8/6/98
mi14

clerk 9/10/98

Introduced By: LARRY PHILLIPS

Proposed No.: **98-498**

ORDINANCE NO. 13290

AN ORDINANCE approving the Washington Water Supply Water System Plan for the Echo Glen Water System.

PREAMBLE:

K.C.C. 13.24 requires approval of comprehensive plans for water utilities a prerequisite for granting right-of-way franchises and approval of right-of-way construction permits.

Washington Water Supply is a business that owns and operates ten water systems in four counties. The Echo Glen Water System is located north of the City of Maple Valley and is within King County's jurisdiction.

The King County Utilities Technical Review Committee reviewed and approved the water system plan on July 16, 1998.

The plan is categorically exempt from the state Environmental Policy Act because no pipe in the system is larger than eight inches in diameter, WAC 197-11-800 (24) (b).

The UTRC recommends that the council approve the plan.

13290

BE IT ORDAINED BY THE COUNCIL OF KING COUNTY:

SECTION 1. The Washington Water Supply Water System Plan for the Echo Glen Water System, Attachment A, is hereby approved without conditions.

INTRODUCED AND READ for the first time this 24th day of August, 1998.

PASSED by a vote of 11 to 0 this 28th day of September, 1998.

KING COUNTY COUNCIL
KING COUNTY, WASHINGTON

Louise Miller
Chair

ATTEST:

Clerk of the Council

APPROVED this 2 day of October, 1998.

King County Executive

Attachments: The Washington Water Supply Water System Plan for the Echo Glen Water System

13290 98-498

WASHINGTON WATER SUPPLY, INC.

1997 Water System Plan

DOH Project #97-0109

FINAL SUBMITTAL

Prepared Under the Direction of:

WASHINGTON WATER SUPPLY, INC.
P.O. Box 2985
Silverdale, WA 98383
(360) 380-8330

Prepared By:

WHITELEY ENGINEERING
19062 Highway 305 N., Suite 101
Poulsbo, WA 98370
(360) 779-7993

WASHINGTON WATER SUPPLY, INC.
1997 Water System Plan

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See notebook 2 of 2 for appendices

WASHINGTON WATER SUPPLY, INC.
1997 Water System Plan

13290

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Please see Separate Notebook for Appendices to each of the above Water Systems

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Chapter 16. Wolf Water System (contd.)

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Chapter 1
Description of Water System

A. Water System Owner & Manager

Washington Water Supply, Incorporated, is a "C" Corporation with an existing active customer count of 300 connections. These systems are located in Clallam, Kitsap, Island, and King Counties. The customer count per system, ranges from a three customer system to a 156 customer system.

Washington Water Supply, Inc. (WWS) was established in 1991 to meet the demand for providing potable water for residential, commercial, and industrial consumers. The corporation has a professional staff that can respond to electrical, mechanical, and water quality issues typical of supplying potable water to the consumer.

WWS owns and operates potable water systems in the State of Washington with systems in Kitsap, King, Island, and Clallam counties. The size of the systems vary from three users to more than one hundred.

In an effort to maintain a dependable supply for normal domestic consumption, WWS has provided our customers with business and emergency telephone numbers by printing them on a billing statement issued to each customer on a monthly basis. In some cases, WWS has attended neighborhood association meetings to introduce the company and/or answer questions about water service for that area.

WWS has established a line of communication with the Washington State Utilities and Transportation Commission. This regulatory agency assures our customers of WWS's commitment of purveying potable water in the State of Washington at a fair and equitable rate.

Costs for service are issued to each customer on a monthly basis, with payment due in fifteen days. In some cases the monthly service fee is a flat rate, otherwise customer costs are based on meter consumption. Neighborhood associations have contracted WWS to operate and maintain their water system to reduce confusion about administrative practices such as the collection of monthly fees and enforcement of association rules and bylaws.

Washington Water Supply, Inc. is a privately held corporation chartered in the State of Washington in 1991. **The officials of the Corporation are:**

President: ***John Poppe***
9278 Morningside Drive NW
Silverdale, Washington
(360) 698-1290

Secretary/Treasurer: ***Linda Poppe***
9278 Morningside Drive NW
Silverdale, Washington
(360) 698-1290

The Corporate offices and maintenance headquarters for water service operations are located in Silverdale at the following mailing address:

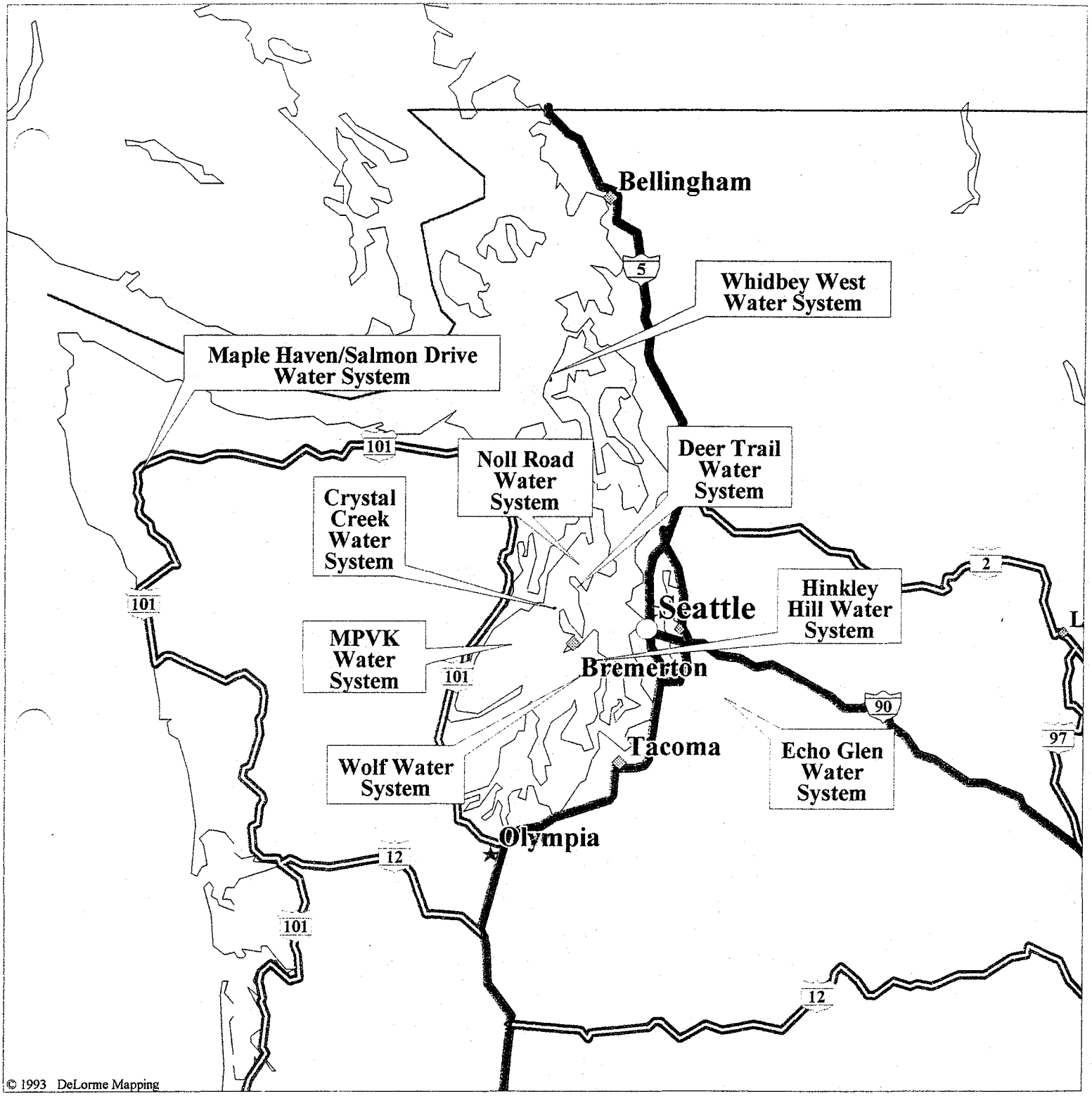
Washington Water Supply, Inc.
P.O. Box 2985
Silverdale, WA 98383
(360) 308-8330

B. History of Water System Development

Each water system owned by Washington Water Supply, Inc. (WWS) was initially constructed to supply water to a new subdivision by the land developer. WWS acquired the water systems either from the developer or from a previous owner. WWS now owns a total of ten individual water systems as described in this Water System Plan and listed in the following Table. The individual systems are approved by the County Health District or State of Washington for the number of connections indicated in the table. See the map on the following page for the general location of each water system.

WASHINGTON WATER SUPPLY SYSTEMS
(WFI for all systems: #2137)

SYSTEM NAME	SYSTEM ID NUMBER	COUNTY NAME	APPROVED SERVICES	EXISTING SERVICES
Crystal Creek	474214	Kitsap	41	41
Deer Trail	314649	Kitsap	8	6
Echo Glen	27510D	King	38	42 ?
Hinkley Hill	30406P	Kitsap	8	9
Maple Haven	51150M	Clallam	18	18
MPVK	473128	Kitsap	9	9
Noll Road	367730	Kitsap	4	3
Salmon Drve	028340	Clallam	6	9
Whidbey West	363146	Island	176	156
Wolf	304014	Kitsap	4	4



LEGEND

- Major City
- State Capitol
- Town, Small City
- Large City
- Interstate, Turnpike
- US Highway
- National Boundary
- Population Center
- Interstate Highway
- US Highway
- Land Mass
- Open Water

Scale 1:1,600,000 (at center)

20 Miles

50 KM

Wed Jan 29 09:56:50 1997

C. Map & Description of Existing Service Areas

Washington Water Supply, Inc. owns and operates ten separate and distinct water supply systems in Kitsap, King, Island, and Clallam Counties. Specific locations and service area boundaries are discussed in the subsequent sections devoted to each system. Current and projected service connections for each water supply system are shown on the service area maps. Only applications for service from properties identified on the service area maps are eligible for water service; new service procedures are discussed in Chapter 1, section E.

D. Map & Description of Existing Facilities, Pressure Zones & Identification of Adjacent Water Utilities

See Summary of Individual Water Systems in Chapters 9 - 18.

E. Service Area Policies

The fundamental operating objective of Washington Water Supply, Inc. is to provide safe and reliable water to its users at affordable rates while returning adequate earnings to the stockholders in the Corporation. It has the further objective of operating the water service in a manner fully compliant with all applicable county, state and federal regulations.

F. Interlocal Agreements

This Small Water System Plan is the only planning document pertaining to the water systems owned and operated by Washington Water Supply, Inc.

Some of the water systems owned and operated by Washington Water Supply, Inc. are located in Kitsap and Island counties and are subject to the Kitsap and Island County Coordinated Water System Plans (CWSP). The CWSP establishes regional water resource management policies and defines minimum design standards for public water systems in Kitsap and Island Counties. This Small Water System Plan conforms to and is subject to the CWSP for properties located in both Island and Kitsap counties. Washington Water Supply, Inc. has a service policy to provide drinking water to all qualified properties within its service areas. Eligible properties desiring to acquire water from other sources are reviewed on each individual request.

Washington Water Supply, Inc. does have one intertie connection on its Whidbey West Water System. This system has a service area agreement with Sea View Water Company which is owned by H.L. Morgan. A copy of this Service Area Agreement can be located in the Appendix for Chapter 17 (Whidbey West) of this Water System Plan.

Washington Water Supply, Inc.'s policy concerning interties with other systems is to consider such proposals on a case-by-case basis in terms of impact on current operations, financial implications including tariff revisions, and technical and administrative benefit.

Chapter 2
Basic Planning Data

A. Existing Population Served & Current Number of Service Connections

This contains information concerning the service areas, description of existing facilities and the assessment of their adequacy, growth projections, identification of improvements with capital cost estimates, and forecast of financial operations of Washington Water Supply, Inc. Each individual water system is covered in separate chapters. This section contains information applicable to all systems.

B. Historical Water Usage

See Individual Water System Chapters.

C. Future Population & Service Connection Projections

See Individual Water System Chapters.

D. Future Water Usage

See Individual Water System Chapters.

E. Map and Description of Future Service Areas

See Individual Water System Chapters.

F. Existing and Future Land Use Considerations

See Individual Water System Chapters.

G. Fire Flow Requirements

See Individual Water System Chapters.

H. Water Conservation Program

1. Goals & Objectives of Water Conservation Program:

The purpose of the Water Conservation Program is to minimize water waste, educate water users in methods of water conservation and motivate water users to save water.

Several of the water systems owned by Washington Water Supply, Inc. have shown excessive water consumption. This is most common in the cases where there are no individual water service meters. From time to time, it has been necessary to reduce peak consumption to ensure adequate supply for essential uses. To cover such cases, the utility policy is to inform the patrons of the conservation need by means of roadside reader boards, telephone message or mailings. Where circumstances dictate, outdoor watering will be controlled by a voluntary irrigation water conservation program where lawn watering is allowed, or alternate days based on odd/even street addresses.

The effectiveness of the water conservation program will be routinely monitored. Consumption statistics will be compiled monthly for those systems with service meters. The data will be analyzed to compare the total consumption as measured by individual service meters with the total production over the same period as measured by the source flowmeter. These water accounting procedures will demonstrate the effectiveness of the leak detection and correction program.

Monthly individual service meter data will be evaluated to establish a consumption profile for each connection or group of connections. The effectiveness of the conservation effort can be inferred by the consumption trends.

2. Description of Water Conservation Public Education Program:

The Washington Water Supply, Inc. conservation program provides education and information to our customers on the value and desirability of conserving our water resource. Water saving tips and suggestions to encourage saving water while reducing water bills will be mailed once each year with bills. Information regarding the no cost programs for shower and faucet flow restrictors in each county is also given to customers upon request. Customer participation and effectiveness will be determined by comparisons of water usage data gathered during each bimonthly billing period and through comparisons of source meter data over time. Please see Section H.3 for examples of notices to customers regarding conservation.

3. Description of Other Voluntary Water Conservation Measures Being Implemented:

Rates approved in the existing tariff have conservation pricing built into them. A noticeable reduction in household water use and lawn irrigation has been observed. Water users have discussed installation of toilet tank water displacement devices as well as shower and faucet restrictors. Also, additional installations of toilet, faucet and shower flow reduction devices have been observed when water samples were drawn from kitchens and bathrooms. Those paying significantly more for usage above the base rate are choosing conservation options.

A second part of our initial conservation program is to relate our available water usage data to the number of water users and correlate the results over time. Group A systems having service meters already installed are read monthly, thus data is maintained and available at this time.

The third activity to be implemented will be to install source meters on all Group A Systems by the end of 1998 and individual service meters by 1999. Data will be collected on a monthly basis to determine usage patterns as soon as a source meter is installed on a system source. Water usage data for Group B Systems will be estimated. On water systems where a reduction in source and storage requirements is sought, daily source meter readings will be kept during the peak summer months.

Washington Water Supply, Inc. also has an aggressive leak detection and repair program. Significant elements of that program include:

- Inspection of all water main routes at the time of monthly customer meter reading. Suspicious wet spots are investigated and if required, repaired.

- Compilation and interpretation of periodic meter reading spreadsheets which tabulate the current meter reading with meter readings taken I and 2 months previously. Significant increases in individual consumption compared to total system consumption statistics and past usage for the individual service will be identified and investigated.

- At each billing, the total consumption billed to customers will be compared to the water volume pumped as measured by source meters. Significant discrepancies will be investigated and corrected.

Water conservation has been a high priority with Washington Water Supply, Inc. Our conservation goal is provide enough water to meet the basic needs for human consumption, sanitary hazard reduction, and meet the life requirements of plant flora adjacent to our customers residence.

Conservation has been implemented through the following methods:

- Immediate response to customer leaks when the Company is contacted by the customer. The results of this activity can be illustrated through the reduction in the salt water intrusion (chloride levels) into the aquifer.

- Response to a low water pressure complaint. This investigation is recorded on a **"RECORD OF PRESSURE TEST"** form and is kept on file in the Silverdale office. Follow-up work may locate a leak as the cause of the low pressure.

- Monitoring of electric power bills can reflect if the pump operation at the well source or booster pump is excessive. The monthly electric power bill provides us with a signal that extra water is being withdrawn from the aquifer. - poor method.

- WWS has installed water meters at most of the well heads to monitor monthly consumption. The meter readings are recorded monthly and investigative actions are taken if the water withdrawal rate is excessive for the season.

- Usual walking of the system familiarizes the company representatives with the usual surface water runoff characteristics.

- Monitoring customer consumption with meter reading comparison has prompted us to contact the customer with a representative, by telephone, or through a written notice.

- Direct notification to the customer. Our first notice was the standard DOH Conservation letter. Customer response was critical of the brochure so we opted to develop our own conservation program into the following three phases:

FIRST - This is a friendly reminder of the pending cold weather with basic steps to protect personal property and save on water line failures due to cold weather. *See Attachment A.*

SECOND - This is a stronger request for voluntary conservation by clearly identifying times for high use activity. *See Attachment B.*

THIRD - This " WATER CONSERVATION ALERT" provides the most aggressive restrictions that we have taken to date. *See Attachment C.*

It is important to note that during tenure as a company, WWS has used all seven of the above methods at some point to conserve water.

WASHINGTON WATER SUPPLY, INC.

"Water Supply and Distribution"

SAMPLE NOTICE

December 30, 1993

Washington Water Supply, Inc. will be installing water meters on your service line and the well head that serves your system during the month of January, 1994. The water pumped from the well will be compared to water consumption to assist with the detection of leaks and to help with the comprehensive water plan for this area.

As a result of the meter installation, your monthly fee for water use will be based on the flow as defined in our tariff. We have attached a copy of the tariff page defining the "Metered Rate" for for your information.

As of February 1, 1994 your monthly fee for water service will be based on the metered rate. Meters will be read each month with the new rate structure reflected in your March, 1994 billing statement.

Please call should us at 206-439-0344 should questions arise.

12608 EAST MARGINAL WAY SOUTH SEATTLE, WA. 98168

TELEPHONE: (206) 439-0344 FAX: (206) 248-0410

WASHINGTON WATER SUPPLY, INC.

"Water Supply and Distribution"

Dear Water Customer

We wish this 1994-1995 winter season be enjoyable with the absence of problems associated with cold weather. Washington Water Supply wishes to provide some basic reminders for preventing damage to your water system due to frigid temperatures. Therefore, we suggest you take the following steps to prevent freeze damage to your pipes and appurtenances.

1. **Know the location of the valve(s) to shut off your water should a break occcur.**

2. **Open water spigots, valves, hydrants on exposed lines that have been drained.**

3. **Insulate and/or heat tape those lines that are exposed to the cold air.**

4. **Enclose open crawl spaces.**

5. **Wrap or insulate hose bibs attached to your house.**

6. **Get to know your neighbor. They may be your best resource should a problem occur.**

Please call us if you have ideas or if we can answer questions.

Respectfully,
Washington Water Supply

12608 EAST MARGINAL WAY SOUTH SEATTLE, WA. 98168
TELEPHONE: (206) 439-0344 FAX: (206) 248-3410

WASHINGTON WATER SUPPLY, INC.

"Water Supply and Distribution"

Dear Water Customer,

The potential for a cold 1995-1996 winter is on the horizon as cooler weather arrives. We at Washington Water Supply wish our customers to enjoy the change in seasons by being prepared for the anticipated cold weather. Therefore, we suggest you take the following steps to prevent freeze damage to your pipes and appurtenances.

1. **Know the location of the valve(s) to shut water off to your house should a break occur.**

2. **Drain the water from your water lines used to water your plants. For example, irrigation lines, yard faucets, hoses.**

3. **Cover your outside hose bibs with fabricated styrofoam cups or even wrap a towel around the bib.**

4. **Make certain all water leaks are corrected.**

5. **Insulate all exposed water lines and appurtenances.**

Please consider this as a reminder to help reduce the frustration associated with frozen water lines. If you have other ideas that would be helpful for your neighbors, please call us with your suggestion.

Respectfully,
WASHINGTON WATER SUPPLY

12608 EAST MARGINAL WAY SOUTH SEATTLE, WA. 98168
TELEPHONE: (206) 439-0344 FAX: (206) 248-3410

WASHINGTON WATER SUPPLY, INC.

"Water Supply and Distribution"

WATER CONSUMER,

THE STATE OF WASHINGTON IS ANTICIPATING A LONG DRY SUMMER. THE GROUND WATER SERVING YOUR RESIDENCE MUST BE CONSERVED TO HELP US MAKE IT THROUGH THE 1994 SUMMER. WE ASK THAT YOU CONSERVE BY WASHING YOUR CAR AND WATERING YOUR OUTSIDE PLANTS AS FOLLOWS:

- ***HOUSE NUMBERS WITH THE LAST DIGIT ENDING IN AN ODD NUMBER WATERING ON SUNDAY, WENSDAY, FRIDAY.***
- ***HOUSE NUMBERS WITH THE LAST DIGIT ENDING IN AN EVEN NUMBER WATERING ON MONDAY, THURSDAY, SATURDAY.***

PLEASE CALL US AT 1-206-439-0344 SHOULD QUESTIONS ARISE.

WASHINGTON WATER SUPPLY

12608 EAST MARGINAL WAY SOUTH SEATTLE, WA. 98168

TELEPHONE: (206) 439-0344 FAX: (206) 248-3410

WASHINGTON WATER SUPPLY, INC.

"Water Supply and Distribution"

WATER CONSERVATION ALERT

RESTRICTIONS

ALL CUSTOMERS - * NO WATER RUNNING TO WASTE
*** NO UNATTENDED HOSES**
*** NO HOSES WITHOUT SHUT OFF NOZZLES**
*** NO WASHING OF SIDEWALKS OR DRIVEWAYS**
*** NO NONRECIRCULATING ORNAMENTAL FOUNTAINS OR PONDS**

VOLUNTARY

ALL CUSTOMERS - * HOUSE NUMBERS ENDING IN AN ODD DIGIT SHALL WATER ON MONDAY, THURSDAY, SATURDAY-2 HOURS MAXIMUM
*** HOUSE NUMBERS ENDING IN AN EVEN DIGIT SHALL WATER ON SUNDAY, WEDNESDAY, FRIDAY 2 HOURS MAXIMUM**
*** PLEASE DO NOT WATER LAWNS ON TUESDAYS!**

PLEASE CALL US AT 206-439-0344 SHOULD QUESTIONS ARISE

WASHINGTON WATER SUPPLY

JUNE 1992

12608 EAST MARGINAL WAY SOUTH SEATTLE, WA. 98168
TELEPHONE: (206) 439-0344 , FAX: (206) 248-3410

4. Description of System Meters:

Washington Water Supply, Inc. has a policy that all new connections be metered with a Utility approved meter. All meter units will be cubic feet unless approved by the Utility. All well heads will be metered to compliment our water conservation activity and engineering evaluation.

Existing un-metered connections on the group "A" systems will be retrofitted with a meter by 1999.

Meters will be tested when requested by the patron and all meters will be tested should unexplainable irregularities be recognized. Where significant meter error is uncovered, the meter will be repaired or replaced.

5. Savings from Implemented Conservation Practices:

The water conservation measures practiced by WWS include informing water service patrons of responsible water saving practices recommended by the state Department of Health, as explained above. Toward that end, the utility will assist patrons in obtaining flow restrictors to limit the water consumption of each connected household.

Generally, shower and faucet flow restrictors reduce water flow from 0.5 to 3.0 G.P.M., and toilet tank water displacement devises reduce flow approximately 1.5 gallons per flush. Using Kitsap County Public Utility District #1's program for fitting houses with water flow control devises, and from the Department of Ecology Publication, "Water Activity Chart" the reductions in usage are determined as follows:

TYPE	% SAVINGS	GAL SAVED/FAMILY
Toilet-Water Displacement device	**32%**	**32% x 90 gal = 29 gal**
Faucet-Low Flow Orifice	**17%**	**17% x 40 gal = 7 gal**
Shower-Low Flow Orifice	**42%**	**42% x 125 gal = 53 gal**

Estimated savings per residence equals 89 Gal/Day. If one half of all system users (155 total) install the 3 devices, then 13,795 gallons of water per day will be conserved. This is the Water System's goal by the year 2000.

CHAPTER 3
System Analysis

A. Minimum Design Criteria

The Kitsap County Coordinated Water System Plan established basic design criteria. We have attempted to establish minimum design standards which reflect those criteria and further define the minimum construction standards acceptable to Washington Water Supply, Inc.

STANDARD MATERIAL AND CONSTRUCTION SPECIFICATIONS

All materials and construction shall conform to the requirements of the most current edition of the "Standard Specifications for Municipal Public Works Construction," published by the Washington State Chapter of the American Public Works Association (APWA) or as specified below. The APWA specifications shall be referred to below as the "standard specifications". Final approval of all materials proposed for installation shall be by Washington Water Supply, Inc.

1. Water Pipe (4" and larger)

Water Pipe 4" and larger shall either be Ductile Iron Pipe conforming to the requirements of AWWA C-151 (Thickness Class 50) and Section 9-30.1(1) of the standard specifications, or P V C Pipe equal to AWWA C-900 (Pressure Class 150) Pipe shall be bedded as specified for flexible pipe in Section 7 of the standard specifications.

2. Water Main Pipe (Under 4")

Water main pipe under 4" shall not be allowed unless otherwise approved by Washington Water Supply, Inc. When approved it will consist of PVC-Schedule 40, PVC-Schedule 80, or 200 psi Polyethylene, IPS.

3. Galvanized Steel Pipe

Galvanized steel pipe shall conform to the latest revision of ASTM A-I20 or A53, Grade A, Schedule 40, seamless pipe. Pipe shall be hot-dip galvanized. Pipe fittings shall be galvanized and threaded. In no case shall Galvanized Pipe be in contact with Copper pipe.

4. Fittings

Transition, reducing or flexible couplings shall be cast iron equal to Smith-Blair or Romac. Tapping sleeves shall be cast iron or Stainless Steel designed to fit the pipe being tapped with a flanged branch of the size specified.

5. Gate Valves

Gate valves 2" and larger shall be resilient Wedge and shall conform to the requirements of AWWA C-509 and Section 7-12 of the standard specifications furnished with standard square operating nut. Gate valves smaller than 2 inches shall be 125 psi, non-rising storm, wedge disk, all brass or bronze valves with screwed, or flanged ends compatible with the connecting pipe.

6. Concrete Valve Marker Posts

A pre-cast valve marker post shall be furnished and installed with each single or closely grouped combination of valves or blow-off or air release valve assembly. Marker posts shall be 4" minimum square section and a minimum of 42" in length, with beveled edges and containing at least one (1) 3/8" diameter bar of reinforcing steel. Valve marker posts shall be equal to those manufactured by Fog-Tite Meter Seal Company, or equal.

7. Fire Hydrants

Fire hydrants shall conform with AWWA C 502 and Section 77 of the standard specifications. Hydrants shall be Clow Challenger F2500 hydrants with National Standard threads on the two 2½" hose connections and 4½" pumper port. The pumper port shall face the street or be oriented in a manner approved by WWS, Inc.

8. Fire Hydrant Guard Posts

These may be required by Washington Water Supply, Inc. However, in cases where guard posts may pose a danger to fast moving traffic, they will generally not be required. In parking lots and other areas where traffic is moving slowly, guard posts will be required.

9. Locating Wire

Locating wire shall be 12 gauge solid copper, with neoprene coating. All connections or splicing shall be made with split bolt connectors.

10. Connection to the Existing System

Connections to the existing water mains shall not be made without notifying Washington Water Supply, Inc. at least 48 hours in advance of the work and receiving approval, in writing, from Washington Water Supply, Inc. of the timing and method of connection. All materials and equipment necessary to make the connection shall be assembled on the site 24 hours in advance of the work for Washington Water Supply's approval. Once work is started, it shall proceed continuously, without interruption, and as rapidly as possible until complete.

All materials used for the connection shall be thoroughly sterilized by swabbing the interior with a 50 ppm chlorine solution. If field cutting of asbestos cement pipe is required, all requirements of Regulation 1, Article 10 of the Puget Sound Air Pollution Control Agency shall be met. This shall specifically include the employment of a certified asbestos worker to perform all work included in cutting and removing asbestos cement pipe.

If the connection to the existing system involves turning off the water, the developer or contractor shall be responsible for notifying the residents affected 48 hours in advance of the shut-off. Washington Water Supply, Inc. will advise which owners are to be notified. No shut-off of mains will be allowed overnight or on weekends or holidays.

11. Hydrostatic Testing of Water Mains

The developer or contractor shall furnish all labor, equipment and materials required to conduct all testing. Hydrostatic pressure testing shall conform to the requirements of Section 7-11 of the APWA/WSDOT standard specifications. Hydrostatic testing of 2" and smaller PVC mains will be per the manufacturers recommendations but in no case less than 200% of the maximum working pressure of the effected main. Washington Water Supply, Inc. shall be the sole judge of whether any pressure drop observed is acceptable and the drop shall not exceed 5 psi in 15 minutes. The project engineer must complete and submit a DOH "Certification of Completion" report to DOH and WWS prior to final approval of the project.

12. Flushing, Sterilization and Bacteriological Testing

Flushing, and sterilization shall meet the requirements of Section 7-11 of the standard specifications. Water for filling and flushing of new mains will be available from the existing distribution system. The timing, method and location of disposal of water flushed from new mains shall be approved by Washington Water Supply, Inc. Washington Water Supply, Inc. will take all samples, or supervise the same, for bacteriological analysis. The contractor will be responsible for payment of all lab fees.

13. Roadway Restoration and Pavement Repair

Roadway repair and restoration shall meet the requirements of the County Department of Public Works and the WSDOT standard specifications. All pavement cutting shall be made by saw cutting straight and vertical edges in the existing pavement a minimum of one foot back from the maximum trench width. The minimum pavement section shall be 2 inches of crushed surfacing top course conforming to Section 9-03 of the standard specifications and 2 inches of asphalt concrete Class B conforming to Section 5-04 of the standard specifications. After paving all joints shall be sealed with hot asphalt.

14. Finishing and Cleanup

Before acceptance of water main construction, all areas in which work has taken place shall be cleaned and graded to the satisfaction of Washington Water Supply, Inc. and the County Department of Public Works. Final grading shall present a uniform appearance blending into existing and adjacent contours. Roadway and shoulder restoration shall meet County requirements. Drainage facilities such as catch basins, inlet, culverts, and ditches shall be cleaned of all debris which is the result of water main construction activities.

B. Evaluation of Existing Water Systems

Each of the Water Systems owned by Washington Water Supply, Inc. will be addressed separately in its own chapter. The detail of the analysis will vary depending upon the size and complexity of the individual water system.

C. Water Quality Analysis

Since passage of the 1986 amendments to the Safe Drinking Water Act (SDWA) numerous regulations have been promulgated by the USEPA. The regulations that directly impact the monitoring requirements to be met by Washington Water Supply, Inc. include, total coliform bacteria, inorganic chemicals, volatile organic chemicals (VOCI) synthetic organic chemicals (SOC) and radionuclides.

The status of each system is described in the sections devoted to each water system.

D. Summary of Deficiencies

See Individual Water System Chapters 9 - 17.

Chapter 4
Improvement Program

A. Capital and Non-Capital Improvements for a 20 Year Period

The objective of the financial analysis is to evaluate the financial viability of the Utility and validate the feasibility of future financial operations.

The term "Financial Viability" is considered to mean "The water utility's ability to fully finance the total cost of developing, constructing, operating and maintaining a public water system in continuous compliance with the water quantity and quality requirements of the state Department of Health and local regulations." The financial viability test is an analysis, based on current and projected operating budgets, showing that the utility generates a positive operating surplus, maintains a record of positive retained earnings, and demonstrates a capital asset ratio exceeding 30% while complying with all applicable public health requirements.

The feasibility of future financial operations is a judgement by the Washington Utility and Transportation Commission staff taking into consideration the utility's rate design, allocation of revenue requirements to the current rate payers, justification for operating expense and profit projections, and other issues deemed significant on a case-by-case basis.

The minimum planning horizon for the financial viability test is ten years with detailed projections for the next five years; the Growth Management Act requires capital facility planning projections for 20 years and detailed plans for six years. By covering the periods required under the Growth Management Act, this Water System Plan satisfies both of these requirements.

The definition of a capital expenditure is that activity or purchase ($500 or greater) that replaces or significantly extends the life of existing equipment, unit, structure, or feature that is used for the Operation and Maintenance of the water systems for the company.

History. In 1991, Washington Water supply, Inc. developed a Capital Improvement Plan of updating the records of our water systems. This activity included the excavation of some appurtenances to confirm system drawings. As deficiencies were noted a list was made of visible system improvements.

The 1992 Capital Improvement Plan included visible repairs such as roof repairs, painting, replacement of doors, and the installation of a common lock system. Our corporate policy mandated the locking and placement of locks that are common to all our systems. This common lock allows one key to all system locks reducing confusion during emergency response.

The 1993 Capital Improvement Plan included the painting of exterior structures and special emphasis was placed on interior upgrade. This upgrade included the replacement of leaking and corroded appurtenances such as valving, heating systems, venting, meters/gauges, and pipe sections.

The 1994 Capital Improvement Plan continued the replacement of corroded or worn appurtenances. In some cases, there is a need to apply new exterior surfaces. Original system drawings are not representative of actual installation.

The 1995 Capital Improvement Plan included the replacement of corroded or inoperative appurtenances. This activity supported the pending rate application and subsequent Water System Plan.

B. Six Year Improvement Schedule

See Table 4-1 on the following page. This table covers the 20 year planning period, however as may be expected, the financial predictions beyond the six year schedule are pretty sparse and will likely prove to be inaccurate. In any case, it is a valuable tool for use in long range planning.

Water system improvements are scheduled based upon first hand knowledge of the WWS systems. We are correcting the problems which pose the most serious risk to health as early as possible, while still providing a financially feasible plan.

Whidbey West Water System
Capital Improvement Program

	Account (Projected Water Utility Plant Additions)		Acct #	1996 total	1997 total	1998 total	1999 total	2000 total	2001 total	2002 total	2003 total	2004 total	2005 total	2006 total	2007 total	2008 total	2009 total	2010 total	2011 total	2012 total	2013 total	2014 total	2015 total
1	Structures and Improvements	$15,843	304		$4,843	$2,000	$2,100	$2,200	$2,300	$2,400													
2	Wells and Springs	$10,000	307						$10,000														
3	Supply Mains	$10,000	309							$10,000													
4	Pumping Equipment	$11,304	311		$1,304					$10,000													
5	Water Treatment Equipment	$1,000	320			$1,000																	
6	Services	$21,366	333		$5,366	$3,000	$3,100	$3,200	$3,300	$3,400													
7	Meter and Meter Installation	$11,000	334			$2,000	$2,100	$2,200	$2,300	$2,400													
8	Other Plant and Miscellaneous Equipment	$3,500	339			$500	$600	$700	$800	$900													
9	Tools, Shop and Garage Equipment	$1,750	343			$250	$300	$350	$400	$450													
10	Power Operated Equipment	$1,500	345			$100	$200	$300	$400	$500													
11																							
12	Water System Plan	$23,000		$23,000																			
	Total Improvement Program	$110,263		$23,000	$11,513	$8,850	$8,400	$8,950	$19,500	$30,050	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Washington Water Supply
Capital Improvement Program

		cost	start work																				
13	**CRYSTAL CREEK**																						
14	Install Individual Service Meters	$16,000	1999		$2,000		$7,000	$7,000															
15																							
16	**DEER TRAIL**																						
17	Deer Trail Pumphouse Renovation	$12,136	1997		$12,136																		
18																							
19	**ECHO GLEN**																						
20	Reservoir repairs	$1,500	2003								$1,500												
21	New Well Pumps	$16,000	1997		$10,000	$6,000																	
22	Change to 1 Phase Electricity	$22,800	1997		$2,800				$20,000														
23	Replace 150 lf 2" with 6"	$5,000	2000					$5,000															
24	Install Individual Service Meters	$14,000	1998			$7,000	$7,000																
25	New Pumphouse	$20,000	1997		$5,000		$15,000																
26	**HINKLEY HILL**																						
27	Hinkley Hill Pumphouse Renovation	$6,000	1998			$6,000																	
28	Pump, Motor & Tank Replacement	$10,000	1997		$10,000																		
29	**MAPLE HAVEN/SALMON**																						
30	Intertie the two water systems	$1,500	1999				$1,500																
31	Install 4 Blow-Offs	$1,800	2003								$1,800												
32	Replace 900 lf of 2" with 4" PVC	$20,000	2006											$20,000									
33	Pump & Motor Replacement	$5,842	1997		$5,842																		
34	**MPVK**																						
35	Reservoir Access, Vent and Source Meter	$700	2003								$700												
36	New roof on the pumphouse	$600	2005								$600												
37																							
38	**NOLL ROAD**																						
39	Pumphouse modifications	$600	2002							$600													
40																							
41	**WOLF**																						
42	Pumphouse renovation	$1,500	2001						$1,500														
43	Find the water main & install 2 Blow-Offs	$1,500	2001						$1,500														
44																							
45																							
46	Office Equipment	$215			$215																		
47	WSP (includes Whidbey West)	$40,000	1996	$40,000	$9,000					$5,000													
	Total Improvement Program	$197,693		$40,000	$56,993	$19,000	$30,500	$12,000	$23,000	$5,600	$4,600	$0	$0	$20,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
				1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015

C. Map and Description of Proposed Facilities

See Summary of Individual Water Systems in Chapters 9 through 18.

