2022 Water System Plan

CROSS VALLEY WATER DISTRICT
2022 WATER SYSTEM PLAN UPDATE

Approved by the Commissioners
March 15, 2022

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PROJECT CERTIFICATION

The technical material and data contained in this report was prepared by PACE Engineers, Inc., under the supervision of the below listed individuals. Those responsible staff members who are registered professional engineers are licensed in the State of Washington.

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EXECUTIVE SUMMARY

This Comprehensive Water System Plan update for Cross Valley Water District has been prepared in accordance with the requirements of the Washington Department of Health (DOH) as put forth in WAC 246-290-100, Water System Plan, for water system planning, design, and engineering. Cross Valley Water, as a provider of public domestic water and fire protection service to more than 1,000 connections, is classified as a Group A public water utility. The District is therefore required under WAC 246-290-100 to prepare written water system plan or update every ten years. This Plan is updates and supersedes previous water system plans for the District and will remain in effect for ten years following the date of written approval.

Cross Valley's mission for its water system is to "provide a safe and dependable drinking water supply, to protect public health and meet their customer's water needs, as well as to provide water for firefighting for the community served." The District is located in southern Snohomish County, just north of the Snohomish-King County line. It has grown from the small Cross Valley Water Association (incorporated in 1964) to a public water district with a service area of nearly 40 square miles and customer base of approximately 7,000 connections, or approximately, 9,000 Equivalent Residential Units (ERUs). The District boundaries extend from the Snohomish-King County line on the south to the City of Snohomish and Skipley Road on the north and from the Snohomish and Snoqualmie Rivers on the east to 51st Avenue Southeast and Lowell Larimer Road on the West. As described in Section 2 of this Plan, the District's corporate boundary is slightly smaller than its established Retail Water Service Area and annexations to the corporate boundary are anticipated in the future. Adjustments to the service area are limited to small mutually agreed upon exchanges with neighboring purveyors along the outside boundaries as may be appropriate to delivery of cost effective water service.

Cross Valley straddles the Urban Growth Area (UGA) Boundary for Snohomish County and serves urban, transitional, and rural designated land. The District serves a mixture of industrial development in the southern portion of the service area; suburban residential development near the main arterials (SR 522 and SR 9) and in the northern (Fobes Hill) area; and, rural residential and suburban agricultural land near the center of the District and valley floor. Land Uses are not expected to change significantly although infill development is expected, especially within the UGA. Sensitive areas, major waterways, wetlands and farmland designations all contribute to limiting growth potential outside of the UGA. This Plan outlines provision of water service, including fire protection, to the entire retail service area, although the required improvements to extend service to new customers will be the responsibility of future developers.

Population and employment forecasting by Snohomish County, the City of Snohomish and the Puget Sound Regional Council have been considered in determining growth patterns and water supply requirements. The District currently serves and estimated population of approximately 22,273 people and nearly 8,439 employees. It is estimated that in the year of 2040, the service

area will accommodate approximately 28,799 people and over 10,417 employees. Under these projections water demands would increase from an estimated 687.90 million gallons annually in 2019 to 889.44 million gallons in 2040. Average water use per single family home (or ERU value) used for in calculating demand projections is 210 gallons per day per ERU.

The District is committed to a regional water use efficiency and conservation program and has established an in-house awareness and program promotion strategy to discourage water waste and encourage conservation. In accordance with Municipal Water Law requirements, water use efficiency goals and progress are tracked and published annually.

The District's Water System has been designed over time to incorporate the growth of the system in a rural landscape. The topography of the area minimizes the need for pumping facilities to maintain system pressures. Almost all areas are served by gravity, with pumping facilities installed at District operated wells and in areas needing additional pressure in the case of an emergency or fire.

The primary source of supply to the southern portion of the District is from 11 separate groundwater wells. Water from the wells is augmented by water purchased through the Clearview Water Supply Agency (CWSA) and directly from the City of Everett. The CWSA has constructed regional transmission mains and pumping facilities from the City of Everett system in the north down through Cross Valley Water District to the 12 million gallon CWSA storage reservoir located in the western portion of the District. While groundwater supply remains the District's most economical option, the CWSA supply will be used to augment and meet projected development needs. The northern portion of the District is supplied by a combination of water purchased the CWSA and direct connections to the Everett System. Water quality meets all federal, state, and local requirements. Recent source improvements include the development of Well 7B which assisted in resolving supply issues in the southeastern corner of the District.

Water storage is provided by a combination of the aforementioned CWSA 12.0 million gallon reservoir, of which Cross Valley contractually maintains 2.0 million gallons, and 5.72 million gallons of water stored in five other reservoirs ranging in capacity from 0.1 to 2.0 million gallons. The new Echo Lake Reservoir (1.62 MG) was built since the last plan and replaced the old Echo Lake Standpipe. This resolved some of the storage deficit in the southern portion of the District and provided a solution to low pressure issues in the south east part of the District. The CIP project to replace the Lee Forest Reservoir is proposed to resolve the storage deficit.

Transmission of water resources across the District is complicated by distance and something the District is seeking to improve. The CIP outlines a plan for improving water flow to areas of the District by including a project on the southeastern area of the system near Echo Lake, along HWY 9, Broadway Avenue, and Lowell Larimer Road.

Cross Valley's CIP includes a total of $39.4 million for system facilities, operations, and planning improvements; annual funding programs for ongoing maintenance and replacement and updates; $6.9 million for projects to increase fire flow as development in various areas of the District occurs; and the Undersized Main Replacement Program. The CIP projects range from

looping improvements to Asbestos Cement pipe replacement, to new pumping and storage facilities and PRV replacements. Coordinating with Washington State Department of Transportation on improvements along SR-9 will also improve the system along a highway that contains a significant mix of industrial, commercial, and urban and rural residential development.

A comprehensive review of the District's Water Rates and General Facilities Charges was performed in conjunction with development of this Plan, and adjustments were made to minimize the impacts of the CIP on rate payers. Cross Valley intends to continue applying for financial assistance through low interest loans and grants as they become available and will periodically review its rates going forward.

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GLOSSARY

ACRONYMS

AC	Asbestos-Cement
ADD	Average Daily Demand
APWA	American Public Works Association
ASR	Aquifer Storage and Recovery
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
BPA	Bonneville Power Authority
CBD	Central Business District
ccf	One hundred cubic feet
cfs	Cubic feet per second
CIP	Capital Improvement Plan
CPA	Conservation Potential Assessment
CT	Census Tract
CWSA	Clearview Water Supply Agency
CWSP	North Snohomish County Coordinated Water System Plan
CWSSA	Critical Water Supply Service Area
DBP	Disinfection By-Product
DCVA	Double Check Valve Assembly
DOE	Washington State Department of Ecology
DOH	Washington State Department of Health
DOT/APWA	Standard Specifications for Road, Bridge, and Municipal Construction, Washington State Department of Transportation and the American Public Works Association, 2006 Edition
ENRTM	Engineering New Record TM
EPA	United States Environmental Protection Agency
ERU	Equivalent Residential Unit
ES	Equalizing Storage
ESA	Endangered Species Act
FAZ	Forecast Analysis Zone
FF	Fire Flow
Fps	Feet per second
FSS	Fire Suppression Storage
gal	Gallons
GASB	General Accounting Standards Board
GFC	General Facility Charge
GIS	Geographic Information System
GMA	Growth Management Act
gpad	Gallons per acre per day
gpcd	Gallons per capita per day
gpd	Gallons per day
gpm	Gallons per minute
HCP	Habitat Conservation Plan
HGL	Hydraulic Grade Line
HH	Households
ISO	Insurance Services office

lf	Lineal foot/feet
LFC	Local Facility Charge
MCL	Maximum Contaminant Level
MDD	Maximum Daily Demand
MG	Million Gallons
mg/l	Milligrams per liter
MGD	Million gallons per day
MOV	Main Valve Opening
MWL	Municipal Water Law
NMFS	National Marine Fisheries Service
OASIS	Optimization of Aquifer Storage for Increased Supply
OFM	Office of Financial Management
OS	Operational Storage
PDD	Peak Day Demand
PHD	Peak Hour Demand
ppb	Parts per Billion
ppm	Part per Million
PRV	Pressure Reducing Valve
psi	Pounds per square inch
PSRC	Puget Sound Regional Council
PUD	Public Utility District
PVC	Polyvinyl Chloride
RCW	Revised Code of Washington
RWA	
SB	Standby Storage
SCADA	Supervisory Control and Data Acquisition
SDWA	Safe Drinking Water Act
SEPA	State Environmental Policy Act
SSA	Sole Source Aquifer
UAW	Unaccounted-for Water
UBC	Uniform Building Code
UGA	Urban Growth Area or Urban Growth Boundary
ULID	Utility Local Improvement District
UPC	Uniform Plumbing Code
USFWS	United States Fish and Wildlife Service
USGS	United State Geological Survey
WAC	Washington Administrative Code
WFI	Water Facility Inventory and Report Form (DOH form)
WHPA	Wellhead Protection Area
WSA	Water Service Area
WSDOT	Washington State Department of Transportation
WSRB	Washington Surveying and Rating Bureau
WUCC	Water Utility Coordinating Committee
WUE	Water Use Efficiency
WUTC	Washington Utilities and Transportation Commission

TERMS

Annual Demand	Total water system demand for one calendar year, expressed in millions of gallons (MG), including all uses and unaccounted for water.
Authorized Consumption	The volume of metered and unmetered water used for municipal water supply purposes by consumers, the purveyor, and others authorized to do so by the purveyor, including, but not limited to, firefighting and training, flushing of mains and sewers, street cleaning, and watering of parks and landscapes. These volumes may be billed or unbilled.
Average Daily Demand (ADD)	The annual demand divided by the number of days per year, expressed in million gallons per day (MGD).
Corporate Area	The corporate area is the legal boundary of the District, and comprised of the original District Boundary plus any annexations thereto since origination of the utility. It is the area within which all residents are eligible to vote for the Board of Commissioners, whether they receive service from the District or not. Also referred to as corporate boundary.
Cross Connection	A physical arrangement connecting a public water system, directly or indirectly, with anything other than another potable water system, and capable of contaminating the public water system.
Dead Storage	The volume of stored water not available to all customers at the minimum design pressure in accordance with WAC 246-290-230 (5) and (6).
Distribution System Leakage	The difference between the total volume of water purchased and produced and the total amount of authorized consumption. See authorized consumption definition.
Equalizing Storage	The volume of water required to meet hourly variations in demand in excess of the available rate of supply.
Equivalent Residential Units (ERU)	The amount of water consumed by a typical full-time single family residence. Used for converting users other than single family residences into an equivalent number for the purpose of demand forecasting, system analysis and facility sizing.
Fire Flow	The rate of water flow, in gpm, required to fight fires under WAC 246-293-640 or adopted city or county standards.
Fire Suppression Storage	The volume of water required to accommodate fire demand.
Franchise Area	A designated area within which the utility system is permitted, by franchise, to own, operate and maintain facilities within public rights-of-way.
Future Service Area	The future service area is defined as the area that, if served by a public water utility, would be best served by Cross Valley Water District and historically has been referred to by the District as the water service “planning area”.

Interim Service Boundary	The boundary defining an area that Cross Valley Water District temporarily provides water service to, established by an interlocal agreement with a neighboring purveyor. Interim Service Areas are not considered to be a part of the District's service area.
Maximum Contaminant Level (MCL)	The maximum permissible level of a contaminant in water the purveyor delivers to any public water system user.
Maximum Daily Demand (MDD)	The highest water demand anticipated for any given day, expressed in MGD.
Operational Storage	The volume of the reservoir devoted to supplying the water system while, under normal operating conditions, the source(s) are in "off" status.
Peak Hour Demand (PHD)	The maximum rate of water use, excluding fire flow, which has occurred, or is expected to occur, over a one hour period of time. Typically expressed in gallons per minute.
Potable	Water suitable for drinking by the public.
Pressure Zone	A water supply or distribution subsystem operating at a uniform hydraulic gradient.
Retail service area	The specific area defined by Cross Valley Water District where the District has a duty to provide service to all new service connections. This area includes the District's existing service area and may also include areas where future water service is planned if the requirements of RCW 43. 20. 260 are met.
Service Area	The specific area or areas Woodinville Water District serves or plans to provide water service. For the purposes of this Plan, the Service Area for the District is the same as the District's "Retail Water Service Area" and "Future Service Area".
Standby Storage	The volume of water required to augment the available supply of water during a period of partially or fully restricted flow from the supply source, due to such things as pipeline or pump failure or power outages.
Usable Storage	That portion of the total available storage, which is available on a continuous basis, either by gravity flow or by reliable pumping facilities.

CHAPTER 1
INTRODUCTION

This Comprehensive Water System Plan update for Cross Valley Water District is pursuant to the guidelines and standards required by the Washington Department of Health (DOH). This Plan has been prepared in accordance with WAC 246-290-100, Water System Plan, for water system planning, design, and engineering. Under WAC 246-290-100, a DOH-approved water system plan is in effect for ten years from the date of written approval. This Plan updates and supersedes previous water system plans for the District.

This section of the Water System Plan presents an overview of the planning process, history of the District and summary of the regulations and requirements that Cross Valley adheres to and uses for guidance in the operation of a Group A public water utility. Cross Valley's mission for its water system is to "provide a safe and dependable drinking water supply, to protect public health and meet it's customer's water needs, as well as to provide water for firefighting for the community served."

1.1 BACKGROUND AND SYSTEM OVERVIEW

In 1964, the Cross Valley Water Association was incorporated. From 1964 to 1989, the Association began constructing approximately 26 miles of water line, water storage reservoirs, drilling water wells; acquiring the Marshland Water Association, Clearview Water Company, and Mount Forest Water Company; installing a new telemetry system, preparing a groundwater study, and a comprehensive plan five-year update.

On September 19, 1989, the voters approved the creation of the Cross Valley Water District. The District's leadership is provided by three elected commissioners who are supported by a General Manager, a District Treasurer, and a staff of office and field employees. The District continues to construct new watermains, water storage reservoirs and other improvements while expanding their service area. The location and corporate area for the District is illustrated in Figure 1-1.

In 1998 the District entered into a consortium of water districts with Alderwood Water and Wastewater District, and Silver Lake Water and Sewer District, which is called the Clearview Water Supply Agency (CWSA). The CWSA purchases water from the City of Everett and constructed a regional water supply facilities to convey water to the three member districts. Completed in 2005, the source of supply supplements the District's other water sources to meet the needs of its customers well into the future.

As detailed in the history presented in Table 1-1 on Page 1-5, the District has grown from 328 connections in 1967, as an association, to serving approximately 7,057 connections (7,668 ERU's) in 2018. In addition, Cross Valley provides public sanitary sewer service to the industrial area located in the southwestern portion of the District.

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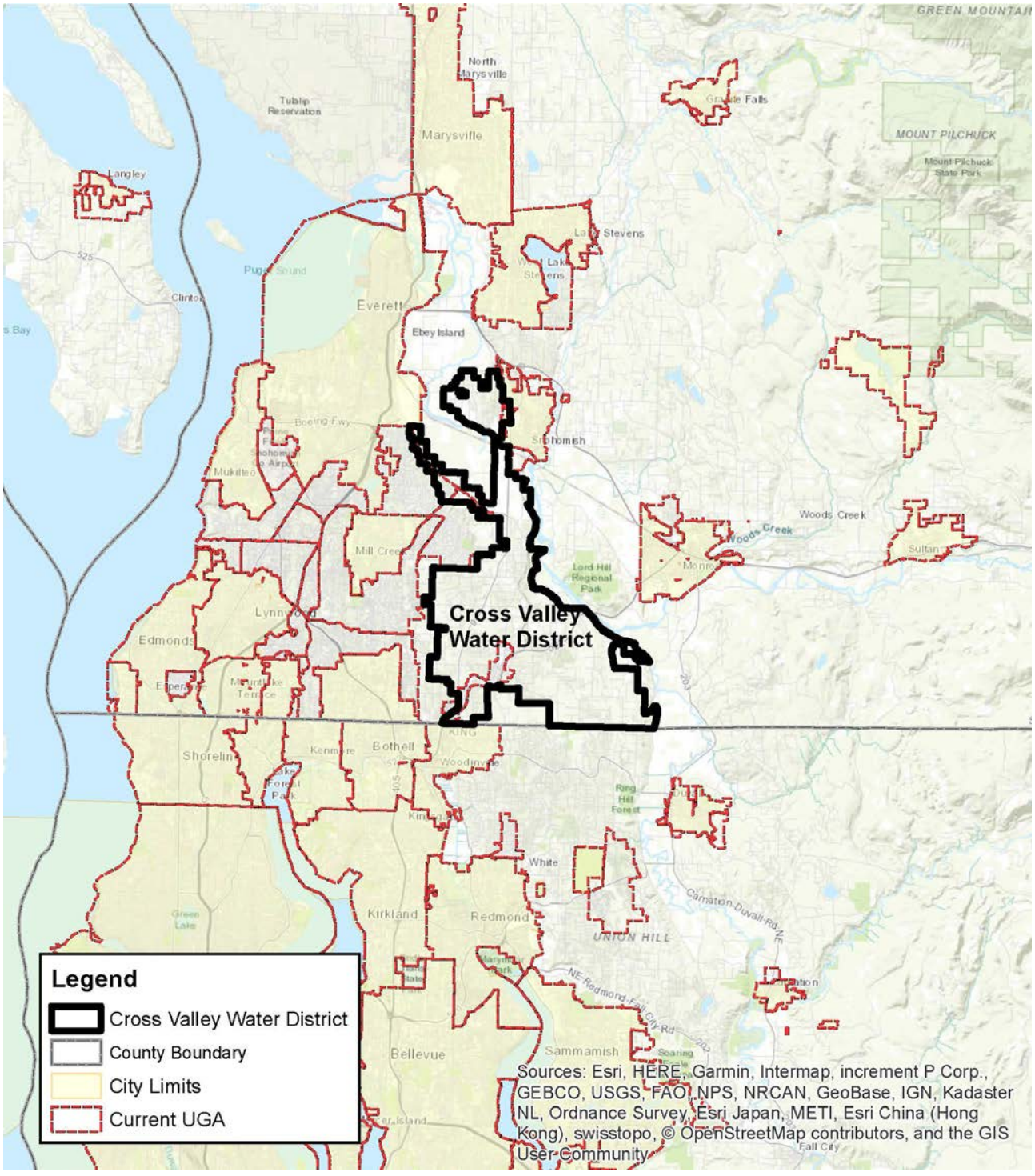

Figure 1-1: Vicinity Map

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TABLE 1-1: DEVELOPMENT HISTORY OF CROSS VALLEY WATER DISTRICT

YEAR	MILESTONE
1964	Cross Valley Water Association incorporated.
1965	Original construction contract for approximately 26 miles of water line for $544,000 awarded to construction company Oxford and Cook.
1966	First customer, Riverview Elementary School, received water; Completed 50,000 and 20,000 gallon reservoirs; Association constructed 21,000 LF of pipeline.
1967	Served 328 customers; Association constructed 4,100 LF of pipeline; Developers constructed 13,675 LF of pipeline.
1968	Drilled and completed Well No. 1; Developers added 11,620 LF of pipeline to system.
1970	Completed 500,000 gallon Echo Lake standpipe; Drilled Well No. 2; Developers added 22,260 LF of pipeline to system.
1971	Comprehensive Plan adopted; Drilled Well No. 3; Completed 8" Echo Lake cross-tie.
1972	Groundwater study completed; Well No. 4 drilled.
1973	Acquired ownership of Marshland Water Association facilities and service to its 29 members; Drilled Well No. 5.
1975	Assumed interim operation of Clearview Water Company and service to its 192 customers;
1976	Completed Clearview expansion project consisting of 6,400 LF of pipe; Constructed 125,000 gallon elevated storage in 756 Zone;
1977	Acquired ownership of Mount Forest Water Company facilities with 16 connections; Developers installed 11,898 LF of pipeline.
1978	Well No. 6 drilled; Completed new office and shop facilities at Clearview;
1980	Completed 1 MG Vine Street reservoir and booster station;
1981	Well No. 7 at Mount Forest was drilled; Completed 8,560 LF of transmission line to Mount Forest;
1982	All wells and reservoirs connected to central panel at Association Office by installation of new telemetry system; Relocated 8,500 LF of watermain along SR-9; Developers installed 9,568 LF of pipeline; Updated groundwater study of 1971.
1983	SR-9 widening required replacement of 8,300 LF of water pipe along SR-9;
1984	Completed Lost Lake Loop, 8,500 LF of pipe; Completed 5-Year Update of Comprehensive Plan;
1985	Purchased Lee Forest Reservoir site; Developers completed 8,000 LF of pipe.
1986	Purchased Well Site Nos. 1, 8, and 9; Drilled Wells 8 and 9;
1987	Lee Forest Reservoir completed; Completed 6,500 LF of pipe, Received sole source aquifer designation from EPA;
1989	Radio communications system installed; Completed water quality study; Completed Comprehensive Plan 5-Year Update;
1989	Voters approved creation of Cross Valley Water District and election of three Commissioners. Initial Commissioners were: Art Sigurdson, Dale Deierling and Doc Pehling.

YEAR	MILESTONE
1990	Lee Forest Booster Station to 756 Zone and watermain constructed; Well No. 10 developed;
1991	Water ULID Nos. 1 and 3 constructed; Annexation Nos. 1 and 2 completed;
1992	Clearview standpipe (47 ft. diam. x 146 ft. high) constructed; Water conservation and cross-connection control programs adopted;
1993	Swan's Trail Water District merger with CVWD; Water ULID No. 6 formed; Annexation Nos. 5 and 7 completed;
1994	Fobes Hill tank property purchased; sewer ULID No. 5 formed; Assumed Woodlane Water Company system, serving 42 connection;
1998	Sewer ULID 5 and Water ULID 6 construction completed, adding approximately 45,000 LF of gravity sewer and approximately 33,000 LF of watermain to the District;
1998	Interlocal Phase II Agreement for the Clearview Water Project Signed between Alderwood Water and Wastewater District, Silver Lake Water and Sewer District and Cross Valley Water District.
2000	Wellhead Protection Plan Developed
2000	New office building completed. Water Treatment Plant for Wells 5,6, & 10 completed
2001	New Water System Plan Completed.
2002	Clearview Local Facilities Transmission and Pump Station Constructed
2003	Water System Vulnerability Assessment completed in accordance with Homeland Security Act.
2004	Emergency Response Plan
2005	Began using CWSA water
2006	Assumed Mt. View Terrace Water Association
2009	New Water and Sewer System Plans Developed
2011	Approval of Annexation No. 13, the area of High Bridge Road
2012	Echo Lake Municipal Water Storage project commenced.
2013	Water System Plan amended – (approved in 2014).
2014	Drilling of new municipal water well (7B) on Mt. Forest site at 165th Ave. SE
2016	New Fales Road Fire Station connected to system.
2019	District replaced 0.5 MG Reservoir with a 1.62 MG Reservoir at Echo Lake and created a new 700 pressure zone; District completed cellular meter reading on all District meters;
2020	District completed telemetry SCADA upgrade

1.2 RULES AND REGULATIONS

1.2.1 Federal Regulations

1.2.1.1 Safe Drinking Water Act

Public Law 93-523, the Safe Drinking Water Act (SDWA), directs the United States Environmental Protection Agency (EPA) to establish minimum national drinking water standards, which limit the amount of substances that can sometimes be found in drinking water sources. Cross Valley Water District maintains a water quality monitoring program which is in accordance with the current federal drinking water standards as governed by the State of Washington Department of Health.

1.2.1.2 Clean Water Act

The Clean Water Act puts forth regulations and requirements for restoration and maintenance of the integrity of the nation's waters in terms of physical, chemical and biological characteristics and security considerations. The U.S. Environmental Protection Agency is the primary administrator of the Clean Water Act but has delegated many aspects of administration of the Act to the State of Washington Department of Ecology (DOE).

1.2.1.3 America's Water Infrastructure Act: Risk Assessments and Emergency Response Plans

On October 23, 2018, America's Water Infrastructure Act (AWIA) was signed into law. AWIA Section 2013 requires community (drinking) water systems serving more than 3,300 people to develop or update risk assessments and emergency response plans (ERPs). The law specifies the components that the risk assessments and ERPs must address, and establishes deadlines by which water systems must certify to EPA completion of the risk assessment and ERP. The Board of Commissioners approved the Risk and Resiliency Assessment in June and the Emergency Response Plan in December of 2021.

1.2.2 State of Washington Regulations

1.2.2.1 State Environmental Policy

State Environmental Policy Act (SEPA) review is generally required for all District projects other than regular renewal and replacement projects involving pipe sizes of 10-inches or less. SEPA requirements and exemptions are detailed in WAC Chapter 197-11 and adopted District environmental policies are in place to ensure that environmental concerns associated with construction are adequately addressed. Initiation of the SEPA process can be at the District's direction or as required for various permits.

1.2.2.2 Department of Health

The Washington State Department of Health's (DOH) "Water System Design Manual" (June 2020) is the primary document governing the sizing and design of Group A public water systems in the state of Washington. This publication sets forth the minimum design guidelines and planning requirements for the supply, storage, distribution, and quality of potable water within Group A public water systems.

1.2.2.3 Municipal Water Law (House Bill 1338)

Washington State House Bill 1338 is an act relating to certainty and flexibility of municipal water rights and efficient water use. The act more closely ties water system planning and engineering approvals by the Department of Health with water rights administration by the Department of Ecology. The legislation directs the Department of Health to adopt enforceable water conservation regulations for public water systems by the end of 2005. House Bill 1338 became effective September 10, 2003. The District maintains an aggressive water conservation program as stewards of the environment and in recognition of safe drinking water as a finite and precious resource. A summary of current and anticipated water conservation efforts is provided in Chapter 4 of this Plan. In addition, Municipal Water Law requires water service providers to establish and follow their own procedures for delivering timely and reasonable water service to properties within its “Retail Service Area”. Cross Valley’s policies and procedures for extension of water service are discussed in Paragraph 1.4.3 of this Section.

1.2.3 Snohomish County

The Fobes Hill area in the northernmost portion of Cross Valley Water District is located within the Critical Water Supply Service Area (CWSSA) for Northern Snohomish County and as such, the District is a member of the Water Utility Coordinating Committee (WUCC) for the area. The Northern Snohomish County Coordinated Water System Plan (CWSP), developed for and by the water utilities in the CWWSA, contains minimum design criteria standard requirements for those water service providers within the planning area established under the CWSP. Although the entire District is not within the CWSP jurisdictional area, the District adheres to and supports the established regional design standards and incorporated them into its minimum design criteria as put forth in Section 5 of this Plan.

1.3 APPROVAL PROCESS

The Water System Plan approval process consists of the following:

- Review and acceptance of a Draft Plan by the Cross Valley Water District and authorization for submittal to DOH for review and comment.
- Submittal of the Plan to other jurisdictions as noted.

- Review and consideration of comments.
- Submittal of a Final Plan for approval/acceptance by DOH.

1.4 INTERLOCAL AGREEMENTS AND DISTRICT POLICIES

The study area for this plan includes the existing and projected water service area of Cross Valley Water District located in south Snohomish County, Washington. This area is also identified as the Retail Water Service Area. The Retail Service Area is, in part, defined by interlocal agreements with neighboring water purveyors, including the City of Everett, Alderwood Water and Wastewater District, Silver Lake Water and Sewer District, and Woodinville Water District. Interlocal Agreements are provided in Appendix C and discussed in detail in Section 2. Neighboring water purveyors are illustrated in Figure 2-1.

Cross Valley is committed to providing water service as requested to serve properties within the Retail Service Area, except as may be subject to the above referenced interlocal agreements or is within the UGA of the City of Snohomish. In these instances, extension of service shall be coordinated with the neighboring purveyor. Similarly, it may become necessary from time to time to coordinate with neighboring providers to determine the most logical means of serving properties located on or near the established service area boundaries. The established process for extension of service to new customers is identified in Paragraph 1.4.3 below.

1.4.1 General Policies

Cross Valley's operations and policies regarding the water system are for the purpose of providing a well-planned water production, transmission, and distribution system that is environmentally sound and adequately protects public health and welfare, the environment, and all property, private and public, within the service area. The following general policies apply to overall operation of the District's water utility.

