
| Dioxin | SOC - 1613 | All sources | State Waiver Thru Dec 2004 |
| Endothall | SOC - 548.1 | All sources | State Waiver Thru Dec 2004 |
| EDB and other soil fumigants | SOC - 504 | S03 | 1 sample(s) every 3 years |
| Glyphosphate | SOC - 547.1 | S03 | State Waiver Thru Dec 2004 |
| [illegible]cides | SOC - 515.2 | S03 | Waiver granted - No sampling required |
| [illegible]cides | SOC - 531.1 | S03 | Waiver granted - No sampling required |
| Inorganic Contaminants | IOC | S03 | 1 sample(s) every 3 years |
| Nitrate * | NIT | S03 | 1 sample(s) every 1 year |
| General Pesticides | SOC - 525.2 | S03 | Waiver granted - No sampling required |
| Diquat | SOC - 549.1 | All sources | State Waiver Thru Dec 2004 |
| Radium 228 | RAD 228 | S03 | 2 sample(s) every 10 months |
| Volatile Organic Contaminants | VOC - 524.2 | S03 | Waiver granted - 1 samples(s) every 3 years |

** These contaminant monitoring groups do not have waiver options under the SDWA.*

## Part 5: Regional Water Quality Monitoring Contact

For Further information call the Northwest Regional Office (Steve Hulsman)

## Northwest Regional Office

Phone: (253) 395-6777

## Special Note

***For Group A Community Systems Only: Your Consumer Confidence Report, summarizing the results of your 2004 water quality monitoring requirements is due before July 1, 2004. For further information visit www.doh.wa.gov/ehp/dw/Our_Main_Pages/consumer.htm or contact the CCR Coordinator at your Regional Office.***

# WATER QUALITY MONITORING - COLIFORM

## A. SUMMARY OF SYSTEM INFORMATION

**Sources:**

The system is supplied from a well field consisting of two wells

**Storage:**

Water storage consists of two 79,400 gallon Mt. Baker Silo concrete reservoirs.

**Treatment / Chlorination:**

None

**Pumping Stations:**

None

**Pressure Zones:**

One

**Population:**

The system currently supplies 110 single-family residential customers with an estimated total population of 270.

## B. SAMPLING INFORMATION

**Sampling Requirements:**

The minimum number of routine samples required each month is a function of the number of people supplied by the system. If a sample shows the presence of coliform, the number of repeat samples required to be collected in the month the presence was detected and in the following month is also a function of the number of people supplied by the system.

Both requirements for small systems are summarized below.

| Population | No. of Routine Samples Each Month | No. of Repeat Samples in the Same Month | No. of Samples In the Next Month |
|---|---|---|---|
| 25 to 1,000 | 1 | 4 | 5 |
| 1,001 to 2,500 | 2 | 3 | 5 |

In the month the presence of coliform was detected, the four repeat samples shall be collected from the following locations:

First Repeat: from the sample location of the previous "routine" sample.

Second Repeat: from a customer within 5 service connections either side of the "routine" sample location (e.g., upstream).

Third Repeat: from a customer within 5 service connections on the opposite side of the "routine" sample location as the second repeat sample location (e.g., downstream).

Fourth Repeat: from the source or right after storage that will provide useful information for determining a source of contamination.

For a system collecting two routine samples per month, the Fourth repeat sample may be omitted.

The month following the reported presence of coliform, five samples must be collected from the distribution system. The sample locations should include the "routine" sites scheduled for the current and previous month. The remaining sample sites should be chosen to represent an overall sampling of water quality in the distribution system.

**Additional Sampling:**

The above sampling schedule states the minimum requirements. The Purveyor may choose to collected additional samples.

When the presence of coliform occurs more than one time in a six-month period, additional samples should be collected from the sources of supply, other areas of distribution system, and from the storage reservoirs to determine extent of the coliform problem. Additional sampling will likely be required by the WA DOH if the repeat sampling shows the presence of coliform.

For the procedures to be followed if repeat samples show the presence of coliform, consult the Purveyor's "Emergency Procedures" herein and in the MANAGEMENT AND OPERATIONS MANUAL.

**Identified Sample Locations:**

The routine sample sites should be selected based on:

a) Alternating the sites within the service area.

b) To detect bacteria regrowth or system contamination, selecting sites near the end of the distribution system and/or that will be representative of a long retention time of water in the system.

Until the District's distribution system is extended to supply new customers, only one site will be used for collecting a routine sample.

The current routine and repeat sample sites are shown on the attached list.

These routine sites are shown in the accompanying drawing.

# COLIFORM MONITORING PLAN

## SYSTEM INFORMATION

| WATER SYSTEM NAME | | | | SYSTEM I.D. NUMBER |
|---|---|---|---|---|
| Skagit County Water District #1 | | | | 003920 |
| PEAK POPULATION SERVED | | | SERVICE CONNECTIONS | |
| 600 | | | 97 | |
| SOURCE | DOH SOURCE NUMBER | CATEGORY | WELL DEPTH | |
| | SO1 + SO2 = SO3 | Well | 200 | |
| TREATMENT | TREATMENT PROCESS | PURPOSE | STORAGE | STORAGE CAPACITY |
| | N/A | N/A | 2 Tanks | 160,000 Gallons |

## SAMPLING INFORMATION

| NUMBER OF ROUTINE SAMPLES REQUIRED BY REGULATION | 1 | NUMBER OF SAMPLE SITES NEEDED TO REPRESENT THE DISTRIBUTION SYSTEM | |
|---|---|---|---|

| | TYPE | SITE # | LOCATION |
|---|---|---|---|
| SAMPLE SITE GROUP | ROUTINE | 01 | 8298 ~~Pinnelli~~ Rd. Pinelli |
| | REPEAT | DS | 37688 SR 20 |
| | REPEAT | US | 7873 Pinelli Rd. |
| | REPEAT | DS | 8423 Pinelli Rd. |
| SAMPLE SITE GROUP | ROUTINE | 02 | 8739 Pinelli Rd. |
| | REPEAT | US | 8647 Pinelli Rd. |
| | REPEAT | DS | 8740 Pinelli Rd. |
| | REPEAT | DS | 37607 Cape Horn Rd. |
| SAMPLE SITE GROUP | ROUTINE | 03 | 37279 Cape Horn Rd. |
| | REPEAT | DS | 37311 Cape Horn Rd. |
| | REPEAT | DS | 37327 Cape Horn Rd. |
| | REPEAT | DS | 38331 Cape Horn Rd. |
| SAMPLE SITE GROUP | ROUTINE | 04 | 8751 Lusk Rd. |
| | REPEAT | DS | 37957 Cape Horn Rd. |
| | REPEAT | DS | 3598 Cape Horn Rd. |
| | REPEAT | US | Skagit River Wood |

## ADDITIONAL SAMPLING INFORMATION

WATER SYSTEM NAME

Skagit County Water District #1

| | TYPE | SITE # | LOCATION |
|---|---|---|---|
| SAMPLE SITE GROUP | ROUTINE | 05 | 8485 Lusk Road |
| | REPEAT | DS | 8598 Lusk Road |
| | REPEAT | US | 8198 Lusk Rd. |
| | REPEAT | 06 | 8329 Lusk Road |
| SAMPLE SITE GROUP | ROUTINE | 06 | 8064 Wyatt Lane |
| | REPEAT | US | 8100 Owens Lane |
| | REPEAT | US | 8107 Owens Lane |
| | REPEAT | US | 8067 Owens Lane |
| SAMPLE SITE GROUP | ROUTINE | | |
| | REPEAT | | |
| | REPEAT | | |
| | REPEAT | | |
| SAMPLE SITE GROUP | ROUTINE | | |
| | REPEAT | | |
| | REPEAT | | |
| | REPEAT | | |
| SAMPLE SITE GROUP | ROUTINE | | |
| | REPEAT | | |
| | REPEAT | | |
| | REPEAT | | |

**Following any routine unsatisfactory coliform sample results, at least 4 repeat samples must be collected. If any repeat sample results are sunsatisfactory, contact DOH (206/464-7670).** The purpose of repeat sampling is to identify the source of coliform contamination. Generally for small water systems, repeat sample sites should include: the routine site that failed, upstream and downstream of the routine site, and the well or reservoir. (Often insects entering the well or reservoir are the source of contamination).

# WATER QUALITY MONITORING – COPPER/LEAD

## A. REQUIREMENT FOR PROGRAM

The US EPA requirement to sample lead and copper levels in drinking water is intended to determine the need for water treatment to provide corrosion control. Most of the lead and copper that occurs in the drinking water is the result of corrosive water. The "action levels" to trigger the need for treatment are 0.015 mg/L and 1.3 mg/L for lead and copper, respectively. These criteria are conservative. For example, the State's maximum contamination levels for lead is 0.050 mg/L.

The system currently supplies 110 single-family full-time residential customers with an estimated total population of 270.

Under the US EPA "Lead and Copper Monitoring Guidance" criteria, the Purveyor is required to collect 5 initial tap samples once, following the procedures summarized below:

1. Sampling locations:

   a) Single family structures [1] containing copper pipes with lead solder installed before 1986 (date of lead solder ban in Washington), and before 1983 if possible

   b) Customers with water softeners should not be selected (softened water is corrosive)

2. Sampling protocol:

   a) Use one-liter sample bottles (supplied by lab)

   b) Sample should be obtained from a cold water kitchen or bathroom tap; first draw of water after water stands at least 6-hours in plumbing system; the customer may collect the sample

The complete sample procedure and discussion of the regulatory requirements may be found in the US EPA publication "Lead and Copper Monitoring Guidance for Water Systems Serving <100 Persons".

[1] No lead piping could be found within the distribution or plumbing systems. The locations for sampling, therefore, meet the "Tier 3" criterion.

## B. SAMPLING FREQUENCY AND LIST OF SAMPLE SITES

The utility is required to collect samples as described below:

| POPULATIION | < 100 | 101 TO 500 | 500 TO 3,300 |
|---|---|---|---|
| INITIAL AND 6 MONTHS | 5 | 10 | 20 |
| ANNUALLY FOR THREE YEARS | 5 | 10 | 10 |
| EVERY THIRD YEAR THEREAFTER | 5 | 10 | 10 |
| 90th PERCENTILE FOR INITIAL SAMPLES | Average of 2 highest | Second highest | Third highest |

The above table assumes that each sampling period, an action level is not exceeded. Because repeat samples are required, more sites than the number above meeting the location selection criterion should be identified.

Attached is the list of addresses of the single-family residential homes proposed for the collection of samples.

The age of buildings and the age and type of plumbing therein were determined by the Purveyor based on discussion with the property owners, review of Island County files, and/or Purveyor's files.

## C. COMPLIANCE WITH STANDARDS

The "action levels" to trigger the need for corrosion treatment is 0.015 mg/L and 1.3 mg/L for lead and copper, respectively. If the 90th percentile level of lead or copper exceed 0.015 or 1.3 mg/L, the "action level" is considered exceeded.

### LEAD AND COPPER MONITORING RESULTS – 2005

| SITE | LEAD (mg/L) | COPPER (mg/L) |
|---|---|---|
| 8370 Lusk Road | 0.002 | 0.022 |
| 37921 SR 20 | ND | 0.022 |
| 8298 Pinelli Road | ND | 0.052 |
| 37607 Cape Horn Road | ND | ND |
| 8496 Pinelli Road | ND | 0.064 |

Action level for lead is 0.015 mg/L
Action level of copper is 1.3 mg/L

Avocet Environmental Testing
1500 North State Street, Suite 200
Bellingham, WA 98225
(360) 734-9033

AVOCET
ENVIRONMENTAL TESTING

## DRINKING WATER INORGANIC CHEMICALS (IOC) REPORT

| | | | | | |
|---|---|---|---|---|---|
| System ID: | 00392Q | System Name: | Skagit Co. District #1 | | |
| Lab/Sample #: | 05716056 | Date Collected: | 08/04/04 | DOH Source #: | S03 |
| Multiple Source #s: | NA | Sample Type: | B | Sample Purpose: | C |
| Date Received: | 08/04/04 | Date Reported: | 08/23/04 | Supervisor: | CB |
| Date Digested: | NA | Date Analyzed: | 08/05/04 | | |
| County: | Skagit Co. | | | Group: | A B Private |
| Sample Location: | S03 | | | | |
| Send Report To: | Water and Waste Water Services<br>14263 Calhoun Road<br>Mt. Vernon, WA 98273 | | | Bill To: | Same |

| DOH# | Analyte | RESULT | Units | SRL | Trigger | MCL | Method | Analyst |
|---|---|---|---|---|---|---|---|---|
| | | | EPA Regulated | | | | | |
| 4 | Arsenic | 0.002 | mg/L | 0.01 | 0.01 | 0.01 | sm3113B | ML |
| 5 | Barium | <0.02 | mg/L | 0.1 | 2 | 2 | sm3113B | ML |
| 6 | Cadmium | <0.0005 | mg/L | 0.002 | 0.005 | 0.005 | sm3113B | ML |
| 7 | Chromium | <0.005 | mg/L | 0.01 | 0.1 | 0.1 | sm3113B | ML |
| 11 | Mercury | <0.0005 | mg/L | 0.0005 | 0.002 | 0.002 | EPA245.1 | ML |
| 12 | Selenium | <0.005 | mg/L | 0.005 | 0.05 | 0.05 | sm3113B | ML |
| 110 | Beryllium | <0.002 | mg/L | 0.003 | 0.004 | 0.004 | sm3113B | ML |
| 111 | Nickel | <0.01 | mg/L | 0.04 | 0.1 | 0.1 | sm3113B | ML |
| 112 | Antimony | <0.005 | mg/L | 0.005 | 0.006 | 0.006 | sm3113B | ML |
| 113 | Thallium | <0.002 | mg/L | 0.002 | 0.002 | 0.002 | EPA200.9 | ML |
| 116 | Cyanide | <0.05 | mg/L | 0.05 | 0.2 | 0.2 | sm4500CN-F | PS |
| 19 | Fluoride | 0.2 | mg/L | 0.2 | 2 | 4 | EPA300.0 | PS |
| 114 | Nitrite-N | <0.5 | mg/L | 0.5 | 0.5 | 1 | EPA300.0 | PS |
| 20 | Nitrate-N | 0.7 | mg/L | 0.5 | 5 | 10 | EPA300.0 | PS |
| 161 | Total Nitrate/Nitrite | | mg/L | 0.5 | 5 | 10 | EPA300.0 | |
| | | | EPA Regulated (Secondary) | | | | | |
| 8 | Iron | <0.021 | mg/L | 0.1 | 0.3 | 0.3 | sm3111B/sm3113B | ML |
| 10 | Manganese | <0.005 | mg/L | 0.01 | 0.05 | 0.05 | sm3111B/sm3113B | ML |
| 13 | Silver | <0.002 | mg/L | 0.01 | 0.05 | 0.05 | sm3113B | ML |
| 21 | Chloride | 1.1 | mg/L | 20 | 250 | 250 | EPA300.0 | PS |
| 22 | Sulfate | 7.1 | mg/L | 10 | 250 | 250 | EPA300.0 | PS |
| 24 | Zinc | <0.05 | mg/L | 0.2 | 5 | 5 | sm3111B | ML |
| | | | State Regulated | | | | | |
| 14 | Sodium | <5 | mg/L | 5 | ..... | ..... | sm3111B | ML |
| 15 | Hardness | 86 | mg/L | 10 | ..... | ..... | sm2340C | KD |
| 16 | Conductivity | 180 | umhos/cm | 10 | 700 | 700 | sm2510B | PS |
| 17 | Turbidity | 0.1 | NTU | 0.1 | 1 | 1 | EPA180.1 | PS |
| 18 | Color | 5 | color units | 5 | 15 | 15 | sm2120B | PS |
| 26 | TDS | NA | mg/L | 150 | 500 | 500 | sm2540C | |
| | | | State Unregulated | | | | | |
| 9 | Lead | <0.001 | mg/L | 0.002 | 0.015 | 0.015 | EPA200.9 | ML |
| 23 | Copper | <0.005 | mg/L | 0.2 | 1.3 | 1.3 | EPA200.9/sm3111B | ML |

*Comments:* Copy Sent to Washington State DOH

Trigger Level = DOH drinking water response level. Systems w/results exceeding this level must contact regional DOH for further information.
MCL (Maximum Contaminant Level) = If the contaminant amount exceeds the MCL, immediately contact your regional DOH office.
..... indicates the compound was not detected in sample; also, Method Detection Level (lab MDL) is lower than the SRL.
SRL (State Reporting Levels) = minimum reporting levels required by Washington DOH
TDS = Total Dissolved Solids
NA = Not Applicable

Copies: A - Client B - Lab

# Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com


## Synthetic Organic Chemicals (SOC's) Analysis Report
## EPA Test Method - 504.1

| | | | | | |
|---|---|---|---|---|---|
| System ID#: | 00392Q | System Name: | SKAGIT COUNTY WATER DIST. #1 | | |
| Lab/Sample Number: | 125 06482 | Collect Date: | 8/18/2004 | DOH Source #: | S03 |
| Multiple Source Nos: | | Sample Type: | A | Sample Purpose: | C |
| Date Received: | 8/25/2004 | Date Reported: | 31-Aug-04 | Supervisor: | JWC |
| Date Analyzed: | 8/27/2004 | Analyst: | SAT | | |
| County: | SKAGIT | | | | |
| Sample Location: | 16752 | | | | |
| Report To: | Address: | 1500 N. STATE ST. STE. 200 | | | |
| | City, State, ZIP | BELLINGHAM, WA 98225 | | | |
| | Phone Number: | 360-734-9033 | | | |

| DOH # | Contaminant | Result | Units | SRL | Trigger | MCL |
|---|---|---|---|---|---|---|
| | **EPA Regulated Chemicals** | | | | | |
| 102 | EDB | ND | ug/l | 0.02 | 0.02 | 0.05 |
| 103 | DBCP | ND | ug/l | 0.04 | 0.04 | 0.2 |
| | **State Unregulated Chemicals** | | | | | |
| 79 | 1,2,3-Trichloropropane | ND | ug/l | 0.5 | 0.5 | |

Notes:
ND = Not Detected within the sensitivity of the instrument
Numerical Entry = Detection at level indicated
SRL - *Minimum reporting level for Washington DOH*
MCL - EPA maximum contaminant level
Trigger - Washington DOH response level. If results exceed this level, contact the DOH

**Lab Supervisor:** John Cook

Anatek File # 04D1455-01

# Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

## Volatile Organic Chemicals (VOC's) Report - EPA Test Method 524.2

| | | | | | |
|---|---|---|---|---|---|
| System ID#: | 00392Q | System Name: | SKAGIT COUNTY WATER DIST. #1 | | |
| Lab/Sample Number: | 125 05835 | Collect Date: | | DOH Source #: | |
| Multiple Source Nos: | | Sample Type: | | Sample Purpose: | |
| Date Received: | 8/11/2004 | Date Reported: | 16-Aug-04 | Supervisor: | JWC |
| Date Analyzed | 8/12/2004 | Analyst | MAS | | |
| County: | SKAGIT | Report To: | 1500 N. STATE ST. STE. 200 | Phone Number: | 360-734-9033 |
| Sample Location: | TRIP BLANK 16055 | | BELLINGHAM, WA 98225 | | |

| DOH # | Analytes | Results | Units | SRL | Trigger | MCL |
|---|---|---|---|---|---|---|
| | **EPA Regulated** | | | | | |
| 45 | Vinyl Chloride | ND | ug/l | 0.5 | 0.5 | 2.0 |
| 46 | 1,1-Dichloroethylene | ND | ug/l | 0.5 | 0.5 | 7.0 |
| 47 | 1,1,1-Trichloroethane | ND | ug/l | 0.5 | 0.5 | 200 |
| 48 | Carbon Tetrachloride | ND | ug/l | 0.5 | 0.5 | 5.0 |
| 49 | Benzene | ND | ug/l | 0.5 | 0.5 | 5.0 |
| 50 | 1,2-Dichloroethane | ND | ug/l | 0.5 | 0.5 | 5.0 |
| 51 | Trichloroethylene | ND | ug/l | 0.5 | 0.5 | 5.0 |
| 52 | 1,4-Dichlorobenzene | ND | ug/l | 0.5 | 0.5 | 75 |
| 56 | Dichloromethane | ND | ug/l | 0.5 | 0.5 | 5.0 |
| 57 | trans-1,2-Dichloroethylene | ND | ug/l | 0.5 | 0.5 | 100 |
| 60 | cis-1,2-Dichloroethylene | ND | ug/l | 0.5 | 0.5 | 70 |
| 63 | 1,2-Dichloropropane | ND | ug/l | 0.5 | 0.5 | 5.0 |
| 66 | Toluene | ND | ug/l | 0.5 | 0.5 | 1000 |
| 67 | 1,1,2-Trichloroethane | ND | ug/l | 0.5 | 0.5 | 5.0 |
| 68 | Tetrachloroethylene | ND | ug/l | 0.5 | 0.5 | 5.0 |
| 71 | Chlorobenzene | ND | ug/l | 0.5 | 0.5 | 100 |
| 73 | Ethylbenzene | ND | ug/l | 0.5 | 0.5 | 700 |
| 76 | Styrene | ND | ug/l | 0.5 | 0.5 | 100 |
| 84 | 1,2-Dichlorobenzene | ND | ug/l | 0.5 | 0.5 | 600 |
| 95 | 1,2,4-Trichlorobenzene | ND | ug/l | 0.5 | 0.5 | 70 |
| 160 | Total Xylenes | ND | ug/l | 0.5 | 0.5 | 10000 |
| 74 | m/p Xylenes(MCL for Total) | ND | ug/l | 0.5 | 0.5 | |
| 75 | o-Xylene(MCL for Total) | ND | ug/l | 0.5 | 0.5 | |
| | **EPA Unregulated** | | | | | |
| 27 | Chloroform | ND | ug/l | 0.5 | 0.5 | |
| 28 | Bromodichloromethane | ND | ug/l | 0.5 | 0.5 | |
| 29 | Chlorodibromomethane | ND | ug/l | 0.5 | 0.5 | |
| 30 | Bromoform | ND | ug/l | 0.5 | 0.5 | |
| 53 | Chloromethane | ND | ug/l | 0.5 | 0.5 | |
| 54 | Bromomethane | ND | ug/l | 0.5 | 0.5 | |
| 55 | Chloroethane | ND | ug/l | 0.5 | 0.5 | |
| 58 | 1,1-Dichloroethane | ND | ug/l | 0.5 | 0.5 | |
| 59 | 2,2-Dichloropropane | ND | ug/l | 0.5 | 0.5 | |
| 62 | 1,1-Dichloropropylene | ND | ug/l | 0.5 | 0.5 | |
| 64 | Dibromomethane | ND | ug/l | 0.5 | 0.5 | |
| 70 | 1,3-Dichloropropane | ND | ug/l | 0.5 | 0.5 | |
| 72 | 1,1,1,2-Tetrachloroethane | ND | ug/l | 0.5 | 0.5 | |
| 78 | Bromobenzene | ND | ug/l | 0.5 | 0.5 | |
| 79 | 1,2,3-Trichloropropane | ND | ug/l | 0.5 | 0.5 | |
| 80 | 1,1,2,2-Tetrachloroethane | ND | ug/l | 0.5 | 0.5 | |
| 81 | o-Chlorotoluene | ND | ug/l | 0.5 | 0.5 | |
| 82 | p-Chlorotoluene | ND | ug/l | 0.5 | 0.5 | |
| 83 | m-Dichlorobenzene | ND | ug/l | 0.5 | 0.5 | |
| 154 | 1,3-Dichloropropene | ND | ug/l | 0.5 | 0.5 | |
| | **State Unregulated** | | | | | |
| 65 | cis-1,3-Dichloropropene | ND | ug/l | 0.5 | 0.5 | |
| 69 | trans-1,3-Dichloropropene | ND | ug/l | 0.5 | 0.5 | |
| 85 | Fluorotrichloromethane | ND | ug/l | 0.5 | 0.5 | |
| 86 | Bromochloromethane | ND | ug/l | 0.5 | 0.5 | |
| 87 | Isopropylbenzene | ND | ug/l | 0.5 | 0.5 | |
| 88 | n-Propylbenzene | ND | ug/l | 0.5 | 0.5 | |
| 89 | 1,3,5-Trimethylbenzene | ND | ug/l | 0.5 | 0.5 | |
| 90 | tert-Butylbenzene | ND | ug/l | 0.5 | 0.5 | |
| 91 | 1,2,4-Trimethylbenzene | ND | ug/l | 0.5 | 0.5 | |
| 92 | sec-Butylbenzene | ND | ug/l | 0.5 | 0.5 | |
| 93 | p-Isopropyltoluene | ND | ug/l | 0.5 | 0.5 | |
| 94 | n-Butylbenzene | ND | ug/l | 0.5 | 0.5 | |
| 96 | Naphthalene | ND | ug/l | 0.5 | 0.5 | |
| 97 | Hexachlorobutadiene | ND | ug/l | 0.5 | 0.5 | |
| 98 | 1,2,3-Trichlorobenzene | ND | ug/l | 0.5 | 0.5 | |
| 102 | EDB(Scan Confirm 504.1) | ND | ug/l | 0.5 | 0.5 | |
| 103 | DBCP(Scan Confirm 504.1) | ND | ug/l | 0.5 | 0.5 | |
| 162 | Dichlorodifluoromethane | ND | ug/l | 0.5 | 0.5 | |

ND = Not Detected within the sensitivity of the instrument
SRL - Minimum reporting level for Washington DOH
MCL - EPA maximum contaminant level
Trigger - Washington DOH response level.
If results exceed this level, contact the DOH

Lab Supervisor 16-Aug-04

Anatek File # 04D1275-02

Washington State Public Health Laboratory
1610 NE 150th Street, Shoreline WA. 98155-9701
Phone (206) 361-2896 FAX (206) 361-2899

# RADIONUCLIDE ANALYSES REPORT

| | | |
|---|---|---|
| System ID No.: 00392Q | System Name: SCWD #1 | |
| Lab/Sample No: 023611324 | Date Collected: 06/16/04 12:30 | DOH Source No: S03 |
| Multiple Source Nos: | Sample Type: B | Sample Purpose: C |
| Date Received: 06/18/04 | Date Reported: 10/26/04 | Supervisor: [illegible] |
| | Date Analyzed: 10/17/04 | Analyst: MAT |
| County: Skagit | Group: A | |
| Sample Location: S03 | | |
| Send Report To: Avocet Environmental Testing, Inc.<br>1500 North State Street, Suite 200<br>Bellingham, WA 98225 | Bill To: Avocet Environmental Testing, Inc.<br>1500 North State Street, Suite 200<br>Bellingham, WA 98225 | |

| DOH # | ANALYTES | LAB MDA | RESULTS | UNITS | DATE ANALYZED | MCL | ANALYST'S INITIALS & METHOD USED |
|---|---|---|---|---|---|---|---|
| | EPA/STATE REGULATED (These analyses should be performed in order as listed) | | | | | | |
| 165 | Gross Alpha | | | pCi/L | | -- | |
| 166 | Radium 228 | 0.6 | ND | pCi/L | 10/17/04 | | MAT/3M DISK |
| | *Determine Radium 226 activity if Gross Alpha is greater than 5.0 pCi/L** | | | | | | |
| 39 | Radium 226* | | | pCi/L | | -- | |
| | *Determine Uranium activity if Gross Alpha is greater than 15.0 pCi/L ** | | | | | | |
| 105 | Uranium** (mass) | | | µg/L | | 30 | |
| 105 | Uranium** (activity) | | | pCi/L | | 20** | |
| | *Depending on the foregoing data determine the following (must be completed if data is available):* | | | | | | |
| 40 | Radium 226 + 228 | | | pCi/L | | 5 | |
| 40 | Gross Alpha*** + Radium 228 | | | pCi/L | | 5 | |
| 41 | Gross Alpha minus Uranium | | | pCi/L | | 15 | |
| | *Do the following only if specifically requested by the client or the state* | | | | | | |
| 42 | Gross Beta**** | | | pCi/L | | 50 | |
| 43 | Tritium**** | | | pCi/L | | 20,000 | |
| 44 | Strontium 90**** | | | pCi/L | | 8 | |
| 107 | Cesium 134**** | | | pCi/L | | *** | |
| 108 | Iodine 131**** | | | pCi/L | | *** | |

*Comments:* Avocet Lab#05714079

**MCL (Maximum Contaminant Level):** If the contaminant amount exceeds the MCL, immediately contact your regional DOH office.
**MDA: Minimum Detectable Amount.**
NA (Not Analyzed): use in the results column for compounds not included in the current analysis.
ND (Not Detected): use in the results column for compounds analyzed and not detected at a level greater than or equal to the MDA.
*** If Gross Alpha is less than , or equal to, 5 pCi/L,** it may be assumed that the Alpha activity is entirely due to Radium 226 (i.e., Radium 226 would not need to be run). The Alpha activity is then added to the Radium 228 activity (i.e., Beta activity) for MCL determinations. If the sum of the Alpha activity plus the Radium 228 activity is greater than 5 pCi/L, Radium 226 activity must then be determined for water system compliance purposes (i.e., Radium 226 + Radium 228 activity)
****Uranium's MCL is given in mass terms (µg/L).** When Uranium is determined by mass methods, it must be converted to activity levels (pCi/L) for calculation of the MCL (Gross Alpha less Uranium). A conversion factor of 0.67 pCi/l per µg/L should be used. Uranium needs to be determined only when the Gross Alpha exceeds 15 pCi/L.
:e Gross Alpha in lieu of Radium 226 when the Gross Alpha is less than, or equal to, 5.0 pCi/L
:he MCL for **beta particle and photon radioactivity from man-made radionuclides** is the average annual concentration which shall not produce an annual dose equivalent to the total body or any internal organ greater than four millirem/yr.

Avocet Environmental Testing
1500 North State Street, Suite 200
Bellingham, WA 98225
(360) 734-9033

AVOCE ENVIRONMENTAL TESTI

# DRINKING WATER REPORT FOR ARSENIC

| | | | | | |
|---|---|---|---|---|---|
| System ID No.: | 00392Q | Client Name: | Skagit County Water District | | |
| Lab/Sample No: | 05790246 | Date Collected: | 08/28/02 | DOH Source No: | SO3 |
| Multiple Source Nos.: | NA | Sample Type: | U | Sample Purpose: | C |
| Date Received: | 08/28/02 | Date Reported: | 09/04/02 | Supervisor: | CB |
| | | Date Analyzed: | 08/30/02 | | |
| County: | Skagit | Group : | (A) B Private | | |
| Sample Location: | Pump House Faucet | | | | |
| Send Report To: | Water & Wastewater Services<br>14263 Calhoun Road<br>Mt. Vernon, WA 98273 | Bill To: | Same | | |

| DOH # | ANALYTE | RESULT | UNITS | SRL | TRIGGER | MCL | Method | Analyst |
|---|---|---|---|---|---|---|---|---|
| *EPA REGULATED* | | | | | | | | |
| 4 | Arsenic | 0.003 | mg/l | 0.002 | 0.05 | 0.05 | sm3113B | ML |

***NOTES:***

SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).

Trigger Level: DOH drinking water response level. Systems with compounds detected at concentrations in excess of this level are required to take additional samples. Contact your regional DOH office for further information.

MCL (Maximum Contaminant Level): If the contaminant amount exceeds the MCL, immediately contact your regional DOH office

< : This symbol before a number indicates the compound was not detected in the sample at or above the concentration indicated.

*Comments:* Copy sent to Washington State DOH

Copies: A - Client B - DOH (2) C - County D - Laboratory

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Bellingham, WA 98225
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RECEIVED
APR 18 2002
ISLAND CO HEALTH DEPT.

# DRINKING WATER REPORT FOR NITRATE

| | | | | | |
|---|---|---|---|---|---|
| System ID: | 00392Q | System Name: | Skagit County Water District #1 | | |
| Lab/Sample #: | 05784690 | Date Collected: | 04/03/02 | DOH Source #: | SO3 |
| Multiple Source #s: | NA | Sample Type: | B | Sample Purpose: | C |
| Date Received: | 04/04/02 | Date Reported: | 04/05/02 | Supervisor: | CB |
| | | Date Analyzed: | 04/04/02 | | |
| County: | Island | Group : | (A) B Private | | |
| Sample Location: | Pump House Well #1 - Well #2 | | | | |
| Send Report To: | Water and Wastewater Services<br>14263 Calhoun Rd.<br>Mt. Vernon, WA 98273 | Bill To: | Same | | |

| DOH # | ANALYTE | RESULT | UNITS | SRL | TRIGGER | MCL | Method | Analyst |
|---|---|---|---|---|---|---|---|---|
| *EPA Regulated* | | | | | | | | |
| 20 | Nitrate - N | 1.0 | mg/l | 0.5 | 5 | 10 | 300.0 | CB |

***NOTES:***

SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).

Trigger Level: DOH drinking water response level. Systems with compounds detected at concentrations in excess of this level are required to take additional samples. Contact your regional DOH office for further information.

MCL (Maximum Contaminant Level): If the contaminant amount exceeds the MCL, immediately contact your regional DOH office

< : *This symbol before a number indicates the compound was not detected in the sample at or above the concentration indicated.*

***Comments:*** Copy sent to Washington State DOH.

Copies: A - Client B - DOH (2) C - County D - Lab

Washington State Public Health Laboratory
1610 NE 150th Street, Shoreline WA. 98155-9
Phone (206) 361-2896 FAX (206) 361-2899

# RADIONUCLIDE ANALYSES REPORT

| | | |
|---|---|---|
| System ID No.: 00392Q | System Name: Skagit County Water District 1 | |
| Lab/Sample No: 02368727 | Date Collected: 8/15/01 | DOH Source No: S03 |
| Multiple Source Nos: | Sample Type: B | Sample Purpose: C |
| Date Received: 8/17/01 | Date Reported: 10/13/01 | Supervisor: JR/MS |
| | Date Analyzed: 10/01/01 | Analyst: RAS |
| County: Skagit | Group: A | |
| Sample Location: Pump house | | |
| Send Report To: Avocet Environmental Testing<br>1500 State Street<br>Bellingham, WA 98225 | Bill To: Avocet Environmental Testing<br>1500 State Street<br>Bellingham, WA 98225 | |

| DOH # | ANALYTES | LAB MDA | RESULTS | UNITS | DATE ANALYZED | MCL | ANALYST/METHOD |
|---|---|---|---|---|---|---|---|
| EPA REGULATED | | | | | | | |
| 39 | Radium 226 | | | pCi/l | | 3 | |
| 40 | Radium 226 + 228 | | | pCi/l | | 5 | |
| 41 | Gross Alpha | 2 | ND | pCi/l | 10/01/01 | 15* | RAS/EPA 900.0 |
| 42 | Gross Beta | 4 | ND | pCi/l | 10/01/01 | 50 | RAS/EPA 900.0 |
| 43 | Tritium | | | pCi/l | | 20000 | |
| 44 | Strontium 90 | | | pCi/l | | 8 | |
| 107 | Cesium 134 | | | pCi/l | | ** | |
| 108 | Iodine 131 | | | pCi/l | | ** | |
| EPA UNREGULATED | | | | | | | |
| 105 | Uranium | | | pCi/l | | | |
| 109 | Radon | | | pCi/l | | | |

*NOTES:*

**MCL: Maximum Contaminant Level.** If the contaminant amount exceeds the MCL, immediately contact your regional DOH office.