Chapter 5
Financial Program

REGULATION OF INVESTOR OWNED WATER COMPANIES

An overview of the function of the WUTC as a state agency regulating investor-owned water companies:

COMMISSION STRUCTURE

The Washington Utilities and Transportation Commission (WUTC) is a three member board appointed by the Governor and confirmed by the Senate. It is responsible for regulating the investor-owned utility and transportation businesses in the state.

The Utilities Division of the Commission regulates more that 70 water companies that meet certain customer and revenue criteria. The Commission is responsible to see that regulated water companies provide safe and reliable service to their customers at rates that are reasonable, yet give the companies an opportunity to earn a reasonable rate of return.

Publicly owned water companies are already under public review. For example, water service may be offered by a cooperative owned by customers and managed by the board they elect. Other municipally operated utilities and transportation systems, like water, power or bus systems are controlled by city councils. The Commission regulates only privately owned companies offering services to the public.

FILING RATE AND SERVICE SCHEDULES

All regulated utilities must file rate and service schedules, that is tariffs, with the Commission. With few exceptions, before a Water Company may change rates or terms of a regulated service, it must get permission from the Commission. When first coming under regulation by the Commission, Water Companies file specific rate and service schedules or tariffs, listing the Company's existing rates and services.

COMMISSION OPEN MEETINGS

An open meeting is a regularly scheduled public meeting held by the Commission. Pre-announced business items or filings are presented to, and addressed by, the Commission. Commission staff reviews and presents recommendations to either approve a filing or suspend for a formal hearing to allow additional time for investigation.

The Commission is a quasi-judicial body. This means that the Commission conducts hearings with proceedings similar to a court of law. Administrative law Judges, employed by an independent state agency, conduct the proceedings.

NOTE: For more information on the rate hearing process, you may request at no cost, a copy of "Your Guide to a Rate Hearing", by calling the Public Affairs Office of the Commission at (360) 586-1185 or toll free 1-800-562-6150.

WATER COMPANY ACCOUNTING AND RECORD KEEPING

Commission accountants review the records of regulated Water Companies to ensure that the Company's financial books and records are properly maintained. Accountants analyze the legitimacy of Company operating expenses and investments.

WATER COMPANY PHYSICAL OPERATIONS

A staff engineer provides the Commission with field surveys of physical operations, and recommendations to ensure adequacy of service and quality of water.

A staff financial specialist reviews Water Company contracts. This may include affiliated interest transactions, and security applications for debt issues. These individuals also study the financial, management and operating characteristics of water companies in addition to the sale or transfer of water systems.

The Tariff Specialist reviews proposed tariff filings for compliance with State laws and Administrative Codes and studies the Company's rate design and rate spread options. Tariff Specialists recommend Commission jurisdiction when water companies meet criteria for regulation and they assist the company in the initial regulatory process.

NOTE: Technical questions regarding water company operations may be directed to the Commission's Water Section. Contact Fred Ottavelli, Utilities Water Program Manager, at (360) 753-6436.

MAJOR ISSUES EXAMINED IN A GENERAL RATE CASE

The Commission looks at four major issues in a general rate case:

1. The company's legitimate annual operating expenses and how they have increased or decreased since the last rate case.

2. The company's rate base: the total investment in plant and assets, less depreciation and contributions, on which rate-payers pay the company a return.

3. The company's rate of return, (profit) it can earn on its investment or rate base.

4. The company's rate design, or the specific rates charged for its different services.

PUBLIC INVOLVEMENT

The WUTC is firmly committed to providing the public the opportunity to participate in the regulatory process. Regulating water companies notify their customers of proposed rate increases. The Commission's public involvement coordinator, Terry Winfield, is available to advise water company staff when they are writing a rate increase notice to customers in order to comply with Commission rules. ***Ms. Winfield may be contacted at (360) 586-1190.***

CONSUMER AFFAIRS

The Commission also provides help to consumers through the Consumer Affairs Section. When consumers cannot resolve a dispute with a regulated company, they may speak with a service examiner in Consumer Affairs and may file a complaint. ***Customers may call the Consumer Affairs Section toll free at 1-800-562-6150.***

A. Itemized Two Year Summary of System Revenue and Expenses

Please refer to *Worksheet 1*, the "Six Year Operating Budget" worksheets included in this chapter. Please note that the Whidbey West Water System has its own set of worksheets which are separate from the other water systems owned by Washington Water Supply.

B. Historical Summary of Financing System Improvements

Washington Water Supply, Inc. is a "**C**" Corporation within the State of Washington. The Corporation was formed in 1991 in response to the need for qualified water purveyors. The accounting system was developed to present an income/expense reporting system for each water system and provide a summary of those expenses that are associated with operating the whole company. This type of accounting system is intended to assist with the UTC process of establishing fair and equitable rates for our customers.

In 1992, Washington Water Supply, Inc. purchased the Whidbey West Water System. Although the DOH recognized the purchase of the system, once the Purchase and Sales Agreement had been signed the Utilities and Transportation Commission (UTC) delayed the "**TRANSFER OF PROPERTY**". This delay prevented system optimization and a rate structure to support system improvements and progress on the Water System Plan (WSP).

In October 1994, the UTC approved the " **TRANSFER OF PROPERTY**". In January 1994, Washington Water Supply, Inc. (WWS) met with DOH staff to gain an understanding of component needs for the Water System Plan (WSP).

Two Year Summary - Revenue & Expenses

No.		WWS Actual 1995	WWS Actual 1996	Whidbey West ACTUAL 1995	Whidbey West ACTUAL 1996
1	**REVENUES**				
2	Water Rates	$57,212	$67,216	$26,360	$45,910
3	Fees and Service (new connects @ $3000/ea)	$0	$0		
4	Other Revenue	$0	$0	$1,452	$1,452
5	TOTAL REVENUES (Add 2-4)	$57,212	$67,216	$27,812	$47,362
6	**EXPENSES**				
7	**Operation & Maintenance (O&M)**				
8	Salaries & Benefits (Operator)	$0	$0	$0	$0
9	Power & Other Utilities	$4,362	$5,126	$5,973	$5,300
10	Chemical & Treatment	$0	$0	$0	$0
11	Monitoring	$2,217	$1,738	$2,219	$2,097
12	Materials, Supplies & Parts	$4,065	$1,612	$6,387	$6,376
13	Transportation Expenses	$855	$1,898	$207	$1,034
14	Miscellaneous Expenses	$1,096	$6,173	$1,510	$1,939
15	**Total O&M (Add 8-14)**	$12,595	$16,547	$16,296	$16,746
16	**General & Administrative Expenses**				
17	Salaries & Benefits	$4,290	$8,235	$7,200	$4,686
18	Office Supplies & Postage	$1,743	$900	$1,348	$5,397
19	Insurance- Vehicles, Liability, Workers Comp	$1,192	$1,236	$1,193	$1,353
20	Legal & Accounting	$20,543	$15,270	$13,917	$13,385
21	Engineering & Professional Services	$1,257	$3,741	$2,983	$0
22	Fees	$1,019	$500	$336	$385
23	Miscellaneous Expenses (e.g. Training)	$2,571	$7,235	$15,460	$0
24	Total General & Administrative Expenses (Add 17-23)	$32,615	$37,117	$42,437	$25,206
25	Depreciation Expense (If Applicable)	$2,800	$3,000	$1,350	$1,350
26	TOTAL EXPENSES (Add 15+24+25)	$48,010	$56,664	$60,083	$43,302
27	Taxes (property, B & O)	$291	$249	$200	$281
28	Annual Debt Payments - Loans/Bonds (Principal & Intere	$15,000	$15,000	$2,631	$4,800
29	Total Outstanding Debt - Loans/Bonds (Principal & Intere	$101,435	$98,435	$14,618	$14,618
30	**Capital Improvement Program Expenditures**				
31	New CIP Facilities		$0	$3,000	$0
32	Renewal & Replacement Facilities		$0	$1,500	$1,500
33	Safe Drinking Water Act Facilities			$0	$0
34	Non-Facility Costs (e.g., conservation program costs)		$17,000	$0	$27,775
35	**Capital Sources**				
36	Loan/Bonds Funds		$0	$0	$0
37	Grants		$0	$0	$0
38	Special Charges		$0	$0	$0
39	Withdrawal From Existing Reserves		$0	$0	$0
40	Net CIP (31+32+33+34)-(36+37+38+39)		$17,000	$4,500	$29,275
41	**Operating Cash Reserve**				
42	Minimum Balance (1/8 Line (15+24)			$0	$5,244
43	Annual Balance (this year's contribution)		$0	$0	$0
44	Cumulative Balance		$0	$0	$0
45	**Emergency Reserve**				
46	Minimum Balance (Cost of Most Vulnerable Facility)		$20,000	$0	$40,000
47	Annual Balance (this year's contribution)		$0	$0	$0
48	Cumulative Balance		$0	$0	$0
49	**Replacement Reserve (Voluntary)**				
50	Minimum Balance (System Replacement Cost)($2,000/		$0		
51	Annual Balance (this year's contribution)		$0	$0	$0
52	Cumulative Balance		$0	$0	$0
53	TOTAL REV. REQUIRED (Add 26+27+28+40+43+47+5		$88,913	$67,414	$77,658
54	**BUDGET SURPLUS (DEFICIT) (Subtract 5-53)**		($21,697)	($39,602)	($30,296)
55	1.5% Annual Median Household Income				
56	Projected Annual Residential Bill (Worksheet 2)				

Six (6) Year Planning Period:

C. Cost of Improvements

See Table 4-1 in the previous chapter, "Capital Improvements". This Table directly relates to page 3 of 7, "Projected Water Utility Plant Additions," in the following section for both the Whidbey West System and the remaining Washington Water Supply Systems.

D. Annual Operation and Maintenance Expenses

The Financial Statements included in this Chapter follow the guidelines as set forth by the UTC. There are two separate and distinct sections. The first section refers to all of the water systems owned by Washington Water Supply, *excluding the Whidbey West Water System*. The second section refers to the Whidbey West Water System separately.

The financial pages are:

Page 1 of 7	Projected Income Statement
Page 2 of 7	Projected Comparative Balance Sheets
Page 3 of 7	Projected Water Utility Plant Additions
Page 4 of 7	Projected Customer County Summary
Page 5 of 7	Projected Cash Flow Statement
Page 6 of 7	Projected Regulatory Fee Calculation
Page 7 of 7	Miscellaneous Expenses

Washington Water
Projected Income Statement
For the Calendar Years 1997-2002

ACCOUNT		1997	1998	1999	2000	2001	2002
	REVENUES						
400	Operating Revenues	70085	77850	82730	90943	94109	97228
471	Miscellaneous Revenue Accounts						
474	Other Revenue Accounts						
	Utility Operating Revenue	70085	77850	82730	90943	94109	97228
	EXPENSES						
401	Operating Expense Accounts	54573	52797	55840	58978	62024	65157
403	Depreciation	9335	10283	11153	11646	12367	12540
406	Amortization Expense						
408	Other Tax & License	834	800	800	800	800	800
409	Income Taxes						
	Utility Operating Expense	64742	63880	67793	71424	75191	78497
	Utility Operating Income (Loss)	5343	13970	14937	19519	18918	18731
	OTHER INCOME AND DEDUCTIONS						
	Other Income:						
414	Gain(Loss) from Disposition of Plant						
415-416	Jobbing and Contract Work						
419	Interest and Dividend Income						
421	Nonutility Income	7	10	10	10	10	10
	Total Other Income	7	10	10	10	10	10
	Other Deductions:						
426	Miscellaneous Nonutility Expenses						
427	Interest Expense	9866	11996	12496	12746	12196	12696
433	Extraordinary Income/Deduction						
	Total Other Deductions	9866	11996	12496	12746	12196	12696
	Net Income / (Loss)	(4516)	1984	2451	6783	6732	6045

Washington Water
Projected Comparative Balance Sheets
For the Calendar Years 1996 - 2002

ACCOUNT		1996	1997	1998	1999	2000	2001	2002
	ASSETS:							
101	Utility Plant	87054	144047	163047	178547	190547	213547	219147
108	Less: Accumulated Depreciation	15089	24424	34707	45859	57505	69872	82412
110	Accumulated Amortization							
114	Utility Plant Acquistion Adjustment							
	Net Utility Plant	71965	119623	128340	132688	133042	143675	136735
124	Utility Investments							
127	Special funds							
131	Cash	(252)	2317	3174	3778	4707	5806	6791
141	Customer Accounts Receivable	13205	11161	9000	9000	9000	9000	9000
151	Plant Materials and Supplies							
162	Prepayments							
186	Other Deferred Debits							
	Other Assets							
	Total Assets	84918	133101	140514	145466	146749	158481	152526
	EQUITY CAPITAL AND LIABILITIES:							
201	Capital Stock Issued							
211	Other Paid in Capital	9255	22818	22818	22818	22818	22818	22818
214-215	Retained Earnings	(67735)	(72251)	(70267)	(67815)	(61032)	(54300)	(48255)
218	Proprietary Capital							
	Total Equity Capital	(58480)	(49433)	(47449)	(44997)	(38214)	(31482)	(25437)
224	Long Term Debt							
231	Accounts Payable	46085	62571	63000	63000	63000	63000	63000
232	Notes Payable	97313	119963	124963	127463	121963	126963	114963
235	Customer Deposits							
236	Accrued Taxes							
253	Other Deferred Credits							
265	Miscellaneous Operating Reserves							
271	Contributions In Aid of Construction (CIAC)							
272	Less:Accumulated Amortization of CIAC							
	Other Liabilities							
	Total Liabilities	143398	182534	187963	190463	184963	189963	177963
	Total Equity Capital and Liabilities	84918	133101	140514	145466	146749	158481	152526

Washington Water
Projected Water Utility Plant Additions
For the Calendar Years 1997 - 2002

OUNT		1997	1998	1999	2000	2001	2002
301	Organization						
302	Franchises						
303	Land and Land Rights						
304	Structures and Improvements	12136	11000	1000	5000	20000	5000
305	Collecting and Impounding Reservoirs						
306	Lake, River and other intakes						
307	Wells and Springs						
309	Supply Mains						
310	Power Generation Equipment						
311	Pumping Equipment	35756		5500		3000	600
320	Water Treatment Equipment						
330	Distribution Resevoirs and Standpipes						
331	Transmission and Distributions Mains		4000	3000			
333	Services	8886	2000	1000			
334	Meters and Meter Installation		2000	5000	7000		
335	Hydrants						
339	Other Plant and Miscellaneous Equipment						
340	Office Furniture & Equipment	215					
341	Transportation Equipment						
343	Tools, Shop and Garage Equipment						
345	Power Operated Equipment						
348	Other Tangible Plant						
101	Water Utility Plant Total	56993	19000	15500	12000	23000	5600

No Plant Retirements through the year 2002

Washington Water
Projected Customer Count Summary (end of year)
For the Calendar Years 1997 - 2002

	1997	1998	1999	2000	2001	2002
Total Unmetered	150	150	150	150	150	150
Total Metered						
Total Master Metered						
Connections served by Master Meters						
Other Services						
Total Customers Billed	150	150	150	150	150	150
Total Customers	150	150	150	150	150	150
Rate per Customer per month	$38.94	$43.25	$45.96	$50.52	$52.28	$54.02

Washington Water
Projected Cash Flow Statement
For the Calendar Years 1997-2002

OUNT		1997	1998	1999	2000	2001	2002
	OPERATING CASH INFLOWS						
400	Operating Revenue	70085	77850	82730	90943	94109	97228
414	Gain (Loss) Dispostion of Plant						
419	Interest and Dividend Income						
	Total Operating Cash Inflows	70085	77850	82730	90943	94109	97228
	OPERATING CASH OUTFLOWS						
601	Salaries and Wages - Employees						
603	Salaries and Wages - Officers	24098	18000	20000	22000	24000	26000
604	Employee Pensions and Benefits						
615	Purchased Power	5894	5665	5835	6010	6190	6376
618	Chemicals & Testing						
620	Materials & Supplies	1608	2575	2652	2732	2814	2898
631	Contractual Engineer						
632	Contractual Accounting	1960	2019	2079	2142	2206	2272
633	Contractual Legal		1030	1061	1093	1126	1159
635	Contractual Other						
641	Rents	2200	2266	2334	2464	2476	2550
650	Transportation Expenses	4526	4662	4802	4946	5094	5248
655	Insurance Expense	2073	1000	1030	1061	1093	1121
665	Regulatory, Fees						
666	Regulatory, Rate Case		3000	3090	3183	3279	3377
670	Bad Debt Expense						
675	Miscellaneous Expenses (Schedule A)	12214	12580	12957	13347	13746	14156
401	Operating Expenses	54573	52797	55840	58978	62024	65157
408	Utility Excise Tax						
408	Property Taxes	834	800	800	800	800	800
408	Payroll Tax						
408	Other Tax License						
409	Income Taxes						
	Loan Payment Principle	(22650)	(5000)	(2500)	5500	(5000)	12000
409	Accounts Payable	(16486)	(429)	0	0	0	0
	Total Operating Cash Outflows	16271	48168	54140	65278	57824	77957
	Total Operating Cash Flow	53814	29682	28590	25665	36285	19271
	CAPITAL CASH INFLOWS						
421	Miscellaneous Nonutility income	7	10	10	10	10	10
101	Property, Plant & Equipment						
	Service Connection/Contribution						
	Cash/Other	15607	2161	0	0	0	0
	Total Capital Cash Inflows	15614	2171	10	10	10	10
	CAPITAL CASH OUTFLOWS						
426	Miscellaneous Nonutility Expenses						
427	Interest Expense	9866	11996	12496	12746	12196	12696
433	Extraordinary Income/Deduction						
	Capital Expenditures - New Plant	56993	19000	15500	12000	23000	5600
	Total Capital Cash Outflows	66859	30996	27996	24746	35196	18296
	Total Capital Cash Flow	(51245)	(28825)	(27986)	(24736)	(35186)	(18286)
	CASH BALANCE END OF YEAR	2569	857	604	929	1099	985

Washington Water
Projected Regulatory Fee Calculation
For the Calendar Years 1997-2002

The regulatory fee for Water Utilities is as follows:

Line No. L		
	Utility (1st $50,000 of gross intrastate operating revenue)	.1%
	Utility (Amount above $50,000 of gross intrastate operating revenue)	.2%

	Calculation	1997	1998	1999	2000	2001	2002
1	Total Gross intrastate operating revenue	70085	77850	82730	90943	94109	97228
2	Less non-fee paying revenues						
3	Net Gross intrastate Operating Revenue	70085	77850	82730	90943	94109	97228
		Section 1					
	If L3 is $50,000 or less						
4	Multiply l3 x .1% (.001)= This is your current year Regulatory fee						
		Section 2					
	If L3 is greater than $50,000						
5	Enter amount from L3	70085	77850	82730	90943	94109	97228
6	less $50,000 base	(50000)	(50000)	(50000)	(50000)	(50000)	(50000)
7	Additional amount above $50,000 base	20085	27850	32730	40943	44109	47228
8	Multiply $50,000 x .1% (.001)=	50	50	50	50	50	50
9	Multiply L7 x .2% (.002)=	40	56	65	82	88	94
10	Add L8 and L9 = This is your current year Regulatory fee	90	106	115	132	138	144
	TOTAL DUE						
	Add L-4 or L-10 and L-11 and L-12 This is your TOTAL DUE =	90	106	115	132	138	144

Washington Water
Miscellaneous Expenses
Schedule A

	1997	1998	1999	2000	2001	2002
Rentals						
Grounds Repair	718	739	761	785	808	832
Equipment Repair	2277	2345	2416	2488	2563	2639
Plumbing Repair	839	864	890	917	944	972
Electrical Repair	732	754	777	800	824	849
Underground Util Rep - Mech	1419	1462	1505	1551	1597	1645
Instrument Repair	33	34	35	36	37	38
Water Tests	4006	4126	4250	4377	4509	4644
State & City Taxes	34	35	36	37	38	39
Licenses & Permits	168	173	178	184	189	195
Telephone	960	989	1018	1049	1080	1112
Customer Relations	30	31	32	33	34	35
Postage	544	560	577	594	612	630
Outside Professional Services	93	96	99	102	105	108
Bank Charges & Fees	361	372	383	394	406	418
Total Miscellaneous Expenses	12214	12580	12957	13347	13746	14156

FUTURE FINANCES FOR WASHINGTON WATER SUPPLY

The improvements listed in the Washington Water Supply's Capital Improvement Schedulehave beeen and will be financed from depreciation allowance, owner investments, and surcharges. The Capital Facilities Plan details each anticipated capital project on the Construction Schedule.

At present we do not anticipate any new service connections to this group of water systems as most of them are at their capacity based on DOH requirements. We do anticipate connecting the Salmon Drive and the Maple Haven water systems with DOH approval to increase reliability to users. We have estimated that our rates will increase by at least 3% each year to keep up with inflation and maintain existing regulatory water quality monitoring mandates.

Our estimated net worth for the next 6 years is shown on the accompanying table of balance sheets. The balance sheet for 1997 is given in the first column. Additions to plant are added in agreement with the Capital Facilities Plan and the Construction Schedule.

We have prepared an operating budget for each of the next 6 years. The 1997 figures have been included for comparison. The 1998 figures and subsequent years have been estimated because the actual expenditures and income are incomplete at this time. We predict that our operating costs will increase by at least 3% (inflation) each year and have based our future expense predictions accordingly.

Operating costs are expected to rise with taxes, new fees, license requirements, and water quality testing for various health hazards. UTC allows the inclusion of these expenses, if predictable and certain, in the determination of eligibility of the system for a rate increase. In order to keep up with increasing expenses, rate increases are required every year which is time-consuming and expensive task for all concerned. Therefore, WWS will seek approval from the UTC to increase rates on an annual basis to mimimize costs.

REVENUE PLAN

The revenue source for our systems is from the sale of water to our customers. Income from the water sales can be increased by an increase in our customer base or an increase from monthly rates. The rate increase of revenue can come in the minimum rate or the charge for metered water, or both. We anticipate the use of surcharges and owner investments as sources of income for capital improvement in our facilities. Owner investment will be the primary source of capital improvement funding as demonstrated in past capital investment activities.

PROPOSED RATES

At the present time, the minimum metered rate for our customers is $40.25 per month. Charge for usage above 500 cubic feet is $2.00 for every 100 cubic feet. Our unmetered flat rate is $43.25 per month. We plan to apply for a minimum of 3% (inflation) increases in all of our fees annually. UTC approval of the annual inflationary rate increases will keep the company viable and reduce the need for large increases every few years.

It is our desire that the water systems under the Washington Water Supply, Inc. tariff be combined with the Whidbey West Water System tariff to allow all of our systems to be under the same rate structure. We feel that this would keep our accounting expenditures down.

In summary, Washington Water Supply, Inc. plans on maintaining a rate structure that allows for good service at a fair cost to our customers.

It is our desire to consolidate the Washington Water Supply, Inc. Tariff and the Whidbey West Water System Tariff to one common rate structure. This consolidation would ease in tariff changes and reduce customer costs.

In summary, Washington Water Supply, Inc. plans on maintaining a rate that allows for good service at a fair cost to the consumer.

Whidbey West
Projected Income Statement
For the Calendar Years 1997-2002

ACCOUNT		1997	1998	1999	2000	2001	2002
	REVENUES						
400	Operating Revenues	54043	62000	68000	74000	80000	86000
471	Miscellaneous Revenue Accounts						
474	Other Revenue Accounts						
	Utility Operating Revenue	54043	62000	68000	74000	80000	86000
	EXPENSES						
401	Operating Expense Accounts	41467	50566	52176	51706	53278	54950
403	Depreciation	8023	8074	8804	8804	9054	9554
406	Amortization Expense						
408	Other Tax & License	285	300	300	300	300	300
409	Income Taxes						
	Utility Operating Expense	49775	58940	61280	60810	62632	64804
	Utility Operating Income (Loss)	4268	3060	6720	13190	17368	21196
	OTHER INCOME AND DEDUCTIONS						
	Other Income:						
414	Gain(Loss) from Disposition of Plant						
415-416	Jobbing and Contract Work						
419	Interest and Dividend Income						
421	Nonutility Income						
	Total Other Income	0	0	0	0	0	0
	Other Deductions:						
426	Miscellaneous Nonutility Expenses						
427	Interest Expense	3183	3090	3140	2740	1790	1190
433	Extraordinary Income/Deduction						
	Total Other Deductions	3183	3090	3140	2740	1790	1190
	Net Income / (Loss)	1085	(30)	3580	10450	15578	20006

Whidbey West
Projected Comparative Balance Sheets
For the Calendar Years 1996 - 2002

ACCOUNT		1996	1997	1998	1999	2000	2001	2002
	ASSETS:							
101	Utility Plant	67314	78827	87677	96077	105027	124527	154577
108	Less: Accumulated Depreciation	8374	16397	24471	33275	42079	51133	60687
110	Accumulated Amortization							
114	Utility Plant Acquistion Adjustment							
	Net Utility Plant	58940	62430	63206	62802	62948	73394	93890
124	Utility Investments							
127	Special funds							
131	Cash	(32)	784	254	238	1042	174	684
141	Customer Accounts Receivable	1658	3776	4000	4000	4000	4000	4000
151	Plant Materials and Supplies							
162	Prepayments							
186	Other Deferred Debits							
	Other Assets							
	Total Assets	60566	66990	67460	67040	67990	77568	98574
	EQUITY CAPITAL AND LIABILITIES:							
201	Capital Stock Issued							
211	Other Paid in Capital	54479	48750	48750	48750	48750	48750	48750
214-215	Retained Earnings	(34915)	(33830)	(33860)	(30280)	(19830)	(4252)	15754
218	Proprietary Capital							
	Total Equity Capital	19564	14920	14890	18470	28920	44498	64504
224	Long Term Debt							
231	Accounts Payable	5786	21169	21169	21169	21169	21169	21169
232	Notes Payable	35216	30901	31401	27401	17901	11901	12901
235	Customer Deposits							
236	Accrued Taxes							
253	Other Deferred Credits							
265	Miscellaneous Operating Reserves							
271	Contributions In Aid of Construction (CIAC)							
272	Less:Accumulated Amortization of CIAC							
	Other Liabilities							
	Total Liabilities	41002	52070	52570	48570	39070	33070	34070
	Total Equity Capital and Liabilities	60566	66990	67460	67040	67990	77568	98574

Whidbey West
Projected Water Utility Plant Additions
For the Calendar Years 1997 - 2002

ACCOUNT		1997	1998	1999	2000	2001	2002
301	Organization						
302	Franchises						
303	Land and Land Rights						
304	Structures and Improvements	4843	2000	2100	2200	2300	2400
305	Collecting and Impounding Reservoirs						
306	Lake, River and other intakes						
307	Wells and Springs					10000	
309	Supply Mains						10000
310	Power Generation Equipment						
311	Pumping Equipment	1304					10000
320	Water Treatment Equipment		1000				
330	Distribution Resevoirs and Standpipes						
331	Transmission and Distributions Mains						
333	Services	5366	3000	3100	3200	3300	3400
334	Meters and Meter Installation		2000	2100	2200	2300	2400
335	Hydrants						
339	Other Plant and Miscellaneous Equipment		500	600	700	800	900
340	Office Furniture & Equipment						
341	Transportation Equipment						
343	Tools, Shop and Garage Equipment		250	300	350	400	450
345	Power Operated Equipment		100	200	300	400	500
348	Other Tangible Plant						
101	Water Utility Plant Total	11513	8850	8400	8950	19500	30050

No Plant Retirements through the year 2002

Whidbey West
Projected Customer Count Summary (end of year)
For the Calendar Years 1996 - 2002

	1997	1998	1999	2000	2001	2002
Total Unmetered	42	40	38	36	34	32
Total Metered	110	122	134	140	142	144
Total Master Metered						
Connections served by Master Meters						
Other Services						
Total Customers Billed	152	162	172	176	176	176
Total Customers	152	162	172	176	176	176
Rate per Customer per month	$29.63	$31.89	$32.95	$35.04	$37.88	$40.72

Whidbey West
Projected Cash Flow Statement
For the Calendar Years 1997-2002

ACCOUNT		1997	1998	1999	2000	2001	2002
	OPERATING CASH INFLOWS						
400	Operating Revenue	54043	62000	68000	74000	80000	86000
414	Gain (Loss) Dispostion of Plant						
419	Interest and Dividend Income						
	Total Operating Cash Inflows	54043	62000	68000	74000	80000	86000
	OPERATING CASH OUTFLOWS						
601	Salaries and Wages - Employees						
603	Salaries and Wages - Officers	15842	16317	16807	17311	17830	18366
604	Employee Pensions and Benefits						
615	Purchased Power	4425	6180	6365	6556	6753	6956
618	Chemicals & Testing						
620	Materials & Supplies	2852	3600	3800	4000	4200	4400
631	Contractual Engineer						
632	Contractual Accounting	1960	2019	2079	2142	2206	2272
633	Contractual Legal						
635	Contractual Other		1030	1061	1093	1126	1159
641	Rents	2200	2266	2334	2465	2476	2550
650	Transportation Expenses	2649	2728	2810	2895	2981	3071
655	Insurance Expense	122	1000	1030	1061	1093	1126
665	Regulatory, Fees						
666	Regulatory, Rate Case		1000	1030	1061	1093	1126
670	Bad Debt Expense						
675	Miscellaneous Expenses (Schedule A)	11417	14426	14860	13122	13520	13924
401	Operating Expenses	41467	50566	52176	51706	53278	54950
408	Utility Excise Tax						
408	Property Taxes	285	300	300	300	300	300
408	Payroll Tax						
408	Other Tax License						
409	Income Taxes						
	Loan Payment Principle	4315	(500)	4000	9500	6000	(1000)
409	Accounts Payable	(15383)	0	0	0	0	0
	Total Operating Cash Outflows	30684	50366	56476	61506	59578	54250
	Total Operating Cash Flow	23359	11634	11524	12494	20422	31750
	CAPITAL CASH INFLOWS						
421	Miscellaneous Nonutility income						
101	Property, Plant & Equipment						
	Service Connection/Contribution						
	Cash/Other	(7847)	(224)	0	0	0	0
	Total Capital Cash Inflows	(7847)	(224)	0	0	0	0
	CAPITAL CASH OUTFLOWS						
426	Miscellaneous Nonutility Expenses						
427	Interest Expense	3183	3090	3140	2740	1790	1190
433	Extraordinary Income/Deduction						
	Capital Expenditures - New Plant	11513	8850	8400	8950	19500	30050
	Total Capital Cash Outflows	14696	11940	11540	11690	21290	31240
	Total Capital Cash Flow	(22543)	(12164)	(11540)	(11690)	(21290)	(31240)
	CASH BALANCE END OF YEAR	816	(530)	(16)	804	(868)	0

Whidbey West
Projected Regulatory Fee Calculation
For the Calendar Years 1997-2002

The regulatory fee for Water Utilities is as follows:

Line No. L		
	Utility (1st $50,000 of gross intrastate operating revenue)	.1%
	Utility (Amount above $50,000 of gross intrastate operating revenue)	.2%

		1997	1998	1999	2000	2001	2002
	Calculation						
1	Total Gross intrastate operating revenue	54043	62000	68000	74000	80000	86000
2	Less non-fee paying revenues						
3	Net Gross intrastate Operating Revenue	54043	62000	68000	74000	80000	86000
		Section 1					
	If L3 is $50,000 or less						
4	Multiply l3 x .1% (.001)= This is your current year Regulatory fee						
		Section 2					
	If L3 is greater than $50,000						
5	Enter amount from L3	54043	62000	68000	74000	80000	86000
6	less $50,000 base	(50000)	(50000)	(50000)	(50000)	(50000)	(50000)
7	Additional amount above $50,000 base	4043	12000	18000	24000	30000	36000
8	Multiply $50,000 x .1% (.001)=	50	50	50	50	50	50
9	Multiply L7 x .2% (.002)=	8	24	36	48	60	72
10	Add L8 and L9 = This is your current year Regulatory fee	58	74	86	98	110	122
	TOTAL DUE						
	Add L-4 or L-10 and L-11 and L-12						
	This is your TOTAL DUE =	58	74	86	98	110	122

Whidbey West
Miscellaneous Expenses
Schedule A

	1997	1998	1999	2000	2001	2
Rentals	43	44	46	47	48	50
Grounds Repair	1910	1967	2026	2087	2150	2214
Equipment Repair	0	800	824	849	874	900
Plumbing Repair	795	819	843	869	895	922
Electrical Repair	111	114	118	121	125	129
Underground Util Rep - Mech	2460	2534	2610	2688	2769	2852
Instrument Repair	70	72	74	76	79	81
Meter Install	1100	3000	3090	1000	1030	1061
Water Tests	2172	2237	2304	2373	2445	2518
Hook up Costs	587	605	623	641	661	680
Licenses & Permits	391	403	415	427	441	453
Telephone	946	974	1004	1034	1065	1097
Customer Relations	56	58	59	61	63	65
Postage	562	578	596	614	633	652
Outside Professional Services	192	198	204	210	216	223
Meals & Entertainment	22	23	24	25	26	27
Total Miscellaneous Expenses	11417	14426	14860	13122	13520	13924

FUTURE FINANCES FOR WHIDBEY WEST WATER SYSTEM

The improvements listed in the Whidbey West Water System Capitol Improvement Program have been and will be financed from depreciation allowance, owner investment, and surcharges. The table listing the Capitol Improvement Program identifies historical capital projects and the estimated costs for the next 6 years.

At present we anticipate contributions in 1997-1999 for 12 additional service connections. The water system has been approved for 22 new connections. At present the Tariff permits a connection fee of $300 for each new connection, thus the recovery of connection costs will be $3,600. After 15% allowance for income tax is taken out, the usable amount will be $3060. The $300 connection fee has proven insufficient to recover the costs of connecting our new customers to Whidbey West Water System. Washington Water Supply, Inc. (WWSI) has relied on owner investment for financing the Water System Plan and other capital costs that we have historically incurred. A customer surcharge, intended to recover Water System Plan costs, was added to our tariff in 1996 increasing the monthly service fee by $2.81 which is scheduled to expire about Oct. 2002. This surcharge will not cover all of our water system plan costs thus additional water system plan costs and other capital costs will need to be added to monthly customer use fees in the future.

Our estimated net worth for the next 6 years is shown in the accompanying table of balance sheets for all 6 years. The balance sheet for 1997, as stated in our 1997 annual report to the Utilities and Transportation Commission (UTC), is given in the first column. Additions to plant have been identified for the appropriate years since 1996 are added in agreement with the Capital Improvement Plan and the approximate date of construction for each. We have also included our annual reports that we filed with the UTC for 1994-96.

Our operating costs are expected to rise with the addition of regulatory fees, operation and maintenance costs, inflation, and required water quality testing. In addition, WWSI intends to recover historical operations and maintenance costs that were identified in the original 1995 rate application before the UTC. The UTC allows the inclusion of these expenses, if

predictable and certain, in the determination of eligibility for a rate increase. In order to keep up with present-day rising expenses, rate increases have to be applied for every year which is a time-consuming and expensive task for all concerned. Therefore, Washington Water Supply, Inc. predicts the annual inflationary costs increasing by 3% per year and will file for rate increases each year to maintain the present day value of income to costs.

REVENUE PLAN

Revenue sources for our system are sales of water to customers, service connections fees, and surcharges. Income from water sales can be increased by a raise in rates for either metered or unmetered services. As described earlier, the service connection fee is not adequate to cover the cost of a new service connection so a service connection fee adjustment is anticipated. We anticipate pursuing facility charge as a means of financing some of our Capital Projects. Our surcharge for the Water System Plan was granted by the UTC in Oct. 1996. It allowed for a monthly $2.81 per customer charge and it will expire in Oct. 2002. Additional Water System Plan costs will be included in the next new rate application.

PROPOSED RATES

In 1994, the average base rate charge per customer was $15.17 per month. This increased to 19.09 per month (plus $2.81/customer/month) with the approved rate increase in 1995. In our effort to meet with the numerous DOH requirements and with our continuing improvement schedule, our operating expenses continued to exceed our income and thus we went in for another rate increase in 1996. It was not approved until Oct. 1996.

The present rates, after the Oct. 1996 rate adjustment, are: Minimum Charge for metered customers is $22.30 for the first 500 cubic feet. Charge for usage above 500 cubic feet is $1.25 per 100 cubic feet thereafter. There is also a $2.81 monthly surcharge for the Water System Plan costs and it runs through Oct.2002. The charge for unmetered customers is $25.00 per month. There is also a $2.81 monthly surcharge for the Water System Plan costs and it runs through Oct. 2002. For future increases, we would tend to increase each fee by the same percentage.

Chapter 6
Relationship with Other Plans

A. Compatibility with Other Related Plans

"Relevant" portions of this Water System Plan will be submitted to Seaview Water System for review and comment. Washington Water Supply has a service area agreement between its Whidbey West Water System and Seaview in Island County. Should this plan not compliment Seaview, changes will be made.