- It is Cross Valley Water District's policy to serve all customers requesting service that are with the retail (future) water service area discussed below and described in Section 2.
- As discussed in Paragraph 1.4.3, Developers are required to extend facilities to the furthest boundary of their property for future extension by others.
- Temporary water service agreements have been and will continue to be granted on a case-by-case basis to properties located outside of the District's service area. Agreements require property owners to pay all applicable connection charges and fees, and that annexation to the District will not be protested in the future.

1.4.2 Retail Water Service Area

As indicated in the Snohomish County Coordinated Water System Plan, Cross Valley Water District has a duty to serve customers that reside or operate businesses within their designated retail water service area, which is displayed in Figure 2-1. Because much of the southern half of the District's service area is located within a U.S. Environmental Protection Agency (EPA) designated Sole Source Aquifer (SSA), it is imperative that the District provide service in a reasonable and timely fashion for

customers and landowners needing safe drinking water. A discussion of the process for obtaining service is provided in Paragraph 1.4.3 below. As the primary, aggregate supplier in the SSA, Cross Valley remains in the best position to maintain the supply and health of the aquifer, and to provide measures for long term wellhead protection. Thus, it remains a high priority for the District to encourage customers that currently own and operate private wells within all portions of the District to connect to the distribution system over the long term.

1.4.3 Extension of Service: Timely Service Response

The District is committed to providing water supply within its retail service area in a timely and reasonable manner, consistent with applicable District policies and resolutions, Washington State Department of Health (DOH) rules and guidelines, and other applicable federal, state, and local laws including the Washington State Municipal Water Law.

An Application and Agreement are required for any applicant desiring to connect to Cross Valley's water system. The issuance of water work orders occurs subsequent to payment of the appropriate water connection and meter installation fees as required.

All proposed developments, including commercial, industrial, residential and municipal services that occur within the District's retail water service area shall connect directly to the District's water system. Building applicants are required to submit appropriate civil construction and/or site plans. They are advised of the requirements for connection to, and extension of existing watermains for domestic water and fire flow purposes through the Developer Extension Agreement (DEA) process. Subsequent to approval of the Developer Extension and receipt of required fees, a field work order is generated to direct District Staff to set/install meters on the subject property. Water meter setting by the District generally occurs within 2-10 business days after all requirements are met.

Applicants for water service within the Districts retail service area are advised that a "timely" service response period commences on the date the District receives the required fees and forms for a meter installation or completion of a DEA.

1.4.3.1 Water System Connection Application Procedures/Review

The following discussion outlines the application evaluation process for a new water system connection as it stands at the writing of this Plan. The process may change slightly from time to time to improve efficiency and make use of resources available. Administrative modifications to the review would not necessitate a Water System Plan amendment.

A potential customer can submit a Water Service Inquiry Form prior to submission of a complete connection application and a Fire Flow request if applicable. If the potential customer still desires to proceed to the connection application they can submit a formal application/request. The request for a water meter or a DEA is received by the District at the District office. A review of the

form(s) is done for completeness and ensures the mandatory review documentation is attached. Documentation includes but is not limited to:

- Completed application form
- Site plans (if applicable)
- Civil drawings
- Developers Extension Agreement (DEA)
- All required fees

The District's review process will generally begin within two to five business days from receipt of a complete application. DEAs require Board approval and generally are scheduled for the next available Commissioner meeting. Incomplete applications will not be accepted and/or reviewed. The applicant is notified of an incomplete submittal and the permit application and associated documents are returned.

The District's responsibility for water service begins at and includes connection to the public watermain and ends at the water meter, setter, and box. All pipes and connections from the water meter to the premises or building served by District water are the property and sole responsibility of the owner or lessee of the premises or building.

Extension of water service beyond existing watermains and laterals must be addressed within the civil construction plans included with the DEA application. It is the applicant's obligation to plan and construct the facilities necessary to allow extension of the District water facilities to their structure and/or property, and to extend the watermain to the furthest edge of the applicant's property and/or through the property to provide for future extensions of the water system and developments.

1.4.3.2 Water Permit Evaluation, Issuance, and Extensions

In the course of its review process of water meter and DEA applications, the District will determine whether adequate water system capacity (domestic and fire flow) is available to serve an applicant's property based on available capacity from water rights, supply, storage, transmission and treatment. This will be accomplished through the ongoing tracking of equivalent residential units served by the District in comparison to the maximum number of equivalent residential units that can be served by the system.

Water system extensions that are required to provide water service to a proposed site/building/development shall be approved by the District and the District's consulting engineer and must conform to the District's adopted design criteria, construction standards and specifications. All costs of the extension are to be paid by the developer or applicant. The DEA will expire after two years.

Time extensions, if requested, will be reviewed by the District staff and forwarded to the Board of Commissioners for their review and, if appropriate, their approval.

1.4.3.3 Customer Complaints: Timely and Reasonable Service

In the event an individual water service applicant or party seeking a Developer Extension Agreement has a grievance regarding the "timely and reasonable" response of the District to his/her water application, the applicant is directed to submit in writing to the District's Board of Commissioners, a request for said grievance to be heard before the Board. Prior to such a hearing, the General Manager shall consult with the District's engineer(s) and make a recommendation to the Board for its consideration in the course of a Board hearing.

The applicant may attend and present their position at the hearing. Once a request for hearing is submitted, a hearing before the Board shall occur within 60 days. A decision by the Board shall occur no later than thirty (30) business days after the hearing.

1.4.4 Remote Systems and Service Area Adjustments

The Coordinated Water System Plan acknowledges that new development will demand water service in remote areas of the service area prior to the extension of the distribution system. Areas beyond the reasonable extension of existing lines must install a "remote" system. Remote systems are constructed to District standards and include pipe sizes and valves that will facilitate hookup of the development when lines are eventually extended to the area. Because of geography and development patterns, and in order to protect the sole source aquifer, it is expected the District will eventually serve the entire district in a coordinated, integrated fashion. The wells developed for any remote system, and the corresponding distribution system, will therefore, over time, be owned and operated by the District.

At the present time (2021), the District does not own and operate any remote systems. This is primarily because topography and development patterns have allowed line extensions by the District as reasonable alternatives, and because the District considers protecting the aquifer from unnecessary drilling and unregulated withdrawals a high priority. However, private wells and individual water systems do operate within the water system. The Aqua Copia System is one such water utility that operates near the intersect of Pressure Zones 756C, 640C and 640, west of Highway 9 at approximately 196th Street. Cross Valley prepared an analysis of the potential merging of the Aqua Copia System into Cross Valley under a DOH Water System Acquisition Grant in 2005. That analysis indicated that Aqua Copia was at the time an active private water utility without the desire for acquisition. Cross Valley does recognize that if the Aqua Copia system does require assistance or takeover in the future, the District will consider the option if the District's existing ratepayers are not financially impacted and service is not impacted in any negative way. A similar study was accomplished for the Schluter Water

Association near the northeastern boundary in the Fobes Hill area. A similar conclusion was drawn, although in this instance, the City of Snohomish may be the appropriate purveyor if a takeover were accomplished in the future. Consideration of takeover of any water systems or service area and agreements is subject to approval of the Boards of both agencies and may require approval by the Departments of Health and Ecology, Snohomish County, and the Water Utility Coordinating Committee that governs implementation of the Coordinated Water System Plan. The Clearview Water Supply agency members should also be notified and/or consulted on any significant service area exchanges or takeovers.

1.4.5 Satellite System Management

Cross Valley has acknowledged the role of Snohomish County Public Utility District (PUD) No. 1 as the Satellite System Management Agency. Systems outside of designated areas or those within service areas that the designated utility cannot or will not be responsible for are under their jurisdiction.

Before the PUD takes over a system or area, it asks the adjacent service area provider if they will assume responsibility for the area. The PUD, the City of Snohomish, and the District have discussed service to the area west and north of the City of Snohomish, and the District has agreed to incorporate into their service area the area bordered by 52nd Street S.E., 36th Street S.E., Bickford Avenue, and Ebey Slough. Any existing system assumed, or any new system constructed, must meet District standards.

The District actively participates as one of the largest systems planning under the CWSP. The District has already implemented many of the plan's recommendations, such as use of minimum design standards, establishment of a financial plan, and planning for water use efficiency and groundwater protection. The Water Utility Coordinating Committee of the CWSP provides a forum for purveyors to discuss operational problems, pending regulations and service area adjustments and review design standards.

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CHAPTER 2

BASIC PLANNING DATA

2.1 OVERVIEW

This section of the Plan provides a general description of Cross Valley's current and potential future water service areas, and identifies the primary physical, land use and demographic characteristics of these areas. This information has been utilized to identify existing and future land use scenarios and to forecast future population and employment growth. Information from these projections form the basis for the flow projections and system analyses contained in subsequent sections of the Plan.

2.2 PLANNING AND SERVICE AREAS

2.2.1 Corporate Area

Cross Valley's corporate boundary, as shown in Figure 2-1, encompasses approximately 40 square miles in south Snohomish County. It extends from approximately the City of Snohomish and Skipley Road on the north to the King/Snohomish County line on the south, and from the Snohomish and Snoqualmie Rivers on the east, to 51st Avenue SE and Lowell Larimer Road on the west. The corporate area is the legal boundary of the District, and comprised of the original District Boundary plus any annexations thereto since origination of the utility. Residents within the corporate area are eligible to vote for the Board of Commissioners, whether they receive service from the District or not. In 2011, an annexation into the District occurred (Annexation 13) in the area northeast of Lost Lake and south of the Snoqualmie River that added approximately 30 properties and approximately 275 acres to the existing Corporate Area. The annexation occurred entirely within the District's designated Retail Water Service Area, and as such this annexation had no significant impact on the analysis performed in this Plan.

2.2.2 Water Service Area Description

Under Municipal Water Law, water purveyors are required to establish a "retail water service area" within which they accept a duty to serve the properties requesting service. The District plans to extend service to residents and businesses within the designated retail water service area as requests for service are made, recognizing that economic and development patterns will dictate the rate at which Cross Valley is able to expand the reaches of its system. Service requests are conducted under the terms of extension established by District policy and conditions established by system extension agreements. The policy and process for extension of service is outlined in Section 1.4.3

of this Plan and the retail water service area is shown in relation to the Snohomish County UGA and local incorporated cities on Figure 2-1.

The northern portion of the District is within the Critical Water Supply Service Area (CWSSA) addressed in the North Snohomish County Coordinated Water System Plan (CWSP). This area is referred to as Fobes Hill and encompasses approximately 5 square miles of primarily residential development north of the Snohomish River. It is identified as an expanding system in the CWSP and subject to the minimum design criteria and service area agreements established by the CWSP.

The southern portion of the District's service area is referenced in the CWSP, but the precise CWSSA boundary in the central and south areas of the District are not delineated in the most current map adopted by Snohomish County. As such, the southern portion of the District is not subject to the policies and agreements established in the CWSP.

2.2.2.1 Current Service Area

The current service area is defined as the area the existing (2019) system serves, which includes all customers connected to the Cross Valley system. It includes small portions of the City of Snohomish city limits and Potential Annexation Area (PAA) within the City's designated UGA boundary. The City of Everett considered annexation of the area west of Lowell Larimer Road and north of Seattle Hill Road, but in January of 2009 the City Council dropped its pursuit of the annexation. The City of Snohomish considered an annexation of 17.4 acres in 2014 that was on the east side of the District on the intersection of SR 9 and 16th St. The annexation was denied by the Boundary Review Board. As indicated in Figure 2-1, other jurisdictions that provide water service near Cross Valley include Alderwood Water and Wastewater District, the City of Everett, and Silver Lake Water and Sewer District to the west, the City of Snohomish in the north and northwest, and Woodinville Water District to the south. The District currently provides water service to the Maltby industrial area, which is a designated urban area. In addition, within the District are several water providers. The Aqua Copia water system serves approximately 100 residential connections within the District's boundaries east of State Route 9 in the vicinity of 196th Street Southeast. The Fobes Water District (46 connections), and Schluter Water Association (80 connections), serve within the existing District service area.

2.2.2.2 Future Service Area

The future service area is defined as the area that, if served by a public water utility, would be best served by Cross Valley Water District and historically has been referred to by the District as the water service "planning area". Cross Valley's planning, retail service and future service areas are identical, and the terms are used interchangeably. As previously noted, the service area boundary

is delineated in Figure 2-1 and includes parcels located in the central and southeast portions of the District between the existing corporate boundary and the Snohomish River. Other areas include the areas to the north and west of the Fobes Hill neighborhood north to State Route 2 and the Snohomish River, and the area located near Little Lake and Crystal Lake located south of State Route 522 and west of Paradise Lake Road. For the purposes of this Water System Plan, it is assumed these areas will require water service from the District by the year 2030. The District maintains the first right of refusal for service within the future service area and will work with property owners throughout this area to determine the most effective means of service.

2.2.2.3 Interim Water Service Area

The Interim Water Service Area is defined as areas either served by Cross Valley for a neighboring purveyor, or by a neighboring purveyor but within Cross Valley's retail service area on a temporary basis. Interim service areas, such as those identified on Figure 2-1, are described in the interlocal agreements signed by Cross Valley and neighboring purveyors, which are included in Appendix C. Small service area exchanges with Silver Lake Water and Sewer District as defined by the interlocal agreement signed on March 18, 2010 are indicated on Figure 2-1.

In addition, Cross Valley currently serves approximately 77 connections in the Fobes Hill Area that are within the Urban Growth Area of the City of Snohomish. While no exact plan for transfer of these connections to Snohomish is in place, it is expected that they will one day be served by Snohomish. Valving off the area to transfer services is relatively easy and will not have a significant impact on system operations in the area.

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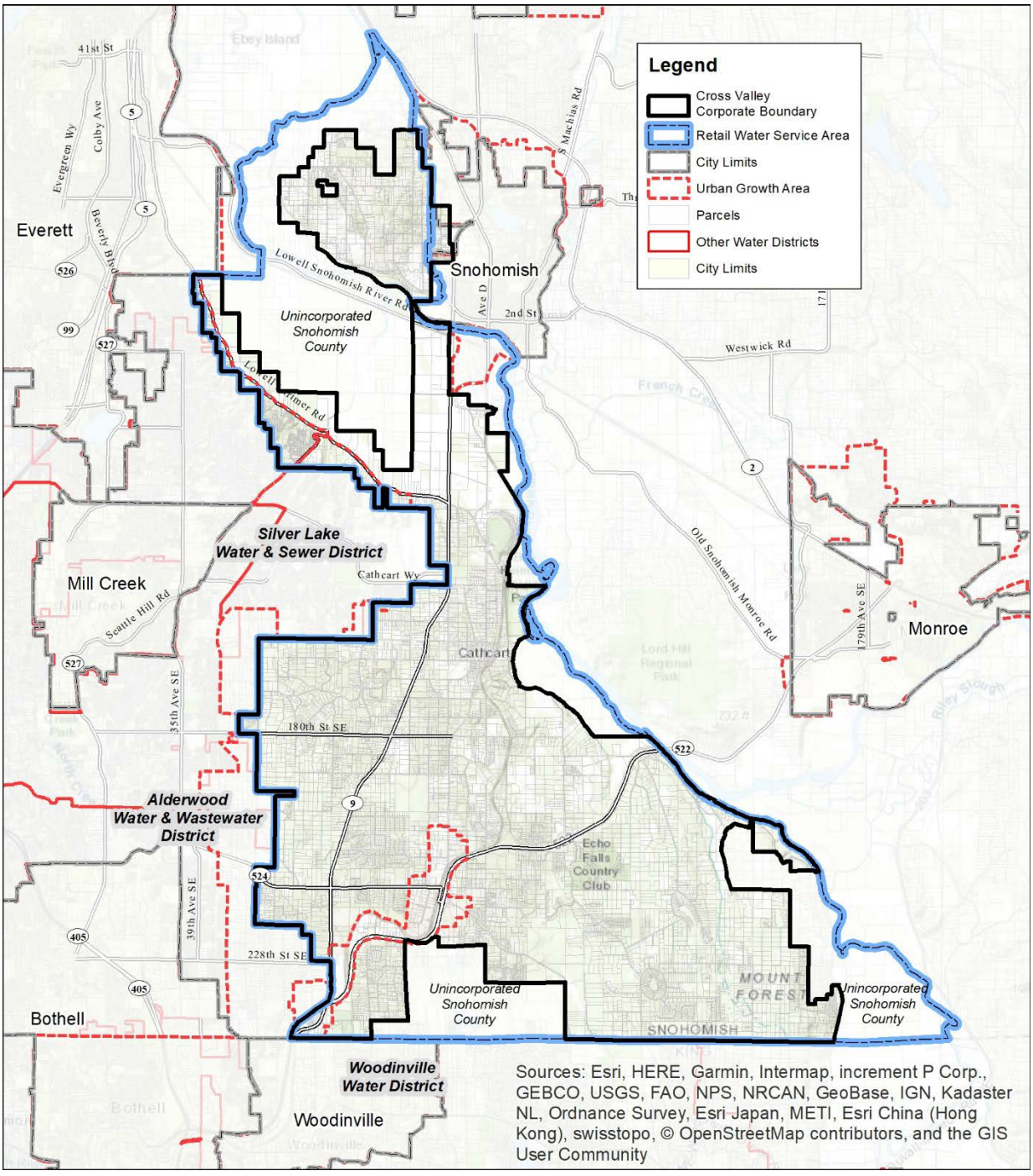

Figure 2-1: Water Service Area Map

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2.3 SERVICE AREA CHARACTERISTICS

2.3.1 Topography

In general, the District is located on the southeastern edge of the Intercity Plateau, which is an upland area extending from Everett southwards and bounded by the Snoqualmie and Snohomish Rivers on the west. The area is characterized by smooth hills generally 400 to 500 feet above mean sea level. Several valleys trending north-south traverse the uplands areas, including the Little Bear Creek and Sammamish River Valleys, Bear Creek Valley, Paradise Valley and the Snohomish and Snoqualmie River Valleys. Steep escarpments along the eastern and western boundaries are the result of glacial erosion and continued erosion caused by Little Bear Creek to the west and the Snohomish and Snoqualmie Rivers to the east. The service area ranges in elevation from approximately 10 to 30 feet along the Snohomish and Snoqualmie Rivers to a maximum elevation of 620 feet in the vicinity of the Clearview Water Supply Agency (CWSA) Standpipe, a regional water storage facility.

2.3.2 Surface Water Features

There are numerous surface water resources in the District's corporate boundary. The Snohomish and Snoqualmie Rivers lie just east of the service area, while Little Bear Creek flows along the western boundary of the service area. There are also several lakes in the area south of State Route 522, including Devil's (Lost) Lake, Echo Lake and various small lakes and wetlands. Crystal Lake lies just south of the service area, in Snohomish County, and Paradise Lake, Cottage Lake and Lake Leota are further south in King County. Shadow Lake, Lake Beecher, and the Batts and Hanson Sloughs are located along the eastern boundary of the service area north of Cathcart.

2.3.3 Ecology

The entire area was logged in the early portion of this century and some of the area which is not developed is in second and third growth forest. Trees consist of species common to the Puget Sound lowlands and are dominated by Douglas Fir, Western Red Cedar and Hemlock. Alder and Bigleaf Maple are found in numerous locations. The forested areas serve as permanent habitat for many of the larger mammals native to the region, including deer, bobcat, coyote, porcupine, and opossum.

2.3.4 Climate and Rainfall

Climate conditions in the Cross Valley Water District area are typical of the marine climate of the Puget Sound region. Marine climates are characterized by mild summers and wet winters. The average annual precipitation for the area is approximately 56.5 inches, with 84 percent of the precipitation occurring from October through May. The average annual temperature in the area is approximately 49° F, which represent a range from approximately 37° F to approximately 62° F.

2.3.5 Soils

Soils in this area of south Snohomish County are generally of the Alderwood soil series. These are moderately deep and were formed on glacial till. Surface layers are gravelly loam overlying weakly cemented hardpan, with depth to hardpan generally 20 to 40 inches. Other soil types in the area include Everett, Indianola and Norma soils, which are found in areas with surface exposures of outwash deposits. The Everett soils, which are characterized by sand and gravel, are located on terraces and outwash plains, and are the result of glacial striation. Soils associated with wetlands, such as Bellingham, McKenna, Orcas peat, and Mukilteo soils are located in surface depressions and drainage ways.

2.3.6 Economy

The overall character of the service area is rural residential in nature. Commercial growth is occurring along the State Route 9 corridor and the distilleries, nurseries, and other businesses are increasing in the Maltby Industrial Area. In 2005, King County Wastewater Treatment Division built the Brightwater Treatment Facility located west of State Route 522 and east of Snohomish Woodinville Rd at approximately 228th St SE. Because this is a wastewater treatment facility that reuses treated wastewater on site for various treatment processes, it has not resulted in high water consumption.

2.3.7 Transportation

The major transportation corridors in the District include State Route 9 (Snohomish Woodinville Rd), which travels generally north-south through the District, and State Route 522, which enters the southern end of the District from the southwest corner and exits the northeast boundary at the confluence of the Snohomish and Snoqualmie rivers. Lower-Larimer Road in the northwest corner of the District is the major arterial connecting the Maltby Industrial area with the City of Everett.

2.4 LAND USE AND ZONING

Land use and zoning within Cross Valley Water District is under the jurisdiction of Snohomish County. The District encompasses a rural area of south central Snohomish County dominated by large, single family lots that are 5 acres or greater in size. The rural and agricultural zoned areas create a community of sparsely populated wooded lots, pastures, and small hobby farms. There are three unincorporated areas with more dense settlement and commercial and/or industrial activity (Clearview, Maltby and Cathcart) as well as commercial development along the Route 9 corridor. There are some areas where residential development is allowed at slightly higher densities, due to development patterns that pre-dated the Growth Management Act. These areas with higher density development tend to be located either in close proximity to Route 9, Lowell Larimer Road, or adjacent to the lakes in the southern portion of the District.

As indicated in the Zoning Map (Figure 2-2), the overwhelming majority of zoning consists of rural lots 5 acres in size or greater, with a few areas such as the area west of Maltby, Seattle

Hill, and the eastern portions of Fobes Hill located within the City of Snohomish's UGA having higher density for single family use.

Exceptions to the predominantly rural residential land use within the water service area include the Maltby UGA, which is zoned for industrial and urban commercial uses, and the Clearview Limited Area of More Intensive Rural Development (LAMIRD) which allows rural business uses. The location of the Urban Growth Area is critical in utility system planning because it provides a boundary within which higher densities are anticipated and an "urban" level of services are to be provided. Conversely, areas outside of the UGA are expected to be developed at lower densities and receive the appropriate level of public services.

2.4.1 Growth Management Act

Snohomish County's Growth Management Act (GMA) plans were completed in December 1996 and have been updated periodically since. The goals contained within Snohomish County's GMA Comprehensive Plan recognize that rural areas are not interchangeable, and that neighborhood business centers must exist in some rural areas. In 2012, Snohomish County Planning and Development Services issued and adopted an updated Buildable Lands Report (BLR) that identifies areas of potential growth and redevelopment over a 20-year planning period.

In addition to releasing the BLR, an important component of growth management planning involves the concept of concurrency. The County will not permit new development unless the level of services is available (particularly road and domestic water services) to serve the new development, without impacting the existing level of service for residents. CVWD assists the County in meeting the concurrency requirement by assuring that water is available prior to issuance of development permits within the District's service area.

Snohomish County' Comprehensive Plan expires in 2023, and they will be undertaking the 2024 Comprehensive Plan Update at the end of 2021. With the statewide housing shortage and growth in Snohomish County, it is a possibility that the Urban Growth Boundaries could change. This would lead to the District having to not only adjust the boundaries but assure that the District can serve the growing community.

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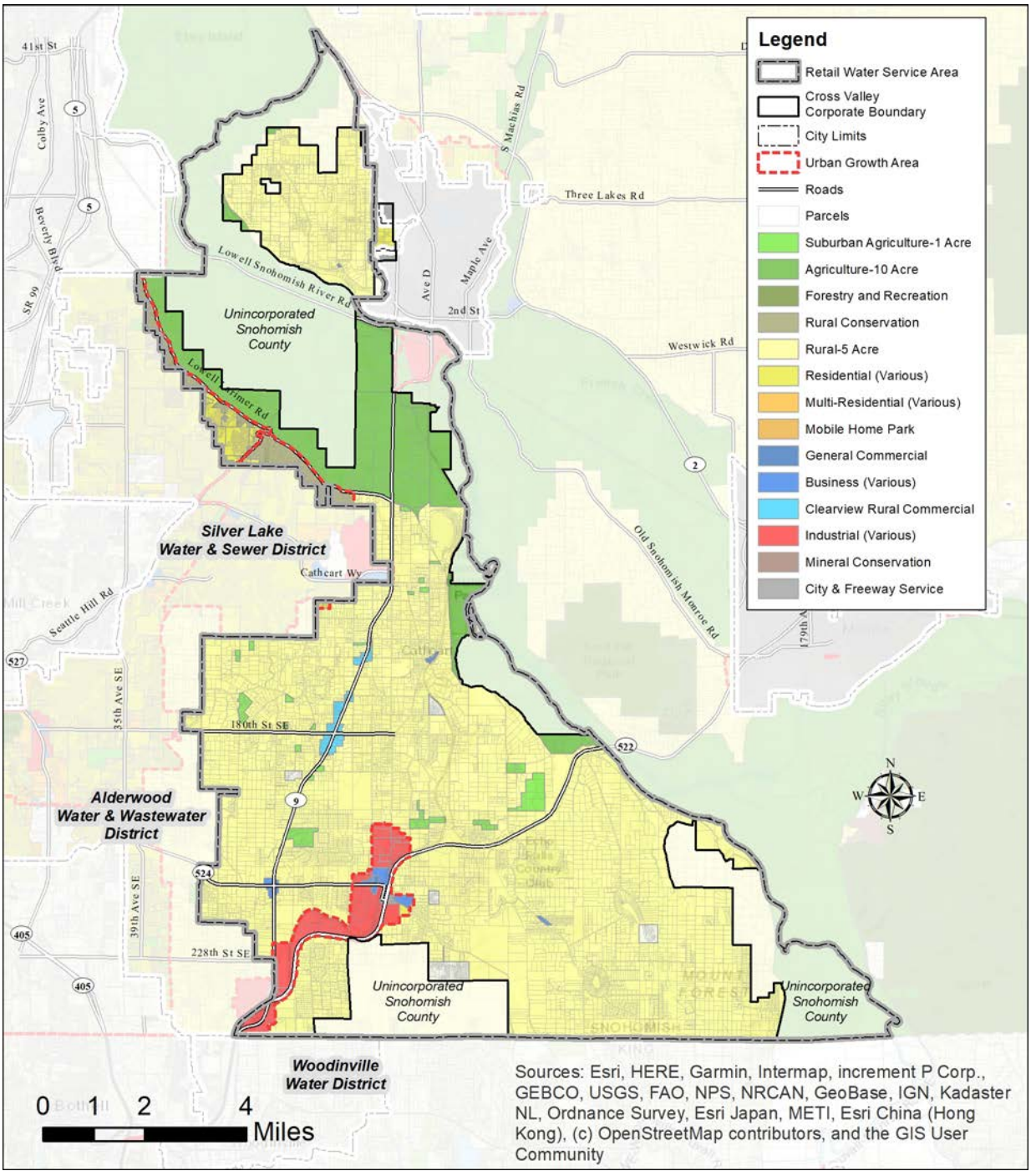

Figure 2-2: Zoning Map

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2.5 POPULATION AND EMPLOYMENT

In order to effectively assess the future water system needs of the District, it is necessary to project future population and employment for the service area. The population and employment projections are obtained by analyzing past demographic trends and by utilizing the planning data developed by the Puget Sound Regional Council (PSRC).