**MDA: Minimum Detectable Amount.**

**NA (Not Analyzed)** indicates this analyte was not included in the current analysis.

**ND (Not Detected)** indicates this analyte was analyzed and not detected at a level greater than or equal to the MDA.

* Excluding Uranium

** The MCL for beta particle and photon radioactivity from man-made radionuclides is the average annual concentration which shall not produce an annual dose equivalent to the total body or any internal organ greater than four milli-rem/yr.

*Comments*

Avocet Lab # 057-77571

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# INORGANIC COMPOUNDS (IOC) REPORT FOR LEAD & COPPER

Client Name: Water and Waste Water Services
14263 Calhoun Road
Mount Vernon, WA 98273

Reference Number: 05-15884
Project: 00392Q Lead & Copper

System Name: SKAGIT CO WATER DISTRICT #1
System ID Number: 00392Q
DOH Source Number: 93
Multiple Sources:
Sample Type: A
Sample Purpose: C
County: Skagit

Analyst mvp
Date Received: 12/23/2005
Report Date: 1/31/2006

Supervisor:

| DOH# | 23 (Copper) | 9 (Lead) |
|---|---|---|
| SRL | 0.02 mg/L | 0.002 mg/L |
| AL | 1.3 mg/L | 0.015 mg/L |

| Lab Number | Date Collected | Site / Location | Copper mg/L | Lead mg/L | METHOD |
|---|---|---|---|---|---|
| 04635042 | 12/22/05 | 8370 Husk Rd | 0.022 | 0.002 | 200.8 |

NOTES:

tate Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).

Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A ---ok MCL value indicates a level is not currently established.

AL (Federal Action Level): 0.015mg/L for Lead and 1.3 mg/L for Copper. If the compounds detected at concentration in excess of this level, contact your regional DOH office for further information.

ND (Not Detected): indicates that the compound was not detected above the Specified Reporting Limit (SRL).

NA (Not Analyzed): indicates that this compound was not analyzed.

Comments:

FORM: Pb&Cu

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# INORGANIC COMPOUNDS (IOC) REPORT FOR LEAD & COPPER

Client Name: Water and Waste Water Services
14263 Calhoun Road
Mount Vernon, WA 98273

Reference Number: 05-15541
Project: Skagit

System Name: SKAGIT CO WATER DISTRICT #1
System ID Number: 00392Q
DOH Source Number: 93
Multiple Sources:
Sample Type:
Sample Purpose: C
County: Skagit

Analyst mvp
Date Received: 12/15/2005
Report Date: 1/6/2006

Supervisor:

| DOH# | 23 (Copper) | 9 (Lead) |
|---|---|---|
| SRL | 0.02 mg/L | 0.002 mg/L |
| AL | 1.3 mg/L | 0.015 mg/L |

| Lab Number | Date Collected | Site / Location | Copper mg/L | Lead mg/L | METHOD |
|---|---|---|---|---|---|
| 04634339 | 12/15/05 | 37921 SR 20 | 0.022 | ND | 200.8 |
| 04634340 | 12/15/05 | 8298 Pinelli Rd | 0.052 | ND | 200.8 |
| 04634341 | 12/15/05 | 37607 Cape Horn Rd | ND | ND | 200.8 |
| 04634342 | 12/15/05 | 8496 Pinelli Rd | 0.064 | ND | 200.8 |

NOTES:

SRL (State Reporting Level): indicates the *minimum reporting level required by the Washington Department of Health (DOH).*

Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A CL value indicates a level is not currently established.

deral Action Level): 0.015mg/L for Lead and 1.3 mg/L for Copper. If the compounds detected at concentration in excess of this level, contact your regional DOH office for further information.

ND (Not Detected): indicates that the compound was not detected above the Specified Reporting Limit (SRL).

NA (Not Analyzed): indicates that this compound was not analyzed.

Comments:

FORM: Pb&Cu

Avocet Environmental Testing
1500 North State Street, Suite 200
Bellingham, WA 98225
(360) 734-9033

AVOCET
ENVIRONMENTAL TESTING

DRINKING WATER REPORT for LEAD & COPPER

| | | | | | |
|---|---|---|---|---|---|
| System ID #: | 00392Q | System Name: | Skagit County Water District #1 | | |
| DOH Source No.: | S93 (LCR) | Sample Type: | A | Sample Purpose: | C |
| Date Received: | 05/22/02 | Date Reported: | 06/13/02 | Supervisor: | CB |
| Date Analyzed: | 06/10/02 | Analyst: | ML | Group: | A B Private |
| County: | Skagit | | | Sample Location: | (See table below) |
| Send Report To: | Water and Wastewater Services<br>14263 Calhoun Rd.<br>Mt. Vernon, WA 98273 | Bill To: Same | | | |

| | LEAD | COPPER |
|---|---|---|
| DOH # | 9 | 23 |
| SRL | 0.002 mg/L | 0.02 mg/L |
| AL | 0.015 mg/L | 1.3 mg/L |
| METHOD | 200.9 | 3111B/200.9 |

| Lab Sample # | Date Collected | Site / Location | Result Lead mg/L | Result Copper mg/L |
|---|---|---|---|---|
| 05786418 | 05/22/02 | 8485 Lusk Rd. | 0.004 | <0.005 |
| 05786419 | 05/22/02 | 37844 Schulze | <0.001 | <0.005 |
| 05786420 | 05/22/02 | 37921 SR 20 | <0.001 | 0.046 |
| 05786421 | 05/22/02 | 8329 Lush Rd. | <0.001 | 0.031 |
| 05786422 | 05/22/02 | 37607 Cape Horn Rd. | <0.001 | 0.018 |

***NOTES:***

AL (Federal Action Levels): 0.015 mg/L for Lead and 1.3 mg/L for Copper. If compounds detected at concentration are in excess of this level, contact your regional DOH office for further information.

SRL (State Reporting Levels): Indicates the minimum reporting level required by the Washington DOH

< = This symbol before a number means the compound was not detected in the sample; also, the laboratory used a Method Detection Level (lab MDL) lower than the SRL.

*COMMENTS:* Copy sent to Washington State DOH

Copies: A - Client B - DOH (2) C - County D - Lab

# Skagit County Water District No. 1
# Water Quality Report
# 2004

## Consumer Confidence Report For the Year 2004

We're pleased to present to you the 2004 Annual Water Quality Report. This report is designed to inform you about the quality of the water that we provided last year. Included are details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) and state standards. We believe the information provides a valuable service to our customers.

Your drinking water is highly regulated by the EPA and is tested regularly. Keeping pace with upgraded water testing and more stringent federal standards is a challenge but one that SCWD #1 strongly supports. Our constant goal is to provide you with a safe source of drinking water.

## Who We Are.....

SCWD #1 is a water utility of 121 connections. Our Board of Directors consists of 3 members working with a certified water operator, who are proud to bring you good quality water. Any member or resident of this water utility is welcome to attend our regularly scheduled meeting the third Wednesday of every month at 7:00 pm, which is held at the Birdsview Fire Hall on Russell Road. If you have any questions or concerns regarding this water utility, your water, or this report we will be happy to answer them. **In case of emergency, please call Water & Wastewater Services, our water system operator, at 1-800-895-8821 or after regular hours at 1-360-336-6935.**

SCWD #1 water sources consist of 2 wells and 2 reservoirs, one is 200 feet deep and the other is 203 feet ep. They are located about half a mile above Pinelli Road. After the water is drawn from the wells we store .. in the reservoirs and it is delivered to your home.

## Presence of Contaminants in Drinking Water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791).

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radio-active material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water before we treat it include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture and residential uses.
- Radioactive contaminants, which are naturally occurring.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

## Presence of Contaminants Continued....

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain ›ntaminants in water provided by public water systems. We treat our water according to EPA's regulations.

**Some people may be more vulnerable to contaminants** in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

## Water Quality Data

The table below lists all the drinking water contaminants that we detected during the 2004 calendar year. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done January 1 through December 31, 2004. The state requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, is more than one year old.

### Terminology

**MCLG** (Maximum Contaminant Level Goal): the level of a contaminant allowed in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

**MCL** (Maximum Contaminant Level): the highest level of a contaminant that is allowed in drinking water. MCL's are set close to the MCLG's as feasible using the best available treatment technology.

**AL** (Action Level): the concentration of a contaminant which, when exceeded, triggers treatment or other requirements which a water system must follow.

**ND** (Not Detected)

**ppm** (parts per million or milligrams per liter (mg/L)): about the same as ½ an aspirin tablet dissolved in a bathtub full (50 gallons of water)

**ppb** (parts per billion or microgrms per liter): about the same as 1 dissolved aspirin tablet in a 100,000 gallon swimming pool.

| Inorganic Contaminants | MCL | MCLG | SCWD #1 Water | Range of Detections | Sample Date | Violation | Typical Sources of Contaminant |
|---|---|---|---|---|---|---|---|
| Nitrate as nitrogen (ppm) | 10 | 10 | .7 | .05-.7 | 8/2004 | NO | Runoff from fertilizer use |

We have learned through our monitoring and testing that some elements have been detected. The EPA has determined that your water IS SAFE at these levels. Every month our system is tested for Fecal Coliform Bacteria. All water samples came back from the lab with a good report. As you can see by the table, our system had no violations in 2004. We're proud that your drinking water meets or exceeds all Federal and State requirements.

## Additional Information

**"hy do the taste and odor of my water sometimes differ?** Water naturally varies in taste and odor at fferent times of the year. Taste and odor problems can also come from new or old pipelines, plumbing fixtures or changes in water quality. Customers may notice changes during severe winter storms, when reservoirs are low, or during hot weather. SCWD #1 closely monitors such changes to ensure they do not affect the safety of the water.

## Additional Information Continued....

**Security – We all need to be careful!** While Washington State's Division of Drinking Water has never been lax regarding this issue, they have implemented more stringent guidelines to be sure that all that can be done is being done to protect your quality water. Four topics being focused on are 1) Emergency Response, 2) Sanitary Surveys, 3) Operator Certifications, and 4) Enforcement. SCWD #1 wholly support the DOH in these efforts and continue to do all that can be done to maintain good quality water.

**Important water conservation tips:**

**Bathroom:**

- Check toilets for leaks. Drop food coloring or a leak-detection tablet in the toilet tank. If color appears in the bowl, there is a leak that requires immediate attention.
- Reduce the water level per flush by installing a water displacement device in the toilet tank. A plastic bottle, weighted with water or sand works well. Never use a brick.
- Install water-saving shower-heads or flow restrictors, which are available at local hardware stores and other retail outlets.
- Check faucets and pipes for leaks. A small drip from a worn washer can waste 20 or more gallons a day. Larger leaks waste even more.

**Kitchen & Laundry:**

- Turn the dishwasher and washing machines on only when full.
- Buy and install a faucet aerator.

**Lawn & Garden:**

- Water only when needed. Frequency depends on the type of plants and soil conditions.
- Water the lawn in the evening when evaporation is less likely to occur. Avoid watering during the heat of the day or when windy. Use a broom, not a hose when cleaning driveways and walkways.

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
DIVISION OF DRINKING WATER

# CONSUMER CONFIDENCE REPORT CERTIFICATION FORM

**For Calendar Year 2000 Reports due before July 1, 2001**
This certification form is due before October 1, 2001

*Please note*: Although the report and certification are not required to be sent to the state by the same date, if Drinking Water Regional Office staff receive the certification at the same time as the report (by July 1, 2001), we will be better able to identify your report and properly credit your system.

1. Please complete and attach this certification to your Consumer Confidence Report. Send both to the Regional Office for your county (addresses follow) **before July 1, 2001**. File a copy for your records.

2. Mail or deliver your report and certification with enough advance time for the report to be received in the Regional Office **before July 1, 2001** in order to be credited for compliance purposes. Copies of reports received after July 1 will not be considered on time, even if postmarked July 1. Copies of certifications received after October 1 will not be considered on time, even if postmarked October 1.

CERTIFICATION FOR:

Water System Name Skagit County Water District #1

Water System ID Number 00392Q

County Name Skagit

I confirm that this Consumer Confidence Report has been distributed in accordance with the Consumer Confidence Report state requirement (Chapter 246-290 Part 7 Subpart B WAC) and that the information contained in the report is correct and consistent with the compliance monitoring data previously submitted to the Washington State Department of Health Division of Drinking Water.

CERTIFIED BY:

Signature [signature]

Printed Name Kelly T. Wyllie

Phone 360-466-4443

Date 6-18-01

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JUN 20 2001
NW DRINKING WATER

# Skagit County Water District Number 1: Quality Water Report

Volume 3, Issue 1 July 2001 Water and Wastewater Services ID # 00392Q Phone Toll Free 1-800-895-8821

## *CCR 2000*

*We're pleased to present to you this year's Annual Quality Water Report. This report is designed to educate and inform you about the quality water and services we deliver to you every day. This publication conforms to the federal regulation requiring water utilities to provide water quality information annually. We believe the information provides a valuable service to our customers.*

This report is technical in nature and our goal is to understand what is in your water and what isn't. Your drinking water is highly regulated by the Environmental Protection Agency (EPA) and is tested regularly. Our constant goal is to provide you with a safe source of drinking water.

The Skagit County Water District #1 number one water source is the primary local well, 200 ft deep. Well #2 was installed in 1989 and is 203 feet deep. The wells are located within a fenced compound about ½ mile above Pinelli Road.

All drinking water, including bottled water contains at least small amounts of some contaminants. The presence of these does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

**Potential contaminants and their sources include:**

- **Microbial contaminants such as viruses/bacteria, from wildlife.**
- **Inorganic contaminants such as salts and metals, which are naturally occurring.**
- **Organic contaminants, which are by-products of dis-infection processes; and**
- **Radioactive contaminants, which can be naturally occurring.**

Keeping pace with up-graded water testing and more stringent federal standards is a challenge but one that Skagit County Water District #1 strongly supports.

Because we are committed to keeping you informed about water issues, we encourage you to read this report. Each year we will update your report in response to changing federal requirements, so you may want to save it. If you have questions or comments on this report or suggestions for future reports, please call:

1-800-895-8821.

**INSIDE THIS ISSUE**

1 **Health Issues**

2 **Water Quality Monitoring Results for 2000**

3 **Terms and Abbreviations**

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NW DRINKING WATER

# 2000 Water Quality Monitoring Results

Water quality tests were conducted and compiled from January to December of 2000. The table below shows each compound, the units of measure and the allowable levels. Also shown are the levels found in the Skagit County Water District #1 water source and potential sources of compounds. Presence of certain compounds does not necessarily pose a health risk. Some tests are required annually while others are required less often. Data shown is the most recent available. Abbreviations and definitions are shown in the key below to help you become more familiar with the terms used. The final column shows that your water meets all requirements.

Skagit County Water District #1 Commissioners are David Schorno, Norm Rathvon and Ben Clark. The Commission meetings are held the third Wednesday of each month at 7pm at the Birdsview Fire Hall on Russel Road.

**As you can see from the table, Skagit County Water District #1 had no violations. We're proud that your drinking water meets or exceeds all Federal and State requirements. Some compounds have been detected. The EPA has determined that your water IS SAFE at these levels.**

| Component * | MCGL | MCL | SCWD#1 Results | | Is Your water safe? | Typical Sources |
|---|---|---|---|---|---|---|
| **Distribution System Samples for Bacteria** | | | | | | |
| Total Coliform Bacteria | MCLG<br>Zero | MCL<br>• | Not Detected | | Yes | Naturally present in the environment<br>• MCL= presence of Coliform Bacteria in 5% of monthly samples. |
| Fecal Coliform Bacteria | MCLG<br>Zero | MCL<br>♦ | Not Detected | | Yes | Human and animal fecal waste<br>♦ Presence of Total Colifom in a routine and repeat sample with at least one also positive for Fecal Coliform. |
| Lead<br>Average range sampled from 10 sites | MCLG<br>0 ppb | MCL<br>15 ppb | 1.06 ppb | | Yes | Corrosion of household plumbing systems, erosion of natural deposits. Lead in drinking water is rarely the sole cause of lead poisoning, but it can add to a person's total lead exposure. All potential sources of lead in the household should be identified and removed, replaced or reduced. |
| Copper<br>Average range sampled from 10 sites | MCLG<br>1.3 ppm | MCL<br>1.3 ppm | .029 ppm | | Yes | Corrosion of household plumbing systems, erosion of natural deposits and leaching from wood preservatives. |
| **Inorganic and Organic Parameters** | | | | | | |
| Fluoride<br>9/00 | .2 ppm | 4 ppm | .4 ppm | | Yes | Water additive that promotes strong teeth. Target amount=1ppm |
| Nitrate<br>9/00 | .5 ppm | 10 ppm | .9 ppm | | Yes | Erosion from natural deposits<br>As a precaution we always notify physicians and health care providers in this area if there is ever a higher than normal level of nitrates in the water. |
| Volatile Organic Compounds Tested 9/00 | None Detected | | ND | | Yes | Highly evaporative petroleum based compounds and by-products of disinfection. |
| Synthetic Organic Chemicals Tested 9/00 | None Detected | | ND | | Yes | Pesticides and Herbicides |

MCL= Maximum Contaminant Level = the highest level allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.

MCLG = Maximum Contaminant Level Goal: The level of contaminant allowed in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

TT Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water

A = Not Applicable ND = Not Detected

Ppm = Parts per million or milligrams per liter (mg/L) about the same as ½ and aspirin table (162.5 mg) dissolved in a bathtub full (50 gallons of water)

= Parts per billion or micrograms per liter. About one dissolved aspirin tablet (162.5 mg) in a 25 meter swimming pool (100,000 ons).

Skagit County Water District #1 is not subject to disinfection. In water systems which are chlorinated, certain by-products form as a result of chemical reactions between chlorine and naturally occurring organic matter in the water. This disinfection process (should it be required) is carefully controlled to remain effective, while keeping disinfection byproduct levels low.

# Health Issues and Questions

## Population Issues

Some members of the population are more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV-AIDS or other immune system disorders, some elderly, and infants, can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

To ensure that tap water is safe to drink, EPA adopts regulations setting the water quality standards for public water systems. The Federal Food and Drug Administration regulates contaminants in bottled water and is responsible for providing the same level of public health protection.

## Lead and Copper and Your Drinking Water—Are you at Risk?

Our source waters do not contain lead or copper. However, lead and copper can leach into residential water from building plumbing systems containing copper plumbing, lead-based solder, brass fixtures or some types of zinc coatings used on galvanized pipes and fittings. Brass fixtures, regardless of age, generally also contain some lead. Metals leach into building plumbing systems when water has not been used and sits stagnant in the pipes for six hours or longer. Hence the recommendation that seasonally occupied homes have the pipes drained if the residence has been unoccupied for any length of time.

If a home is "high risk" you may want to flush water that has been standing for six hours or longer, prior to using it for cooking or drinking. Many people flush until they notice the temperature change—usually less than 30 seconds. However, be "water smart" and use the flushed water for watering plants or washing dishes. You should never use hot tap water for cooking, drinking or making baby formula because hot water dissolves metals faster.

Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attentions span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

Customers wanting to have their water tested (for a fee) may call Water and Wastewater Services at 1-800-895-8821 to obtain a list of independent testing laboratories in the area.

Skagit Count Water District #1
P.O. Box 1958
Anacortes, WA 98273

ADDRESS CORRECTION REQUESTED

Mailing Address
Street Number and Name
City, State 98765-4321

# Appendix Q

# Emergency Plan

# EMERGENCY RESPONSE PLAN

## A. PLAN OVERVIEW

This Emergency Response Plan covers the emergency repair of the water system infrastructure, and the response to low pressure and water quality complaints.

This plan will be used in conjunction with the Water Conservation Plan and Water Shortage Response Plan included in herein (Appendix L and Appendix M, respectively).

With good conservation (e.g., <250 gpd/ERU), the 158,800 gallons of reservoir storage is adequate to serve 110± residential users from four to five days.

## B. EMERGENCY TELEPHONE NUMBERS AND PERSONNEL

Response to all emergencies may be initiated by calling 9-1-1; the County Sheriff Department maintains a list of the telephone number of the Purveyor's operator.

All calls for business with the Purveyor, including emergency calls, may be made to:

Commissioners:

| | | |
|---|---|---|
| Position 1 | Norm Rathvon | Tel. (360) 826-4337 |
| Position 2 | Ben Clark | Tel. (360) 826-5507 |
| Position 3 | Stepthen Stout | Tel. (360) 826-3858 |

Contract Operator:

Kelly Wynn (360) 466-4443
Water & Wastewater Services

The contract operator maintains a list of contractors to undertake any repair work that he cannot complete.

The reservoir well house is not currently equipped with an Auto-dialer/alarm monitor that has the above number in the computer program.

## C. NOTIFICATION OF LOCAL AUTHORITIES

The following agencies shall be notified by a Commissioner, where required by statute, to request assistance, or to provide information for public inquiries:

| | |
|---|---|
| Ms. Nancy Feagin, PE<br>Regional Engineer<br>WA Department of Health | (253) 395-6765 |
| Lorna Parnet<br>Skagit County Health Dept. | (360) 336-9380 |
| County Engineer<br>Skagit County Public Works Dept. | (360) 336-9400 |

## D. VULNERABILITY ASSESSMENT

The most likely emergencies will include the following:

- Complaint of low pressure
- Water main leak or break
- Complaint about water quality and/or positive bacteriological result from routine monitoring

Major and or wide-spread system failure may occur from the following:

- Fire at the well house
- Landslides due to flooding
- Earthquake
- Chemical contamination of sources of supply

## E. EMERGENCY RESPONSE

### Complaint of low pressure

Complaints of low pressure should be referred to the system operator. The operator should include the following actions in his investigation of the complaint:

- Verify that the source of supply pressure is normal.
- Reservoir is full
- Booster pump discharge pressures are in normal range
- Establish if low pressure is only apparent at the customer making the complaint. This may be done by checking the pressure at the meter to the customer making the complaint (remove meter and install pressure gauge), and the meter at the nearest customer.

- If the low pressure occurs at more than one home, check the distribution system for closed valves or leaks/breaks.
- If the low pressure is limited to one customer, check for closed main cock, leaking service pipe, or blocked meter or faulty meter check valve.
- If the pressure is normal at meter, recommended that customer contact plumber.

DO NOT undertake work on private property to correct a problem in the customer's plumbing system.

**Water main leak or break**

All system repairs will be done by System Operator where possible.

The system operator (contractor) has equipment and parts to accomplish most foreseeable repair work required in the system.

The Purveyor's contract operator usually maintains the following minimum supply of materials to facilitate emergency repairs:

- Two lengths of 4, 6 and 8-inch AWWA C-900 Cl. 150 PVC or Cl. 50 DI pipe
- Two 4, 6 and 8-inch MJ ductile iron sleeves with joint materials
- 20 ft. each of 3/4 inch and 1-inch HDPE service tubing
- Brass fittings, connectors etc., for services
- Two 4 in. x 3/4 in service saddles and corp stops.

When the work cannot be accomplished by the system operator, the contractors listed on page 2 of the Management and Operations Manual should be contacted.

Whenever possible, leaks in mains and services should be repaired without the shut down of the water main.

A water main break may need to be shut down for repair. When isolating the section of broken pipe, leave at least one gate valve slightly open to allow water to flow out of the broken section of pipe until dewatering equipment can remove the water surrounding the broken section of pipe. This is done to prevent groundwater and dirt from entering the broken section of pipe.

In the event of a water main break that shatters a section of pipe or otherwise allows groundwater to enter the main, contamination of the water pipe shall be assumed. As part of the repair procedure, the water system shall be disinfected with a high concentration of chlorine (e.g., 200 mg/L for 2 hours), and then flushed. Following flushing, a bacteriological sample will be collected from the customer at the downstream end of the system.

The system operator shall verbally notify all affected water consumers about the break, the disinfection procedure, and the need to boil water used for consumption until a satisfactory bacteriological test result is obtained from the lab.

Where a customer cannot be contacted immediately, a written notice will placed on the front door handle, and a follow-up visit will be made to confirm that the customer received notice about the break.

Upon receiving a satisfactory bacteriological test result, the system operator will verbally notify all affected water consumers as noted above.

Follow the emergency disinfection procedures outlined in AWWA Standard "Disinfecting Water Mains".

Disinfect all repair material with a 5 percent solution of sodium hypochlorite (bleach). Add chlorine to the open trench section as a precautionary measure; working in a wet trench exposes repair parts to groundwater, mud, etc.

If groundwater enters the broken pipe, a full disinfection by the "slug" method may be necessary. The chlorine dose for this method should be at least 500 mg/L.

Following the repair of a main break that requires dewatering of the system, to that confirm water quality is maintained, collect bacteriological samples, one upstream and one downstream of the break.

If a long period of time is necessary for the repair of a main, it may be necessary to provide temporary water supply to customers by:

- Using garden hoses to connect homes with water to those without, usually through the back yard hose bibs, and
- Using fire hose to run a temporary service main, and making connection to each meter setter.

All hoses used to provide temporary service connections should be disinfected.

**Complaint about water quality and/or positive bacteriological result from routine monitoring**

With respect to water quality issues, if a complaint indicates system contamination, or the results of water quality analysis shows that any maximum contaminant level (MCL) is exceeded, the system operator and manager shall follow the procedures set forth in WAC 246-290-320 (Appendix P).

Additional guidance on dealing with water quality complaints may be obtained from the following two publications:

*Maintaining Distribution System Water Quality*, 1985, published by the American Water Works Association.

*Handling Water Quality Complaints*, 1978, California-Nevada Section, AWWA

*Backflow Incident Investigation Procedures*, 1996, Pacific Northwest Section, AWWA

Corrective action may include the following, depending on the nature of the complaint or quality problem:

- Door-to-door or telephone notification of customers
- County and state Department of Health notification
- Public notification per WAC 246-290-330 and the Coliform Monitoring Plan (see Appendix P).

**Backflow Incident**

A backflow incident response plan is included in Appendix N, Cross Connection Control Program.

## F. GENERAL REFERENCE

For major emergencies, such as those listed in the vulnerability assessment, emergency response procedures will need to be developed at the time of the emergency.

For general emergency planning, the following references should be studied before an emergency situation occurs:

> *Emergency Planning for Water Utility Management (M19),* Third Edition, 1994, published by the American Water Works Association.

# Appendix R

## Water Supply & Demand Forecast

## Water Right Self-Assessment

## Consistency Statement

## ANNUAL PRODUCTION / USE HISTORY

| Year | Number of Services | Source Production (gallons) | Commercial Water Use: Rasar State Park (gallons) | Commercial Water Use: Skagit River Woods (gallons) | Single-family & unaccounted (gallons) |
|---|---|---|---|---|---|
| 1999 | 107 | 9,426,250 | 576,932 | 881,892 | 7,967,426 |
| 2000 | 110 | 10,587,490 | 907,174 | 1,259,782 | 8,420,534 |
| 2001 | 111 | 11,729,338 | 1,066,573 | 2,021,694 | 8,641,071 |
| 2002 | 110 | 10,600,431 | no data | no data | |
| 2003 | 110 | 10,195,689 | 690,000 | 1,913,526 | 7,592,163 |
| 2004 | 112 | 12,439,165 | 745,532 | 1,753,985 | 9,939,648 |

÷112÷365 =

12,439,165

ADD for 2004 based on S-F Residential 243 gpd/ERU

## JULY - AUGUST USE

| | Rasar State Park (gallons) | Skagit River Woods (gallons) | Single-Family Residential: Two-month (gallons) | Single-Family Residential: Per day (gpd) | Single-Family Residential: Summer ADD (gpd/ERU) |
|---|---|---|---|---|---|
| 2003 | 322,612 | 538,261 | 2,577,458 | 41,572 | 385 |
| 2004 | 189,598 | 438,403 | 2,461,015 | 39,694 | 361 |

| Equivalent ERUs for | Rasar State Park | Skagit River Woods | |
|---|---|---|---|
| 2003 | 13.5 | 22.6 | July-August use divided |
| 2004 | 8.5 | 19.6 | by ADD x 62 days |
| For demand forecast | 11 | 21 | Average of 2003 & 2004 |

| | Connections | ERUs |
|---|---|---|
| Number of active full-time single-family customers in 2004: | 110 | 110 |
| Number of active part-time single-family customers in 2004: | 0 | 0 |
| Number of purchased, but inactive water shares in 2004: | 0 | 0 |
| Number of multi-family customers in 2004: | 0 | 0 |
| Number of commercial/institutional customers in 2004: | 2 | 32 |
| **Total number of current connections / ERUs** | 112 | 142 |

## UNACCOUNTED-FOR WATER

| | | | | |
|---|---|---|---|---|
| 2004 volume of water produced | 12,439,165 | gallons | 38.2 | acre-feet |
| 2004 volume distributed | 12,058,336 ? | gallons | | |
| Difference of produced minus sold (unaccounted-for water) | 380,829 | gallons | 3.1% | |

## ESTIMATE OF FUTURE DEMAND

| | | |
|---|---|---|
| Current number of parcels in service area (by count) | 197 | ERUs |
| Minus parcels for Rasar State Park and Skagit River Woods | -6 | ERUs |
| Current number of potential single-family parcels without subdivision | 191 | ERUs |
| Equivalent number of ERUs for commercial customers | 32 | ERUs |
| Allowance for growth in Rasar State Park and Skagit River Woods | 6 | ERUs |

Subdivision of large parcels

| Parcel No. | Area (acres) | Zoning | Density | Additional Customers | |
|---|---|---|---|---|---|
| P42286 | 118 | SF-NRL | 1 per 20 acres | 8 | ERUs |
| P42334 | 79 | SF-NRL | 1 per 20 acres | | |
| P42919 | 40 | RRc-NRL | 4 per 40 acres | 20 | ERUs assuming all acreage is developed as clustered housing |
| P42293 | 40 | RRc-NRL | clustered | | |
| P118330 | 20 | RRc-NRL | housing | | |
| P42297 | 40 | RRc-NRL | ↓ | | |
| P42294 | 20 | RRc-NRL | | | |
| P42295 | 20 | RRc-NRL | | | |
| P42305 | 40 | RRc-NRL | | | |
| P42322 | 40 | RRc-NRL | | | |
| P42326 | 20 | RRc-NRL | ↓ | | |
| P42325 | 20 | RRc-NRL | 4 per 40 acres | | |
| P42921 | 70 | RRV | 1 per 10 acres | 12 | ERUs |
| P42923 | 28 | RRV | ↓ | | |
| P42916 | 20 | RRV | | | |
| P42911 | 13 | RRV | | | |
| P10002 | 13 | RRV | | | |
| P42846 | 13 | RRV | | | |
| P42799 | 20 | RRV | ↓ | | |
| P42796 | 20 | RRV | 1 per 10 acres | | |
| | | | Total | 269 | ERUs |

## WATER SUPPLY

Current Water Rights:

| | |
|---|---|
| 150 | gpm maximum withdrawal rate |
| 65.5 | acre-feet maximum annual withdrawal |

Current Well Production equals the water right.

## ALLOWABLE NUMBER OF CONNECTIONS

**Based on Water Right Rate of Withdrawal (Qi) of 150 gpm**

| | | |
|---|---|---|
| Assuming 800 gpd/ERU (without water conservation) | 270 | ERUs |
| Assuming 600 gpd/ERU (long-term conservation goal) | 360 | ERUs |

**Based on Water Right Annual Withdrawal (Qa) of 65.5 acre-feet**

| | | |
|---|---|---|
| Assuming current recorded ADD of 243 gpd/ERU | 241 | ERUs |
| Assuming short-term conservation goal of 200 gpd/ERU | 292 | ERUs |
| Assuming long-term conservation goal of 175 gpd/ERU | 334 | ERUs |

## WATER RIGHT SELF-ASSESSMENT

| Permit, Claim or Certificate | Name of Rightholder or Claimant | Priority Date | Source Name & Number | Primary or Supplement | Existing Water Rights | | Forecasted 20-Year Source Demand | | Forecasted 20-Year Excess/Deficiency | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Maximum Flow Rate Qi | Maximum Annual Qa | Maximum Flow Rate Qi | Maximum Annual Qa | Maximum Flow Rate Qi | Maximum Annual Qa |
| Permits & Certificates 1 G1-2484C | Skagit Co. WD # 1 | | Wells 1 & 2 | P | 150 | 65.5 | 112 | 53 | | |
| | | | | **TOTAL** | 150 | 65.5 | 112 | 53 | 38 | 13 |

| Intertie Name/Identifier | Name of Purveyor Providing Water | Existing Limits on Intertie Water Use | | Existing Consumption Through Intertie | | Intertie Supply Excess/Deficiency | |
|---|---|---|---|---|---|---|---|
| | | Maximum Flow Rate Qi | Maximum Annual Qa | Maximum Flow Rate Qi | Maximum Annual Qa | Maximum Flow Rate Qi | Maximum Annual Qa |
| | | | | | | | |
| | **TOTAL** | | | | | | |

| Pending Water Right Applications | Name on Permit | Date Submitted | Primary or Supplement | Pending Water Rights | |
|---|---|---|---|---|---|
| | | | | Maximum Flow Rate Qi | Maximum Annual Qa |
| | | | | | |
| | | TOTAL | | 0 | 0 |

Forecast 20-year demand based on
269 Ultimate ERUs in service area
600 gpd/ERU MDD for Qi
175 gpd/ERU ADD for Qa

Forecast assumes water conservation.

# Attachment 5 - Water System Plan and Small Water System Management Program Consistency Statement Checklist

Interim Guidance 11/06/2003

This consistency statement checklist is intended to ensure consistency of water system planning documents and adopted local comprehensive plans and development regulations. The expectation is that each local planning jurisdiction in which the water utility provides service will review the relevant water system planning information and provide a signed consistency statement to the utility for submittal to the Department of Health. If the local planning agency will not respond, the highest authority within the utility (chair of governing body, executive director of private companies, etc.) must sign to verify consistency of the plan information.

**Water System Name:** *SKAGIT COUNTY W.D. No. 1* **PWS ID:** *00392Q*

**Planning Document Title:** *2006 Water System Plan* **Plan Date:** *Nov. 05*

**Local Planning Jurisdiction:** *Skagit County*

| Consistency Statement<br>(Reference Municipal Water Law Section 5 and 8, amendment to chapter 90.03, 180 and chapter 43.20 RCW) | Page(s) in Planning Document Consistent Statement Refers to | Yes or No Plan Consistent |
|---|---|---|
| The service area and land use identified in the water system plan is consistent with the *adopted comprehensive plan and adopted development regulations and policies.* | *See Attached* | *Yes* |
| ***FOR WATER SYSTEM PLANS ONLY*** - The growth projection used to forecast water demand for the service area is consistent with the adopted city/county's population growth projections (and commercial development projection if applicable). If a different growth projection was used, the alternative growth projection and methodology proposed is acceptable based on explanation given. | *See Attached* | *Yes* |
| ***FOR WATER SYSTEM PLANS ONLY*** - New potential large water users (that may have a significant impact on the water system) that the city/county is aware of have been identified in the water system plan. | *NA* | *NA* |
| ***FOR CITY-OWNED SYSTEMS ONLY-*** All policies regarding water service outside the corporate boundaries must be included in the water system plan. These policies are consistent with the adopted *comprehensive plan* and *development regulations.* | *NA* | *NA* |
| ***WHERE THE LOCAL PLANNING AGENCY IS UNABLE TO SIGN A CONSISTENCY STATEMENT*** - Provide documentation of efforts to coordinate with local agencies with a 60-day timeline for local agency to respond. Include: name of contact, date, type of effort attempted, and response from local agency. | *NA* | *NA* |

I certify that the above statements are true to the best of my knowledge and that these statements support the conclusion that the subject planning document is consistent with adopted comprehensive plans, development regulations, and other policies.