B. Compatibility with Regional Supplement of Coordinated Water System Plan

Our intent is for this Water System Plan to be compatible with the Kitsap County and Island County Supplements. Subsequent to a review by the local Department of Health in each County, we will make any necessary revisions for compatibility.

C. County Response on Compatibility with Land Use Plans and Growth Policies

Washington Water Supply, Inc. has water systems in four (4) counties. Each of the water systems is small, and if taken individually as non expanding community owned systems, would not even require a Water System Plan. The systems are all small enough that they have no bearing whatsoever on land use planning in the various counties represented. Therefore, we do not feel that it is appropriate, or cost effective, to submit these documents to all of the various Departments of Community Development in the various counties.

The Echo Glen water system is located in King County. Upon request of the DOH we submitted a draft copy of the base document and the Echo Glen water system chapter to Bruce Bennett of King County Water & Land Resources for his review on June 27, 1997. To date, he has not requested changes or revisions.

D. Consistency with Previous Water System Plan

There is no previous Water System Plan for Washington Water Supply, Inc.

Chapter 7
Operation & Maintenance Program

A. Personnel Involved in Water System Operation

Organization. Washington Water Supply, Inc. is a privately owned corporation chartered in the state of Washington. Overall management of corporate operations is provided by the Board of Directors which is responsible for the safe, efficient and reliable operation of the Water System in compliance with applicable county, state and federal regulations.

President. Responsibility and authority for the overall planning and operations of the Water Systems resides with the Corporate President. The President is responsible to the Board of Directors and serves as the Chairman of the Board of Directors. He directs the activities of the General Manager who is in direct charge of the day to day operations of the Water System.

The President is responsible for the active daily technical operation of the Water System in accordance with accepted public health. The president will perform water quality monitoring and take follow-up action as required. He will provide inspection of all system components, implement preventive maintenance required, keep records for water quality, and quantity, as well as implement water conservation and cross-connection programs as required. When a situation arises requiring dispatch of emergency personnel, the president will receive the report, arrange for emergency service personnel to be sent to the site, and contact affected customers.

Vice President. The Vice President has overall authority of planning and control of Washington Water Supply, Inc. if the President becomes incapacitated or is absent.

Secretary/Treasurer. The Secretary/Treasurer of the Corporation is responsible for maintaining all records of corporate operations, executing legal documents, and filing periodic reports and returns on behalf of the company. This includes preparing and submitting the Water Facilities Inventory and Report Form to the state Department of Health annually or at such times as requested by DOH. The Secretary/Treasurer is also responsible for collecting, handling, and disbursing funds for the company and keeping financial records incident to corporate operations.

The Corporation owns and operates a total of ten separate and distinct water systems in Kitsap, King, Island and Clallam Counties, to wit:

Water System Name	Location	ID Number	Approved Connections
Crystal Creek	Silverdale	474214	41
Deer Trail	Poulsbo	314649	8
Echo Glen	Maple Valley	27510D	38
Hinkley Hill	Port Orchard	30406P	8
Maple Haven	Forks	51150M	18
MPVK	Bremerton	473128	9
Noll Road	Poulsbo	367730	4
Salmon Drive	Forks	028340	6
Wolf	Port Orchard	304014	4
Whidbey West	Whidbey Island	363146	176

B. Routine Operation Procedures

Water Service Initiation. Property owners can request service initiation by contacting the President who verifies the eligibility of the applicant and identifies required additions or modifications to the systems to accommodate the new connection. After appropriate financial arrangements are made between the applicant and the Secretary/Treasurer, the necessary installations and connections are made at the direction of the President.

Water Service Termination. Except for non-payment of water service charges, or unsanitary conditions, once a water service connection is established it is never terminated. In the case of non-payment of water service charges, the treasurer mails a Notification of Water Service Termination to the property owner. If payment is not received as prescribed in the notice, the President directs that the service be terminated by closing and padlocking the shutoff valve at the point of delivery. The Corporation also has the option of filing a claim of lien for arrearages and costs with the County Auditor and foreclosing as provided by law. At any time after termination, the property owner may apply for resumption of service upon payment to the Secretary/ Treasurer of the past due amounts plus collection costs and penalties in accordance with the WUTC approved tariff.

Complaints. Complaints concerning water service are addressed to the President who is responsible for their prompt investigation and resolution. If the complaint cannot be resolved in a reasonable time, the President will notify the party making the complaint of the circumstances and try to work out a satisfactory temporary solution.

Maintenance & Operating Procedures. All aspects of the operation and maintenance of Washington Water Supply, Inc. are conducted under the management of the President. No work is performed, or changes made on the system without his direction.

Personnel who routinely work on Washington Water Supply, Inc. properties are identified below:

John Poppe
Certification: WDM IV

The water systems owned by Washington Water Supply, Inc. will be routinely inspected and serviced by personnel assigned to that duty. The general operation and maintenance tasks and the frequency of performance is tabulated as follows:

Table 7.1 Routine Maintenance Summary
Table 7.2 Routine Operations Summary

The specific requirements for each individual water system are addressed in the chapter devoted to that individual water system.

TABLE 7.1

WASHINGTON WATER SUPPLY, INC.
Routine Maintenance Summary

DEFINITION: Activities that confirm the operation or extend the life of an equipment item or process at the source of supply, pressure boosting system, or distribution system.

TASK	J	F	M	A	M	J	J	A	S	O	N	D
FLUSH MAINS	X					X						
CLEAN RESERVOIR										X		
CHECK CONTROLS	X	X	X	X	X	X	X	X	X	X	X	X
PAINT FIRE HYDRANTS						X	X	X				
OPERATE DISTRIBUTION SYS VALVES	X					X						
PAINT FLUSH VALVE						X	X	X				
GROUNDS MAINT			X	X	X	X	X	X	X	X		

TABLE 7.2

WASHINGTON WATER SUPPLY, INC.
Routine Operations Summary

DEFINITION: Activities that confirm the operation of an equipment item or process at the source of supply, pressure boosting system, or distribution system. This includes, but is not limited to, water quality, regulatory interface, customer interface, and general activities supporting product delivery to the customer.

TASK	J	F	M	A	M	J	J	A	S	O	N	D
COLIFORM TESTING	X	X	X	X	X	X	X	X	X	X	X	X
CUSTOMER METER READINGS	X	X	X	X	X	X	X	X	X	X	X	X
WELL HEAD METER READINGS	X	X	X	X	X	X	X	X	X	X	X	X
REGULATORY COMPLIANCE REVIEW	X	X	X	X	X	X	X	X	X	X	X	X
CHLORIDE, Fe, Mn, NITRATE TESTS	X			X			X			X		
CHECK WELL WATER LEVEL				X				X				
SANITARY SURVEY	X	X	X	X	X	X	X	X	X	X	X	X
ANNUAL WATER TESTS						X						

Mechanical & Physical Malfunctions. Every system failure and service complaint will be promptly investigated and immediate steps taken to protect property and restore service. Permanent repairs will be undertaken after completing an investigation and developing a specific repair plan. Where substantial repair work is required, an appropriate contractor will be called in to deal with the problem. Where technical assistance or advice is required, the appropriate specialist listed in the following "Technical Assistance Guide" will be called.

Anticipated service interruptions or other abnormal operating conditions will be scheduled to avoid peak demand conflict, and patrons will be notified in advance of the time and expected impact of the interruption by telephone and/or direct mail.

Emergency Service Points of Contact. All emergency conditions including service interruptions, pipe breaks or circumstances endangering life or property are to be reported by telephone to the General Manager at **(360) 308-8330.** In the absence of the General Manager, consult the Technical Assistance guide in the Tables 7.3, 7.4 & 7.5 .

Emergency Notification Procedure. When water system interruption is anticipated, public notification will be made by placing reader boards at the roadside near the entrances to the service area or by telephone message, giving 24 hours notification if possible. In the event of an unacceptable water quality test finding, the President is responsible for ensuring that all concerned parties are notified in accordance with WAC 248-54-187. A description of the procedure for dealing with water quality problems is included in Chapter 7, Section C of this plan.

Should a customer notify WWS of a problem and the problem is classified as an Emergency Repair, a WWS representative has the option of correcting the problem by personal inspection or contacting a qualified service person or company familiar with the system. WWS has developed a working relationship with journeymen and craft persons in each of the service areas to reduce emergency response time.

Tables 7-3, 7-4 and 7-5 detail those persons or businesses that have a working knowledge of the water systems and have the expertise of providing "Technical Assistance" in the Counties where the individual Water Systems are located.

TABLE 7.3
KITSAP COUNTY
Technical Assistance Guide

Assistance for the following Water Systems:

Crystal Creek
Deer Trail
Hinkley Hills
Noll Road
MPVK
Wolf

Baylor Electric P.O. Box 1533 Silverdale, WA 98383	Business & Emergency (360) 698-9445
John Poppe 9278 Morningside Drive Silverdale, WA 98383	Office (360) 308-8330 Home (360) 692-1290 Cellular (360) 908-0592
Red's Electric 2300 8th Street Bremerton, WA 98310	Business (360) 377-3903 Emergency #1 (360) 692-1932 Emergency #2 (360) 698-5280
Service Plumbing Dorothy Collins P.O. Box 195 Gorst, WA 98377	 (360) 377-4621 (360) 373-9105
Silverdale Plumbing 3550 NW Byron Silverdale, WA 98383	 (360) 692-8840
Utility Service Company Incorporated 12608 East Marginal Way South Seattle, WA 98268	Business (206) 246-5674 Emergency #1 (360) 698-1290 Emergency #2 (206) 747-9430 Emergency #3 (360) 452-8833

TABLE 7.4

CLALLAM COUNTY
Technical Assistance Guide

Assistance for the following Water Systems:

Salmon Drive
Maple Haven

John Poppe	Office (360) 308-8330
9278 Morningside Drive	Home (360) 698-1290
Silverdale, WA 98383	Cellular (360) 908-0592
John's Plumbing	
1463 Andersonville Avenue	
Forks, WA 98331	(360) 374-9619
Anderson Electric	
71 North Forks Avenue	(360) 374-6724
Forks, WA 98331	(360) 374-9004
Utility Service Company Incorporated	Business (206) 246-5674
12608 East Marginal Way South	Emergency #1 (360) 698-1290
Seattle, WA 98268	Emergency #2 (206) 747-9430
	Emergency #3 (360) 452-8833

TABLE 7.5
ISLAND COUNTY
Technical Assistance Guide

Assistance for the following Water Systems:

Whidbey West

John Poppe — Office (360) 308-8330
9278 Morningside Drive — Home (360) 698-1290
Silverdale, WA 98383 — Cellular (360) 908-0592

Bob's Pumps
Bob Nelson
1665 West Fort Nuggent Road — Business (360) 675-5441
Oak Harbor, WA 98277 — Emergency (360) 675-5059

Reed's Electric
2012 North 1700 West — Business (360) 675-0269
Oak Harbor, WA 98277 — Home (360) 679-6474

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* Utility Service Company Incorporated — Business (206) 246-5674
12608 East Marginal Way South — Emergency #1 (360) 698-1290
Seattle, WA 98268 — Emergency #2 (206) 747-9430
Emergency #3 (360) 452-8833

**** Echo Glen Water System, located in King County may call Utility Service Company, located in Seattle, for Technical assistance.***

C. Water Quality Sampling Procedures

Routine Water Quality Monitoring. The General Manager is responsible for ensuring that water quality monitoring samples are taken as prescribed in WAC 246-290-300 for Group A systems and WAC 246-291-300 for Group B systems; and for administering the Coliform Monitoring Plan in compliance with State Department of Health regulations.

In the event an MCL is exceeded, the General Manager will notify the state Department of Health within 48 hours per WAC 246-290-320 for Group A systems and WAC 246-291-310 for Group B systems. The Manager must also notify the public according to the procedures outlined in WAC 246-290-330 for Group A systems and WAC 246-291-360 for Group B systems, initiate investigative actions to determine the cause of the contamination and ensure that the appropriate corrective action is accomplished.

Immediately upon discovery of contamination in the system, all patrons and water users are to be notified of the condition. When the problem has been resolved, the patrons are advised of the fact. If resolution is not immediately accomplished, interim public health measures will be identified by consultation with state Department of Health specialists and promptly distributed to the patrons in writing.

The Water Quality Sampling Schedule for Inorganics, VOC's, Nitrates and Coliform Bacteria is shown for all WWS water systems in the chart on the following page, and in each chapter for the Group A systems.

Water Sampling Schedule

GROUP A:

System	Bact.		Nitrate	V.O.C.	I. Chem	Cl.	Fe.	Mn.	Other
Crystal	Monthly	*Last*	2/97	5/97	12/92	NA	NA	NA	Cu/Pb
Creek		*Next*	2/98	11/97, 5/98	**now**	NA	NA	NA	SOC
Echo	Monthly	*Last*	3/97	2/94	2/94	NA	NA	NA	Cu/Pb
Glen		*Next*	3/98	6/97	**now**	NA	NA	NA	
Sandy	Monthly	*Last*	5/96	2/96	2/96	Quarterly	Quarterly	Quarterly	Cu/Pb
Bubbles		*Next*	6/97	6/99	2/99				
Lavender	Monthly	*Last*	5/98	2/96	2/96	Quarterly	Quarterly	Quarterly	Cu/Pb
Lane		*Next*	6/97	6/99	2/99				
Maple	Monthly	*Last*	2/97	see below	2/96	NA	NA	NA	Cu/Pb
Haven		*Next*	2/98		2/99	NA	NA	NA	

GROUP B:

Deer	Annually	*Last*	2/97	N/A	6/85	NA	NA	NA	
Trail		*Next*	2/98	N/A	N/A	NA	NA	NA	
Hinkley	Annually	*Last*		N/A	8/85	NA	NA	NA	
Hill		*Next*		N/A	N/A	NA	NA	NA	
Noll	Annually	*Last*	2/97	N/A	8/86	NA	NA	NA	
Road		*Next*	2/98	N/A	N/A	NA	NA	NA	
Wolf	Annually	*Last*	6/96	N/A	8/85	NA	NA	NA	
Water		*Next*	6/99	N/A	N/A	NA	NA	NA	
Salmon	Annually	*Last*	2/97	N/A	1/97	NA	NA	NA	
Drive		*Next*	2/98	N/A	N/A	NA	NA	NA	
MPVK	Annually	*Last*	4/97	N/A	5/88	NA	NA	NA	
Water		*Next*	2/98	N/A	N/A	NA	NA	NA	

* Maple Haven - 3 VOC quarters required during '96 - '98

All Group A Systems have completed the first Cu/Pb tests, and plan to complete the 2nd test before the end of 1997.

D. Emergency Response Activities

The emergency response program currently in operation within Washington Water Supply, Inc. service areas is designed to provide access to personnel able to resolve low pressure or emergency water outage situations rapidly and efficiently. Presently, 24 hour emergency phone numbers are printed on every billing sent to customers. The numbers have also been provided to 911 emergency.

It has been the experience of the Company that the majority of emergency situations have to do with power or telephone contractors digging through a main which wasn't supposed to exist there. The second most often experienced emergency is a power outage causing pumping to stop until power is resumed. These situations are reported by customers to the water system office during office hours and through emergency phone numbers after office hours and on weekends and holidays. After verification of an emergency the customers affected by it are contacted by phone or hand delivered notice explaining the situation and the actions being taken including the time, if known, that service will be restored.

Physical Damage. The first priority in dealing with physical failure in the water system is to protect life and property. The second priority is to restore substantial service as soon as possible. Once interim service is restored, permanent repairs are handled in a routine manner. When necessary, other agencies will be requested to assist in emergency responses. Points of contact for such assistance are shown in the following table:

Service Required	Agency	Phone
Traffic Control, Kitsap	Kitsap County Sheriff	911
Traffic Control, Clallam	Clallam County Sheriff	911
Traffic Control, Island	Island County Sheriff	911
Traffic Control, King	King County Sheriff	911
Power Line Location	Underground Locators	424-5555
Fire Fighting	Fire Department	911
Medical Assistance	Medic 1	911

In an effort to maintain a dependable supply for normal domestic consumption, WWS has provided our customers with business and emergency telephone numbers by printing them on a billing statement issued to each customer on a monthly basis. In some cases, WWS has attended neighborhood association meetings to introduce the company and/or answer questions about water service for that area.

Disinfection Procedures. In the event that the water system or portions thereof require disinfection, only methods allowed under state Department of Health regulations will be used. Procedures based on AWWA C652 and AWWA C651a are considered to be the most appropriate for Washington Water Supply, Inc. systems because of simplicity and availability of materials.

Additional Emergency Procedures. The following additional procedures will be implemented upon approval of the Water System Plan:

- Display office and emergency telephone numbers at each pumphouse and notify customers of the fact.
- Office personnel will have an emergency call-up list of action personnel responsible for electrical, pumping, plumbing and disaster emergencies.
- 24 Hour contact will be maintained through pagers for an emergency.
- Customers will be advised to maintain a three (3) day drinking water supply on hand in the event of a natural disaster in which communications and/or transportation failure make quick emergency response improbable.

The following forms are to be used in reporting customer contacts.

EMERGENCY RESPONSE REPORT

DATE_____

TIME_____

PERSON REPORTING
NAME_____
ADDRESS_____
CITY/STATE/ZIP_____
TELEPHONE_____

D E S C R I P T I O N O F P R O B L E M

_____
_____
_____
_____
_____
_____
_____

C O R R E C T I V E A C T I O N

_____
_____
_____
_____

COMMENTS_____
_____
_____
_____

SEPT95

WASHINGTON WATER SUPPLY, INC.

"Water Supply and Distribution"

CUSTOMER COMPLAINT

DATE _____

TIME _____

CUSTOMER NAME _____

STREET _____

CITY, STATE, ZIP _____

PHONE NUMBER _____

ACCOUNT NUMBER _____

COMPLAINT: _____

_____

_____

_____

RESPONSE / FOLLOW-UP_____

_____

_____ DATE _____

COMMENTS:_____

_____

_____

12608 EAST MARGINAL WAY SOUTH SEATTLE, WA. 98168

TELEPHONE: (206) 439-0344 FAX: (206) 248-3410

WASHINGTON WATER SUPPLY, INC.

"Water Supply and Distribution"

RECORD OF PRESSURE TEST

DATE _____
TIME _____
WWS REPRESENTITIVE ID _____

CUSTOMER NAME _____
STREET _____
CITY/ZIP _____
TELEPHONE # _____
ACCOUNT # _____

CUSTOMER PRESENT **Y / N**

TEST PROCEDURE: Notify customer of intent to conduct test. If customer desires, allow them to witness test and ask questions of procedure. Apply test device to exterior hose bib and test static pressure. Observe static water pressure for at least five minutes and record high/low readings. Record pressure reading with at least one faucet open. If possible, record lowest pressure reading with all house faucets open. If customer not available, make two copies with one placed in the front door and the other archived at corporate head offices.

INITIAL STATIC WATER PRESSURE H / L ____/____
ONE FAUCET OPEN PRESSURE H / L ____/____
ALL FAUCETS OPEN LOWEST PRESSURE _____

COMMENTS _____

_____

_____

FEB'95

12608 EAST MARGINAL WAY SOUTH SEATTLE, WA. 98168
TELEPHONE: (206) 439-0344 FAX: (206) 248-3410

E. Vulnerable System Facilities

The distribution of safe potable water to our customers is the number one priority of Washington Water Supply, Inc.(WWS). The implementation of this priority and subsequent tasks begins with the security of the source of supply (well heads).

All Sources of Supply must be protected from vandalism and contamination from either intentional interference of water quality or accidental. Therefore, the well sites are contained within protective structures that limit access to the public. In addition, the well heads have been properly plumbed with screens at the well surface to restrict accidental contamination from insects.

The Whidbey West Water System presents a salt water intrusion problem common to ground water sources on Whidbey Island. Therefore, WWS has developed a water quality monitoring program for the sources of supply that will provide early detection of contamination as a result of salt water intrusion. Therefore, we will pursue other well sources to limit the amount of salt water intrusion.

The reservoir sites are concrete structures that are locked and provide restricted public access. All access ladders are locked in an adjacent building structure to prevent public access to the top of the structures. Vent portals have been properly screened to prevent accidental contamination of the water within the reservoir.

The distribution system is in generally good shape. The area that causes us the most concern is the 2.5" line along West Beach Road. There is an area that may be damaged due to tidal action(s) or an unusual storm resulting in wave action. Therefore, WWS is desirous of maintaining an emergency source of supply at the north end of the system. If the main line were to be washed out during a major storm, WWS could maintain a temporary water supply to our customers until a permanent solution could be developed.

In summary, other well sites will be investigated. The reservoirs are in good shape. The distribution system is generally in good shape with the exception of the water main at the north end of West Beach Road.

F. Cross Connection Control Program

Washington Water Supply, Inc. has implemented a cross-connection control program to protect the health of the water consumers and to assure the potability of the water. Upon approval of the Water System Plan, the Board of Directors will adopt a resolution to establish authority for the program within the Washington Water Supply, Inc. service areas.

All systems currently owned by Washington Water Supply, Inc. are totally residential with water usage for homes. There is little new construction within the water system service area so the potential for main breakage hazards are limited. The program to be instituted will generally be educational and request participation by customers. A notice to customers was sent in June, 1997, and is included on the following page. This notice informed customers of possible cross-connections and the resulting hazards that may accompany them. The notice describes possible home-based cross-connections such as chemically injected lawn irrigation systems, filling the family spa or pool with the water hose left below the water line, or the presence of a water connection to an in-house photographic development chemical tank.

In addition, all new customers must sign a connection application form that informs them of the cross-connection hazards and the typical protection devices.

Cross-connections which are identified will have a minimum backflow preventor required, and customers will be supplied with a suggested source of supply and contacts for required annual testing of the installed device. Full identification and development of the program will proceed over a period of five years to allow time for the educational process, with time to identify real hazards, classify the risks and for customers to react with implementation of appropriate equipment. At the end of the transitional five year period, a second resolution will be adopted by the Board of Directors requiring back-flow prevention at recognized cross-connection points as a condition of continued service.

WASHINGTON WATER SUPPLY, INC

"Water Supply and Distribution"

CROSS - CONNECTION SURVEY

JUNE, 1997

Dear Washington Water Supply Inc. Customer,
The Washington State Department of Health and
Washington Water Supply, Inc. is asking for your response to this survey. The purpose of this survey is list those sources that may contaminate your drinking water system should a significant reduction in water pressure occur. The results of this survey will be analyzed for connection deficiencies. Should deficiencies be noted WWS will assist you alternatives that will prevent contamination of your potable water system.

CROSS CONNECTION POINTS

Lawn irrigation system

Drip irrigation for vegetation

Automatic makeup water system for animals

Fish aquarium or aquatic plant ponds

Medical equipment that is connected to your water supply

Medical or dental laboratory

Industrial or Commercial equipment that uses water

Please enclose this survey page with your next payment.
Should questions arise please call us 1-360-308-8330.

Washington Water Supply Inc.

P.O. BOX 2985 SILVERDALE, WA 98383
(360) 308-8330

Chapter 8
Overall Summary

Washington Water Supply Inc. was formed out of the need to have professional management of many smaller water systems. The systems in most urgent need of this service are generally those that have had very little past maintenance and are in need of repair. Many of the customers on these systems have come to expect poor quality water and service. They have also come to expect very low cost water.

The water quality requirements facing Health Professionals and Water Purveyors today are a far cry from those that were in place 20 years ago. Older water systems were designed to meet the requirements of their day. It is not surprising that we find it necessary to improve and/or replace major system components in order to provide water meeting the current standards.

Many of the Washington Water Supply water systems are in need of major renovations. The extent and cost of these renovations is much greater due to the fact that they have not been well maintained over the years. The required repairs cannot be accomplished overnight. However, major strides have been made over the past 3 years. Washington Water Supply has attempted to schedule the work such that the health related projects take precedence over the capacity and pressure related projects.

Each of the water systems are addressed in a separate Chapter (9-17). Each Chapter is laid out in the same format as the basic Water System Plan. The deficiencies and required improvements are fully discussed in Section ***"X.3-D"*** of each chapter.

Bringing these water systems up to current standards is not an easy task, nor will it be cheap. It is however, do-able and worth doing. The people of this State deserve, and have the right to expect, that wherever they go, they can trust that the water supply is safe and adequate.

CHAPTER 11

Echo Glen Water System

11.1 Description of Water System

The Echo Glen Water System (#27510D) is located in Maple Valley, just north of the intersection of SR-18 and SR-169. In general terms, the system is 20 miles SE from Seattle, in King County. The Water System is located in the southwest quarter of Section 3 and the northwest quarter of section 10; Township 22 North; Range 6 East; WM. The Echo Glen System has a total of forty-two (42) existing known connections. Lud approved for 38.

11.1-B History of System Development

The water system was developed in 1967 by Gesell enterprises to serve tracts 1 & 2 of Gesell Addition, which encompasses the first 8 lots on 229th street. Evergreen Drilling Company drilled the well in August of 1966, and reported its capacity at over 250 gpm.

A Water Right permit was granted in 1968, and certificated in 1976 for 250 gpm and 26⅔ Acre Ft./Yr. The Storage Reservoir was installed in 1977-1978. The water system was approved for 38 connections in 1987 based upon a report prepared by Dick Heintze, PE. This report was prepared to gain approval to connect Ms. Sandra Morrow.

Brian Boye, with the NW section of WSDOH, performed a sanitary survey on December 16th, 1994. The report is included in the Appendicies.

The Echo Glen Water Company purchased the Water System in 1987. Washington Water Supply, Inc. in turn, purchased the Water System in 1991. Washington Water Supply, Inc. has not connected additional customers since purchasing the system.

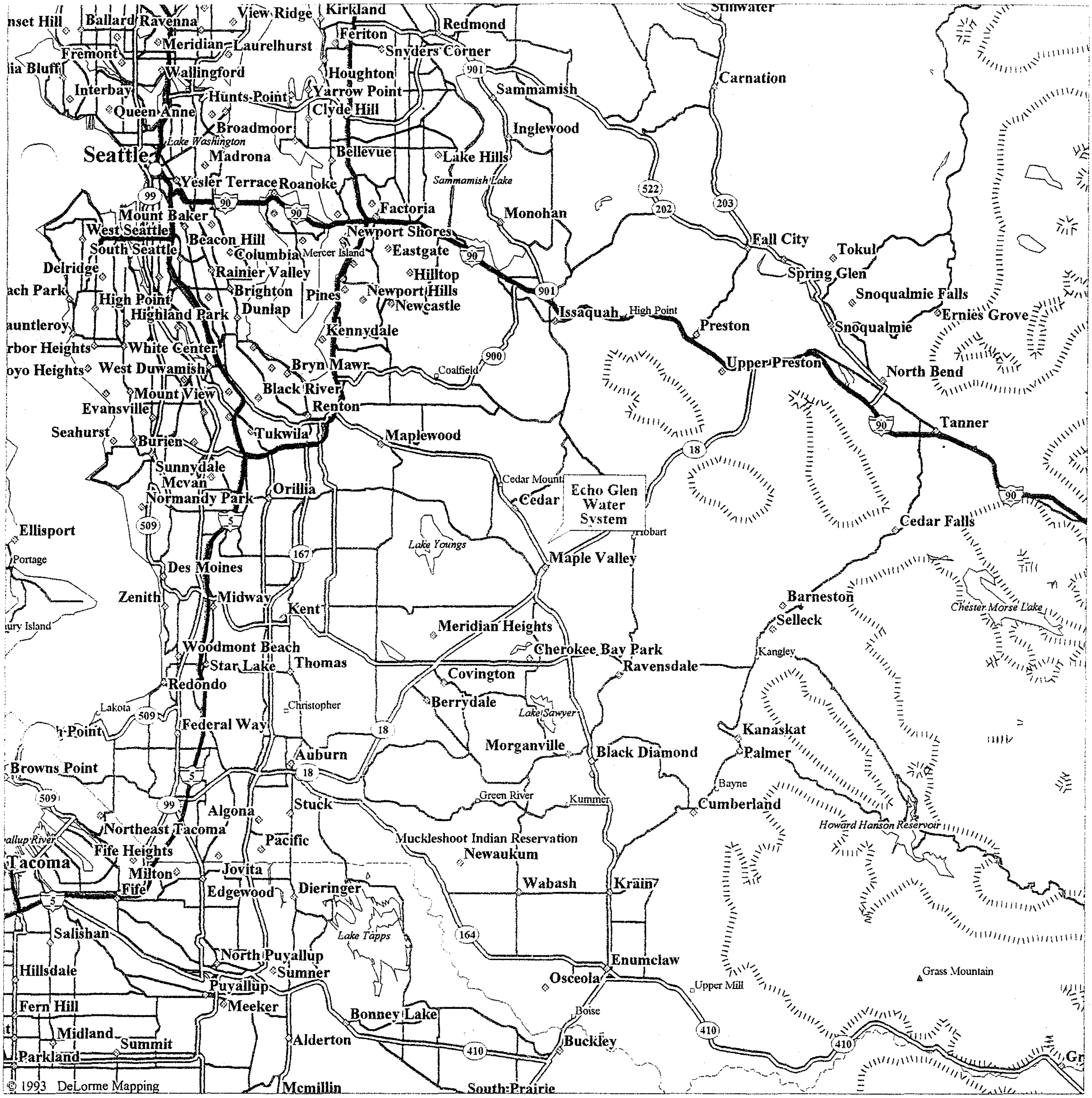
11.1-C Maps & Description of Existing Service Area

The system serves the southwest quarter of Section 3 and the northwest quarter of section 10; Township 22 North; Range 6 East; WM. Primarily, the water system serves those lots along 229th St. and 231st St. between 206th and 121st St. Vicinity Maps can be found on the following pages.

This water system lies within the future service area of the Cedar River Water & Sewer District; therefore, cannot be expanded. It is also located within the East King County Critical Water Supply Service Area.

The only existing water distribution plan was prepared by Hernando Chaves, PE in 1991, 24 years after construction, and is only approximate. It is included in the appendices. A second sheet was prepared showing proposed pumping facilities; however, these facilities were not constructed.

We have prepared a new AUTOCAD distribution plan from the available data *(See a reduced copy in the following pages).* Again, this plan is approximate only, and does not reflect actual field located water mains. Elevation contours have been imported from the USGS 7.5' Maple Valley Quadrangle (1995 revision). This distribution map can be revised as additional information becomes available. Water main repairs and conversations with long time residents will generate actual information defining size, type and location of the existing water mains and appurtenances.



LEGEND

	State Route		Major Street/Road
	Geo Feature		Interstate Highway
	Major City		State Route
	Town, Small City		Land Mass
	Large City		Open Water
	Hill		Contours
	Interstate, Turnpike		
	County Boundary		
	Population Center		

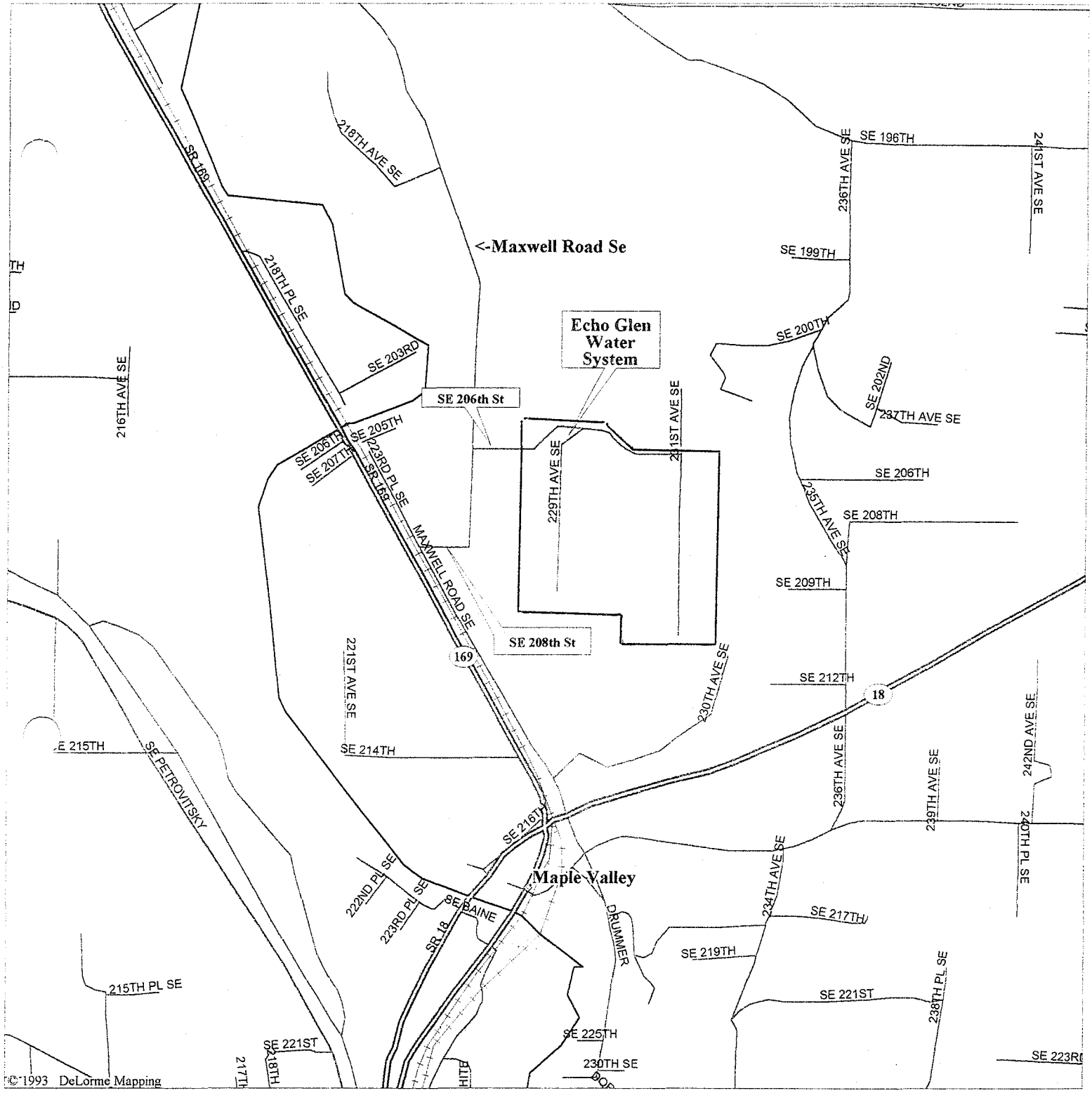
Scale 1:300,000 (at center)

5 Miles

10 KM

Echo Glen Large Scale

Mon Jan 20 20:14:08 1997



LEGEND

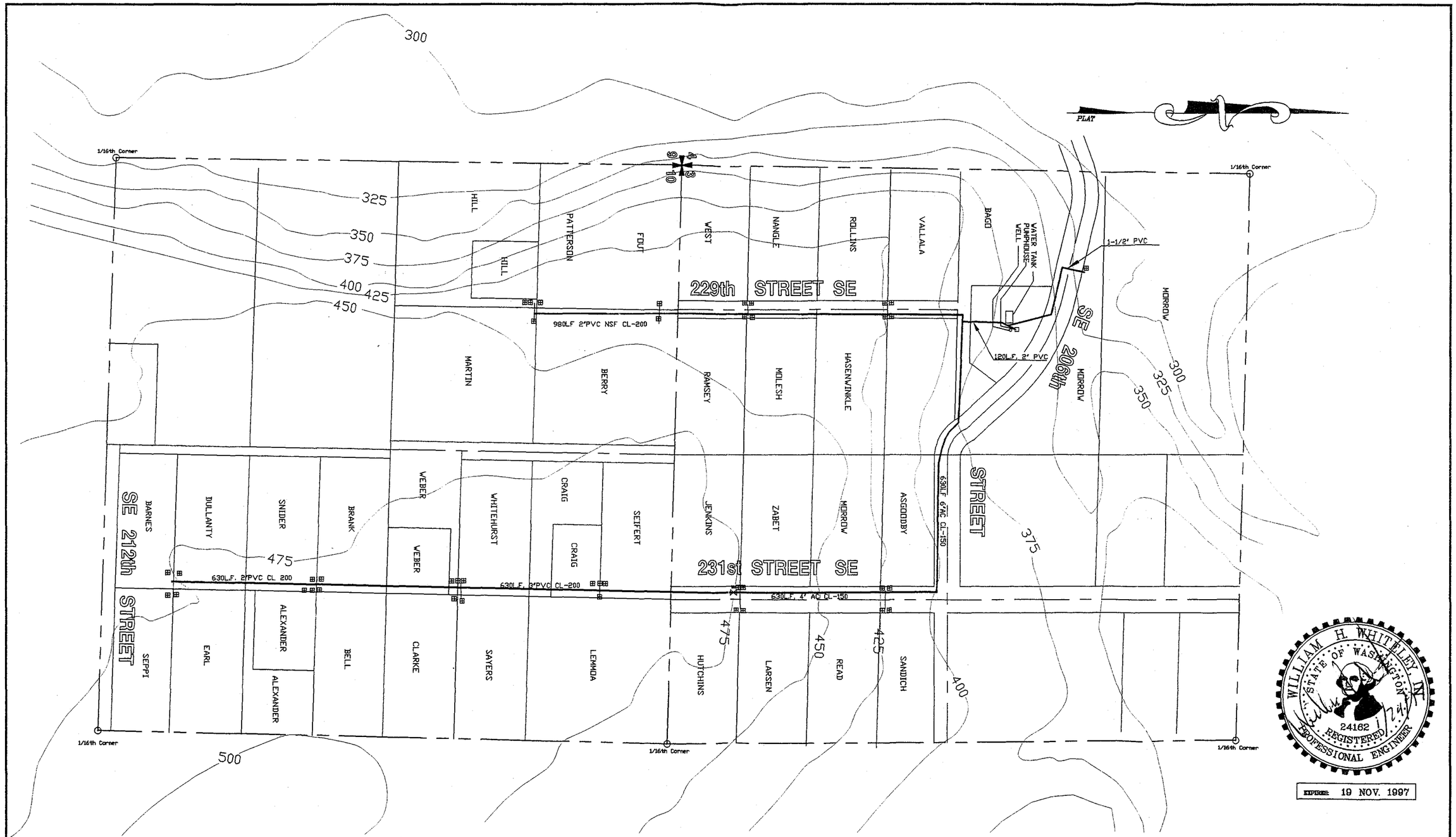
- State Route
- Town, Small City
- Population Center
- Street, Road
- Major Street/Road
- State Route
- Railroad
- River
- Utility (powerline)

Scale 1:15,625 (at center)

1000 Feet

500 Meters

Mon Jan 20 20:11:03 1997



WILLIAM H WHITELEY JR
STATE OF WASHINGTON
24162
REGISTERED
PROFESSIONAL ENGINEER

EXPIRES: 19 NOV. 1997

Notes:

1. This is not a survey. Property lines shown are based upon the Assessors Tax Map and are approximate only.
2. Contours shown are from the USGS 7.5 min. Quadrangle. They are not based upon field survey data and are approximate only.
3. Water main size type and location are based upon available records and are approximately only.