PSRC provides parcel level projection data for a given geography through PSRC's Land Use Vision which are growth projections dataset intended for use in planning analyses. For this Plan, the pressure zones were provided to PSRC. Staff at PSRC was able to allocate the population and employment model results into the pressure zones as shown in Table 2-1. These overall projection estimates were developed through a two-step process. First, PSRC's 2015 macroeconomic forecast is broken down to jurisdiction-level household, population, and job control totals (for cities and towns, unincorporated UGAs, and rural areas) using numeric policy guidance from the VISION 2040 Regional Growth Strategy and adopted local growth targets. Secondly, the control totals are allocated to the parcel-level across each jurisdiction using PSRC's UrbanSim land use model.

The projections listed in Table 2-1 show current (2019) and projected growth in population and employment anticipated to occur within the District's pressure zones through the year 2040.

2.5.1 Service Area Population and Employment

The existing (2019) and projected water service area population and employment figures are summarized in Table 2-1. As indicated, the water service area population is currently estimated at nearly 22,273 people and expected to reach 23,393 by the year 2029, and over 28,799 by the year 2040. Employment is currently estimated at nearly 8,439 and employment growth is expected to reach 9,159 by 2029 and 10,417 by 2040.

2.5.2 Population Served

Data provided from the District's billing system indicates that almost 6,900 residential connections (ERU's) receive water service from Cross Valley Water District. Using an average household size of 2.8 results in an estimated population served of approximately 19,320. The remaining population in the service area is served by individual wells or small (less than six) clusters of homes on a single well producing less than 5,000 gallons per day. While some number of individual wells will likely always be present in the rural areas of the District, new connections in the future will likely come from a combination of new development and property owners requesting public water service to replace their individual wells.

TABLE 2-1: WATER SERVICE AREA POPULATION AND EMPLOYMENT PROJECTIONS, 2008-2030

POPULATION								
Pressure Zones	**Source**	**2019**	**2020**	**2025**	**2029**	**2030**	**2035**	**2040**
280 E	City of Everett	533	543	559	560	560	577	585
310 E	City of Everett	1558	1560	1604	1634	1642	1755	2077
280 C	Clearview	198	198	201	203	203	215	249
310 C	Clearview	620	625	670	743	761	850	947
370 C	Clearview	2020	2045	2126	2140	2144	2156	2199
480 C	Clearview	262	262	279	286	288	307	351
575 C	Clearview	769	769	781	807	813	845	977
640 C	Clearview	626	629	630	652	658	684	763
756 C	Clearview	2973	2973	3032	3091	3106	3295	3741
280	District Wells	717	717	718	734	738	823	905
310	District Wells	74	74	83	84	84	84	80
382	District Wells	118	119	117	112	111	115	116
420	District Wells	456	458	458	461	463	490	548
575	District Wells	2567	2558	2622	2658	2667	2895	3500
640	District Wells	5410	5410	5553	5691	5725	6228	7354
700	District Wells	1859	1859	1913	1959	1971	2068	2289
E 500	District Wells	188	188	184	186	187	217	242
S 500	District Wells	348	348	355	369	372	440	481
W 500	District Wells	977	977	997	1023	1029	1159	1395
	Grand Total	**22273**	**22312**	**22882**	**23393**	**23522**	**25203**	**28799**
EMPLOYMENT								
Pressure Zones	**Source**	**2019**	**2020**	**2025**	**2029**	**2030**	**2035**	**2040**
280 E	City of Everett	23	25	29	30	30	33	37
310 E	City of Everett	83	85	108	120	123	137	159
280 C	Clearview	96	96	88	90	90	91	88
310 C	Clearview	18	19	21	25	26	28	36
370 C	Clearview	75	79	85	86	86	112	120
480 C	Clearview	81	81	91	97	99	105	111
575 C	Clearview	99	98	99	102	103	104	114
640 C	Clearview	71	71	74	96	101	108	118
756 C	Clearview	1072	1102	1179	1179	1179	1188	1206
280	District Wells	85	89	100	106	107	118	111
280	District Wells	27	28	27	30	31	31	32

310	District Wells	125	128	131	137	138	153	170
382	District Wells	5	5	5	4	4	5	7
420	District Wells	10	10	11	11	11	12	17
420	District Wells	3	3	3	3	3	3	4
575	District Wells	1215	1232	1266	1282	1286	1423	1498
640	District Wells	3549	3629	3746	3784	3794	3953	4179
700	District Wells	272	279	322	345	351	382	445
E 500	District Wells	7	7	7	12	13	19	23
S 500	District Wells	10	10	11	13	13	16	19
W 500	District Wells	1513	1491	1568	1607	1617	1767	1923
	Grand Total	**8439**	**8567**	**8971**	**9159**	**9205**	**9788**	**10417**

2.6 HISTORIC CONSUMPTION AND PROJECTED WATER SYSTEM DEMANDS

A primary objective for water demand forecasting is to accurately determine the utility's future water system and financial requirements. The following paragraphs outline how historical demands were assessed and the methodology behind future demand projections. Please note that although this planning process has had the benefit of using the most current population and employment data available through PSRC and the local land use jurisdictions, water demands are vulnerable to weather patterns and conservation programs. The range of factors that influence demand and consumption, specifically conservation, are discussed in greater detail in Section 4.

In order to calculate future water system demands and associated source of supply and water system requirements, two steps are required: identification of water supply (including both water purchases and water production from District wells) in comparison to actual water sales, and determination of historical water use characteristics of the various types of connections served by the District.

Evaluation of water use by customer class is accomplished by expressing non-residential customers in Equivalent Residential Units or "ERUs." To determine ERUs, historical water demand data for a single-family connection is analyzed to arrive at an average daily demand per ERU expressed in gallons as Average Daily Demand per ERU (ADD/ERU). By dividing this average daily demand into the total use for each customer class, the estimated ERUs per customer class are determined. The average use per single-family connection is the same as the average use per ERU.

2.6.1 Historic Purchases and Well Production

Table 2-2 provides a history of District well production and water purchases and compares it with total consumption by customers and the District in its operations. The difference is referred to as the total Distribution System Leakage (DSL), which is comprised of water lost due to leaks, unaccounted-for uses in fighting fires, water main breaks, and construction use in fire hydrants. Non-revenue water, shown in Table 2-2,

represents the total amount of water consumed that the District is not able to bill customers for. Since 2016, the District's non-revenue water has averaged approximately 12.8% of total production and purchases, and 41% of this non-revenue water is from flushing operations to maintain water quality, authorized consumption during construction activities and other District uses. These types of uses are considered "accounted-for". The DSL rate from the period of 2016-2018 is estimated at approximately 7.5%. Under WAC 246-290-820(4), since the DSL rate is less than 10% over a 3-year period, the District does not need to implement a water loss control action plan.

TABLE 2-2: HISTORIC PRODUCTION, PURCHASES, AND CONSUMPTION, 2013-2018
(All figures in MG)

Year	Well Production	Outside Purchases[1]	Customer Use	Non-Revenue Water	Authorized Consumption	Distribution System Leakage	DSL Rate
2013	381.43	249.28	542.58	88.13	34.43	53.70	8.5%
2014	370.80	257.47	548.56	79.71	33.82	45.89	7.3%
2015	391.79	269.87	597.82	63.85	15.54	48.31	7.3%
2016	347.92	260.66	535.62	72.96	20.05	52.91	8.7%
2017	372.02	290.26	587.15	75.13	34.70	40.43	6.1%
2018	380.40	287.48	568.05	99.83	48.69	51.14	7.7%
Average 2016-18	366.78	279.47	563.60	82.64	34.48	48.16	7.49%

1 – Includes water purchased through City of Everett interties and from the CWSA

2.6.2 Historic Billed Consumption by Customer Class

Tables 2-3 through 2-6 presents historical data by customer class for total water sold (demand) by billing class, number of connections, average use per connection (gallons/connection/day), and estimated ERUs. The historical average use per ERU of 207 gallons/ERU/day is based on demand data that only represents the average residential use per day for the last three years and does not include an allowance for non-revenue water. Consistent with the land use patterns found in the District, an overwhelming majority of consumption is from single family residences, which collectively consume approximately 84% to 89% of all billed water use in the District.

TABLE 2-3: WATER DEMAND SUMMARY (MG)

Customer Class	2013	2014	2015	2016	2017	2018
Residential	468.46	463.05	516.19	463.65	513.64	500.97
Commercial	31.02	33.91	35.05	33.30	34.19	29.61
Agricultural	20.15	21.68	27.77	20.94	18.08	15.00
Industrial	9.93	9.31	9.04	11.09	10.38	11.30
Government	12.32	20.55	8.84	6.05	10.11	9.11
Authorized Use	34.43	33.82	15.54	20.05	34.70	48.69
Distribution System Leakage	53.70	45.89	48.31	52.91	40.43	51.14
Total	630.71	628.27	661.67	608.58	662.28	667.88

TABLE 2-4: TOTAL CONNECTIONS

Customer Class	2013	2014	2015	2016	2017	2018
Residential	6,234	6,250	6,275	6,326	6,420	6,787
Commercial	129	131	131	132	134	134
Agricultural	57	57	60	63	63	63
Industrial	56	56	56	56	56	56
Government	18	18	18	18	17	17
Total	6,494	6,512	6,540	6,594	6,690	7,057

TABLE 2-5: AVERAGE USE PER CONNECTION (GAL/CONN/DAY)

Customer Class	2013	2014	2015	2016	2017	2018
Residential	206	203	225	201	219	202
Commercial	659	709	734	692	699	605
Agricultural	963	1,042	1,261	918	786	652
Industrial	486	455	442	542	508	553
Government	1,876	3,128	1,345	939	1,629	1,469

TABLE 2-6: ESTIMATED ERUS

Customer Class	2013	2014	2015	2016	2017	2018
Residential	6,234	6,250	6,275	6,326	6,420	6,787
Commercial	413	458	426	454	427	401
Agricultural	268	293	338	286	226	203
Industrial	132	126	110	151	130	153
Government	164	277	107	83	126	123
Authorized Consumption	449	441	203	261	452	635
DSL	700	598	630	690	527	667
Total	8360	8443	8088	8251	8309	8969

2.6.3 Water Demand Projections

Future water demand projections are based on the historical water use, the projected number of ERU's by year presented in Table 2-7 and an average water use that includes an allowance for non-revenue water of approximately 14.5%.

Evaluation of water use by customer class has been accomplished according to the District's three primary sources of supply (Everett Water, CWSA Water, and District Water). Table 2-7 presents the distribution of existing ERUs by primary source of supply and by Pressure Zone. Population and employment projections were used to estimate overall residential, commercial, and industrial growth, which was then applied to each pressure zone. Using PSRC estimates for growth in the District, current ERUs for 2018 were estimated, and "future ERUs" for the years 2019 through 2025, 2030, 2035, and 2040 were determined in order to estimate future ERUs over a six, ten, and 20-year planning period.

Table 2-8 shows the projected water demands based on an average use of 207.4 gallon/ERU/day. These projected demands do not assume reductions in average water use over time resulting from the District's Water Use Efficiency program. Table 2-9 shows a comparison of total District use with and without the Water Use Efficiency program meeting its goals for conservation. The District's Water Use Efficiency program and the adopted goals for conservation are discussed in detail in Chapter 4.

TABLE 2-7: SUMMARY OF WATER SYSTEM ERU'S

Water Source	Pressure Zone	2018	2019	2020	2025	2029	2030	2035	2040
City of Everett	280 E	155	164	167	174	174	174	180	184
	310 E	665	700	701	723	737	741	792	937
CWSA Water	280 C	92	97	97	98	99	99	105	120
	310 C	140	148	149	160	178	182	203	227
	370 C	695	731	741	772	777	778	792	810
	480 C	122	129	128	137	141	141	151	172
	575 C	273	288	285	292	302	304	316	364
	640 C	62	65	65	66	70	71	74	82
	756 C	1140	1200	1201	1234	1256	1261	1330	1492
District Wells	280	314	331	331	331	339	341	380	417
	310	36	38	38	42	42	43	43	42
	382	29	30	31	30	28	28	30	31
	420	145	153	153	152	155	155	164	184
	575	1042	1097	1096	1124	1139	1143	1243	1476
	640	2252	2370	2378	2443	2498	2512	2715	3158
	700	568	597	596	617	632	636	668	740
	E 500	66	70	69	69	69	70	81	90
	S 500	153	161	161	164	170	172	203	222
	W 500	571	601	599	614	630	634	711	848
District Total		8521	8969	8988	9241	9436	9484	10181	11597

TABLE 2-8: PROJECTED WATER DEMANDS, WITHOUT WUE PROGRAM
(ALL FIGURES IN MG)

Water Source	Pressure Zone	2018	2019	2020	2025	2029	2030	2035	2040
City of Everett	280 E	11.92	12.55	12.84	13.31	13.36	13.37	13.83	14.13
	310 E	51.02	53.70	53.80	55.42	56.53	56.80	60.74	71.85
CWSA Water	280 C	7.08	7.45	7.43	7.52	7.58	7.60	8.03	9.21
	310 C	10.78	11.34	11.44	12.27	13.63	13.96	15.58	17.42
	370 C	53.28	56.08	56.87	59.20	59.60	59.70	60.73	62.09
	480 C	9.38	9.87	9.83	10.51	10.78	10.85	11.56	13.22
	575 C	20.96	22.06	21.87	22.40	23.13	23.32	24.21	27.94
	640 C	4.75	5.00	5.02	5.05	5.35	5.43	5.66	6.30
	756 C	87.44	92.04	92.14	94.68	96.31	96.71	101.99	114.42
District Wells	280	24.08	25.35	25.37	25.42	26.00	26.14	29.14	31.99
	310	2.75	2.90	2.90	3.21	3.25	3.26	3.32	3.25
	382	2.21	2.32	2.34	2.31	2.18	2.15	2.27	2.38
	420	11.14	11.72	11.77	11.67	11.85	11.90	12.59	14.08
	575	79.95	84.15	84.05	86.18	87.35	87.64	95.37	113.21
	640	172.68	181.77	182.34	187.34	191.57	192.63	208.24	242.22
	700	43.53	45.82	45.75	47.29	48.49	48.79	51.23	56.77
	E 500	5.09	5.36	5.32	5.26	5.33	5.34	6.20	6.91
	S 500	11.71	12.33	12.34	12.59	13.07	13.19	15.60	17.05
	W 500	43.78	46.08	45.97	47.10	48.30	48.60	54.56	65.00
District Total		653.51	687.90	689.37	708.72	723.66	727.40	780.85	889.44

TABLE 2-9: PROJECTED DEMANDS, WITH AND WITHOUT WUE PROGRAM

Year	Projected ERUs	Average Day Demand w/o WUE (MGD)	Average Day Demand with WUE (MGD)	Max Day Demand w/o WUE (MGD)	Max Day Demand with WUE (MGD)
2018	8521	1.79	1.79	4.48	4.48
2019	8969	1.88	1.88	4.71	4.71
2020	8988	1.89	1.89	4.72	4.72
2021	9039	1.90	1.89	4.75	4.72
2022	9089	1.91	1.89	4.77	4.73
2023	9140	1.92	1.89	4.80	4.73
2024	9190	1.93	1.89	4.83	4.73
2025	9241	1.94	1.89	4.85	4.73
2026	9289	1.95	1.89	4.88	4.74
2027	9338	1.96	1.89	4.91	4.74
2028	9387	1.97	1.89	4.93	4.74
2029	9436	1.98	1.90	4.96	4.74
2030	9484	1.99	1.90	4.98	4.74
2035	10181	2.14	1.98	5.35	4.96
2040	11597	2.44	2.20	6.09	5.51

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CHAPTER 3

EXISTING WATER SYSTEM

3.1 INTRODUCTION

The following paragraphs provide an overview of Cross Valley Water District's existing water system including source(s) of supply, storage, and transmission and distribution main characteristics. A graphical summary of the existing water system is presented on the hydraulic profile shown in Figure 3-1 and an overall Water System Plan Map is included at the back of this document.

The District's Water System has been designed over time to incorporate the growth of the system in a very rural landscape. The topology of the District Corporate Area minimizes the need for pumping facilities to maintain system pressures. Almost all areas of the District are served by gravity, with pumping facilities existing at District operated wells and in areas needing additional pressure in the case of an emergency or fire.

In addition to maintaining production from 11 separate wells, the District purchases water from the City of Everett through interties, and from the Clearview Water Supply Agency (CWSA).

3.2 SOURCE OF SUPPLY

3.2.1 State Regulations

The Washington State Department of Health's (DOH) "Water System Design Manual" (June 2020) is the primary document governing the sizing and design of Group A public water systems in the state of Washington. This publication sets forth the minimum design guidelines and planning requirements for the supply, storage, distribution, and quality of potable water within Group A public water systems.

3.2.2 Northern Snohomish County Coordinated Water System Plan

The Northern Snohomish County Coordinated Water System Plan (CWSP) contains minimum design criteria standard requirements for those water systems within the Critical Water Supply Area (CWSSA) addressed by the CWSP. The Fobes Hill Area of Cross Valley Water District is the only portion of the District within the CWSSA and is therefore subject to the minimum design criteria, requirements and policies set forth by the CWSP.

3.3 GROUND WATER WELLS

Cross Valley Water District operates and maintains a total of 11 groundwater supply wells. All wells are connected to the District's SCADA telemetry system with the exception of the Woodlane Well. The wells are briefly described below and listed on Table 3-1.

TABLE 3-1: GROUNDWATER WELLS

Well No.	Cert. Num	Well Tag No.	Max Rate Allowed (Qi)	Max Volume Allowed (Qa)	Section-Township-Range	Motor Size (HP)	Zone Supplied	Flow Rate (gpm)
1	Cert. 6472 G1-08872	AGB982	160	250	24-27-05E	15	640	130
Woodlane	G1-23131C	AGB985	40	37	35-27-05E	7.5	640	40
3	Cert – 7424 G1-11000	AGB986	400	400	25-27-05E	55	640	350
Mt Forest	G1-00594C	Unk	110	88	-	-	-	-
5	G1-2055OC	AGB998	500	400	24-27-05E	75	575/756	450
6	G1-22974C	AGB984	900	1200	24-27-05E	75	575/756	400
7	G1-23697	AGB989	700	659	35-27-06E	75	700/640	350
7A	G1-22043C	AGB988	55	(Non-additive)	35-27-06E	30	700/640	150
7B	G1-23697	APP315	(Non-additive)	(Non-additive)	35-27-06E	75	700/640	500
8	G1-24816C	AGB987	500	600	25-27-05E	75	640	450
9	G1-24906C	AGB983	900	1008	24-27-05E	125	640	980
10	G1-25582P	AGB999	700	(Non-additive)	24-27-05E	75	575/756	700

3.3.1 Well No. 1

Well No. 1 is located at the same site as Well No. 9. Well No. 1 is not consistently in operation due to the sufficient flows from Well No. 9. Well No. 1 pumps to the Lee Forest Reservoir, which subsequently provides supply to the 640 Pressure Zone. Well No. 1 does not have an on-site generator, however, Well No. 9 includes a hook-up for a temporary generator, which may be substituted for a permanent on-site generator in the future.

3.3.2 Woodlane Well

The Woodlane Well was originally constructed to serve the Woodlane neighborhood within the District's service area. The neighborhood requested the District to take over the system and acquire the Woodlane Well due to insufficient resources to maintain the water system in accordance with DOH regulations and requirements. The District purchased the property and sealed and abandoned an existing on-site water tank. . Since the quantity of water produced from the well is minimal, the District will manually turn on and off the well, mostly during the summertime, to enhance the source, as necessary. The Woodlane Well supplies the 640 Pressure Zone and theoretically can pump water to the Lee Forest Reservoir.

3.3.3 Well No. 3

Well No. 3 is located on the same property as Well No. 8. Well No. 3 was constructed in the 1970's and currently provides source to the Lee Forest Reservoir and subsequently to the 640 Pressure Zone. Prior to the construction of the Lee Forest Reservoir and Wells Nos. 7 and 7A, Well No. 3 provided supply to the Echo Lake Reservoir. The well house has a manual transfer switch for a temporary generator hook-up in emergency situations.

3.3.4 Well No. 5

Well No. 5 is located at the Water Treatment Facility along with Well No. 6 and Well No. 10. The utility building which houses Well No. 5 also includes a pump station (Well No. 5 Pump Station), which can provide supply to both the 575 and 756 Pressure Zones. The Well No. 5 Pump Station, which will be later described in this section, provides supply to the Vine Street Reservoir (575 Pressure Zone) and backup supply to Clearview Standpipe (756 Pressure Zone). An onsite permanent diesel generator can provide back-up power to Well Nos. 5, 6, 10, the Well No. 5 Pump Station, and the Water Treatment Facility located on the site. Water from this well is first treated to remove iron and manganese, settled for a required contact time in a clear tank, and then pumped into the water system.

3.3.5 Well No. 6

As stated above, Well No. 6 is also located at the Water Treatment site on the same site as Well No. 10 and Well No. 5. Water from this Well is also treated prior to being pumped by Well No. 5 Pump Station to supply the water system. The well building includes a separate chlorinator room to inject chlorine gas, which has since been abandoned with the construction of the Water Treatment Facility. During the drilling of the well, the District anticipated a groundwater capacity of 1,000 gpm, but the well was subsequently only able to produce approximately 400 gpm. The aforementioned permanent diesel generator provides emergency power during outages.

3.3.6 Well No. 7

Water is drawn from Well No. 7 by a vertical turbine pump and the well is located on the same property as Well No. 7A and 7B. Well No. 7 was constructed to augment flows from Well No. 7A to that portion of the 700 and 640 Pressure Zone served by the Echo Lake Reservoir. Well No. 7 includes a manual transfer switch and can be powered by a temporary portable generator during emergency situations.

3.3.7 Well No. 7A

Well No. 7A was constructed prior to Well No. 7 and 7B. It was previously used as a community well for the surrounding residences. The District enlarged the existing well house to provide additional space for operations and maintenance once they took ownership of the existing well. Well No. 7A cannot be powered during emergency situations as it has not been retrofitted with a generator connection. Well No. 7A also

pumps directly to fill the Echo Lake Reservoir to provide supply for that portion of the 700 and 640 Pressure Zone served by the Echo Lake Reservoir. Limited transmission capabilities exist between the Well Nos. 7 and 7A site in the southeastern corner of the District and the remainder of the 640 Zone.

3.3.8 Well No. 7B

Well No. 7B was constructed after Wells No. 7 and 7A and is the newest well in the District. The pump is a submersible pump that pumps at 500 gpm with a TDH of 425 and has an elevation of 275, (185 below the surface). It began producing water supply in July 2017 and was built to increase the capacity of the wells in the Echo Lake Area serving the area consisting of the newly created 700 Zone and the East 500 Zone that includes Annexation 13. The well allows for maximization (full utilization) of water rights and reduces the need for pumping supply to the southern and eastern areas of the District and has a built in generator on-site

3.3.9 Well No. 8

As previously mentioned, Well No. 8 is situated on the same parcel as Well No. 3. Well No. 8 pumps to the Lee Forest Reservoir which in turn provides supply to the 640 Pressure Zone. The well house has a manual transfer switch for a temporary generator hook-up in emergency situations.

3.3.10 Well No. 9

Well No. 9 is located on the same site as Well No. 1 and is the most productive well for the District. The well pump was originally intended for Well No. 6, but later utilized for Well No. 9 when projected flowrate from Well No. 6 was never realized. The well house was partitioned for the installation of a hypochlorinator in the separate room, but the hypochlorinator has since been abandoned. Well No. 9 includes a hook-up for a temporary generator, which may be substituted for a permanent on-site generator in the future. Well No. 9 pumps to the Lee Forest Reservoir which in turn provides supply to the 640 Pressure Zone.

3.3.11 Well No. 10

Well No. 10 is located inside the Water Treatment Facility building, adjacent to the building's control room and in the same vicinity of Well No. 6. The well was originally drilled in 1990, however was not put into permanent service until completion of construction of the Water Treatment Facility. Water from Well No. 10 is first treated, and then pumped to the system through the Well No. 5 Pump Station.

3.4 WATER TREATMENT FACILITY

Cross Valley Water District operates a Water Treatment Facility to facilitate iron and manganese removal from water produced at three of the District's eleven groundwater wells. The three subject wells (Wells 5, 6, 10) are located on a single site. The treatment facility is equipped with a permanent emergency diesel generator to ensure operation during power outages.. The

treatment facility site also has a 150,000-gallon clear tank to detain the treated water for the minimum required contact time before entering the water system. Due to the additional DOH requirements necessary to mix treated water supply and untreated groundwater supply water within a water system, the District intentionally maintains separate areas for which the treated and untreated water supply serve the water system. This ensures that the treated water supply and untreated groundwater supply is not combined in any area and the District will not need to address additional DOH operational requirements for the water system.

3.5 INTERTIES

In addition to the groundwater wells, source supply is provided to the District via five City of Everett water system interties, three interties with the Clearview Water Supply Agency (CWSA), one intertie with Alderwood Water and Wastewater District, and one intertie with Silver Lake Water and Sewer District. Cross Valley Water District monitors and maintains a total of ten-meter supply connections as presented in Table 3-2.

TABLE 3-2: WATER SYSTEM INTERTIES

Meter Name	Location	Supply	Meter Size (inches)	Capacity/ Agreement Capacity (gpm)[1]
Fobes Master Meter	83rd Avenue SE and 52nd Street SE	City of Everett	8	1600
Swan's Trail Master Meter	5710 61st Ave SE	City of Everett	4	500
Skipley Road Master Meter	Skipley Road and 72nd DR SE	City of Everett	8	1600
Lowell- Larimer Road Master Meter	8418 Lowell-Larimer Road	City of Everett	4	500
Mt. View Terrace Master Meter	Skipley Road and 68th Ave. SE	City of Everett	4	500
CWSA Supply Meter	15830 73rd Ave SE	CWSA	10 (At 12 MG tank)	3800
CWSA Supply Meter	8114 64th Street SE	CWSA	8 (At CWSA P.S.)	7500
CWSA Supply Meter	77th Ave SE and Lowell-Larimer Road	CWSA	8	2400

SLWSD/CVWD	Seattle Hill Road (SR 96) and 125th St. SE	Silver Lake Water and Sewer District	8	N/A
AWWD Interim and Emergency Supply Intertie	228th St SE and State Route 9.	Alderwood Water and Wastewater District	4	850
[1]N/A: Interlocal agreements do not specify a limit to the quantity of water supply.				

The agreement with CWSA allows the District to purchase up to 6.0 MGD of water annually. Water from CWSA is delivered from a regional, shared storage facility to the Fobes Hill area north of the Snohomish River, the Seattle Hill area near Lowell Larimer road, and other pressure zones as described in Section 3.8.

3.6 WATER STORAGE

Cross Valley Water District currently owns and maintains a total of five (5) separate storage reservoirs. Additionally, the District jointly participates and is allocated a portion of storage within the CWSA 12-million-gallon reservoir. The combined storage capacity of the five (5) reservoirs is approximately 5.7 million gallons, with an additional two (2) million gallons available through the District's participation in the CWSA. Each reservoir is described below and detailed in Table 3-3.

3.6.1 Vine Street Reservoir

The Vine Street Reservoir is located on the same property as the District office, and provides one (1) million gallons of storage to the 575 Pressure Zone. A booster pump station downstream of the reservoir pumps water to supply the reservoirs located in the 756 Pressure Zone as needed during peak or emergency conditions to supplement the supply from CWSA.

3.6.2 Echo Lake Reservoir

A higher pressure zone (zone 700) was created around Echo Lake and Lost Lake in order to alleviate existing low pressures in this portion of the system. To complete the zone creation, a new reservoir with a higher overflow elevation at the previous Echo Lake storage tank location provided higher pressures and increased fire flow availability. The new Echo Lake reservoir has a diameter approximately 48 feet and height of approximately 120 feet. The reservoir provides 1.62 MG of storage. Wells 7, 7A and 7B currently provide supply to the Echo Lake Reservoir.

3.6.3 Lee Forest Standpipe

The Lee Forest Standpipe is located adjacent to the Lee Forest, which was granted to the University of Washington for scientific study. The reservoir provides one (1) million gallons of storage to the 640 zone. Wells 1, 3, 8, 9 and the Woodlane Well all provide

supply to the standpipe. A pump station is also located on the property and can pump water to the 756 Zone reservoirs in emergency situations. However, with the construction of the CWSA and Clearview pump station, adequate supply is provided to the 756 reservoirs and thus the pump station is not used for daily operations. The District intends to construct an additional reservoir to provide additional storage for future growth and development.