Signature _____ Date _____

Printed Name, Title, & Jurisdiction _____

**For any issues of inconsistency, please provide comments on how they can be resolved.

# Appendix S

# Financial Viability Assessment

| | | BASE YEAR 2004-05 | SIX-YEAR OPERATING BUDGET YEAR 1 2006 | YEAR 2 2007 | YEAR 3 2008 | YEAR 4 2009 | YEAR 5 2010 | YEAR 6 2011 |
|---|---|---|---|---|---|---|---|---|
| **REVENUES** | | | | | | | | |
| 1 | Water Rates - Commodity | $ 7,656 | $ 7,656 | $ 10,560 | $ 10,560 | $ 10,560 | $ 10,560 | $ 10,560 |
| 2 | Water Rates - Fixed Monthly | $ 21,504 | $ 21,696 | $ 27,360 | $ 27,600 | $ 27,840 | $ 28,080 | $ 28,320 |
| 3 | Fees - Connection | $ - | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 |
| 4 | Other Revenue- misc charges | | $ - | $ - | $ - | $ - | $ - | $ - |
| 5 | Other Revenue -bank interest | $ 2,110 | $ 1,979 | $ 1,548 | $ 1,236 | $ 1,136 | $ 1,036 | $ 704 |
| 6 | Total Revenue (1 to 4) | | $ 34,831 | $ 42,968 | $ 42,896 | $ 43,036 | $ 43,176 | $ 43,084 |
| **EXPENSES - OPERATIONS** | | | | | | | | |
| 7 | Salaries & F.B. [Note 1] | $ 21,846 | $ 22,000 | $ 22,889 | $ 23,347 | $ 23,814 | $ 24,290 | $ 24,776 |
| 8 | Equiv. of Salaries (pro-bono) | | $ - | | | | | |
| 9 | Power & Other Utilities | $ 1,574 | $ 1,600 | $ 1,665 | $ 1,698 | $ 1,732 | $ 1,767 | $ 1,802 |
| 10 | Chemicals & Treatment | $ - | $ - | | | | | |
| 11 | Monitoring | | $ 350 | $ 350 | $ 1,000 | $ 350 | $ 350 | $ 1,000 |
| 12 | Materials, Supplies & Parts | | | | | | | |
| 13 | Meter reading | (in item 7) | | | | | | |
| 14 | Miscellaneous Expenses | | $ 500 | $ 500 | $ 500 | $ 500 | $ 500 | $ 500 |
| 15 | Total - Operations (7 to 14) | $ 23,420 | $ 24,450 | $ 25,403 | $ 26,545 | $ 26,395 | $ 26,906 | $ 28,077 |
| **EXPENSES - GENERAL ADMIN.** | | | | | | | | |
| 16 | Salaries & F.B. [Note 1] | $ 1,920 | $ 2,000 | $ 2,081 | $ 2,122 | $ 2,165 | $ 2,208 | $ 2,252 |
| 17 | Office Supplies/Postage/Rent | | | | | | | |
| 18 | Insurance [2] | $ 1,948 | $ 2,000 | $ 2,081 | $ 2,122 | $ 2,165 | $ 2,208 | $ 2,252 |
| 19 | Accounting | $ 481 | $ 500 | $ 520 | $ 531 | $ 541 | $ 552 | $ 563 |
| 20 | Legal | | | | | | | |
| 21 | Engineering's & Surveying | (in capital) | | | | | | |
| 22 | Fees & taxes [3] | | | | | | | |
| 23 | Miscellaneous Expenses [4] | $ 117 | $ 500 | $ 500 | $ 500 | $ 500 | $ 500 | $ 500 |
| 24 | Total - Admin. (16 to 23) | $ 4,466 | $ 5,000 | $ 5,182 | $ 5,275 | $ 5,371 | $ 5,468 | $ 5,568 |
| 25 | Depreciation Expenses | $ - | $ - | $ - | $ - | $ - | $ - | $ - |
| 26 | TOTAL EXPENSES (15+24+25) | $ 27,886 | $ 29,450 | $ 30,585 | $ 31,820 | $ 31,766 | $ 32,375 | $ 33,645 |

See page 4 for notes

| | | | SIX-YEAR OPERATING BUDGET | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | BASE YEAR 2004-05 | YEAR 1 2006 | YEAR 2 2007 | YEAR 3 2008 | YEAR 4 2009 | YEAR 5 2010 | YEAR 6 2011 |
| 27 | Taxes (property + B & O) | $ - | | | | | | |
| 28 | Annual Debt Payments (P & I) | $ - | | $ 6,746 | $ 14,979 | $ 14,979 | $ 14,979 | $ 14,979 |
| 29 | Total Outstanding Debt (P & I) | $ - | | $ 121,727 | $ 270,296 | $ 270,296 | $ 270,296 | $ 270,296 |
| **CAPITAL IMPROVEMENTS** | | | | | | | | |
| 30 | New Facilities | | | | | | | |
| | a) Wells | | | | | | | |
| | b) New mains | | | | $ 148,569 | | | |
| | c) Reservoir | | | $ 26,010 | | | | |
| 31 | New Meter & Service $ 1,000 | | $ 1,000 | $ 1,000 | $ 1,000 | $ 1,000 | $ 1,000 | $ 1,000 |
| 32 | RPBA Upgrade | | | $ 121,727 | | | | |
| 33 | Water Main Replacement | | | | | | | |
| 34 | Miscellaneous (e.g., Air valves) | | | | $ 10,612 | | | $ 10,000 |
| 35 | Non-Facility Costs [5] | $ - | | | | | | |
| **CAPITAL SOURCES** | | | | | | | | |
| 36 | Loan/Bond Funds | $ - | | $ 121,727 | $ 148,569 | | | |
| 37 | Grants | $ - | $ - | $ - | $ - | $ - | $ - | $ - |
| 38 | Special assessments/rates | $ - | $ - | $ - | $ - | $ - | $ - | $ - |
| 39 | Withdrawal from Ex. Reserves | $ - | $ 1,000 | $ 27,010 | $ 11,612 | $ 1,000 | $ 1,000 | $ 11,000 |
| 40 | NET C.I.P. (30 to 35) - (36 to 39) | $ - | $ - | $ - | $ - | $ - | $ - | $ - |
| **RESERVES - OPERATING CASH** | | | | | | | | |
| 41 | Target Minimum Balance [6] | $ 3,486 | $ 3,681 | $ 3,823 | $ 3,977 | $ 3,971 | $ 4,047 | $ 4,206 |
| 42 | Annual Installment | | | | | | | |
| 43 | Running Balance | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 |
| **RESERVES - EMERGENCY** [7] | | | | | | | | |
| 44 | Target Minimum Balance [8] | $ 25,000 | $ 25,750 | $ 26,523 | $ 27,318 | $ 28,138 | $ 28,982 | $ 29,851 |
| 45 | Annual Installment from W Rates | $ - | $ - | $ - | $ - | $ - | $ - | $ - |
| 46 | Annual Installment from Fees | | | | | | | |
| 47 | Running Balance | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 |
| **RESERVES- REPLACEMENT** | | | | | | | | |
| 48 | Target Balance [9] | $ - | $ - | $ - | $ - | $ - | $ - | $ - |
| 49 | Annual Installment from W Rates | | $ 1,500 | $ 2,000 | $ (7,500) | $ (7,500) | $ (7,500) | $ (9,100) |
| 50 | Annual Installment from Fees | | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 |
| 51 | Annual Withdrawal (line 39) | | $ (1,000) | $ (27,010) | $ (11,612) | $ (1,000) | $ (1,000) | $ (11,000) |
| 52 | Running Balance | $ 64,925 | $ 68,925 | $ 47,415 | $ 31,803 | $ 26,803 | $ 21,803 | $ 5,203 |

| | BASE YEAR 2004-05 | SIX-YEAR OPERATING BUDGET YEAR 1 2006 | YEAR 2 2007 | YEAR 3 2008 | YEAR 4 2009 | YEAR 5 2010 | YEAR 6 2011 |
|---|---|---|---|---|---|---|---|
| TOTAL REVENUE REQUIRED 53 (lines 26,27,28,39,42,45,46,49,50) | | $ 34,450 | $ 42,831 | $ 42,798 | $ 42,745 | $ 43,353 | $ 43,024 |
| BUDGET SURPLUS (DEFICIT) 54 (line 5 - line 53) | | $ 381<br>1% | $ 138<br>0% | $ 98<br>0% | $ 291<br>1% | $ (177)<br>0% | $ 60<br>0% |

| | | BASE YEAR 2004-05 | SIX-YEAR PROJECTION OF INCOME FROM RATES AND CHARGES YEAR 1 2006 | YEAR 2 2007 | YEAR 3 2008 | YEAR 4 2009 | YEAR 5 2010 | YEAR 6 2011 |
|---|---|---|---|---|---|---|---|---|
| WATER RATE INCOME | | | | | | | | |
| a) | Number of Services | | | | | | | |
| | Single-family residential | 110 | 111 | 112 | 113 | 114 | 115 | 116 |
| | Commercial, Institutional, etc | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| b) | Meter Charge (flat rate/year) | | | | | | | |
| | Single-family residential | $ 192 | $ 192 | $ 240 | $ 240 | $ 240 | $ 240 | $ 240 |
| | Commercial, Institutional, etc | $ 192 | $ 192 | $ 240 | $ 240 | $ 240 | $ 240 | $ 240 |
| c) | Income (flat rate x number) | | | | | | | |
| | Single-family residential | $ 21,120 | $ 21,312 | $ 26,880 | $ 27,120 | $ 27,360 | $ 27,600 | $ 27,840 |
| | Commercial, Institutional, etc | $ 384 | $ 384 | $ 480 | $ 480 | $ 480 | $ 480 | $ 480 |
| d) | Sub-total | $ 21,504 | $ 21,696 | $ 27,360 | $ 27,600 | $ 27,840 | $ 28,080 | $ 28,320 |
| WATER COMMODITY INCOME | | | | | | | | |
| e) | Volume sold (gallons/year) | 12,439,165 | 12,439,165 | 12,439,165 | 12,439,165 | 12,439,165 | 12,439,165 | 12,439,165 |
| | Volume sold (cu. ft./year) | 1,662,990 | 1,662,990 | 1,662,990 | 1,662,990 | 1,662,990 | 1,662,990 | 1,662,990 |
| f) | Volume subject to commodity > 1,000 cu. ft./yr. | 528,000 | 528,000 | 528,000 | 528,000 | 528,000 | 528,000 | 528,000 |
| g) | Excess, > 1,000 cu. ft. per 100 cu. ft. | $ 1.45 | $ 1.45 | $ 2.00 | $ 2.00 | $ 2.00 | $ 2.00 | $ 2.00 |
| h) | Commodity income | $ 7,656 | $ 7,656 | $ 10,560 | $ 10,560 | $ 10,560 | $ 10,560 | $ 10,560 |
| TOTAL OF RATE & CHARGES | | $ 29,160 | $ 29,352 | $ 37,920 | $ 38,160 | $ 38,400 | $ 38,640 | $ 38,880 |
| CONNECTION INCOME | | | | | | | | |
| I) | Added residential connections | | 1 | 1 | 1 | 1 | 1 | 1 |
| j) | Added commercial connections | | 0 | 0 | 0 | 0 | 0 | 0 |
| k) | Connection fee $ 3,500 | | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 |
| TOTAL OF CONNECTION FEES | | $ - | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 |

## FINANCIAL VIABILITY TEST SUMMARY

| | | YEAR 1 2006 | YEAR 6 2011 |
|---|---|---|---|
| A 1 | REVENUES | | |
| A 2 | Water Rates (lines 1+2) | $ 29,352 | $ 38,880 |
| A 3 | Total other revenues (3+4) | $ 5,479 | $ 4,204 |
| A 4 | Total revenue (A2+A3) | **$ 34,831** | **$ 43,084** |
| A 5 | EXPENSES | | |
| A 6 | O&M, Adm, etc. (15+24+25) | $ 29,450 | $ 33,645 |
| A 7 | Taxes (27) | $ - | $ - |
| A 8 | Debt Payment (28) | $ - | $ 14,979 |
| A 9 | CIP from rates (38) | $ - | $ - |
| A 10 | Add to Oper. Reserve (42) | $ - | $ - |
| A 11 | Add to Emer. Reserve (45+46) | $ - | $ - |
| A 12 | Add to Repl. Reserve (49+50) | $ 5,000 | $ (5,600) |
| A 13 | Total Revenue Req'd. (A6 to A12) | **$ 34,450** | **$ 43,024** |
| A 14 | REVENUE - EXPENDITURES | $ 381 | $ 60 |
| A 15 | Line A 4 greater than A 13 (Y/N) | YES | YES |
| | HOUSEHOLD INCOME | | |
| D 26 | Medium Income [9] | $ 45,513 | $ 45,513 |
| D 27 | Medium Income x 0.015 | **$ 683** | **$ 683** |
| D 28 | Number of ERUs (line 'a') | | |
| | Single-family | $ 111 | $ 116 |
| | Commercial equivalent | $ 2 | $ 2 |
| | Total ERUs | $ 113 | $ 118 |
| D 29 | Req'd Revenue/ERU (53/D 28) | **$ 305** | **$ 365** |
| D 30 | Line D 27 greater than D 29 | YES | YES |

| | | YEAR 1 2006 | YEAR 6 2011 |
|---|---|---|---|
| | OPERATING RESERVES | | |
| B 16 | Current Operating | $ 5,000 | $ 5,000 |
| B 17 | Budgeted Increase (42) | $ - | $ - |
| B 18 | Total Reserve (43) | **$ 5,000** | **$ 5,000** |
| B 19 | REQUIRED OPERATING CASH RESERVES (line A 6 x 0.125) | **$ 3,681** | **$ 4,206** |
| B 20 | Line B 18 greater than B 19 | YES | YES |
| | EMERGENCY RESERVES | | |
| C 21 | Current Emergency | $ 30,000 | $ 30,000 |
| C 22 | Budgeted Increase (45+46) | $ - | $ - |
| C 23 | Total Reserve (47) | **$ 30,000** | **$ 30,000** |
| C 24 | COST OF MOST VULNERABLE FACILITY [8] (well replacement) | **$ 26,000** | **$ 26,000** |
| C 25 | Line C 23 greater than C 24 | YES | YES |

**TABLE NOTES:**

[1] Includes commissioners & one admin staff
Operator compensation is use of home at Reservoir No. 2
Rental income equals operator's salary & F.B.
[2] Includes vehicles, general liability & worker comp.
[3] No sales tax on water and connections
[4] Includes Skagit County fees
[5] Such as water conservation promotion, CCR
[6] One-eighth of Expenses - General Admin.
[7] May be alternative financing, e.g., line of credit
[8] Most vulnerable component replacement cost (well),
[9] 2000 Census report

**GENERAL NOTES:**

[a] Assumed inflation rate for capital costs 2.0%
[b] Assumed cost of borrowing from PWTF 1.0%
(for calculating annual debt repayment, line 28)
n = 20 CRF = 0.05542
[c] Water Share fee(buy-in; added to reserves) $ 2,500
Connection fees (service + meter) $ 1,000

[d] Interest revenue assumed as 2.0%
(applied to lines 47 & 52, entered into line 5)
[e] Commondity rate increase assumed in year 2007
Meter charge (flat rate) increase assumed in 2007

# RESOLUTION NO. 60-98

**A RESOLUTION of the Board of Commissioners of Skagit County Water District #1, Skagit County, Washington.**

**RESOLUTION TO INCREASE CUSTOMER BASE AND USAGE RATES**

**WHEREAS,** Skagit County Water District #1, of Skagit County, Washington, Board of Commissioners has determined that due to rising cost of repair and maintenance, the base and usage rates will need to be increased.

**NOW, THEREFORE BE IT RESOLVED,** by the Board of Commissioners of Skagit County Water District #1, that the base rate for the first 1000 cubic feet will increase from fourteen dollars ($14.00) to sixteen dollars ($16.00), and that the use fee for each additional 100 cubic feet of water will increase from $1.25 to $1.45 for each 100 cubic feet over 1000. Commercial customers will realize the same base rate increase per meter, with the usage fee increasing from $2.00 to $2.20 for each 100 cubic feet over 1000. This increase will be reflected on the billing for March/April 1998.

Adopted by the Commissioners of Skagit County Water District #1. of Skagit County, Washington, at it's regular meeting held this 4th day of March 1998.

SKAGIT COUNTY WATER DISTRICT #1

Commissioner

Commissioner

Commissioner

**ATTEST:**

Secretary of Said Commission

I, Secretary of the Board or Commissioner's of Skagit County Water District #1, Skagit County, Washington, do hereby certify that the foregoing resolution a true and correct copy of Resolution No. 60-98 of said Board, duly adopted at a regular meeting hereof held the 4th day of March 1998.

# SCWD#1
## Trial Balance
As of November 30, 2004

| | Nov 30, 04 | |
|---|---|---|
| | Debit | Credit |
| 1002 · General Cash | 6,001.34 | |
| 1300 · General Temporary Investment | 40,000.00 | |
| 1300 · General Temporary Investment:1301 · State Pool-General Temp.Invest. | 9,129.13 | |
| 1550 · Reserve Cash | 254.74 | |
| 1600 · Reserve Temporary Investments | 50,000.00 | |
| 1600 · Reserve Temporary Investments:1601 · State Pool-Reserve Temp. Invest | 925.20 | |
| 1110 · Accounts Receivable | 2,652.47 | |
| 3001 · Retained Earnings | | 51,227.92 |
| 3100 · Opening Bal Equity | | 41,978.27 |
| 4010 · Water Bill Fee | | 34,382.50 |
| 4020 · Letter of Availabilty Fee | | 100.00 |
| 4040 · Late Fee | | 559.67 |
| 4050 · Disconnect/Reconnect Fee | | 450.00 |
| 4060 · Interest Income | | 2,111.28 |
| 6015 · Auditors Service | 441.18 | |
| 6025 · Commissioners Salaries | 1,600.00 | |
| 6035 · Engineering Services | 977.18 | |
| 6045 · Insurance - General | 2,627.00 | |
| 6065 · Licenses/Permits | 299.50 | |
| 6075 · Management Services | 14,550.20 | |
| 6085 · Other Services | 12.10 | |
| 6095 · Utilities | 1,311.63 | |
| 6100 · Payroll Expenses | 27.97 | |
| TOTAL | 130,809.64 | 130,809.64 |

# SCWD#1
## Balance Sheet
As of November 30, 2004

| | | Nov 30, 04 |
|---|---|---|
| ASSETS | | |
| Current Assets | | |
| Checking/Savings | | |
| 1002 · General Cash | | 6,001.34 |
| 1300 · General Temporary Investment | | |
| 1301 · State Pool-General Temp.Invest. | 9,129.13 | |
| 1300 · General Temporary Investment - Other | 40,000.00 | |
| Total 1300 · General Temporary Investment | | 49,129.13 |
| 1550 · Reserve Cash | | 254.74 |
| 1600 · Reserve Temporary Investments | | |
| 1601 · State Pool-Reserve Temp. Invest | 925.20 | |
| 1600 · Reserve Temporary Investments - Other | 50,000.00 | |
| Total 1600 · Reserve Temporary Investments | | 50,925.20 |
| Total Checking/Savings | | 106,310.41 |
| Accounts Receivable | | |
| 1110 · Accounts Receivable | | 2,652.47 |
| Total Accounts Receivable | | 2,652.47 |
| Total Current Assets | | 108,962.88 |
| TOTAL ASSETS | | **108,962.88** |
| LIABILITIES & EQUITY | | |
| Equity | | |
| 3001 · Retained Earnings | | 51,227.92 |
| 3100 · Opening Bal Equity | | 41,978.27 |
| Net Income | | 15,756.69 |
| Total Equity | | 108,962.88 |
| TOTAL LIABILITIES & EQUITY | | **108,962.88** |

# SCWD#1
## Estimated Income & Expense
November 2004

| | Nov 04 |
|---|---|
| Income | |
| 4010 · Water Bill Fee | 3,255.37 |
| 4040 · Late Fee | 222.02 |
| 4050 · Disconnect/Reconnect Fee | 158.25 |
| 4060 · Interest Income | 14.07 |
| Total Income | 3,649.71 |
| Expense | |
| 6025 · Commissioners Salaries | 350.00 |
| 6075 · Management Services | 1,370.33 |
| Total Expense | 1,720.33 |
| Net Income | **1,929.38** |

# Appendix T

# Service Policy

# SERVICE POLICIES

Adopted with adoption of Water System Plan

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF SKAGIT COUNTY WATER DISTRICT No. 1 ESTABLISHING WATER SERVICE APPLICATION, BILLING, PAYMENT, COLLECTION AND CROSS CONNECTION PROCEDURES AND POLICIES.

## A. DEFINITIONS

"Board of Commissioners" or "Board" means the Board of Commissioners of the Skagit County Water District No. 1.

"Customer" mean the current owner of the parcel of land as defined by the Skagit County Auditor's parcel number and as recorded with the District's Manager.

"Customer account" means the account maintained by the District for each Customer to which water service is provided by the District.

"Delinquency penalty" means the penalty established by the District by resolution under the authority granted in RCW 57.08.081.

"Delinquent sum" means any portion of a Customer's account that remains due and unpaid at the end of any payment period.

"District" means the Skagit County Water District No. 1, also referred to as the "Purveyor" hereinafter.

"Manager" means the duly appointed manager of the District as either an employee or independent contractor to perform the functions of the manager.

"Payment period" means a period of time equal to thirty (30) calendar days from and after the District mails bills to the Customer reflecting the sums due on the Customer's account for water service provided.

"Shut off" means the discontinuation of service referred to in RCW 57.08.081.

"Water service" or "service" means the supply of potable water from the District's system to its Customer.

"Water service connection" or "water connection" means the physical installation of the tap, fittings, pipe and other necessary appurtenances required to deliver water from the water main up to and including the meter box, meter setter and/or meter.

## B. GENERAL

Service is provided by agreement between the Skagit County Water District No. 1, a government body formed under Island County, hereinafter referred to as the Purveyor, and each owner of a single parcel of land as defined by the Island County Auditor's parcel number, hereinafter referred to as the Customer.

The form of agreement consists of the *"Application for Water Service"* to be signed by each initial Customer or *"Reapplication for Water Service"* to be signed by each new Customer for a change of ownership of the parcel of property served. A copy of the terms of the agreements, as represented by the application form "*Application for Water Service*" is attached hereto. The Purveyor shall apply these policies equally to all customers.

The Purveyor shall accept an "*Application for Service*" on the condition that Customer will start construction of a dwelling unit within one (1) year. The Customer shall submit with the "*Application for Service*" a check or money order for the connection charges established by the Purveyor. If the Customer fails to start construction within the prescribed period, the application will be voided and the Purveyor will refund the amount of the connection charge to the Customer without interest. No refund will be made for water rate fees and charges. Except, where circumstances presented to the District Commissioners in writing, an extension may be granted for a period up to six (6) months.

Until the Purveyor has approval from the WA Department of Health to supply a number of equivalent single-family residential units equal to or greater than the number of platted lots within the service area, an "*Application for Service*" shall not be accepted for the purpose of the Customer pre-servicing a parcel prior to its sale. The Customer shall demonstrate intent to construct a dwelling by attaching a set of building plans or other such evidence satisfactory to the Purveyor.

Upon the Purveyor's acceptance of an "*Application for Service*", the water rate fees and charges outlined in Section D and Section E, by resolution, hereinafter, shall be billed to the Customer.

All lots within the District's service area without a service connection at the time of formation of the District are considered single parcels and are entitled to purchase one single-family residential service connection (ERU). Excepted as provided for under Section G hereinafter, provision of water in a greater amount (than one ERU) is at the sole discretion of the District.

Water shall not be conveyed by the Customer beyond the lot being served.

No person shall tamper or interfere with the Purveyor's water system, nor shall any person, except as authorized by the Purveyor, connect to or operate any pipe, valve, meter, hydrant or other part of the water system.

The Purveyor reserves the right to require any customer to install as a condition of receiving or maintaining water service a pressure reducing valve, surge tank, air gap or backflow prevention assembly, or similar devices at any location where the Purveyor determines a need to protect the Purveyor's water system from physical damage or contamination.

The supply of water to any customer is contingent upon:

1) The requirement that the Customer shall take all measures necessary to prevent the contamination of the plumbing system within his/her premises and the Purveyor's water distribution system that may occur from backflow from a cross connection. These measures shall include the prevention of backflow under any backpressure or backsiphonage condition, including the disruption of supply from the Purveyor's system that may occur by reason of routine system maintenance or during emergency conditions, such as a water main break.

2) The Customer installing, operating and maintaining at all times his/her plumbing system in compliance with the current edition of the Uniform Plumbing Code as it pertains to the prevention of contamination, prevention of water hammer, and protection from thermal expansion due to a closed system that could occur with the present or future installation of backflow preventers on the Customer's service and/or at plumbing fixtures.

The Customer shall be responsible to indemnify and hold harmless the Purveyor and its agents and employees for all contamination of the Customer's plumbing system or the Purveyor's water distribution system that results from an unprotected or inadequately protected cross connection within his/her premises. This indemnification shall pertain to all backflow conditions that may arise for the Purveyor's suspension of water supply, recognizing that an air gap separation on the customer's service pipe would otherwise be provided by the Purveyor to supply water to the Customer, and the air gap would necessitate the Customer providing adequate facilities to collect, store and pump water for his/her premises.

The Purveyor shall not be liable for damages nor will allowances be made for loss of production, sales or service in case of water pressure variations, or revisions to pressure within the system, or in case the operations of the Purveyor's sources of water supply or means of distribution fails or is curtailed, suspended or interfered with, or for any cause reasonably beyond the Purveyor's control. Such pressure variations, failure, curtailment, suspension, interruption or interference shall not be held to constitute a breach of contract on the part of the Purveyor, or in any way affect any liability for payment by the customer for rates, fees and charges due.

The Purveyor shall supply water service at a pressure equal to or greater than the level required by the WA Department of Health. Above this pressure, the Purveyor may alter the pressure supplied to the Customer as needed for the efficient design and operation of the water system.

The Purveyor shall supply water service at a pressure less than 150 psi. Should the Customer wish pressure less than the pressure supplied by the Purveyor, the Customer shall be responsible for the installation of a pressure-reducing valve on its plumbing system.

The Customer shall not install a booster pump within its plumbing system without the express written permission of the Purveyor.

These policies apply to all Customers within the Purveyor's service area.

## C. INSTALLATION, OWNERSHIP AND MAINTENACE RESPONSIBILITIES

The Purveyor shall install the service pipe, meter, and meter box to a new Customer.

The Purveyor may delay installation of a service connection until such time as the Customer's construction activities will not present a risk of damage to the Purveyor's facilities.

The Purveyor ownership of the public water system starts at the sources of supply, includes all the public water treatment, storage, and distribution facilities, and ends at the point of delivery to the Customer's water system, which begins at the downstream end of the service connection located on the public right-of-way or Purveyor held easement. The downstream end of the service connection shall be defined by the downstream connection to the meter setter or meter (where a meter setter is not utilized) inside the Purveyor's meter box. The Customer shall be responsible for the installation, maintenance, repair and future replacement of the service pipe from the downstream connection to the meter setter to the connection to the Customer's plumbing system consisting of all piping located within the Customer's premises.

## D. WATER RATES AND CHARGES

The District's most recent "*Schedule of Water Rates and Charges*" established by resolution shall apply.

The quarterly water bill shall reflect the following for each billing period:

- Total water used.
- The "Flat Rate or Meter" charge.
- The "Commodity" charge.
- Miscellaneous fees and charges as described hereinafter.
- All delinquency in the Customer's account.
- Applicable tax.

The connection fee for a ¾-inch service pipe not exceeding, 60-feet in length shall include the following: *Per RCW 57.08.005 (10)*

- The pro rata share of the cost of the purchase, maintenance and improvement of the existing water system, based on the number of connections currently authorized by the WA Department of Health. Maintenance costs shall include all costs not associated with producing water (e.g., cost of electricity, chemicals).

- The average cost of installation of service and meter. The calculated average shall incorporate the difference in cost of short services (no crossing of road pavement) and long services (road crossing).
- Applicable tax and administration fees.

Any water connection with a service larger than ¾-inch or longer than 60-feet shall include all additional costs for its installation. At the time of the Customer's submittal of the "*Application for Service*" the Purveyor shall estimate the additional cost. The Customer's application shall be processed upon the Customer's payment of the estimated additional cost. Upon completion of the service connection, the Purveyor shall submit a refund or bill to the Customer for the difference between the estimated cost and the actual cost of installation.

The connection fee shall be based on the Purveyor's assessment of the Customer's water demand in terms of equivalent single-family residential unit (ERU). One ERU is the amount of water assumed in the water system design for the maximum day demand (MDD). The quantity of water for one ERU shall be the amount established in the Purveyor's *Water System Plan* approved by the Washington Department of Health.

The minimum assessed MDD per customer is 1 ERU. For multi-family and mixed use premises, the number of ERUs assessed to a customer shall be rounded upward to the nearest ½ ERU. An auxiliary residential dwelling with less than 800 square feet of floor space (excluding garage) for a single-family customer that contains a kitchen facility (e.g., mother-in-law suite) will be assessed as ½ ERU. Auxiliary residential dwelling of 800 square feet or greater shall be assessed as 1 ERU.

The Purveyor shall reassess a Customer's water demand for a change of property use or expansion of premises. The Customer with a change in occupancy or application for building permit shall pay in addition to the connection fee, a hook-up expansion fee assessed for expansion of service. The Purveyor shall not give a refund for a reduction in service.

Prospective customers shall, at the time of application for service, specify the type and scale of use proposed for the service. The Purveyor's approval of a service connection as signified by the issuance to the County of a "Water Availability Form" shall be contingent upon the connection serving the use specified at the time of application.

During the duration of the service, the Purveyor shall have the authority to disapprove changes in use of a service or apply restrictions or conditions to approval of a change of use necessary for proper system operation and protection of the public water system from contamination.

Separate service connections may be requested for residential fire sprinkler systems only. The separate fire service connection shall be equipped with a Customer installed and District approved backflow prevention assembly. The connection fee shall include the actual cost of installation plus the administration overhead charges set forth in Section D and Section E.

The fee for the Purveyor to install a backflow prevention assembly on the Purveyor's service pipe to isolate the Customer's premises shall include the actual cost of installation plus the administration overhead charges set forth in Section D and Section E. Once installed, a quarterly maintenance fee of ten dollars ($10.00) shall be assessed to the Customer for the Purveyor's annual testing, inspection, maintenance, repair and future replacement of the assembly in accordance with WAC 246-290-490.

The Purveyor shall submit the water bill to the Customer (owner of the property obtaining water).

## E. MISCELLANEOUS FEES, CHARGES AND ASSESSMENTS

An administration charge of five dollars ($5.00) shall be assessed to each bill issued with delinquent fees or charges. *Per RCW 57.08.081 (3)*

In the event the Purveyor terminates water service as a result of a delinquent billing, the fee for reinstatement shall include an administration fee of twenty-five dollars ($25.00).

For accounts that are repeatedly delinquent, the District may require a deposit before re-instatement equal to the current quarterly Base Rate to be deposited in the District's Account. When such time the Customer demonstrates a one-year history of timely payments, the held deposit, shall be credited to the Customers water account. The District shall retain any interest on the deposited funds.

An interest rate of one percent (10%) per annum shall be assessed to any delinquent amount. *Per RCW 57-08-081 (3)*

An administration charge of twenty-five dollars ($25.00) shall be charged for any dishonored check received by the Purveyor in payment of water bill or other debt owed to the Purveyor. Any entry for payment of the debt shall be reversed in the Purveyor's accounts.

In each quarterly billing period, the Customer may obtain one scheduled turn-on or shut-off of service at the meter during normal working hours at no cost, provided at least twenty-four (24) hours written notice is given to the Purveyor. The Customer shall be billed the after-hour rate for a service call for all other shut-off and turn-on of service within the thirty-day period.

The per hour rate for after hour service calls requested by the Customer for water meter shut-off due to problems on the Customer side of the water meter shall be fifty dollars ($50.00) per call for the first hour, plus fifty dollars ($50.00) for each additional hour, or portion thereof.

After-hours is considered to include:

- Before seven-thirty a.m. and after four-thirty p.m. Monday through Friday
- Weekends and holidays.

Water used for construction shall be assessed a commodity charge of one dollar ($1.00) per one thousand gallons, plus an administration fee for monitoring water use of ten dollars ($10.00) per day.

The Customer may request a check of the calibration of their meter. If the meter is found to be within the accuracy limits established by American Water Works Association standards (e.g., for displacement type meters at ¼-gpm: 95 to 101% of volume), a fee of seventy-five dollars ($75.00) will be assessed to the Customer. For the same meter, for any subsequent request for a check of meter calibration within a one-year period, a seventy-five dollar ($75.00) deposit will be required. This deposit will be refunded if the meter is found to be outside of the previously noted accuracy range.

If the meter is found to be outside of the accuracy limits, an estimate will be made of any overcharge to the Customer, and a credit for the previous two-month period will be applied to the next water billing. No assessment will be made to the Customer for under recording of water usage.

The Customer may request a special meter reading and billing statement for a change in property ownership. A fee of up to thirty dollars ($30.00) shall be charged for each billing. For a change of ownership of property, the Customer at the time of billing shall be responsible for payment for the pro-rated billing period.

If a meter is unreadable due to any action by the Customer, such as but not limited to parking a vehicle over the meter box or encroachment of the Customer's landscaping, the Purveyor shall estimate the amount of the Customer's water usage for the billing period based on past billing records. The Customer will be billed for this estimated usage plus a ten percent (10%) contingency. Upon reading of the meter, the subsequent billing will be adjusted to reflect the actual usage when the meter was blocked from reading. An administration charge of twenty dollar ($20.00) shall be charged for each billing period where the meter is deemed un-readable.

The administration overhead charge shall be ten percent (10%) and shall be added to the cost of work done "at cost" on behalf of the Customer or others (e.g., other utility), including but not limited to the relocation of services or meter boxes and extension of water mains.

For the cost of work billed to the Customer with an estimated value over $20,000, the Purveyor may determine the applicable administration overhead charge as part of the agreement to perform the work.