Whiteley Engineering

ECHO GLEN
Water Distribution Plan

19062 Highway 305 N
Poulsbo, WA 98370
360-779-7993

Washington State Department of Health

REVISION:	CLIENT: Washington Water Supply 12608 E. Marginal Way South Seattle, WA 98168	DESIGN: WHW DRAWN: WHW DATE: 1/24/97	SCALE: 1" = 200' JOB NO.: 1039 SHEET: 1 OF 1

C:\AAA\1039WWS\ECHO-A 1-24-97 3:32:49 pm

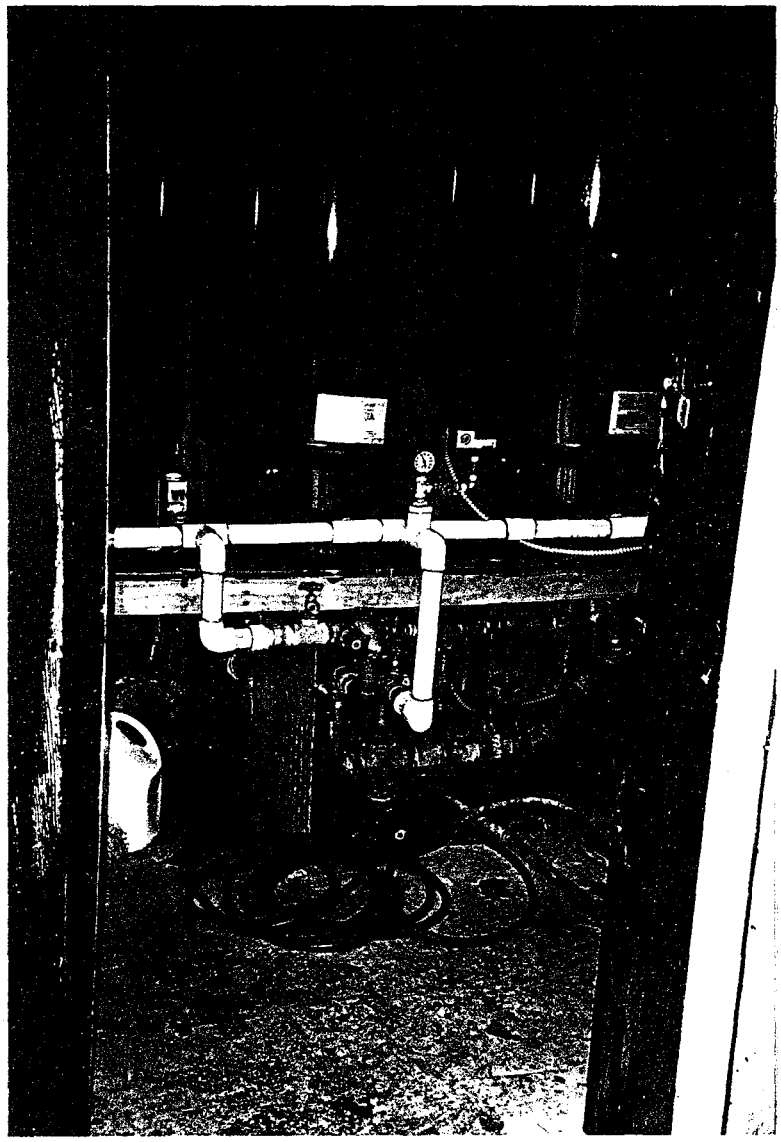
11.1-D Description of Existing Facilities

The Echo Glen Water System is a Group A system that consists of a well pumping to a ground level 21,402 gallon Concrete Reservoir. There is also a 6,200 Gallon Steel Tank on-site, but not connected to the water system. A booster pumping system is used to pump to the distribution system. The water mains are 6"ϕ PVC Cl-200, 3"ϕ PVC Cl-200 and 2"ϕ PVC Cl-200.

Prior to Washington Water Supply, Inc., the original Booster Pumping system utilized continuous running pumps, with no pressure tanks. In 1992, three bladder tanks were added and a smaller booster pump was added to act as a Jockey Pump. Unfortunately, two out of three of the bladders have failed and the pump cycle time has been shortened. Also, the power service is *"Open Delta Three Phase"*. This has been a problem because it utilizes two single phase legs and fakes the third leg. It is common to have power fluctuations that trip the phase monitor and disable the pumps until someone drives out and resets them.

The Echo Glen pump house is wood frame building with a concrete floor. The building is too small and the concrete floor has been undermined causing the entire building to tilt. Washington Water Supply jacked the building back up which was a good temporary repair. However, the Company agrees that a new larger pumphouse should be built in the near future. See the following photograph:

The Interior piping is comprised of irregular sized galvanized iron and class 40 PVC. The Pressure Tanks were installed in 1991 above the booster pumps, making access and repair very difficult, if not dangerous. The limited floor space, in the building, would not provide an adequate work area for a proper chlorination system. See in the following photograph:



The following is a summary of the system components:

a. System Information

	Echo Glen
Location	Maple Valley
System ID	#27510D
County	King

b. Sources

Echo Glen (SO1)
8" x 159' deep
Pump Test = 250 gpm)
(Existing Pump = 41 gpm)

c. Storage

21,402 Gal. Concrete Reservoir - Rectangular

d. Treatment

None

e. Booster Pumping Stations

Main Booster Station at Pump House:

1. Jockey Pump
2. 7½ hp Booster (out of service)
3. 10 hp Booster

f. Pressure Zones

There is only one pressure zone

11.2 Basic Planning Data

11.2-A Existing Population Served and Current Number Of Service Connections

There are a total of forty-two (42) residential connections on the Echo Glen System, as of this date. The population served is estimated to be 2.5 persons per connection, or 105 people.

11.2-B Historical Water use

There are no source meters installed; however, there are hour meters installed on the well pump and the 10 hp booster pump. The capacity of the well pump has been dropping over the past nine years, based on records from Valley Pump in Auburn, Washington. We estimate the well capacity to be 35 gpm at this time. Based upon this, and the running time of the well pump, we have estimated the water use over the past two years in Table 11.1.

The water use on the system is very high. There are no individual water service meters at this time, making it impossible to accurately determine system leakage.

The 1996 average water use per connection is 450 gpcd. (gallons per connection per day). The Kitsap Public Utility District has kept detailed water use records for 10 of their water systems. The average water use in those local water systems is 238 gpcd. Thus, the Echo Glen Water Consumption is almost double the average water consumption of Kitsap County PUD Systems. Based on estimates, the average consumption during the peak month was 887 gpcd, in August of 1995.

Also, from the Kitsap PUD records, we have found that the correlation between the peak day water use and the average daily use is 250%, and that the correlation between the peak day use and the average use during the peak month is 150%. We have used these factors to estimate the peak day water use per connection for the Echo Glen Water System. The estimated 1996 Peak Day water consumption per connection is between 1125 and 1330 gpcd, with the average being 1228 gpcd.

1995 Water Use Records

Date of Reading	Hour Meter	Elapsed Days	Elapsed Hours	Est. Well GPM	Est. Gal. Used	# of Connects	Water use GPDC
11/20/94	5706.6						
12/11/94	5815	21.0	108.4	35.0	227,640.0	41.0	264.4
01/09/95	5967	29.0	152.0	35.0	319,200.0	41.0	268.5
01/14/95	5991	5.0	24.0	35.0	50,400.0	41.0	245.9
02/05/95	6097.6	22.0	106.6	35.0	223,860.0	41.0	248.2
02/12/95	6132.1	7.0	34.5	35.0	72,450.0	41.0	252.4
02/21/95	6192	9.0	59.9	35.0	125,790.0	41.0	340.9
03/16/95	6303.3	23.0	111.3	35.0	233,730.0	41.0	247.9
04/11/95	6431	26.0	127.7	35.0	268,170.0	41.0	251.6
04/26/95	6506.9	15.0	75.9	35.0	159,390.0	41.0	259.2
05/23/95	6732.5	27.0	225.6	35.0	473,760.0	41.0	428.0
06/03/95	6901.1	11.0	168.6	35.0	354,060.0	41.0	785.1
06/13/95	6981.6	10.0	80.5	35.0	169,050.0	41.0	412.3
07/01/95	7189.4	18.0	207.8	35.0	436,380.0	41.0	591.3
07/14/95	7343.9	13.0	154.5	35.0	324,450.0	41.0	608.7
07/18/95	7410.8	4.0	66.9	35.0	140,490.0	41.0	856.6
08/10/95	7809.1	23.0	398.3	35.0	836,430.0	41.0	887.0
08/27/95	7957.5	17.0	148.4	35.0	311,640.0	41.0	447.1
09/24/95	8336.2	28.0	378.7	35.0	795,270.0	41.0	692.7
10/15/95	8505	21.0	168.8	35.0	354,480.0	41.0	411.7
11/12/95	8710.4	28.0	205.4	35.0	431,340.0	41.0	375.7
11/16/95	8740.8	4.0	30.4	35.0	63,840.0	41.0	389.3
12/16/95	8958.7	30.0	217.9	35.0	457,590.0	41.0	372.0
12/28/95	9068	12.0	109.3	35.0	229,530.0	41.0	466.5
	Total Days	403.0		TL. Gal.	7,058,940.0		

Average Gal./ Day/Conn (GPDC) = 427.2

1996 Water Use Records

Date of Reading	Hour Meter	Elapsed Days	Elapsed Hours	Est. Well GPM	Est. Gal. Used	# of Connects	Water use GPDC
12/28/95	9068						
01/21/96	9261.4	24.0	193.4	30.0	348,120.0	41.0	353.8
02/14/96	9444.7	24.0	183.3	30.0	329,940.0	41.0	335.3
02/28/96	9549	14.0	104.3	30.0	187,740.0	41.0	327.1
02/29/96	9553	1.0	4.0	30.0	7,200.0	41.0	175.6
03/03/96	9578.1	3.0	25.1	30.0	45,180.0	41.0	367.3
03/28/96	9761.4	25.0	183.3	30.0	329,940.0	41.0	321.9
04/14/96	9898.7	17.0	137.3	30.0	247,140.0	41.0	354.6
05/27/96	10258.5	43.0	359.8	30.0	647,640.0	41.0	367.4
06/03/96	10326.2	7.0	67.7	30.0	121,860.0	41.0	424.6
06/26/96	10621.8	23.0	295.6	30.0	532,080.0	41.0	564.2
07/07/96	10786.5	11.0	164.7	30.0	296,460.0	41.0	657.3
08/19/96	11500.1	43.0	713.6	30.0	1,284,480.0	41.0	728.6
09/22/96	11924	34.0	423.9	30.0	763,020.0	41.0	547.4
10/24/96	12205.3	32.0	281.3	30.0	506,340.0	41.0	385.9
11/27/96	12510.5	34.0	305.2	30.0	549,360.0	41.0	394.1
12/10/96	12639.8	13.0	129.3	30.0	232,740.0	41.0	436.7
	Total Days	348.0		TL. Gal.	6,429,240.0		

Average Gal./ Day/Conn (GPDC) = 450.6

TABLE 11.1

11.2-C Future Population & Service Connection Projections

There are no plans at this time to serve any additional connections since this system lies within the future service area of the Cedar River Water & Sewer District .

11.2-D Future Water Use Projections

Based on estimates, current water use is very high. This is most likely due to the lack of individual water meters. There is no positive feed back system in place to curb water use and reward those who practice conservation.

Subsequent to the installation of individual water meters, water use per connection is expected to decrease by as much as 50%. The conservation program in addressed in Chapter 2-H.

11.3 SYSTEM ANALYSIS

11.3-B Evaluation of Existing Water System

a. Source

Evergreen Drilling Company drilled the well in August of 1966 and reported its capacity at over 250 gpm. The Driller is reported to have been Rally Freeburg, who is known for his good work in the industry. The drillers' report is included in the appendix. The well has an 8" steel casing and was drilled to a depth of 159 feet. The well was then pump tested for 4 hours at 250 gpm with 10 feet of drawdown. The static water level was reported to be 117 feet and complete recovery was within 1 minute. A Gould model 100H 5 hp submersible Pump was subsequently installed. The rated capacity of that pump when new was 83 gpm @ 125' TDH. The pump was tested by Valley Pump of Auburn in 1988 and found to produce 60 gpm. The pump was again tested in 1991 and found to produce 41 gpm with a pumping water level of 116'-4" (static = 107'-5").

A Water Right permit was granted in 1968, and certificated in 1976 for 250 gpm and 26⅔ Ac.-Ft./Yr.

From this data two things are apparent:

1. The existing well pump capacity is dropping. It is currently pumping at less than half of its rated capacity.

2. The well is capable of a much higher flow, in all likelihood the full 250 gpm, as originally pump tested in 1966.

The Well Cap is identified in the 1994 Sanitary Survey as needing to be sealed and protected.

b. Treatment

There is no treatment required on the existing water system. Chlorination may prove to be necessary in the future. However, the 1994 sanitary survey detected several required improvements that will, most likely, eliminate bacterial contamination problems.

c. Storage

The Echo Glen Water System, with forty-two (42) connections, a single source, and 21,402 gallons of storage, is slightly beyond its designed capacity at this time. However, The actual water use is more than double the assumed values used for design purposes. Therefore, the water system is actually well beyond its capacity at this time.

The existing well capacity far exceeds what the existing pump is producing. The existing pump could be replaced with two well pumps and would count as two sources. At present, the WSDOH Sizing Guidelines allow systems serving less than 100 connections to reduce or completely eliminate Standby Storage when the 24 hour source capacity, when the best source out of service equals or exceeds the required volume of Standby Storage. The proposed new Water Works Standards, as they now exist, will require all Group A water systems, regardless of size, to provide a minimum Stand-by Storage of 200 gallons per connection.

The source and storage requirements of the water system are shown in the following tables:

❶ Table #11.2 - Existing System with a single Source

❷ Table #11.3 - Existing System with Two Sources & 200 Gal Minimum Standby Storage.

❸ Table #11.4 - Existing System with Two Sources & No Minimum Standby Storage.

SOURCE & STORAGE TABLE

(10-99 CONNECTONS)

ECHO GLEN WATER SYSTEM

Based upon existing system with a single source"

BEST SOURCE 1	
Pump Test	250.0
Exist Pump	41.0
Water Right	250.0
Limiting Flow	41.0

SOURCE 2	
Pump Test	0
Exist Pump	0
Water Right	0
Limiting Flow	0

TOTAL SOURCE	41

Reservoir 1	30,000
Reservoir 2	0
Reservoir 3	0
TOTAL STORAGE	30,000

Existing Services	42	conn
MID flow	95	gpm
Source Req'd	17.50	gpm
Standby St. Req'd	25,200	gal
Equalizing St. Req'd	8,100	gal
Fire Storage Req'd	0	gal
TOTAL STORAGE REQ,D	33,300	gal

TABLE 11.2

SOURCE & STORAGE TABLE (10-99 CONNECTONS)

ECHO GLEN WATER SYSTEM

Based upon two sources and 200 gal. Min. Stand-By Storage"

BEST SOURCE 1	
Pump Test	250.0
Exist Pump	60.0
Water Right	250.0
Limiting Flow	60.0

SOURCE 2	
Pump Test	250
Exist Pump	60
Water Right	250
Limiting Flow	60

TOTAL SOURCE	120

Reservoir 1	21,402
Reservoir 2	0
Reservoir 3	0
TOTAL STORAGE	21,402

Existing Services	42	conn
MID flow	95	gpm

Source Req'd	17.50	gpm
Standby St. Req'd	8,400	gal
Equalizing St. Req'd	0	gal
Fire Storage Req'd	0	gal
TOTAL STORAGE REQ,D	8,400	gal

TABLE 11.3

SOURCE & STORAGE TABLE

(10-99 CONNECTONS)

ECHO GLEN WATER SYSTEM

Based upon two sources and NO Stand-By Storage"

BEST SOURCE 1	
Pump Test	250.0
Exist Pump	60.0
Water Right	250.0
Limiting Flow	60.0

SOURCE 2	
Pump Test	250
Exist Pump	60
Water Right	250
Limiting Flow	60

TOTAL SOURCE	120

Reservoir 1	21,402
Reservoir 2	0
Reservoir 3	0
TOTAL STORAGE	21,402

Existing Services	42	conn
MID flow	95	gpm

Source Req'd	17.50	gpm
Standby St. Req'd	0	gal
Equalizing St. Req'd	0	gal
Fire Storage Req'd	0	gal
TOTAL STORAGE REQ,D	0	gal

TABLE 11.4

d. Distribution System

A Hydraulic Model of the complete water system was created using *"CYBERNET".* This is a graphical interface which enables the user to access the "Kentucky Pipe Model II" from within AutoCAD. A map of the nodes and pipes created for the modeling is to be included in the following pages.

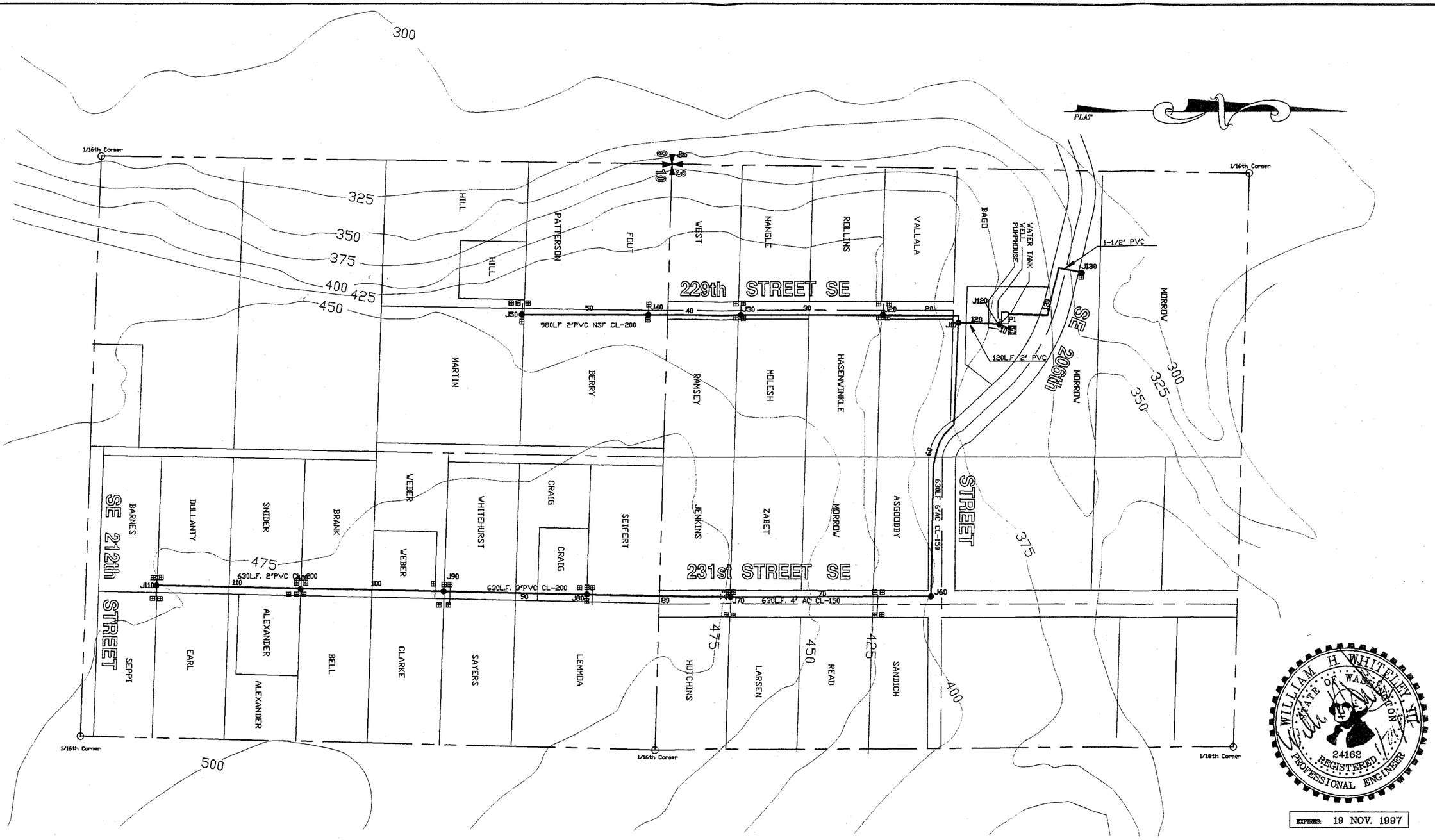
Modeling of a pressure zone that is served by a well or booster pump is somewhat different than a gravity zone. The booster pumps are set to maintain the pressure in the pressure tanks within a set pressure range. In this case, the existing pressure settings are as follows:

UNIT	Pump On - psi	Pump Off - psi
Lead	80	100

We have modeled this system using a *Pressure Source Node* set at 80 psi in Run #1 and 100 psi in run # 3. In Run # 2, we examine the effect of replacing the existing 2" PVC between the pumphouse and the 6" AC main. This model has not been field calibrated at this time. Subject to actual calibration, the outcome may change.

Copies of each of these runs are included in the following pages.

Subsequently, the results of each run of the Hydraulic Model will be discussed.



EXPIRES: 19 NOV. 1997

Notes:

1. This is not a survey. Property lines shown are based upon the Assessors Tax Map and are approximate only.
2. Contours shown are from the USGS 7.5 min. Quadrangle. They are not based upon field survey data and are approximate only.
3. Water main size type and location are based upon available records and are approxmately only.

Whiteley Engineering

ECHO GLEN
Cybernet Hydraulic Model

19062 Highway 305 N
Poulsbo, WA 98370
360-779-7993

Washington State Department of Health

REVISION:

CLIENT: Washington Water Supply
12608 E. Marginal Way South
Seattle, WA 98168

DESIGN: WHW	SCALE: 1" = 200'
DRAWN: WHW	JOB No.: 1039
DATE: 1/24/97	SHEET: 1 OF 1

C:\AAA\1039WWS\ECHO-A 1-22-97 5:26:16 pm

****
S U M M A R Y O F O R I G I N A L D A T A
****

CyberNet Version 2.18. Copyright 1991,92 Haestad Methods Inc.

Run Description: Existing Network @ PHD & 80 psi

Drawing: ECHO-CYB

P I P E L I N E D A T A

STATUS CODE: XX -CLOSED PIPE BN -BOUNDARY NODE PU -PUMP LINE
CV -CHECK VALVE RV -REGULATING VALVE

PIPE NUMBER	NODE NOS. #1	#2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.	BND-HGL (ft)
10-BN	0	120	32.0	2.0	140.00	0.00	554.54
20	10	20	185.0	2.0	140.00	0.00	
30	20	30	319.0	2.0	140.00	0.00	
40	30	40	210.0	2.0	140.00	0.00	
50	40	50	285.0	2.0	140.00	0.00	
60	10	60	629.0	6.0	130.00	0.00	
70	60	70	450.0	4.0	130.00	0.00	
80	70	80	324.0	3.0	140.00	0.00	
90	80	90	325.0	3.0	140.00	0.00	
100	90	100	324.0	2.0	140.00	0.00	
110	100	110	325.0	2.0	140.00	0.00	
120	10	120	92.0	2.0	140.00	0.00	
130	120	130	281.0	1.5	140.00	0.00	

J U N C T I O N N O D E D A T A

JUNCTION NUMBER	JUNCTION TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	CONNECTING PIPES		
10-1		0.00	380.00	20	60	120
20-1		6.90	425.00	20	30	
30-1		9.20	430.00	30	40	
40-1		4.60	435.00	40	50	
50-1	End 229th St	9.20	440.00	50		
60-1		9.20	400.00	60	70	
70-1		9.20	475.00	70	80	
80-1		9.20	477.00	80	90	
90-1		11.50	480.00	90	100	
100-1		11.50	477.00	100	110	
110-1	End 231st ST	9.20	475.00	110		
120-1		0.00	370.00	10	120	130
130-1	Morow	2.30	325.00	130		

```
+-----------------------------------------------+
|              MAXIMUM DIMENSIONS               |
|                                               |
|  Number of pipes ..................  250     |
|  Number of pumps ..................   62     |
|  Number junction nodes.............  250     |
|  Flow meters ......................   62     |
|  Boundary nodes ...................   25     |
|  Variable storage tanks ...........   62     |
|  Pressure switches ................   62     |
|  Regulating Valves.................   62     |
|  Items for limited output .........  250     |
|  limit for non-consecutive numbering .. 2572  |
+-----------------------------------------------+
```

Cybernet version 2.18. SN: 1132184220-250

Extended Description:

U N I T S S P E C I F I E D

FLOWRATE ..... = gallons/minute
HEAD (HGL) ..... = feet
PRESSURE ..... = psig

O U T P U T O P T I O N D A T A

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT

S Y S T E M C O N F I G U R A T I O N

NUMBER OF PIPES .....(p) = 13
NUMBER OF JUNCTION NODES .....(j) = 13
NUMBER OF PRIMARY LOOPS .....(l) = 0
NUMBER OF BOUNDARY NODES .....(f) = 1
NUMBER OF SUPPLY ZONES .....(z) = 1

****
S I M U L A T I O N R E S U L T S
****

The results are obtained after 2 trials with an accuracy = 0.00000

S I M U L A T I O N D E S C R I P T I O N

CyberNet Version 2.18. Copyright 1991,92 Haestad Methods Inc.

Ru Description: Existing Network @ PHD & 80 psi

Drawing: ECHO-CYB

STATUS CODE: XX -CLOSED PIPE BN -BOUNDARY NODE PU -PUMP LINE
CV -CHECK VALVE RV -REGULATING VALVE TK -STORAGE TANK

PIPE NUMBER	NODE NOS. #1	#2	FLOWRATE (gpm)	HEAD LOSS (ft)	PUMP HEAD (ft)	MINOR LOSS (ft)	LINE VELO. (ft/s)	HL/ 1000 (ft/ft)
10-BN	0	120	92.00	5.25	0.00	0.00	9.39	164.08
20	10	20	29.90	3.79	0.00	0.00	3.05	20.47
30	20	30	23.00	4.02	0.00	0.00	2.35	12.59
40	30	40	13.80	1.03	0.00	0.00	1.41	4.89
50	40	50	9.20	0.66	0.00	0.00	0.94	2.31
60	10	60	59.80	0.25	0.00	0.00	0.68	0.40
70	60	70	50.60	0.96	0.00	0.00	1.29	2.13
80	70	80	41.40	1.68	0.00	0.00	1.88	5.19
90	80	90	32.20	1.06	0.00	0.00	1.46	3.26
100	90	100	20.70	3.36	0.00	0.00	2.11	10.36
110	100	110	9.20	0.75	0.00	0.00	0.94	2.31
120	10	120	-89.70	14.40	0.00	0.00	9.16	156.56
130	120	130	2.30	0.20	0.00	0.00	0.42	0.72

J U N C T I O N N O D E R E S U L T S

JUNCTION NUMBER	JUNCTION TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	JUNCTION ELEVATION (ft)	PRESSURE HEAD (ft)	JUNCTION PRESSURE (psi)
10-1		0.00	534.88	380.00	154.88	67.12
20-1		6.90	531.09	425.00	106.09	45.97
30-1		9.20	527.08	430.00	97.08	42.07
40-1		4.60	526.05	435.00	91.05	39.46
50-1	End 229th St	9.20	525.39	440.00	85.39	37.00
60-1		9.20	534.63	400.00	134.63	58.34
70-1		9.20	533.67	475.00	58.67	25.42
80-1		9.20	531.99	477.00	54.99	23.83
90-1		11.50	530.93	480.00	50.93	22.07
100-1		11.50	527.57	477.00	50.57	21.92
110-1	End 231st ST	9.20	526.82	475.00	51.82	22.46
120-1		0.00	549.28	370.00	179.28	77.69
130-1	Morow	2.30	549.08	325.00	224.08	97.10

S U M M A R Y O F I N F L O W S A N D O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM BOUNDARY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO BOUNDARY NODES

PIPE NUMBER	FLOWRATE (gpm)
10	92.00

NET SYSTEM INFLOW = 92.00
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 92.00

**** CYBERNET SIMULATION COMPLETED ****

MAXIMUM DIMENSIONS	
Number of pipes	250
Number of pumps	62
Number junction nodes.....	250
Flow meters	62
Boundary nodes	25
Variable storage tanks	62
Pressure switches	62
Regulating Valves.....	62
Items for limited output	250
limit for non-consecutive numbering ..	2572

Cybernet version 2.18. SN: 1132184220-250

Extended Description:

U N I T S S P E C I F I E D

FLOWRATE ..... = gallons/minute
HEAD (HGL) ..... = feet
PRESSURE ..... = psig

O U T P U T O P T I O N D A T A

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT

S Y S T E M C O N F I G U R A T I O N

NUMBER OF PIPES .....(p) = 13
NUMBER OF JUNCTION NODES .....(j) = 13
NUMBER OF PRIMARY LOOPS .....(l) = 0
NUMBER OF BOUNDARY NODES .....(f) = 1
NUMBER OF SUPPLY ZONES .....(z) = 1

****
S I M U L A T I O N R E S U L T S
****

The results are obtained after 2 trials with an accuracy = 0.00000

S I M U L A T I O N D E S C R I P T I O N

CyberNet Version 2.18. Copyright 1991,92 Haestad Methods Inc.

Description: Replace 2" from P.H. to main @PHD & 80 psi

Drawing: ECHO-CYB

STATUS CODE: XX -CLOSED PIPE BN -BOUNDARY NODE PU -PUMP LINE
CV -CHECK VALVE RV -REGULATING VALVE TK -STORAGE TANK

PIPE NUMBER	NODE NOS. #1	#2	FLOWRATE (gpm)	HEAD LOSS (ft)	PUMP HEAD (ft)	MINOR LOSS (ft)	LINE VELO. (ft/s)	HL/ 1000 (ft/ft)
10-BN	0	120	92.00	0.02	0.00	0.00	1.04	0.78
20	10	20	29.90	3.79	0.00	0.00	3.05	20.47
30	20	30	23.00	4.02	0.00	0.00	2.35	12.59
40	30	40	13.80	1.03	0.00	0.00	1.41	4.89
50	40	50	9.20	0.66	0.00	0.00	0.94	2.31
60	10	60	59.80	0.25	0.00	0.00	0.68	0.40
70	60	70	50.60	0.96	0.00	0.00	1.29	2.13
80	70	80	41.40	1.68	0.00	0.00	1.88	5.19
90	80	90	32.20	1.06	0.00	0.00	1.46	3.26
100	90	100	20.70	3.36	0.00	0.00	2.11	10.36
110	100	110	9.20	0.75	0.00	0.00	0.94	2.31
120	10	120	-89.70	0.07	0.00	0.00	1.02	0.74
130	120	130	2.30	0.20	0.00	0.00	0.42	0.72

J U N C T I O N N O D E R E S U L T S

JUNCTION NUMBER	JUNCTION TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	JUNCTION ELEVATION (ft)	PRESSURE HEAD (ft)	JUNCTION PRESSURE (psi)
10-1		0.00	554.44	380.00	174.44	75.59
20-1		6.90	550.66	425.00	125.66	54.45
30-1		9.20	546.64	430.00	116.64	50.54
40-1		4.60	545.61	435.00	110.61	47.93
50-1	End 229th St	9.20	544.96	440.00	104.96	45.48
60-1		9.20	554.19	400.00	154.19	66.82
70-1		9.20	553.23	475.00	78.23	33.90
80-1		9.20	551.55	477.00	74.55	32.31
90-1		11.50	550.49	480.00	70.49	30.55
100-1		11.50	547.13	477.00	70.13	30.39
110-1	End 231st ST	9.20	546.39	475.00	71.39	30.93
120-1		0.00	554.51	370.00	184.51	79.95
130-1	Morow	2.30	554.31	325.00	229.31	99.37

S U M M A R Y O F I N F L O W S A N D O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM BOUNDARY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO BOUNDARY NODES

PIPE NUMBER	FLOWRATE (gpm)
10	92.00

NET SYSTEM INFLOW = 92.00
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 92.00

**** CYBERNET SIMULATION COMPLETED ****

```
+-----------------------------------------------+
|            MAXIMUM DIMENSIONS                 |
|                                               |
|  Number of pipes ..................  250     |
|  Number of pumps ..................   62     |
|  Number junction nodes.............  250     |
|  Flow meters ......................   62     |
|  Boundary nodes ...................   25     |
|  Variable storage tanks ...........   62     |
|  Pressure switches ................   62     |
|  Regulating Valves.................   62     |
|  Items for limited output .........  250     |
|  limit for non-consecutive numbering .. 2572  |
+-----------------------------------------------+
```

Cybernet version 2.18. SN: 1132184220-250

Extended Description:

U N I T S S P E C I F I E D

FLOWRATE ..... = gallons/minute
HEAD (HGL) ..... = feet
PRESSURE ..... = psig

O U T P U T O P T I O N D A T A

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT

S Y S T E M C O N F I G U R A T I O N

NUMBER OF PIPES .....(p) = 13
NUMBER OF JUNCTION NODES .....(j) = 13
NUMBER OF PRIMARY LOOPS .....(l) = 0
NUMBER OF BOUNDARY NODES .....(f) = 1
NUMBER OF SUPPLY ZONES .....(z) = 1

****
S I M U L A T I O N R E S U L T S
****

The results are obtained after 2 trials with an accuracy = 0.00000

S I M U L A T I O N D E S C R I P T I O N

CyberNet Version 2.18. Copyright 1991,92 Haestad Methods Inc.

Description: Replace 2" from P.H. to main @PHD & 100psi

Drawing: ECHO-CYB

STATUS CODE: XX -CLOSED PIPE BN -BOUNDARY NODE PU -PUMP LINE
CV -CHECK VALVE RV -REGULATING VALVE TK -STORAGE TANK

PIPE NUMBER	NODE NOS. #1	#2	FLOWRATE (gpm)	HEAD LOSS (ft)	PUMP HEAD (ft)	MINOR LOSS (ft)	LINE VELO. (ft/s)	HL/ 1000 (ft/ft)
10-BN	0	120	92.00	0.02	0.00	0.00	1.04	0.78
20	10	20	29.90	3.79	0.00	0.00	3.05	20.47
30	20	30	23.00	4.02	0.00	0.00	2.35	12.59
40	30	40	13.80	1.03	0.00	0.00	1.41	4.89
50	40	50	9.20	0.66	0.00	0.00	0.94	2.31
60	10	60	59.80	0.25	0.00	0.00	0.68	0.40
70	60	70	50.60	0.96	0.00	0.00	1.29	2.13
80	70	80	41.40	1.68	0.00	0.00	1.88	5.19
90	80	90	32.20	1.06	0.00	0.00	1.46	3.26
100	90	100	20.70	3.36	0.00	0.00	2.11	10.36
110	100	110	9.20	0.75	0.00	0.00	0.94	2.31
120	10	120	-89.70	0.07	0.00	0.00	1.02	0.74
130	120	130	2.30	0.20	0.00	0.00	0.42	0.72

J U N C T I O N N O D E R E S U L T S

JUNCTION NUMBER	JUNCTION TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	JUNCTION ELEVATION (ft)	PRESSURE HEAD (ft)	JUNCTION PRESSURE (psi)
10-1		0.00	600.58	380.00	220.58	95.58
20-1		6.90	596.79	425.00	171.79	74.44
30-1		9.20	592.77	430.00	162.77	70.54
40-1		4.60	591.75	435.00	156.75	67.92
50-1	End 229th St	9.20	591.09	440.00	151.09	65.47
60-1		9.20	600.32	400.00	200.32	86.81
70-1		9.20	599.37	475.00	124.37	53.89
80-1		9.20	597.68	477.00	120.68	52.30
90-1		11.50	596.62	480.00	116.62	50.54
100-1		11.50	593.27	477.00	116.27	50.38
110-1	End 231st ST	9.20	592.52	475.00	117.52	50.92
120-1		0.00	600.64	370.00	230.64	99.95
130-1	Morow	2.30	600.44	325.00	275.44	119.36

S U M M A R Y O F I N F L O W S A N D O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM BOUNDARY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO BOUNDARY NODES

PIPE NUMBER	FLOWRATE (gpm)
10	92.00

NET SYSTEM INFLOW = 92.00
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 92.00

**** CYBERNET SIMULATION COMPLETED ****

Cybernet Data Discussion

Run #1- PHD with Pressure Source @ 80 psi

The minimum pressure at any node is 22 psi, which is below the 30 psi minimum. An individual pressure reducing valve is required on the Morow service, node #J130.