3.6.4 Clearview Standpipe

The Clearview Standpipe and Clearview Pump Station are located on the same site, and the Clearview Elevated Tank on separate property, but located nearby. The standpipe is filled by the Clearview Pump Station and provides two (2) million gallons of storage to the 756 Pressure Zone. At the time of construction of the Clearview Pump Station, the Clearview Standpipe was retrofitted to have the fill line access the reservoir at the top. Since the outlet is at the bottom of the reservoir, the retrofitted fill line will promote circulation of the water to improve overall water quality.

3.6.5 Clearview Elevated Tank

The Clearview Elevated Tank supplements the 756 Pressure Zone with an additional 125,000 gallons of storage. The Clearview Elevated Tank was donated from Army surplus and was assembled on the site prior to the construction of the Clearview Standpipe. The Clearview Elevated Tank also is filled from the Clearview Pump Station.

3.6.6 CWSA Reservoir

The CWSA Reservoir consists of a total storage capacity of 12 million gallons of which 2 million gallons are allocated to Cross Valley Water District. The reservoir is part of the Clearview Water Supply Agency's joint use facilities and is shared between Cross Valley Water District, Alderwood Water and Wastewater District and Silver Lake Water and Sewer District. One CWSA master meter for Cross Valley Water District is located at the reservoir to meter flows to the Clearview Pump Station, where it is then pumped to the Clearview Standpipe as well as the Clearview Elevated Tank. Future plans consist of constructing an identical reservoir adjacent to the existing reservoir, from which the District could receive additional storage in the future.

TABLE 3-3: WATER STORAGE RESERVOIRS

Reservoir Name	Location	Size (MG)	Overflow Elevation	Dimensions	Material	Zone(s) Served
Vine Street	8710 180th St SE	1.0	575'	74' Diameter 30' Height	Welded Steel	575, 420, 280, 310
Echo Lake Reservoir	14212 Aspen Way	1.6	704'	48' Diameter 120' Height	Welded Steel	700, 640, 500, 382

Lee Forest Standpipe	7933 196th St SE	1.0	640'	54' Diameter 60' Height	Welded Steel	640, 500, 382
Clearview Standpipe	8033 172nd St SE	2.0	756'	47' Diameter 146' Height	Welded Steel	756C, 640C,575C, 280C
Clearview Elevated Tank	8015 172nd St SE	0.1	756'	30' Diameter 25 Height	Welded Steel	756C, 640C,575C, 280C
CWSA Reservoir[1]	15830 73rd Ave SE	12.0 2.0 to CVWD	660	184' Diameter 66' Height	Welded Steel	756C, 575C, 480C, 310C, 280C, 370C

[1]CWSA Reservoir is a joint use tank owned and operated by the Clearview Water Supply Agency and is shared with Alderwood Water and Wastewater District and Silver Lake Water and Sewer District. Cross Valley maintains ownership of 2.0 million gallons. Additional water is available in emergency conditions affecting only Cross Valley.

3.7 PUMPING FACILITIES

Elevations within the District necessitate pumping of supply into the District's system, as well as for moving the water supply throughout the transmission and distribution systems. The hydraulic profile shown on Figure 3-1 provides an overview of the pumping required within each area of the District. Additional information regarding the specifics of each pump station is provided in Table 3-4. A general summary of the pumping facilities and characteristics is contained in the following paragraphs.

3.7.1 3.7.1 Vine Street Booster Station

The Vine Street Booster Station is located at the District office property. The booster station consists of one pump located in an underground vault and was originally constructed to pump water to fill the Clearview Elevated Tank, but currently can pump water from the 575 Pressure Zone to fill both the Clearview Elevated Tank and Clearview Standpipe. Due to the additional supply from the CWSA, the Vine Street Booster Station is mostly operated during peak demands and emergency conditions. Since the discharge line from the pump station is only 3-inches in diameter, the booster station supplies approximately 300 to 400 gpm to the aforementioned 756 Pressure Zone reservoirs.

3.7.2 3.7.2 Lee Forest Booster Station

The Lee Forest Booster Station was originally constructed to provide supply to fill the abovementioned reservoirs supplying the 756 Pressure Zone. However, with the formation of the CWSA and construction of the CWSA Reservoir and Clearview Pump Station, supply from the Lee Forest Booster Station is no longer needed to fill the reservoirs which supply the 756 Pressure Zone. Thus, the Lee Forest Booster Station is also typically operated only in emergency situations and during peak demand periods to supplement flows to 756 Pressure Zone reservoirs. The pump station is equipped with a

manual transfer switch such that a portable generator can be connected to provide power during a power outage.

3.7.3 3.7.3 Clearview Pump Station

The Clearview Pump Station was constructed concurrent with the construction of the CWSA reservoir. The Clearview Pump Station is supplied flow from the CWSA reservoir and pumps to fill the Clearview Elevated Tank as well as the Clearview Standpipe for the 756 Pressure Zone. The pump station houses a permanent diesel generator to provide power in an emergency situation.

3.7.4 Well No. 5 Pump Station

The pump station located at Well No. 5 produces up to 1,000 gpm to fill the Vine Street Reservoir and can produce 500 gpm to the Clearview Elevated Tank and Clearview Standpipe under emergency conditions. With the formation of the CWSA and resulting water supply from the CWSA reservoir to the 756 Pressure Zone, the 500 gpm supply to the Clearview Elevated Tank and Standpipe is not needed, and thus the pump is mostly used during emergency situations. A permanent on-site diesel generator can provide power to the pump station during an outage. The pump station includes a provision for a future pump to supply the 640 Pressure Zone; however, there is currently no transmission piping plumbed to that pressure zone.

TABLE 3-4: PUMP STATIONS

Station Name	Location	Year Built/ Retrofit		Pump Model	GPM	RPM	Motor HP	Zone Served
Vine Street Booster Station	8710 180th St SE	1980	Peerless Pump/Marathon Electrical Motor		400	3510	30	756 (Emerg.)
Lee Forest Booster Station	7933 196th St SE	1990	1	Peerless C820/AM-BF Pump/US Motor	260	3520	25	756 (Emerg.)
			2	Peerless C825AM-BF Pump/US Motor	410	3510	40	
			3	Peerless C825AM-BF Pump/US Motor	410	3510	40	
Clearview Boosters	8033 172nd St SE	2002	1	Peerless 2-6AE16G 1-10MA	500	1775	25	756
			2	Paco Pump/Baldor Motor	1000	1760	50	
			3	Paco Pump/ Baldor Motor	1000	1760 0	50	
Well No. 5, 6 & 10 Treatment Boosters	20231 87th Ave	2000	1	Peerless Pump/US Electrical Motor	1760	1760	75	756
			2	Peerless Pump/Baldor Motor	1760	1760	100	575

3.8 SERVICE AREAS AND PRESSURE ZONES

The District has 15 pressure gradients or pressure zones: 190, 280, 310, 340, 370, 382, 412, 420, 440, 480, 500, 575, 640, 700 and 756, because of the varied topography of the area. It utilizes three major water sources, namely City of Everett, CWSA, and its own wells and reservoirs. A fourth source with Silver Lake WSD consists of a single emergency intertie on Seattle Hill Road that is only utilized to supplement fire flows in the 370C Zone if localized pressures drop to extreme low pressure. For the purposes of analysis and for an enhanced understanding of the water distribution system, the District has been divided into five major service areas.

These service areas were outlined on the basis of configuration and sources of water supplies as well as source mixing constraints. These service areas are further divided into 22 pressure zones accounting for various pressure gradients and origin of water supplies.

These pressure zones are interconnected through 46 pressure reducing valves. Pressures in the pressure zones are controlled by either a combination of reservoir levels and pump stations, or by pressure reducing valves. In general, the District maintains pressure to its customers between 40 and 90 psi.

Pressure Zones are named based on the pressure gradients at which they lie and are connoted by initials of the sources of water (i.e. E for Everett water, C for Clearview water) and geographical directions for the zones being served by District operated supply and storage. A detailed description of the configuration of pressure zones within service areas is as follows. Figure 3-1 provides a graphic representation and hydraulic profile of the system.

3.8.1 Fobes Hill Service Area

At the northern end of the District, there exists the Fobes Hill area that houses three pressure zones and is supplied by meters from both the City of Everett and the CWSA meters. The Pressure Zones being supplied by the Everett water in the Fobes Hill and Lowell-Larimer areas are shown in shades of orange in the Water System Map.

3.8.1.1 310 E Pressure Zone

The 310 Pressure Zone has multiple connections to the City of Everett. It is supplied by pressure reducing valves just downstream of the Swan's Trail Master Meter and the Skipley Road Master Meter, and also pressure reducing valves from the 412E Pressure Zone.

3.8.1.2 412 E Pressure Zone

The 412 Pressure Zone is supplied by the City of Everett through a master meter and PRV located at 7707 Foster Slough. Through several prvs, this zone provides water to the 310E pressure zone.

3.8.1.3 480 C Pressure Zone

The 480 Pressure Zone is located in the northern portion of the District, within the Fobes Hill Area. The pressure zone is mainly served by the Clearview Water Supply Agency Meter at 64th Street and 81st Avenue SE.

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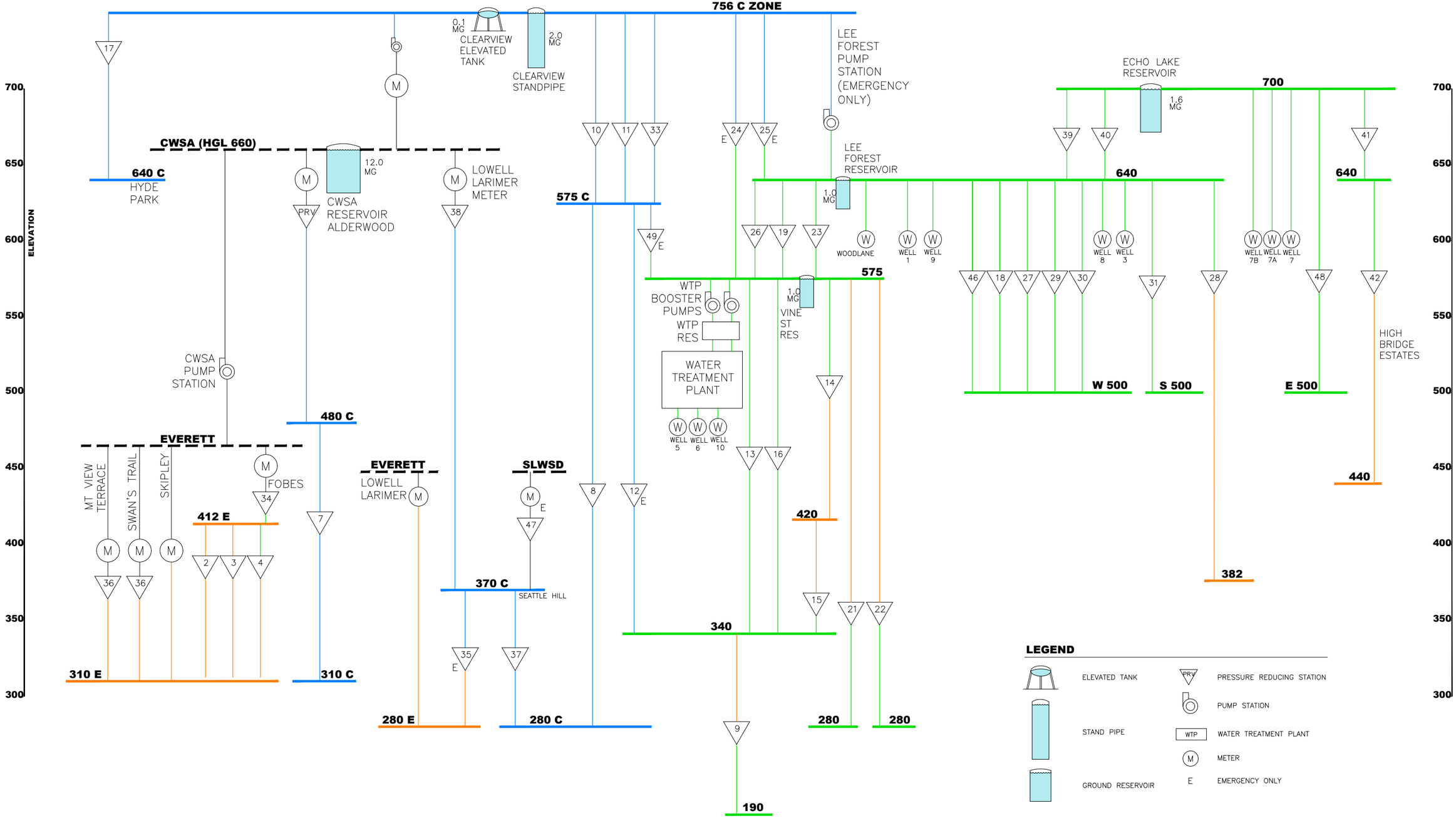

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PACE

Hydraulic Profile
Cross Valley Water District

Figure No.

3-1

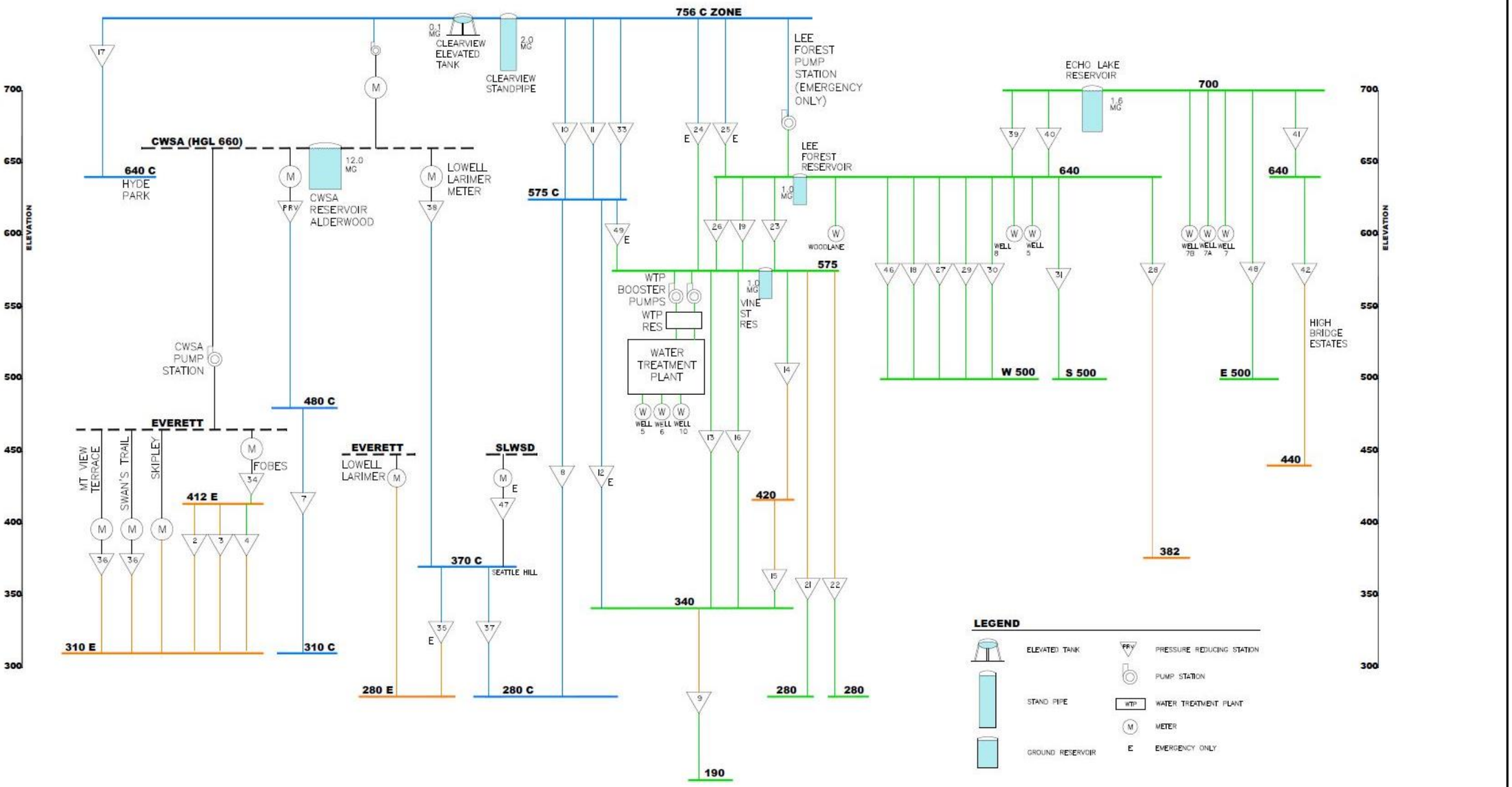

Figure 3-1: Hydraulic Profile

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3.8.1.4 310 C Pressure Zone

This pressure zone lies in the east side of this service area and is one of the zones being served from the Clearview supply. It is supplied through pressure reducing valves from the 480 C Pressure Zone.

3.8.2 Lowell-Larimer Service Area

To the southwest of the Fobes Hill area lies the Lowell-Larimer area that is also supplied by City of Everett and CWSA meters. This area is composed of two pressure zones being served by these two different sources.

3.8.2.1 280 E Pressure Zone

The 280 Pressure Zone is located in the northwest section of the District. It is supplied by the Lowell-Larimer Master Meter from the northern end and through pressure reducing valves from the 370 C pressure zone.

3.8.2.2 370 C Pressure Zone

The 370 Pressure Zone is similarly located in the northern section of this service area. This zone is supplied through a pressure reducing valve west and downstream of the CWSA meter located at the intersection of Lowell Larimer Rd and 27th Ave. It receives emergency flow through a master meter intertie connection with Silver Lake Water and Sewer District.

3.8.3 Clearview Service Area

The Clearview service area is composed of an assortment of pressure zones that are solely supplied by CWSA facilities, namely the CWSA Meters, Clearview Standpipe and Clearview Elevated Tank. This service area covers the area south of Fobes Hill and Lowell-Larimer areas and western central portion of the District, shown by variations of blue on the Water System Map.

3.8.3.1 280 C Pressure Zone

This pressure zone is located at the corridor connecting the Lowell-Larimer area to the District east of the Snohomish River. It secures Clearview water through an eastern pressure reducing valve downstream of CWSA Master Meter located at Lowell-Larimer Road and 27th Avenue and additionally through pressure reducing valves from the 575 C Pressure Zone.

3.8.3.2 575 C Pressure Zone

The 575 C Pressure Zone is located in the central western area of the District below the Lowell-Larimer region. It is served by Clearview storage and receives water through pressure reducing valves from the 756 C Pressure Zone.

3.8.3.3 640 C Pressure Zone

This pressure zone is located in the western end of the District. It is supplied from the Clearview storage through a pressure reducing valve from Pressure Zone 756 C.

3.8.3.4 756 C Pressure Zone

The 756 Pressure Zone is located in the central – western portion of the District, generally north of the Maltby Urban Growth Area. The hydraulic gradient in this zone is determined by the water reservoir levels within the Clearview Elevated Tank and Clearview Standpipe. Water service connections within this zone consist of commercial business and single family residential.

3.8.4 District North Service Area

This is one of two service areas that utilize District operated storage facilities and wells, shown in shades of green in the water system map. The District North uses the Vine Street Reservoir and is supplied by Wells 5 and 6 processed by the District Treatment Plant. It is composed of five pressure zones that spread out from the area south of Fobes Hill to the north of Highway 522.

3.8.4.1 190 Pressure Zone

This pressure zone is located directly north of Broadway along Springhetti Road. It receives water through a pressure reducing valve coming off of a pipe originating in the 340 pressure zone.

3.8.4.2 340 Pressure Zone

This pressure zone is located directly south of the Fobes Hill area drawing water from the District operated reservoirs. It receives water through two pressure reducing valves coming off the 575 pressure zone and one pressure reducing valve from the 420 pressure zone.

3.8.4.3 280 Pressure Zone

The 280 pressure zone is an area located on the eastern end of the District adjacent to the Snohomish River. It utilizes the District's water sources through pressure reducing valves from the Pressure Zones 575.

3.8.4.4 575 Pressure Zone

The 575 Pressure Zone is centrally located within the District and utilizes water from District operated reservoirs. It is supplied through pressure reducing valves from the 640 Pressure Zone, and also the water reservoir level within the Vine Street Reservoir. This pressure zone serves commercial business connections along SR 9 and also single family residences.

3.8.4.5 420 Pressure Zone

The 420 Pressure Zone is located in the central – eastern portion of the District and generally provides service to single family residential connections. The 420 zone is a small intermediate zone supplied from the 575 Zone through PRV 14 and flows into the 340 Zone through PRV 15.

3.8.5 District South Service Area

The District South is the second service area that draws from separately operated District wells, namely 1, 9, 3, 8, 7, 7A, and 7B located at central and eastern corners of the service area. This service area occupies the southern portion of District and houses the largest and most populous pressure zone, 640.

3.8.5.1 640 Pressure Zone

The 640 Pressure Zone is the largest pressure zone within the District and includes the Maltby Urban Growth Area. The 640 Pressure Zone is generally located in the southern portion of the District. Pressure reducing valves from the 756 Pressure Zone, as well as water reservoir levels in the Lee Forest Standpipe control the hydraulic gradient in the 640 Pressure Zone. Due to pressure problems within the Echo Lake area of the District, the 700 zone was created by virtue of construction of the Echo Lake Reservoir and can serve the 640 zone thru 3 PRV stations . Water service connections within this zone consist of light industrial, commercial business, and single family residential.

3.8.5.2 382 Pressure Zone

The 382 Pressure Zone is located on the most northern portion of the South Service area. The zone is directly fed by a pressure reducing valve from the 640 Pressure Zone.

3.8.5.3 440 Pressure Zone

The 440 Pressure Zone located in the eastern portion of the District and serves the High Bridge Estates development. The zone is directly fed by a pressure reducing valve from the 640 Pressure Zone.

3.8.5.4 700 Pressure Zone

A higher pressure zone was created around Echo Lake in order to alleviate existing low pressures in this portion of the system. To complete the zone creation, a new reservoir with a higher overflow elevation (704 feet) at the current Echo Lake storage tank location provided higher pressures and increased fire flow availability, plus standby storage.

3.8.5.5 W 500 Pressure Zone

The 500 West Pressure Zone is one of the non-contiguous portion of service area with a 500ft pressure gradient. This zone located in the southwest corner of

the District is controlled by five pressure reducing valves from the 640 Pressure Zone and provides water service for light industrial, commercial business, and single family residential connections.

3.8.5.6 S 500 Pressure Zone

This South 500 Pressure Zone is located at the southern tip of the District being served through a pressure reducing valve from the 640 Pressure Zone.

3.8.5.7 E 500 Pressure Zone

This is a small East 500 Pressure Zone also located in the southeastern corner of the District and is controlled by a pressure reducing valve from the 640 Pressure Zone.

3.9 TRANSMISSION AND DISTRIBUTION SYSTEM

Cross Valley Water District's transmission and distribution system consists of approximately 920,000 lineal feet of 24-inch to 2-inch diameter pipe and is constructed of a variety of materials consisting of ductile iron, polyvinyl chloride (PVC), cast iron, and Asbestos Cement (AC). Of this total footage, approximately 40 percent is 6-inch, 36 percent is 8-inch and approximately 13 percent is 12-inch water main. Included in the back of this Plan is a full sized map which depicts the size and type of the existing distribution and transmission mains for the water system. As further detailed in section 5 of this plan, the District requires the use of Class 52 ductile iron pipe in general and Class 53 ductile iron pipe on 4-Inch and smaller for all future water main construction, except under special circumstances (i.e. cathodic protection, corrosion protection, etc.) where another pipe type may provide for a more practical engineering application.

3.10 PRESSURE REDUCING VALVES

The District currently maintains 46 pressure reducing valves (PRVs) throughout the distribution system. The PRVs range in size from 6-inches to 12-inches in diameter for the 'mainline' PRVs with typical 3-inch diameter bypass PRVs. The PRVs connect the District to 22 separate pressure zones and maintain an acceptable range of pressure throughout the system. Table 3-5 provides an overview of the pressure reducing valves within the system.

TABLE 3-5: PRESSURE REDUCING VALVES

PRV No.	Location	Upstream Zone	Downstream Zone	Upstream Static Pressure (psi)	Downstream Static Pressure
1	Removed				
2	60th St – Foster Slough	412E	310	98	55
3	70th Dr – 73rd Pl SE	412E	310	95	55
4	6713 – 69th Ave	412E	310	103	55
5	7707 Foster Slough	412E	412E	113	113
6	7617 79th Ave	310E	310	62	62
7	72nd – 83rd Ave SE	480C	310	118	60
8	13702 SR 9	575	280C	130	55
9	13025 Springhetti	340	190	130	55
10	7625 156th St SE	756	575C	90	40
11	152nd St & SR 9	756	575	130	75
12	SR 9 & N of Landfill	575	340	130	45
13	144th St & Broadway Ave	575	340	140	40
14	Elliott Rd & Market St	575	420	150	70
15	102nd & Elliot Rd	420	340	120	90
16	10117 149th St	575	340	160	65
17	180th St –West Interurban	756	640	140	37
18	205th & 72nd Dr. SE	640	500	120	57
19	8727 206th St SE	640	575	90	60
20	10530 180th St (Removed)				
21	180th St – Fales Rd	575	280	200	72
22	11624 188th ST	575	280	155	60
23	19921 Fales Rd.	640	575	160	125
24	192nd & 88th Ave	756	575	120	30
25	87th Ave SE	756	640	135	70
26	212 & 91St Ave	640	575	110	72
27	212th St, West of 78th	640	500	105	45
28	129th Ave & 131st Dr	640	500	155	60

PRV No.	Location	Upstream Zone	Downstream Zone	Upstream Static Pressure (psi)	Downstream Static Pressure
29	224th St. SR 9	640	500	190	120
30	240th St SE – Wellington Hills G.C.	640	500	105	34
31	22503 102nd Ave SE	640	500	90	50
32	16731 Mt. Forest Blvd	640	E500	118	41
33	164th ST & SR 9	756	575C	100	42
34	Skipley Road – Master Meter 72	Everett	310E	174	103
35	Lowell Rd and Seattle Hill Rd	370C	280E	185	100
36	Swans Trail – Master Meter	Everett	310E	190	119
37	Lowell and 77th (1)	370C	280C	270	105
38	Lowell and 77th (2)	Everett	370C	190	190
39	Echo Lake Road & 222nd St SE	700	640	90	58
40	Lost Lake Rd & West Lost Lake Rd	700	640	86	54
41	165th Ave SE & 234th St SE	700	640	134	104
42	Highbridge Estates	640	440	123	55
43	18601 109th Ave SE (Removed)	420.0	420	136	80
44	110th & Downes (Deactivated)	640	640	132	132
45	SR 9 & 197th	756C	640	146	84
46	SR 9 & 201st	640	W500	124	57
47	SLWD Seattle Hill	SLWSD	370C	139	57
48	Mount Forest & 165th	700	E500	110	92
49	152nd Street (emergency)	575 C	575	160	40

3.11 ZONE VALVES

A zone valve is an inline valve, such as a gate valve, that is closed in order to close pipe networks for the purpose of creating zone boundaries between pressure zones. In addition to separating pressure zones with zone valves, the District can also utilize zone valves within the same pressure zone to separate treated and untreated water or fine-tune water source flow through the water piping network. Zone valves are a non-permanent condition that allows system operators to expand or otherwise change zone boundaries as necessary.

Portions of the following zones are separated with zone valves:

- 756 Pressure Zone – 575 Pressure Zone
- 575 Pressure Zone
- 640 Pressure Zone
- 280 Pressure Zone

In the event of an emergency or unplanned event in the 640 zone and Lee Forest Reservoir the District is notified of the potential mixing of surface water and groundwater or chlorinated and non-chlorinated water. The Lee Forest Reservoir and 640 zone is a non-chlorinated or ground water supply. Lee Forest Reservoir is considered full at the level of 60ft. The Districts SCADA system is set to alarm employees in the event the reservoir level reaches 40ft. The PRV stations that have the capability to supply the 640 zone and Lee Forest Reservoir will activate if and only if the reservoir reaches the level of 15ft. The buffer zone of 25ft allows the District staff to respond. If the PRVs are activated staff will flush and sample downstream of the PRVs for CL2 levels until it has been dispersed.