## F. BILLING PERIOD, PERIOD OF DELINQUINCY AND TERMINATION OF SERVICE

The Purveyor shall bill Customers for water service on a two-monthly basis, with the first billing period ending in February of each year. The bill shall cover a reading period of approximately two months, except for an initial or final bill to any Customer. Each bill shall state the due date.

Payment of water bills and other debts owed to the Purveyor shall be made to the Purveyor's business address only. Delivery of payment shall be made by mail or by courier service.

All water billing shall be delinquent if not paid within thirty (30) days from the date of billing. In the event that a water billing shall become delinquent, the Purveyor shall issue the following notices to the Customer:

1) The first notice shall be issued within ten (10) days after a water bill has become delinquent.

2) A second notice shall be issued thirty days after a water bill has become delinquent. The second notice shall state that the Purveyor may terminate water service on the tenth (10) day following the date of delivery of the second notice.

A water billing shall be considered delinquent if not paid in full when due and owing, including all penalties and interest charges assessed pursuant to Section D and Section E.

Said notices shall be deemed delivered on the date the Purveyor deposits the notice in the U.S. Mail and shall be mailed to the Customer at its regular billing address. The Purveyor shall have no obligation to provide notice of delinquency and termination of water service to any person occupying or renting the Customer's property. Notwithstanding the aforesaid, the delivery of a shut-off notice utilizing a door hanger placed on the front door of the dwelling occupying the Customer's premises shall constitute additional written notice to the Customer issued on the date of delivery.

The Customer notified of the pending shutoff of service for delinquency in payment of a debt owned to the Purveyor may submit a written appeal prior to two (2) working days before the date stated for shutoff of service. The appeal shall be sent by registered mail or by courier service to the Purveyor's business address. The appeal shall set forth the reasons the Customer disputing the delinquent billing or state the reasons for requesting additional time to pay the bill. The appeal shall be reviewed and a ruling issued at the next regularly scheduled meeting of the Board. Should the Board's ruling reaffirm the shutoff, water may be shut off without further notice.

After the first notice of pending shutoff of service, the Purveyor may deliver subsequent shut-off notices, or after shutoff of service, a notice that service has been shutoff using a door hanger envelope. Such practice of providing these notifications shall not constitute an obligation on the part of the Purveyor.

For undue hardship for a Customer, the Board may extend the period for payment of a delinquent water billing and/or other debts owed to the purveyor for a period of up to ninety (90) calendar days. With any extension of time for payment, the Customer's bill shall accrue interest and other charges pursuant to Section D and Section E.

Any correction in the Customer's account due to errors or omission by the Purveyor may be made within one year of the issuance of a water bill. The Purveyor shall make a refund or assess the Customer for the difference, including refunding any assessed interest or administrative charges.

In the event that the Purveyor terminates water service as a result of delinquent billing, water service shall be reinstated at the Purveyors convenience but not until such time as the delinquent bill plus fees and charges assessed pursuant to Section D and Section E, have been paid in their entirety.

All delinquent billings and costs related to the termination of service, including, but not limited to the removal of water meter, shall become a lien upon the real property served; per *RCW, 57.08.081 (8)* after the Purveyor certifies such delinquency to the County Auditor. The said lien shall be in accordance with and foreclosed in the manner set forth in the Revised Code of Washington. In the event of foreclosure of lien, the person and/or real properties against whom the foreclosure occurs shall pay the Purveyor reasonable attorney's fee and court costs for the foreclosure, as allowed by law. Per RCW 57.08.081 (4)

The Customer acknowledges the right of the Purveyor to discontinue water supply within 72 hours of giving notice, or a lesser period of time if required to protect the public health, in the Purveyor's effort to contain a contaminant or pollutant that is detected in the customer's system.

Without limiting the generality of the foregoing, in lieu of discontinuing water service the Purveyor may install a reduced pressure backflow assembly (RPBA) on its service pipe to provide premises isolation, and recover all of its costs for the installation and subsequent maintenance and repair of the assembly, appurtenances and enclosure from the Customer as fees and charges for water. The failure of the Customer to pay these fees and charges may result in termination of service in accordance with the Purveyor's water billing policies.

## G. SUPPLY TO SUBDIVIDED PROPERTY / EXPANSION OF SERVICE AREA

No service shall be provided to Customers outside the service area without the District first obtaining:

- A revised Service Area Agreement with Island County.
- WA Department of Ecology approval of a change in water rights to cover the additional area of service, and if necessary, new water rights to supply the additional Customers.
- WA Department of Health approval of an update or minor revision to the District's *Water System Plan*.

No service shall be provided to lots created within the service area by the subdivision of property without the District first obtaining WA Department of Health approval of an update or minor revision to the District's *Water System Plan*.

Water shall not be supplied to an adjacent public water system (i.e., through a system intertie), except for temporary supply in an emergency, without the District first obtaining:

- A revised Service Area Agreement with Island County.
- WA Department of Ecology approval of a change in water rights to cover the additional area of service, and if necessary, new water rights to supply the additional Customers.
- WA Department of Health approval of an update or minor revision to the District's *Water System Plan*.

Service shall not be provided to lots outside the service area or additional lots created through subdivision of parcels inside the service area without the District first establishing the adequacy of supply for the existing vacant lots within the service area. The adequacy of supply for the existing platted lots and proposed additional lots shall be established through the number of connections (ERUs) the WA Department of Health authorizes the District to supply.

All costs for the expansion of service area or supply of subdivided parcels within the service area shall be borne by the applicant for service to the proposed newly created Customers. The costs shall include, but are not limited to the following:

1. Extension of water main(s) to the new Customers.
2. Construction of additional or upgrading of existing:
    a. Source(s) of supply (i.e., wells).
    b. Reservoir(s).
    c. Booster pump station(s).
3. Engineering, surveying and legal costs associated with construction of facilities necessary for serving additional connections, including the preparation of project report and water system plan documents.
4. Regulatory agency fees and charges.
5. Applicable administration overhead charges as set forth in Section D and Section E.

The District (not the applicant for service) shall prepare and make all submissions to regulatory authorities for approval to supply additional customers.

Prior to any review by the District of a proposed expansion of service area or supply of subdivided parcels, the applicant shall enter into a written agreement to bear the costs noted above. The customer shall pay a deposit to the District in the amount estimated by the District for the review of the application, including the cost of professional fees, and submissions of document to regulatory authorities.

Any cost paid by the applicant for the District for the review and submission to regulatory authorities shall not be refunded to the applicant should the regulatory approval for the District be denied or otherwise restricted, or the applicant's project is cancelled, modified or denied by the County or other administrative authority having jurisdiction.

## H. SIZE AND LOCATION OF SERVICE AND METER

Water meter and service sizes shall conform to those prescribed by the American Water Works Association in the most current edition of "Sizing Water Service Mains & Meters" (AWWA M22), as published from time to time, with any interpretations of those standards to be made by the District. Regardless of type or use of service pipe and meter size, the District has the authority to modify the size of the meter or service pipe throughout the duration of a service. The meter shall be sized based on considerations of volume and rate of water use, fire safety, existing equipment requirements and other relevant criteria.

Unless otherwise approved by the District, the service pipe shall be installed perpendicular to the water main in the street or District owned easement.

The service pipe and water meter shall not be installed within the Customer's driveway or entrance sidewalk or behind any fencing or landscaping that restricts the District's reading or maintenance of the meter and/or maintenance of the service pipe.

## I. INSTALLATION STANDARDS

Water mains and services shall be installed in accordance with the District's *Standard Plans and Specifications for Water Main Installation* included in the District's *Water System Plan* approved by the WA Department of Health. To facilitate system maintenance and repairs, the District may include with *Standard Plans and Specifications for Water Main Installation* a list of approved materials for service connections and water main installation.

## J. USE OF FIRE HYDRANTS

With prior approval of the District, water for construction may be obtained from designated fire hydrants provided the following equipment is provided and maintained by the applicant for water:

- Water meter of a type approved by the District.
- Backflow prevention assembly of a type approved by the District and tested by a WA Department of Health certified backflow assembly tester (BAT) to demonstrate performance of the assembly.

Approval for use of a hydrant for construction water, or other purposes not related to fire fighting, shall be at the sole discretion of the District. Application for water use for construction or any use not related to firefighting shall be made on a form provided by the District that sets forth the conditions for District's approval of the use of the hydrant.

## K. WATER CONSERVATION

To respond to drought or emergency conditions, the District may impose temporary water conservations measures that include, but are not limited to the following:

- Additional water commodity charges (i.e., surcharge for high usage).
- Odd/even day or other lawn water restrictions.
- Ban on lawn watering and washing of vehicles.

Any Customer failing to repair leaks within 30 days of receipt of written notification of such leaks, the District may have the water shut-off or may restrict the flow to the Customer by partly closing a service valve, installing a restriction fitting, or other means without further notice until such leak's repaired.

Leaks discovered on vacant homes may be shut-off at the meter immediately and a notice will be hung on the door of the vacant home explaining reason for shut-off. The District shall not be held responsible for shutting off or failing to shut off a leaking service to a vacant home and/or not notifying a Customer of a suspected leak.

## L. INCONSISTENT PRIOR POLICIES AND PROCEDURES SUPERSEDED

All existing District resolutions, policies and procedures are hereby modified, amended and superseded to be in accordance with the polices and procedures set forth below.

## A. EFFECTIVE DATE

This resolution and the policies and procedures set forth herein shall be effective the date set forth below.

**APPROVED AND ADOPTED THIS _____**

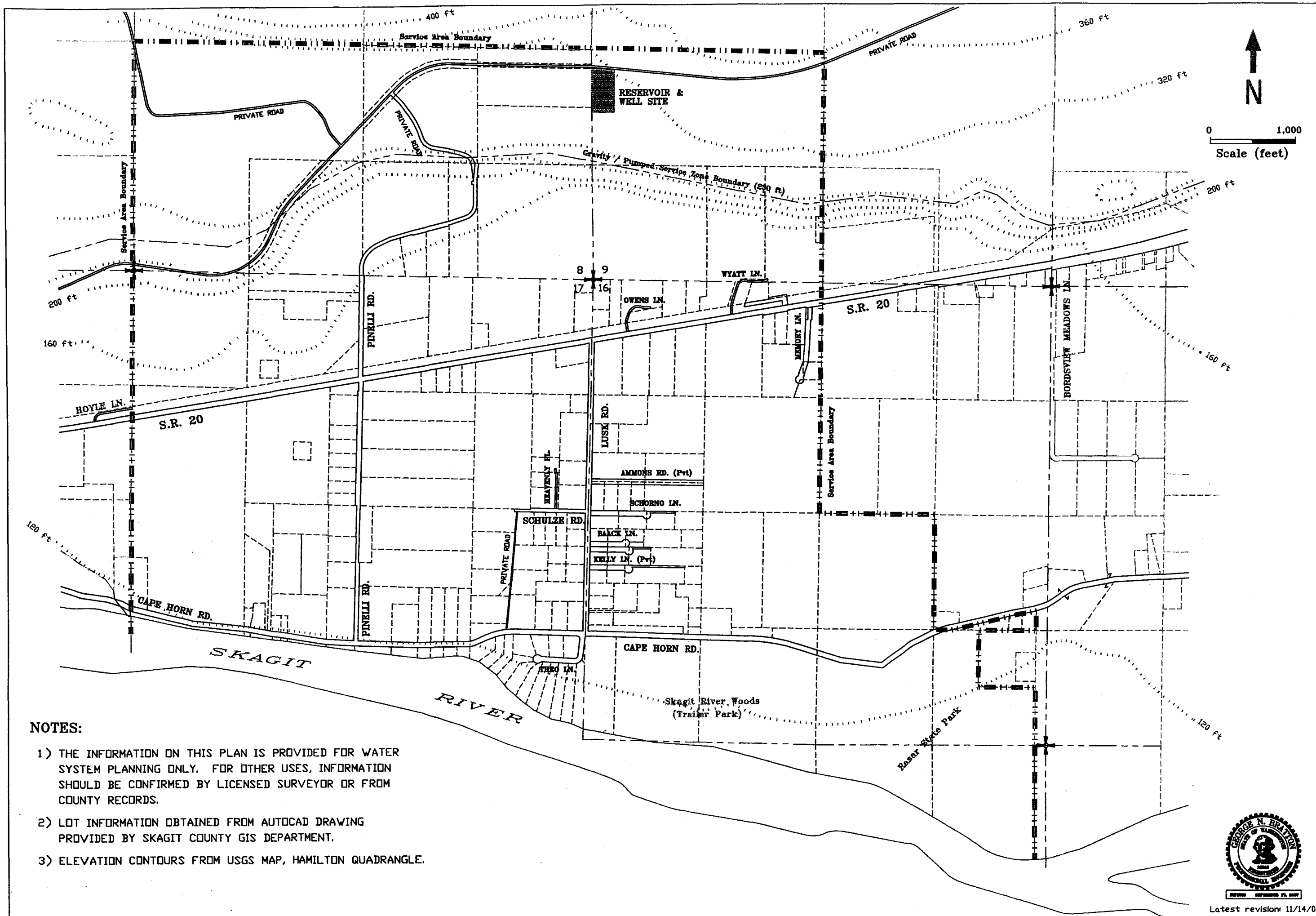
_____ _____

_____

**APPROVED AS TO FORM AND SIGNED BY ATTORNEY**

_____

# DRAWINGS




## NOTES:

1) THE INFORMATION ON THIS PLAN IS PROVIDED FOR WATER SYSTEM PLANNING ONLY. FOR OTHER USES, INFORMATION SHOULD BE CONFIRMED BY LICENSED SURVEYOR OR FROM COUNTY RECORDS.

2) LOT INFORMATION OBTAINED FROM AUTOCAD DRAWING PROVIDED BY SKAGIT COUNTY GIS DEPARTMENT.

3) ELEVATION CONTOURS FROM USGS MAP, HAMILTON QUADRANGLE.

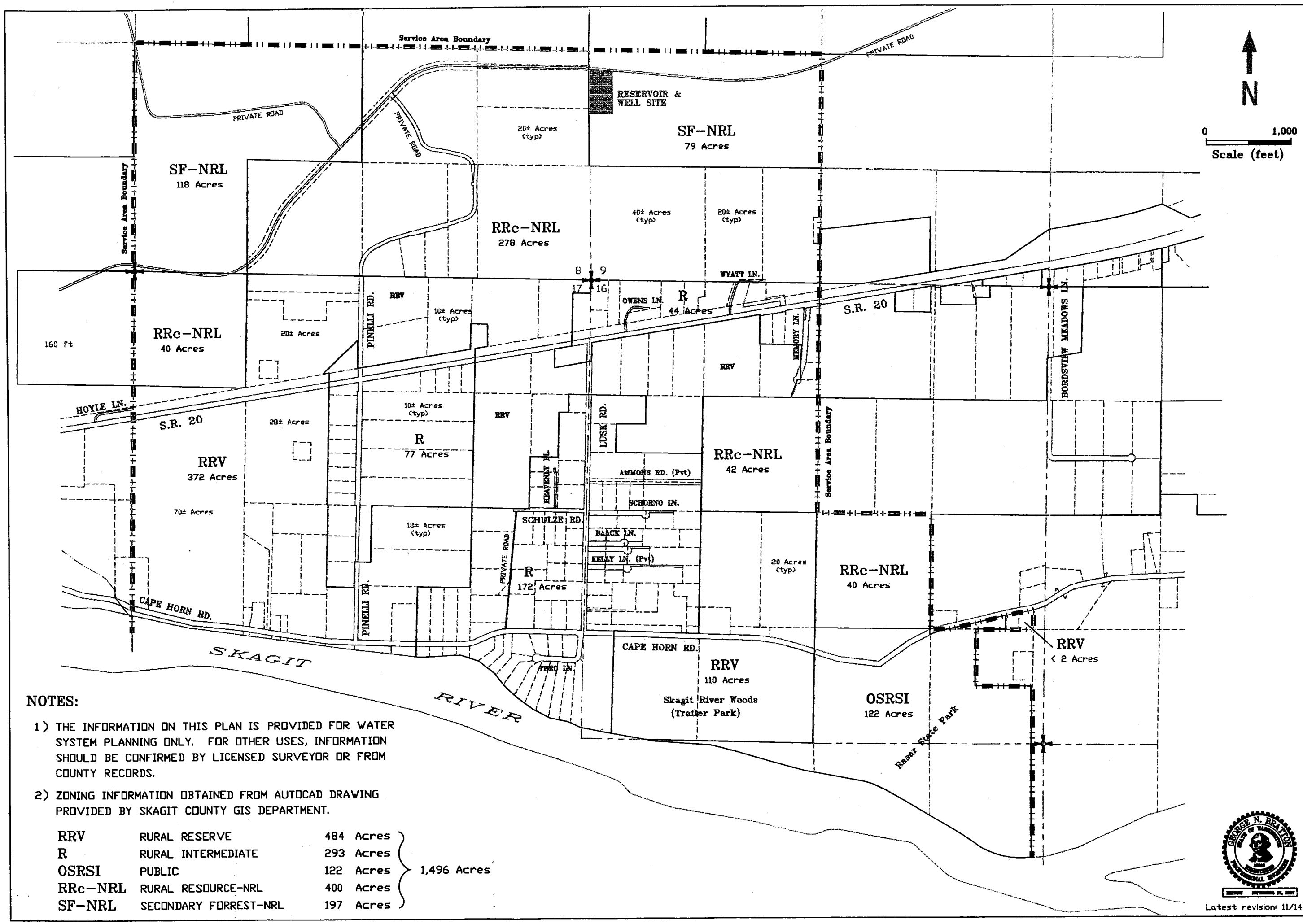
Latest revision: 11/14/05

GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550 October 2005

WATER DISTRIBUTION SYSTEM
SERVICE AREA

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 1 of 1

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2) ZONING INFORMATION OBTAINED FROM AUTOCAD DRAWING PROVIDED BY SKAGIT COUNTY GIS DEPARTMENT.

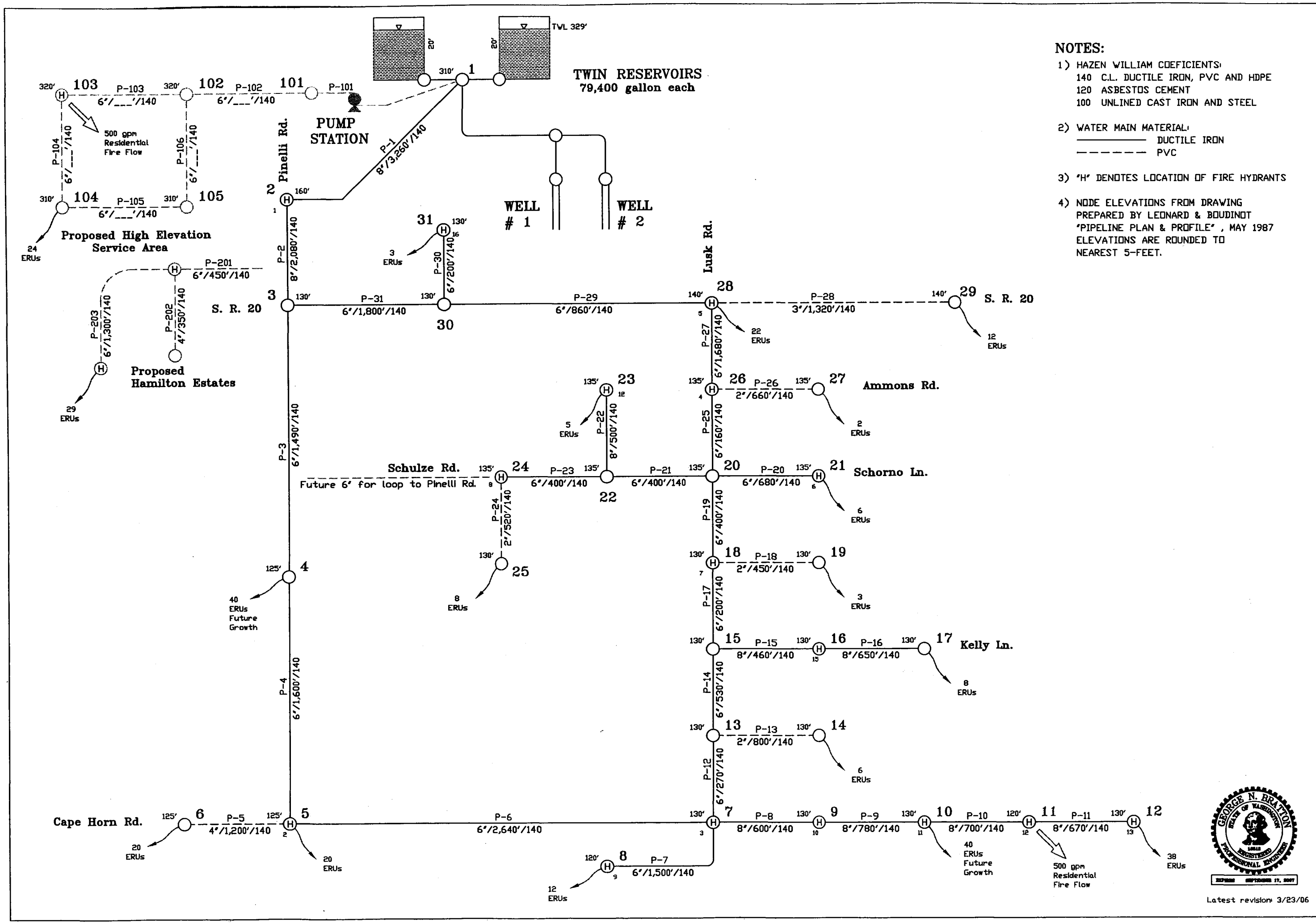
| | | | | |
|---|---|---|---|---|
| RRV | RURAL RESERVE | 484 | Acres | 1,496 Acres |
| R | RURAL INTERMEDIATE | 293 | Acres | |
| OSRSI | PUBLIC | 122 | Acres | |
| RRc-NRL | RURAL RESOURCE-NRL | 400 | Acres | |
| SF-NRL | SECONDARY FORREST-NRL | 197 | Acres | |

Latest revision: 11/14/05

GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550— October 2005

# WATER DISTRIBUTION SYSTEM
## SERVICE AREA
## Land Use

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273




## NOTES:

1) HAZEN WILLIAM COEFICIENTS:
   140 C.L. DUCTILE IRON, PVC AND HDPE
   120 ASBESTOS CEMENT
   100 UNLINED CAST IRON AND STEEL

2) WATER MAIN MATERIAL:
   ———— DUCTILE IRON
   - - - - - - PVC

3) 'H' DENOTES LOCATION OF FIRE HYDRANTS

4) NODE ELEVATIONS FROM DRAWING PREPARED BY LEONARD & BOUDINOT 'PIPELINE PLAN & PROFILE', MAY 1987 ELEVATIONS ARE ROUNDED TO NEAREST 5-FEET.

GEORGE N. BRATTON
STATE OF WASHINGTON
PROFESSIONAL ENGINEER

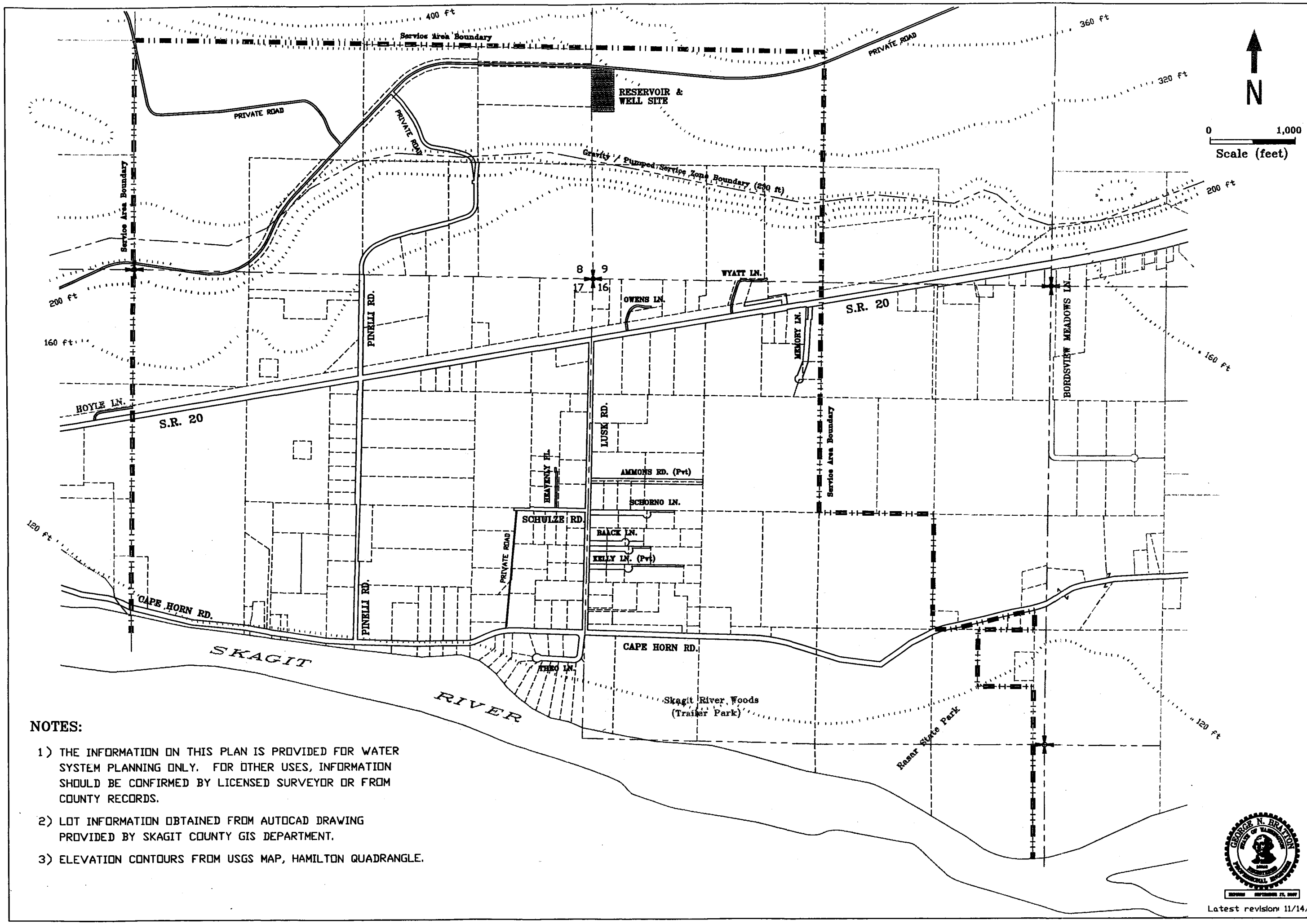
Latest revision 3/23/06

GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550 February 2005

# WATER DISTRIBUTION SYSTEM COMPUTER SCHEMATIC

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 1 of 1

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2) LOT INFORMATION OBTAINED FROM AUTOCAD DRAWING PROVIDED BY SKAGIT COUNTY GIS DEPARTMENT.

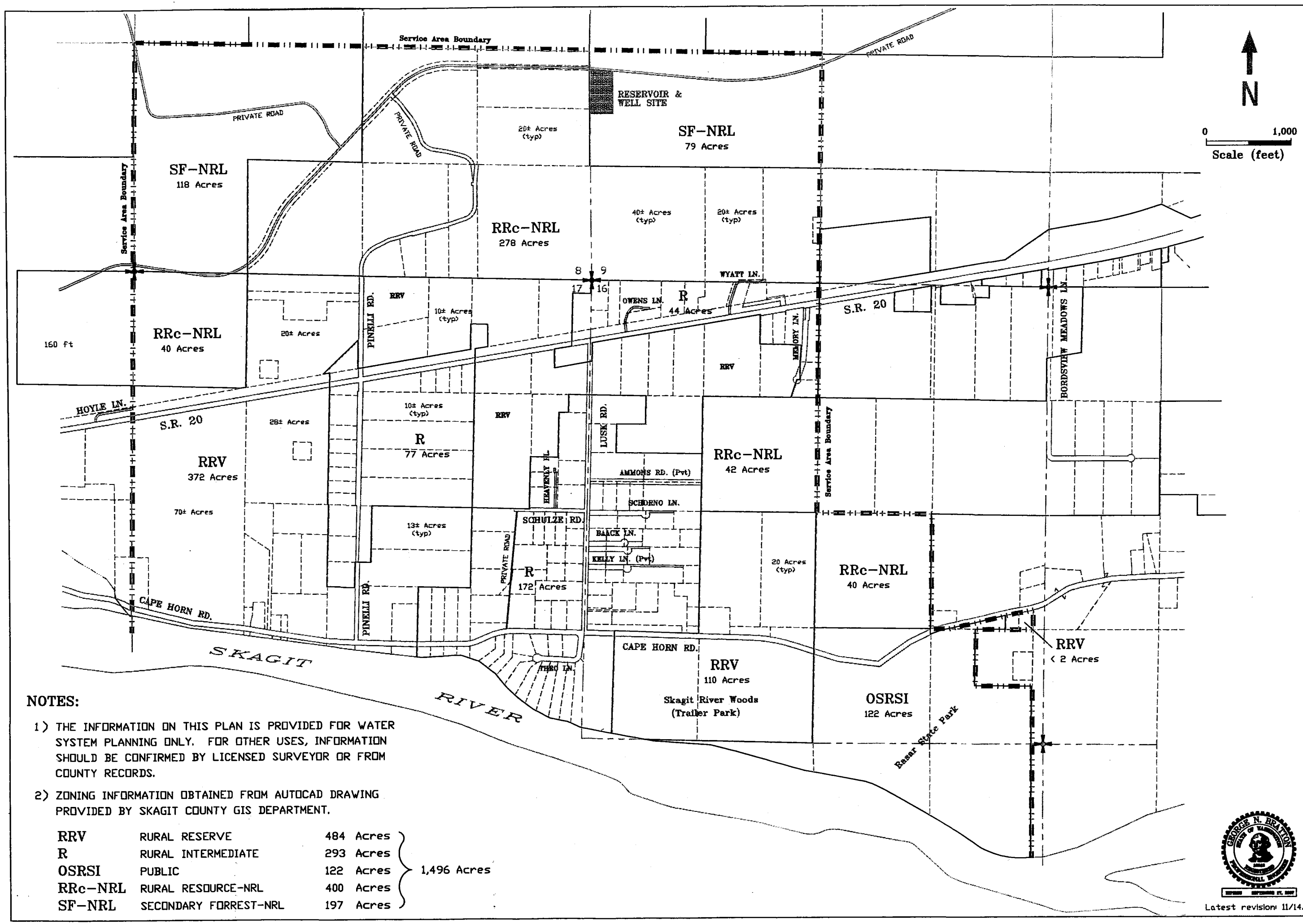
3) ELEVATION CONTOURS FROM USGS MAP, HAMILTON QUADRANGLE.

Latest revision 11/14/05

GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550 October 2005

# WATER DISTRIBUTION SYSTEM
## SERIVICE AREA

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

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| R | RURAL INTERMEDIATE | 293 Acres | |
| OSRSI | PUBLIC | 122 Acres | |
| RRc-NRL | RURAL RESOURCE-NRL | 400 Acres | |
| SF-NRL | SECONDARY FORREST-NRL | 197 Acres | |

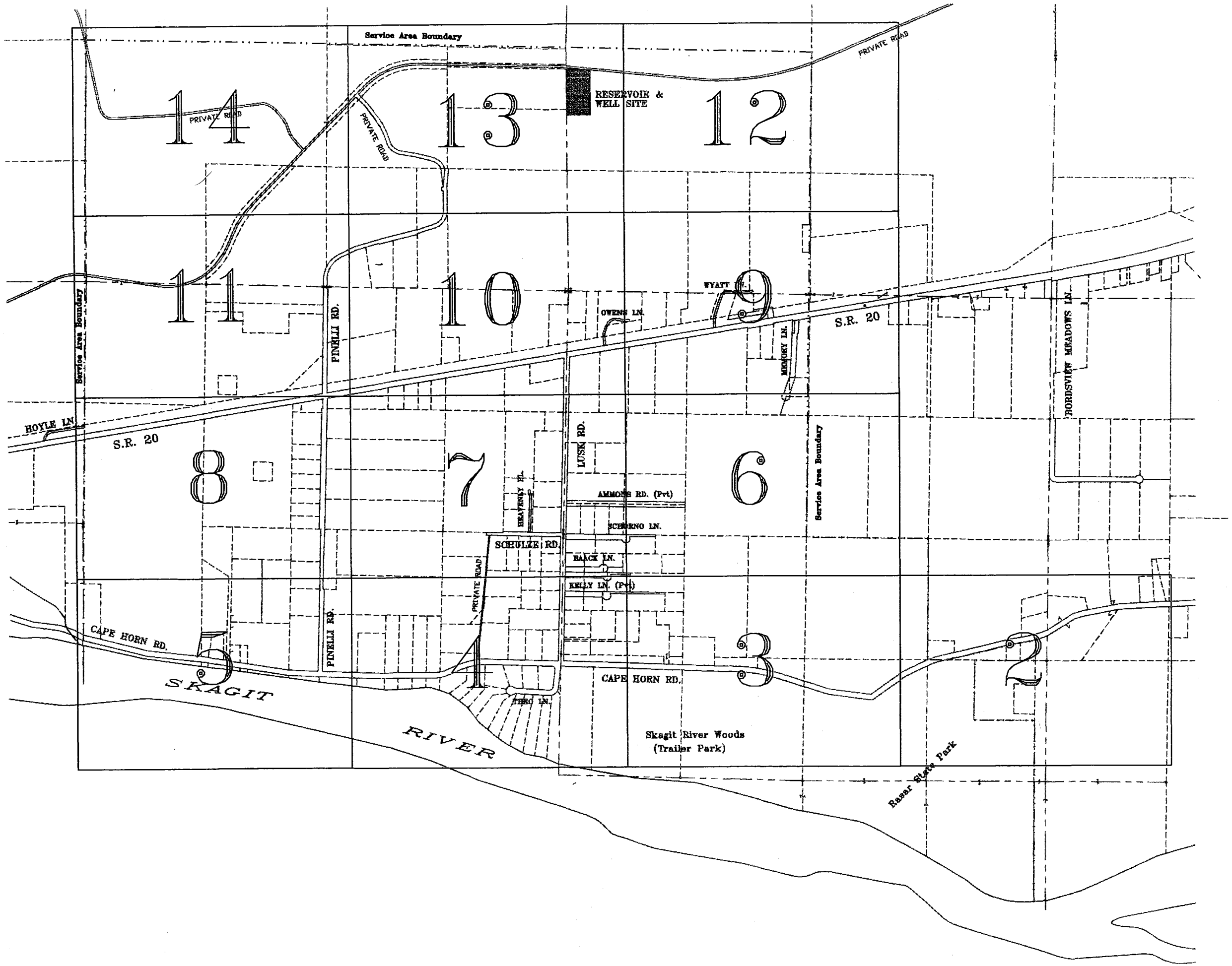
Latest revision: 11/14/05

GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550— October 2005

WATER DISTRIBUTION SYSTEM
SERVICE AREA
Land Use

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 1 of 1

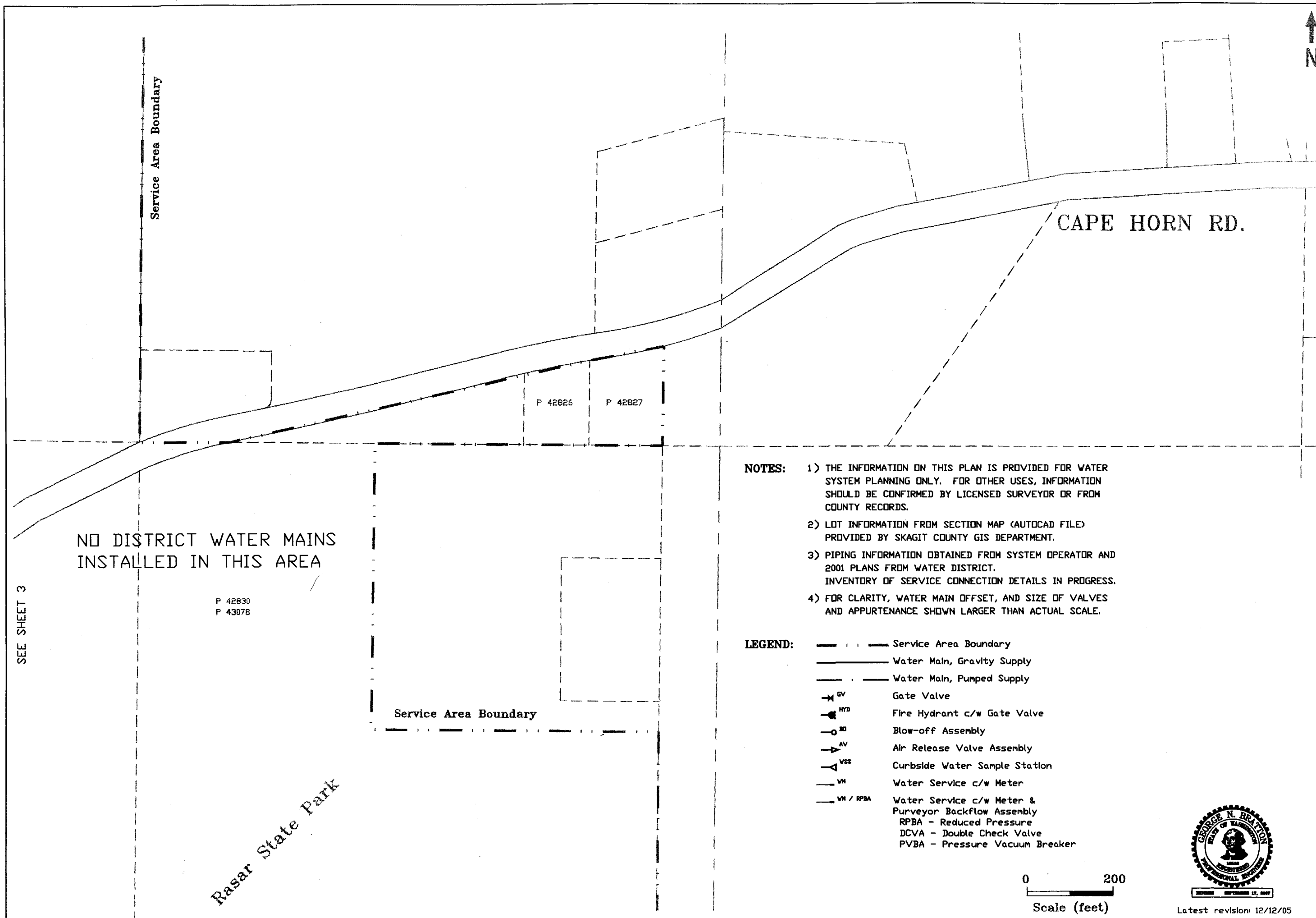



GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550 October 2005

WATER DISTRIBUTION SYSTEM
COMPREHENSIVE MAP
Key Plan

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 1 of 14




**NOTES:**

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2) LOT INFORMATION FROM SECTION MAP (AUTOCAD FILE) PROVIDED BY SKAGIT COUNTY GIS DEPARTMENT.
3) PIPING INFORMATION OBTAINED FROM SYSTEM OPERATOR AND 2001 PLANS FROM WATER DISTRICT. INVENTORY OF SERVICE CONNECTION DETAILS IN PROGRESS.
4) FOR CLARITY, WATER MAIN OFFSET, AND SIZE OF VALVES AND APPURTENANCE SHOWN LARGER THAN ACTUAL SCALE.