Run #2- PHD with P. S. @ 80 psi & replace 2" PVC (Pump house to 6" AC)

The minimum pressure in the system is 30 psi. This just barely meets the 30 psi minimum. An individual pressure reducing valve is required on the Morow service node #J130.

Run #3- PHD with P. S. @100psi & replace 2" PVC (Pump house to 6" AC)

The minimum pressure in the system is 50 psi. This just barely meets the 30 psi minimum. An individual pressure reducing valve is required on the Morow service node #J130.

e. Fire Flow

The Echo Glen Water System is not designed to provide Fire Flow.

11.3-C Water Quality Analysis

There have been several failed bacteriological samples over the past four (4) years. The reason for these failed samples has not been positively established, but is suspected to be venting and manhole portals. A sanitary survey was done in 1994 and several potential hazards were identified *(Included in the appendix).* The access hatch on top of the reservoir is the most probable cause of the bacterial contamination. There is also some concern regarding the well cap.

Please refer to the Capital Improvement Program in Chapter 4 of this Water System Plan regarding the proposed start dates for the following planned improvements:

1. Install a steel access cover equal to those provided by the Mount Baker Silo Company (or equal) on their concrete reservoirs. This must be bolted and grouted (or sealed) into place to form a permanent water tight connection.

2. The reservoir overflow is to be retrofitted with a turn down 90* elbow and a fine mesh stainless steel screen.

3. The reservoir drain is to be fitted with a removable cap or a fine mesh stainless steel screen.

4. At the time when the well pump is replaced, the well cap should be replaced with a PAS-1 pitless adaptor and PAS-2 cap (or equal).

5. Provision is to be made in the new pump house for continuous hypochlorite injection, should it prove to be necessary. A source meter is necessary to monitor the chlorine use, and has been scheduled for installation.

. A Complete Inorganic Chemical analysis was done in 1994. There were no compounds above the MCL. The results can be found in the Appendix. The system should be analyzed again at this time.

Volatile Organics were sampled in 1992 and again in 1994. None were detected.

The Echo Glen Water System was selected to participate in the WSDOH Area wide sampling project in 1995. There were no SOC's detected.

The well was given a "Moderate" susceptibility rating. Therefore, an Area Waiver was required. The area waiver came back with a Low Susceptibility rating and no additional SOC testing has been required.

There is no record of Radionuclide testing. This should be taken at this time.

ECHO GLEN WATER SYSTEM
WATER QUALITY TESTING LOG

GROUP A (UNDER POPULATION 250)

1995 BACTERIOLOGICAL

JAN	1	JULY	1
FEB	1	AUG	1
MAR	1	SEPT	1
APR	1	OCT	1
MAY	1	NOV	1
JUNE	1	DEC	1

1996 BACTERIOLOGICAL

JAN	4	JULY	1
FEB	5	AUG	1
MAR	1	SEPT	1
APR	1	OCT	1
MAY	1	NOV	1
JUNE	9	DEC	1

1997 BACTERIOLOGICAL

JAN	1	JULY	1
FEB	1	AUG	1
MAR	1	SEPT	1
APR	1	OCT	1
MAY	1	NOV	1
JUNE	1	DEC	1

1998 BACTERIOLOGICAL

JAN		JULY	
FEB		AUG	
MAR		SEPT	
APR		OCT	
MAY		NOV	
JUNE		DEC	

1999 BACTERIOLOGICAL

JAN		JULY	
FEB		AUG	
MAR		SEPT	
APR		OCT	
MAY		NOV	
JUNE		DEC	

WELL NUMBER 1

YEAR	INORGANI	VOC'S	NITRATE	SOC'S	RADION.	Pb/Cu	
1990							
1991							
1992		12/28/92					
1993							
1994	02/22/94	02/22/94		09/28/94			
1995							
1996							
1997						5/21, 12/17	Initial (2)
1998			4/98				Reduced (1)
1999							
2000							
2001							
2002							
2003							
2004							

2000 BACTERIOLOGICAL

JAN		JULY	
FEB		AUG	
MAR		SEPT	
APR		OCT	
MAY		NOV	
JUNE		DEC	

2001 BACTERIOLOGICAL

JAN		JULY	
FEB		AUG	
MAR		SEPT	
APR		OCT	
MAY		NOV	
JUNE		DEC	

TABLE 11.5

5. Radionuclides - WAC 246-290-300 (9)

Group A Water Systems must test for gross alpha particle activity, radium-226 and radium-228 every 48 months. One sample should be taken from each source. *(Note: Current DOH policy is to require that each source have one sample on file not more than 10 years old).*

6. Volatile Organic Chemicals (VOC's) - WAC 246-290-300 (8)(b)

A test for VOC's must be performed once every three (3) years unless initial testing showed the presence of VOC's. The test should be taken from a point representative of the source, after treatment, and prior to entry to the distribution system.

7. Nitrates - WAC 246-290-300-3(b) *(reference to 40-CFR 141)*

Each source must be sampled once per year. Additional Nitrate testing will not be required on those years where a complete inorganic analysis is done, because Nitrate testing is including in that test. The test should be taken from a point representative of the source, after treatment, and prior to entry to the distribution system.

8. Synthetic Organic Contaminants (SOC's) - WAC 246-290-300 (8)(c)

A vulnerability / susceptibility assessment has been completed for this well. SOC monitoring requirements are based upon this assessment. The well received a Moderate Susceptibility rating and; therefore, an area waiver was required. The Area waiver came back with a Low susceptibility rating and requires no SOC monitoring.

11. Disinfection Byproducts

A new rule is expected in a couple of years. As of now, there is no MCL for total Chlorine, but in the future a limit of 4.0 mg/l has been proposed.

10. Lead & Copper - WAC 246-290-300 (4)

All Group A water systems are required to monitor for lead and copper in tap water. The ***initial monitoring*** consists of two rounds of sampling, conducted in consecutive six month periods. If the results of either round exceed the action levels for lead and copper with the 90th percentile sample, DOH will instruct regarding corrosion control treatment for the water system.

When a system does not exceed either action level (with the 90th percentile sample) during the two consecutive six month periods, ***reduced monitoring*** will be allowed for annual samples the next three consecutive years. If the system does not exceed either action level in this three year period, the ***reduced monitoring*** frequency will be reduced to once every three years.

In selecting tap water sampling sites, it is important to locate sites with the highest risk of lead and copper corrosion. (Lead in plumbing materials was prohibited by the State Building Code in 1987.) The number of tap samples required is determined by the population served in the system, see the Table below.

Number of Required Samples		
POPULATION SERVED	≤ 100	101 - 500
INITIAL MONITORING	5	10
REDUCED MONITORING	5	5

If an MCL is exceeded in any of the above testing, the requirements of WAC #246-290-320 and #246-290-330 must be followed regarding departmental and public notification.

c. Well Head Discussion

There is no record of a Well Site Inspection of the Echo Glen Water system. However, the water system has been approved by DOH. Brian Boye, with the NW section of WSDOH performed a sanitary survey on December 16th, 1994. The report is included in the Appendices.

Wellhead Protection Plan (WHPP)

The purpose of the Wellhead Protection Plan (WHPP) is to protect the quality of drinking water derived from groundwater and to safeguard groundwater sources against contamination. Wellhead protection is a program mandated by the Safe Drinking Water Act for Group A water supplies. The Wellhead Protection Areas (WHPA) is defined in the Safe Drinking Water Act as "the surface and sub-surface area around a well or well field supplying a public water system through which contaminants are reasonably likely to move toward and reach such water well or well field." Following is the Echo Glen Water System Wellhead Protection Plan:

A. The updated ***Susceptibility Assessment*** for the well is included in the appendix for Chapter 11 of this WSP. The method used by WWS to delineate wellhead protection zones is the Calculated Fixed Radius (CFR). By the use of the DOH susceptibility assessment forms and related guidance, a CFR was determined for the 6 month, 1 year, 5 year, and 10 year time of travel for contaminants. The following table shows the time of travel and related zone of contribution:

Time of Travel	Zone of Contribution
6 month	310 feet
1 year	440 feet
5 year	980 feet
10 year	1390 feet

B. ***All known and potential ground water contamination sources located within the defined WHPA having the potential to contaminate the source water of the wells*** - The land use within the 6 month, 1, 5, and 10 year time of travel is residential only. There is a sewer system in the area. Therefore, the possibility of pesticide application is the main potential ground water contaminant. There are no other known sources of contamination, such as land fills, injection wells, or underground storage tanks within a 600 ft. radius of the well.

The well is located adjacent to, and approximately 50 feet from, a county road. However, the road is downhill from the well site and drainage is directed away from the site.

The well was drilled in 1966 prior to the requirement for well logs and an 18' Bentonite Seal. The well was drilled by Evergreen Drilling and we have a good log of the drilling strata. The well is drilled through 117 feet of tills and clays of varying quality. The well is completed at 159 feet. The static water level is at 106 feet. While it would be beneficial to have a Bentonite seal, the impervious strata between the ground surface and the aquifer are far more important in protecting the aquifer from any contamination from surface water.

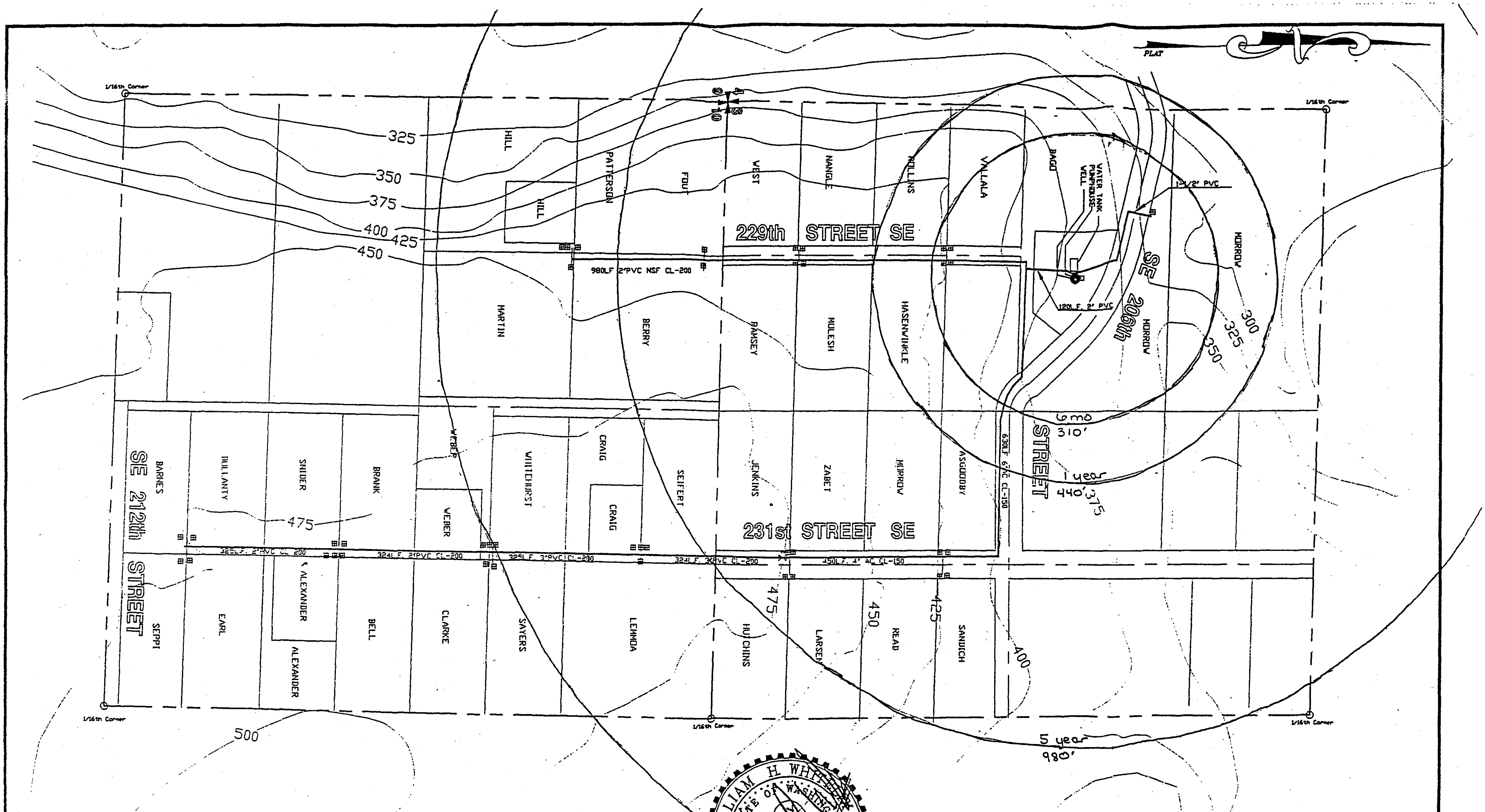
C. ***Notification to all owners/operators of known or potential sources of ground water contamination located within the wellhead protection area.*** - There are no known businesses within the WHPA. Therefore, notification is not necessary.

D. ***Notification to regulatory agencies and local governments indicating WHPA boundaries and findings.*** A letter of notification has been sent to the King County Fire Marshal and to the Cedar River Water & Sewer District, copies have been included.

E. ***Contingency Plan*** - To ensure that the Echo Glen water system has an adequate supply of potable water in the event that contamination results in the temporary or permanent loss of the well, the following plan is being adopted:

> Upon determination of contamination in the well, use of the affected well would be immediately discontinued. The location and depth of a new well would be determined based upon the nature of the contaminant of the existing source. Since the Echo Glen water system lies within the future service area of the Cedar River Water & Sewer District, another alternative would be to contact them for the possibility of an intertie with their system.

F. ***Documentation of coordination with local emergency spill response teams*** - We have sent a letter to the King County Fire Marshal.



Notes:

1. This is not a survey. Property lines shown are based upon the Assessors Tax Map and are approximate only.
2. Contours shown are from the USGS 7.5 min. Quadrangle. They are not based upon field survey data and are approximate only.
3. Water main size type and location are based upon available records and are approximately only.

WILLIAM H WHITELEY III
STATE OF WASHINGTON
24162
REGISTERED PROFESSIONAL ENGINEER

EXPIRES 19 NOV. 1997

Whiteley Engineering

ECHO GLEN
Water Distribution Plan

19062 Highway 305 N
Poulsbo, WA 98370
360-779-7993

Washington State Department of Health

REVISION	CLIENT Washington Water Supply 12608 E. Marginal Way South Seattle, WA 98168	DESIGN WHW	SCALE 1" = 200'
		DRAWN WHW	JOB No. 1039
		DATE 1/24/97	SHEET 1 OF 1

11.3-D Summary of Deficiencies, Existing & Proposed Requirements

This water system is in need of some major renovations. Each of the following items have been discussed in the previous pages:

1. Install a new reservoir access hatch, overflow and drain.

2. Install two new single phase well pumps with approved pitless adaptors, and an approved well cap.

3. Construct a new pump house with single phase electric service, new booster pumps, a source meter, and new Well-X-Trol Pressure tanks. A Hypochlorination system should be installed in the new pump house.

4. Replace the 2" main from the Pump house to the 6" AC main.

5. Install Individual Service Meters at each connection.

11.4 Improvement Program

See Chapter 4 for the complete Capital Improvement Program, scheduling discussion, and Tables.

11.5 Financial Program

See Chapter 5 for discussion and Tables.

11.6 Relationship with Other Plans

The Echo Glen Water System lies within the future service area of the Cedar River Water & Sewer District; therefore, cannot be expanded. We have contacted the CRW&SD and have asked them to review the service area map for conflicts.

The Water System also lies within the East King County Critical Water Supply Service Area. We have contacted Bruce Bennett with King County Water and Land Resources and have sent him a copy of the applicable portions of the Water System Plan for his review.

See Chapter 6 for further discussion.

9-7 Operation & Maintenance Program

11.7-A Personnel Involved in Water System Operation

See Chapter 7 for complete title descriptions and discussion.

11.7-B Routine Operation Procedures

Table 11-6 and Table 11-7 on the following pages show the routine Operations and Maintenance Schedules for the Echo Glen Water System.

The Coliform monitoring plan is outlined in Table 11-8. This includes Sampling sites and Rotation schedules.

TABLE 11.6

Echo Glen Water System
Routine Maintenance Summary

DEFINITION: Activities that confirm the operation or extend the life of an equipment item or process at the source of supply, pressure boosting system, or distribution system.

TASK	J	F	M	A	M	J	J	A	S	O	N	D
FLUSH WATER MAINS	X					X						
INSPECT AND/OR CLEAN RESERVOIR						X						
CHECK CONTROLS	X	X	X	X	X	X	X	X	X	X	X	X
OPERATE DISTRIBUTION SYSTEM VALVES						X						
PAINT FLUSH VALVES & APPURTENANCES							X					
GROUNDS MAINTENANCE AND PAINTING WHEN NECESSARY			X	X	X	X	X	X	X	X		

TABLE 11.7

Echo Glen Water System
Routine Operations Summary

DEFINITION: Activities that confirm the operation of an equipment item or process at the source of supply, pressure boosting system, or distribution system. This includes, but is not limited to, water quality, regulatory interface, customer interface, and general activities supporting product delivery to the customer.

TASK	J	F	M	A	M	J	J	A	S	O	N	D
BI-WEEKLY SYSTEM INSPECTION	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
COLIFORM TESTING	X	X	X	X	X	X	X	X	X	X	X	X
CUSTOMER METER READINGS	X	X	X	X	X	X	X	X	X	X	X	X
WELL HEAD METER READINGS	X	X	X	X	X	X	X	X	X	X	X	X
REGULATORY COMPLIANCE REVIEW	X	X	X	X	X	X	X	X	X	X	X	X
ANNUAL WATER TESTS											X	
CHECK STATIC WATER LEVEL IN WELL				X				X				
SANITARY SURVEY	X	X	X	X	X	X	X	X	X	X	X	X

TABLE 11.8

COLIFORM MONITORING PLAN

System Information

WATER SYSTEM NAME Echo Glen Water System			COUNTY King	SYSTEM I.D. NUMBER 27510D
PEAK POPULATION SERVED 103			SERVICE CONNECTIONS 41	
SOURCE	DOH SOURCE NUMBER SO1	CATEGORY Well		WELL DEPTH 159'
TREATMENT NA	TREATMENT PROCESS N/A	PURPOSE N/A	STORAGE CONCRETE	STORAGE CAPACITY 21,402 GALLONS

Sampling Information

NUMBER OF ROUTINE SAMPLES REQUIRED MONTHLY BY REGULATION	1	NUMBER OF SAMPLE SITES NEEDED TO REPRESENT THE DISTRIBUTION SYSTEM	2

	TYPE	SITE #	LOCATION
SAMPLE SITE GROUP	ROUTINE	EG1	Barnes Residence
	REPEAT	EGR1A	Dulanty Residence
	REPEAT	EGR1B	Earl Residence
	REPEAT	EGR1C	Seppi Residence
SAMPLE SITE GROUP	ROUTINE	EG2	Hill Residence
	REPEAT	EGR2A	Martin Residence
	REPEAT	EGR2B	Berry Residence
	REPEAT	EGR2C	Patterson Residence

PAGE 1

Additional Sampling Information

WATER SYSTEM NAME
Echo Glen Water System

For maximum coverage of different branches of the distribution system, a decision to rotate the required routine 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.

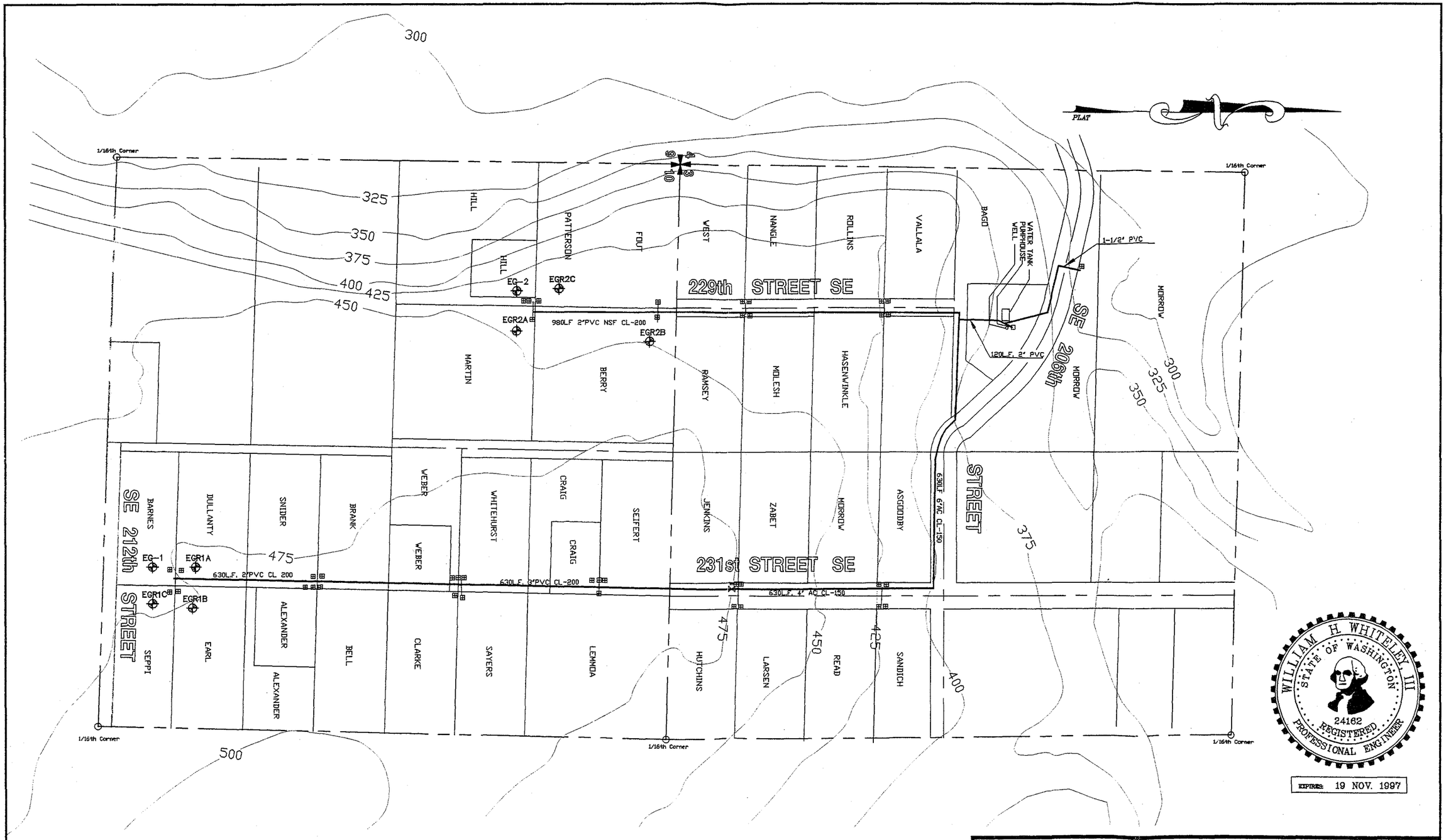
ROTATION SCHEDULE

MONTH	SAMPLE SITE(S)	MONTH	SAMPLE SITE(S)
January	EG1	July	EG1
February	EG2	August	EG2
March	EG1	September	EG1
April	EG2	October	EG2
May	EG1	November	EG1
June	EG2	December	EG2

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. List any sites which will routinely be used as follow-up sites.

MONTH AFTER FOLLOW-UP SAMPLE SITES
The month following a positive coliform sample, the water must be (1) re-tested at the original sample site, (2) tested upstream from bad sample, (3) tested downstream from bad sample, (4) tested at the wellhead, and (5) tested at the reservoir. In this way, the source of the contamination can be identified and treated.

PAGE 2



WILLIAM H WHITELEY III
STATE OF WASHINGTON
24162
REGISTERED
PROFESSIONAL ENGINEER

EXPIRES: 19 NOV. 1997

Notes:

1. This is not a survey. Property lines shown are based upon the Assessors Tax Map and are approximate only.
2. Contours shown are from the USGS 7.5 min. Quadrangle. They are not based upon field survey data and are approximate only.
3. Water main size type and location are based upon available records and are approximately only.

Whiteley Engineering

ECHO GLEN
COLIFORM MONITORING PLAN

19062 Highway 305 N
Poulsbo, WA 98370
360-779-7993

Washington State Department of Health

REVISION:	CLIENT: Washington Water Supply 12608 E. Marginal Way South Seattle, WA 98168	DESIGN: WHW	SCALE: 1" = 200'
		DRAWN: WHW	JOB NO.: 1039
		DATE: 1/24/97	SHEET: 1 OF 1

C:\AAA\1039WWS\ECHO-A 1-28-97 10:06:45 am

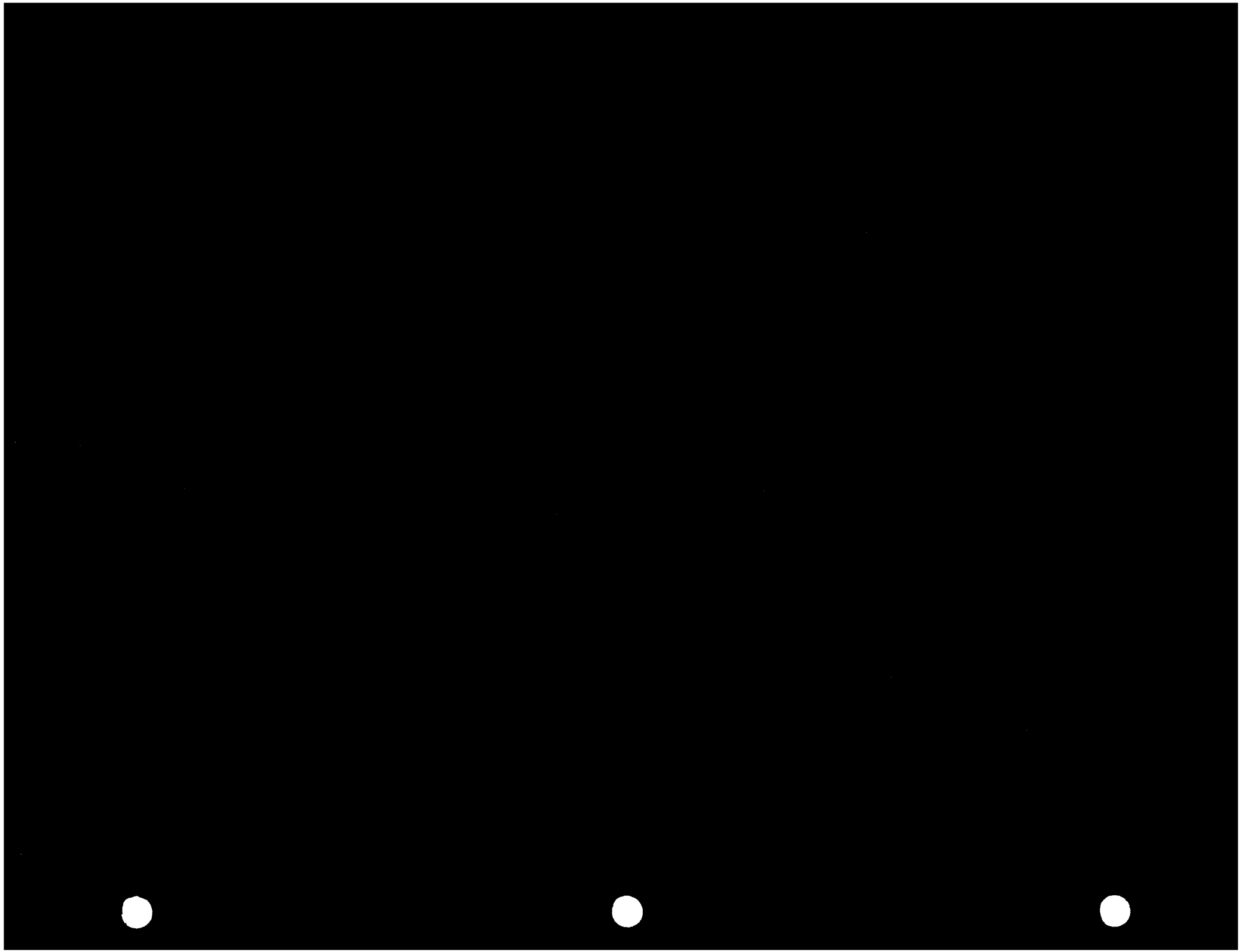
PREPARATION INFORMATION

SYSTEM NAME	DATE PLAN COMPLETED	DATES MODIFIED
Echo Glen Water System	**1/97**	

NAME OF PLAN PREPARER	POSITION	DAYTIME PHONE #
John Poppe	**Owner, Washington Water Supply, Inc.**	**(360) 308-8330**

STATE REVIEWER	DATE LAST REVIEW

PAGE #3



Washington State Department of Health
Environmental Health

WATER FACILITIES INVENTORY (WFI)

Read Instructions on back before completing

UPDATED

DATE UPDATED: 03/24/95

1. SYSTEM ID NO.	2. COUNTY	GROUP	TYPE	WRIA
17510D	KING	A	COMM	9

3. SYSTEM NAME: ECHO GLEN WATER SYSTEM

STREET ADDRESS: 12608 E. MARGINAL WAY SOUTH

P.O. BOX (IF APPLICABLE):

CITY: SEATTLE STATE: WA ZIP CODE: 98168

4. OWNER'S NAME (LAST, FIRST): WASHINGTON WATER SUPPLY, OWNER NO.: 2137

STREET ADDRESS: 12608 E. MARGINAL WAY SOUTH

P.O. BOX (IF APPLICABLE):

CITY: SEATTLE STATE: WA ZIP CODE: 98168

5. SYSTEM CONTACT PERSON: JOHN POPPE - MANAGER TITLE:

DAY TELEPHONE: 206-439-0344 EVENING TELEPHONE: 360-698-1290

6. OWNERSHIP (CHECK ONE ONLY)

- [ ] PRIVATE: NON-PROFIT
- [X] PRIVATE: FOR-PROFIT
- [ ] LOCAL GOVERNMENT (COUNTY / CITY / PUD / WATER DISTRICT)
- [ ] STATE
- [ ] FEDERAL

7. PREDOMINANT CHARACTERISTIC (CHECK ONE ONLY)

- [X] RESIDENTIAL
- [ ] RECREATIONAL
- [ ] BUSINESS / INDUSTRIAL / AGRICULTURAL / COMMERCIAL
- [ ] LODGING / FOOD SERVICE
- [ ] SCHOOL / DAY CARE
- [ ] OTHER (CHURCHES, ETC.)

WFI COMPLETED BY: TITLE:

DAY TELEPHONE: DATE:

8. SUBMITTED FOR: [ ] NEW SYSTEM [ ] NO CHANGE [ ] REACTIVATE [ ] SYSTEM NAME CHANGE* [ ] UPDATE [ ] DELETE

*OLD SYSTEM NAME - ENTER ONLY IF CHANGING WITH **THIS** WFI:

SYSTEMS SERVING ANY RESIDENTS (PEOPLE LIVING IN A DWELLING SERVED BY THE SYSTEM), COMPLETE THIS SECTION

9. NUMBER ACTIVE RESIDENTIAL **CONNECTIONS**: 41

10. NUMBER ACTIVE RESIDENTIAL **POPULATION**: 123

SYSTEMS SERVING ANY NON-RESIDENTS (I.E., TRAVELERS, EMPLOYEES, STUDENTS, ETC.), COMPLETE THIS SECTION

11. NUMBER NON-RESIDENTIAL CONNECTIONS:

12. ENTER AVERAGE DAILY NON-RESIDENTIAL POPULATION SERVED FOR EACH MONTH. MAKE ENTRY FOR EACH MONTH

JAN	APR	JUL	OCT
FEB	MAY	AUG	NOV
MAR	JUN	SEP	DEC

13. DOES THE SYSTEM SERVE AT LEAST 25 OF THE SAME NON-RESIDENTS FOR 4 OR MORE DAYS PER WEEK FOR AT LEAST 180 DAYS PER YEAR?

[ ] YES [X] NO

14. TOTAL NUMBER CONNECTIONS METERED:

15. DISTRIBUTION RESERVOIR(S) TOTAL CAPACITY: 57,000 GALLONS

16. DOH SOURCE NUMBER	17. SOURCE NAME (LIST UTILITY'S NAME FOR SOURCE. IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S ID # AND NAME USING FOLLOWING FORMAT: XXXXXX / NAME EXAMPLE: 77050Y / SEATTLE)	18. SOURCE CATEGORY: WELL	WELL FIELD	SURFACE	SPRING	RANNEY / INF. GAL	INTERTIE	PURCHASE-TREATED	PURCHASE-UNTREATED	19. USE: PERMANENT	SEASONAL	EMERGENCY	20. SOURCE METERED	21. TREATMENT: NONE	CHLORINATION	FILTRATION	FLUORIDATION	OTHER	22. WELL DEPTH (FEET)	23. SOURCE CAPACITY (GPM)	24. SOURCE LOCATION: 1/4, 1/4 SEC.	SEC. NO.	TWP	RNG.	SWTR EVALUATION / VOC EVALUATION
S01	WELL #1	X								X				X					159	250	SW/SW	03	22N	06E	

MINIMUM REQUIRED BACTERIOLOGICAL SAMPLING SCHEDULE

25.	26.	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
		1	1	1	1	1	1	1	1	1	1	1	1

). APPROVED SERVICES (PER PLANS): 38 DATE OF LAST SANITARY SURVEY: 00 00 0000 BY DOH [ ] LHD [ ]

EM IN CRITICAL WATER SUPPLY SERVICE AREA? [ ] YES [ ] NO GW MGMT AREA? [ ] YES [ ] NO FOR LHD USE ONLY

EFFECTIVE DATE RETRO. CHANGES | SIGNATURE OF DOH REVIEWER | DATE

WATER SYSTEM

DOH 331-011 (Rev. 5/92)

CERTIFICATE OF WATER RIGHT

☐ Surface Water [illegible]

☒ Ground Water [illegible]

CERTIFICATE NUMBER	PERMIT NUMBER	APPLICATION NUMBER	PRIORITY DATE
[illegible]	[illegible]	9306	March 15, 1968

NAME
[illegible], INC.

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
Route 2 Box 1090	Maple Valley	Washington	[illegible]

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.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
A well - 8"x159'

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	250	26 2/3

QUANTITY, TYPE OF USE, PERIOD OF USE
Community Domestic Supply - continuous use

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION/WITHDRAWAL
[illegible] feet east and [illegible] feet north of the southwest corner of Section 3

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
	3	22	[illegible]		[illegible]

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
A		[illegible] Addition

LEGAL DESCRIPTION OF PROPERTY WATER TO BE USED ON

[illegible] of Sec. 3, and [illegible] of Sec. 10; ALL in T. 22 N., R. 6 E.W.M.

As provided under RCW 43.21.130, 90.03.360, 90.44.250 and 90.44.020 a master meter shall be installed in this system to measure the total amount of withdrawal.

This permit shall be subject to cancellation should the permittee fail to comply with the development schedule contained herein and/or fail to give notice to the Division of Water Management on forms provided by said office documenting such compliance.

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 Olympia, Washington, this 31st day of May 19 [illegible].