3.12 TELEMETRY SYSTEM

The District's telemetry system was recently upgraded and further upgrades of the telemetry system are proposed. The telemetry system is a computerized monitoring system, which allows for remote control of the District's supply points and allows for control of pump stations and reservoirs. Functions monitored by the telemetry system include pump operation, pressure readings (suction and discharge), flow measurements, intrusions, flooding, low fuel levels, and power and/or communication failure.

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CHAPTER 4
WATER CONSERVATION AND REUSE

4.1 INTRODUCTION

Cross Valley Water District (the District) recognizes that water conservation is a critical component of water supply planning. Under the Municipal Water Law (MWL) enacted in 2003, the District and other large public water providers in the State of Washington were required to place greater emphasis on ensuring efficient use of water, per Department of Ecology (DOE) determinations of beneficial use, in exchange for certainty of water rights and greater flexibility to plan for future demand. On January 22, 2007, the Water Use Efficiency (WUE) rule became effective, directing DOE to adopt and enforce a regulatory WUE program.

In the development of its WUE Program, the District evaluated nine conservation measures for cost effectiveness, though only required to evaluate six. This proactive approach to WUE is congruous with the District's longstanding support for the goals of regional water conservation and commitment to promoting efficient use through reductions in average household/business water consumption within its boundaries.

Water reuse is under consideration throughout the regional wastewater treatment service area of the King County Wastewater Treatment Division. Opened in 2011, Cross Valley houses the Brightwater regional treatment plant in the Maltby industrial area, located within the District's southwest service area. The District remains open to potential partnerships and opportunities for water reuse within its service area and was designated in December of 2005 as the purveyor of any reclaimed water within Cross Valley service area through a mitigation agreement with the County. The District recognizes that actual use of reclaimed water will require careful coordination of specific environmental conditions and customer needs in terms of quality, quantity, and price.

4.2 WATER CONSERVATION HISTORY

In the early 1990's, the District implemented a water conservation program which used the Conversation Planning Requirements. The core of the Cross Valley Water District's Conservation Plan falls into four categories:

- Public Education
- Technical Assistance and Administration
- Metering Policy
- Other Incentives / Measures

4.2.1 Public Education

Historically, the District has provided numerous public education services for its customers related to water conservation and stewardship. Currently, water conservation related public education programs are provided within the District's service area by the City of Everett, a utility partner. The District also maintains individuals on staff who are versed in water conservation, should any schools or organizations wish to promote water education. Additionally, conservation related information is provided on the District's website and informational notices are sometimes included on the billing statements sent to customers.

Cross Valley recognizes the importance in displaying both current and historical water usages on the water bills sent to customers, as this enables customers to track their own conservation and WUE efforts and to identify irregularities. In addition, reaching out to high water users to inform them of choices concerning WUE has been common practice for District staff.

4.2.2 Technical Assistance and Administration

Offering technical assistance to customers and administering system wide measures has been at the core of the District's Conservation Plan since the 1990s. The Conservation Plan over the past thirty years has included the following activities:

- A low-flow showerhead and faucet aerator exchange.
- Outdoor hose nozzle and water timer
- Targeting large water users for commercial and residential water audits (for internal water consumption) offered through the City of Everett, when available.
- Irrigation audits for golf courses and residences (external consumption) offered through the City of Everett, when available.

Newly added to the conservation efforts:

- An option for Beacon software allowing customers to open accounts, sign up for leak alerts, and view/track their own conservation goal.

4.2.3 Metering Policy

The District maintains a policy requiring meters on all sources, interties, and customer connections. Customers with new irrigation systems are also offered the opportunity to install separate meters as a conservation measure.

4.2.4 Other Incentives / Measures

The following items fall under the Other Incentives / Measures category:

- The District's office maintains water wise landscaping which provides customers with an educational example of how landscapes may be designed to maximize water efficiency, minimize excessive watering during peak summer months, and promote healthy soils.

- The District provides lawn watering schedules both in fliers and on the District website.
- The District has had tremendous success in distributing water conservation kits, achieved by publicizing the availability of the kits. Both indoor and outdoor kits are made available, as well as toilet leak detection strips.
- In January 1, 1993, a tiered rate structure (conservation pricing) was implemented to encourage conservation. Rates are reviewed periodically and adjusted as necessary. Conservation pricing and the break points in the block structure are considered in these adjustments.

Previous Incentives / Measures:

- The high efficiency appliance rebate program, though no longer offered, 17 Cross Valley customers were issued rebates.

4.3 Water Use Efficiency (WUE) Goal

Table 4-1 summarizes the requirements established under the MWL's Rule on Water Use Efficiency and provides a status on the District's progress towards meeting the requirements.

Table 4-1: Water Use Efficiency Requirements – Medium-Sized Water Systems

Component (WAC #)	Requirements	District Status/Recommendations
Data Collection (246-290-100)	Provide monthly and annual water production totals for all sources, including quantities purchased from and/or supplied to other purveyors. Provide Annual usage totals for each customer class and a description of the "seasonal variations" in consumption patterns of each customer class. Consider water use efficiency rate structures.	Cross Valley records water consumption and production data as required, including annual and monthly production totals, consumption totals by customer class, and seasonal variations of consumption totals by customer class. The District currently maintains a conservation pricing scheme discussed in Section 4.2.4. The District receives water use reports from associated fire departments and maintains a system for tracking water used in district operations, fire-fighting, and other types of authorized consumption. A copy of the District's Water Reclamation Checklist is provided in Appendix E.

Component (WAC #)	Requirements	District Status/Recommendations
Demand Forecasting (246-290-100)	Provide demand forecasts for District with and without conservation measures for the plan approval period and at least twenty-year planning period. Demand forecasts shall be developed per WAC 246-290-221. Describe forecasted savings from efficiency program, including all cost effective measures evaluated.	Water demand forecasts, with and without conservation measures, is discussed in Section 2.6.3 of this Plan. Demand forecasting methodology is compliant with WAC 246-290-221 standards. The District records estimated savings resulting from the WUE Program and has calculated forecasted savings from proposed WUE measures, discussed in Section 4 of this plan.
Metering (246-290-496)	All water sources and service connections must be metered. If not currently fully metered, District must implement a plan for full installation. Consumption: Meters must be installed on all new service connections when the connection is activated. Production: The volume of water produced or purchased must be measured using a meter installed upstream of the distribution system. Meters must be installed on all interties used as permanent or seasonal sources Meters must be selected, installed, operated, calibrated, and maintained following generally accepted industry standards and information from the manufacturer.	Cross Valley meters all new direct service connections and has meters on all existing sources, interties, and customer connections. In 2016 the District began installing remote reading equipment on all of its meters, which was completed in 2019. "Smart metering" is offered to customers through use of Beacon software, which offers access to hourly water use data, promoting leak detection and providing customers with tools to manage water use. Water production is measured using meters installed upstream of the distribution system. Meters are installed in all interties used as permanent or seasonal sources. The District's meter installation, calibration, and maintenance practices follow general industry standards. All meters purchased by the District, come pre-calibrated, and meet AWWA standard.
Efficiency Program (246-290-810)	Proposed WUE (Water Use Efficiency) program to include the following:	The WUE Program adopted by the District evaluated at least six measures as required by systems with between 2,500 and 9,999

Component (WAC #)	Requirements	District Status/Recommendations
	Existing Program: Describe existing WUE program and estimate amount of water saved through program over the prior six or more years. *Goals*: Describe proposed WUE goals in compliance with WAC 246-290-830. *Measures*: Provide at least 6 proposed WUE measures, required of water systems with 2,500 - 9,999 connections. Describe how measures address proposed goals and estimate projected water savings from implementation of measures. Describe how customers will be educated on measures. Explain how WUE program will be evaluated for effectiveness in the future. Quantitatively evaluate proposed measures for cost-effective from the system's perspective, including marginal costs of producing water, and/or whether the measures are cost-effective if costs are shared with other entities. Quantitatively or qualitatively evaluate measures to determine cost-effectiveness from the societal perspective. For measure to be implemented over the next six or more years, include a schedule and budget that demonstrates how they will be funded. The District may submit a schedule and budget for the entire water system plan approval period, if the approval period is longer than six years. DSL: Evaluate District's Water distribution system leakage in accordance with WAC 246-290-820.	connections. Measures were evaluated quantitatively for cost effectiveness and qualitatively on the basis of measures' potential effects on customer rates. The WUE Program is discussed further throughout this chapter and meets all requirements.
Distribution System Leakage (246-290-820)	Include Distribution System Leakage (DSL) totals in accordance with WAC 246-290-820 and report all actions taken to minimize leakage, if any. DSL totals should be recorded in both annual percent and volume. Percentage DSL must be calculated using the equation provided in WAC 246-290-820. Authorized consumption which cannot be metered, such as fire flow, must be estimated. If all or portions of transmission lines are excluded when determining DSL, estimate the amount of leakage from the excluded portion of transmission and describe how it is maintained to minimize leakage. Any water that cannot be accounted for is considered DSL. N/A The District is considered compliant if DSL is ten percent or less for the last three-year average, or if a water loss control action plan is provided.	The District is fully compliant with WAC 246-290-820. No water loss action plan is required, as the three-year average DSL is less than 10% annually. The District provides leakage volume statistics in their Water Use Efficiency Report (WUE).

Component (WAC #)	Requirements	District Status/Recommendations
Goals (246-290-830)	WUE Goals are designed to enhance the efficient use of water by a system's consumers (consumption per ERU). Goals must be developed in accordance with WAC 246-290-830. WUE programs should be designed to adequately address WUE Goals and programs must be modified if any previous goal has not been met. If the District determines that further reductions in consumption levels are not reasonably achievable, District shall provide written justification in accordance with WAC 246-290-830 to be included in WUE Program and Performance Report. Provide documentation of compliance with WUE Goal setting requirements as follow: (a) Goals shall be set in a public forum to provides opportunity for public participation and comment. Public notice must occur at least two weeks prior to the forum and should include the purpose, date, time, and location of forum, and how/where to access any supporting documents. (b) The following regulatory information must be made available to the public: (i) Efficiency Program requirements per WAC 246-290-810(4); (ii) Annual WUE performance reports in compliance with WAC 246-290-840; (iii) Description of water supply per WAC 246-290-100(4)(f)(iii)(B), or source description in accordance with WAC 246-290-105 (4)(f); (iv) Summary of public comments and how they were considered. The District's governing Board shall review all comments received and, following required goal setting process, shall reestablish District's WUE goals at least every six years. Existing public processes may be used if all other requirements of WAC 246-290-830 (4) are met. WUE Goals may be changed at any time, if in accordance with required goal setting process. Changes must be identified in next Performance Report.	The District has established 6 WUE goals, discussed in detail in Section 4.3.1. Goals are consistent with the purpose, scope, and setting requirements outlined in WAC 246-290-830. WUE Goals will be set in a public forum for which public notification will be sent out. Supporting documents will be uploaded to a designated website, along with all regulatory information required to be made available to the public.
Performance Reports (246-290-840)	Develop an annual report in accordance with WAC 246-290-840. Report should include total annual water production in volume; total DSL in volume and percentage; all actions taken to	The District includes an annual performance report with the annual CCR, and submits their

Component (WAC #)	Requirements	District Status/Recommendations
	minimize DSL; current WUE goals, goal schedule, and relevant WUE measures; and a narrative description of the District's progress towards goals. Submit report annually to Department of Health (DOH) and make available to the public.	performance report to DOH separately by July 1st every year.

As Table 4-1 depicts, Cross Valley is in compliance with the requirements for WUE established under the MWL. Discussion of the WUE goals for conservation and the program established to support the goal is provided in the following paragraphs.

4.3.1 Goal(s) for Conservation

The District began efforts to establish their goals for conservation in late 2007. To calculate a reasonable savings in water usage over the next reporting period, the District first looked at total customer consumption from 2014 to 2018. The District's water use from 2014-2018 is shown in Table 4-2. The historic and projected customer consumption data displayed in Table 4-2 and Figure 4-1 does not include non-revenue water, such as water used for testing fire hydrants and flushing water mains to improve water quality or water leakage from the system. In addition to the savings projected from participants in the conservation program, District staff is striving to minimize the amount of water used in day-to-day operations.

Table 4-2: Historical Customer Consumption

Year	Total Customer Water Use (Million Gallons)	Consumption by Customer Class (Million Gallons)				
		Residential	Commercial	Industrial	Government	Agriculture
2014	548.50	463.05	33.91	9.31	20.55	21.68
2015	596.89	516.19	35.05	9.04	8.84	27.77
2016	535.03	463.65	33.30	11.09	6.05	20.94
2017	586.40	513.64	34.19	10.38	10.11	18.08
2018	566.00	500.97	29.61	11.30	9.11	15.00
Average	566.56	491.50	33.21	10.22	10.93	20.69
Average % of Total Use		86%	6%	2%	2%	4%

* Estimated data based on historic billing records

Next, seasonal variations in water use were reviewed and indicate that water use during peak summer months approaches approximately 358 gallons per ERU per day. Other periods of the year water use averages between 138-228 gallons per ERU per day. District staff concluded it

was cost effective to further reduce both indoor and outdoor use as a method for lowering average day demand (ADD) and peak day demand (PDD). The Municipal Water Law (MWL) requires a measurable goal for conservation be evaluated and adopted through a public process to reduce customer demands over a six-year period. In 2021, the Board of Commissioners adopted the following goals for reducing water use:

Goal 1:

"For the Everett Supply Area, Cross Valley Water District will participate in the regional conservation program administered by the City of Everett, which is to reduce the regional demand for water, based on typical consumption volumes, by approximately 1.4 million gallons per day on an annual basis by the end of 2029.

Goal 2:

"For areas serviced by wells, Cross Valley Water District will allocate the necessary resources to save 10 gallons per day (GPD) per equivalent residential unit (ERU) through 2030. This represents a 3% reduction in daily consumption per ERU by 2030."

These goals endeavored to provide an annual savings of 0.5% over the previous year in terms of average consumption per ERU. Figure 4-1 displays projected daily consumption per ERU. There are two scenarios listed in the graph: the "blue" bars show current water use at different times of the year and the "green" bars to their left show projected water use in 2040 with the proposed WUE Program in place.

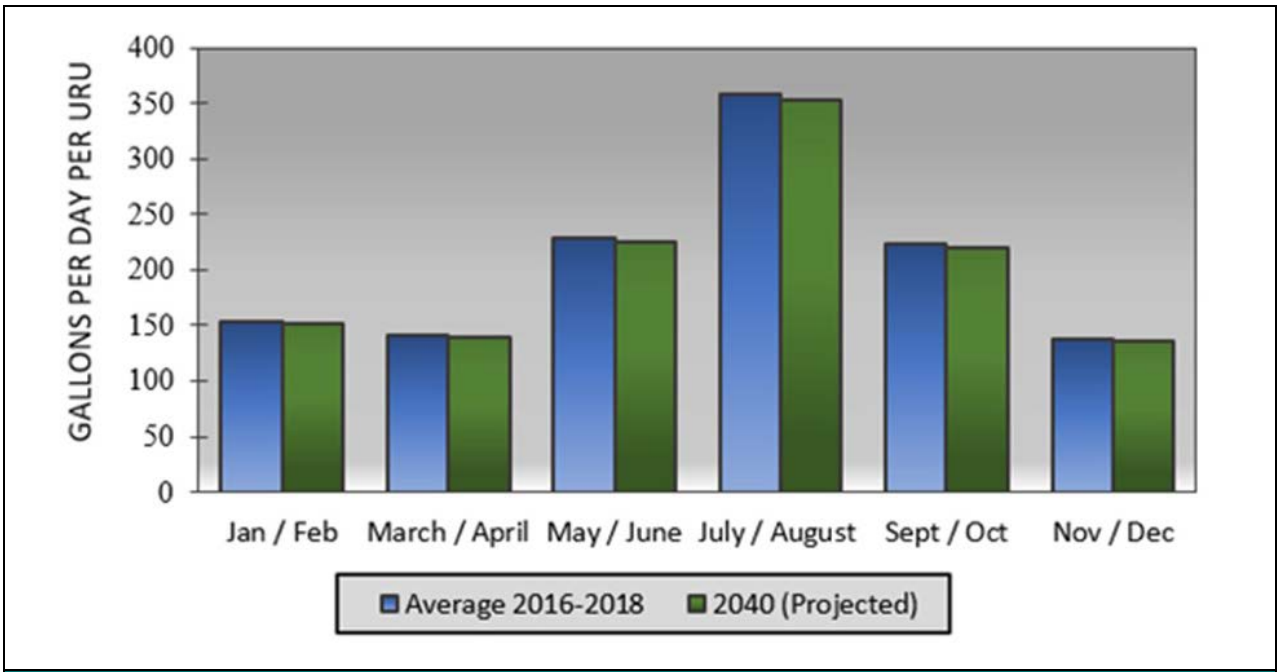

Figure 4-1: Historic and Projected GPD per ERU

As a wholesale customer of the City of Everett, Cross Valley is included in their regional goal of reducing water use. The District contributes to this regional goal by administering at least six of the WUE measures listed in Table 4-3 over a six year period. The measures listed in Table 4-3 have been evaluated and/or implemented for Cross Valley's WUE Program and have been adopted by the City of Everett and the District. A copy of the City of Everett's Conservation Program as put forth in the City's 2020 Comprehensive Water Plan, is provided in Appendix G.

Table 4-3: Water Use Efficiency Measures

Measure		Description	Annual GPD Saved Per Unit Distributed[1]
1.	Public Education	School curriculum outreach and the demonstration garden educate customers on water saving behavioral tips.	-
2.	Indoor Conservation Kits	Kits contain low-flow showerheads, bathroom aerators, and kitchen aerators.	20
3.	Outdoor Conservation Kits	Kits contain automatic water timers, spray nozzles, and new rubber washers.	5
4.	Leak Detection Program	Detection tablets indicate leaks in household fixtures and encourage repair.	5
5.	Business and School Audits	Indoor and outdoor audits determine ways schools and businesses can save water in landscape maintenance or in day-to-day operations.	50
6.	Conservation Pricing	The District's Tiered Structure discourages high consumption.	-
7.	Lawn Watering Schedule	This voluntary program designates which days certain households can water lawns to help mitigate peak demands	-

Note[1:] Savings are estimated and based on assumed participation from District customers. The expected savings from the Conservation Pricing, Lawn Water Schedule, and Public Education Program has not be calculated, but the measures will continue to exist as part of the District's comprehensive WUE Program.

4.4 WATER REUSE

Reclaimed water and water reuse is recognized as an effective method for improving the longevity of the District's sources of supply. With King County Metro's Brightwater Treatment Facility having opened in 2011, the District is in a unique position to benefit from the Class A reclaimed water that will be produced from the plant within its own service area. The District will continue to support efforts for industrial users and other potential candidates to obtain reclaimed water and will work with customers and King County to ensure service is provided where cost-effective and requested. None of the Cross Valley customer's currently receive reclaimed water service. The District has entered into an agreement with King County as part of the mitigation

related to construction of the Brightwater Wastewater Treatment Plant within the Cross Valley service area that established the District as the purveyor of reclaimed water within the service area. The District will work directly with King County to establish such service if it is requested and appropriate. Cross connection control facilities will be required and enforced by the District as part of its regular Cross Connection Control program.

CHAPTER 5
WATER SYSTEM MINIMUM DESIGN CRITERIA

5.1 INTRODUCTION

The concept and utilization of minimum design criteria are important to proper planning, design, and operation of a water system. It is also paramount to the evaluation of the existing water system in order to determine present deficiencies and future improvement requirements. Cross Valley Water District operates entirely within Snohomish County and, as such, it is important that the District's standards be consistent with the requirements of the County.

The Northern Snohomish County Coordinated Water System Plan (CWSP) contains minimum design criteria standard requirements for those water service providers that are within the Critical Water Supply Service Area (CWSSA) established for the Plan. The Fobes Hill area is the only portion of the District within the CWSP jurisdictional area. However, while the District is not totally within the CWSSA, the minimum design standards set forth by Cross Valley meets or exceeds those set forth in the CWSP. The District must also operate in accordance with the standards and requirements put forth by the Safe Drinking Water Act, America's Water Infrastructure Act of 2018 (AWIA) and the Washington State Department of Health.

The District maintains a District Code as compiled from resolutions of Cross Valley Water District. The code contains information and guidance on standards the District has adopted for construction materials and methods. The District Code was current through Resolution 2021-12-12, which was passed on December 21, 2021.

This section of the Plan summarizes the minimum design criteria used for system evaluation and design. The following water system components are addressed in this Section:

- Source and Supply,
- Transmission System,
- Distribution System,
- Storage, including equalizing, standby and fire storage,
- Water Quality,
- Control Systems, and,
- Auxiliary Power Requirements.

5.2 REFERENCE DATUM

The datum used for planning of facilities in this study and for District design work is based on NAVD 88 (vertical datum) and NAD 83/91 (horizontal datum).

5.3 DESIGN PERIOD

In planning water facilities, it is necessary to identify a specific period of time over which facilities are designed for. The period of design for this study is approximately 20 years. Although some of the facilities proposed herein may have reached capacity within the estimated design period, others will have much longer useful lives and will continue to provide adequate service to the community far beyond the specified design period. For example, new ductile iron pipes should have a useful life of 50 years or more while pumps/motors and electrical equipment may have a useful life of 15 years or less.

In planning water facilities with capacities adequate for the next 20 years, it is often necessary to accomplish development of the water system in phased segments according to established regional and localized needs.

5.3.1 Planning

Initial system construction and additions should conform to the comprehensive plan.

Public water systems should be designed to provide fire-fighting capability in accordance with the requirements of the local Fire Marshal.

Phased development is permitted where full development will take several years.

5.3.2 Reliability

Multiple water sources are recommended in combination with adequate emergency reserve in gravity storage to allow for interruption of supply at one point, while still maintaining water supply to the system at the design rate.

Looping of the water mains to improve circulation quality and fire flow is an on-going goal of the District.

Pumping stations are to contain multiple booster pumps of sufficient capacity to meet the maximum day demands with the largest pump out of service.

Auxiliary power is required where adequate gravity storage is not provided.

5.4 WATER SUPPLY RECOMMENDATIONS AND REQUIREMENTS

The October 2019 DOH “Water System Design Manual” sets forth the following recommendations for water supply system and source pump stations, with additional requirements for booster pump stations.

5.4.1 Source Pump Stations

Unless given explicit DOH approval to use finished water storage to meet MDD, source-pumping capacity must be sufficient to meet MDD, per WAC 246-290-222(4). Design engineers should consider the following when evaluating installed pump capacity:

- Metered source production and water system demand records.
- System head conditions when pumping to storage or distribution, and when pumping from wells with significant seasonal changes in dynamic (pumping) water levels.

- Pump curve(s).
- Pump controls and logic.
- An engineering analysis that verifies pump performance under actual system head conditions.

Pump stations shall be provided with a minimum of 20 pounds per square inch (psi) at the intake of the pumps under peak hour demand or fire flow plus maximum day demand rate conditions.

Pump stations shall have an automatic shut-off in place for when the intake pressure drops below 10 psi.

Pump stations shall have power connections available to two independent primary public power sources or provision for in-place auxiliary power if the pumps provide fire flow, or are pumping from ground level storage.

Telemetry is required at all new pump stations and supply points.

5.4.2 Water supply

Source capacity should meet the maximum day demand while concurrently replenishing the fire suppression storage volume within 72 hours of its depletion.

Water sources should be capable of providing the maximum day demand for the system with 18 hours of pumping.

5.4.3 Booster Pump Stations

Open system Booster Pump Stations (BPS), which transfer water to a higher pressure zone governed by an atmospheric storage tank, shall be capable of providing source capacity as established for water supply sources in the following Section 6.

Closed system BPS, which transfer water to a higher pressure zone closed to the atmosphere, shall provide peak hourly demand with a minimum of 30 psi of pressure at all connections. It is recommended that this capability be provided with the largest pump off-line.

Closed system BPS shall provide fire flow in conjunction with maximum daily demand with 20 psi of residual pressure. Additionally, since this system is located in an area governed by the Public Water System Coordination Act of 1977 (PWSCA), this capability must be provided with the largest pump off-line.

5.5 WATER DISTRIBUTION RECOMMENDATIONS AND REQUIREMENTS

5.5.1 Water Pressure

The District's system has been designed to provide normal static water pressure between approximately 30 and 220 pounds per square inch (PSI), measured at the water meter. A new customer to the District assumes the responsibility to determine the exact water pressure at the meter, and to consider possible

unanticipated pressure surges. Where pressure exceeds 80 PSI, whether static pressure or due to unanticipated pressures surges in the system, it is the customer's responsibility to install an appropriate type of pressure regulator with strainer. (Reference: Current Edition of the Uniform Plumbing Code).

The customer can provide higher pressure than is provided, but it is the Customer's responsibility to install the facilities necessary to achieve the desired pressure. It is also the Customer's responsibility to absorb the costs associated with those facilities that will achieve the desired and required pressure. The District shall use its best efforts to ensure safe and adequate pressure in the mains, but shall not be held liable for damage resulting in the negligence of the customer in failing to provide reasonable safeguards for their own property.

New water mains or additions to existing mains shall provide an adequate design quantity of water at a positive pressure between 30 and 100 psi under peak hourly design flow conditions measured at any customer's water meter.

The distribution system shall be designed to provide the required fire flow demands while providing pressures of at least 20 psi throughout the system during peak hourly design flow conditions.

All new facilities should be designed to provide a minimum pressure of 30 psi at the customer meter under static conditions.

Distribution system pressures of up to 100 psi are acceptable in small, low-lying areas not subject to high flow rates and surge pressures. When static pressures exceed 80 psi, however, individual pressure reducing valves (PRV's) are required on individual service lines in order to protect plumbing from excessively high pressures and to reduce water loss due to leakage. Individual PRVs shall be provided and maintained by the customer according to the Uniform Plumbing Code.

5.5.2 Pipe Sizing and Materials

The size of distribution mains shall be such that the velocity will not exceed 8 feet per second under peak hourly demand conditions. Maximum velocities of 10 feet per second may occur under fire flow conditions or for short sections of main.

Minimum pipe diameter for residential is 8-inches nominal inside diameter, or as hydraulically justified by the District to accommodate domestic water and fire protection service. Minimum pipe diameter for non-residential is 12-inches nominal inside diameter, or as hydraulically justified by the District to accommodate domestic water and fire protection service. Actual water main sizes must be established by the District and may require hydraulic network modeling.

Water system extensions shall consider water quality when designing their projects and provide adequate capacity, redundancy, and reliability of the distribution system, and may require; on-site looping of water systems, connection to all existing mains adjacent to the property, and/or installing water main stubs to limits of the property to allow for

future water system connections. Where a development borders or span different pressure zones, the installation of main line pressure reducing valve (PRV) stations will be required. The length of dead-end mains for new development will be limited to a maximum of 300 feet. Off-site water systems improvements may be required where deemed necessary by the District for flow capacity or system reliability.

Pipe materials shall be cement lined, Class 52 (minimum), Class 53 on 4-inch and smaller ductile iron pipe, conforming to ANSI Standard A21.51, ductile iron pipe, and manufactured in the USA, unless otherwise approved. All pipe shall be wrapped with polyethylene casing and bedded in sand or crushed rock. All materials shall meet the accepted standards of the water works industry as specified by authorities such as the American Society for Testing and Materials (ASTM), the American Water Works Association (AWWA), and the American Public Works Association (APWA).

Water system pipelines shall be constructed of “lead free” materials which have a lead content of less than a weighted average of 0.25%.

Pipe fittings must be cement lined cast iron or ductile iron. If HDPE piping is used similar fittings to piping must be used.

Water source pumping facilities and storage facilities must be designed so that, in combination, they can supply the peak hourly demand in all parts of the system at a minimum pressure of 30 psi.