**LEGEND:**

- Service Area Boundary
- Water Main, Gravity Supply
- Water Main, Pumped Supply
- GV — Gate Valve
- HYD — Fire Hydrant c/w Gate Valve
- BO — Blow-off Assembly
- AV — Air Release Valve Assembly
- VSS — Curbside Water Sample Station
- VM — Water Service c/w Meter
- VM / RPBA — Water Service c/w Meter & Purveyor Backflow Assembly
  - RPBA - Reduced Pressure
  - DCVA - Double Check Valve
  - PVBA - Pressure Vacuum Breaker

0 200
Scale (feet)

GEORGE N. BRATTON
STATE OF WASHINGTON
PROFESSIONAL ENGINEER
EXPIRES SEPTEMBER 17, 2007

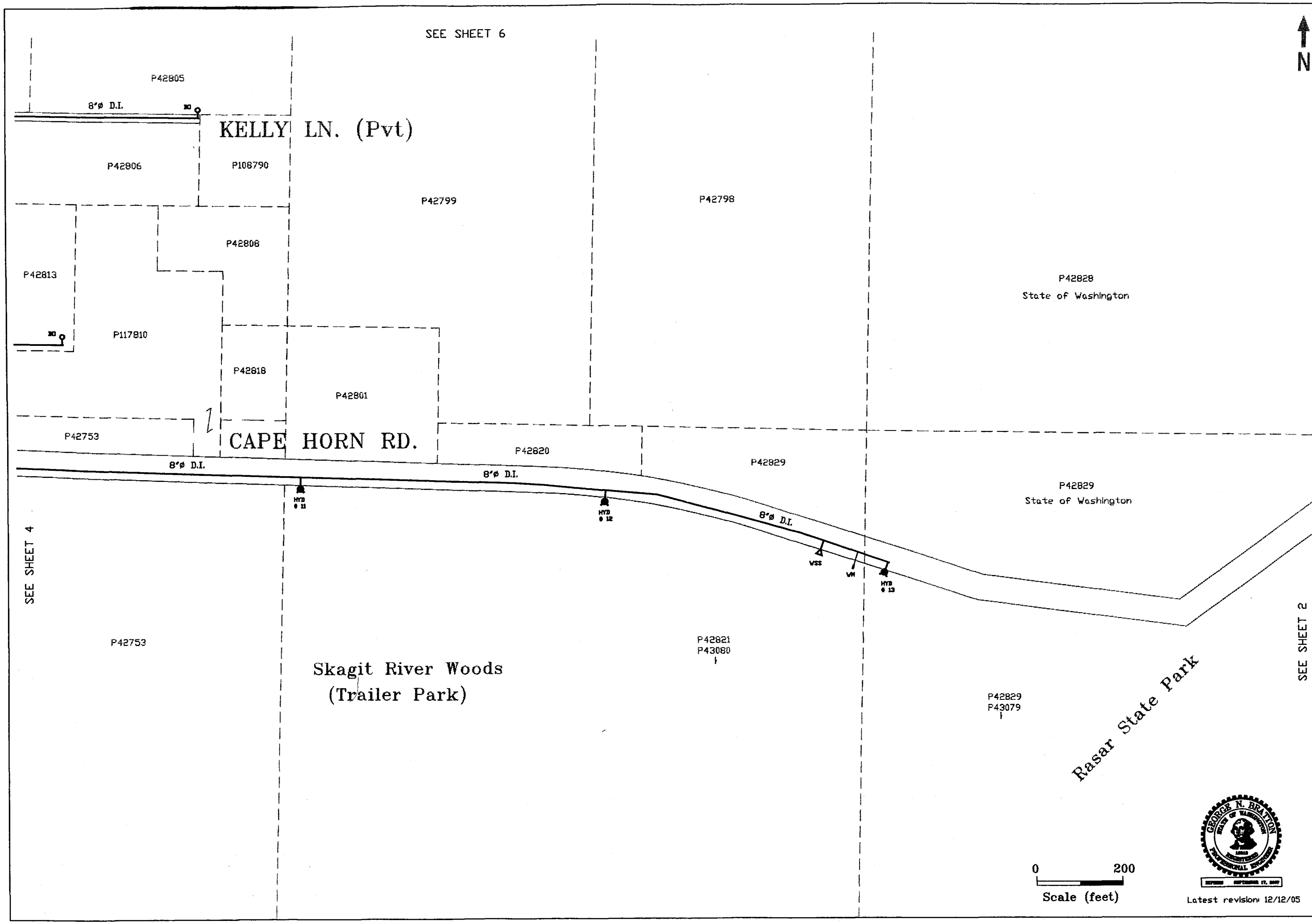
Latest revision 12/12/05

GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550 October 2005

WATER DISTRIBUTION SYSTEM
COMPREHENSIVE MAP

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 2 of 14

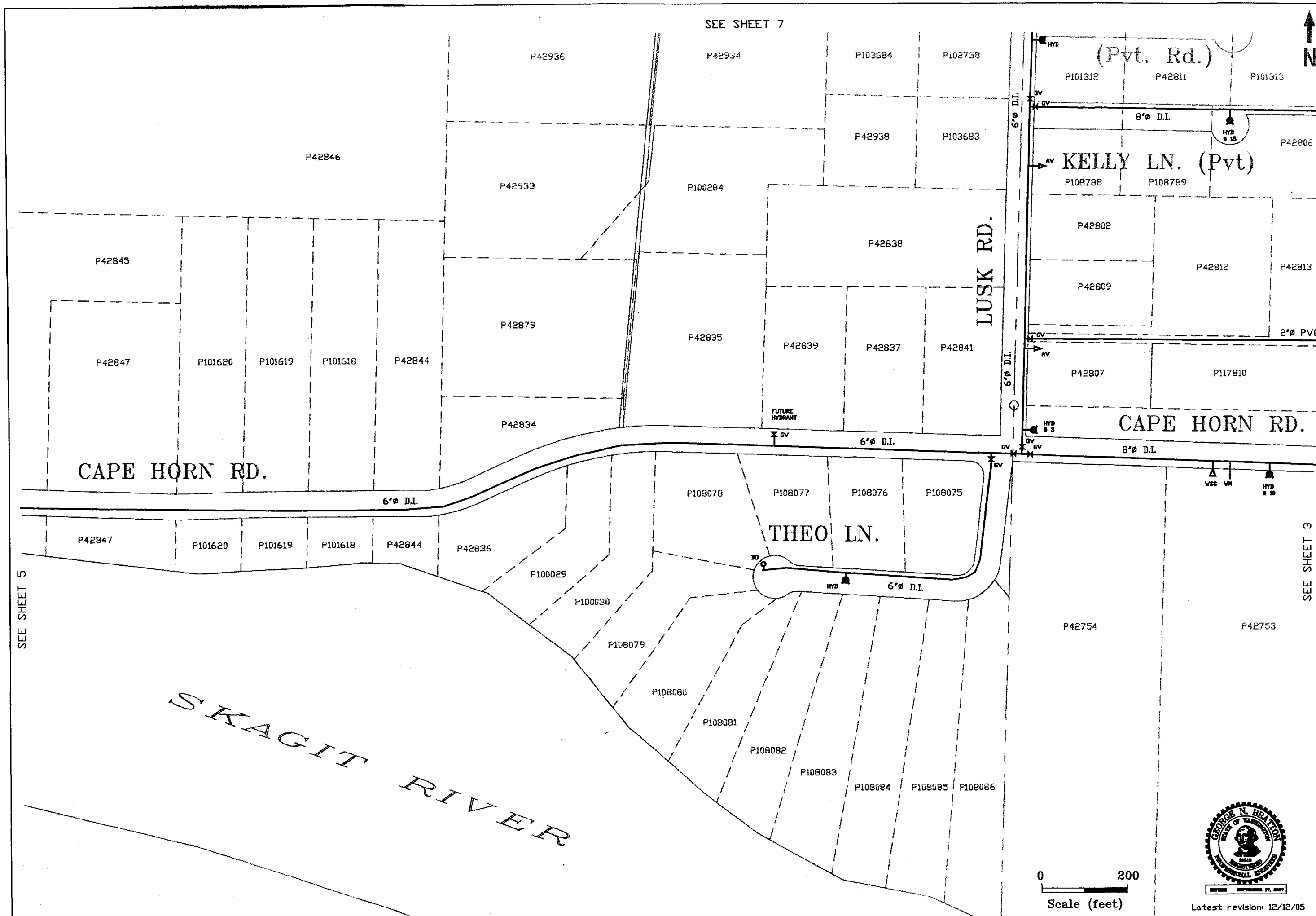



GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550 October 2005

WATER DISTRIBUTION SYSTEM
COMPREHENSIVE MAP

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 3 of 14



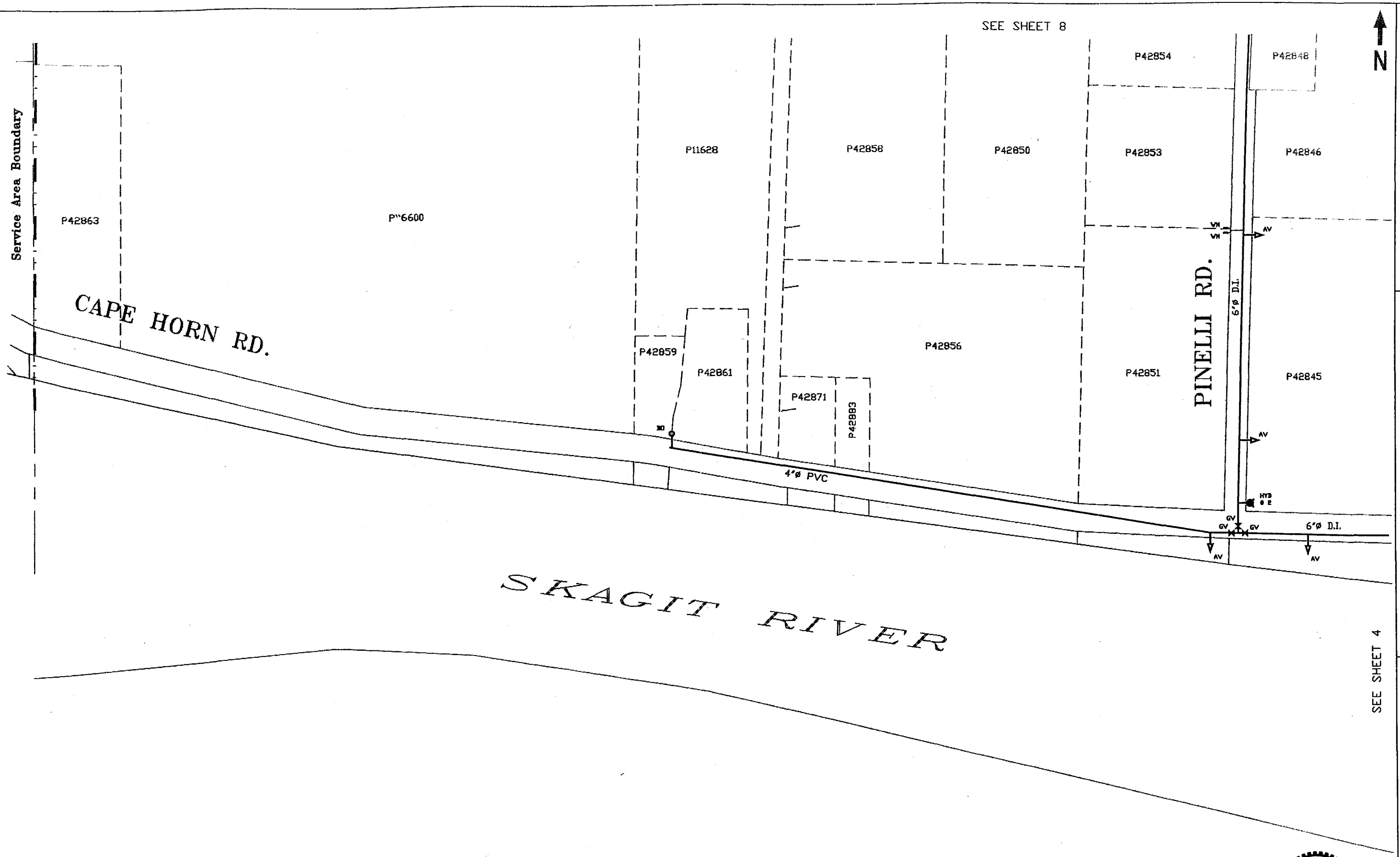

Latest revision: 12/12/05

GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550 October 2005

WATER DISTRIBUTION SYSTEM
COMPREHENSIVE MAP

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 4 of 14



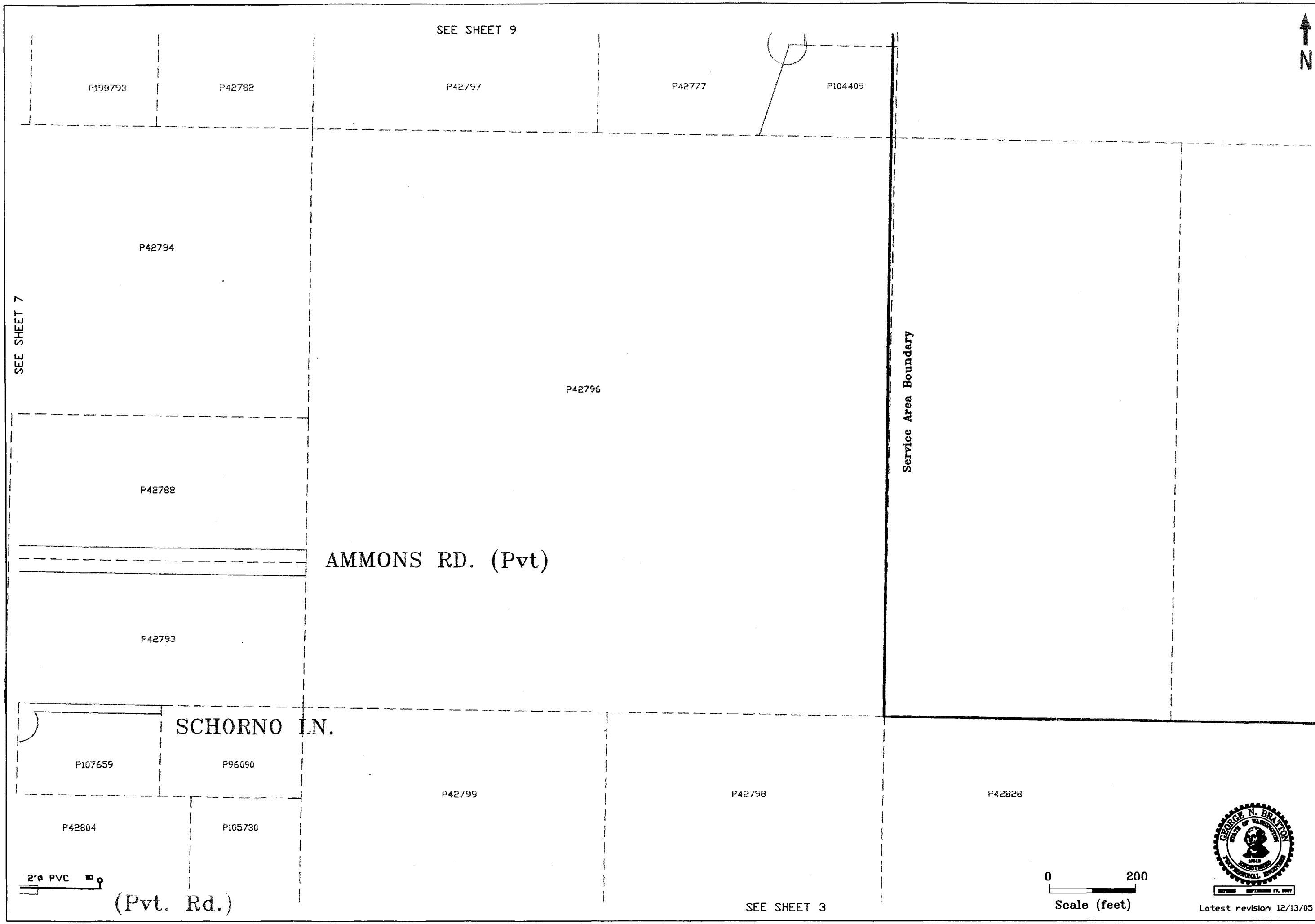

GEORGE N. BRATTON
STATE OF WASHINGTON
SEALED
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES SEPTEMBER 17, 2007

Latest revision: 1/12/06

GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550 October 2005

WATER DISTRIBUTION SYSTEM
COMPREHENSIVE MAP

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

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1252 S. Farragut Drive
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c/o Water & Wastewater Services
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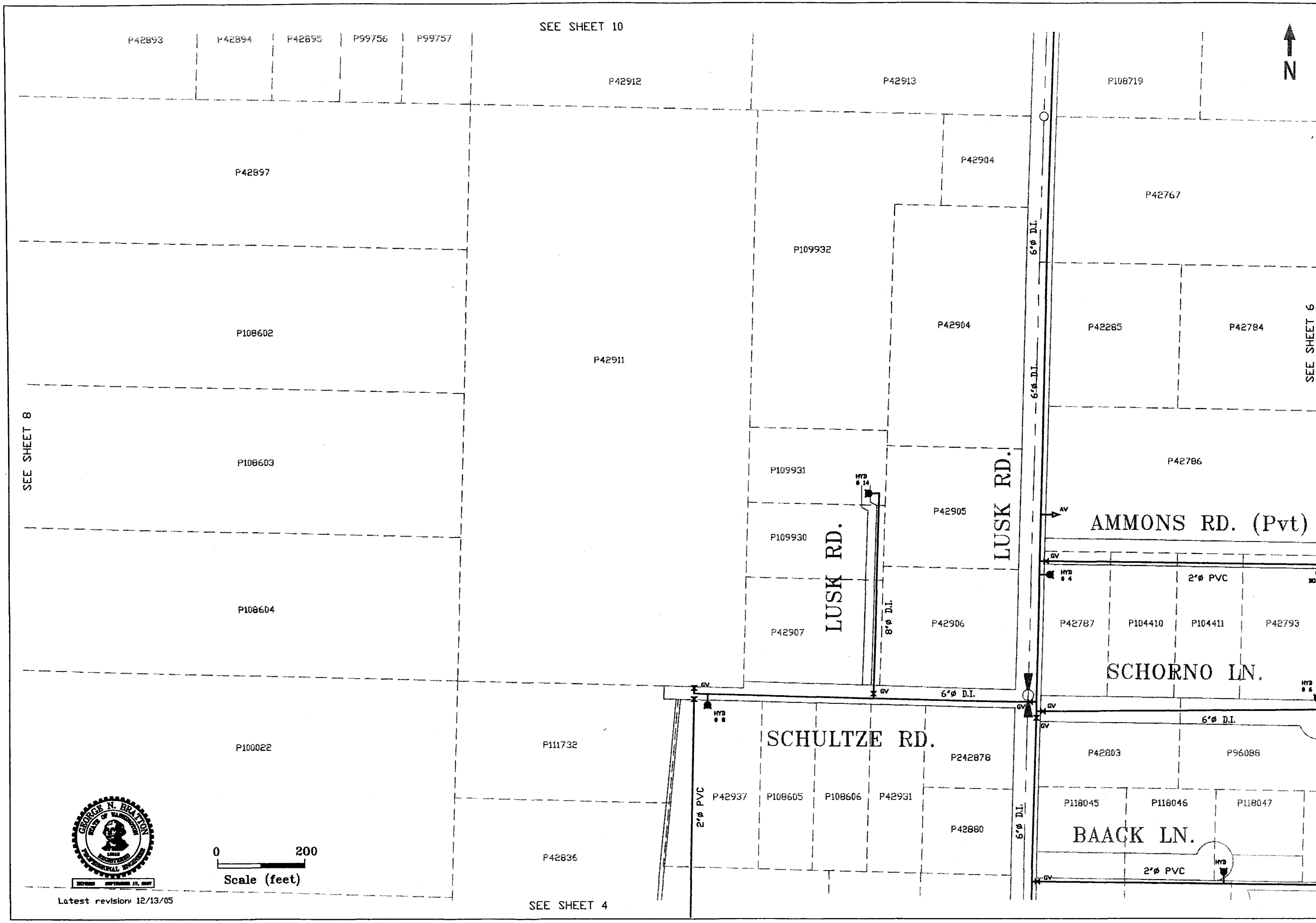
Mt. Vernon, Washington, 98273

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1252 S. Farragut Drive
Coupeville, Washington 98239
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WATER DISTRIBUTION SYSTEM
COMPREHENSIVE MAP

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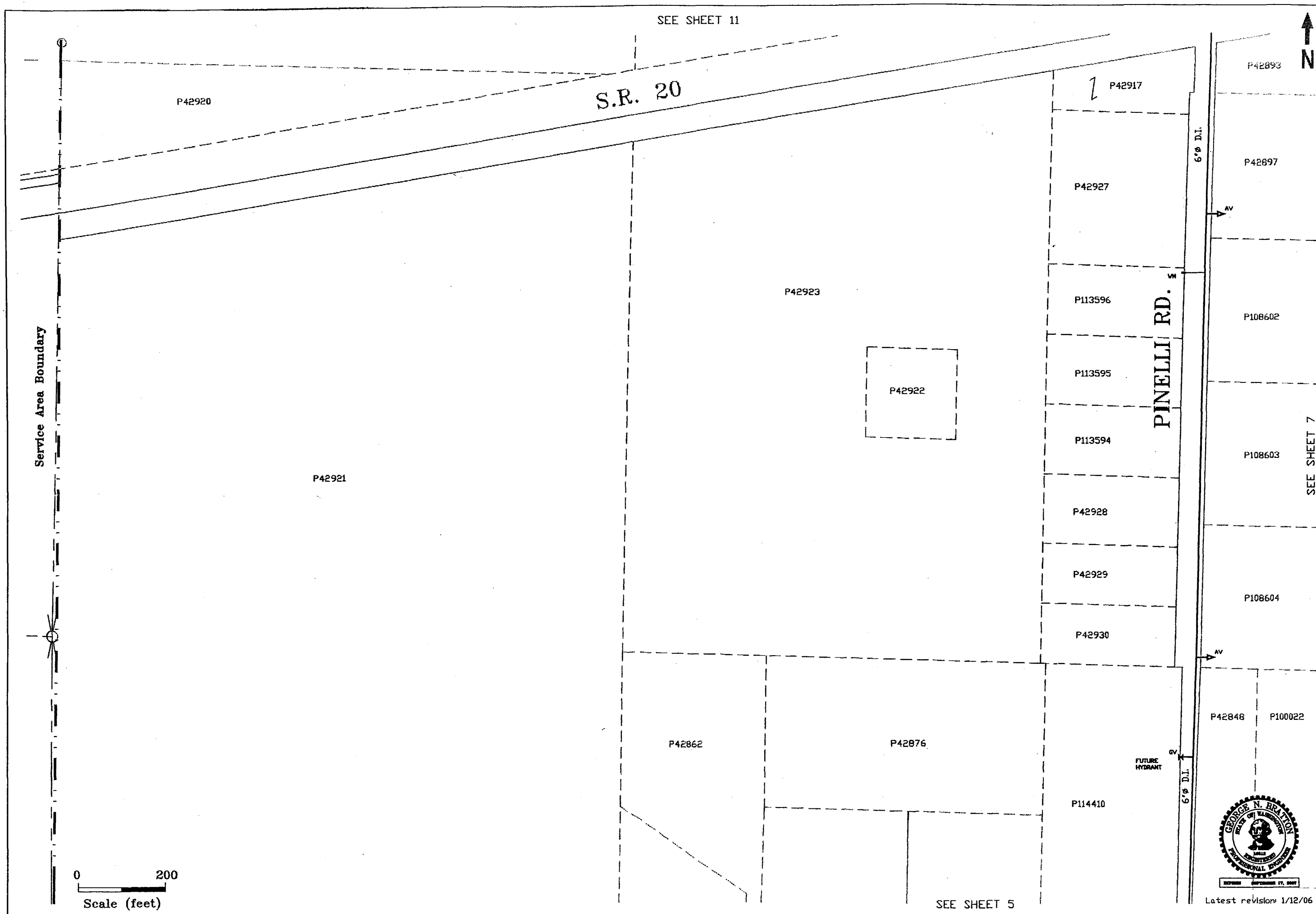
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 7 of 14

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1252 S. Farragut Drive
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Job 550 October 2005

WATER DISTRIBUTION SYSTEM
COMPREHENSIVE MAP

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

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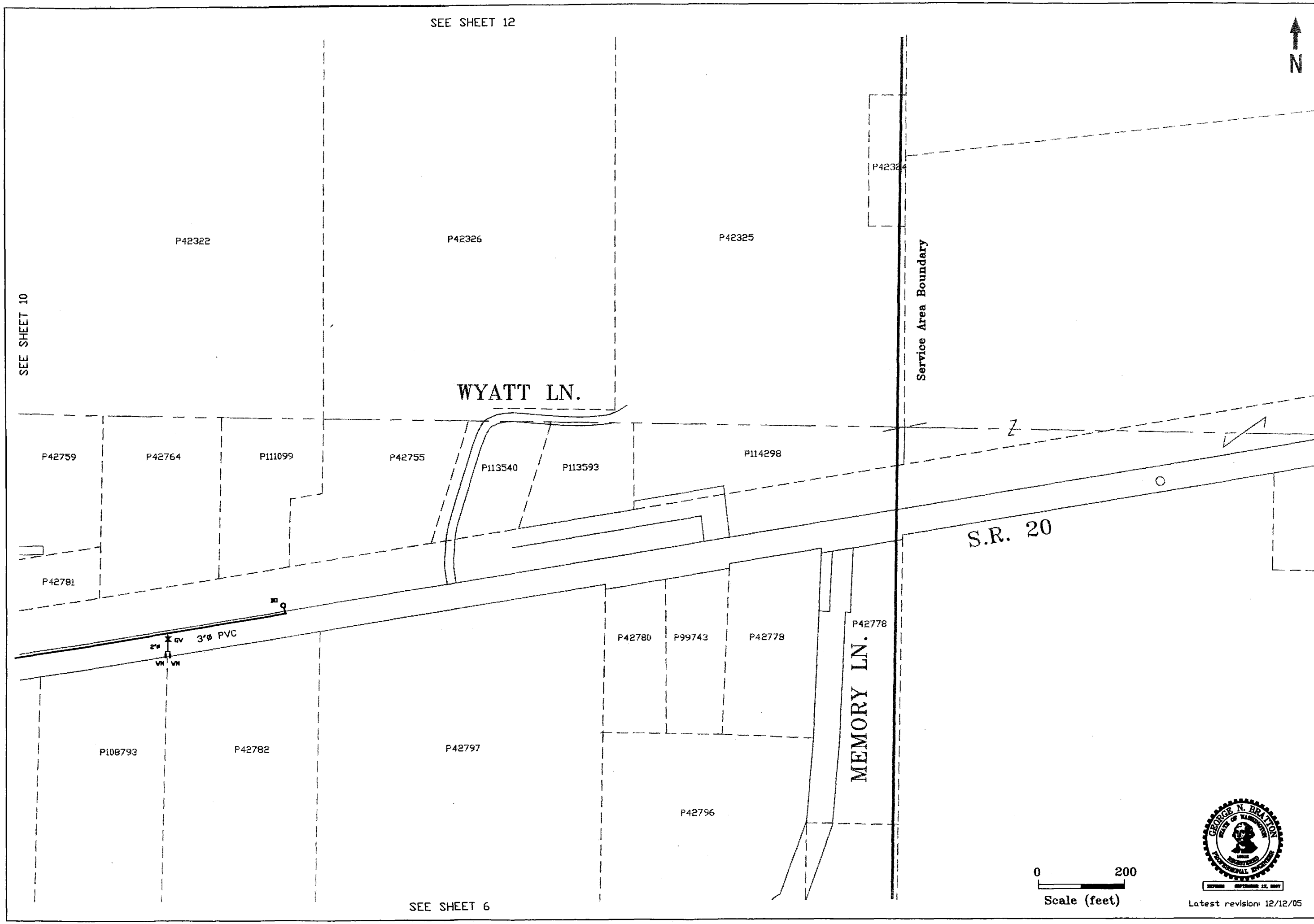
Sht. 8 of 14

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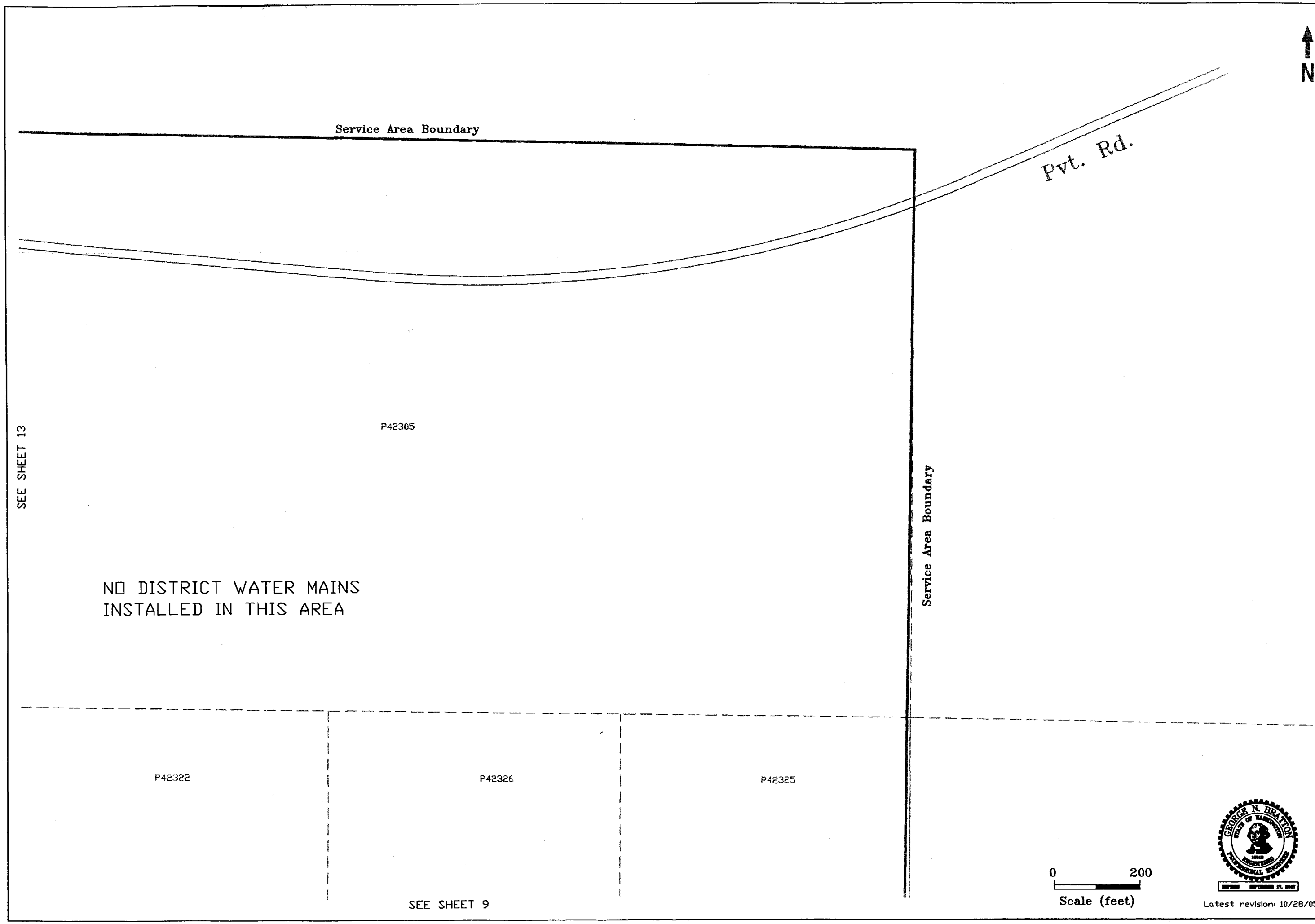
WATER DISTRIBUTION SYSTEM
COMPREHENSIVE MAP