JOHN A. BIGGS, Director
Department of Ecology

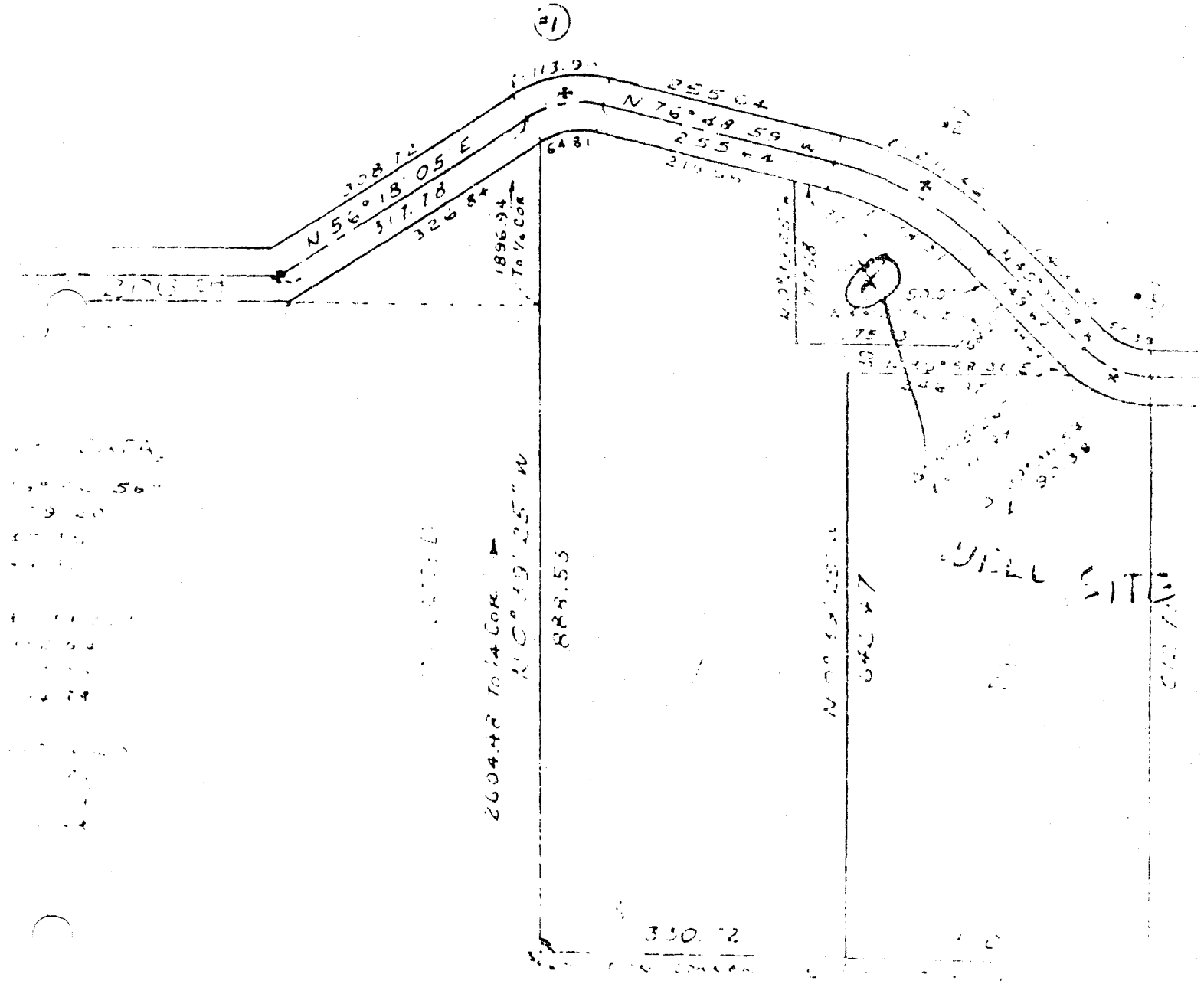
by R. [illegible] Bolley
[illegible], Assistant Director

[illegible] [illegible]

FOR COUNTY USE ONLY

GISELL ADDITION

SECTION 3, T22N, R6E, W.M.
KING COUNTY, WASHINGTON



orig sent to Dept of Ecology 5-14-91

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

ASSIGNMENT OF APPLICATION OR PERMIT TO APPROPRIATE WATER

$5.00 ASSIGNMENT FEE

I, Gesell Enterprises, Inc. (Applicant/Permittee) of King (County) Washington (State), do hereby assign, transfer and set over unto Echo Glen Water Co., Inc. (Assignee) of 1017 - 8th Ave N., Seattle, WA 98109 (bookkeeping address) (Address), 1-800-244-4666 (Phone Number), all of my right, title and interest in and to 9304 (application #) (Application/Permit) Number G1-00519C for the appropriation of waters of 8" well (Stream, Lake, Spring, Well, etc.) in King County, as said Certificate No. G1-00519C (Application/Permit) appears of record in the office of the Department of Ecology, Olympia, Washington.

Witness my hand this 3rd day of May, 19 91.

GESELL ENTERPRISES, INC.:
Applicant(s) Permittee
BY: L.K. Gesell

ECHO GLEN WATER CO., INC.:
Assignee
By: Richard Koopmans, President

STATE OF WASHINGTON
County of King } ss.

I L.K. Gesell (Applicant/Permittee), being first duly sworn, depose and say that I have read the above Assignment of Application or Permit to Appropriate Water; that I know the contents thereof; and that the facts therein stated are true.

IN WITNESS WHEREOF, I have hereunto set my hand this 3rd day of May, 1991.

L.K. Gesell
(Applicant/Permittee)

DONNA L. BAKER NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES 11-3-94

Subscribed and sworn to before me this 3rd day of May, 1991.

Donna L Baker
Notary Public

NEW ADDRESS AS OF April 29, 1991
DEPARTMENT OF ECOLOGY
NW REGIONAL OFFICE
3190 160TH AVE SE
BELLEVUE, WA 98008-5452

Report of Examination on Ground Water G1005/9-

Received date March 15, 1968 Date of exam. November 21, 1968 Appli. No. 9304

Name Gesell Enterprises, Inc. Address Route 2, Box 1090, Maple Valley, Wn.

Type of works well Dimensions 8" x 159'

Progress of works Well complete (project started)

Quantity applied for 250 g.p.m. acre-feet per year

Legal sub. Tract A/ of the Plat of Gesell Addition Sec. 3 Twp. 22 N. Rge. 6 E. County King

Use Community domestic supply

Irrigation-acreage: Present Planned Feasible

Municipal: Population as of

Industrial

Time pump will be operated Continuously

Other water rights appurtenant to this land None

Proximity to existing works, springs, wells, or streams There are no recorded Ground Water rights within ½ mile of applicants well

Area Sub-area Zone

RECOMMENDATIONS

Approved for 250 g.p.m. 26 2/3 acre-feet per year, subject to existing water rights. (1 acre-foot 325,850 gallons.)

The installation of an access port as described in attached Ground Water Bulletin No. 1 shall be required prior to issuance of final certificate of water right. The applicant may, for his own convenience, wish to install an air-line and gage in addition to the access port.

Use of the waters to be appropriated under this application will be for a public water supply. State Board of Health rules require every owner of a public water supply to obtain written approval from the State Director of Health prior to any new construction or alterations of a public water supply. The applicant is advised to contact the Washington State Department of Health, 304 Public Health Building, Olympia, with regard to the need for compliance.

The water requirement for community domestic supply for this development is based on a maximum annual need of 2/3 acre-foot for each lot, or 26 2/3 acre-feet annually for 40 lots.

Applicant is advised that notice of proof of appropriation of water (under which final certificate of water right issues) should not be filed until the permanent withdrawal facilities have been installed together with a main line system capable of delivering the recommended quantity of water to an existing or proposed distribution system within the area to be served.

As provided under RCW 43.21.130, 90.03.360, 90.44.250 and 90.44.020, a master meter shall be installed in this system to measure the total amount of withdrawal.

Signed at Olympia, Washington
this 4 day of December, 1968

Dean Wood

DEAN WOOD
Water Resources Inspector
Division of Water Management

EVERGREEN DRILLING

15407 ~~xxxx~~ - 42nd AVENUE SOUTH

CH 2-9212

SEATTLE, WASH. 98188 August 19 1966

M. Gasell Enterprises, Inc.

Rt. 2, Box 1090, Maple Valley, Wash.

Log on Well Drilled at Maple Valley

0	- 8	Top Soil & Rocks
8	- 22	Gravel & Gray Clay
22	- 27	Sandy clay
27	- 31	Till
31		Seepage
31	- 70	Till
70	- 95	Dry Brown Sand
95	- 100	Seepage
100	- 103	Silty Blue Clay
103	- 117	Till
117	- 135	Lenses of Sand & Clay(water bearing)
135	- 152	Sand & Gravel, loose (waterbearing)
152	- 159	Clay

10' of .0.5 Stainless Steel Screen installed
Test pumped 250 gpm
10' of drawdown in 4 hrs, complete recovery
in one minute.

9412736

Laucks Testing Laboratories, Inc.

940 S. Harney Seattle, WA 98108 (206) 767-5060

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSIS

→ DO NOT WRITE IN SHADED AREAS • PLEASE FILL BOXES NUMBERED 1 THRU 14 • SEE BACK FOR INSTRUCTIONS ←

LABORATORY NUMBER: 9812570

DATE RECEIVED: 12/22/94 11:30

1. DATE COLLECTED: 12/22/94

2. SYSTEM NAME: Echo Glen

3. SYSTEM ID #: 27510D

4. CIRCLE GROUP: (A) B

5. COUNTY: King

6. SOURCE TYPE: ☐ SURFACE ☒ WELL ☐ SPRING ☐ PURCHASE

7. SAMPLE TAKEN: ☐ BEFORE TREATMENT ☒ AFTER TREATMENT

8. SOURCE NO.: S01

9. SOURCE NAME:

10. COLLECTED BY: Clarson

TELEPHONE: 206 439-0344

11. IF TAKEN AFTER TREATMENT, CHECK TREATMENT:

☐ FLUORIDATION
☒ CHLORINATION
☐ FILTRATION
☐ WATER SOFTENER, TYPE: _____
☐ OTHER: _____

12. IF TAKEN FROM DISTRIBUTION, INDICATE ADDRESS:

13. SEND REPORT AND INVOICE TO:

ADDRESS:
WUSI
12608 E. Marginal Wy S
Seattle, WA 98168

TELEPHONE: 206 439-0344

14. REMARKS:

Complete inorganic chemical sampling

LABORATORY REPORT

TESTS	MCL[1]	Less Than <	RESULTS	UNITS	Compliance YES	Compliance NO	Chemist Initials
Antimony Sb	0.006	<	.0050	mg/l	✓		BL
Arsenic[P] As	0.05	<	0.010	mg/l	✓		
Barium[P] Ba	2.0	<	0.10	mg/l	✓		
Beryllium Be	0.004	<	.0020	mg/l	✓		
Cadmium[P] Cd	0.005	<	.0020	mg/l	✓		
Chromium[P] Cr	0.1	<	0.010	mg/l	✓		
Copper Cu	1.0[2]	<	0.02	mg/l	✓		
Iron Fe	0.3	<	0.05	mg/l	✓		
Lead[P] Pb	0.05[2]	<	0.002	mg/l	✓		
Manganese Mn	0.05	<	0.010	mg/l	✓		
Mercury[P] Hg	0.002	<	.0005	mg/l	✓		
Nickel Ni	0.1	<	0.040	mg/l	✓		
Selenium[P] Se	0.05	<	0.005	mg/l	✓		
Silver Ag	0.1	<	0.010	mg/l	✓		
Sodium[P] Na	20.[3]		7	mg/l			
Thallium Tl	0.002	<	.0010	mg/l	✓		
Zinc Zn	5.0	<	0.05	mg/l	✓		
Hardness			74	mg/l as $CaCO_3$			
Conductivity	700		170	umhos/cm 25° C	✓		
Turbidity[P]	1.0		0.4	NTU	✓		
Color	15.0	<	5.0	Color Units	✓		
Chloride Cl	250	<	20	mg/l	✓		
Cyanide CN	0.2	<	0.100	mg/l	✓		
Fluoride[P] F	2.0	<	0.5	mg/l	✓		
Nitrate[P] as N	10.0		2.6	mg/l	✓		
Nitrite as N	1.0	<	0.5	mg/l	✓		
Sulfate SO_4	250	<	10	mg/l	✓		
TDS	500			mg/l			

LABORATORY COMMENTS:

DATE OF REPORT: 1-9-95

FOOTNOTES: 1- MCL: Maximum Contamination Level; 2- This is the State MCL, Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper;
3- Recommended MCL
P- Primary Standard; TDS- Total Dissolved Solids Run only when Conductivity is Greater than 700

Laucks 85 years
Testing Laboratories, Inc.
940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063

Chemistry, Microbiology, and Technical Services

Certificate of Analysis

CLIENT: Washington Water Supply, Inc.
12608 E Marginal Way South
Seattle, WA 98168

Work Order# : 94-02-744
DATE RECEIVED : 02/22/94
DATE OF REPORT: 02/28/94

ATTN : Tony Mole

Work ID : 524.2 Analysis
Taken By : Client
Transported by: Hand Delivered
Type : Water

Echo Glen

SAMPLE IDENTIFICATION:

	Sample Description	Collection Date
01	Booster Pump House Faucet	02/22/94

GENERAL COMMENTS ON VOLATILE ORGANICS TICs:

Tentatively Identified Compounds, or TICs, are reported on a separate page if you requested this additional analytical work or if a regulatory agency requires that TICs be reported. (For instance, the State of Washingtion requires TIC reporting for all official 524.2 analyses.) In the heading information on the TIC report, the number of tentatively identified compounds found is noted. If no TICs were found, the report will say so and there will be no further information on the report. If TICs were found, they will be listed and an estimated concentration will be shown for each.

FLAGGING:

The flag "U" indicates the analyte of interest was not detected, to the limit of detection indicated.

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Chemistry, Microbiology, and Technical Services

CLIENT : Washington Water Supply, Inc.

Certificate of Analysis

Work Order# : 94-02-744

Unless otherwise instructed all samples will be discarded on 04/14/94

Respectfully submitted,
Laucks Testing Laboratories, Inc.

John M. Buerger

Laucks 85 years
Testing Laboratories, Inc.
940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063

Chemistry, Microbiology, and Technical Services

VOLATILE ORGANIC CHEMICAL REPORT

Results of Analysis by EPA Method 524.2
Measurement of Purgeable Organic Compounds in Water by Capillary Column
Gas Chromatography/Mass Spectrometry

Send Report To: Washington Water Supply, Inc.
12608 E Marginal Way South
Seattle, WA 98168

COUNTY	: King		
SYSTEM NAME	: Echo Glenn	LABORATORY NO.	: 08116508
SYSTEM ID NO.	: 275100	DATA FILE	:
DATE COLLECTED	: 02/22/94	ANALYST	: KNG
DATE ANALYZED	: 02/23/94	DATE OF REPORT	: 02/28/94
SOURCE NUMBER	: S01	SUPERVISOR'S INITIALS	: JBR
SOURCE TYPE	: Well	LTL #	: 9402744-01A

Regulated Compounds

EPA Code	NAME OF COMPOUND	* MCL (ug/L)	** Amount (ug/L)
2976	VINYL CHLORIDE	2	ND
2977	1,1-DICHLOROETHYLENE	7	ND
2981	1,1,1-TRICHLOROETHANE	200	ND
2982	CARBON TETRACHLORIDE	5	ND
2990	BENZENE	5	ND
2980	1,2-DICHLOROETHANE	5	ND
2984	TRICHLOROETHYLENE	5	ND
2969	P-DICHLOROBENZENE	75	ND
2979	T-1,2-DICHLOROETHYLENE	100	ND
2380	CIS-1,2-DICHLOROETHYLENE	70	ND
2983	1,2-DICHLOROPROPANE	5	ND
2991	TOLUENE	1000	ND
2987	TETRACHLOROETHYLENE	5	ND
2989	CHLOROBENZENE	100	ND
2992	ETHYL BENZENE	700	ND

* Maximum Contaminant level

** NOTE: ND indicates that the true concentration is
less than the method detection limit of 0.5 ug/L.

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940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063
Chemistry, Microbiology, and Technical Services

Results of Analysis by EPA Method 524.2 (continued)

LABORATORY NO. : 08116508
DATA FILE :

Regulated Compounds (continued)

EPA Code	NAME OF COMPOUND	* MCL (ug/L)	** Amount (ug/L)
2995	M/P-XYLENE (total xylene MCL=10000)		ND
2997	O-XYLENE (total xylene MCL=10000)		ND
2996	STYRENE	100	ND
2968	O-DICHLOROBENZENE	600	ND
2964	METHYLENE CHLORIDE	5	ND
2985	1,1,2-TRICHLOROETHANE	5	ND
2378	1,2,4-TRICHLOROBENZENE	70	ND

Trihalomethanes (THM)

2941	CHLOROFORM		ND
2943	BROMODICHLOROMETHANE		ND
2944	CHLORODIBROMOMETHANE		ND
2942	BROMOFORM		ND

* Maximum Contaminant level

** NOTE: ND indicates that the true concentration is less than the method detection limit of 0.5 ug/L.

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940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063
Chemistry, Microbiology, and Technical Services

REPORT ON SAMPLE: 9402744-01A
Client Sample ID: Booster Pump House Faucet

Date Received : 02/22/94 Collection Date : 02/22/94
Test Code : TIC_V Test Method : 524.2

TENTATIVELY IDENTIFIED VOLATILE COMPOUNDS

Number of TICs found: 1 Conc Units: UG/L

CAS Number	Compound Name	RT	Est. Conc
67641	ACETONE	1.88	7J

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APPENDIX

Method Blank Report

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940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063

Chemistry, Microbiology, and Technical Services

Quality Control Report
Method Blanks for Work Order 9402744

Blank Name	Samples Verified	Test Description	Result	Units	Control Limit
B022394_MVO_W02	1	Vinyl chloride	0.50 U	ug/L	0.50
		1,1-Dichloroethylene	0.50 U		0.50
		1,1,1-Trichloroethane	0.50 U		0.50
		Carbon tetrachloride	0.50 U		0.50
		Benzene	0.50 U		0.50
		1,2-Dichloroethane	0.50 U		0.50
		Trichloroethylene	0.50 U		0.50
		p-Dichlorobenzene	0.50 U		0.50
		Chloromethane	0.50 U		0.50
		Bromomethane	0.50 U		0.50
		Chloroethane	0.50 U		0.50
		Methylene chloride	0.50 U		2.5
		trans-1,2-Dichloroethylene	0.50 U		0.50
		1,1-Dichloroethane	0.50 U		0.50
		2,2-Dichloropropane	0.50 U		0.50
		cis-1,2-Dichloroethylene	0.50 U		0.50
		1,1-Dichloropropene	0.50 U		0.50
		1,2-Dichloropropane	0.50 U		0.50
		Dibromomethane	0.50 U		0.50
		Toluene	0.50 U		0.50
		1,1,2-Trichloroethane	0.50 U		0.50
		Tetrachloroethylene	0.50 U		0.50
		1,3-Dichloropropane	0.50 U		0.50
		Chlorobenzene	0.50 U		0.50
		1,1,1,2-Tetrachloroethane	0.50 U		0.50
		Ethyl benzene	0.50 U		0.50
		m/p-Xylene	0.50 U		0.50
		o-Xylene	0.50 U		0.50
		Styrene	0.50 U		0.50
		Bromobenzene	0.50 U		0.50

A method blank can validate more than one analyte on more than one work order. The method blanks in this report may validate analytes not determined on this work order, but nonetheless determined in the associated blank.

Because they validate more than one work order, method blank results are not always reported in the same concentration units or to the same detection limits that are used for sample results.

* = blank exceeds control limit

Laucks 85 years
Testing Laboratories, Inc.
940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063

Chemistry, Microbiology, and Technical Services

Quality Control Report
Method Blanks for Work Order 9402744

Blank Name	Samples Verified	Test Description	Result	Units	Control Limit
		1,2,3-Trichloropropane	0.50 U		0.50
		1,1,2,2-Tetrachloroethane	0.50 U		0.50
		o-Chlorotoluene	0.50 U		0.50
		p-Chlorotoluene	0.50 U		0.50
		m-Dichlorobenzene	0.50 U		0.50
		o-Dichlorobenzene	0.50 U		0.50
		Dichlorodifluoromethane	0.50 U		0.50
		Trichlorofluoromethane	0.50 U		0.50
		Bromochloromethane	0.50 U		0.50
		Isopropylbenzene	0.50 U		0.50
		n-Propylbenzene	0.50 U		0.50
		1,3,5-Trimethylbenzene	0.50 U		0.50
		tert-Butylbenzene	0.50 U		0.50
		1,2,4-Trimethylbenzene	0.50 U		0.50
		sec-Butylbenzene	0.50 U		0.50
		p-Isopropyltoluene	0.50 U		0.50
		n-Butylbenzene	0.50 U		0.50
		1,2,4-Trichlorobenzene	0.50 U		0.50
		Naphthalene	0.50 U		0.50
		Hexachlorobutadiene	0.50 U		0.50
		1,2,3-Trichlorobenzene	0.50 U		0.50
		Chloroform	0.50 U		0.50
		Bromodichloromethane	0.50 U		0.50
		Chlorodibromomethane	0.50 U		0.50
		Bromoform	0.50 U		0.50
		t-1,3-Dichloropropene	0.50 U		0.50
		cis-1,3-dichloropropene	0.50 U		0.50

A method blank can validate more than one analyte on more than one work order. The method blanks in this report may validate analytes not determined on this work order, but nonetheless determined in the associated blank.

Because they validate more than one work order, method blank results are not always reported in the same concentration units or to the same detection limits that are used for sample results.

* = blank exceeds control limit

2/7/95
copy to JP
already

STATE OF WASHINGTON

DEPARTMENT OF HEALTH

DIVISION OF DRINKING WATER

Airdustrial Center, Bldg. 3 • P.O. Box 47822 • Olympia, Washington 98504-7822

February 2, 1995

Enclosed are the results of the synthetic organic chemicals (SOC) sample collected from your water system, as part of the Department of Health's Area Wide Sampling Project. No detections above the EPA trigger levels were found. The sample we took for this project will count as the first quarter's sample IF you do not receive a waiver or are required to do partial sampling in combination with a waiver. **PLEASE KEEP THE ENCLOSED ANALYTICAL REPORT IN YOUR RECORDS.**

Please note that participation in the Area Wide Sampling Project does not mean that you have been granted a monitoring waiver. In order to be eligible for any of the available waivers, DOH **must** have on file a completed Groundwater Contamination Susceptibility Assessment Survey Form for each groundwater source or a Surface Water Checklist for each surface water source. If you have filed these forms, then you will be notified of your susceptibility rating and waiver options in the next few weeks. If you have not filed these forms you still can. However, systems submitting forms after March 15 will be required to do the first quarter of monitoring no matter what the waiver determination is. If you need copies of these forms, please contact your regional DOH office.

Group A Transient Non Community (TNC) water systems, as well as emergency or inactive sources, are exempt from the SOC testing requirements. If your water system is classified as a Group A Community (COMM) or Non-Transient Non-Community (NTNC) water system, then you must complete 4 consecutive quarters of monitoring for SOC's (Analytical Methods 515.1, 525.1, 531, 547 & 549), beginning in March 1995, **UNLESS** you are granted a waiver to reduce the monitoring requirements. If you are unsure as to the classification of your system check your Water Facilities Inventory (WFI) form or call your DOH regional office.

Thank you for participating in this project. The Area Wide Sampling Project has provided DOH with a database containing water quality information regarding pesticides. This database will assist in Phase II/V Area Waiver determinations.

Sincerely,

Patricia Wickham

Patricia Wickham
Project Manager

DOH Area-Wide Groundwater Monitoring Project

Synthetic Organic Compound (SOC) Water Quality Report

Analyzed by Materials Testing & Consulting, Inc.

ECHO GLEN WATER SYSTEM
SEATTLE
WA
98168

Sample Date 9/28/94
Report Date 2/2/95
PWSID 27510DS01
DOH Sample ID DOH-1451

METHOD	CONSTITUENT	RESULT (1)	UNITS	QUAL (2)	MCL (3)	EPA Trigger Level (4)
EPA 515.1						
	2,4,5-T	ND	ug/L	U		0.8
	2,4,5-TP	ND	ug/L	U	50	0.2
	2,4-D	ND	ug/L	U	70	0.1
	2,4-DB	ND	ug/L	U		0.8
	Dalapon	ND	ug/L	U	200	1
	Dicamba	ND	ug/L	U		0.81
	Dinoseb	ND	ug/L	U	7	0.2
	Pentachlorophenol	ND	ug/L	U	1	0.04
	Picloram	ND	ug/L	U	500	0.1
EPA 525.1						
	Alachlor	ND	ug/L	U	2	0.2
	Aldrin	ND	ug/L	U		0.083
	Atrazine	ND	ug/L	U	3	0.1
	Benzo(a)pyrene	ND	ug/L	U	0.2	0.02
	Butachlor	ND	ug/L	U		0.5
	Chlordane	ND	ug/L	U	2	0.2
	Di(ethylhexyl)-adipate	ND	ug/L	U	400	0.6
	Di(ethylhexyl)-phthalate	ND	ug/L	U	6	0.6
	Dieldrin	ND	ug/L	U		0.5
	Endrin	ND	ug/L	U	2	0.01
	Heptachlor	ND	ug/L	U	0.4	0.04
	Heptachlor Epoxide	ND	ug/L	U	0.2	0.02
	Hexachlorobenzene	ND	ug/L	U	1	0.1
	Hexachlorocyclo-pentadiene	ND	ug/L	U	50	0.1
	Lindane	ND	ug/L	U	0.2	0.02
	Methoxychlor	ND	ug/L	U	40	0.1
	Metolachlor	ND	ug/L	U		0.5
	Metribuzin	ND	ug/L	U		0.5
	Propachlor	ND	ug/L	U		0.5
	Simazine	ND	ug/L	U	4	0.07
	Toxaphene	ND	ug/L	U	3	1
EPA 547						
	Glyphosate	ND	ug/L	U		

(1) ND: Compound not detected.

(2) U, UJ: Compound not detected J: Detected below reporting limit, resampling may be required. B: Compound detected in blank.

(3) MCL: Maximum Concentration Limit, maximum concentration permissible in water as established by EPA, NPDWR.

(4) EPA Trigger Level: EPA specified concentration over which increased monitoring frequencies are required.

WASHINGTON WATER SUPPLY, INC.

"Water Supply and Distribution"

March 12, 1995

Mr. Steve Hulsman
Department of Health
1511 Third Ave. Suite 719
Seattle, WA 98101-1632

Dear Mr. Hulsman,

Washington Water Supply, Inc. has completed and enclosed the SOC "Susceptibility Assessment Survey" packet for the Echo Glen Water System (ID# 27510D).

Please call should questions arise.

Respectfully,

John Poppe

John Poppe
Washington Water Supply, Inc.

12608 EAST MARGINAL WAY SOUTH SEATTLE, WA. 98168

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.

PART I: System Information

Well owner/manager : WASHINGTON WATER SUPPLY, INC.

Water system name : Echo Glen Water System

County: KING County

Water system number: 27510D Source number: _____

Well depth: 159 (ft.) (*From WFI form*)

Source name: Echo Glen Water System

WA well identification tag number: ___ ___ ___-___ ___ ___

X well not tagged

Number of connections: 41 Population served: 102.5

Township: _____ Range: _____

Section: _____ 1/4 1/4 Section: _____

Latitude/longitude (if available): _____/_____

How was lat./long. determined?

____ global positioning device ____ survey ____ topographic map
____ other: _____

* 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: 08/19/66 month/day/year

last reconstruction: ___ / ___ /___ month/day/year

_____ information unavailable

2) Well driller: Evergreen Drilling
15407 - 42 nd Ave. South
Seattle, WA

___ well driller unknown

3) Type of well:

___**Drilled:** ___ rotary ___ bored ___ cable (percussion) ___ **Dug**

___ **Other:** ___ spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: _____

Additional comments: Not defined on well drillers report.

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: 250 GPM (gallons/min)

Source of information: Well drillers report.

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 ___ (greater than) 100 ft

___ flowing well/spring (artesian)

How was water level determined?

___ well log ___ other: _____

___ depth to ground water unknown

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

_____ psi (pounds per square inch)
or
_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ___ YES X NO

5) Wellhead elevation (height above mean sea level): _____ (ft)

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

___ other: _____

___ information unavailable

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

X evidence of a confining layer in well log

___ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer?** ___ YES ___ NO

___ information unavailable

7) Sanitary setback:

___ (less than) 100 ft* ___ 100-120 ft ___ 120-200 ft X (greater than) 200 ft
* if less than 100 ft describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

___ wellhead enclosed in a wellhouse

___ controlled access (describe): _____

_____

___ other uses for wellhouse (describe): _____

_____

X no wellhead control

9) Surface seal:

___ 18 ft

___ (less than) 18 ft (no Department of Ecology approval)

___ (less than) 18 ft (Approved by Ecology, include documentation)

___ (greater than) 18 ft

X 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: _____ (gallons)

How was this determined?

__ meter (400 gpd/conn) (4 conn) (365 days/yr) = Annual volume

X estimated: X pumping rate (5,986,000)

__ 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: 1390 (ft)

Information available on length of screened/open interval?

X YES __ NO

Length of screened/open interval: 10' (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:

_____

_____

_____

_____

_____

_____

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.

None Visible.

Suggestions and Comments

Did you attend one of the susceptibility workshops?	___ YES	X NO
Did you find it useful?	___ YES	___ NO
Did you seek outside assistance to complete the assessment?	___ YES	___ NO

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

I did not receive this form until the end of February, 1995.

This is an extremely short amount of time to complete this form.

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	___
(greater than) 5 mg/liter nitrate	___
Nitrate sampling records unavailable	___

SAMPLE has been collected. Waiting on results.

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:	YES
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)	
EDB/DBCP detected below MCL at least once	___
EDB/DBCP detected above MCL at least once	___
EDB/DBCP never detected	X
EDB/DBCP tests required but not yet completed	___
EDB/DBCP tests not required	___

D. Other SOCs (pesticides and other synthetic organic chemicals):	YES
Other SOCs detected	___
Other SOC tests performed but none detected *	___
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).	X
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?)

X YES ___ NO

Describe with references to map produced in Part IV:

_____

_____

2) Aquifer Material:

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

___ YES 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?

___ YES X NO

Consulting Engineer

Letter #2

Telephone
746-0519

Richard L. Heintze, P.E., L.S.

Registered Civil Engineer – Land Surveyor

INTERLAKE ASSOCIATES
14846 S.E. 50th St.
Bellevue, Washington 98006

April 6, 1988

Mr. Robert Sullivan, President
Echo Glen Water Co.
P.O. Box 33
Gorst, Wash. 98337

Re: Gesell Water System, Maple Valley
D.S.H.S. I.D. 27510 D, Class 2

Dear Sir:

Recently your associate Mr. Rock Caley requested that I submit a report to you on the capacity of the subject water system. Mr. Caley was aware that I had physically measured and analyzed in June 1987 for 38 services. The well output was obtained from pump tests made by Valley Pump, Auburn, phone No. 939-8008.

The well test indicated a yield of ~~50~~ 259 G.P.M. or 86,400 G.P.D. if pumped continuously. Per D.S.H.S. standards of 800 G.P.D., this source could support 108 services.

Storage facilities consisted of a covered concrete box and a horizontal cylindrical steel tank. The concrete box at the time had a level control that cut-out the well pump at a depth of 7.1 feet or 21,402 gallons. The steel storage tank at the time was not in use but has a capacity of 6,200 gallons. Thus total available storage is 27,602 gallons.

Total required storage per D.S.H.S. standards requires 600 gallons/service standby plus equalizing storage which is based on a D.S.H.S. formula and maximum instantaneous demand.

For 38 Services:	Required Standby Storage is	22,800 gallons
	" Equalizing " is	4,350 gallons
	Total Required Storage is	27,150 gallons
For 39 Services:	Required Standby Storage is	23,400 gallons
	" Equalizing " is	4,650 gallons
	Total Required Storage is	28,050 gallons
For 40 Services:	Required Standby Storage is	24,000 gallons
	" Equalizing " is	4,950 gallons
	Total Required Storage is	28,950 gallons
Available Storage is		27,602 gallons

Storage Deficiency: 38 Services ..... None
39 Services ..... 448 gallons
40 Services ..... 1348 gallons

Storage may be increased slightly by raising the cut-off level control in the concrete box tank. Each foot of depth contains 3,014 gallons which is 251 gallons per inch. Thus, raising the level 2 inches gives an additional 502 gallons and raising it 6 inches gives an additional 1,500 gallons. However, good tank design requires leaving about 1.0 foot of free board to reduce overflow due to turbulence when tank is filling.

Since the top of the adjacent horizontal steel tank may be slightly below the full level of the concrete box tank, it will overflow before the latter is full. This may be rectified by either raising the supports of the steel tank or by installing a Bob valve in the top of the filler pipe. This valve is similar to the float valve in a toilet tank.

Before putting the steel tank back into service, it would be advisable to flush it out with a strong chlorine solution and submit bacterial water samples to the Health Dept.

Service pressure is maintained by a continuously running boost pump that delivers 100 P.S.I. at the pump house and about 60 P.S.I. at the highest lot. These pressures were checked by gage personally. A standby boost pump can be put into service immediately.

Sincerely,

RICHARD L. HEINTZE, P.E., L.S.
INTERLAKE ASSOCIATES

R. L. Heintze

RLH/mlh

cc: Mr. Batra, P.E.
Dept. Social & Health Services
Water Supply Section

EVERGREEN DRILLING

15407 ~~XXXX~~ - 42nd AVENUE SOUTH

CH 2-9212

SEATTLE, WASH. 98188, August 19 1966

M Gasell Enterprises, Inc.

Rt. 2, Box 1090, Maple Valley, Wash.

Log on Well Drilled at Maple Valley

0 -	8	Top Soil & Rocks
8 -	22	Gravel & Grey Clay
22 -	27	Sandy clay
27 -	31	Till
31		Seepage
31 -	70	Till
70 -	95	Dry Brown Sand
95 -	100	Seepage
100 -	103	Silty Blue Clay
103 -	117	Till
117 -	135	Lenses of Sand & Clay(water bearing)
135 -	152	Sand & Gravel, loose (waterbearing)
152 -	159	Clay

10' of .010 Stainless Steel Screen installed
Test pumped 250 gpm
10' of drawdown in 4 hrs, complete recovery
in one minute.

Laucks 85 years
Testing Laboratories, Inc.
940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063

Chemistry, Microbiology, and Technical Services

CLIENT: Washington Water Supply, Inc.
12608 E Marginal Way South
Seattle, WA 98168

Certificate of Analysis

Work Order# : 94-02-744
DATE RECEIVED : 02/22/94
DATE OF REPORT: 02/28/94

ATTN : Tony Mole

Work ID : 524.2 Analysis
Taken By : Client
Transported by: Hand Delivered
Type : Water

Echo Glen

SAMPLE IDENTIFICATION:

	Sample Description	Collection Date
01	Booster Pump House Faucet	02/22/94

GENERAL COMMENTS ON VOLATILE ORGANICS TICs:

Tentatively Identified Compounds, or TICs, are reported on a separate page if you requested this additional analytical work or if a regulatory agency requires that TICs be reported. (For instance, the State of Washington requires TIC reporting for all official 524.2 analyses.) In the heading information on the TIC report, the number of tentatively identified compounds found is noted. If no TICs were found, the report will say so and there will be no further information on the report. If TICs were found, they will be listed and an estimated concentration will be shown for each.

FLAGGING:

The flag "U" indicates the analyte of interest was not detected, to the limit of detection indicated.

Laucks 85 years
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Chemistry, Microbiology, and Technical Services

CLIENT : Washington Water Supply, Inc.

Certificate of Analysis

Work Order# : 94-02-744

Unless otherwise instructed all samples will be discarded on 04/14/94

Respectfully submitted,
Laucks Testing Laboratories, Inc.