Polyethylene encasing or cathodic protection shall be utilized as determined by the District in areas of corrosive soil conditions which may affect the life of the pipelines.

Fire flow modeling must be performed under the conditions of maximum day demand, maintaining a minimum system-wide pressure of 20 psi.

5.5.3 Valves

Valving shall be installed in a configuration which permits the isolation of lines for repair, while keeping as many customers as possible in service when performing repairs, flushing, new construction cut-ins, or other operations.

The maximum distance between valves shall be 800 feet.

Additional valves may be required in order to assure the capability to isolate water mains for repairs, replacements, or new connections and will be determined by the District on a case-by-case basis.

Pressure Reducing Valves (PRV’s), or zone isolation valves, should be installed at pressure zone boundaries to permit future pressure zone realignment without the need for piping reconfiguration.

A blow-off assembly or fire hydrant shall be installed on all dead end runs and at designated points of low elevation to provide a means for adequate flushing of the system. The blow-off assembly shall be installed in a utility right-of-way, except where a written access and construction easement is provided to the water utility. In no case

shall the location be such that a possibility of back-siphonage into the distribution system exists.

5.5.4 Fire Hydrants

The District operates per local Fire authorities. Specific consideration of the individual fire district regulations, such as hydrant port size, shall be made during design.

Standard 5-1/4 inch Main Valve Opening (MVO) fire hydrants are required approximately every 900 feet in rural areas, unless otherwise approved.

Standard 5-1/4 inch Main Valve Opening (MVO) fire hydrants are required approximately every 600 feet in residential areas, unless otherwise approved.

Standard 5-1/4 inch Main Valve Opening (MVO) fire hydrants are required approximately every 300 feet in commercial areas, unless otherwise approved.

Additional fire hydrants may be required to ensure adequate fire protection is provided for specific development proposals.

The maximum length of a 6-inch hydrant lead shall be 50 feet. Hydrant leads over 50 feet shall be 8-inches.

The hydrants shall be painted according to current District Standards The tops of hydrants shall be painted as directed by the district standards in accordance with the following Snohomish County Fire Code coloring table:

Table 5-1: Snohomish County Fire Code Coloring Table

Color	Estimated Flow From Hydrant
Safety Blue	1,500 gpm or greater
Safety Green	1,000 to 1,499 gpm
Safety Orange	500 to 999 gpm
Safety Red	Less than 500 gpm
Black	For drafting use only (hard suction/steamer port)
White	Cross on top of hydrant – for filling tankers only

5.5.5 Cross-Connection Control

Where the possibility of contamination of potable water exists, water services shall be equipped with appropriate cross-connection control assemblies in accordance with DOH requirements and the District's Cross-Connection Control Program. The District's current cross-connection control standards are set forth in District Resolution #1991-9-6 which is included in Appendix I. Updates to this program were adopted on June 19, 2001, in Resolution No. 2001-6-2. The updated program stated in this chapter was

adopted on August 20, 2019, by Resolution 2019-8-3. As indicated, the need, size, and location of cross-connection control assemblies shall be determined by the District.

5.6 STORAGE RECOMMENDATIONS AND REQUIREMENTS

Storage requirements are based on five components: operational storage, equalizing storage, standby storage, fire suppression storage and dead storage. The minimum requirements for each of the components of the total storage requirement are summarized below. The minimum amount of storage required shall be adequate to provide for equalizing storage plus the larger of standby or fire suppression storage. The recommended storage volume is equal to the sum of the equalizing, standby and fire suppression storage components. Chapter 6 of this Plan includes a complete analysis of the District's water storage requirements and existing capacities.

5.6.1 Operational Storage

The operational storage is the volume of water available to supply the system under normal operating conditions while the source is considered "off". This volume varies according to the sensitivity of the water level sensors controlling the source pumps and the configuration of the tanks designed to provide the required volume while preventing excessive cycling of the pump motor(s). The volume of operational storage is therefore dependent upon pump design parameters and is not impacted by the minimum design parameters set forth by DOH.

5.6.2 Equalizing Storage

Equalizing storage is the volume of water required to supplement source-pumping capacity when system demands exceed the source pumping capabilities. The volume of equalizing storage must be sufficient to meet hourly water system demands in excess of the rate of supply and must be at an elevation sufficient to meet these demands at a minimum delivery pressure of 30 psi. The amount of required equalizing storage is to be calculated in accordance with the DOH "Water System Design Manual".

5.6.3 Standby Storage

Standby storage is a volume of finished water a water system reserves to maintain a certain level of service if one or more permanent source of supply becomes partially or completely unavailable for use. Restriction of flow may be caused by a pumping equipment failure, supply line failure, maintenance or repair, or other conditions that may cause interruption in supply. For single source systems, standby storage requirements are equal to maximum day demand for a system, deliverable at 20 psi. For a multiple source system, the standby storage is calculated as max day demand, less the flow available with the largest source out of service. It is recommended that standby storage not be less than 200 gallons per ERU .

5.6.4 Fire Suppression Storage

Fire suppression storage must be equal to the amount of water required to accommodate fire demand while maintaining a minimum system pressure of 20 psi. Fire flow requirements are determined by the Fire Marshal having jurisdiction and generally conform to the procedures utilized by the Washington Surveying and Rating Bureau as set forth in a pamphlet entitled "Guide for Determination of Required Fire Flow" published by the Insurance Services Office, Municipal Survey Service.

5.6.5 Dead Storage

Dead storage is the amount of water not available to all customers at the minimum design pressure. Dead storage is not considered when determining volumes to provide operational, equalizing, standby or fire suppression storage.

5.7 FIRE FLOW REQUIREMENTS

The amount of water required for fire-fighting purposes is specified in terms of rate of flow in gallons per minute (GPM) and an associated time duration in minutes. Minimum fire flow requirements are typically determined by the local fire protection authority or county fire marshal on a case-by-case basis, depending on the type of development in an area and the required fire flows for the particular facilities and structures associated with that development.

While the District takes current and anticipated fire flow demand into consideration when sizing distribution system facilities, the number of connections served by the District is independent of fire flow demands. Therefore, while it is within the local fire authority's discretion to decide whether to restrict development based on fire flow capacity, inadequate capacity does not limit the number of ERUs or connections which may be approved by the District.

The following fire flow considerations are addressed by the District during the design analysis process:

- Identify and report any known hydraulic deficiencies in fire flow capacity to the local fire authority and local planning/building departments.
- Prioritize capital improvements to meet anticipated fire flow demands within a reasonable period and coordinate improvements with the local fire authority.
- Ensure that hydraulic fire flow deficiencies are reflected in operational plans.

It is important to confirm fire suppression requirements and optimal design with local fire protection authorities. Design engineers should discuss optimal fire hydrant spacing with the local fire protection authority officials and may wish to coordinate on ways to minimize needed fire flow to accommodate any physical capacity constraints of the water system. Where fire suppression is required, fire suppression flow plus maximum daily demand usually controls the size and layout of distribution systems. Therefore, it is important to confirm the fire flow requirements.

For estimating purposes and as a guide for fire flow requirements within the District, the minimum fire flows are 500 gpm for 60 minutes in rural residential areas, 1,000 gpm for 2 hours

in urban residential areas, 2,500 gpm for 2 hours in commercial areas, and a target of 4,000 gpm for 4 hours in industrial areas. It should be noted that the water system within the industrial area(s) of the District was originally designed for a maximum fire flow of 4,000 gpm and, thus, portions of the water system within the industrial area cannot provide more than 4,000 gpm of available flow. When and where possible, however, the District will persue developer upgrades to the water system for future new industrial developments in order to provide a minimum available fire flow of 4,500 gpm.

The District considers all existing and allowable land uses in planning for provision of adequate fire flows throughout the District. The fire flow demand for an area that contains more than one type of development is assumed to be equal to the highest fire flow requirement for the area. The Northern Snohomish County Coordinated Water System Plan (CWSP) also contains minimum design criteria standard requirements for those water service providers that are within the Critical Water Supply Service Area (CWSSA) established for the Plan. While the only portion of the District within the CWSP jurisdictional area is the Fobes Hill area, the minimum design standards set forth by Cross Valley meets or exceeds those set forth in the CWSP.

Per Chapter 246-293 WAC, new booster pump stations within the Public Water System Coordination Act, must be able to meet fire flow with the largest capacity booster pump out of service. Open-system booster pump stations can use reservoir storage in the pressure zone supplied to meet fire flow requirements. The remaining pumps, in conjunction with supply from the reservoir, must be able to maintain a minimum of 20 psi at ground level at all points in the distribution system while supplying MDD plus needed fire flow. In general, you should be cautious using a closed booster pump station if fire flow is required because a closed booster pump station is less reliable than gravity storage. A new booster pump station serving a closed system should be designed with back-up power operated by an automatic transfer switch if power outages exceed the threshold standards in WAC 246-293-660(1).

A variety of sources are available for estimating the District's future fire flow requirements including the DOH guidelines, the Uniform Fire Code, and the Washington Surveying and Rating Bureau (WSRB). Although each of these provides guidelines for fire flow planning, final determination of fire flow requirements is determined during the building permit process. A summary of the guidelines used for this planning process are as follows:

Under regulations established by the Department of Health, all water systems providing fire flow must be designed to deliver a minimum rated flow of 500 gpm for 30 minutes in residential areas, 750 gpm for 60 minutes in commercial areas and for multifamily structures over 4,000 sq. ft., and 1,000 gpm for 60 minutes in Industrial areas. There is no specified flow for rural areas.

Under regulations established by Snohomish County, all water systems providing fire flow within the Urban Growth Area (UGA) must be designed to deliver a minimum rated flow of 1,000 gpm for 2 hours in residential areas, and 1,500 gpm for 2 hours in commercial areas and for multifamily structures over 4,000 sq. ft. Fire flow requirements for industrial structures are based on building type and appurtenances. There is no specified flow for rural areas.

The Insurance Services Office (ISO) has been the premier source on property and liability risk since 1971. ISO's standardized policy is the foundation on which many insurers build their coverage programs. The Washington Surveying and Rating Bureau (WSRB) uses the ISO guidelines to establish minimum fire protection requirements for existing residential, commercial, industrial, and institutional facilities. The ISO's 2014 "Guide For Determination of Needed Fire Flow" helps establish the fire flow needed in a given area based on construction type, floor area, height, connected or adjoining buildings and type of occupancy. Adjustments are based on the number of stories, construction material and the presence of automatic sprinkler systems.

The International Fire Code also provides a standard for fire flow for municipalities that subscribe to that standard.

5.8 GENERAL FACILITY PLACEMENT

All piping, pumping, source, storage, and other facilities shall be located on public rights-of-way (ROW), dedicated utility easements, or District-owned property. Wherever possible, pipelines shall be located in dedicated streets or in easements which have been granted to the District. A street is not dedicated until the plat which created it has been filed with the Snohomish County Recorder, or unless the County has a Deed of Record.

Unrestricted access shall be provided to all public water system lines and their appropriate appurtenances and all public fire hydrants.

5.8.1 Easement Standards

The District's standard utility easement is a minimum of 15 feet in width, with piping installed at least 5 feet from the easement's edge. Larger easements may be required in certain circumstances and exceptions to this minimum easement will be granted at the discretion of the District and limited to the most extreme of situations. Utility easements shall not be established such that they straddle any property line, unless approved by the District.

Water utilities shall be located in accordance with the standards and guidelines established by the District. Where existing utilities or storm drains are in place, new facilities shall conform to these standards as nearly as practicable and be compatible with the existing installations.

The cover over pipes (from the top of the pipe to the finished grade) for pipes 8-inches and smaller shall be a minimum of 36-inches and a maximum of five feet. For pipes 10-inches and larger, the minimum cover shall be 48-inches with a maximum cover of five feet. Because other utilities are usually installed before water utilities due to gravity constraints, the District may allow the minimum or maximum cover to be modified at utility crossings with District approval.

The District follows the standards set by DOE regarding the vertical separation of utilities. The separation requirements between potable water and sanitary sewer are 10 feet of horizontal separation and 18-inches of vertical separation (from the bottom of the

water main to the crown of the sewer main). Where practical, there shall be at least 5 feet of horizontal separation from other utilities.

Engineers shall plan and design water mains in segmented grids and loops to the greatest degree possible, to avoid as many dead ends as possible. Looping may not always be practical due to topography, geology, pressure-zone boundaries, unavailable easements, or locations of users. If dead ends cannot be avoided, blow-offs or fire hydrants should be provided to allow adequate flushing of those mains.

5.8.2 Supply Location Considerations

Location considerations for water sources include risks of intrusion from sea water and ground water intrusion (GWI) which can be caused by a variety of circumstantial or season factors. Additionally, if supply sources are located in different watersheds, wellhead protection areas, or aquifers, design engineers may be justified in providing a reduction of standby storage volume.

The scope of required source water sampling varies depending on the type of source water and location of the intake. The District has recently installed 42 water quality sample stations in locations where the District can collect representative water quality samples from the distribution systems.

Reservoirs should be placed within the pressure zone, as those at the edge of a pressure zone or beyond have longer detention times.

The appropriate and measured selection and location of pipeline appurtenances such as valves, instrumentation, and flushing stations also enables the District to optimally manage the distribution system and maximize consumer value. In accordance with WAC 246-290-200 and local requirements, the District must assess geologic risk (seismic and unstable slopes) when designing water systems, assessing existing mains, and/or installing new water mains. Seismically appropriate pipe materials and connections should be provided for all pipes, particularly when located within a pump station or reservoir, directly below it, and within 20 feet of the pump station or reservoir foundation.

If a customer requires a Booster Pump Station to serve their project, the designer and engineer must recognize that the location the individual booster pump will serve is a cross-connection hazard. The project will be required to provide the necessary facilities to address this hazard.

5.8.3 District Facilities

Site consideration for District facilities also includes ensuring compliance with local zoning and building codes, and maintaining community acceptance. The District is aware that maximum permitted sound levels can be as low as 45 dBA in residential areas at night and is careful to ensure that facilities, such and booster pump stations, are placed so as to avoid noise pollution of residences and parks, in accordance with WAC 173-60-040.

5.8.4 Department of Labor and Industries

The District ensures compliance with Labor & Industries (L&I) Standards for locating pressure tanks, as follows. Pressure tanks should be located above normal ground surface and be completely housed. WAC 296-104-260 enforces the L&I standard which requires at least 18 inches of clearance around the tanks for proper inspection, maintenance, and repair access, however, L&I offers a Boiler/Pressure Vessel Clearance Variance Request form (F620-041-000) online, as it may not always be practical to provide the required clearance all the way around a pressure tank.

For all pressurized tanks, which typically are located where residential wells supply the water, a PRV must meet state Department of Labor and Industries' design requirements (WAC 296-104 Board of Boiler Rules).

5.9 RELIABILITY CONSIDERATIONS

The District is aware of minimum reliability requirements, including WAC 246-290-420, and maintains compliance with all relevant requirements. For reliability purposes, multiple water sources are recommended in conjunction with adequate reserve in gravity storage to allow for the interruption of one supply source while maintaining production sufficient to meet average daily demand (ADD). Combined permanent and seasonal source capacity should also be sufficient to produce maximum daily demand (MDD) in a pumping period of 20 hours or less. The District takes a variety of factors into consideration when assessing reliability, including installed pump capacity, pumping tests, source reliability, and intertie capacity.

5.9.1 Source Reliability

The reliability of a water source depends on a number of environmental factors, such as rainfall, snowpack, and/or the hydrogeological characteristics of an aquifer for groundwater sources. Source reliability may also depend on legal water restrictions, such as the DOE requirement to interrupt well withdrawal during low-flow periods in a nearby stream. Climate change is anticipated to amplify these factors, making it even more important for the District to consider the need for resiliency in the face of changing conditions over the life of the water system.

Source reliability can be expressed in terms of how frequently a purveyor expects normal demand to go unmet, such as a one-in-50 year or one-in-100-year drought. For wells subject to interruption due to low stream flow, it is recommended that a once-in-50-year interval is used as the basis for establishing reliance on a source to meet normal water system demand. A source reliability standard of 98 percent is recommended for evaluating a watershed's capacity.

In general, the reliability of a surface source is more uncertain than groundwater because it relies so heavily on precipitation levels and is vulnerable to reduction in withdrawal due to low stream flow. New surface water sources proposed for drinking water should be evaluated for long-term reliability, including the security of interruptible water rights and potential competing beneficial uses.

5.9.2 Pump Station Reliability

Pump stations are to contain multiple booster pumps of sufficient capacity to meet one-half of the peak day demands with the largest pump out of service.

The selected pump-test protocol should identify the aquifer safe yield. Based on the pump test protocol and quality of data, the design engineer should apply an appropriate factor of safety (e.g., multiply pump test results by 0.85) when calculating safe yield to account for unknown hydrogeologic conditions and future climatic conditions.

The District ensures that all supply pump stations meet power source reliability standards. This includes maintaining connections to two independent primary public power sources, auxiliary power availability (auto transfer capable), and/or adequate gravity standby storage.

5.9.3 Reliability of Capacity

Reliability of system capacity is also ensured through design standards. In general, the District's total daily source capacity is sufficient to meet MDD. If unable to meet this capacity requirement, the District would be required to provide equalizing storage to meet diurnal demands that exceed source capacity, per WAC 246-290-235(2). Emergency sources, including emergency interties, are not included in the total source capacity calculations.

The District documents the approaches used to assess its source-based service capacity, as well as related assumptions, such as the source of data used to determine demand.

5.9.4 Fire Flow Reliability

The Water System Coordination Act (chapter 70.116 RCW) requires subject water systems to meet certain reliability standards when pumping provides fire flow. Permanent and seasonal sources must be capable of replenishing depleted fire suppression storage within 72-hours (continuous, 24-hour source pumping may be assumed for replenishment), or sooner if required by the local fire authority, while concurrently supplying the MDD for the water system.

5.9.5 Purchased Water and Intertie Reliability

The District is permitted to purchase its water supply in whole or in part from another water system per WAC 246-290-132(3)(a)(v), so long as the District assesses and demonstrates the reliability of the purchased water agreement and how the intertie improves overall system reliability. A new or renewed wholesale water agreement which raises reliability concerns must be submitted in tandem with a viable plan for identifying an alternative supply which does satisfy the water quantity/quality reliability standards of WAC 246-290-420 and WAC 246-290-222.

5.10 STANDARD PLANS AND SPECIFICATIONS

Per WAC 246-290-125, Cross Valley Water District maintains a current approved water system plan on file with DOH that includes construction specifications for distribution mains.

The plan and specifications constitute a waiver from the DOH project report submittal and approval process required under WA.,C 246-290-110 and WAC 246-290-120, provided that construction of such projects are certified by a registered professional engineer and provided that the District submits required documentation to DOH prior to placing the distribution pipeline into service and maintains on file a completed construction completion report to be made available for review by DOH upon request. Specific improvements for which project report approval is not required include the installation of valves, fittings, meters, hydrants, and approved backflow prevention assemblies; repair/replacement of system components of a similar capacity and material to the original construction specifications; and maintenance or painting of surfaces not contacting potable water.

All other water system improvement projects require submittal to and approval by the Washington State Department of Health. A copy of Cross Valley Water District's standards is on file at the District.

5.11 WATER QUALITY STANDARDS

In accordance with WAC 246-290-310, all sources used as a public drinking water supply must test for regulated contaminants and meet the water quality standards set by the Washington State Department of Health (DOH) and the federal Safe Drinking Water Act (SDWA).

While each regulated chemical and radiological contaminant has a drinking water Maximum Contaminant Level (MCL), microbial drinking water contaminants have an assigned drinking water treatment technique requirement (disinfection or disinfection and filtration) instead of an MCL. At minimum, initial source water quality testing is required for all regulated bacteriological contaminants, inorganic chemicals (IOCs), volatile organic chemicals (VOCs), radionuclides, synthetic organic chemicals (SOCs), and soil fumigants. Additional testing is recommended for alkalinity, bromide, pH, phosphates, silica, sulfides, and total organic carbon (TOC). Regulations for secondary contaminants address aesthetic concerns, such as imparting an unwanted taste, odor, or appearance to the water, but are not currently based on a risk to human health. If a substance exceeds its MCL or its maximum residual disinfectant level (MRDL), the purveyor shall take follow-up action as directed under WAC 246-290-320. Additional quality design standards include the requirement of sample taps at all drinking water sources per WAC 246-290-300.

The District recognizes the requirements put forth by the State's Wellhead Protection Program (WHPP) for group A systems relying on groundwater, as well as the various source monitoring requirements established by SDWA and the State for surface water supplies, which is currently carried out by the City of Everett to ensure compliance. The District is also aware that additional monitoring requirements may be forthcoming and will comply with such requirements as they are implemented in the State of Washington.

Monitoring activities as implemented by the Districts WHPP can be found in the Appendices. The District also publishes annual consumer confidence reports and lead and copper public education information containing current water quality data in accordance with EPA and DOH regulations. The most recent Consumer Confidence Report and additional information on the District's water quality and water quality standards is provided in the Appendix.

5.12 WATER MAIN BREAK RESPONSE

The District has developed a water main break response plan for their entire system. This includes the chlorinated and non-chlorinated areas of their District. The breaks are categorized into four types of breaks that require different levels of responses. The document has been included in Appendix L.

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CHAPTER 6
WATER SYSTEM ANALYSIS

6.1 INTRODUCTION

The following paragraphs summarize the analyses performed on the water system under existing and future conditions, and present the recommendations arrived at as a result of those analyses. The water system has been analyzed in accordance with the requirements of the State Department of Health and the minimum criteria established by the District and documented in Section 5 of this Plan.

Table 6-1 below provides an overview of the system as it was analyzed for source and storage requirements. Note that some pressure zones and service areas share storage facilities, but not necessarily the same sources.

TABLE 6-1: SYSTEM CONFIGURATION OVERVIEW

Service Area	Provided Storage	Pressure Zones	Primary Source	Secondary Source
Fobes Hill	1/2 of CWSA Regional Storage Facility	310E 412E	Everett Interties (3)	Everett Meters
		310C 480C	CWSA Connection	
Lowell/Larimer		280E	Everett Intertie	Silver Lake Intertie
		370C	CWSA Connection	
CWSA	Clearview Standpipe Clearview Elevated Tank ½ of CWSA Tank	756C 640C 575C 280C	Clearview Meters	Lee Forest Booster Station Vine Street Booster Station
District Treated North	Vine Street Reservoir	575 420 340 280 190	Wells 5, 6, and 10 Treatment Plant	CWSA PRV 756 Zone PRV 640 Zone PRV
District Untreated South	Lee Forest Reservoir Echo Lake Reservoir	640 700 382 440 W 500, S 500, E 500	Wells 1 and 9 Wells 7,7A and 7B Wells 3 and 8 Woodlane	756 Zone PRVs (emergencies)

6.2 SOURCE OF SUPPLY

The supply requirements for the District are based on the guidelines established by the Washington State Department of Health's "Water System Design Manual" (2019 Edition). Based on these guidelines, the water supply needs to be able to deliver the maximum day

demand of the system while concurrently replenishing the depleted fire suppression storage within 72 hours. Table 6-2 presents the source of supply analysis under existing and future conditions.

The Fobes Hill area is supplied by meters from both the City of Everett and CWSA. Four separate City of Everett interties supply the 412E and the 310E Pressure Zone, which covers about three quarters of the Fobes Hill area. The interties are in separate locations, thus, the 412E and 310E Zone has been analyzed as an area that is served by multiple sources. The remaining pressure zones in the service area, the 480C and 310C are supplied through a single CWSA meter and have been analyzed as an area that is served by a single source.

The remaining service areas are all considered to be Multiple Source areas based on the configurations of the District's various supply sources. The CWSA service area has multiple CWSA metered connections and is also supplied by water pumped from the Lee Forest and the Vine Street Booster Stations. The District North service area utilizes Wells 5, 6, and 10 which are processed at the District's treatment plant facility. Similarly, the District South service area uses wells 1, 3, 7, 7A, 7B, 8, and 9.

TABLE 6-2: SOURCE ANALYSIS

Year	Service Areas	Pressure Zones	ERUs	MDD	FSS[1]	Source (gpm)			
				(gpm)	(gpm)	Required	Existing Capacity of Source	Surplus/ (Deficit)	Available ERUs
2020	Fobes Hill	310E, 412E	736	269	28	296	3,700	3,404	9,336
		310C, 480C	291	106	28	134	2,400[2]	2,266	6,215
	Lowell-Larimer	370C, 280E	954	348	14	362	8,000[2]	7,638	20,951
	CWSA	756C, 640C, 575C, 280C	1,731	631	125	756	5,280[2]	4,524	12,408
	District North	575, 420, 340, 280, 190	1,699	619	125	744	2,750	2,006	5,501
	District South	700, 640, 382, 440, W 500, E 500, S 500,	4,025	1,468	125	1,593	4,510	2,917	8,002
2030	Fobes Hill	310E, 412E	778	283	28	311	3,700	3,389	9,314
		310C, 480C	340	124	28	152	2,400[2]	2,248	6,195
	Lowell-Larimer	370C, 280E	1,000	365	14	379	8,000[2]	7,621	20,912

Year	Service Areas	Pressure Zones	ERUs	MDD (gpm)	FSS[1] (gpm)	Source (gpm) Required	Existing Capacity of Source	Surplus/ (Deficit)	Available ERUs
	CWSA	756C, 640C, 575C, 280C	1,821	664	125	789	5,280[2]	4,491	12,318
	District North	575, 420, 340, 280, 190	1,765	644	125	769	2,750	1,981	5,435
	District South	700, 640, 382, 440, W 500, E 500, S 500,	4,253	1,551	125	1,676	4,510	2,834	7,774
2040	Fobes Hill	310E, 412E	983	359	28	386	3,700	3,314	9,089
		310C, 480C	419	153	28	181	2,400[2]	2,219	6,087
	Lowell-Larimer	370C, 280E	1,043	380	14	394	8,000[2]	7,606	20,862
	CWSA	756C, 640C, 575C, 280C	2,162	788	125	913	5,280[2]	4,367	11,977
	District North	575, 420, 340, 280, 190	2,226	812	125	937	2,750	1,813	4,974
	District South	700, 640, 382, 440, W 500, E 500, S 500,	5,347	1,950	125	2,075	4,510	2,435	6,680

Notes:
(1) – Fire Suppression Storage (FSS) volume replenishing rate. Source must replenish the FSS volume within 72 hours
(2) – Based on a total maximum draw from CWSA of 6 MGD.
MDD = Maximum Day Demand. Based on 525 gpd/ERU, or 2.5 times the Average Day Demand of 210 gpd / ERU.

6.3 WATER TREATMENT FACILITY ANALYSIS

The District's operates a Water Treatment Facility to facilitate iron and manganese removal from water produced at three of the District's eleven groundwater wells. The three subject wells (Wells 5, 6, 10) are located on a single site and treat the water in the District North Service Area. The treatment facility is equipped with a permanent emergency diesel generator to ensure operation during power outages.. The treatment facility site has a 150,000-gallon clear tank to detain the treated water for the minimum required contact time before entering the water system. Currently, the maximum flow the facility can produce is 1,400 gallons per minute. The required flow necessary to accommodate the District North service area is 937 gpm for the year

2040. This suggests that an additional 1,271 ERUs are available in the capacity of the treatment facility which suggests that the treatment facility is more limiting then the source capacity for the District North Service Area which has 4,974 available ERUs in 2040.

6.4 WATER STORAGE ANALYSIS

The District's storage requirements are based on the following components: effective storage, equalizing storage, standby storage, and fire suppression storage. In addition to these primary storage components, is operational storage, which is used to prevent excessive cycling of supply pump motors. Each of the individual storage components are described below.

6.4.1 Effective Storage

The total volume of a reservoir or storage tank, as measured between the overflow elevation and the outlet elevation, may not necessarily equal the effective volume available to the water system. Effective volume is equal to the total volume less any dead storage built into the reservoir. Dead storage is defined as the volume of water stored and not available to all customers at the minimum design pressure in accordance with WAC 246-090-230 (5) and (6). The dead storage volume is excluded from the volumes provided to meet the operational, equalizing, and fire suppression storage requirements.