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 9 of 14

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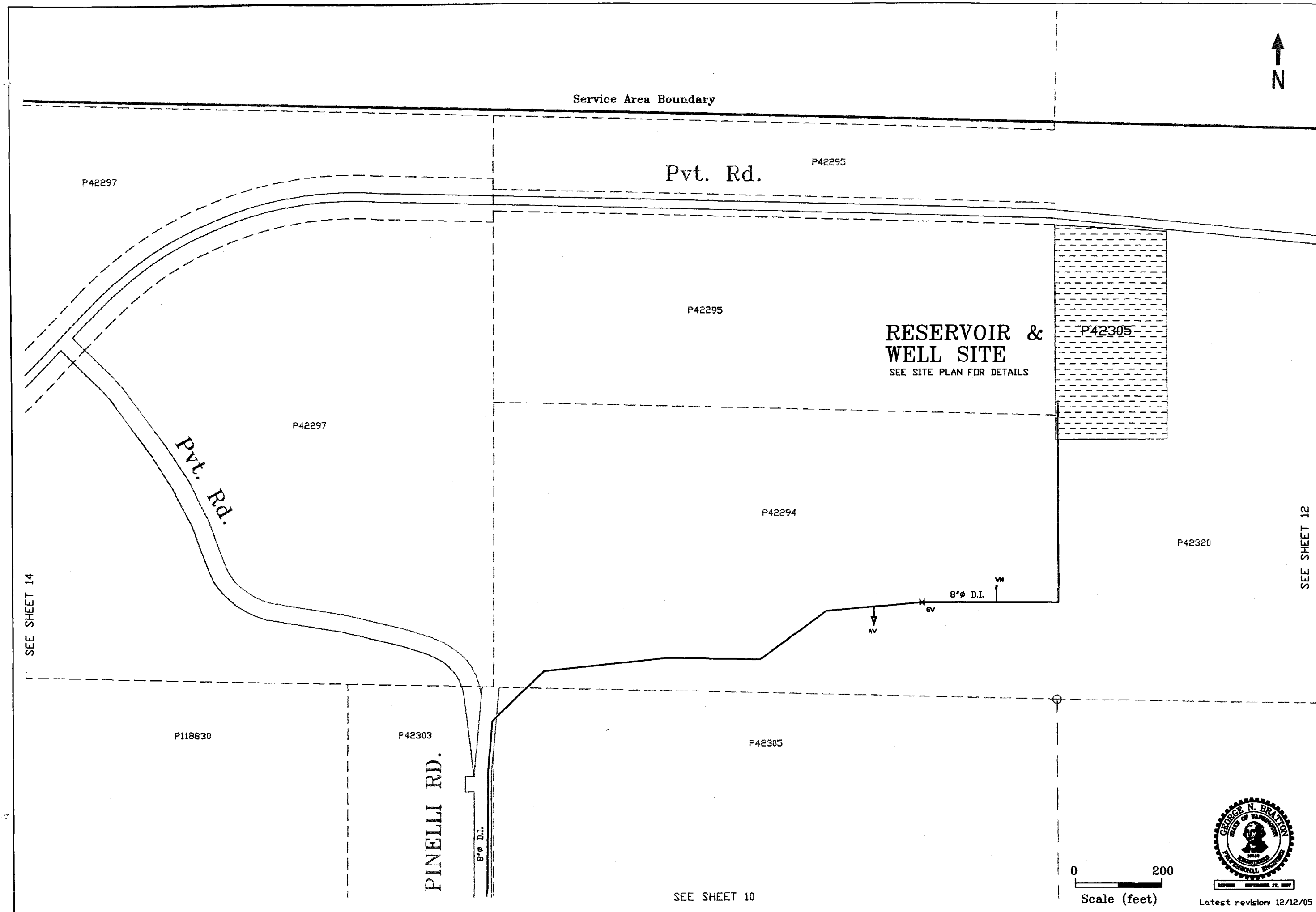
WATER DISTRIBUTION SYSTEM
COMPREHENSIVE MAP

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

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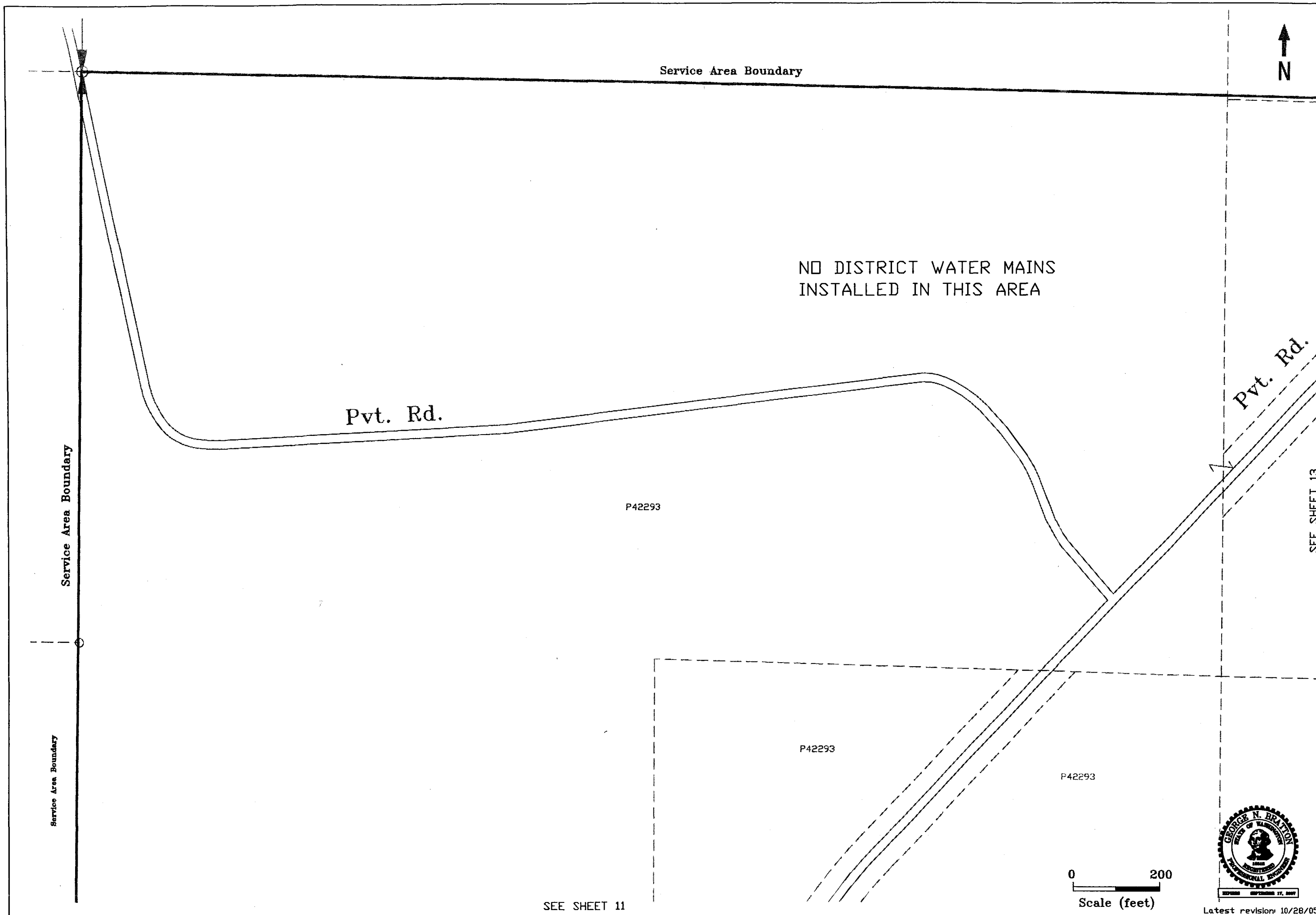
Job 550 October 2005

WATER DISTRIBUTION SYSTEM
COMPREHENSIVE MAP

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 13 of 14

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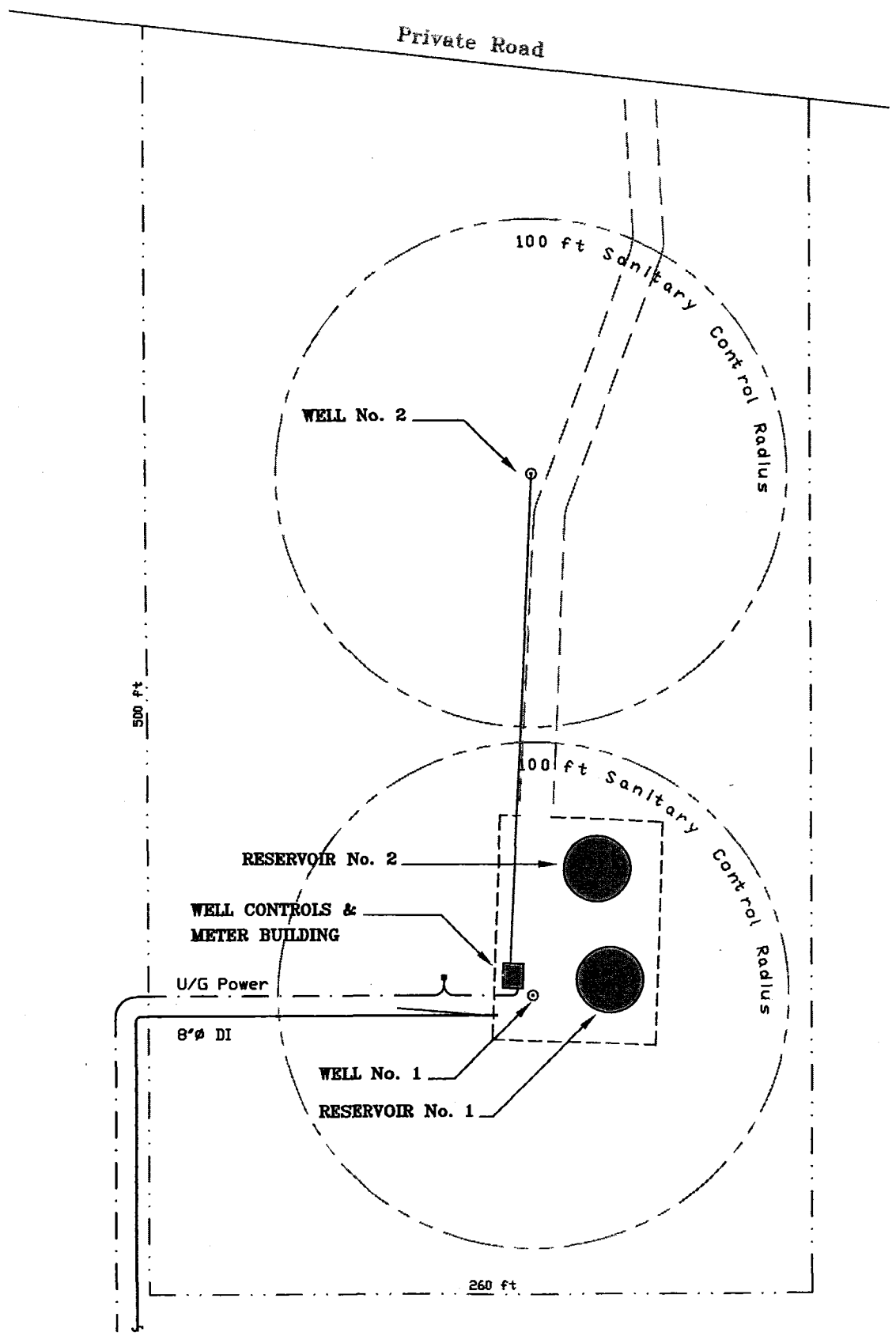
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550 October 2005

WATER DISTRIBUTION SYSTEM
COMPREHENSIVE MAP

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 14 of 14

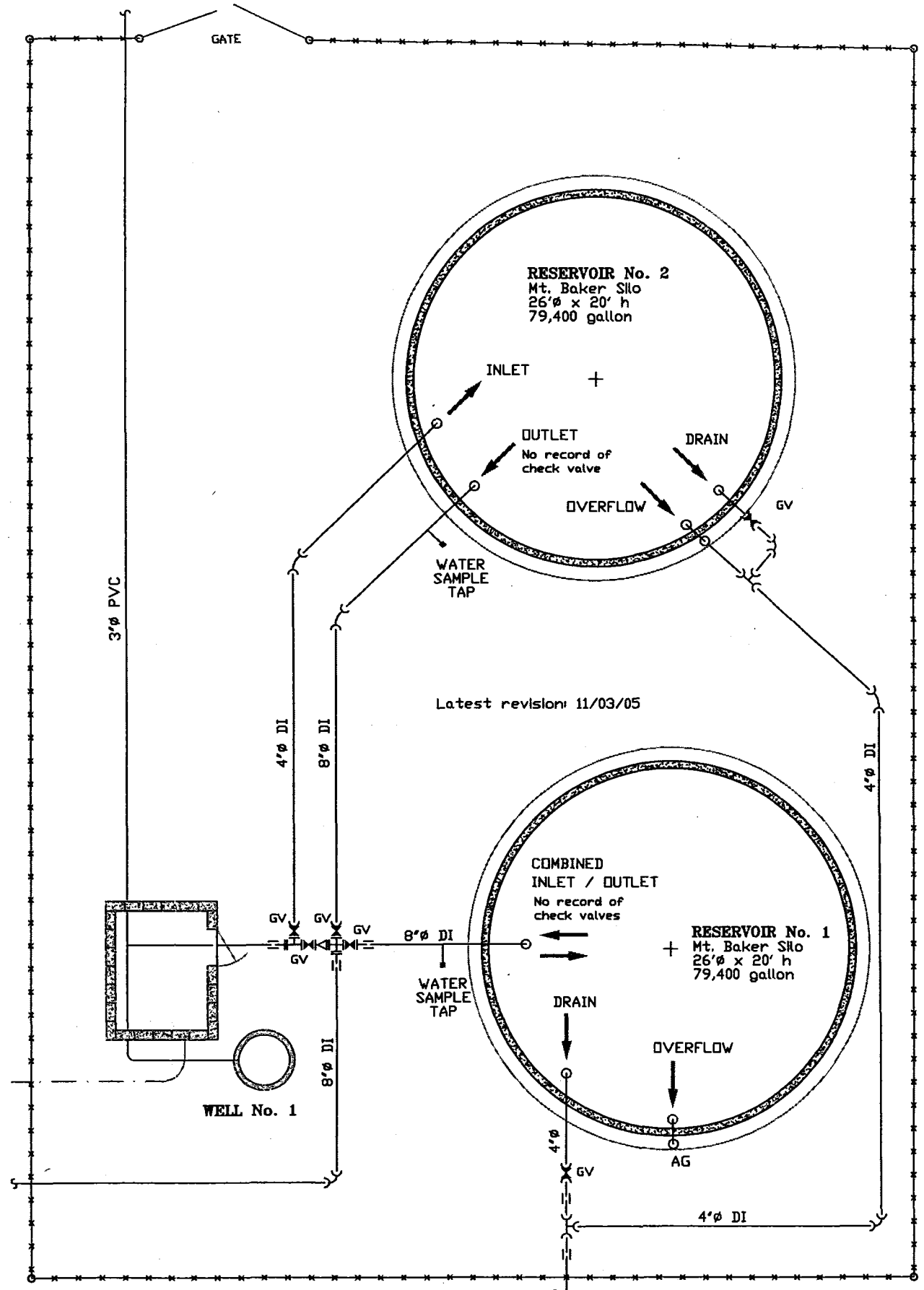



WELL LOT

0 60

Scale (feet)

Scale:




RESERVOIR COMPOUND

0 10

Scale (feet)

Daylight discharge
downstream

**NOTES:**

INFORMATION FROM DRAWING BY CHS ENGINEERS DATED JANUARY 1999, MARKED PRELIMINARY. NO RECORD DRAWING FOUND.

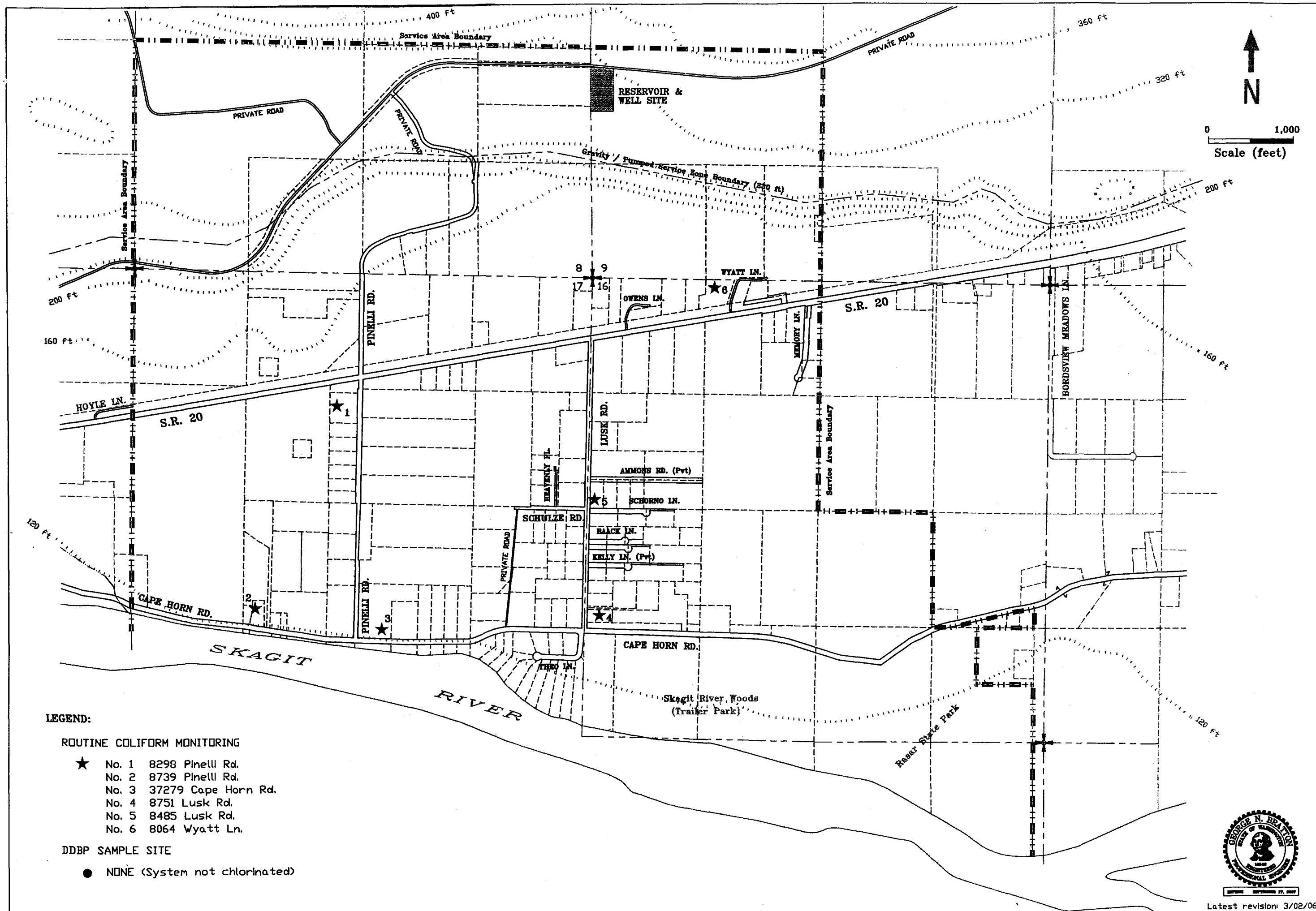
Latest revision: 3/02/06

GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550 November 2005

WATER DISTRIBUTION SYSTEM
COMPREHENSIVE MAP
RESERVOIRS AND WELLS
Site Plan

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington 98273

Sht. 1 of 1




**LEGEND:**

ROUTINE COLIFORM MONITORING

★ No. 1 8298 Pinelli Rd.
No. 2 8739 Pinelli Rd.
No. 3 37279 Cape Horn Rd.
No. 4 8751 Lusk Rd.
No. 5 8485 Lusk Rd.
No. 6 8064 Wyatt Ln.

DDBP SAMPLE SITE

● NONE (System not chlorinated)

Latest revision: 3/02/06

GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550 October 2005

WATER DISTRIBUTION SYSTEM
WATER QUALITY MONITORING SITES

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 1 of 1

SCWD#1 Copy

# Attachment 5 - Water System Plan and Small Water System Management Program Consistency Statement Checklist

Interim Guidance 11/06/2003

This consistency statement checklist is intended to ensure consistency of water system planning documents and adopted local comprehensive plans and development regulations. The expectation is that each local planning jurisdiction in which the water utility provides service will review the relevant water system planning information and provide a signed consistency statement to the utility for submittal to the Department of Health. If the local planning agency will not respond, the highest authority within the utility (chair of governing body, executive director of private companies, etc.) must sign to verify consistency of the plan information.

**Water System Name:** *SKAGIT COUNTY W.D. No. 1* **PWS ID:** *00392Q*

**Planning Document Title:** *2006 Water System Plan* **Plan Date:** *Nov. 06*

**Local Planning Jurisdiction:** *Skagit County*

| Consistency Statement<br>Reference: Municipal Water Law Section 1 and 2 amendment to chapter 43.20 RCW and chapter 43.70 RCW | Page # | Date |
|---|---|---|
| The service area and land use identified in the water system plan is consistent with the *adopted comprehensive plan and adopted development regulations and policies.* | *See Attached* | *Yes* |
| ***FOR WATER SYSTEM PLANS ONLY*** - The growth projection used to forecast water demand for the service area is consistent with the adopted city/county's population growth projections (and commercial development projection if applicable). If a different growth projection was used, the alternative growth projection and methodology proposed is acceptable based on explanation given. | *See Attached* | *Yes* |
| ***FOR WATER SYSTEM PLANS ONLY*** - New potential large water users (that may have a significant impact on the water system) that the city/county is aware of have been identified in the water system plan. | *NA* | *NA* |
| ***FOR CITY-OWNED SYSTEMS ONLY-*** All policies regarding water service outside the corporate boundaries must be included in the water system plan. These policies are consistent with the adopted *comprehensive plan* and *development regulations.* | *NA* | *NA* |
| ***WHERE THE LOCAL PLANNING AGENCY IS UNABLE TO SIGN A CONSISTENCY STATEMENT*** - Provide documentation of efforts to coordinate with local agencies with a 60-day timeline for local agency to respond. Include: name of contact, date, type of effort attempted, and response from local agency. | *NA* | *NA* |

I certify that the above statements are true to the best of my knowledge and that these statements support the conclusion that the subject planning document is consistent with adopted comprehensive plans, development regulations, and other policies.

Jeroldine Hallberg
Signature

11-9-06
Date

Jeroldine Hallberg, Senior Planner, Skagit County
Printed Name, Title, & Jurisdiction

**For any issues of inconsistency, please provide comments on how they can be resolved.

*GEORGE BRATTON, P.E.*
*Civil Engineer*
*1252 S. Farragut Drive*
*Coupeville, WA 98239*
*TEL. (360) 678-4552*
*FAX (360) 678-5374*

SKAGIT COUNTY
PERMIT CNTR.
NOV 06 2006
RECEIVED

November 3, 2006

Jeroldine Hallberg
Skagit County Planning
1800 Continental Place
Mount Vernon, WA 98273

Dear Jeroldine,

SKAGIT COUNTY WATER DISTRICT No. 1 (DOH ID # 00392Q)
2006 TO 2011 WATER SYSTEM PLAN

Please find attached for your review the following revised calculations:

- Water Supply and Demand Forecast
- Allowable Number of Connections
- Water Right Self-assessment

I included 6 existing ADUs (survey by the system operator) in the assessment of the current number of ERUs. For growth, I assumed that 10% of the single-family parcels may have an ADU. I retained the number of new lots proposed for the Hamilton Estates and Cape Horn subdivisions. This number of lots may not be approved by the County, but I wish to be conservative for the growth forecast.

The six and 20-year demand forecasts include three growth scenarios (slow, moderate and high). Based on the current water rights of 150 gpm and 65.5 acre-feet per year, and no conservation, the water rights are inadequate for the high growth rate 20-year forecast. Accordingly, an application will be submitted to WA DOE for additional water rights.

Because of the uncertainty of obtaining additional water rights, the conservation goals were established based on additional water rights not being obtained. Although the long-term goal requires a very stringent conservation program, the duty to service may require this level of conservation.

Even with stringent conservation, if the number of ADUs is not limited to about 10 percent of the single-family customers, it may not be possible to serve all customers in the service area without additional water rights. Accordingly, the District will be considering adding to their service policies a limit on the sale of water shares for accessory dwelling units to the number of equivalent single-family residential units authorized by the WA Department of Health in excess of the District's obligation to supply existing parcels and parcels that may be created by subdivision.

The District's lawyer will need to determine if this policy will be enforceable. If not, the County's authorization of an ADU for each parcel could potentially result in the District being unable to meet its duty to serve imposed under the Municipal Law. The County increased the number of potential customers (essentially double) at build-out and the WA DOE limits the water supply. Fortunately, this will not be an issue in the six-year Water System Plan, and hopefully will not become an issue in the 20-year plan.

Please let me know if you wish to have any of the projections on growth increased. I would like to be conservative in the long-range demand forecast. The distribution system is designed for fire flow. Hence the estimate of build-out will affect only supply, the capital plan will not be impacted in the short-term.

I attached a *Consistency Checklist* for your signature if the above calculations meet with your approval.

I will then respond to the WA DOH letter of June 12th and hopefully we can complete the current water system plan.

Please call me if you have any questions.

Sincerely,

George Bratton, P.E.

Cc Kelly Wynn, Water & Wastewater Services
Lorna Parent, Skagit County Environmental Health

## ALLOWABLE NUMBER OF CONNECTIONS (ERUs)

**Summary of System Information:**

| | | | | | |
|---|---|---|---|---|---|
| Water rights: | G1-24847C | 150 | gpm | 65.5 | acre-feet |
| Based on | 127 | residential connections | | | |
| | 324 | seasonal camp sites (Skagit River Woods) | | | |
| Well production: | | | | | |
| Well No. 1 | 75 | gpm | 5 hp Jacuzzi pump | | |
| Well No. 2 | 75 | gpm | 5 hp Jacuzzi pump | | |
| | 150 | gpm | 216,000 gpd | | |
| Storage: | | | | | |
| Current | | | | | |
| Tank No. 1 | 79,400 | gallons | Mt. Baker Silo 26' dia x 20' high | | |
| Tank No. 2 | 79,400 | gallons | Mt. Baker Silo 26' dia x 20' high | | |
| | 158,800 | gallons (nominal) | | | |

| | | | |
|---|---|---|---|
| WA DOH approval | | | |
| Single-family residential | 159 | ERUs | |
| Skagit River Woods Campgroun | 12 | ERUs | 20 |
| Rasar State Park | 8 | ERUs | |
| | 179 | ERUs | April 2, 2001 letter |
| Current number of connections: | | | |
| Single-family residential | 112 | | 2005 WFI |
| Non-S-F residential | 2 | | |
| | 114 | | |
| Ultimate number of customers: | | | |
| Current S-F residential customer | 191 | ERUs | |
| and unserved parcels | | ERUs | |
| State Park & Skagit River Wood: | 32 | ERUs | See Water Supply and Demand Forecast |
| Subdivision of large parcels including proposed subdivisions | 92 | ERUs | |
| Possible expanion of service are | 10 | | |
| Allowance for ADUs (10% of lots) | | | |
| Growth allowance for State Park & Skagit River Woods | 6 | ERUs | |
| | 331 | ERUs | |

| | | | | |
|---|---|---|---|---|
| Recorded Maximum Day Demand (MDD | 43,939 | gpd | 2004 | |
| Recorded 2004 demand: | 12,439,165 | gallons | 38.2 | acre-feet |
| Recorded MDD | no record | | | |
| MDD without conservation: | 800 | gpd/ERU assumed without recorded MDD | | |
| MDD short-term goal | 700 | gpd/ERU | | |
| MDD long-term goal (20-years) | 600 | gpd/ERU | | |
| Recorded Average Day Demand (ADD) | 243 | gpd/ERU | | |
| ADD short-term goal | 200 | gpd/ERU | | |
| ADD long-term goal (20-years) | 160 | gpd/ERU | | |

The following is a summary of the calculated number of equivalent number of single family residential connections (ERUs) that the system may supply, based on various design criteria.

**Water Rights:**

270 ERUs Based on the current water right rate of production, assuming 800 gpd/ERU Maximum Day Demand (no water conservation).

360 ERUs Based on the current water right rate of production, assuming 600 gpd/ERU MDD (long-term water conservation goal).

**241** ERUs Based on the current water right annual withdrawal, assuming recorded ADD controls

292 ERUs Based on the current water right annual withdrawal, assuming conservation reduces ADD to short-term goal

365 ERUs Based on the current water right annual withdrawal, assuming conservation reduces ADD to long-term goal

**Well Production:**

Well production equals water rights, see above calculations

**Water Treatment:**

not applicable

**Water Storage:**

278 ERUs Based on current storage, assuming 800 gpd/ERU for standby storage and calculation of Peak Hour Demand, reduction for operating and dead storage, allowance for filter backwash, current well production with credit towards standby storage for multiple wells.

374 ERUs Based on above, assuming long-term water conservation goal of 600 gpd/ERU MDD

## ANNUAL PRODUCTION / USE HISTORY

| Year | Number of Services | Source Production (gallons) | Commercial Water Use: Rasar State Park (gallons) | Commercial Water Use: Skagit River Woods (gallons) | Single-family & unaccounted (gallons) |
|---|---|---|---|---|---|
| 1999 | 107 | 9,426,250 | 576,932 | 881,892 | 7,967,426 |
| 2000 | 110 | 10,587,490 | 907,174 | 1,259,782 | 8,420,534 |
| 2001 | 111 | 11,729,338 | 1,066,573 | 2,021,694 | 8,641,071 |
| 2002 | 110 | 10,600,431 | no data | no data | |
| 2003 | 110 | 10,195,689 | 690,000 | 1,913,526 | 7,592,163 |
| 2004 | 112 | 12,439,165 | 745,532 | 1,753,985 | 9,939,648 |

ADD for 2004 based on S-F Residential 243 gpd/ERU

## JULY - AUGUST USE

| | Rasar State Park (gallons) | Skagit River Woods (gallons) | Single-Family Residential: Two-month (gallons) | Single-Family Residential: Per day (gpd) | Single-Family Residential: Summer ADD (gpd/ERU) |
|---|---|---|---|---|---|
| 2003 | 322,612 | 538,261 | 2,577,458 | 41,572 | 385 |
| 2004 | 189,598 | 438,403 | 2,461,015 | 39,694 | 361 |

| Equivalent ERUs for | Rasar State Park | Skagit River Woods | |
|---|---|---|---|
| 2003 | 13.5 | 22.6 | July-August use divided |
| 2004 | 8.5 | 19.6 | by ADD x 62 days |
| For demand forecast Avg | 11 ✓ | 21 ✓ | Average of 2003 & 2004 |

| | Connections | ERUs |
|---|---|---|
| Number of active full-time single-family customers in 2004: | 110 | 110 |
| Number of Accessory Dwelling Units in above (1 ERU/ADU): | na | 6 |
| Number of active part-time single-family customers in 2004: | 0 | 0 |
| Number of purchased, but inactive water shares in 2004: | 0 | 0 |
| Number of multi-family customers in 2004: | 0 | 0 |
| Number of commercial/institutional customers in 2004: | ✓ 2 | ✓ 32 |
| **Total number of current connections / ERUs** | 112 | 148 |

WFF (3/2007 = 121)

Rasar SP / Skag River Woods

## UNACCOUNTED-FOR WATER

| | | | | |
|---|---|---|---|---|
| 2004 volume of water produced | 12,439,165 | gallons | 38.2 | acre-feet |
| 2004 volume distributed | 12,058,336 | gallons | | |
| Difference of produced minus sold (unaccounted-for water) | 380,829 | gallons | 3.1% | |

## ESTIMATE OF FUTURE (ULTIMATE) DEMAND

| | | |
|---|---|---|
| Current number of parcels in service area (by count) | 197 | ERUs |
| Minus parcels for Rasar State Park and Skagit River Woods | -6 | ERUs |
| Current number of potential single-family parcels without subdivision | 191 | ERUs |
| Equivalent number of ERUs for commercial customers | 32 | ERUs (Skag. River Woods/Rasar SP |
| Allowance for growth in Rasar State Park and Skagit River Woods | 6 | ERUs |
| Allowance to expand service area east & west along SR 20 for commercial developments with domestic & fire flow | 10 | ERUs |

Subdivision of large parcels

| Parcel No. | Area (acres) | Zoning | Density | Additional Customers | |
|---|---|---|---|---|---|
| P42286 | 118 | SF-NRL | 1 per 20 acres | 8 | ERUs |
| P42334 | 79 | SF-NRL | 1 per 20 acres | | |
| P42919 | 40 | RRc-NRL | 4 per 40 acres | | |
| P42293 | 40 | RRc-NRL | clustered | | |
| P118330 | 20 | RRc-NRL | housing | | |
| P42297 | 40 | RRc-NRL | ↓ | | |
| P42294 | 20 | RRc-NRL | | 20 | ERUs assuming all |
| P42295 * | 20 | RRc-NRL | | | acreage is developed |
| P42305 | 40 | RRc-NRL | | | as clustered housing |
| P42322 | 40 | RRc-NRL | | | |
| P42326 | 20 | RRc-NRL | ↓ | | |
| P42325 | 20 | RRc-NRL | 4 per 40 acres | | |
| P42921 *** | 70 | RRV | 8 | | |
| P42923 | 28 | RRV | 4 | | |
| P42916 ** | 20 | RRV | 3 | | |
| P42911 | 13 | RRV | 1 | 26 | ERUs |
| P10002 | 13 | RRV | 1 | | |
| P42846 | 13 | RRV | 1 | | |
| P42799 | 20 | RRV | 4 | | |
| P42796 | 20 | RRV | 4 | | |

Added lots for proposed/current subdivisions of large parcels:

| | | | |
|---|---|---|---|
| * | Windsong Ranch, P42295 (Aloha Lumber) | 8 | 12 ERUs - 4 (for RRC-NRL) |
| ** | Subdivision of P42916 (Hamilton Estates) prior to GMA | 26 | 29 ERUs - 3 (for RRV) |
| *** | Cape Horn (P42921) along west service area boundary | 4 | 12 ERUs - 8 (for RRV) |
| | Sub-total | 331 | ERUs |
| | Allowance for accessory dwelling units (ADUs), 10% of S-F lots (191+8+20+26+8+26+4) at 1 ERU/ADU | 28 | ERUs |
| | Total at build-out | 359 | ERUs |

## 6 AND 20-YEAR DEMAND FORECASTS

| | [1] Slow growth rate | | [2] Moderate growth rate | | [3] High growth rate | |
|---|---|---|---|---|---|---|
| current | 148 | | 148 | | 148 | |
| 2006 | 150 | | 150 | | 150 | |
| 2007 | 152 | | 155 | | 155 | |
| 2008 | 154 | 12 | 157 | 21 | 157 | 21 |
| 2009 | 156 | | 164 | | 164 | |
| 2010 | 158 | | 166 | | 166 | |
| 2011 | 160 | | 169 | | 169 | |
| 2016 | 168 | | 188 | | 203 | |
| 2026 | 188 | | 230 | | 359 | |

[1] Slow growth rate assumes average of one ERU per year for a new customer and one ADU per year for existing customers (additional 40 ERUs).