John M. Buerger

Laucks 85 years
Testing Laboratories, Inc.
940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063

Chemistry, Microbiology, and Technical Services

VOLATILE ORGANIC CHEMICAL REPORT

Results of Analysis by EPA Method 524.2
Measurement of Purgeable Organic Compounds in Water by Capillary Column
Gas Chromatography/Mass Spectrometry

Send Report To: Washington Water Supply, Inc.
12608 E Marginal Way South
Seattle, WA 98168

COUNTY	: King		
SYSTEM NAME	: Echo Glenn	LABORATORY NO.	: 08116508
SYSTEM ID NO.	: 275100	DATA FILE	:
DATE COLLECTED	: 02/22/94	ANALYST	: KNG
DATE ANALYZED	: 02/23/94	DATE OF REPORT	: 02/28/94
SOURCE NUMBER	: S01	SUPERVISOR'S INITIALS	: JBR
SOURCE TYPE	: Well	LTL #	: 9402744-01A

Regulated Compounds

EPA Code	NAME OF COMPOUND	* MCL (ug/L)	** Amount (ug/L)
2976	VINYL CHLORIDE	2	ND
2977	1,1-DICHLOROETHYLENE	7	ND
2981	1,1,1-TRICHLOROETHANE	200	ND
2982	CARBON TETRACHLORIDE	5	ND
2990	BENZENE	5	ND
2980	1,2-DICHLOROETHANE	5	ND
2984	TRICHLOROETHYLENE	5	ND
2969	P-DICHLOROBENZENE	75	ND
2979	T-1,2-DICHLOROETHYLENE	100	ND
2380	CIS-1,2-DICHLOROETHYLENE	70	ND
2983	1,2-DICHLOROPROPANE	5	ND
2991	TOLUENE	1000	ND
2987	TETRACHLOROETHYLENE	5	ND
2989	CHLOROBENZENE	100	ND
2992	ETHYL BENZENE	700	ND

* Maximum Contaminant level

** NOTE: ND indicates that the true concentration is
less than the method detection limit of 0.5 ug/L.

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Chemistry, Microbiology, and Technical Services

Results of Analysis by EPA Method 524.2 (continued)

LABORATORY NO. : 08116508
DATA FILE :

Regulated Compounds (continued)

EPA Code	NAME OF COMPOUND	* MCL (ug/L)	** Amount (ug/L)
2995	M/P-XYLENE (total xylene MCL=10000)		ND
2997	O-XYLENE (total xylene MCL=10000)		ND
2996	STYRENE	100	ND
2968	O-DICHLOROBENZENE	600	ND
2964	METHYLENE CHLORIDE	5	ND
2985	1,1,2-TRICHLOROETHANE	5	ND
2378	1,2,4-TRICHLOROBENZENE	70	ND

Trihalomethanes (THM)

2941	CHLOROFORM		ND
2943	BROMODICHLOROMETHANE		ND
2944	CHLORODIBROMOMETHANE		ND
2942	BROMOFORM		ND

* Maximum Contaminant level

** NOTE: ND indicates that the true concentration is less than the method detection limit of 0.5 ug/L.

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Chemistry, Microbiology, and Technical Services

Results of Analysis by EPA Method 524.2 (continued)

LABORATORY NO. : 08116508
DATA FILE :

Unregulated Compounds

EPA Code	NAME OF COMPOUND	** Amount (ug/L)
2210	CHLOROMETHANE	ND
2214	BROMOMETHANE	ND
2216	CHLOROETHANE	ND
2978	1,1-DICHLOROETHANE	ND
2416	2,2-DICHLOROPROPANE	ND
2410	1,1-DICHLOROPROPENE	ND
2408	DIBROMOMETHANE	ND
2412	1,3-DICHLOROPROPANE	ND
2986	1,1,1,2-TETRACHLOROETHANE	ND
2993	BROMOBENZENE	ND
2414	1,2,3-TRICHLOROPROPANE	ND
2988	1,1,2,2-TETRACHLOROETHANE	ND
2965	O-CHLOROTOLUENE	ND
2966	P-CHLOROTOLUENE	ND
2967	M-DICHLOROBENZENE	ND
2212	DICHLORODIFLUOROMETHANE	ND
2218	TRICHLOROFLUOROMETHANE	ND
2430	BROMOCHLOROMETHANE	ND
2994	ISOPROPYLBENZENE	ND
2998	N-PROPYLBENZENE	ND
2424	1,3,5-TRIMETHYLBENZENE	ND
2426	TERT-BUTYLBENZENE	ND
2428	SEC-BUTYLBENZENE	ND
2030	P-ISOPROPYLTOLUENE	ND
2422	N-BUTYLBENZENE	ND
2418	1,2,4-TRIMETHYLBENZENE	ND
2248	NAPHTHALENE	ND
2246	HEXACHLOROBUTADIENE	ND
2420	1,2,3-TRICHLOROBENZENE	ND
2228	CIS-1,3-DICHLOROPROPENE	ND
2224	TRANS-1,3-DICHLOROPROPENE	ND

** NOTE: ND indicates that the true concentration is less than the method detection limit of 0.5 ug/L.

All detected non-THM compounds have been confirmed by reanalysis.

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Chemistry, Microbiology, and Technical Services

REPORT ON SAMPLE: 9402744-01A
Client Sample ID: Booster Pump House Faucet

Date Received : 02/22/94 Collection Date : 02/22/94
Test Code : TIC_V Test Method : 524.2

TENTATIVELY IDENTIFIED VOLATILE COMPOUNDS

Number of TICs found: 1 Conc Units: UG/L

CAS Number	Compound Name	RT	Est. Conc
67641	ACETONE	1.88	7J

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Chemistry, Microbiology, and Technical Services

APPENDIX

Method Blank Report

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Chemistry, Microbiology, and Technical Services

Quality Control Report
Method Blanks for Work Order 9402744

Blank Name	Samples Verified	Test Description	Result	Units	Control Limit
B022394_MV0_W02	1	Vinyl chloride	0.50 U	ug/L	0.50
		1,1-Dichloroethylene	0.50 U		0.50
		1,1,1-Trichloroethane	0.50 U		0.50
		Carbon tetrachloride	0.50 U		0.50
		Benzene	0.50 U		0.50
		1,2-Dichloroethane	0.50 U		0.50
		Trichloroethylene	0.50 U		0.50
		p-Dichlorobenzene	0.50 U		0.50
		Chloromethane	0.50 U		0.50
		Bromomethane	0.50 U		0.50
		Chloroethane	0.50 U		0.50
		Methylene chloride	0.50 U		2.5
		trans-1,2-Dichloroethylene	0.50 U		0.50
		1,1-Dichloroethane	0.50 U		0.50
		2,2-Dichloropropane	0.50 U		0.50
		cis-1,2-Dichloroethylene	0.50 U		0.50
		1,1-Dichloropropene	0.50 U		0.50
		1,2-Dichloropropane	0.50 U		0.50
		Dibromomethane	0.50 U		0.50
		Toluene	0.50 U		0.50
		1,1,2-Trichloroethane	0.50 U		0.50
		Tetrachloroethylene	0.50 U		0.50
		1,3-Dichloropropane	0.50 U		0.50
		Chlorobenzene	0.50 U		0.50
		1,1,1,2-Tetrachloroethane	0.50 U		0.50
		Ethyl benzene	0.50 U		0.50
		m/p-Xylene	0.50 U		0.50
		o-Xylene	0.50 U		0.50
		Styrene	0.50 U		0.50
		Bromobenzene	0.50 U		0.50

A method blank can validate more than one analyte on more than one work order. The method blanks in this report may validate analytes not determined on this work order, but nonetheless determined in the associated blank.

Because they validate more than one work order, method blank results are not always reported in the same concentration units or to the same detection limits that are used for sample results.

* = blank exceeds control limit

Laucks 85 years
Testing Laboratories, Inc.
940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063

Chemistry, Microbiology, and Technical Services

Quality Control Report
Method Blanks for Work Order 9402744

Blank Name	Samples Verified	Test Description	Result	Units	Control Limit
		1,2,3-Trichloropropane	0.50 U		0.50
		1,1,2,2-Tetrachloroethane	0.50 U		0.50
		o-Chlorotoluene	0.50 U		0.50
		p-Chlorotoluene	0.50 U		0.50
		m-Dichlorobenzene	0.50 U		0.50
		o-Dichlorobenzene	0.50 U		0.50
		Dichlorodifluoromethane	0.50 U		0.50
		Trichlorofluoromethane	0.50 U		0.50
		Bromochloromethane	0.50 U		0.50
		Isopropylbenzene	0.50 U		0.50
		n-Propylbenzene	0.50 U		0.50
		1,3,5-Trimethylbenzene	0.50 U		0.50
		tert-Butylbenzene	0.50 U		0.50
		1,2,4-Trimethylbenzene	0.50 U		0.50
		sec-Butylbenzene	0.50 U		0.50
		p-Isopropyltoluene	0.50 U		0.50
		n-Butylbenzene	0.50 U		0.50
		1,2,4-Trichlorobenzene	0.50 U		0.50
		Naphthalene	0.50 U		0.50
		Hexachlorobutadiene	0.50 U		0.50
		1,2,3-Trichlorobenzene	0.50 U		0.50
		Chloroform	0.50 U		0.50
		Bromodichloromethane	0.50 U		0.50
		Chlorodibromomethane	0.50 U		0.50
		Bromoform	0.50 U		0.50
		t-1,3-Dichloropropene	0.50 U		0.50
		cis-1,3-dichloropropene	0.50 U		0.50

A method blank can validate more than one analyte on more than one work order. The method blanks in this report may validate analytes not determined on this work order, but nonetheless determined in the associated blank.

Because they validate more than one work order, method blank results are not always reported in the same concentration units or to the same detection limits that are used for sample results.

* = blank exceeds control limit

Laucks Since 1908
Testing Laboratories, Inc.
940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063
Chemistry, Microbiology, and Technical Services

REPORT ON SAMPLE: 9412736-01
Client Sample ID: 27510D ECHO

Date Received : 12/22/94 Collection Date : 12/22/94

Test	MCL		Results	Units
Antimony	0.006	<	0.0050	mg/L
Arsenic	0.05	<	0.010	mg/L
Barium	2.0	<	0.1	mg/L
Beryllium	0.004	<	0.0020	mg/L
Cadmium	0.005	<	0.0020	mg/L
Chromium	0.1	<	0.01	mg/L
Copper	1.0*	<	0.02	mg/L
Iron	0.3	<	0.05	mg/L
Lead	0.05*	<	0.002	mg/L
Manganese	0.05	<	0.010	mg/L
Mercury	0.002	<	0.0005	mg/L
Nickel	0.1	<	0.040	mg/L
Selenium	0.05	<	0.005	mg/L
Silver	0.1	<	0.010	mg/L
Sodium			7	mg/L
Thallium	0.002	<	0.001	mg/L
Zinc	5.0	<	0.05	mg/L
Hardness			74	mg/L, as CaCO3
Conductivity	700		170	Micromhos/cm, 25°C
Turbidity	1.0		0.4	NTU
Color	15.0	<	5.0	Color Units
Chloride	250	<	20	mg/L
Cyanide	0.2	<	0.100	mg/L
Fluoride	2.0	<	0.5	mg/L
Nitrate	10.0		2.6	mg/L
Nitrite	1.0	<	0.5	mg/L
Sulfate	250	<	10	mg/L

MCL = Maximum Contamination Level established for drinking water under current EPA and State of Washington regulations. No MCL has been established for hardness or sodium, although 20 mg/L is a recommended MCL for sodium.

* = This is the Washington State MCL. Federal action levels are 0.015 mg/L for lead and 1.3 mg/L for copper.

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
DIVISION OF DRINKING WATER
Airdustrial Center, Bldg. 3 • P.O. Box 47822 • Olympia, Washington 98504-7822

June 30, 1995

Dear Water System Manager:

This package of information includes the rating of your Ground Water Contamination Susceptibility Assessment Survey(s). If you submitted surveys for additional sources that are not listed, they will be rated and sent to you in a separate mailing.

Also enclosed is:

1) Information on your monitoring requirements for the Volatile Organic Chemicals (VOC) for the 1993 -1995 compliance period.

2) A Fact Sheet that introduces the Area Waiver for Synthetic Organic Compounds (SOC) for sources that do not receive a Susceptibility Waiver. More information on SOC monitoring requirements and the Area Waiver for this compliance period will be sent to you within the next two weeks. You have the option to apply for this waiver or proceed with the required monitoring.

3) An invoice for a fee of $75.00 per source which covers the cost incurred, to date, by DOH in reviewing, rating and computerizing the Susceptibility Survey form(s) listed. Please send a check and the invoice to the address on the invoice within 30 days.

Please note that if any of your sources received a susceptibility rating of "low", you have been granted a Susceptibility Waiver for the 1993 - 1995 compliance period for that source, and do not need to proceed any further with the Area Waiver option. **Please read over the enclosed information carefully and keep it in your files.** Call your DOH Regional Office* if you should have any questions.

Sincerely,

Ginny Stern
Hydrogeologist

*Southwest Regional Office: Belle Fuchs (360) 586-5179, Vinnie Wright (360) 664-2203
Northwest Regional Office: Steve Hulsman (206) 464-7962, Jim Phillips (206) 464-6543
Eastern Regional Office: Brian Talbott (509) 456-2797

Washington State Department of Health
Division of Drinking Water

Invoice # Nº 31435

INVOICE
SUSCEPTIBILITY / USE WAIVER REVIEW

To: PUBLIC WATER SYSTEM NUMBER: 27510D

ECHO GLEN WATER SYSTEM
12608 E. MARGINAL WAY SOUTH

SEATTLE WA 98168

VENDOR # 48

JOB # _____

ACCT. # 7170-016

DATE	DESCRIPTION	AMOUNT
06/30/95	Susceptibility Assessment Review Fee. @ $75.00 per source. For sources: 27510D s01 Susceptibility Rating: M Total:	$75.00

Make check or money order payable to ***Department of Health****. Tear off lower portion and* ***send payment and lower portion within 30 days to:***

DEPARTMENT OF HEALTH
PO BOX 1099
OLYMPIA WA 98507-1099

DOH 710-010(10/21/94)

Division of Drinking Water
Susceptibility /Use Waiver Review

PWS ID / PWS NAME		
27510D ECHO GLEN WATER SYSTEM		
SOURCE ID(S)		
INVOICE # Nº 31435	INVOICE DATE 06/30/95	
AMOUNT $75.00		

DEPARTMENT OF HEALTH
REVENUE SECTION
PO BOX 1099
OLYMPIA WA 98507-1099

1F 0420241070 01667

1995 Fee Structure For Area Waivers
(Per Source)

Population Served	*Waiver Fee*
0 - 300	$325
301 - 1,000	$490
1,001 - 5,000	$825
5,001 OR MORE	$995

As directed by the Legislature, fees for an Area Waiver have been developed in order to recover only the costs of developing and implementing the Area Waiver Program. The Legislature also directed that the fee structure be set according to system size. The above chart outlines fees charged for an initial Area Waiver. Renewal fees will be considerably less.

SOC Testing Requirements Without an Area Waiver
Four Quarters /Per source

Analytical Method	*Price for 1 Quarter**	*Price for 4 Quarters*
515.1 (HERBICIDES)	$150.00*	$600.00
525.2 (PESTICIDES)	$225.00*	$900.00
531.1 (CARBAMATES)	$150.00*	$600.00
547 (GLYPHOSATE)	$150.00*	$600.00
549 (DIQUAT)	$150.00*	$600.00
TOTAL	$825.00*	$3300.00

* This is an average of the fees charged by the labs certified to perform the analytical method. Individual method prices may vary depending on which lab you use.

You may choose to do this monitoring rather than take advantage of the Area Waiver. Each source that does NOT receive a waiver must complete all of the tests listed above for 4 quarters before December 31, 1995.

$$ THE *AREA WAIVER* CAN SAVE YOU MONEY $$

What is the Area Waiver?
The *Area Waiver* is a waiver option developed by DOH to grant waivers to water systems that received a susceptibility rating of moderate or high risk though the Susceptibility Assessment program. These systems are not eligible for a Susceptibility Waiver and must apply for an Area Waiver or complete 4 quarters of SOC (pesticides) testing by December 31, 1995.

Did I waste my time filling out the Ground Water Susceptibility Assessment Survey since I didn't get a Susceptibility Waiver?
No. The Assessment Survey is required for the Area Waiver too.

Why wouldn't I want to do the testing?
The Federal Safe Drinking Water Act requires public water supply sources to do 4 quarters of SOC testing before December 31, 1995 UNLESS they receive a monitoring waiver from the state. The list of SOC's is long and there is not a single analytical method that tests for all of them. It takes 5 different analytical methods to test for all of them. These tests are expensive and could cost as much as $825 per quarter for every source.

How do I get an Area Waiver?
You will be receiving detailed information in the mail soon telling you how to apply for a waiver. This information will also tell you how your system will benefit from the *Area Waiver*.

Does an Area Waiver cover my entire system or do I have to get one for every source?
Just like the Susceptibility Waiver, you must apply for an Area Waiver for each source.

How much does the Area Waiver cost?
The fee for the *Area Waiver* is based upon the size of the system (number of people served). The smaller the system the smaller the fee. The fee structure is listed on the back side.

Why do I have to pay for this Waiver?
This waiver originated from a piece of legislation, 2SHB2616, enacted by the 1994 Washington State Legislature. This bill directed DOH to develop a water quality data base and process for granting waivers to the sources not eligible for a Susceptibility Waiver. The Legislature felt that the sources that benefited from this special project should be the only ones to pay for it. In order to do the project, DOH was given a short term loan that they must pay back during 1995. DOH was directed to recover the costs of the project through the *Area Waiver* fees.

OVER →

SUSCEPTIBILITY RATING

The following source(s) is/are rated as moderate or high susceptibility and have **NOT** been granted a Susceptibility Waiver for synthetic organic compounds (SOC's). However, this source can still gain SOC monitoring relief with an Area Waiver. Detailed information about the Area Waiver will be mailed to you along with a list of the monitoring requirements that will be required if you do not get an Area Waiver.

Water Source: 27510 - S01

VOLATILE ORGANIC CHEMICAL (VOC) MONITORING REQUIREMENTS FOR THE 1993 - 1995 COMPLIANCE PERIOD

- [x] No additional VOC samples are required this compliance period.
- [ ] 1 quarter of VOC monitoring (method 524.2) is required this compliance period.
- [ ] 4 quarters of VOC monitoring (method 524.2) is required this compliance period.
- [ ] Quarterly monitoring is required of this source due to VOC detections in previous samples.

NOTE: This susceptibility rating does not affect requirements for BACTERIOLOGICAL (Coliform), INORGANIC CHEMICAL (IOC), or NITRATE monitoring. You should continue your coliform monitoring according to the regulations for Group A Public Water Systems (WAC 246-290-300, July 1994). One complete IOC analysis is required during each three-year compliance period. Nitrate sampling is required once a year, by itself or as part of an IOC (above). (See WAC 246-290-300, Table 3, for monitoring locations).

SAVE THIS INFORMATION

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
DIVISION OF DRINKING WATER
Airdustrial Center, Bldg. 3 • P.O. Box 47822 • Olympia, Washington 98504-7822
TDD Relay 1-800-833-6388

August 4, 1995

Dear Water System Manager:

In a recent mailing, we notified you that one or more of your sources is rated as moderate or high susceptibility and is not eligible for a susceptibility waiver. **However, the source(s) is eligible for an Area Waiver. If you apply for an Area Waiver, it will decrease or eliminate the amount of SOC monitoring you must do and save you money.**

If you decide not to apply for the Area Waiver, you must complete 4 consecutive quarters of SOC monitoring. You should know that the full SOC monitoring will cost about $3,300 per source for 4 quarters. The enclosed orange sheet has a complete list of the requirements.

Enclosed is:

1. **An Area Waiver invoice for $325 for each source.** If you want the Area Waiver, return the invoice with full payment. When DOH gets your payment, a waiver will be issued and written proof sent to you for your files. No waiver will be issued until payment is received. Please send your payment within thirty (30) days of the date of the invoice. *Please note that the fee for an Area Waiver will increase to $525 after September 30, 1995.*

2. **A blue sheet that has your Area Waiver Vulnerability rating on it.** This rating has been used to determine your monitoring requirements, if any, under the Area Waiver. These are shown on the blue sheet under "Test Methods Required". (The cost of this monitoring is in addition to the cost of the Area Waiver.) On the back is an explanation of the risk code.

3. **An orange sheet that tells you how an Area Waiver can save you money.**

Please read the enclosed information carefully. Remember, until you are issued a waiver, the sources listed on the invoice are required to do 4 quarters of SOC monitoring before December 31, 1995. To get an Area Waiver, send the invoice and payment to DOH at the address listed on the invoice. The fee covers only the cost of the Area Waiver. If you have any questions, please call your DOH Regional Office (listed below).

Sincerely,

Ginny Stern
Hydrogeologist

Southwest Regional Office: Belle Fuchs (360) 586-5179
Northwest Regional Office: Steve Hulsman (206) 464-7962
Eastern Regional Office: Scott Fink (509) 456-2475

Division of Drinking Water

INVOICE

Groundwater Monitoring Waiver

PUBLIC WATER SYSTEM NUMBER: 27510D

To: ECHO GLEN WATER SYSTEM
12608 E. MARGINAL WAY SOUTH

SEATTLE WA 98168

DATE	DESCRIPTION	AMOUNT
08/04/95	AREA WAIVER FEE @ $325.00 PER SOURCE	
	27510D Source: 1	
	TOTAL DUE:	$325.00

Make check or money order payable to ***Department of Health****. Tear off lower portion and* ***send payment and lower portion within 30 days to:***

DEPARTMENT OF HEALTH
PO BOX 1099
OLYMPIA WA 98507-1099

DOH 331-039 (7/20/94)

Division of Drinking Water
Groundwater Monitoring Waiver

PWS ID / PWS NAME		DEPARTMENT OF HEALTH REVENUE SECTION PO BOX 1099 OLYMPIA WA 98507-1099
27510D	ECHO GLEN WATER SYSTEM	
SOURCE ID(S)		
AMOUNT	$325.00	

1F 0420245010 01674

8/95

Area Waiver Vulnerability Risk Code

An explanation of the Vulnerability Risk Code is on the back.

System # 27510D System Name ECHO GLEN WATER SYSTEM

Source #	*Risk Code*	*Vulnerability Rating*	*Test Methods Required With the Area Waiver*
1	2001	L	

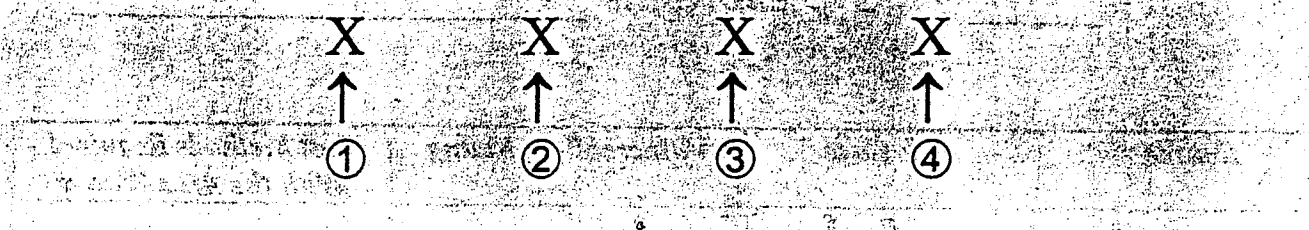
Sources rated as *Low* vulnerability do not need to do any further testing during this compliance period.

Sources rated as *Moderate* vulnerability must do 1 quarter of testing for the method(s) listed above. If a moderate source detects an SOC then its rating will be changed to *High*.

Sources rated as *High* vulnerability must do 4 quarters of testing for the method(s) listed above.

Save This Information

The 4 Digit Vulnerability Risk Code



The risk vulnerability code is a specific combination of 4 risk factors that classify the relative degree of risk a source has to pesticide contamination.

① The first digit represents the geographic location of the source. The Department of Ecology's Water Resource Inventory Area map that identifies the state's watersheds was used to establish "areas". An area received a risk code of **0**, **1**, or **2**, depending on the number of detections that occurred in that area during the Area Wide Monitoring Project.

② The second digit is for land use. This information came from a special map developed by the United States Geological Survey. Eighteen land use types that were classified together into three groups: forests, wetlands, and barren lands received a risk code of **0**. Urban settings were given a risk code of **1.** Agricultural or range lands received a risk code of **2.**

③ The third digit is for well depth. Statistical analysis of all of the wells tested in the Area Wide Monitoring Project showed that wells greater than 125 feet deep were at a lower risk to pesticide contamination than wells of a lesser depth. Wells deeper than 125 feet received a risk code of **0** and wells 125 feet or less have a code of 1. Well depth's were located using DOH's computer records. If there was no well depth listed for a source it was automatically given a risk code of 1. **If this is incorrect you must supply documentation that shows the depth of the well to correct this information.**

④ The fourth digit shows average nitrate levels. Statistical analysis of the wells in the monitoring project showed that wells with an average nitrate level of less than 2.7 mg/L nitrate had a lower level of risk for pesticide contamination. A risk code of **0** has been assigned to wells with <u>average</u> nitrate levels of 2.7 mg/L or less. Wells with <u>average</u> nitrate levels of greater than 2.7 mg/L were assigned a level of 1. The nitrate data is from DOH's computer records. Sources for which there was no nitrate data were given a risk code of 1. **If you have test results that verify nitrate levels for a source, please send them to DOH. (Please note that the nitrate level is an *Average* and not the highest level.)**

$$ How The AREA WAIVER Can Save You Money $$

What is the Area Waiver?

The *Area Waiver* is a waiver option developed by DOH to grant waivers for sources that received a susceptibility rating of *moderate* or *high* risk though the Susceptibility Assessment program. These sources are not eligible for a Susceptibility Waiver and the water system must apply for an Area Waiver or complete 4 quarters of SOC testing by December 31, 1995.

How much does the Area Waiver cost?

As directed by the Legislature, DOH developed the Area Waiver fees in order to recover *only* the costs of developing and implementing the Area Waiver Program. During the fall of 1994, the program tested 1326 wells for pesticide contamination. Area Waivers were developed using the information gathered during this part of the program. The Legislature also directed that the fees be set so that small systems pay less. The chart below shows the fees for an Area Waiver during the 1993 - 1995 compliance period. Renewal fees for the 1996 - 1998 compliance period will be far less. *Please note the fee increase after September 30, 1995.*

Area Waivers Fees For the 1993 - 1995 Compliance Period
(Per Source)

Population Served by System	*Area Waiver Fee Before September 30, 1995*	*Area Waiver Fee After September 30, 1995*
0 - 300	$325	$525
301 - 1000	$490	$690
1001 - 5000	$825	$1025
5001 or more	$995	$1195

What If I Do Not Want To Pay The Area Waiver Fee?

You will not receive an Area Waiver unless you pay the fee. Each source that does not receive a waiver must complete all of the tests listed below. These tests must be done for 4 consecutive quarters during the 1993 - 1995 compliance period.

SOC Testing Requirements Without an Area Waiver
Four Quarters /Per source

Analytical Method	*Price for 1 Quarter**	*Price for 4 Quarters*
515.1(HERBICIDES)	$150.00*	$600.00
525.2 (PESTICIDES)	$225.00*	$900.00
531.1 (CARBAMATES)	$150.00*	$600.00
547 (GLYPHOSATE)	$150.00*	$600.00
549 (DIQUAT)	$150.00*	$600.00
TOTAL	**$825.00***	**$3300.00**

* This is an average of the fees charged by the labs certified to perform the analytical method. Individual method prices may vary depending on which lab you use.

Answers to Two Important Questions:

1) Why did the rating on my Susceptibility Invoice package differ from my rating on my Area Waiver Invoice package?

Answer: They are two different ratings. The "Susceptibility Rating" is determined by the physical characteristics of your water system. The "Vulnerability Rating" is determined by the water system's vulnerability to Pesticide Contamination. Sources with a medium or high susceptibility rating may still be vulnerable to pesticide contamination. This is why the area waiver was created.

> *Example: The water system can receive a susceptibility rating of"H" (High) because of its structure, but because there may be no pesticide use in the area can receive a "L" (Low) vulnerability rating for pesticides.*

2) The 4th digit of the Vulnerability Risk Code assigned to my water system should be "0" as I remember the nitrate test was under 2.7 mg/L.

Answer: The nitrate level used is the average of all your past nitrate sample results. If you have additional information on testing that you feel may adjust your rating please send copies to your Regional Office. The change in nitrate will only affect monitoring requirements. You will still need the Area Waiver to avoid the quarterly Pesticide SOC testing.

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

January 3, 1995

Mr. Edwin Mola and Ms. Cindy Larson
Echo Glen Water System
12608 East Marginal Way South
Seattle, Washington 98168

Subject: Echo Glen Water System
King County
ID# 27510B
Sanitary Survey

Dear Mr. Mola and Ms. Larson:

Thank you for taking the time to meet with me on December 16, 1994 and showing me your water system. The primary reason for the visit was to follow-up on the recent unsatisfactory bacteriological tests which resulted in your water system receiving a **non-acute MCL violation.** The following list summarizes the recommendations of a comprehensive evaluation of the water system facilities and operation. Most of the suggested improvements reflect current standards or **Washington Administrative Code (WAC) Chapter 246-290** regulatory requirements. Each is important and should be implemented.

1. Well heads should be carefully sealed and vented with an inverted, screened, U-shaped vent. The screened vent will provide a controlled opening to allow the flow of air into the well casing during pump operation and avoid suction at unscreened openings in the well head or cracks in the casing.

2. The well head casing should be tightly sealed to exclude potential contaminants. This may be accomplished with a sanitary seal assembly, a watertight pitless adapter cap, a vertical shaft pump base with a continuous weld or an O-ring seal, or other approved method. There should be no open space around electrical wires, cables or ropes, unplugged access ports, non-watertight pitless adapter caps, etc. These are potential entry points for bacteriological contamination resulting in water samples testing positive for total and fecal coliform. Surface runoff, insects, spiders, rodents, dirt and debris can all cause unsatisfactory coliform samples. The well head sanitary cap has an open hole and unscreened vent.

3. Well heads should be protected from the elements within a locked vault or wellhouse to reduce the risk of contamination and vandalism. **Chapter 246-290-420(2) WAC**

requires adequate security measures so that the water source, treatment facilities, storage facilities and the distribution system are under the strict control of the purveyor.

4. Well heads should have a water sample collection tap installed before any storage, pressure tanks or treatment facility. Water quality samples should be taken directly from the source for **Inorganic Chemicals, Volatile Organic Chemicals, Synthetic Organic Chemicals.** Bacteriological water samples are often taken from the source when trying to determine the extent of contamination after an unsatisfactory coliform test.

5. Well heads should have a pressure gauge installed to measure the pressure entering the distribution system. Additional gauges may be useful in other locations as well.

6. In order to understand the water demand of the system users, a source totalizing meter must be installed at each well. An operator can identify water use irregularities such as leaks in the system if the meter is read and recorded regularly.

7. Adequate security measures must be provided to assure the water source, water treatment processes, water storage facilities and the distribution system are under the strict control of the purveyor as required under **Chapter 246-290-420(2) WAC.** The water facilities should be fenced to exclude unauthorized people.

8. The reservoir access hatch cover should be carefully sealed to prevent unwanted openings into the reservoir. A strip of closed cell foam material such as neoprene may be positioned on the hatch or hatch opening to provide this seal. If a gap is present, a variety of organisms including insects, spiders and worms will be able to enter and potentially contaminate the water stored in the reservoir. This is a common cause of bacteriological water samples being found unsatisfactory for total coliform.

9. The reservoir overflow line does not have an angle flap valve or screened end cap. Because open discharge lines can become entry points for animals, birds, insects or other sources of contamination, some sort of physical barriers must be installed. The end of the outlet line should also turn downward and have an air gap of at least three pipe diameters above the ground or waste water receptacle.

10. The reservoir drain line does not have an angle flap valve or screened end cap. Because open discharge lines can become entry points for animals, birds, insects or other sources of contamination, some sort of physical barriers must be installed. The end of the outlet line should also turn downward and have an air gap of at least three pipe diameters above the ground or waste water receptacle.

11. Dead ends on the distribution system should have blowoffs or hydrants installed to allow proper flushing. Low flow areas in the distribution system accumulate sediments which contribute to bacteriological, turbidity, taste and odor problems.

12. The department does not have a copy of an **Emergency Response Plan** on file for your water system as required under **Chapter 246-290-440(2) WAC.** The plan should include the general procedures for routine or major emergencies within the water system an analysis of what parts are vulnerable and contingency plans for those facilities that will become inoperable in a major emergency. The **Emergency Response Plan** should be readily available to personnel responsible for responding to emergencies. Please complete the plan for departmental review and approval by April 1, 1995.

13. The department does not have a copy of a **Coliform Monitoring Plan** on file for your water system as required under **Chapter 246-290-300(2)(b).** The plan should include a system map section indicating locations of sources, storage, treatment, distribution system, pressure zones, coliform sample sites and a narrative section including ID number, population, those items shown on the system map. Please complete and submit a **Coliform Monitoring Plan** to the department for review and approval by April 1, 1995.

14. The department does not have a copy of a **Management and Operations Manual** for your water system on file. Preparing and using an M & O Manual can help ensure that the water system continues to operate efficiently, respond appropriately to emergencies and plan for future regulatory requirements. The **Management and Operations Manual Checklist** provided you is a guide for preparing the manual. It is important you carefully address each of the checklist items so the **O & M Manual** will adequately meet the needs of water system operators with a wide range of experience. Please complete and submit an **O & M Manual** to the department by April 1, 1995.

In closing, thank you again for your cooperation and shared concern for water quality. I would appreciate receiving a status report on your progress with these recommendations within two months. If you have any questions regarding the above comments or I can be of further assistance, please contact me at (206) 464-7670.