6.4.2 Operational Storage

The following definition and brief explanation are presented as reference information only. As defined previously, the operational storage is the volume of water available to supply the system under normal operating conditions while the source is "off". This volume varies according to the sensitivity of the water level sensors controlling the source pumps and the configuration of the tanks designed to provide the required volume while preventing excessive cycling of the pump motor(s).

6.4.3 Equalizing Storage

The most common method for determining equalization storage is to utilize the formula shown below, from DOH's "Water System Design Manual":

ES = (PHD-QS) * 150 Minutes (but in no case less than zero)

Where:
ES = Equalization Storage, gallons
PHD = Peak Hourly Demand, gpm
QS = Sum of all installed and active source of supply capacities, except emergency source of supply, gpm.

This method was used in determining the equalization storage requirements for the District. To increase reliability in the system, the largest pump in each area was considered to be off-line.

6.4.4 Standby Storage

The recommended standby storage volume for the service area with a single source is equal to the maximum day demand and should be located above the elevation necessary to provide service at 20 psi to all connections. For the area of the District that has multiple sources, which is all of them except for a portion of Fobes Hill, a reduction of Standby Storage is possible where on-site emergency/backup power is available. Standby Storage has been analyzed using the DOH recommended formulas (Equation 7-2) provided below:

MDD x N = Total Standby Storage Required
Where:
MDD = Maximum Day Demand for the District (525 gal/ERU/day)
ERUs = The number of ERUs served by the Storage facility

Standby Storage has been analyzed with the following formula in the District where there are multiple sources. According to the DOH manual, "it may be appropriate for design engineers to consider SB volumes less than MDD if multiple sources provide mechanical, electrical, treatment, and transmission redundancy and resilience to a single contamination event.":

SB = (2 days * ADD * N) - [tm * (Qs - Ql)]

Where:
SB = Total Standby Storage Required for multiple sources (gal)
ADD = Average Day Demand (gpd/ERU)
N = Number of ERUs
tm = Time that remaining sources are pumped on the day when the largest source is unavailable, typically 1,440 minutes.
Qs = Sum of all installed and continuously available source of supply capacities, except emergency sources (gpm)
Ql = The largest capacity source available to the system, in gpm.

Table 6-4 shows the amount of Standby Storage calculated for each reservoir and the pressure zones they serve.

6.4.5 Fire Suppression Storage

Fire suppression storage calculations are based on fire flow requirements for buildings and improvements typically found in various types of assigned land use and zoning. Table 6-3 below shows the required fire flow requirements based on zoning and was used as the basis for calculating fire suppression storage requirements.

TABLE 6-3: FIRE SUPPRESSION STORAGE REQUIREMENTS

Zoning	Fire Flow Target Requirement (gpm)	Snohomish County Code Requirement (gpm)	Duration (hours)
Agricultural – 1 unit per 10 acres	1,000	None Req'd	2
Suburban Agriculture – 1 unit per acre	1,000	None Req'd	2
Rural Conservation	1,000	-	-
Rural Residential – 1 unit per 5 acres	1,000	500	2
Residential – 1 unit per 20,000 sq. ft.	1,000	1,000	2
Residential – 1 unit per 9,600 sq. ft.	1,000	1,000	2
Residential – 1 unit per 7,200 sq. ft.	1,000	1,000	2
Rural Business	2,500	2,500	2
Community Business	2,500	2,500	2
Industrial	4,500	4,500	2

For the purposes of this analysis, the 4,500 gpm criteria was applied to all areas of the District, except the Fobes Hill area, since there are commercially zoned properties throughout these areas of the District, and because even low density or rural zoning allows for uses such as schools, which often require equivalent commercial fire flows. The District South and North areas both contain parcels of land that fall within the Industrial zoning category, according to the Snohomish County Comprehensive Plan. Storage facilities serving these areas of the District must contain enough fire suppression storage to accommodate 4,500 gpm for two hours.

6.4.6 Analysis and Recommendations

Analysis of the storage in the Cross Valley system is based on the sum of three storage components: equalizing (ES), standby (SB), and fire suppression storage (FSS). DOH requirements allow for "nesting" fire suppression and standby storage, that is, allowing stored water to be used for either fire suppression or standby purposes. However, for added reliability and flexibility, the District will provide enough storage to accommodate the sum of both fire suppression and standby storage. Table 6-4 summarizes the storage requirements and potential deficiencies based on an analysis of present (2020), near-term future (2030), and long-term future (2040) scenarios. As depicted in the table, the Fobes Hill and Lowell-Larimer areas, being served by half of the District's share of the regional CWSA reservoir, shows a deficiency beginning in 2030. The other areas served by the CWSA water source utilize the remaining half of the District's allotted storage in the CWSA tank. In addition to this storage, the CWSA area also utilizes the Clearview Standpipe and Clearview Elevated Tank. Combining these three storage facilities, the CWSA service area

has sufficient storage capacity to satisfy recommended storage levels. The additional storage in these three reservoirs is also considered back-up storage for the District North service area.

In the District North service area, utilizing the District's Vine Street Reservoir, Table 6-4 shows sufficient storage capacity. It does show in 2040 that the excess capacity is getting limited, and additional storage capacity may need to be considered. However, as growth occurs, standby and fire suppression storage will be made available from the available excess surplus in the CWSA storage facilities. The District North area contains treated water, so mixing CWSA treated water will not alter the quality and consistency of the water provided in the District North service area. As long as the District maintains connections via PRVs from the CSWA area to the District North area, ample storage is provided. It is recommended that, over time, the District evaluate their PRV settings, and if necessary, install additional PRVs to ensure water stored in the Clearview local storage facilities will be easily conveyed to the District North service area under normal operating conditions.

In the District South, the service area using the Lee Forest and Echo Lake Reservoirs, under current conditions, there is a storage deficiency of approximately 90,000 gallons in 2030 when multiple sources is considered in the calculation of the Standby Storage volume for each reservoir. This was anticipated as the previous comp plan called for a new Echo Lake Reservoir and Lee Forest Reservoir. It is recommended that the District construct an additional reservoir at the Lee Forest location and retrofit the existing to maintain a redundancy in storage for operational efficiencies at the Lee Forest site. The additional storage facilities will ensure the District can continue to provide low cost, untreated water to the area. Treated water from higher zones can still be drawn into the service area under temporary or emergency conditions.

The proposed Lee Forest facility would be in addition to the existing storage standpipe with a new standpipe that can provide up to 1,900,000 Gallons of storage, of which all would be useable storage. The standpipe proposed will have an overflow elevation of 640 to provide storage for the 640, W 500, S 500, and 382 Pressure Zones. Further details on this proposed storage facility project are discussed in section 6.9.

With the growth that has occurred in the Fobes Hill and Lowell Larimer area, there is a deficiency in the Storage beginning in 2030. As shown in Table 6-4, the deficiency indicates an approximately 150,000-gallon deficit in 2040. Future plans for CWSA consist of constructing an identical reservoir adjacent to the existing reservoir, from which the District will receive an additional 6 MG of storage in the future. Therefore, no proposed storage is considered for this area at this time. Only when the deficit becomes higher than the required 540,000 gallons for FSS, will the District need to address storage needs in the service area.

As shown in Table 6-4, equalizing storage is inputted as zero in all the service areas because the source capacity is much larger than peak hour demand in all service areas. The equalizing storage capacity is calculated by subtracting Peak Hour Demand (gpm) from the source capacity (gpm) and then multiplying that value by 150 minutes.

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TABLE 6-4: STORAGE FACILITY ANALYSIS FOR EXISTING SYSTEM

Year	Service Area	Reservoir Name	Existing Storage (gallons)				Effective Storage Required (gallons)				A – B	Available ERUs[5]
			Total Capacity[1]	Operational Storage (OS)[2]	Dead Storage (DS)	Net Available (A)	Equalizing Storage (ES)	Standby Storage (SB)[3]	Fire Suppress Storage (FSS)	Total Required (B)	Storage Surplus (gal.)	
2019	Fobes Hill and Lowell/Larimer	1/2 of CWSA Regional Storage Facility	1,000,000	0	0	1,000,000	0	855,907	120,000	975,907	24,093	46
	CWSA	Clearview Standpipe Clearview Elevated 1/2 of CWSA Facility	3,100,000	454,292	775,411	1,870,297	0	346,515	540,000	886,515	983,782	1874
	District North	Vine Street Reservoir	1,000,000	0	0	1,000,000	0	339,871	540,000	879,871	120,129	229
	District South	Lee Forest Reservoir Echo Lake Reservoir	2,620,000	503,922	595,927	1,520,151	0	804,112	540,000	1,344,112	176,039	335
2030	Fobes Hill and Lowell/Larimer	1/2 of CWSA Facility	1,000,000	0	0	1,000,000	0	889,290	120,000	1,009,290	(9,290)	0
	CWSA	Clearview Standpipe Clearview Elevated 1/2 of CWSA Facility	3,100,000	454,292	775,411	1,870,297	0	364,247	540,000	904,247	966,050	1840
	District North	Vine Street Reservoir	1,000,000	0	0	1,000,000	0	353,030	540,000	893,030	106,970	204
	District South	Lee Forest Reservoir Echo Lake Reservoir	2,620,000	503,922	595,927	1,520,151	0	850,685	540,000	1,390,685	129,466	247
2040	Fobes Hill and Lowell/Larimer	1/2 of CWSA Facility	1,000,000	0	0	1,000,000	0	1,027,065	120,000	1,147,065	(147,065)[4]	0
	CWSA	Clearview Standpipe Clearview Elevated 1/2 of CWSA Facility	3,100,000	454,292	775,411	1,870,297	0	432,472	540,000	972,472	897,825	1710
	District North	Vine Street Reservoir	1,000,000	0	0	1,000,000	0	445,211	540,000	985,211	14,789	28
	District South	Lee Forest Reservoir Echo Lake Reservoir	2,620,000	503,922	595,927	1,520,151	0	1,069,446	540,000	1,609,446	(89,295)	0

Notes:
1 – Based on reservoir size or contract amount
2 – Based on the minimum operating level of the storage tank as described in Table 6-5
3 – Standby Storage based on providing 2 days of Average Day Demand (ADD) (207 gal) per Equivalent Residential Unit (ERU)
4 – In case of emergencies, the District North service area can obtain additional storage from the Clearview Standpipe and Elevated Tank via existing PRV connections. Only when the deficit becomes higher than the required 540,000 gallons for FSS, will the District need to address storage needs in the service area.
5 – Available ERUs are calculated by determining how many ERUs (based on MDD) can be served by the

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6.5 PRESSURE ZONE CONFIGURATION

There are currently 22 pressure zones within the District, with the most recent 700 zone being created from the new Echo Lake Reservoir. Many of the zones appear to have been developed on a case-by-case basis to accommodate individual developments as they occurred. Subsequently, infill development has occurred and the distance between these isolated areas have lessened. Several adjacent areas have emerged where the hydraulic grade line (HGL) of neighboring pressure zones differ by as little as 20 to 30 feet. The HGL difference prevents the water systems in the two zones from being connected without the use of a pressure reducing valve (PRV) or pressure boosting pump stations. Because these alternatives for linking pressure zones are expensive, the zone isolation feature in many instances is simply a closed gate valve, which typically increases the number of dead-end mains, reduces available fire flows and necessitates increased flushing to maintain water quality. Reducing or minimizing the number of pressure zones in the system should be an overall goal of any water purveyor. Evaluating opportunities to reduce the number of PRV's and dead end closed valves should be an ongoing consideration in design of Developer Extensions and CIP projects. The PRVs that connect similar pressure zones have been set to allow for flow through the valves under fire flow conditions.

A current project that is under design includes a new PRV at 152nd St SE and State Street. This will provide a new connection of the 575 C zone with the 575 zone and adjusted to supplement flow in high-demand and fire flow conditions. It will not operate during normal demand conditions, thereby sustaining separation of different sources in the 575 HGL.

Special improvements related to pressure zone configuration consist of verification and calibration of PRV settings. At the end of 2020, the PRVs in the system were surveyed to determine accurate elevations to further calibrate the model. PRV settings will be evaluated and adjusted accordingly to assure that all PRV stations are properly balanced to provide an even distribution of flows into all zones. Such adjustments ensure that demands are drawn more equally through the PRVs and does not place excessive demand on any one PRV. Once the system is adequately balanced, Pressure zone labels will be updated to represent the maximum hydraulic grade of the zone more closely.

6.6 TRANSMISSION AND DISTRIBUTION SYSTEM

The purpose of the transmission and distribution systems is to convey water to customers within the District at adequate service pressures while providing fire protection and maintaining water quality. The distribution system should have sufficient hydraulic capacity to meet the peak hour demand at residual pressures that do not fall below 30 psi. Adequate hydraulic capacity must also be available to deliver fire flows during maximum day demand while maintaining a residual pressure of at least 20 psi throughout the entire system. The design criteria and the above constraints were considered in evaluating the existing system using the hydraulic model described below to determine and establish the recommended improvements to the transmission and distribution system throughout the District.

The District requires any new or remodeled developments to construct or be connected to a 12" water main. The current regulations established by Snohomish County is 1,500 gpm for 2 hours in commercial zoned areas and for multifamily structures over 4,000 sq. ft. To accomplish this fire flow requirement, a 12" water main is necessary throughout commercially zoned areas. The District also recognizes that other potential developments that require this higher fire flow may be constructed in residential (or others) zones throughout the District like churches, private schools, etc., where large parcels used to be used for agricultural purposes. On these development sites, connecting to a 12" water main or constructing a 12" water main will be required. The District intends to enforce this requirement on new and/or remodeled developments.

Water system extensions for development of property shall be designed to provide adequate capacity, redundancy, and reliability of the distribution system, and may require; on-site looping of water systems, connection to all existing mains adjacent to the property, and/or installing water main stubs to limits of the property to allow for future water system connections. Where a development borders or span different pressure zones, the installation of main line pressure reducing valve (PRV) stations will be required. The length of dead-end mains for new development will be limited to a maximum of 300 feet. Off-site water systems improvements may be required where deemed necessary by the District for flow capacity or system reliability.

6.7 HYDRAULIC MODELING

6.7.1 Hydraulic Modeling Software

As an aid in the identification and analysis of present and future demands and recommended improvements, the water system was modeled using Infowater© Suite 12.4 software by Innovyze. Infowater© allows graphical representation of a water system within the GIS interface working environment. Using this analysis tool, various modifications, parameter changes, and system improvements can easily be evaluated. Thus, the identification of problem areas and the development of possible solutions are expedited.

The model includes six primary elements – junctions, pipes, tanks, reservoirs, control valves (PRVs, zone valves, etc.), and pumps. Sources of supply (wells, interties, etc.) are typically modeled as reservoirs. Modeled junctions, tanks, reservoirs, control valves, and pumps establish the model's hydraulic characteristics through assigned elevations, facility settings, and physical properties. Pressure Zones are assigned to each junction and can also be assigned to every other element. At present, there are approximately 3,000 pipes and 2,700 junctions that comprise the model inventory.

Infowater© software allows the user to enter all necessary attribute data needed to model the pipes. In addition to assigning external demand data for each node, three-point curves for pumps, pressure reducing valve settings, and reservoir elevations during District fire flow testing were input. For the District's model, the Hazen-Williams method was used for assigning friction coefficients and losses.

6.7.2 Calibration

In order for the hydraulic computer model to correctly reflect the operation of the water system, it must accurately model all facilities within the existing system. This was achieved by first importing all water facility items and their desired attributes from the Water System GIS mapping and database. In addition, the hydraulic model was updated to include current District facilities with the insertion of all recent water main projects. Thus, the Infowater© model accurately reflects all existing water system facilities, their controls, settings, and all other relevant operational data.

Next, total projected demands for the District (as presented in Chapter 3) were allocated into the junctions with customer addresses using InfoWater© extension Demand Allocator. This tool allocated each customer demand to the closest junction. To properly allocate demands in areas with specific customers with higher than average use, point demands for the District's twenty (20) highest water users were considered individually. These accounts are typically larger industrial/commercial, golf course, and mobile home community connections. The actual demands for these connections were obtained from the District's billing records and were entered into the model as point flows at nodes near actual locations. Peaking factors were applied such that the model could simulate system critical situations with flows under maximum day and peak hour demands. The maximum day peaking factor was determined from the ratio of maximum day demand to average day demand and is 2.5. peak hour flows were determined in accordance with DOH guidelines and represent the anticipated highest flow in any given hour. The peak hour to average day demand peaking factor was determined to be 4.07.

To verify that the hydraulic model was accurate and closely reflected the current operation of the existing system, Fire District personnel conducted seven (7) actual fire flow tests in various areas of the District. During these tests, reservoir water levels, pump station flows, and pressure reducing valve settings were noted to record a "snapshot" of the existing water system during fire flow testing. With this data, scenarios were created in the hydraulic model with water system facility parameters set to recorded values during the fire flow tests. After running various simulations, slight adjustments were made to various components of the water system model until the modeled fire flows and static pressures matched the actual tests.

Test static pressures and flows, and modeled static pressures and flows calibrated to within approximately 10 percent in all cases. The fire flow calibration table (Table G-1) can be found in Appendix G. Slight differences between modeled and field results can be attributed to any number of inconsistencies such as: slightly inaccurate elevation data, non-precise operational data, precision and accuracy of testing instrumentation, operator error during test or data collection, unknown closed/open valves, improper allocation of modeled demands, unexpected minimal or high system demand consumption, inaccurate pipe friction factors, or hasty fire flow test (cannot replicate snapshot in model); all of which can cumulate and proliferate the minor differences between actual and modeled results.

The calibration results are sufficient per DOH requirements and adequate for planning purposes. It is recommended that the District utilize future fire hydrant testing opportunities (water availability certificates, maintenance by flushing, developer extension approval testing, etc.) to capture data for continual calibration of the model. Improvements and revisions to the operation and infrastructure of the District's water system will subsequently affect modeling results presented herein. It is recommended that any future planning scenarios following the approval of this Plan be modeled with the most current system information which accurately reflects field conditions.

6.7.3 Hydraulic Modeling Analysis

The model was used to determine areas where system deficiencies exist, or are likely to develop, under various flow conditions and growth scenarios. These deficiencies include areas of high or low pressure, and areas with low available fire flow. The system was analyzed using the minimum design criteria presented in Section 5 of this Plan. Specifically, system analysis under peak hour demand (PHD) and also maximum day demand (MDD) plus fire flow demand for current year (2019) and projected years 2030 and 2040 were conducted to determine areas of low residual pressure and deficient available flows related to minimum required fire flows.

In accordance with Washington State Department of Health (DOH) regulations, MDD plus fire flow demand scenarios are modeled to reflect depleted volumes of fire suppression storage (FSS) and equalizing storage (ES) in the reservoirs. Alternatively, reservoir operating levels were set at the dead storage water elevation for those reservoirs which have exhausted their available storage capacity allocated within a particular pressure zone. The reservoir operating levels are presented in Table 6-5 and used in the MDD plus fire flow analysis as well as the PHD analysis.

TABLE 6-5: RESERVOIR MAXIMUM WATER LEVELS

Storage Facility	Overflow Level (ft)	Minimum Operating Water Level (ft)
Clearview Standpipe	756	667.0
Vine Street Reservoir	575	575.0
Lee Forest Reservoir	640	626.0
Echo Lake Reservoir	704	626.0
CWSA Reservoir*	660	630.0

*Shown for reference only

For steady state analysis, the modeled tests were run with all pumps turned off to assess the ability of the system to operate with supply only from storage reservoirs. In accordance with DOH requirements and to protect systems from damage under high flow events, residual pressures must remain above 20 pounds per square inch (psi) during MDD plus fire

flow demand conditions. Moreover, present and future computer simulations were analyzed using the following pertinent design criteria:

- An acceptable pressure range of 30 psi to 80 psi for domestic flows
- A minimum system pressure of 30 psi throughout the District under peak hour demand conditions
- A minimum system pressure of 20 psi under maximum day demand plus required fire flow conditions

By using these criteria, existing and potential issues were identified and are discussed below.

Reservoir operating levels used for MDD plus fire flow demand analysis should be re-examined in the future should minimum fire flow requirements be increased to require additional FSS, or if additional ES is provided to the system. These possibilities are unforeseen and separate of the considerations at the time of publication of this Plan, but should be noted as any revisions to reservoir operating levels set herein may subsequently affect future analysis results.

6.7.3.1. Low Pressure Analysis

Areas of low pressure were determined under PHD conditions for each of the analysis years and the results presented in Appendix G in the Tables. Due to the hilly terrain of the portions of the District which slope east toward the Snoqualmie River, pressures can vary dramatically when compared to the close proximity of services. Areas of low pressure, below the minimum 30 psi the District tries to maintain, typically include areas in proximity of reservoirs, which are located at high points of the District. These areas were disregarded in the analysis if it was determined that there were no water service connections in proximity of a reservoir at a low-pressure node. Also, transmission mains, which transfer water from the District's sources to its reservoirs and on which no service connections exist, were removed from the low-pressure analysis.

After the construction of the Echo Lake Reservoir low pressure results in the hydraulic model only occurred in close proximity to the reservoirs in the system as indicated in the Tables in Appendix G. Periodic monitoring of the few existing services in these areas and reservoir levels in the general vicinity will ensure adequate pressures to those customers.

6.7.3.2. High Pressure Analysis

High pressures are of concern due to the fact that, at high pressures, distribution mains (especially older pipes), hydrants, valves, and other appurtenances may be subjected to increased stresses which could decrease the service life and require early replacement. Higher pressures also result in greater losses of water through leaks. The District desires working pressures at approximately 40-80 psi and requires individual PRV's when the system pressure to the service exceeds 80 psi. In many instances, customers have water pressure exceeding the desired and maximum static pressure and are

required to install and maintain individual pressure reducing valves on their water service lines in accordance with the Uniform Plumbing Code. Based on the current operation of the system, the areas of high pressure above 80 psi in the District are generally shown in Appendix G in Figure G-2. It should be noted that the aforementioned areas of low pressure are also shown on the abovementioned Figure.

It is recommended that Cross Valley continue to monitor the water system for high pressures and continue its policy of requiring individual pressure reducing valves on services with pressures above 80 psi. High water pressures for future developments will be examined during design and adequate solutions will be determined on an individual basis in accordance with the District's system design parameters.

A developer can provide higher pressure than is provided by the District, but it is the Developer's responsibility to install the facilities necessary (individual PRVs, pumps, etc.) to achieve the desired pressure. It is also the Customer's responsibility to absorb the costs associated with those facilities that will achieve the desired and required pressure. The District shall use its best efforts to ensure safe and adequate pressure in the mains, but shall not be held liable for damage resulting in the negligence of the customer in failing to provide reasonable safeguards for their own property.

6.7.3.3. Pipeline Velocity Analysis

High pipe flow velocities can result in increased future maintenance issues related to the high flow velocities repeatedly scouring the pipe. DOH recommends that the design of distribution mains not exceed a maximum velocity of eight (8) feet per second under PHD conditions. However, maximum velocities of greater than 8 fps may occur under fire flow conditions, in short sections of smaller diameter mains, in piping within pump and valve station facilities, or in dedicated transmission mains. As a comprehensive analysis however, the entire water system was reviewed for maximum velocities. Thus, any high velocity information, including the exception scenarios, were identified herein and considered in the future planning of facility improvements.

Generally, any pipe which currently has high flow velocities will have increased flow velocity in future PHD planning years, therefore, no other year was reviewed. As a conservative measure, sections of pipe with velocities over 8 fps were first analyzed using 2040 PHD's. The results indicated that there are few pipes that exceed velocities of 8 fps in the system distribution mains – see Appendix G in Table G-7. These pipes primarily are small diameter pipes and will be included in the small main replacement program. Two other pipes of sizes 10 and 12 inch are in the vicinity of the Clearview Elevated Tank and will be reviewed to determine if further evaluation is necessary.

6.7.3.4. Fire Flow Analysis

Fire flow analyses were performed on those modeled nodes which represent system hydrants. The District's fire hydrant GIS layer was overlaid onto the hydraulic model to compare the modeled nodes with the actual location of fire hydrants. By utilizing the District's GIS fire hydrant layer, the analysis was streamlined, and deficient fire flow

results are actually representative of fire flow deficiencies for those locations physically served by a system fire hydrant. The current (2020) available fire flow rates as provided by the model are displayed in figure G-1 in Appendix G.

Small diameter mains, dead end nodes, and nodes adjacent to reservoirs and transmission mains, all of which did not serve a hydrant, were removed from the fire flow analysis. Table 6-3 illustrates the minimum fire flow requirements for newly developed or redeveloped properties in the District, based on zoning and land use.

Fire flow simulations were run for the current year (2020) and projected years 2030 and 2040. Residual pressures of 20 psi were used to simulate fire flow conditions for the entire water system and flow simulation results were considered accurate to within a tolerance of 10%. Improvements to meet current and future demand conditions consist of replacing existing undersized pipe, looping water mains, and increasing the HGL of the pressure zone as adequate. These proposed improvements are identified and presented in the Capital Improvement Plan.

Overall, Cross Valley is doing very well in providing the required fire flow. Only several areas were shown to be deficient in the model. Some dead end 6-Inch mains that have fire hydrants at the end are indicated as a potential upsize to an 8” to increase fire flow. Another location that is currently in design right now through a developer extension project is located at the north end of the 575 zone.

The water system within the industrial zoned Maltby Urban Growth Area was originally designed to provide an available fire flow of 4,000 gpm. Although much of the aforementioned area can provide for the District targeted 4,500 gpm available fire flow, one particular area in the southwest corner of the industrial area cannot provide more than 4,000 gpm flow without extensive system upgrades. Since these upgrades would not be practical in terms of cost, added benefit, and water quality, the industrial area in the southwest corner was not reviewed with regard to the upgrades necessary to provide an additional 500 gpm flow.

Even though not required by DOH, pipeline velocities under fire flow conditions were examined in the interest to ensure that the District’s system remains robust under emergency conditions. Maximum pipeline velocity during fire flow conditions should not exceed 10 fps in existing mains. It is noted that small diameter mains (typ. 4-Inch diameter or smaller) typically experience high pipeline velocities during a fire event and thus may be subject to large stress and strain forces. Moreover, small diameter mains decrease the available pressure in the system as turbulent flows result in increased friction losses and generally become a bottleneck in the system. It is recommended that the District evaluate the viability of a small mains replacement program (first assessing 4-Inch and smaller diameter distribution mains) in the interest of reducing high pipeline velocities during fire flow events.

In the event of property rezoning or an urban growth boundary expansion that would require increased fire flow requirements, the system may not be capable of meeting any

subsequent demands. If this is the case, the water system will require re-examination to determine necessary improvements. It is recommended that the District monitor new construction and rezoning activities in the interest of fire protection.

6.8 PUMPING FACILITIES

The District currently has three (3) booster pump stations. Review and analysis of these stations with regard to their relative importance in the system has been performed, with any identified recommendations summarized in the below paragraphs.

Since the system relies primarily on gravity flow from the reservoirs, the pump station analysis falls under the same criteria as the source analysis. Along with the recommendation that the source be able to replenish the fire suppression storage within 72 hours while delivering the maximum day demand, it is also recommended that the maximum day demand be met with 18 hours of continuous pumping and that the average day demand be deliverable with the largest source pump off-line. Tables containing the pumping analysis are provided in Appendix G.

The District has back-up power generators at the CSWA Local Facilities Pump Station, Well 7B, and at the Well 5, 6 and 10, Pump Station at the Water Treatment Plant.

6.8.1 Pumping Recommendations

Additional back-up power has been recommended for the pumps in wells 1 and 9, and wells 3 and 8 to increase the reliability of those sources. This recommendation has been identified in the CIP, Project #C-2.

6.9 RECENTLY COMPLETED PROJECTS

The following projects represent significant water system improvements that have been completed since the last Comprehensive Water System Plan.

- Well No. 7B
- Echo Lake Reservoir
- SR-9 Corridor Improvements
- SCADA System Upgrade

6.10 PROPOSED IMPROVEMENTS

Overall, the system is in good working order with no glaring deficiencies. The District has a lot of small mains throughout the system ranging from 2-Inch to 6-Inch main pipe. In some areas, the District provides lower fire flow but typically meets the 500 gpm requirement. These lower flow areas are in the north end of the 575 zone and the several dead end mains that have hydrants at the end.