[2] Moderate growth rate assumes above plus:
In 10 years, 6 ERUs in Windsong Ranch (Aloha Lumber subdivision)
In 10 years, 13 ERUs in proposed Hamilton Estates
In 10 years, 4 ERUs proposed Cape Horn subdivision

In 20 years, all additional lots created in in above developments (8 + 26 +4 ERUs) allowance of 10% of all S-F lots with ADUs (28), expanded service area (10 ERUs) and growth allowance for Rasar Stare Park and Skagit River Woods ( 6 ERUs)

[3] High growth rate assumes above plus:
In 10 years all additional lots in above developments

In 20 years, balance of the large parcels subdivided (15 ERUs) and 10% of all S-F residential parcel assumed having ADUs.

To allow for all S-F parcels to have an accessory dwelling unit, the ultimate number of ERUs in the service area would be 624.

## WATER SUPPLY

Current Water Rights:

150 gpm, maximum withdrawal rate (Qi) Current well production Qi equals water right.
65.5 acre-feet/year, maximum annual withdrawal (Qa)

## ALLOWABLE NUMBER OF CONNECTIONS BASED ON WATER RIGHTS

**Based on Water Right Rate of Withdrawal (Qi) of 150 gpm**

| | | |
|---|---|---|
| Assuming 800 gpd/ERU (without water conservation) | **270** ✓ | ERUs |
| Assuming 600 gpd/ERU (long-term conservation goal) | 360 ✓ | ERUs |

**Based on Water Right Annual Withdrawal (Qa) of 65.5 acre-feet**

| | | |
|---|---|---|
| Current recorded ADD of 243 gpd/ERU (0.27 acre-ft/ERU) | **241** ✓ | ERUs ← CONTROLS |
| Short-term conservation goal of 200 gpd/ERU | 292 | ERUs |
| Long-term conservation goal of 160 gpd/ERU | 365 | ERUs |

## CONSERVATION / ADDITIONAL WATER RIGHTS

**Required Water Conservation with current Water Rights (Qa)**

| | | | | | |
|---|---|---|---|---|---|
| Assuming | 331 | ERUs (no ADUs) | | 177 | gpd/ERU |
| | | | or | 0.20 | acre-feet/year |
| Assuming | 359 | ERUs (with ADUs) | | 163 | gpd/ERU |
| | | | or | 0.18 | acre-feet/year |

**Required Water Rights (Qa) based on 0.3 acre-feet/year/ERU (no water conservation)**

| | | | | | |
|---|---|---|---|---|---|
| Assuming | 331 | ERUs (no ADUs) | | 99.3 | acre-feet/year |
| | | | or additional | 33.8 | acre-feet/year |
| Assuming | 359 | ERUs (10% with ADUs) | | 107.7 | acre-feet/year |
| | | | or additional | 42.2 | acre-feet/year |

**Required Water Rights (Qi) based on 800 gpd/ERU (no water conservation)**

| | | | | | |
|---|---|---|---|---|---|
| Assuming | 331 | ERUs (no ADUs) | | 184 | gpm |
| | | | or additional | 34 | gpm |
| Assuming | 359 | ERUs (10% with ADUs) | | 199 | gpm |
| | | | or additional | 49 | gpm |

## WATER RIGHT SELF-ASSESSMENT, ALLOWING FOR 10% OF S-F LOT HAVING AN ACCESSORY DWELLING UNIT

| Permit, Claim or Certificate | Name of Rightholder or Claimant | Priority Date | Source Name & Number | Primary or Supplement | Existing Water Rights | | Forecasted 20-Year Source Demand | | Forecasted 20-Year Excess/Deficiency | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Maximum Flow Rate Qi | Maximum Annual Qa | Maximum Flow Rate Qi | Maximum Annual Qa | Maximum Flow Rate Qi | Maximum Annual Qa |
| Permits & Certificates 1 G1-2484C | Skagit Co. WD # 1 | | Wells 1 & 2 | P | 150 | 65.5 | 199.4 | 107.7 | | |
| | | | | TOTAL | 150 | 65.5 | 199.4 | 107.7 | -49 | -42.2 |

| Intertie Name/Identifier | Name of Purveyor Providing Water | Existing Limits on Intertie Water Use | | Existing Consumption Through Intertie | | Intertie Supply Excess/Deficiency | |
|---|---|---|---|---|---|---|---|
| | | Maximum Flow Rate Qi | Maximum Annual Qa | Maximum Flow Rate Qi | Maximum Annual Qa | Maximum Flow Rate Qi | Maximum Annual Qa |
| | | | | | | | |
| | TOTAL | | | | | | |

| Pending Water Right Applications | Name on Permit | Date Submitted | Primary or Supplement | Pending Water Rights | |
|---|---|---|---|---|---|
| | | | | Maximum Flow Rate Qi | Maximum Annual Qa |
| | Skagit Co. WD # 1 | | S | 49 | 42.2 |
| | | TOTAL | | 49 | 42.2 |

Forecast 20-year demand based on
359 Ultimate ERUs in service area
800 gpd/ERU MDD for Qi
267.8 gpd/ERU ADD for Qa

Forecast assumes no water conservation.

## WATER RIGHT SELF-ASSESSMENT, ALLOWING FOR EACH S-F LOT HAVING AN ACCESSORY DWELLING UNIT

| Permit, Claim or Certificate | Name of Rightholder or Claimant | Priority Date | Source Name & Number | Primary or Supplement | Existing Water Rights | | Forecasted 20-Year Source Demand | | Forecasted 20-Year Excess/Deficiency | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Maximum Flow Rate Qi | Maximum Annual Qa | Maximum Flow Rate Qi | Maximum Annual Qa | Maximum Flow Rate Qi | Maximum Annual Qa |
| Permits & Certificates 1 G1-2484C | Skagit Co. WD # 1 | | Wells 1 & 2 | P | 150 | 65.5 | 346.7 | 187.2 | | |
| | | | | TOTAL | 150 | 65.5 | 346.7 | 187.2 | -197 | -121.7 |

| Intertie Name/Identifier | Name of Purveyor Providing Water | Existing Limits on Intertie Water Use | | Existing Consumption Through Intertie | | Intertie Supply Excess/Deficiency | |
|---|---|---|---|---|---|---|---|
| | | Maximum Flow Rate Qi | Maximum Annual Qa | Maximum Flow Rate Qi | Maximum Annual Qa | Maximum Flow Rate Qi | Maximum Annual Qa |
| | | | | | | | |
| | TOTAL | | | | | | |

| Pending Water Right Applications | Name on Permit | Date Submitted | Primary or Supplement | Pending Water Rights | |
|---|---|---|---|---|---|
| | | | | Maximum Flow Rate Qi | Maximum Annual Qa |
| | Skagit Co. WD # 1 | | S | 197 | 121.7 |
| | | TOTAL | | 197 | 121.7 |

Forecast 20-year demand based on
624 Ultimate ERUs in service area
800 gpd/ERU MDD for Qi
267.8 gpd/ERU ADD for Qa

Forecast assumes no water conservation.

**BEFORE THE SKAGIT COUNTY WATER DISTRICT No. 1**

# RESOLUTION No. 86-07

IN THE MATTER OF ADOPTING
PROCEDURES FOR ISSUING OF
WATER HOOK-UP PERMITS TO
PROPERTY OWNERS OF THE
DISTRICT

WHEREAS, the Commissioners met at their regular monthly meeting and considered the adoption of procedures and conditions for the issuing of water-hookup permits to property owners within the District; and

WHEREAS, the District has a duty to supply water to all parcels of land within the water service area delineated in the Agreement for Establishing Water Utility Service Area Boundaries dated June 3, 1996; and

WHEREAS, the ultimate number of parcels of land and the number of equivalent single-family residential units within each parcel of land is established by Skagit County land use policy; and

WHEREAS, the Skagit County Code, Chapter 14.16.710 "Accessory Dwelling Units" permits each parcel to have one accessory dwelling unit as accessory to an existing single-family dwelling; provided principal unit of the single-family dwelling or the accessory dwelling unit is occupied by an owner of the property or an immediate family member of the property owner; and

WHEREAS, the WA Department of Ecology certificate of water rights granted to the District limits the quantity of groundwater withdrawal to supply the property owners within the District; and

WHEREAS, the water right withdrawal rate of 150 gpm and annual withdrawal of 65.5 acre-feet are not adequate to supply all parcels with an accessory dwelling unit; and

WHEREAS, the Commissioners wish to adopt the following Resolution establishing the procedures and considerations for issuing water hook-up permits to owners of property requesting additional supply for an accessory dwelling unit.

NOW THEREFORE, IT IS HEREBY RESOLVED by the Commissioners of the Skagit County Water District No. 1 that:

1. The District will complete a Water Availability Verification Form for an accessory dwelling unit once the Customer signs a revised Application for Water Service and pays the current charge for:

    a. A water share (purchase of equity in the system) for one equivalent single-family residential unit.
    b. An enlarged water service and meter to supply both the original and accessory dwellings.

2. With the subsequent removal of the accessory dwelling unit, the customer shall sign a revised Application for Water Service for reduction of the water meter size (and associated monthly changes) for a single-family dwelling.

3. With the subsequent removal of the accessory dwelling unit, no refund shall be given to the Customer for the purchase of the additional water share, or for the cost to enlarge the service to supply two dwelling units.

4. Once an accessory dwelling unit is removed, should a subsequent application be made for an accessory dwelling unit, the Customer shall again sign a revised Application for Water Service and pays the current charges as noted in item "1", above. Credit shall be given for the previous purchase of an additional water share and enlargement of service.

5. Until additional water rights are obtained from the WA Department of Ecology for the increased withdrawal to supply all parcels that may request service for accessory dwelling units, the District shall allocate the available supply to serving new customers of:

   a. Existing vacant parcels, and
   b. Parcels created by the subdivision of existing parcels.

6. The District shall limit the sale of water shares for accessory dwelling units to the number of equivalent single-family residential units authorized by the WA Department of Health in excess of the District's obligation to supply existing parcels and parcels that may be created by subdivision.

7. The District shall sell water shares for accessory dwelling units on a first-applied, first-supplied basis. The sale of a water share for an accessory dwelling unit shall be assigned to a specific parcel and shall not be transferable to another parcel. If the accessory dwelling unit is not installed within one year of application for a water connection permit, the permit and associated water share shall be void, and all fees refunded minus the applicable administration charges established in the District's service policies.

8. Once the available number of water shares for accessory dwelling units have been utilized, the District will promote water conservation to reduce maximum day and annual demand. If a reduction can be established, the District will request WA Department of Health approval to increase the number of single-family residential units (for accessory dwelling units) that the District may supply.

APPROVED AND ADOPTED this 17th day of Jan., 2007

N. Rathvon

Norm Rathvon, Commissioner

Ben Clark, Commissioner

Stephen Stout

Stephen Stout, Commissioner

## IX. CAPITAL FACILITIES PLAN

Details of the budget level cost estimates are provided in the appendices.

The following capital improvement budget is provided for the next six-year period.

**Table 5**
**CAPITAL PLAN**

| Project Description | Year | Budget |
|---|---|---|
| Change vaults with dual meters and RPBA to provide RPBA on each service. | 2007 to 2008 | $ 117,000 |
| Core drill and install separate top fill inlet on Reservoir No. 2, modify yard piping and other related reservoir and wellhead improvements. | 2008 | $25,000 |
| Added air release valves (allowance for 6) and upgrade enclosures for existing AVB. | 2009 | $10,000 |
| Extend Shultze Road main 1,900 feet or 6"Ø to connect with Pinelli Road ($50,000 easement purchase + $35 per foot + 20% contingency) | 2009 | $140,000 |
| Added distribution valves throughout system (allowance) | 2011 | $10,000 |

The total six-year budget is $ 302,000. All costs are in 2005 dollars. The replacement cost for the existing system is $1,800,000.

## X. FINANCES

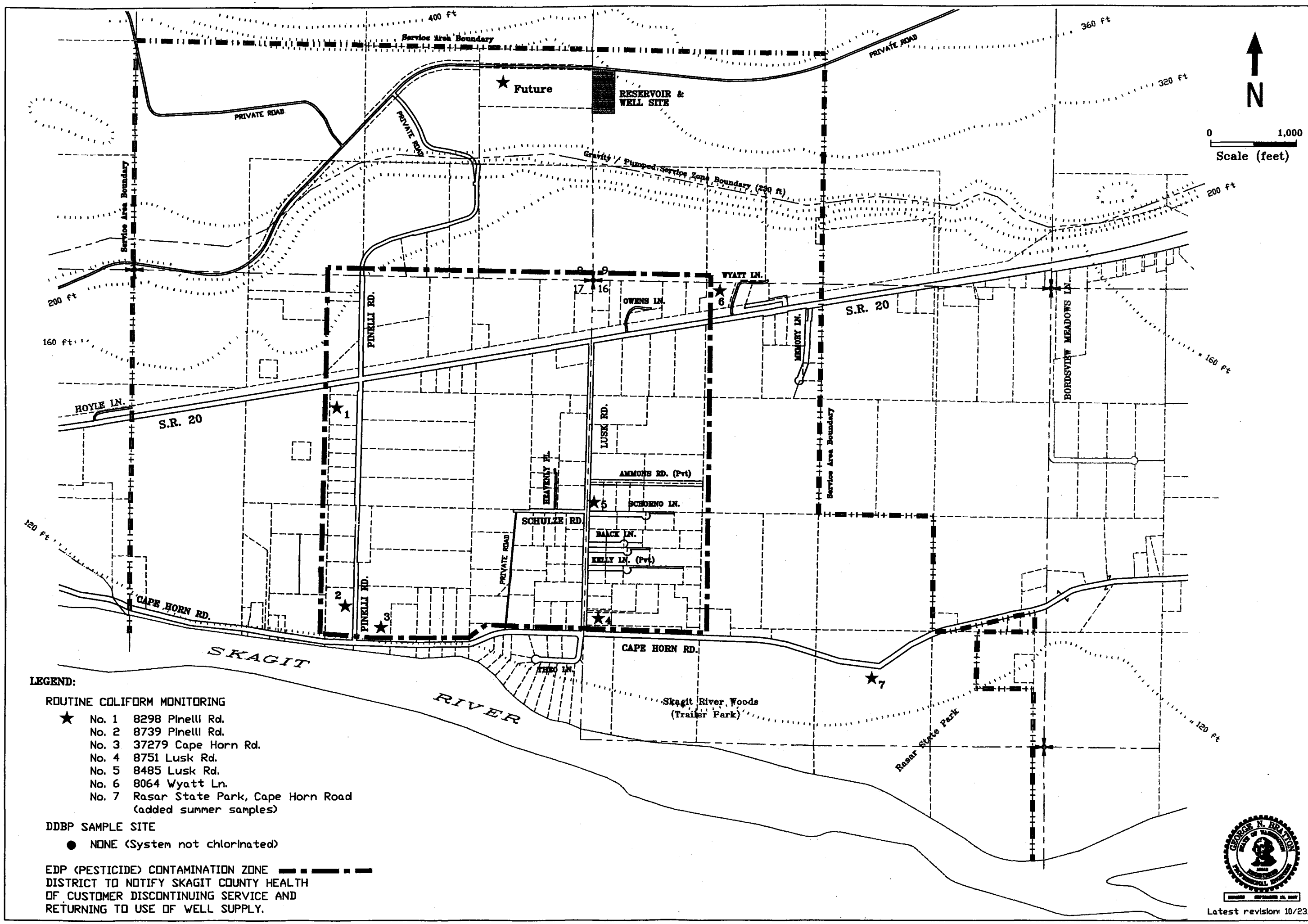
A financial viability assessment, developed in accordance with the Washington Department of Health Financial Viability Manual, March 1995, is provided in the appendices.

Funding for the operation of the water system is obtained from the water rates and charges established in the Purveyor, copy included in the appendices. The present flat rate (meter fee) is $16.00per month. The present fee for a water share (purchase of equity) is $2,500.

All projects greater than $100,000 were assumed to be funded through a PWTF loan. All other projects were assumed funded on a pay-as-you-go basis.

All revenue from the purchase of water shares is dedicated to the capital reserve fund.

The District has no debt. The current financial reserves exceed $ 50,000. This is adequate to cover operating and emergency reserve fund requirements.




**LEGEND:**

ROUTINE COLIFORM MONITORING

- ★ No. 1 8298 Pinelli Rd.
- No. 2 8739 Pinelli Rd.
- No. 3 37279 Cape Horn Rd.
- No. 4 8751 Lusk Rd.
- No. 5 8485 Lusk Rd.
- No. 6 8064 Wyatt Ln.
- No. 7 Rasar State Park, Cape Horn Road (added summer samples)

DDBP SAMPLE SITE

- ● NONE (System not chlorinated)

EDP (PESTICIDE) CONTAMINATION ZONE
DISTRICT TO NOTIFY SKAGIT COUNTY HEALTH OF CUSTOMER DISCONTINUING SERVICE AND RETURNING TO USE OF WELL SUPPLY.

Latest revision: 10/23/06

GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550 October 2005

WATER DISTRIBUTION SYSTEM
WATER QUALITY MONITORING SITES

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 1 of 1

## B. SAMPLING FREQUENCY AND LIST OF SAMPLE SITES

The utility is required to collect samples as described below:

| POPULATIION | < 100 | 101 TO 500 | 500 TO 3,300 |
|---|---|---|---|
| INITIAL AND 6 MONTHS | 5 | 10 | 20 |
| ANNUALLY FOR THREE YEARS | 5 | 10 | 10 |
| EVERY THIRD YEAR THEREAFTER | 5 | 10 | 10 |
| 90th PERCENTILE FOR INITIAL SAMPLES | Average of 2 highest | Second highest | Third highest |

The above table assumes that each sampling period, an action level is not exceeded. Because repeat samples are required, more sites than the number above meeting the location selection criterion should be identified.

Attached is the list of addresses of the single-family residential homes proposed for the collection of samples.

The age of buildings and the age and type of plumbing therein were determined by the Purveyor based on discussion with the property owners, review of Island County files, and/or Purveyor's files.

## C. COMPLIANCE WITH STANDARDS

The "action levels" to trigger the need for corrosion treatment is 0.015 mg/L and 1.3 mg/L for lead and copper, respectively. If the 90th percentile level of lead or copper exceed 0.015 or 1.3 mg/L, the "action level" is considered exceeded.

### LEAD AND COPPER MONITORING RESULTS – 2005

| SITE | LEAD (mg/L) | COPPER (mg/L) |
|---|---|---|
| 8370 Lusk Road | 0.002 | 0.022 |
| 37921 SR 20 | ND | 0.022 |
| 8298 Pinelli Road | ND | 0.052 |
| 37607 Cape Horn Road | ND | ND |
| 8496 Pinelli Road | ND | 0.064 |

Action level for lead is 0.015 mg/L
Action level of copper is 1.3 mg/L

District is on a three-year reduced monitoring schedule.

# SERVICE POLICIES

Adopted with adoption of Water System Plan

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF SKAGIT COUNTY WATER DISTRICT No. 1 ESTABLISHING WATER SERVICE APPLICATION, BILLING, PAYMENT, COLLECTION AND CROSS CONNECTION PROCEDURES AND POLICIES.

## A. DEFINITIONS

"Board of Commissioners" or "Board" means the Board of Commissioners of the Skagit County Water District No. 1.

"Customer" mean the current owner of the parcel of land as defined by the Skagit County Auditor's parcel number and as recorded with the District's Manager.

"Customer account" means the account maintained by the District for each Customer to which water service is provided by the District.

"Delinquency penalty" means the penalty established by the District by resolution under the authority granted in RCW 57.08.081.

"Delinquent sum" means any portion of a Customer's account that remains due and unpaid at the end of any payment period.

"District" means the Skagit County Water District No. 1, also referred to as the "Purveyor" hereinafter.

"Manager" means the duly appointed manager of the District as either an employee or independent contractor to perform the functions of the manager.

"Payment period" means a period of time equal to thirty (30) calendar days from and after the District mails bills to the Customer reflecting the sums due on the Customer's account for water service provided.

"Shut off" means the discontinuation of service referred to in RCW 57.08.081.

"Water service" or "service" means the supply of potable water from the District's system to its Customer.

"Water service connection" or "water connection" means the physical installation of the tap, fittings, pipe and other necessary appurtenances required to deliver water from the water main up to and including the meter box, meter setter and/or meter.

## C. NOTIFICATION OF LOCAL AUTHORITIES

The following agencies shall be notified by a Commissioner, where required by statute, to request assistance, or to provide information for public inquiries:

| | |
|---|---|
| Ms. Nancy Feagin, PE<br>Regional Engineer<br>WA Department of Health | (253) 395-6765<br>WA DOH hotline (877) 481-4901 |
| Lorna Parnet<br>Skagit County Health Dept. | (360) 336-9380 |
| County Engineer<br>Skagit County Public Works Dept. | (360) 336-9400 |

## D. VULNERABILITY ASSESSMENT

The most likely emergencies will include the following:

- Complaint of low pressure
- Water main leak or break
- Complaint about water quality and/or positive bacteriological result from routine monitoring

Major and or wide-spread system failure may occur from the following:

- Fire at the well house
- Landslides due to flooding
- Earthquake
- Chemical contamination of sources of supply

## E. EMERGENCY RESPONSE

### Complaint of low pressure

Complaints of low pressure should be referred to the system operator. The operator should include the following actions in his investigation of the complaint:

- Verify that the source of supply pressure is normal.
- Reservoir is full
- Booster pump discharge pressures are in normal range
- Establish if low pressure is only apparent at the customer making the complaint. This may be done by checking the pressure at the meter to the customer making the complaint (remove meter and install pressure gauge), and the meter at the nearest customer.

## 2. Potential Sources of Contamination

The initial inventory of potential sources of ground water contamination in and around the delineated wellhead protection areas was made using the WA DOH "Ground Water Contamination Susceptibility Assessment Survey Forms" previously submitted to the WA DOH (copy attached).

The WA Department of Health susceptibility rating for the wells *is "moderately susceptible"*.

## 3. Management Plan

The Purveyor does not have regulatory authority over land use. Such regulatory authority rests with the Island County aquifer protection program.

The inventory of potential sources of contamination indicates a relatively low risk for potential groundwater contamination. Therefore, the utility's management plan shall consist of:

a) Notification of the County Health Department and/or Solid Waste Department of any potential sources of contamination in the "high risk" category, identified Washington State publication "Wellhead Protection program", December 1993, Tables 2, except those activities related to residential land use.
b) Public education, as described hereafter.
c) Monitoring of water quality, to give a warning of ground water contamination.
d) Survey of properties where restrictive covenants govern the sanitary control radius for the utility's wells, and enforcement of the covenants when necessary.
e) Encourage voluntary water conservation, to reduce the radius of influence of the drawdown curve, and thus, to reduce the potential for drawing in contaminated ground water.

## 4. Contingency Plan

Both wells withdraw water from the same aquifer.

If an operating source becomes contaminated, the Purveyor will:

a) If necessary, implement the Purveyor's Water Shortage Response Plan to reduce water demand.
b) Assess the impact of the contaminant on water quality; determine if water treatment will allow the continued use of the contaminated well.
c) And if needed, proceed with the acquisition of a replacement well site, using condemnation procedures if necessary.

# SKAGIT COUNTY WATER DISTRICT No. 1

Water District System Service Area

N

0 250 500 1,000 1,500 2,000

Feet

Map Print Date: July 2006

| | | BASE YEAR 2004-05 | SIX-YEAR OPERATING BUDGET YEAR 1 2006 | YEAR 2 2007 | YEAR 3 2008 | YEAR 4 2009 | YEAR 5 2010 | YEAR 6 2011 |
|---|---|---|---|---|---|---|---|---|
| **REVENUES** | | | | | | | | |
| 1 | Water Rates - Commodity | $ 7,656 | $ 7,656 | $ 10,560 | $ 10,560 | $ 10,560 | $ 10,560 | $ 10,560 |
| 2 | Water Rates - Fixed Monthly | $ 21,504 | $ 21,696 | $ 27,360 | $ 27,600 | $ 27,840 | $ 28,080 | $ 28,320 |
| 3 | Fees - Connection | $ - | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 |
| 4 | Other Revenue- misc charges | | $ - | $ - | $ - | $ - | $ - | $ - |
| 5 | Other Revenue -bank interest | $ 2,110 | $ 1,979 | $ 1,548 | $ 1,236 | $ 1,096 | $ 946 | $ 612 |
| 6 | Total Revenue (1 to 4) | | $ 34,831 | $ 42,968 | $ 42,896 | $ 42,996 | $ 43,086 | $ 42,992 |
| **EXPENSES - OPERATIONS** | | | | | | | | |
| 7 | Salaries & F.B. [Note 1] | $ 21,846 | $ 22,000 | $ 22,889 | $ 23,347 | $ 23,814 | $ 24,290 | $ 24,776 |
| 8 | Equiv. of Salaries (pro-bono) | | $ - | | | | | |
| 9 | Power & Other Utilities | $ 1,574 | $ 1,600 | $ 1,665 | $ 1,698 | $ 1,732 | $ 1,767 | $ 1,802 |
| 10 | Chemicals & Treatment | $ - | $ - | | | | | |
| 11 | Monitoring | | $ 350 | $ 350 | $ 1,000 | $ 350 | $ 350 | $ 1,000 |
| 12 | Materials, Supplies & Parts | | | | | | | |
| 13 | Meter reading | (in item 7) | | | | | | |
| 14 | Miscellaneous Expenses | | $ 500 | $ 500 | $ 500 | $ 500 | $ 500 | $ 500 |
| 15 | Total - Operations (7 to 14) | $ 23,420 | $ 24,450 | $ 25,403 | $ 26,545 | $ 26,395 | $ 26,906 | $ 28,077 |
| **EXPENSES - GENERAL ADMIN.** | | | | | | | | |
| 16 | Salaries & F.B. [Note 1] | $ 1,920 | $ 2,000 | $ 2,081 | $ 2,122 | $ 2,165 | $ 2,208 | $ 2,252 |
| 17 | Office Supplies/Postage/Rent | | | | | | | |
| 18 | Insurance [2] | $ 1,948 | $ 2,000 | $ 2,081 | $ 2,122 | $ 2,165 | $ 2,208 | $ 2,252 |
| 19 | Accounting | $ 481 | $ 500 | $ 520 | $ 531 | $ 541 | $ 552 | $ 563 |
| 20 | Legal | | | | | | | |
| 21 | Engineering's & Surveying | (in capital) | | | | | | |
| 22 | Fees & taxes [3] | | | | | | | |
| 23 | Miscellaneous Expenses [4] | $ 117 | $ 500 | $ 500 | $ 500 | $ 500 | $ 500 | $ 500 |
| 24 | Total - Admin (16 to 23) | $ 4,466 | $ 5,000 | $ 5,182 | $ 5,275 | $ 5,371 | $ 5,468 | $ 5,568 |
| 25 | Depreciation Expenses | $ - | $ - | $ - | $ - | $ - | $ - | $ - |
| 26 | TOTAL EXPENSES (15+24+25) | $ 27,886 | $ 29,450 | $ 30,585 | $ 31,820 | $ 31,766 | $ 32,375 | $ 33,645 |

See page 4 for notes

| | | | SIX-YEAR OPERATING BUDGET | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | BASE YEAR 2004-05 | YEAR 1 2006 | YEAR 2 2007 | YEAR 3 2008 | YEAR 4 2009 | YEAR 5 2010 | YEAR 6 2011 |
| 27 | Taxes (property + B & O) | $ - | | | | | | |
| 28 | Annual Debt Payments (P & I) | $ - | | $ 6,746 | $ 14,979 | $ 14,979 | $ 14,979 | $ 14,979 |
| 29 | Total Outstanding Debt (P & I) | $ - | | $ 121,727 | $ 270,296 | $ 270,296 | $ 270,296 | $ 270,296 |
| **CAPITAL IMPROVEMENTS** | | | | | | | | |
| 30 | New Facilities | | | | | | | |
| | a) Wells | | | | | | | |
| | b) New mains | | | | $ 148,569 | | | |
| | c) Reservoir | | | $ 26,010 | | | | |
| 31 | New Meter & Service $ 1,000 | | $ 1,000 | $ 1,000 | $ 1,000 | $ 1,000 | $ 1,000 | $ 1,000 |
| 32 | RPBA Upgrade | | | $ 121,727 | | | | |
| 33 | Water Main Replacement | | | | | | | |
| 34 | Air valves / meters | | | | $ 10,612 | $ 2,000 | $ 2,000 | $ 10,000 |
| 35 | Non-Facility Costs [5] | $ - | | | | | | |
| **CAPITAL SOURCES** | | | | | | | | |
| 36 | Loan/Bond Funds | $ - | | $ 121,727 | $ 148,569 | | | |
| 37 | Grants | $ - | $ - | $ - | $ - | $ - | $ - | $ - |
| 38 | Special assessments/rates | $ - | $ - | $ - | $ - | $ - | $ - | $ - |
| 39 | Withdrawal from Ex. Reserves | $ - | $ 1,000 | $ 27,010 | $ 11,612 | $ 3,000 | $ 3,000 | $ 11,000 |
| 40 | NET C.I.P. (30 to 35) - (36 to 39) | $ - | $ - | $ - | $ - | $ - | $ - | $ - |
| **RESERVES - OPERATING CASH** | | | | | | | | |
| 41 | Target Minimum Balance [6] | $ 3,486 | $ 3,681 | $ 3,823 | $ 3,977 | $ 3,971 | $ 4,047 | $ 4,206 |
| 42 | Annual Installment | | | | | | | |
| 43 | Running Balance | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 |
| **RESERVES - EMERGENCY [7]** | | | | | | | | |
| 44 | Target Minimum Balance [8] | $ 25,000 | $ 25,750 | $ 26,523 | $ 27,318 | $ 28,138 | $ 28,982 | $ 29,851 |
| 45 | Annual Installment from W Rates | $ - | $ - | $ - | $ - | $ - | $ - | $ - |
| 46 | Annual Installment from Fees | | | | | | | |
| 47 | Running Balance | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 |
| **RESERVES- REPLACEMENT** | | | | | | | | |
| 48 | Target Balance [9] | $ - | $ - | $ - | $ - | $ - | $ - | $ - |
| 49 | Annual Installment from W Rates | | $ 1,500 | $ 2,000 | $ (7,500) | $ (7,500) | $ (7,500) | $ (9,100) |
| 50 | Annual Installment from Fees | | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,000 | $ 3,400 |
| 51 | Annual Withdrawal (line 39) | | $ (1,000) | $ (27,010) | $ (11,612) | $ (3,000) | $ (3,000) | $ (11,000) |
| 52 | Running Balance | $ 64,925 | $ 68,925 | $ 47,415 | $ 31,803 | $ 24,803 | $ 17,303 | $ 603 |

| | BASE YEAR 2004-05 | SIX-YEAR OPERATING BUDGET YEAR 1 2006 | YEAR 2 2007 | YEAR 3 2008 | YEAR 4 2009 | YEAR 5 2010 | YEAR 6 2011 |
|---|---|---|---|---|---|---|---|
| TOTAL REVENUE REQUIRED 53 (lines 26,27,28,39,42,45,46,49,50) | | $ 34,450 | $ 42,831 | $ 42,798 | $ 42,745 | $ 42,853 | $ 42,924 |
| BUDGET SURPLUS (DEFICIT) 54 (line 5 - line 53) | | $ 381<br>1% | $ 138<br>0% | $ 98<br>0% | $ 251<br>1% | $ 233<br>1% | $ 68<br>0% |

| | | BASE YEAR 2004-05 | SIX-YEAR PROJECTION OF INCOME FROM RATES AND CHARGES YEAR 1 2006 | YEAR 2 2007 | YEAR 3 2008 | YEAR 4 2009 | YEAR 5 2010 | YEAR 6 2011 |
|---|---|---|---|---|---|---|---|---|
| WATER RATE INCOME | | | | | | | | |
| a) | Number of Services | | | | | | | |
| | Single-family residential | 110 | 111 | 112 | 113 | 114 | 115 | 116 |
| | Commercial, Institutional, etc | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| b) | Meter Charge (flat rate/year) | | | | | | | |
| | Single-family residential | $ 192 | $ 192 | $ 240 | $ 240 | $ 240 | $ 240 | $ 240 |
| | Commercial, Institutional, etc | $ 192 | $ 192 | $ 240 | $ 240 | $ 240 | $ 240 | $ 240 |
| c) | Income (flat rate x number) | | | | | | | |
| | Single-family residential | $ 21,120 | $ 21,312 | $ 26,880 | $ 27,120 | $ 27,360 | $ 27,600 | $ 27,840 |
| | Commercial, Institutional, etc | $ 384 | $ 384 | $ 480 | $ 480 | $ 480 | $ 480 | $ 480 |
| d) | Sub-total | $ 21,504 | $ 21,696 | $ 27,360 | $ 27,600 | $ 27,840 | $ 28,080 | $ 28,320 |
| WATER COMMODITY INCOME | | | | | | | | |
| e) | Volume sold (gallons/year) | 12,439,165 | 12,439,165 | 12,439,165 | 12,439,165 | 12,439,165 | 12,439,165 | 12,439,165 |
| | Volume sold (cu. ft./year) | 1,662,990 | 1,662,990 | 1,662,990 | 1,662,990 | 1,662,990 | 1,662,990 | 1,662,990 |
| f) | Volume subject to commodity > 1,000 cu. ft./yr. | 528,000 | 528,000 | 528,000 | 528,000 | 528,000 | 528,000 | 528,000 |
| g) | Excess, > 1,000 cu. ft. per 100 cu. ft. | $ 1.45 | $ 1.45 | $ 2.00 | $ 2.00 | $ 2.00 | $ 2.00 | $ 2.00 |
| h) | Commodity income | $ 7,656 | $ 7,656 | $ 10,560 | $ 10,560 | $ 10,560 | $ 10,560 | $ 10,560 |
| TOTAL OF RATE & CHARGES | | $ 29,160 | $ 29,352 | $ 37,920 | $ 38,160 | $ 38,400 | $ 38,640 | $ 38,880 |
| CONNECTION INCOME | | | | | | | | |
| l) | Added residential connections | | 1 | 1 | 1 | 1 | 1 | 1 |
| j) | Added commercial connections | | 0 | 0 | 0 | 0 | 0 | 0 |
| k) | Connection fee $ 3,500 | | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 |
| TOTAL OF CONNECTION FEES | | $ - | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 | $ 3,500 |