Sincerely,

Brian P. Boye, PHA
NW Drinking Water Operations

Enclosure

cc: Seattle-King County Health Department
Bob James, Regional Engineer

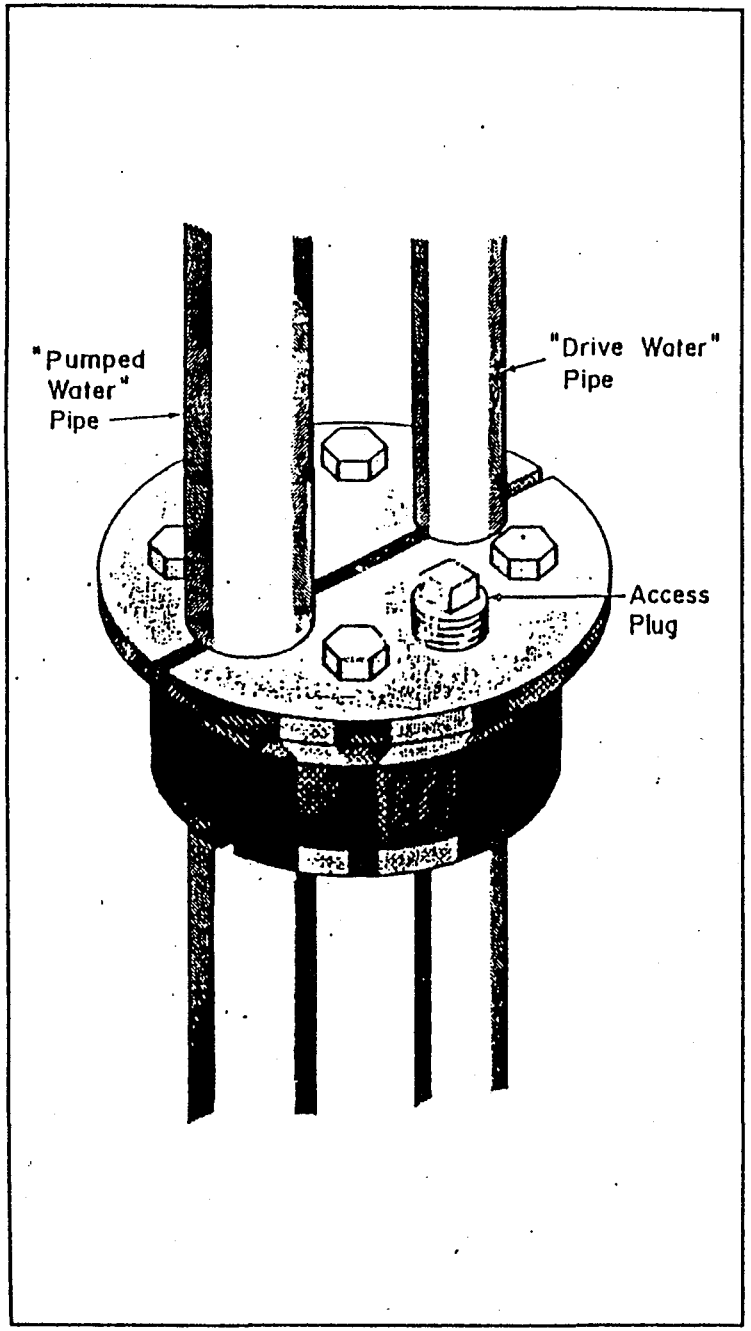


Figure 3-4 Well Seal for Jet Pump Installation

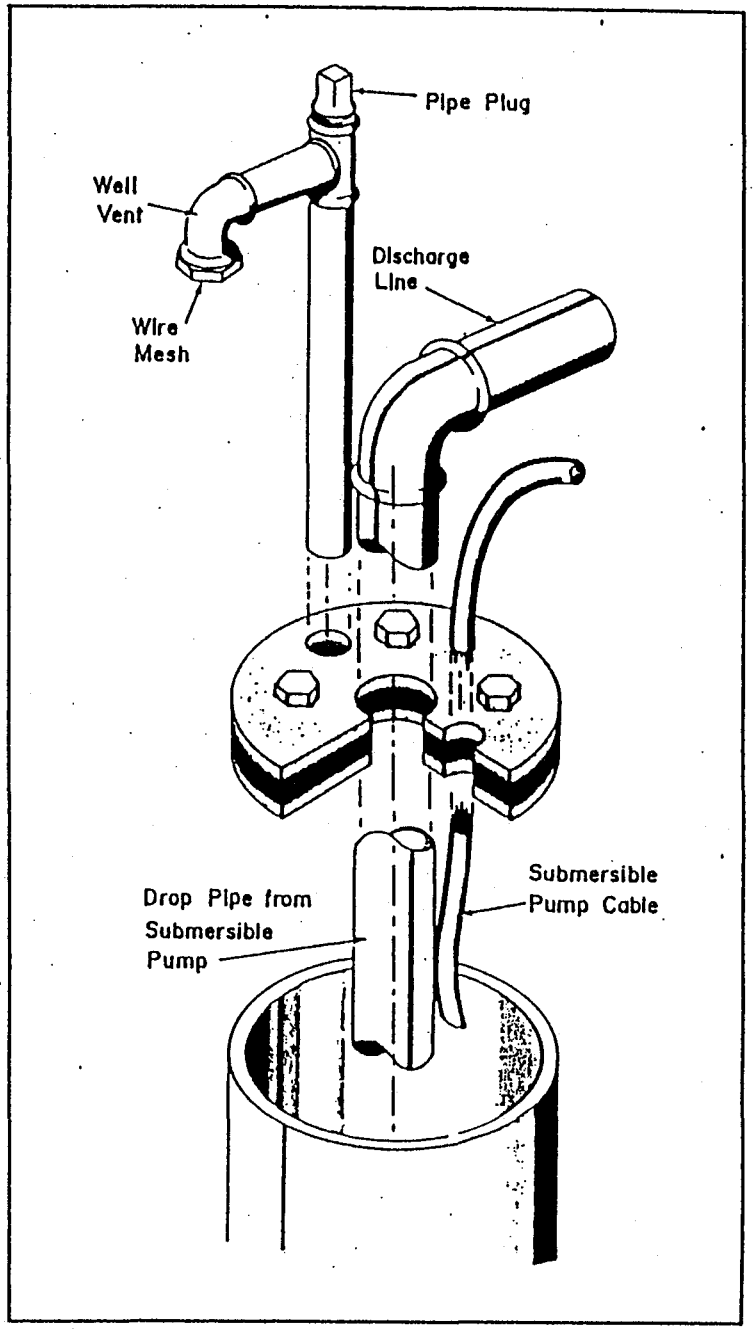
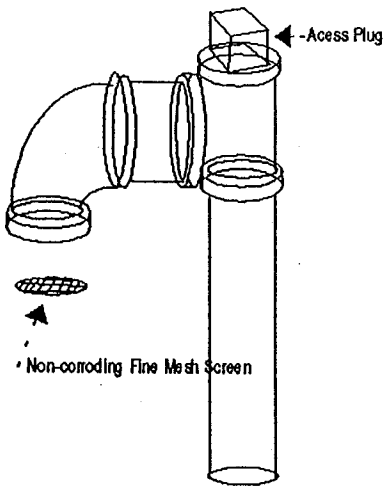
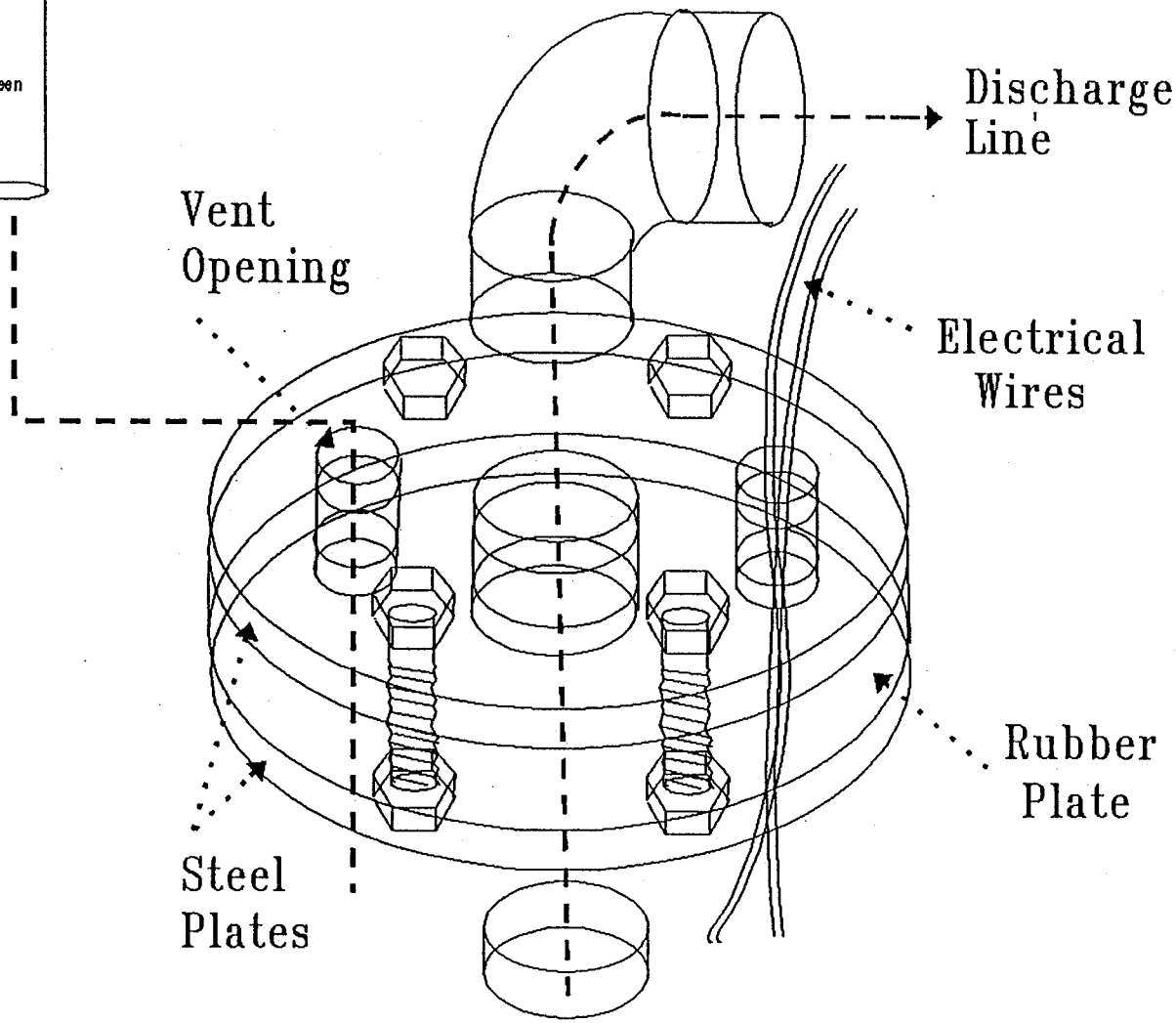


Figure 3-5 Well Seal for Submersible Pump Installation



Common Problems:

* access hole open
* space around wires
* no vent screen
* seal not tight
* no vent



Wellhead Sanitary Seal

RECEIVED THIS DAY

STATE OF WASHINGTON
DEPARTMENT OF SOCIAL AND HEALTH SERVICES JUN 22 10 54 AM '88
[illegible] • Seattle, Washington [illegible]
KING COUNTY

July 8, 1987

8806220467

Ms. Sandra Morrow
22928 SE 296th Street
Maple Valley, Washington 98038

Subject: Gesell Water System
ID #275100
Request for service hookup

Dear Ms. Morrow:

This office has reviewed a written two page engineering report from Mr. Richard Heintze, P.E., regarding the subject matter. The report indicates the following:

1. The existing system has 37 service connections.
2. The well has yield of 60 gpm.
3. The standby storage capacity is 27,000 gallons.
4. The constant pressure in the distribution line is provided by continuous running booster pump.
5. The water quality history is satisfactory.
6. There are not any substantial complaints from existing water users.

Based on the above mentioned information, this office finds it satisfactory for the water purveyor to give you a service line to your property on the subject system.

Sincerely,

Moe R. Batra

Moe R. Batra, P.E.
Regional Engineer
NW Drinking Water Operations

MRBtkg

cc: Seattle-King County Health Dept (SE District)

~~8806280182~~

Consulting Engineer

Telephone
746-0519

Richard L. Heintze, P.E., L.S.

Registered Civil Engineer – Land Surveyor

INTERLAKE ASSOCIATES
14846 S.E. 50th St.
Bellevue, Washington 98006

April 6, 1988

Mr. Robert Sullivan, President
Echo Glen Water Co.
P.O. Box 33
Gorst, Wash. 98337

Re: Gesell Water System, Maple Valley
D.S.H.S. I.D. 27510 D, Class 2

Dear Sir:

Recently your associate Mr. Rock Caley requested that I submit a report to you on the capacity of the subject water system. Mr. Caley was aware that I had physically measured and analyzed in June 1987 for 38 services. The well output was obtained from pump tests made by Valley Pump, Auburn, phone No. 939-8008.

The well test indicated a yield of ~~60~~ 259 G.P.M. or 86,400 G.P.D. if pumped continuously. Per D.S.H.S. standards of 800 G.P.D., this source could support 108 services.

Storage facilities consisted of a covered concrete box and a horizontal cylindrical steel tank. The concrete box at the time had a level control that cut-out the well pump at a depth of 7.1 feet or 21,402 gallons. The steel storage tank at the time was not in use but has a capacity of 6,200 gallons. Thus total available storage is 27,602 gallons.

Total required storage per D.S.H.S. standards requires 600 gallons/service standby plus equalizing storage which is based on a D.S.H.S. formula and maximum instantaneous demand.

For 38 Services:	Required Standby Storage	is	22,800 gallons
	" Equalizing "	is	4,350 gallons
	Total Required Storage	is	27,150 gallons
For 39 Services:	Required Standby Storage	is	23,400 gallons
	" Equalizing "	is	4,650 gallons
	Total Required Storage	is	28,050 gallons
For 40 Services:	Required Standby Storage	is	24,000 gallons
	" Equalizing "	is	4,950 gallons
	Total Required Storage	is	28,950 gallons
Available Storage is			27,602 gallons

Storage Deficiency: 38 Services ..... None
39 Services ..... 448 gallons
40 Services ..... 1348 gallons

Storage may be increased slightly by raising the cut-off level control in the concrete box tank. Each foot of depth contains 3,014 gallons which is 251 gallons per inch. Thus, raising the level 2 inches gives an additional 502 gallons and raising it 6 inches gives an additional 1,500 gallons. However, good tank design requires leaving about 1.0 foot of free board to reduce overflow due to turbulence when tank is filling.

Since the top of the adjacent horizontal steel tank may be slightly below the full level of the concrete box tank, it will overflow before the latter is full. This may be rectified by either raising the supports of the steel tank or by installing a Bob valve in the top of the filler pipe. This valve is similar to the float valve in a toilet tank.

Before putting the steel tank back into service, it would be advisable to flush it out with a strong chlorine solution and submit bacterial water samples to the Health Dept.

Service pressure is maintained by a continuously running boost pump that delivers 100 P.S.I. at the pump house and about 60 P.S.I. at the highest lot. These pressures were checked by gage personally. A standby boost pump can be put into service immediately.

Sincerely,

RICHARD L. HEINTZE, P.E., L.S.
INTERLAKE ASSOCIATES

R. L. Heintze

RLH/mlh

cc: Mr. Batra, P.E.
Dept. Social & Health Services
Water Supply Section

Bellevue off. 827-7720
Mobil 940-0734

November 7, 1975

State of Washington
Department of Social & Health Services

Mr. Roger I. Lewis
P.O. Box 273
Renton, Wa. 98055

Subject: King County
Gesell Enterprises, Inc.
Water Supply & Distribution System

Dear Mr. Lewis:

As-built plans and related data for the subject water system submitted by your engineer, Mr. Robert J. Mondrzyk, were received in this office October 8, 1975, and have been reviewed. Based on this information and on data on file in this office, we make the following comments:

1. The system, as presently constructed, meets the current design standards of the Department of Social and Health Services for service to a maximum of 36 lots (connections), with the single exception of standby storage capacity.

2. Storage capacity required for 36 connections, based on 600 gallons per connection is 21,600 gallons plus equalizing storage. A storage tank of 6,000 gallons capacity is presently in use, leaving a deficit of 15,600 gallons plus equalizing storage. Equalizing storage is based on a diurnal curve of water usage, rate of pumping, number of hours of pumping, and specific hours during the day when pumping occurs. This must be determined by calculation and is usually a relatively small volume.

3. The bacteriological record for this system for 1973, 1974, and to date in 1975 has been good in that there have been only three non-conforming samples; however, the number of samples taken during that period of time has been inadequate and no apparent effort was made to determine the cause of the non-conforming samples.

4. We have no record of protective covenants having been submitted for the well site. Done 1967

5. We have no record of a Water Right Permit Number as issued by the Department of Ecology. Done

It is our understanding that Mr. and Mrs. John Johnson and others have been unable to secure building permits to construct homes on lots served by Gesell Enterprises water system because of a refusal by Gesell Enterprises to

permit connection to the water mains. We suggest that, with your cooperation in the following procedures, the problem of building permits and the deficiencies in the Gesell Enterprises water system facilities and operation may be resolved to the mutual satisfaction of all concerned.

1. Gesell Enterprises, Inc., submit for review and concurrence a proposed program for design and construction of the additional required storage on or before January 1, 1976. The program should indicate the approximate date for submission of engineer's plans and specifications, start of construction, and completion of construction.

2. Protective covenants will be prepared by Gesell Enterprises for recording with the King County Recorder in accordance with WAC 246-54-350, Rules and Regulations of the State Board of Health, a copy of which is enclosed. We also enclose a copy of A Guid[illegible] Approval of Small Public Water Supplies which contai[illegible] information on covenants on Pages 4 and 5. DONE 7-18-99

3. Gesell Enterprises will furnish DSHS with Water Righ[illegible] as issued by Department of Ecology or will apply for[illegible] if a permit number has not been issued previously.

4. Gesell Enterprises will contact the Southeast Distri[illegible] Seattle-King County Department of Public Health, 300[illegible] Renton, Wa. 98055 (Telephone 228-2620) for the purpo[illegible] lishing a schedule for routine bacteriological sampli[illegible] water system.

5. Gesell Enterprises will furnish this office a map showing which lots have been sold and which lots presently have homes constructed on them and connected to the water system, and which lots are still owned by the developer. This should include lots developed by both Gesell and LeGrande. DONE

6. Without regard to the current storage deficiency, DSHS has no objection to the connection of additional customers to the water system provided that, until the storage deficiency is corrected, the additional connections be limited to serving only lots located in the original plat for Gesell Addition filed in Vol. 81 of Plats, Page 55, and for which the original water system plans were approved by this office on January 6, 1967.

7. If connections are arranged for in accordance with Item 6, above, the customer should be advised of the possibility of water shortage occasionally as a result of the current storage deficiency.

Ellen Winighan may be a good starting pt.

Should you have any questions regarding any of the foregoing, please contact us at your convenience.

Sincerely,

John A. Beare, M.D.
Director

A. G. Koch

A. G. Koch, P.E.
District Engineer
Water Supply & Waste Section

AGK:jl

Encl.

cc: Seattle-King Co. Dept. of Public Health
Attn: Ann Jensen
Office of the Atty. Gen., Attn: Mrs. Mildarene Wright
Mr. James A. Humphrey
Robert J. Mondrzyk, P.E.
Mrs. John Johnson

NIEL J. EVANS
ERNOR

NARD NCOVE, M.D., D.P.H.
CTOR

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
PUBLIC HEALTH BUILDING, OLYMPIA, WASHINGTON 98501

Address Reply to Office of Origin

SEATTLE REGIONAL OFFICE

REGIONAL OFFICES
SMITH TOWER
SEATTLE 98104
HUTTON BUILDING
SPOKANE 99204

January 6, 1967

Mr. Robert Gesell
Route 2
Maple Valley, Washington 98038

Subject: Gesell Additional Plat
Water Supply and Distribution System
Well Code: 22/6 - 3N1w

Dear Sir:

Plans and specifications for the above project received in this office on November 7, 1966 have been reviewed, and, in accordance with Chapter .54 of the codified Rules and Regulations of the State Board of Health and the State Department of Health, are hereby APPROVED.

Very truly yours,

BERNARD BUCOVE, M.D., D.P.H.
State Director of Health

A. G. Koch

by: A. G. KOCH
District Engineer
Sanitary Engineering Section

AGK:vlb

cc: King County Health Department
King County Planning Commission
O. L. Anderson & Associate.

Post-it Fax Note 7671	Date 1/22	# of pages ▶ 2
To Bill Whiteley	From L. Poore	
Co.	Co WWST	
Phone # 779-7993	Phone # 698-1240	
Fax # 779-4213	Fax # same	

ECHO GLEN PUMP READINGS

DATE	10HP BOOSTER	WELL PUMP
12-16-95	408.0	8958.7
12-28-95	485.2	9068.0
1-21-96	623.9	9261.4
2-14-96	761.8	9444.7
2-28-96	842.2	9549.0
2-29-96	854.6	9553.7
3-3-96	864.4	9578.1
3-28-96	1005.3	9761.4
4-14-96	1108.7	9898.7
5-27-96	1315.0	10258.5
6-3-96	1425.4	10326.2
6-26-96	1625.3	10,621.8
7-1-96	1148.0	10,784.5
8-5-96	2217.2	11,550.1
9-22-96	2484.4	11,924.0
10-21-96	2645.4	12,205.3
11-21-96	2826.5	12,510.5
12-10-96	2905.5	12,639.8

F/N: WWEGPP

ECHO GLEN PUMP READINGS

DATE CHECKED	10 HP BOOSTER	WELL PUMP
11/20/94	2794.4	5706.6
12/11/94	2794.4	5815.
1/9/95	2794.4	5967.
1/14/95	2794.4	5991.0
2/5/95	2794.4	6097.6
2/12/95	2794.4	6132.1
2/21/95	2794.4	6192.
3/16/95	2794.4	6303.3
4/11/95	2794.4	6431.0
4/26/95	2794.4	6506.9
5/23/95	2794.4	6732.5
6/3/95	.000001	6901.1
6/13/95	58.6	6981.6
7/1/95	214.0	7189.4
7/14/95	325.1	7343.9
7/18/95	374.5	7410.8
8/10/95	552.1	7809.1
8/27/95	552.1	7957.5
9/24/95	0000 0*	8336.2
10/15/95	00168	083505
10/[illegible]	[illegible]	[illegible]
11/12/95	242.0	8710.4
11/16/95	261.8	8740.8
12/16/95	408.0	8958.7
12/28/95	485.2	9068.0

* new meter installed

#1

6140031

219515 08

DEDICATION AND EASEMENT

THE GRANTOR, GESELL ENTERPRISES, INC., being the owner of all of GESELL ADDITION, a recorded plat; and said grantor desiring to sub-divide Tracts 1 and 2 thereof for use as residential dwelling house sites and, in connection therewith, desiring to establish and reserve necessary easements running with the land both as to benefit and burden for the establishment of a domestic water system and access and easement for utilities hereby dedicates and establishes easements as follows:

1. Easement of access, ingress and egress; and installation of utilities as may be required for normal residential use development over, across and upon the following described tract: Those portions of Lots 1 and 2, Gesell Addition as recorded in Volume 81 of Plats, page 51, records of King County, Washington, described as follows: Beginning at a point in the East line of said Lot 1, distant 120.00 feet from the Southeast corner thereof; thence North 89° 58'41" West 40.00 feet; thence North 0°39'25" West 80.00 feet; thence South 89°58'41" East 20.00 feet; thence North 0°39'25" West 472.45 feet to the southerly boundary of Tract "A"; thence North 89°58'32" East along said boundary 139.33 feet; thence North 44°50'52" East along said boundary 68.25 feet to the Southwesterly margin of S. E. 206th Street; thence along said margin South 45°09'08" East 99.62 feet to a tangent curve having a radius of 130.72 feet; thence along said margin and said curve to the left thru an angle of 12°45'33" 29.11 feet; thence South 89°58'32" West 240.53 feet; thence South 0°39'25" East 432.39 feet; thence South 89°58'41" East 20.00 feet; thence South 0°39'25" East 80.00 feet; thence North 89°58'41" West 40.00 feet to the point of beginning.

2. AND SUBJECT to easement over, across and upon so much of the p[illegible]g conveyed hereunder as is encompassed

[illegible] RECUIRED
AFF. NO. E669003
FEB 15 1967
M. R. WILLIAMS

2 sheets

FEB 16 1967 - 8 30

6140031

by the described easement area for easement of access, ingress and egress; and installation of utilities for residential use development in favor of all remaining portions of GESELL ADDITION.

3. And Grantor shall make available, upon demand, sufficient water to each subdivision sold for a single unit domestic dwelling house use at a rate of charge and under conditions in conformity with those rates and conditions as are then charged by the City of Renton for subscribers outside the corporate limits of the City of Renton; the rate to rise or fall as the said out-of-city of Renton rate should rise or fall. The source of water shall be a cased well drilled by grantor heretofore and situated on Tract "A", Gesell Addition. And grantor's liability to supply water shall be limited to the output of said well. Grantor when it has sold all portions of Lots 1 and 2, Gesell Addition then shall have it at its option to convey the well and water system to said purchasers and/or owners; and upon such conveyance being made, all of grantor's obligations under this agreement shall cease and determine.

The easements herein granted and the water rights created shall run with the lands burdened and benefitted thereby and shall bind the successors and assigns of the parties hereto.

WITNESS our hands this 13th day of February, 1967.

GESELL ENTERPRISES, INC.,

Robert R. Gesell

ROBERT R. GESELL, President

Roger I. Lewis

ROGER I. LEWIS, Vice-President

STATE OF WASHINGTON]
] ss.
COUNTY OF KING]

On this 13th day of February, 1967 before me personally appeared ROBERT R. GESELL and ROGER I. LEWIS, to me known to be

FEB 16 1967 - 8 30 FILED BY SEA

#2

AGREEMENT
CONTRACT TO SUPPLY WATER AND DECLARATION OF ROAD EASEMENT

This agreement made and entered into this 2nd day of February, 1968 between Gesell Enterprises, Inc., a Washington corporation hereinafter called the "Grantor" and Squak Mt. Realty, Inc., a Washington corporation hereinafter called the "Grantee".

WITNESSETH: That for and in consideration of five thousand dollars, the Grantor shall grant to the Grantee, it's heirs and assignees, the following:

6405548

239228 (2) 8

I. An easement for ingress and egress and instalation of utilities for normal residential and community development on, under, over and across the following described property; Those portions of Lots 1 and 2, Gesell Addition as recorded in Volume 81 of Plats, page 51, records of King County, Washington, described as follows: Beginning at a point in the East line of said Lot 1, distant 120.00 feet from the Southeast corner thereof; thence North 89°58'41" West 40.00 feet; thence North 0°39'25" West 80.00 feet; thence South 89°58'41" East 20.00 feet; thence North 0°39'25" West 472.45 feet to the southerly boundary of Tract "A"; thence North 89°58'32" East along said boundary 139.33 feet; thence North 44°50'52" East along said boundary 66.25 feet to the Southwesterly margin of S.E. 206th Street; thence along said margin South 45°09'08" East 99.62 feet to a tangent curve having a radius of 130.72 feet; thence along said margin and said curve to the left thru an angle of 12°45'33" 29.11 feet; thence South 89°58'32" West 240.53 feet; thence South 0°39'25" East 432.39 feet; thence South 89°58'41" East 20.00 feet; thence South 0°39'25" East 80.00 feet; thence North 89°58'41" West 40.00 feet to the point of beginning; and over and across the Easterly 20 feet of the Southerly 120 feet of Lot 1, and the Westerly 20 feet of the Southerly 120 feet of Lot 2.

II. A dedication of the following described property for county road right of way:

The West 30 feet of Lot No. 4 and the East 30 feet of Lot No. 3 of Gesell Addition to King County, Washington.

Easements granted herein shall run with the land both as to benefit and burden thereof.

III. Grantor shall furnish water in sufficient amount to supply users in the NW¼ of Section 10, Township 22 North, Range 6 East, W.M. Water shall be supplied through water mains lying within the boundaries of the aforementioned road right of way and extending to and abutting the north boundary line of said NW¼ of the NW¼ of Section 10.

(a) The size of water main within the easement under Item I shall be a 2 inch main which is already installed.

(b) The size of the water main within the dedicated right of way in Item II above shall be a six inch main.

Rate of charge for each domestic user shall be equal to whatever rate is charged by the city of Renton for subscribers outside the corporate limits of the city of Renton.

This contract to supply water shall be limited to properties in NW¼ of Section 10, Township 22N, Range 6 E.W.M. under development by the Grantees herein; and shall be limited to the output of one 3" drilled, cased well situated on Tract "A" of Gesell's Addition to Maple Valley.

Grantee/or Grantor reserves the right to assign all interests created by this Agreement to party or parties now having or later acquiring an interest in above described property. Howard W. Glenn and Barbara Glenn, his wife, and Leslie Carr and Betty Carr, his wife, are

underlying contract holders of portions of said NW¼ of Section 10-22-6.

It is also understood the Grantor shall make available to Grantee one domestic usage for property described as: The North ½ of the East 330 feet of the West 990 feet of the North 660 feet of SW¼ of the SW¼ of Section 3, Township 22N, Range 6 E.W.M.

GESELL ENTERPRISES, INC., A Washington corporation

By: [signature] President

(Corporate Seal)

By: L.K. Gesell Secretary

6405548

STATE OF WASHINGTON } ss.
County of King }

On this 2nd day of February, 1968, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared ROBERT R. GESELL and L. K. GESELL to me known to be the President and Secretary, respectively, of GESELL ENTERPRISES, INC. the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute the said instrument and that the seal affixed is the corporate seal of said corporation.

Witness my hand and official seal hereto affixed the day and year first above written.

[signature]
Notary Public in and for the State of Washington residing at Seattle.

NO SALES TAX
E036861

FILED FOR RECORD AT REQUEST OF
SECURITY TITLE INSURANCE COMPANY
OF WASHINGTON
1109 SECOND AVENUE, SEATTLE, WASH. 98101

#3

7409130333

Notice: Portions of this document poor quality for filming.

DECLARATION OF COVENANT
(To protect water supply)

Know all men by these presents that GESELL ENTERPRISES, INC., owner in fee simple of the land described herein, hereby declares this covenant as follows:

The grantor is the owner in fee simple of Tract A, Gesell Addition, according to plat thereof recorded in Volume 81 of plats, page 55, records of King County, Washington, the same being situated in a portion of Section 3, Township 22 North, Range 5 East W.M., King County, Washington on which the grantor owns and operates a well and water works supplying water for public use located on real estate which includes all of Gesell Addition, Northwest quarter of Northwest quarter of Section 10 and portion of Section 4 (known as Tract 5, Maple Valley Garden Tracts, unrecorded plat, all in Township 22 North, Range 5 East W.M., King County, Washington and grantor is required to keep the water supplied from said well 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 the grantor's land in Tract A which might contaminate the water supply.

NOW, THEREFORE, the grantor agrees and covenants that it and it's heirs, successors and assigns will not construct, maintain, or suffer to be constructed or maintained upon the said lands of grantor and within 100 feet of the well described, so long as the same is operated to furnish water for public consumption, any of the following: cesspools, sewers, privies, septic tanks, drainfields, manure piles, garbage of any kind or description, barns, chicken houses, rabbit hutches, pigpens, or other enclosures or structures for the keeping or maintenance of fowls or animals, or storage of liquid or dry chemicals, herbicides, or insecticides.

These covenants shall run with the land and shall be binding on 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 the hand and seal of the grantor corporation this 21st day of August, 1974.

GESELL ENTERPRISES, INC.

by: Madeleine K. Gesell
Madeleine K. Gesell, President

by: L. K. Gesell
L. K. Gesell, Secretary-Treasurer

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

On this day personally appeared before me MADELEINE K. GESELL and L. K. GESELL to me known to be the President and Secretary-Treasurer, respectively of Gesell Enterprises, Inc. and that

7409130333

SEP-13-74 | 00016 7409130333 — E RF 3.0

7409130333

FILED for Record at Request of

FILED for Record at Request of

Roger I. Lewis, Attorney

P.O. Box 273

Renton, Washington 98055

Address

ASSIGNMENT OF EASEMENTS

#5

8709171014

FOR VALUABLE CONSIDERATION receipt of which is hereby acknowledged, the undersigned do hereby quit claim and assign to Echo Glen Water Co. all of their right, title and interest in those easements for utility purposes located within the road right of ways or as otherwise located on the ground within the following described properties located in Sections 3 and 10, Township 22 N., Range 6 E., W. M., King County, Washington:

1. The utility easements in Gesell Addition, a recorded plat in Vol. 81 on Page 55 under Auditor's File No. 6136934.

2. The easements described in a Declaration recorded under Auditor's File No. 6405547.

3. The easements in that agreement dated Feb. 2, 1968 recorded under Auditor's File No. 6405548.

4. The utility easements are shown and located within those road right of ways described in King County Sub-divisions Nos. 07832 and 6280. Also described under Auditor's File No. 7805170213.

This assignment is binding as their interests may appear of record by the undersigned, their heirs, successors and assigns.

GESELL ENTERPRISES, INC.:

BY: *Lewis K. Gesell*
Lewis K. Gesell, President

Lewis K. Gesell
Lewis K. Gesell, Individually

DEBRA BUCKNER NOTARY PUBLIC COMMISSION EXPIRES JUN. 15, 1991 STATE OF WASHINGTON

RECEIVED THIS DAY SEP 17 11 43 AM '87 BY THE DIVISION OF RECORDS & ELECTIONS KING COUNTY

87/09/17 #1014 A
RECD F 5.00
CASHSL *****5.00
55

STATE OF WASHINGTON }
COUNTY OF *KING* } ss.

On this day personally appeared before me *LEWIS K GESELL* to me known to be the individual described in and who executed the within and foregoing instrument, and acknowledged that *HE* signed the same as *HIS* free and voluntary act and deed, for the uses and purposes therein mentioned.

GIVEN under my hand and official seal this *28th* day of *August*, 19*87*.

Debra Buckner
Notary Public in and for the State of Washington, residing at *Kent*

STATE OF WASHINGTON }
COUNTY OF *KING* } ss.

On this *28th* day of *AUGUST*, 19*87*, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared *LEWIS K. GESELL* and ______ to me known to be the President and ______ Secretary, respectively of *GESELL ENTERPRISES INC.* the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that *HE* authorized to execute the said instrument and that the seal affixed is the corporate seal of said corporation.

Witness my hand and official seal hereto affixed the day and year first above written.

Debra Buckner
Notary Public in and for the State of Washington, residing at *Kent*

FILED for Record at Request of
Jack E. Coley
3671 - W. Frontage Rd.
Port Orchard, WA 98366

TAX NOT REQUIRED
King Co. Records Division
J. Miller Deputy

WELL HISTORY

FEBRUARY, 16, 1967-	DEDICATION OF EASEMENT -(DOCUMENT #1) GAVE WATER TO TRACTS 1 AND 2 OF GESELL ADDITION- (PAGE 2, PARAGRAPH 3) AND SETS THE RATE OF CHARGE.
FEBRUARY 2, 1968-	AGREEMENT (DOCUMENT #2) GAVE WATER TO ALL OF THE PROPERTY UNDER DEVELOPEMENT BY SQUAK MTN. REALTY LOCATED IN THE NW 1/4 OF SECTION 10 (PAGE 1, PARAGRAPH III) (MAP 2 AND 3). AND GAVE WATER TO TAX LOT 87 (MAP 2) OWNED NOW BY "HANAUER" (PAGE 2, SECOND PARAGRAPH) RATE OF CHARGE SHOWN IN (PAGE 1, PARAGRAPH (b)
August 21, 1974-	DECLARATION OF COVENANT (DOCUMENT #3) (To protect Water supply) THIS DOCUMENT IIS TO PROTECT THE WELL FROM IMPURITIES ETC... THIS IS ALSO WHERE IT MENTIONS THE PROPERTY DOWN ON MAXWELL ROAD AS HAVING WATER RIGHTS (MAP 1)
AUGUST 1978-	QUIT CLAIM DEED (DOCUMENT #4) THE DEED MR. GESELL GAVE TO ECHO GLEN GIVING THEM OUR WELL.
SEPTEMBER 17, 1990	ASSIGNMENT OF EASEMENTS (DOCUMENT #5) THIS DOCUMENT WAS MR. GESELL ASSIGNING THE EASEMENT RIGHTS TO ECHO GLEN FOR THE UTILITY EASEMENTS.
MAY 12, 1988-	THIRD PARTY BENEFICIARY CONTRACT AGREEMENT. (DOCUMENT #6) THIS IS A DOCUMENT THAT ECHO GLEN RECORDED-WHEN APPLICATION WAS MADE BY MORROW (THE TRAILER ON OTHER SIDE OF CREEK ON 206TH) TO HOOK UP TO WELL. THIS MEANS ECHO GLEN IS SELLING WATER RIGHTS TO MORE HOMES!! THIS DOCUMENT ALSO IS TRYING TO SET A RATE OF CHARGE (SEE SCHEDULE B). LAST PAGE IS MORROWS APPLICATION REPORT.

PLEASE TYPE FORM.
This FINANCING STATEMENT is presented for filing pursuant to the WASHINGTON UNIFORM COMMERCIAL CODE to perfect a security interest in the below named collateral, unless otherwise indicated immediately below.

☐ LEASE This filing is for informational purposes only. The terms debtor and secured party are to be construed as LESSEE and LESSOR.

☐ CONSIGNMENT - This filing is for informational purposes only. The terms debtor and secured party are to be construed as CONSIGNEE and CONSIGNOR

1. DEBTOR(S) (or assignor(s))
(last name first, and address(es))

Washington Water Supply, Inc.
9278 Morning Side Dr. NW
Silverdale, WA 98383

TRADE NAME
(if any)

2. FOR OFFICE USE ONLY

3. SECURED PARTY(IES) (or assignee(s)) (name and address)

Echo Glen Water Co., Inc.
P.O. Box 41
Southworth, WA 98386

4. ASSIGNEE(S) OF SECURED PARTY(IES)
(if applicable)
(last name first, and address(es))

5. CHECK IF APPLICABLE:

☐ Products of collateral are also covered.

☐ Filing covers a security interest in collateral, including fixtures, of a TRANSMITTING UTILITY and remains effective until terminated.

6. NUMBER OF ADDITIONAL SHEETS PRESENTED:

For Informational Purposes Only
Check Box if Filing Covers Consumer Goods ☐

7. This FINANCING STATEMENT covers the following types or items of property

All of that water system knowN as Echo Glen Water System together with pumps, tanks, wells, well house, water lines and related apparatus including easements where improvements are located. ID# 27510D, Water Right G1-00519C. Situate in King Count Washington.
All maintenance fees and assessments receivables now and in the future.

8. RETURN ACKNOWLEDGMENT COPY TO

Echo Glen Water Co., Inc.
P.O. Box 41
Southworth, WA 98386

FILE WITH:
UNIFORM COMMERCIAL CODE DIVISION
DEPARTMENT OF LICENSING
P O. BOX 9660
OLYMPIA, WA 98504

FOR OFFICE USE ONLY

Images to be filmed ☐

9 This statement is signed by the Secured Party(ies) instead of the Debtor(s) to perfect a security interest in collateral (Please check appropriate box)

(a) ☐ already subject to a security interest in another jurisdiction when it was brought into this state, or when the debtor's location was changed to this state, or

(b) ☐ which is proceeds of the original collateral described above in which a security interest was perfected, or

(c) ☐ as to which the filing has lapsed or

(d) ☐ acquired after a change of name, identity, or corporate structure of the debtor(s)

Complete fully if box (d) is checked, complete as applicable for (a), (b), and (c).

Original filing number _____

Filing office where filed _____

Former name of debtor(s) _____

10. USE IF APPLICABLE

WASHINGTON WATER SUPPLY, INC.
TYPE NAME(S) OF DEBTOR(S) (or assignor(s))

ECHO GLEN WATER CO., INC.
TYPE NAME(S) OF SECURED PARTY(IES) (or assignee(s))

PROMISSORY NOTE

(SHORT FORM WITH INSTALLMENT)

$ 7,000.00 June 1, , 1991

For value received, Washington Water Supply, Inc. promises to pay to Echo Glen Water Co., Inc. or order at P.O. Box 41, Southworth, WA 98386 the sum of Seven Thousand and no/100----------DOLLARS, with interest thereon at the rate of 12% per cent per annum from date hereof payable as follows:

Eighty Five and 71/100----------($ 85.71) Dollars, or more at Maker's option, on or before the 15th day of September, 19 91, and Eighty Five and 71/100----------($85.71) Dollars, or more at Maker's option, on or before the same day of each then succeeding calendar month until said note is paid in full. Maker further agrees to pay interest on the balance, and the diminishing amounts thereof, at the rate of 12 % per annum from above date which interest shall be deducted from each monthly installment and the balance applied in reduction of principal.

This Note is secured by a Deed of Trust & Security Agreements of even date.

If any of said installments are not so paid, the whole sum of both principal and interest shall become due and payable at once without further notice, at the option of the holder hereof.

This note shall bear interest at the maximum legal rate per annum after maturity or after failure to pay any installment as above specified, and if this note shall be placed in the hands of an attorney for collection then the costs thereof or, if suit shall be brought to collect any of the principal or interest of this note I promise to pay reasonable attorney's fees and all associated costs.

Each maker of this note executes the same as a principal and not as a surety.

NOTE: The entire principal and interest balance shall become due at the end of 60 months. The price and terms are made and based upon timely payments, there is a late payment charge of 10% and default interest is 1.5% per month commencing five (5) days after date of delinquency in addition to any other collection charges incurred by seller.

_____ WASHINGTON WATER SUPPLY, INC.:

_____ BY: _____