## FINANCIAL VIABILITY TEST SUMMARY

| | | YEAR 1 2006 | YEAR 6 2011 |
|---|---|---|---|
| A 1 | REVENUES | | |
| A 2 | Water Rates (lines 1+2) | $ 29,352 | $ 38,880 |
| A 3 | Total other revenues (3+4) | $ 5,479 | $ 4,112 |
| A 4 | Total revenue (A2+A3) | **$ 34,831** | **$ 42,992** |
| A 5 | EXPENSES | | |
| A 6 | O&M, Adm, etc. (15+24+25) | $ 29,450 | $ 33,645 |
| A 7 | Taxes (27) | $ - | $ - |
| A 8 | Debt Payment (28) | $ - | $ 14,979 |
| A 9 | CIP from rates (38) | $ - | $ - |
| A 10 | Add to Oper. Reserve (42) | $ - | $ - |
| A 11 | Add to Emer. Reserve (45+46) | $ - | $ - |
| A 12 | Add to Repl. Reserve (49+50) | $ 5,000 | $ (5,700) |
| A 13 | Total Revenue Req'd. (A6 to A12) | **$ 34,450** | **$ 42,924** |
| A 14 | REVENUE - EXPENDITURES | $ 381 | $ 68 |
| A 15 | Line A 4 greater than A 13 (Y/N) | YES | YES |
| | HOUSEHOLD INCOME | | |
| D 26 | Medium Income [9] | $ 45,513 | $ 45,513 |
| D 27 | Medium Income x 0.015 | **$ 683** | **$ 683** |
| D 28 | Number of ERUs (line `a') | | |
| | Single-family | $ 111 | $ 116 |
| | Commercial equivalent | $ 2 | $ 2 |
| | Total ERUs | $ 113 | $ 118 |
| D 29 | Req'd Revenue/ERU (53/D 28) | **$ 305** | **$ 364** |
| D 30 | Line D 27 greater than D 29 | YES | YES |

| | | YEAR 1 2006 | YEAR 6 2011 |
|---|---|---|---|
| | OPERATING RESERVES | | |
| B 16 | Current Operating | $ 5,000 | $ 5,000 |
| B 17 | Budgeted Increase (42) | $ - | $ - |
| B 18 | Total Reserve (43) | **$ 5,000** | **$ 5,000** |
| B 19 | REQUIRED OPERATING CASH RESERVES (line A 6 x 0.125) | **$ 3,681** | **$ 4,206** |
| B 20 | Line B 18 greater than B 19 | YES | YES |
| | EMERGENCY RESERVES | | |
| C 21 | Current Emergency | $ 30,000 | $ 30,000 |
| C 22 | Budgeted Increase (45+46) | $ - | $ - |
| C 23 | Total Reserve (47) | **$ 30,000** | **$ 30,000** |
| C 24 | COST OF MOST VULNERABLE FACILITY [8] (well replacement) | **$ 26,000** | **$ 26,000** |
| C 25 | Line C 23 greater than C 24 | YES | YES |

**TABLE NOTES:**

[1] Includes commissioners & one admin staff
Operator compensation is use of home at Reservoir No. 2
Rental income equals operator's salary & F.B.
[2] Includes vehicles, general liability & worker comp.
[3] No sales tax on water and connections
[4] Includes Skagit County fees
[5] Such as water conservation promotion, CCR
[6] One-eighth of Expenses - General Admin.
[7] May be alternative financing, e.g., line of credit
[8] Most vulnerable component replacement cost (well),
[9] 2000 Census report

**GENERAL NOTES:**

[a] Assumed inflation rate for capital costs 2.0%
[b] Assumed cost of borrowing from PWTF 1.0%
(for calculating annual debt repayment, line 28)
n = 20 CRF = 0.055542
[c] Water Share fee(buy-in; added to reserves) $ 2,500
Connection fees (service + meter) $ 1,000

[d] Interest revenue assumed as 2.0%
(applied to lines 47 & 52, entered into line 5)
[e] Commondity rate increase assumed in year 2007
Meter charge (flat rate) increase assumed in 2007

# WATER CONSERVATION PLAN

## A. OVERVIEW

The following water conservation plan is incorporated into the water system design and the operation and management of the system. Additional long-term water conservation measures may be required in the future. Such requirements will be framed in accordance with the Washington State Department of Ecology publication, Water Conservation Planning Handbook for Public Water Systems. For short-term water conservation measures needed to respond to drought conditions, system operation problems, etc., refer to the Water Shortage Response Plan included herein (Appendix N)

Attached to this conservation plan are completed Washington Department of Health's "Water Use Data Collection Requirements Checklist", "Demand Forecasting Requirements Checklist", and "Water Conservation Program Requirements Checklist".

## B. COMPONENTS OF PLAN

**Metering:**

To minimize unaccounted for water, the system has a meter at each well source, and has included in the Water System Plan a program of installing meters at each service connection.

**Water Rate Structure:**

Water rates include a surcharge (Resolution 60-98) for excess use to encourage conservation.

**Water Audit:**

Periodically, or at those billing periods when the surcharge for excess water use is applied, a comparison will be made between the source (well) meter and the sum of residential consumption, and fire hydrant usage. Should unaccounted for water exceed 9 percent of the source production, a cursory water audit should be performed to determine if the difference is due to an unusual occurrence, such as a water main break. If the unaccounted for water exceeds 9 percent of production in a subsequent comparison review, the water audit should be extended to include a check of meter calibration, and a leak detection survey. If the water loss cannot be accounted for by a cursory audit, a full audit should be conducted as outlined in the American Water Works Association publication, Water Resources Audit, 1988.

To permit the customers to assess individual water use, the water bills will be changed to show consumption history. Any abnormal increase in the customer's consumption should initiate an inquiry into a possible leak in the customer's plumbing system. Any major ongoing increase should initiate a check into the accuracy of the water meter.

**MINUTES FROM June 21st, 2006**
**BOARD OF COMMISSIONER'S MEETING**
**Birdsview Fire Hall, Russell Road, Concrete, WA**

**Present:** Commissioners Ben Clark, Norm Rathvon, and Stephen Stout and Water System Manager Kelly Wynn were present.

**Meeting:** Called to order at 7:00 p.m.

**Public Forum:** None of the District customers attended the scheduled review of the Water System Plan scheduled for 6:30.

**Minutes Approval:** The May17th, 2006 minutes were approved and signed as submitted.

**Financial Report:** The financial statements and trial balance were reviewed as presented.

**Old Business:** The location of a new fire hydrant was discussed and the Board agreed that the fire district would review the location before placement of the new hydrant.

**New Business:** The proposed addendum to the Operations Contract with WWS was reviewed and discussed. The Board tabled a decision until further information is provided.

**Managers Report:** Wynn reported the system ran well in the month of May. The monthly bacteriological samples met D.O.H. requirements. The Aloha Timbers and Hamilton Estates developer extensions were discussed.

**Vouchers:** The following vouchers were signed as presented:

| | |
|---|---|
| WA State Department of Health | $ 348.00 |
| WA State Department of Health | $ 1,167.00 |
| George Bratton, PE | $ 539.80 |
| Puget Sound Energy | $ 262.62 |
| UULC | $ 3.45 |
| WWS | $ 2,392.32 |

**Meeting Adjourned:** 7:45 p.m.

**Respectfully Submitted:**

elly Wynn

**Approval of Minutes:**

# SERVICE POLICIES

Adopted with adoption of Water System Plan

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF SKAGIT COUNTY WATER DISTRICT No. 1 ESTABLISHING WATER SERVICE APPLICATION, BILLING, PAYMENT, COLLECTION AND CROSS CONNECTION PROCEDURES AND POLICIES.

## A. DEFINITIONS

"Board of Commissioners" or "Board" means the Board of Commissioners of the Skagit County Water District No. 1.

"Customer" mean the current owner of the parcel of land as defined by the Skagit County Auditor's parcel number and as recorded with the District's Manager.

"Customer account" means the account maintained by the District for each Customer to which water service is provided by the District.

"Delinquency penalty" means the penalty established by the District by resolution under the authority granted in RCW 57.08.081.

"Delinquent sum" means any portion of a Customer's account that remains due and unpaid at the end of any payment period.

"District" means the Skagit County Water District No. 1, also referred to as the "Purveyor" hereinafter.

"Manager" means the duly appointed manager of the District as either an employee or independent contractor to perform the functions of the manager.

"Payment period" means a period of time equal to thirty (30) calendar days from and after the District mails bills to the Customer reflecting the sums due on the Customer's account for water service provided.

"Shut off" means the discontinuation of service referred to in RCW 57.08.081.

"Water service" or "service" means the supply of potable water from the District's system to its Customer.

"Water service connection" or "water connection" means the physical installation of the tap, fittings, pipe and other necessary appurtenances required to deliver water from the water main up to and including the meter box, meter setter and/or meter.

Water shall not be supplied to an adjacent public water system (i.e., through a system intertie), except for temporary supply in an emergency, without the District first obtaining:

- A revised Service Area Agreement with Skagit County.
- WA Department of Ecology approval of a change in water rights to cover the additional area of service, and if necessary, new water rights to supply the additional Customers.
- WA Department of Health approval of an update or minor revision to the District's *Water System Plan.*

Service shall not be provided to lots outside the service area or additional lots created through subdivision of parcels inside the service area without the District first establishing the adequacy of supply for the existing vacant lots within the service area. The adequacy of supply for the existing platted lots and proposed additional lots shall be established through the number of connections (ERUs) the WA Department of Health authorizes the District to supply.

All costs for the expansion of service area or supply of subdivided parcels within the service area shall be borne by the applicant for service to the proposed newly created Customers. The costs shall include, but are not limited to the following:

1. Extension of water main(s) to the new Customers.
2. Construction of additional or upgrading of existing:
    a. Source(s) of supply (i.e., wells).
    b. Reservoir(s).
    c. Booster pump station(s).
3. Engineering, surveying and legal costs associated with construction of facilities necessary for serving additional connections, including the preparation of project report and water system plan documents.
4. Regulatory agency fees and charges.
5. Applicable administration overhead charges as set forth in Section D and Section E.

The District (not the applicant for service) shall prepare and make all submissions to regulatory authorities for approval to supply additional customers.

Prior to any review by the District of a proposed expansion of service area or supply of subdivided parcels, the applicant shall enter into a written agreement to bear the costs noted above. The customer shall pay a deposit to the District in the amount estimated by the District for the review of the application, including the cost of professional fees, and submissions of document to regulatory authorities.

Any cost paid by the applicant for the District for the review and submission to regulatory authorities shall not be refunded to the applicant should the regulatory approval for the District be denied or otherwise restricted, or the applicant's project is cancelled, modified or denied by the County or other administrative authority having jurisdiction.

**MINUTES FROM January 18th, 2006**
**BOARD OF COMMISSIONER'S MEETING**
**Birdsview Fire Hall, Russell Road, Concrete, WA**

**Present:** Commissioners Ben Clark, Norm Rathvon, and Stephen Stout and Water System Manager Kelly Wynn were present.

**Meeting:** Called to order at 7:00 p.m.

**Public Forum:**

**Minutes Approval:** The December 21st, 2005 minutes were approved and signed as submitted.

**Financial Report:** The financial statements and trial balance were reviewed as presented.

**Old Business:** The Board approved the preliminary Water System Plan and signed the covenants. WWS will send these off to George Bratton and the Department of Health for final approval.

**New Business:**

**Managers Report:** Wynn reported the system ran well in the month of December. The monthly bacteriological samples met D.O.H. requirements. State required lead and copper samples were collected this month.

**Vouchers:** The following vouchers were signed as presented:

| | | |
|---|---|---|
| George Bratton, P.E. | $ | 517.94 |
| Skagit County Auditor | $ | 102.53 |
| Utilities Underground Location Center | $ | 2.30 |
| WWS | $ | 1,861.62 |

**Meeting Adjourned:** 8:00 p.m.

**Respectfully Submitted:**

Kelly Wynn

**Approval of Minutes:**

**MINUTES FROM February 21, 2007**
**BOARD OF COMMISSIONER'S MEETING**
**Birdsview Fire Hall, Russell Road, Concrete, WA**

**Present:** Commissioners Ben Clark and Stephen Stout, Water System Manager Kelly Wynn and WWS assistant Tommie Wynn were present.

**Meeting:** Called to order at 7:10 p.m.

**Public Forum:** Tina Clark

**Minutes Approval:** The January 17th, 2007 minutes were tabled for approval until the two board commissioners (Rathvon & Stout) who attended that meeting are present.

**Financial Report:** The financial statements and trial balance were reviewed as presented.

**Old Business:**

**New Business:** Wynn reported that formal/final approval and acceptance of the new Water System Plan was needed to complete the project. Commissioner Stout made a motion to accept the Water System Plan, with Commissioner Clark seconding the motion. The motion was approved.

**Managers Report:** Wynn reported the system ran well in the month of Janaury. The monthly bacteriological samples met D.O.H. requirements. The Windsong/Aloha project continues moving forward. Also, engineering design has begun with the Hamilton/Birdsview Estates.

**Vouchers:** The following vouchers were signed as presented:

| | | |
|---|---|---|
| Utilities Underground Location Center | $ | 4.80 |
| WWS | $ | 2,489.33 |

**Meeting Adjourned:** 7:30 p.m.

**Respectfully Submitted:**

Tommie Wynn

**Approval of Minutes:**

**Water & Wastewater Services**
4263 Calhoun Road, Mount Vernon, WA 98273 (360) 466-4443 or 800-895-8821

# MEMORANDUM

**TO:** Jennifer Kropack

**FROM:** Kelly Wynn, Manager Skagit County Water District #1

**DATE:** 3/23/07

**SUBJECT:** SCWD#1 Water System Plan Final Actions

Dear Jennifer,

Please find enclosed the items requested by the DOH for finalizing the SCWD#1 Water System Plan. There is not a distribution list since there are not any residents that exist in this location yet.

RECEIVED
MAR 27 2007
DEPARTMENT OF HEALTH
NW DRINKING WATER

## Water & Wastewater Services, LLC

**From:** Kropack, Jennifer (DOH) [Jennifer.Kropack@DOH.WA.GOV]
**Sent:** Tuesday, March 06, 2007 4:39 PM
**To:** kellyw@wwsvc.com
**Subject:** Skagit Co WD #1 WSP final actions

Hi Kelly - Per our phone call, here's the list:

1. CMP - Need table for site rotation and confirmation when the WQ sampling will begin with the schedule.

2. WHPP - Provide the list of residents who received the letter of education, a copy of the letter sent, and the one given to the Fire District.

3. Service area map - Add "retail service area" to the map, stating something like "water service area = retail service area"

I've attached the two template letters for your convenience, as soon as you get these done, I will send out an approval letter.

Thank you.

<<WHPP_Notification_FireDept.doc>> <<WHPP_Resident_Notification_Letter.doc>>

Jennifer Kropack
Regional Planner
WA ST Dept. of Health - Office of Drinking Water - NWRO
20435 72nd AVE S STE 200 MS: K17-12
Kent WA 98032
Phone: (253) 395-6769
Fax: (253) 395-6760
Email: Jennifer.Kropack@doh.wa.gov
Webpage: www.doh.wa.gov/ehp/dw

****Public Health - Always working for a safer and healthier Washington****

# COLIFORM MONITORING PLAN

## SYSTEM INFORMATION

| WATER SYSTEM NAME | | | | SYSTEM I.D. NUMBER | |
|---|---|---|---|---|---|
| Skagit County Water District #1 | | | | 003920 | |
| PEAK POPULATION SERVED | | | SERVICE CONNECTIONS | | |
| 600 | | | 97 | | |
| SOURCE | DOH SOURCE NUMBER | CATEGORY | | WELL DEPTH | |
| | SO1 + SO2 = SO3 | Well | | 200 | |
| TREATMENT | TREATMENT PROCESS | PURPOSE | | STORAGE | STORAGE CAPACITY |
| | N/A | N/A | | 2 Tanks | 160,000 Gallons |

## SAMPLING INFORMATION

| NUMBER OF ROUTINE SAMPLES REQUIRED BY REGULATION | 1 | NUMBER OF SAMPLE SITES NEEDED TO REPRESENT THE DISTRIBUTION SYSTEM | |
|---|---|---|---|

| | TYPE | SITE # | LOCATION |
|---|---|---|---|
| SAMPLE SITE GROUP | ROUTINE | 01 | 8298 Pinnelli Rd. |
| | REPEAT | DS | 37688 SR 20 |
| | REPEAT | US | 7873 Pinelli Rd. |
| | REPEAT | DS | 8423 Pinelli Rd. |
| SAMPLE SITE GROUP | ROUTINE | 02 | 8739 Pinelli Rd. |
| | REPEAT | US | 8647 Pinelli Rd. |
| | REPEAT | DS | 8740 Pinelli Rd. |
| | REPEAT | DS | 37607 Cape Horn Rd. |
| SAMPLE SITE GROUP | ROUTINE | 03 | 37279 Cape Horn Rd. |
| | REPEAT | DS | 37311 Cape Horn Rd. |
| | REPEAT | DS | 37327 Cape Horn Rd. |
| | REPEAT | DS | 38331 Cape Horn Rd. |
| SAMPLE SITE GROUP | ROUTINE | 04 | 8751 Lusk Rd. |
| | REPEAT | DS | 37957 Cape Horn Rd. |
| | REPEAT | DS | 3598 Cape Horn Rd. |
| | REPEAT | US | Skagit River Wood |

## ADDITIONAL SAMPLING INFORMATION

| WATER SYSTEM NAME |
|---|
| Skagit County Water District #1 |

| | TYPE | SITE # | LOCATION |
|---|---|---|---|
| SAMPLE SITE GROUP | ROUTINE | 05 | 8485 Lusk Road |
| | REPEAT | DS | 8598 Lusk Road |
| | REPEAT | US | 8198 Lusk Rd. |
| | REPEAT | US | 8329 Lusk Road |
| SAMPLE SITE GROUP | ROUTINE | 06 | 8064 Wyatt Lane |
| | REPEAT | US | 8100 Owens Lane |
| | REPEAT | US | 8107 Owens Lane |
| | REPEAT | US | 8067 Owens Lane |
| SAMPLE SITE GROUP | ROUTINE | 07 | Razer State Park (Tap Located 90' before Meter) |
| | REPEAT | US | Razer State Park (Day Use Area Tap) |
| | REPEAT | US | 38217 Cape Horn Road |
| | REPEAT | DS | Skagit River Woods (Tap Located 90' before Meter) |
| SAMPLE SITE GROUP | ROUTINE | | |
| | REPEAT | | |
| | REPEAT | | |
| | REPEAT | | |
| SAMPLE SITE GROUP | ROUTINE | | |
| | REPEAT | | |
| | REPEAT | | |
| | REPEAT | | |

**Following any routine unsatisfactory coliform sample results, at least 4 repeat samples must be collected. If any repeat sample results are sunsatisfactory, contact DOH (206/464-7670).** The purpose of repeat sampling is to identify the source of coliform contamination. Generally for small water systems, repeat sample sites should include: the routine site that failed, upstream and downstream of the routine site, and the well or reservoir. (Often insects entering the well or reservoir are the source of contamination).

For maximum coverage of different branches of the distribution system, a decision to rotate the required routing sample(s) among different sample sites may be made. It is recommended, that ROUTINE sampling sites be tested about 4 times per year or more often.

**ROTATION SCHEDULE**

| MONTH | SAMPLE SITE(S) | MONTH | SAMPLE SITE(S) |
|---|---|---|---|
| JANUARY | 01 | JULY | 02 & 07 |
| FEBRUARY | 02 | AUGUST | 03 & 04 |
| MARCH | 03 | SEPTEMBER | 05 & 07 |
| APRIL | 04 | OCTOBER | 06 |
| MAY | 05 & 07 | NOVEMBER | 03 |
| JUNE | 06 & 01 | DECEMBER | 04 |

The month after a coliform positive sample, five FOLLOW-UP samples must be submitted. Describe below the method of selecting the FOLLOW-UP sites. Sites designated as other sampling sites may be also used as FOLLOW-UP sites. Also, list any sites which will be used with any FOLLOW-UP.

| MONTH AFTER SAMPLE SITES |
|---|
| Follow up sampling will be done at the site of the positive sample collection along with designated upstream and downstream sites. Additional sites will be the two closest routine sites. |

| PREPARATION INFORMATION | | |
|---|---|---|
| SYSTEM NAME<br>Skagit County Water District #1 | DATE PLAN COMPLETED<br>11/5/1996 | DATES MODIFIED<br>(2/01)(6/05)(2/07) |
| NAME OF PLAN PREPARER<br>Kelly Wynn | POSITION<br>Manager | DAYTIME PHONE #<br>(360) 293-8582 |
| STATE REVIEWER | DATE LAST REVIEW | |

*GEORGE BRATTON, P.E*
*Civil Engineer.*
*1252 S. Farragut Drive*
*Coupeville, WA 98239*
*Tel. (360) 678-4552*
*FAX (360) 678-5374*

# MEMORANDUM

March 8, 2007

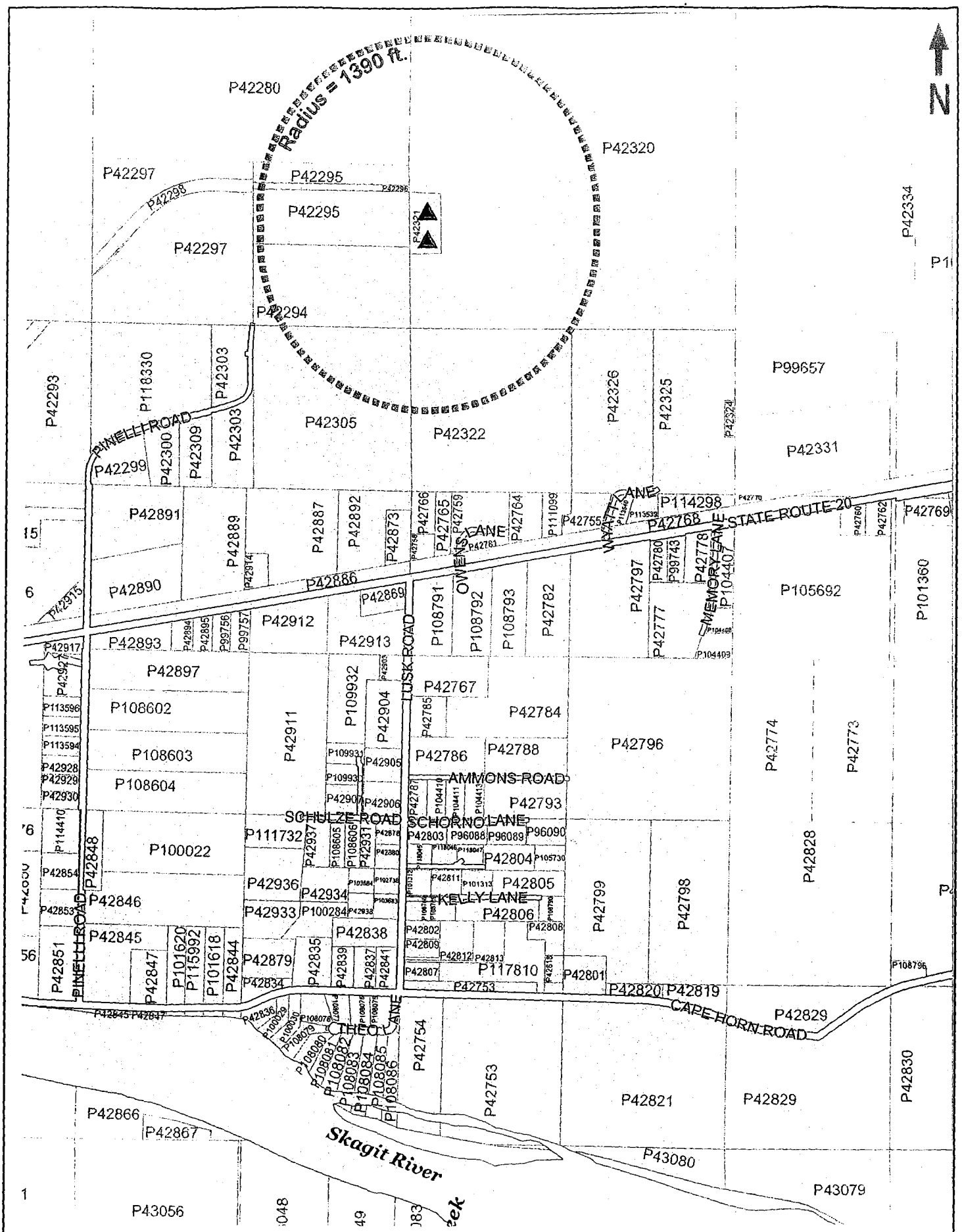
**TO:** Kelly Wynn
Water & Wastewater Services

**FROM:** George Bratton

**SUBJECT:** SKAGIT COUNTY WATER DISTRICT No. 1

Please find attached a service area map with the title changed to include "Retail Service Area" and a note stating that the County approved service area is the same as the retail service area.

Also attached is a drawing of the wellhead protection radius with the parcel numbers that need to be notified. I used the 5-year time of travel since there are very few properties involved. At this time, you only need to send a letter to Aloha Lumber for their subdivision. This limits the number of letters to six.




| Date: Mar. 07 | Scale: N.T.S. | SKAGIT COUNTY WATER DISTRICT No. 1<br>WELLHEAD PROTECTION PROGRAM<br>Notification Letters, 5-year Time of Travel | Plan # WH-1a |
|---|---|---|---|
| By: GEORGE BRATTON, P.E.<br>CIVIL ENGINEER | | | |

# Skagit County Water District #1

14263 Calhoun Road, Mount Vernon, WA 98273 360-466-4443 or 1-800-895-8821

March 16, 2007

Dear Residents:

Skagit County Water District No. 1 is required by the Washington Department of Health to develop a wellhead protection plan. Wellhead protection involves protecting the land area surrounding our wells in order to prevent contamination of our drinking water supply. The well field consists of two wells located on upper Pinneli Rd. Part of the plan is this letter of notification to all potential sources of contamination to our wells.

This letter is intended to inform you of the location of our wells and protection zones, and to serve as a reminder that any hazardous material put onto the ground or into your septic system has the potential of contaminating our drinking water supply. Some potentially harmful activities to avoid are...

- Improper use of a septic system (dumping paint, household cleaners, or solvents into your septic system).
- Dumping motor oil, gasoline, antifreeze or similar fluids onto the ground.
- Heavy use of fertilizers and pesticides.
- Dumping or burying garbage in the ground.

Any unwanted or unused household hazardous materials (like those mentioned above) can be disposed of at the Skagit County transfer station. Call 424-7817 for details, hours of operation, etc.

We are fortunate to have a very good supply of high quality water. It should be everyone's intent to keep it that way for our continued good use, and for the ones that come along after us. Thank you for following these guidelines. If you have any questions about this matter, please feel free to contact me.

## TIPS TO AVOID SEPTIC SYSTEM TROUBLE:

- DO take leftover household chemicals to a hazardous waste collection center for disposal.
- DO practice water conservation. Repair dripping faucets and leaking toilets, run dishwashers and washing machines only when full.
- DO learn the location of your septic system and drain field.
- DON'T allow anyone to drive or park over any part of the system. Areas should be left undisturbed with only a mowed grass cover. Roots from nearby trees or shrubs may clog and damage your drain lines.

- DON'T use commercial septic tank additives. These products usually do not help and some may hurt your system in the long run.
- DON'T poison your system by pouring chemicals down the drain. They can kill the beneficial bacteria that treat your wastewater.

Because everyone plays a role in the protection plan, local residents are also being contacted with similar information. We are fortunate to have a good supply of high quality water. Please help us keep it that way for our continued good use, and for the ones that come along after us. Thank you for your attention in this matter. If you have any questions about the plan, please feel free to contact me.

Sincerely,

N. Rathvon

Norm Rathvon
President, Skagit County Water District No. 1

# Skagit County Water District #1

**14263 Calhoun Road, Mount Vernon, WA 98273** **360-466-4443 or 1-800-895-8821**


MARCH 16, 2007

Dear Emergency Responder:

Skagit County Water District No. 1 is developing a wellhead protection plan as required by the State Department of Health. As part of this plan, Skagit County Water District No. 1 must provide wellhead protection information to agencies responsible for incident/spill response procedures. Using the results of the susceptibility assessment and the findings of the wellhead protection area inventory, local emergency responders are asked to evaluate whether changes in incident/spill response procedures are needed to better protect groundwater within wellhead protection areas. As stated in the Wellhead Protection Program Guidance Document, "If a public water system's source water is determined to be vulnerable to surface activities, special procedures may need to be incorporated into local emergency response plans."

The State DOH has given the Skagit County Water District No. 1 SO1 Well a low vulnerability rating, and SO2 Well a low vulnerability rating.

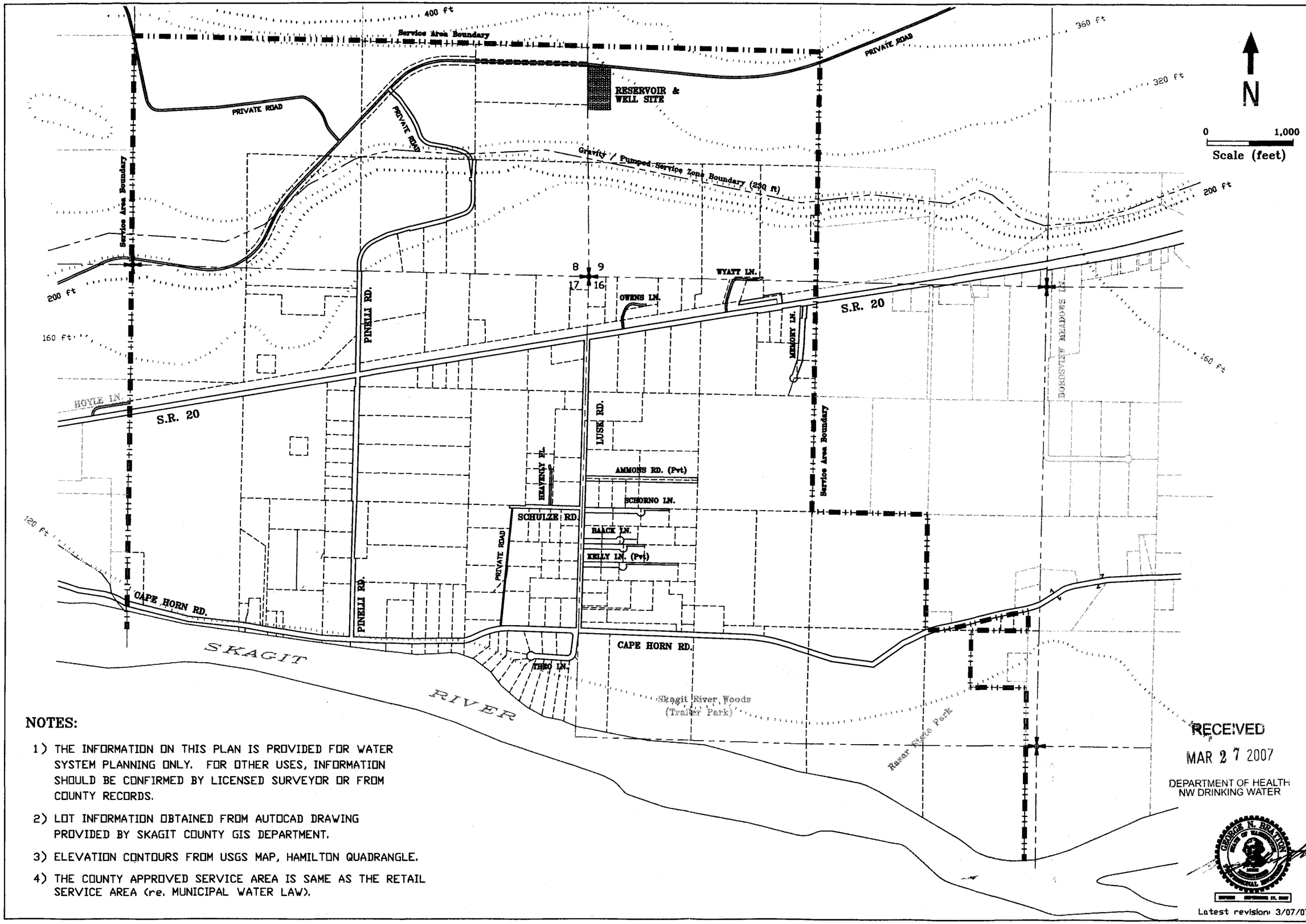
A map of the wellhead protection areas with potential contaminant sources are enclosed for your review. An acknowledgement of receipt of this information or a response from your office is not required as part of the wellhead protection plan documentation.

Thank you for your attention in this matter. If you have any questions about the plan, please feel free to contact us.

Sincerely,

N. Rath

Norm Rathvon
President, Skagit County Water District No. 1




## NOTES:

1) THE INFORMATION ON THIS PLAN IS PROVIDED FOR WATER SYSTEM PLANNING ONLY. FOR OTHER USES, INFORMATION SHOULD BE CONFIRMED BY LICENSED SURVEYOR OR FROM COUNTY RECORDS.

2) LOT INFORMATION OBTAINED FROM AUTOCAD DRAWING PROVIDED BY SKAGIT COUNTY GIS DEPARTMENT.

3) ELEVATION CONTOURS FROM USGS MAP, HAMILTON QUADRANGLE.

4) THE COUNTY APPROVED SERVICE AREA IS SAME AS THE RETAIL SERVICE AREA (re. MUNICIPAL WATER LAW).

RECEIVED
MAR 27 2007
DEPARTMENT OF HEALTH
NW DRINKING WATER

Latest revision: 3/07/07

GEORGE BRATTON, CIVIL ENGINEER
1252 S. Farragut Drive
Coupeville, Washington 98239
Job 550 October 2005

# WATER DISTRIBUTION SYSTEM
## RETAIL SERVICE AREA

SKAGIT COUNTY WATER DISTRICT No. 1
c/o Water & Wastewater Services
14263 Calhoun Road
Mt. Vernon, Washington, 98273

Sht. 1 of 1