Proposed water system improvements are outlined in Section 7 and the Capital Improvements Plan detailed in Table 7-1. Additional background and information on key projects are provided in the following paragraphs. Section 7 provides the Complete CIP and Section 9 of this Plan provides the Financial Analysis.

Project C-2 – Onsite Permanent Back Up Power

As mentioned above in section 6.7.1, on site permanent back up power generators are recommended at each of the District main sources. With the growing uncertainty in weather and hazard events, it is critical to maintain a reliable system. Also, as part of the analysis of the District's storage system, a reduction in Standby Storage was applied due to these generators being installed. Currently, most of the District wells have hook ups for a portable generator. This project includes the installation of back-up generators to operate wells 1 and 9, and wells 3 and 8 during power outages.

Project C-12 – Lowell Larimer Road AC Main Replacement and Upsize

From the previous Plan, project number 2 replaced approximately 4,000 linear feet of AC main in inaccessible easements along Lowell Larimer Road. The water supply in Lowell Larimer still has significant segments with 6 Inch AC main pipe along the corridor that contributes to low fire flow and poor supply. The project consists of approximately 11,000 linear feet of 6 Inch AC main replacement with 8- or 12-Inch Ductile Iron water main.

Project C-8 and C15 – Broadway Ave Main Supply Project - Replacement and Upsize

The water main in Broadway Avenue is predominantly a 6 Inch AC main that has been upsized in pieces. It is a significant backbone to the system in conveying water to the 575 Zone and 280 Zone within the District. The project will provide additional fire flow and supply to areas in the District that are located off of Broadway Avenue. The project consists of approximately 10,000 linear feet of replacement of 6 Inch AC Main with 12 Inch Ductile Iron. Several developer-led projects could assist in pieces of this project through Developer Extensions, however, the District may choose to build some of this as well.

Project C-10 - Lee Forest Storage Reservoir

The previous District Water System Plan included a new reservoir at the Lee Forest reservoir site to provide additional storage capacity for the 640, W 500, S 500, and 382 Pressure Zones. The proposed size of the additional reservoir was approximately 1.9 MG. For this Plan, calculations have confirmed these values. According to the storage calculations shown in Table 6-7 approximately 1,889,714 gallons of additional storage will be needed in 2040 within the Untreated South Service Area of the District. This amount is required in order for the District to maintain a policy of not mixing treated water with untreated water. The District intends to retrofit the existing reservoir and construct the additional 1.9 MG reservoir on site to maintain a redundancy in storage for operational efficiencies. The equation used to calculate the standby storage volume of this reservoir was DOH Equation 7-2 and used the single source version of considering that currently the District does not have onsite backup power generation at Wells 1, 9, 3, and 8. Also, getting flow from the Echo Lake reservoir throughout the Untreated South Service Area is difficult without upsizing some pipes. A capital improvement project C-6, 640 Zone East Water Main, includes a transmission main that goes east to west in the 640 zone to increase reliability. If onsite power generation and the transmission main (project C-6) are constructed, the Standby Storage volume calculation could be reduced significantly. Prior to

constructing the Lee Forest Reservoir, additional analysis will be performed to confirm the required sizing.

TABLE 6-7: PROPOSED LEE FOREST RESERVOIR

Zones Served	Total ERUs (2040)	Equalizing Storage (gal)	Standby Storage (gal)	Fire Suppression Storage (gal)	Dead Storage (gal)	Sum of ES, SB, FSS	Total Additional Storage Required (DS+ES+SB+FSS) (gal)
640, W 500, S 500, & 382	4,476	None	2,349,715	540,000	None	2,889,715	**1,889,714**[1]

Notes:
1 – 1,000,000 gallons of storage already exists within the existing Lee Forest reservoir. The additional reservoir would supplement the existing facility.

CHAPTER 7

CAPITAL IMPROVEMENT PLAN

7.1 INTRODUCTION

This section summarizes the initiated, necessary, and optional water system improvements for the ten-year capital improvement period. Each improvement includes a project summary which discusses the project status, location, purpose, total cost, cost schedule, and project description. Revenue requirements associated with the CIP are put forth in Section 9 – Financial Analysis.

7.2 PROJECT RECOMMENDATIONS

The projects recommended in Table 7-2 are the result and summary of the analysis and recommendations detailed in Section 6 (Water System Analysis). Each project, or project area, is shown on Figure 7-1 - Water System Plan Map.

7.3 COST ESTIMATES

The cost estimates outlined herein are based on industry standards, engineering experience and documented costs of similar recent construction work. Other factors affecting cost estimates include the complexity of the project and the known and unknown constraints which may be associated with the construction. Estimated improvement costs include construction costs, tax, project engineering, permitting, construction management, legal and administrative services (35%) and a contingency factor (varied between 25% and 40% depending on the project size and estimated scope). It is important to note that District staff time is not included and is assumed to be covered in other areas of the District budget. The projects outlined have been identified in conceptual terms and it is important to note that further analysis and actual design of the improvements could significantly impact the cost of the project from the given estimate. Prior to the initiation of the projects outlined in the CIP, specific design criteria should be reviewed, and the cost estimates should be updated to reflect current conditions.

Upon developing costs based on the documented cost, the lineal foot costs of water main construction were compared to the known total project costs for water and price lists from other agencies.

Obtaining other agencies planning costs per foot and considering the type of water main replacements in the future, a planning level cost estimate of 8” water main replacement is determined. With the baseline set, the increasing cost estimates for increased diameter are shown below in Table 7-1. The developed costs are as follows:

Table 7-1: Cost Per Linear Foot	
Replacement Diameter	**Cost Per Linear Foot**
8”	$375.00
12”	$470.00
16”	$570.00
18”	$620.00
24”	$800.00

Based on the project comparable and the year of bidding, these costs are based on 2020 dollars.

Some projects included in the Capital Improvement Plan are carried forward from the previously approved Water System Plan. The most recent Water System Plan was adopted in 2010 with an amendment in 2014 and an extension in 2017. The costs in the 2014 Amendment Plan are based on December 2012 construction values. The projects carried over are not re-estimated with the generic costs per linear foot but extrapolated to a number based on the Engineering New Record (ENR) construction cost index. The costs are changed based on the values and factor below.

ENR Construction Costs Index (Seattle Specific)

- December - 2012 9,412
- December - 2020 12,840
- Factor 2010 – 2020 1.364

7.4 PROJECT SCHEDULING AND PRIORITIZATION

Scheduling of capital improvement projects is paramount to budget development and fiscal solvency. Recommended project scheduling has been developed for the projects included in the Capital Improvement Plan. The projects have been prioritized according to the needs determined by a combination of engineering analysis performed in this planning process, review of the aging infrastructure within the District’s system, water quality improvements to improve public health, the transportation planning schedules for Snohomish County, the Washington State Department of Transportation, and information provided by District staff. Although a detailed ten-year improvement schedule has been developed, scheduled projects identified beyond 2031 are more generally defined.

It is recommended that this CIP be reviewed annually to confirm the actual construction program for the year and coordinated with County, State, and Federal infrastructure projects as identified in each of their respective CIP Project Lists that are updated and reprioritized annually. Projects coordinated with neighboring jurisdictions commonly reduce overall costs of capital improvements. Project priorities should be modified as required to accommodate more current information, key community issues, and available funding. As mentioned previously in

this Section, the magnitude of several of the rehabilitation projects identified in the CIP will be determined from additional monitoring and analysis. Although this Plan is required to be updated every ten years, it is important that the District staff review project priorities as additional studies and analyses are performed and that the CIP be adjusted accordingly.

7.5 FIRE FLOW IMPROVEMENTS

The fire flow improvements shown on Figure 7-1 and referenced in Table 7-2 are to provide adequate flow to meet fire flow requirements within the District's retail water service area. These improvements should be incorporated into future land development activities along property frontage or within new developments and are not considered as capital projects that will require funding from the District. While the plan shows a specific alignment for these improvements, actual alignments may be adjusted to local topography, site development activity, land use, or other factors as determined by the District.

7.6 FUTURE WATER MAINS AND FACILITIES

The future water mains as shown on in on Figure 7-1 are conceptually placed facilities that would be considered when growth occurs in the area. These facilities would provide adequate, reliable flow into the unserved area and provide a normal looped distribution system. These projects would be growth driven and therefore not considered as capital projects with anticipation for funding. These improvements should be incorporated into future land development activities along property frontage or within new developments. While the plan shows a straight-line alignment for these improvements, actual alignments may be adjusted to local topography, site development activity, land use, or other factors as determined by the District. No description or projects identification is provided as they are conceptual.

7.7 ANNUAL PROGRAMS

The District has added annual programs to their Capital Improvement Plan and these annual programs are included in Table 7-2. This enables the District to have a dedicated funding program for necessary projects that reduce operations and maintenance costs, emergency costs, along with providing the funding for ongoing regulatory requirements. For example, the District has allocated $500,000 annually to the AC Main Replacement Program. AC Pipe within the District has a higher risk of failure, is aging, and is necessary for replacement. Annual program projects will be coordinated with other agency projects to reduce costs where applicable.

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Table 7-2: Water System Capital Improvement Plan

ID #	Project Title and Description	Pipe Length (LF)	Diameter (in)	Estimated Total Cost*	Schedule Year
System Configuration, Facilities, Operations and Planning Improvements					
C-1	60th Ave Main Replacement Replace existing aging 2" main. Includes 350 LF 4" & 6" main	350	4, 6	$160,000	2021
C-2	Back-up Generators This project includes the installation of back-up generators to operate wells 1 and 9, and wells 3 and 8, and during power outages			$270,000	2022
C-3	Storage Tank Seismic Retrofit Improvements The Clearview Standpipe, Lee Forest Reservoir, and Vine Street Reservoir are aging and in need of improvements to better protect them from seismic events. Cost estimate includes structural analysis, installation of flexible connections, and the cost of structural improvements for all three facilities			$625,000	2022
C-4	Water Treatment Study The existing treatment plant is aging and the District intends to evaluate upgrades and potential alternatives to improve water quality throughout the District by extending treated water to Southern part of the District.			$50,000	2023
C-5	Water Treatment Plant Upgrades This CIP project entails, making the recommended modifications and upgrades to the aging Treatment Plant determined through the Treatment Plant Study.			2,200,000	2024
C-6	640 Zone East Water Main Transmission main to be installed in order to provide Echo Lake area with multiple sources for increased reliability. Includes 11,000 LF of 12" main from western 640 Zone to eastern 640 Zone	11,000	12	$5,350,000	2023-2025
C-7	Echo Lake Booster Pump Station Provide backup water source to the Echo Lake Area			$500,000	2024
C-8	Broadway Ave Main Supply Project Replacement – Phase 1 Install/replace water main along Broadway Avenue corridor from approximately 164th St SE on the North to 176th St SE on the South. Includes 3,700 LF of 12" main	3,700	12	$1,740,000	2025
C-9	640 Zone Pump at Water Treatment Plant Allow transfer of treated water to 640 Zone for emergency purposes			$164,000	2026
C-10	Reservoir at Lee Forest Improvements to the existing standpipe to address seismic and structural deficiencies and the construction of an additional storage 1.9 million gallon reservoir to accommodate standby and fire suppression requirements in the 640 zone			$3,000,000	2027
C-11	180th St SE and 51st Ave SE Improvements Adjust water system as necessary in coordination with Snohomish County intersection improvements			$75,000	2028
C-12	Lowell Larimer Water Supply Project Replace old, aging AC main within the Lowell-Larimer corridor. Includes 10,000 LF of 8" & 12" main	11,000	12, 8	$4,885,000	2029-2031
C-13	Water System Plan Update			$180,000	2032
C-14	79th Ave SE Extension & Lee Forest PRV Improvements Enable transfer of 756 Zone (CWSA) water to 640 Zone. Includes 1750 LF of 12" main in 79th Ave SE and SE 184th St	1,750	12	$800,000	2033
C-15	Broadway Ave Main Supply Project Replacement – Phase 2 Install/replace the existing old and aging water main along Broadway Avenue corridor from approximately 145th St SE on the North to 164th St SE on the South. Includes 6,300 LF of 12" main	6,300	12	$2,960,000	2034

ID #	Project Title and Description	Pipe Length (LF)	Diameter (in)	Estimated Total Cost*	Schedule Year
C-16	State Route 9 West Side Improvements Install 12" water main on the west side of State Route 9 between 184th St SE on the South and 164th St SE on the North. Project will include a crossing connection on 164th St SE and SR9 going from the west to the east side of the intersection.	7,400	12	$3,478,000	2025-2035
C-17	HWY 524 Interchange Improvements and Widening WSDOT is proposing new roundabouts and new on and off ramps. This requires elevating SR 522 at SR 524/Maltby Road and utility improvements and replacements. Upon a finalized alternative by WSDOT the District will provide more accurate details and designs of proposed watermains and appurtenances.	3,000	12	$1,400,000	2025-2035
C-18	SR 9 Highway Widening Improvements WSDOT is widening the highway from 180th St SE to Lowell Larimer Road. Watermain improvements (upsizing and replacements) will occur where necessary.	17,000	12	$8,000,000	2025-2035
C-19	Property Acquisition for District expansion			$1,000,000	2026-2028
C-20	GIS Updates & Asset Management System			$30,000	2022-2023
C-21	CWSA Storage Expansion Clearview Water Supply Agency is currently undertaking a long-range facilities plan to determine the needs for the next several decades. Important outcomes of the plan will include pumping and storage analysis. These are likely to result in recommended capital improvements for pumping and storage projects to occur within the CWSA boundaries and provide recommendations on timing. Critical inputs to the plan will include the needs of the District. The District will be required to financially support the recommended projects and will set aside funding through this Capital Project to accommodate the anticipated projects.			6,500,000	2025-2030
Sub-Total System, Facilities, Operations and Planning Improvements				***$39,367,000***	
Annual Programs (Ongoing maintenance, replacement, and updates)					
P-1	AC Water Main Replacement Program Replace existing old and aging AC water mains throughout various portions of the District to reduce added operation and maintenance costs associated with water main breaks and to provide increased system reliability.			$5,000,000	2021-2030 ($500,000 annually)
P-2	Undersized Main Replacement Program Replace existing small, aging pipe within the District that is less than 4 inches. These undersized pipe will be replaced with 4 -12 inch main to increase system reliability, hydraulic capacity and provide better fire flow in the system.			$3,000,000	2021-2030 ($300,000 annually)
P-3	Misc. Snohomish County and WSDOT Road/Culvert Improvements Coordinate with miscellaneous State/County improvement projects.			$2,500,000	2021-2030 ($250,000 annually)
P-4	CWSA System Improvements			$1,000,000	2021-2030 ($100,000 Annually)
P-5	PRV Improvements Program New/Replace/upgrade aging PRV assemblies throughout various portions of the District.			$1,000,000	2021-2030 ($100,000 Annually)
P-6	Well Head Protection Implementation Program Implementation of the updated Wellhead Protection Program will help ensure the Single Source Aquifer is protected and preserved for long term use by the District			$300,000	($30,000 annually)
P-7	Risk and Resiliency Assessments and Emergency Response Planning America's Water Infrastructure Act of 2018 requires Risk and Resiliency Assessments and Emergency Response Plans be completed every five years.			$300,000	2026, 2031, 2036

ID #	Project Title and Description	Pipe Length (LF)	Diameter (in)	Estimated Total Cost*	Schedule Year
P-8	Financial Plan, Connection Charges, Rates			$150,000	($25,000 Every two years)
Annual Programs (Ongoing maintenance, replacement, and updates)					
Fire Flow Improvements					
F-1	83rd Ave. and 68th St Improvements Replace existing 6" water main on 83rd Ave. from 68th St. and continuing south to the intersection of 83rd Ave. and 71st St. and then continuing west to the end of cul-de-sac of 71st Pl.	2,100	8	$720,000	
F-2	68th St. and 61st Ave Improvements Replace the existing 4" water main just south of the intersection of 68th St. and 61st Ave. and continuing south to the 61st. Ave. cul-de-sac	1,300	8	$450,000	
F-3	212th St to 129th Ave Looping Improvements Loop the water main with 12" water main from approx. 12433 212th St. and continuing east for approx. 1,700 LF to 129th Ave. Project also includes replacing 8" water main continuing southerly along 129th Ave. to approx. 21409 129th Ave	1700 650	12 8	$860,000	
F-4	Broadway Avenue Improvements Loop the water main from 20315 Broadway Ave. and continuing east to connect to the existing 12” water main at 20312 Broadway Ave.	250	12	$100,000	
F-5	87th Ave and 216th St. Looping Improvements Loop the water main from 21704 87th Ave. and continuing north to 8415 216th St.	500	12	$205,000	
F-6	Maltby Road Improvements Phase I Replace the existing 6" water main from 8602 Maltby Rd. and continuing west to 8330 Maltby Rd.	1,400	12	$580,000	
F-7	216th St. and 219th St. Looping Improvements Loop the water main from 8315 216th St. to 8321 219th St.	1,600	12	$650,000	
F-8	99th Dr. and 231st Pl. Looping Improvements Loop the water main from 99th Dr. and continuing south and then east to connect to the existing water main at 231st Pl.	1,400	8	$480,000	
F-9	224th St. and Villa Dr. Looping Improvements Loop the water main from the intersection of 224th St. and Villa Dr. and continuing west and then south to connect to the existing water main at 99th Dr.	2,500 1 PRV Station	8	$920,000	
F-10	184th St to 180th St along SR 9 Looping Improvements Loop the water main from the intersection of SR 9 and 184th St. and continuing east and then north to connect to the existing water main at 8010 180th St.	2,100	12	$860,000	
F-11	Maltby Road Improvements Phase II Loop the water main from 8813 Maltby Rd. to 8724 Maltby Rd.	200	12	$80,000	
F-12	SR 9 at 164th St Improvements Replace the existing 8" water main from the intersection of 164th St. and SR 9 and continuing south to approx. 16523 SR 9.	600	12	$250,000	
F-13	Bostian Road and 76th Dr. Improvements Replace the existing 8" water main from the intersection of Bostian Rd and 76th Dr. and continuing north to the 76th Dr. cul-de-sac.	800	16	$380,000	

ID #	Project Title and Description	Pipe Length (LF)	Diameter (in)	Estimated Total Cost*	Schedule Year
F-14	Lost Lake Rd. and 148th Ave Looping Improvements Loop the water main from the end of Lost Lake Rd. and continuing south to the intersection of 148th Ave. and 128th St.	1,200	8	$410,000	
	Sub-Total Fire Flow Improvements	***24,800***		***$6,945,000***	
ID	**Undersized Main Replacement Program Location**	**Length (ft)**	**New Diameter**	**Estimated Total Cost**	**Scheduled Year**
SM-1	218th & 57th Ave SE	615	8"	(Included in CIP #C-1)	
SM-2	218th & 60th Ave SE	404	4"	$129,000	
SM-3	67th Ave SE & 183rd ST SE	535	4"	$171,000	
SM-4	Broadway & 162nd ST SE	361	8" or 12"	$170,000	
SM-5	Broadway & 132nd Ave SE	450	8"	$169,000	
SM-6	111th & Springhetti Rd	477	4"	$153,000	
SM-7	117th & 188th ST SE	694	4"	$222,000	
SM-8	Fales Rd (end) & Elliott Rd	586	TBD	$220,000	
SM-9	180th ST SE & Waverly	594	8"	$223,000	
SM-10	78th ST SE & 79th Ave SE	616	TBD	$231,000	
SM-11	79th Ave SE & 74th ST SE	291	TBD	$109,000	
SM-12	81st Ave SE & 71st PL SE	1,223	TBD	$459,000	
SM-13	72nd ST SE & 87th Ave SE	266	TBD	$100,000	
SM-14	160th ST SE & 95th Ave SE	367	TBD	$138,000	
SM-15	160th ST SE & 91st ST SE	454	TBD	$170,000	
SM-16	Lorimor Ex. 176th ST SE & 87th Ave SE	380	2"	$95,000	
SM-17	188th ST SE & 87th Ave SE	449	8" or 12"	$211,000	
SM-18	Broadway & 200th ST SE	650	12 DI	$306,000	
SM-19	Matlby RD (212) & 94th	438	4"	$140,000	
SM-20	95th & Woods PL	305	8" or 12"	$143,000	
SM-21	95th Ave SE & 210th ST SE	917	8" Loop	$344,000	
SM-22	221st ST SE & Villa Dr	179	4"	$57,000	
SM-23	216th ST SE & 102nd Ave SE	622	TBD	$233,000	
SM-24	83rd Ave SE & 164th ST SE	1,701	12"	$799,000	
SM-25	18430 & 109th Ave SE	932	8"	$350,000	
SM-26	10530 (107th Ave SE) & 180th ST SE	409	8" & 4"	$153,000	
SM-27	Robinson RD to 164th	410	8	$154,000	
	Sub-Total Undersized Main Improvements			***$5,649,000***	
Note – The above costs are estimates developed in March 2021 for CIP planning and rate review					

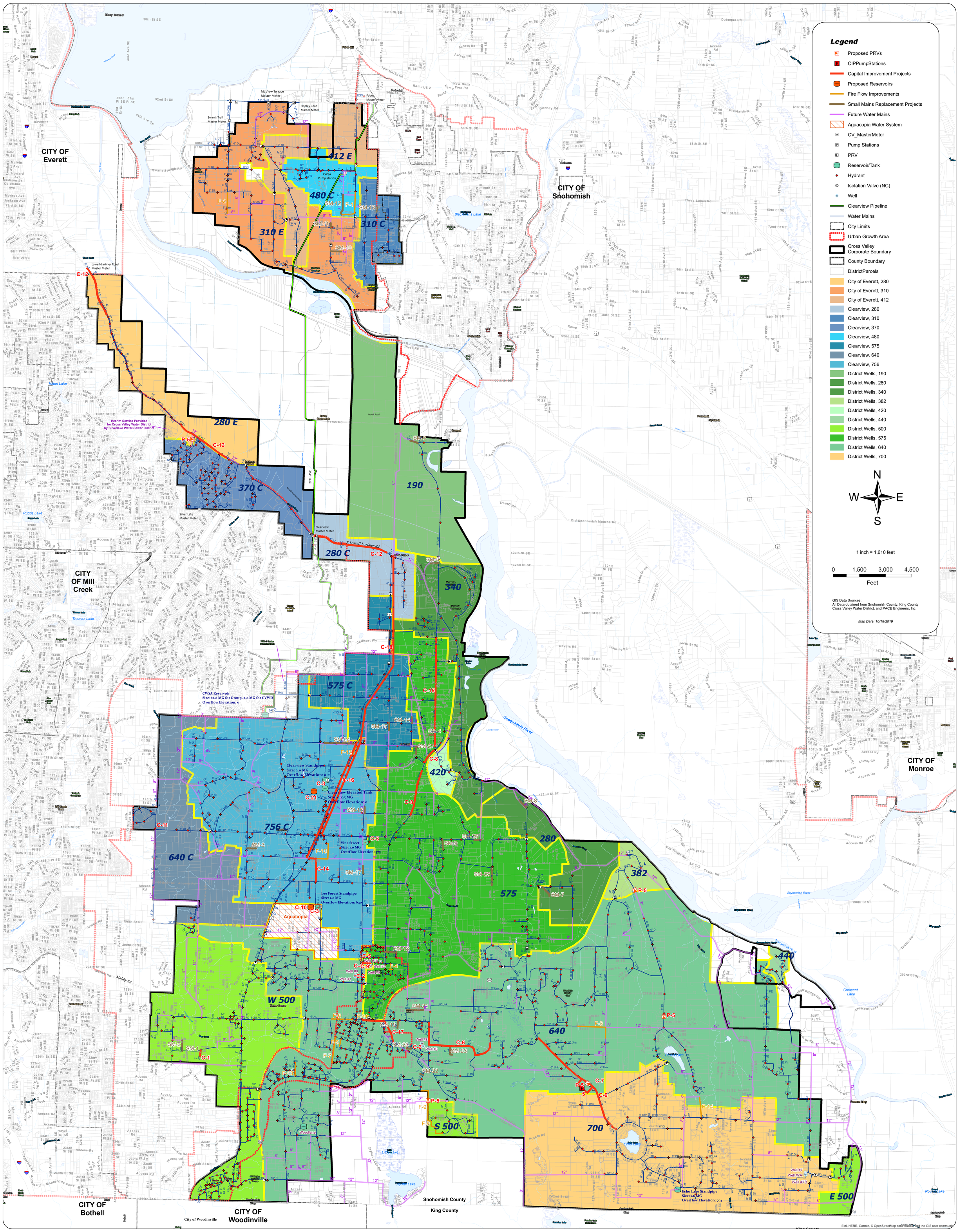

FIGURE 7-1
WATER SYSTEM PLAN MAP

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CHAPTER 8

OPERATIONS AND MAINTENANCE

8.1 INTRODUCTION

The purpose of an operations section is to outline the overall operation of the District's water system and to provide an overview of the District's day-to-day operation, routine maintenance of the system, and emergency operating procedures of the District. This section is not intended to detail the specific operation of individual system components since the District relies on the operation and maintenance manual of each system component for such detailed information. Similarly, the District has developed a detailed emergency plan that provides specific information on the operation of each system component in the event of an emergency and identifies specific procedures for District operation under such conditions.

8.2 GENERAL DISTRICT INFORMATION

District Address and Phone Number:	Cross Valley Water District 8802 180th Street SE Snohomish, Washington 98296-4804 Telephone: (360) 668-6766 Fax: (360) 668-9634 cvwd@crossvalleywater.net
District Contact Person:	Mike Johnson, General Manager
State Dept of Health ID Number:	16270 F
State Department of Health Contacts:	Jolyn Leslie, P.E., Regional Engineer Washington State Department of Health Telephone: (253) 395-6762 (Direct) Telephone: (253) 395-6750 (General) Fax: (253) 395-6760

8.3 DISTRICT ORGANIZATION AND MANAGEMENT

Cross Valley Water District is authorized under RCW Title 57 to operate and maintain a public water utility system. The District operates under a Commissioner system wherein three Commissioners are elected by the citizens of the District. By resolutions, the Board of Commissioners makes and establishes policies that govern the operation of the District. The District holds its regular public meetings on the first and third Tuesday of each month.

The primary responsibilities of key District personnel are summarized on the Organization Chart shown in Figure 8-1. Engineering and legal counsel for the District is provided by outside consultants approved by the Board of Commissioners. These consultants report to and coordinate with the General Manager and/or other staff as directed. Financial consultants are utilized as needed for bond counsel and accounting requirements.

In June 2015, the District began to use Code Publishing to house all resolutions, standards, codes and other administrative documents. All documents and information can be retrieved from https://www.codepublishing.com/WA/CrossValleyWaterDistrict/.

8.4 PERSONNEL CERTIFICATION

The District encourages state certification of operations personnel and sponsors attendance of personnel at appropriate safety and technical seminars. Table 8-1 provides a listing of current certifications held by District staff members. The District staff rotates "on-call duty" to ensure that an appropriately certified and qualified employee is on-call at all times.

Table 8-1: Employee Certifications

Employee	Job Title	Certification Level
Mike Johnson	General Manager	Water Distribution Manager 4
Dave Calvo	Operations and Maintenance Manager	Water Distribution Manager 3, Water Distribution Specialist, Cross Connection Control Specialist
Amanda Worzella	Lead Utility Service Worker	Water Distribution Manager 1, Water Distribution Specialist, Cross Connection Control Specialist
Justin Jones	Water Quality Utility Service Worker	Water Distribution Manager 1, Water Treatment Plant Operator 1
Ryan Marshall	Utility Service Worker 2	Water Distribution Manager 1. Water Treatment Plant Operator 2, Cross Connection Control Specialist

8.5 SYSTEM OPERATIONS AND CONTROL

The District's telemetry system was recently upgraded and further upgrades of the telemetry system are proposed. The telemetry system is a computerized monitoring system, which allows for remote control of the District's supply points and allows for control of pump stations and reservoirs. Functions monitored by the telemetry system include pump operation, pressure readings (suction and discharge), flow measurements, intrusions, flooding, low fuel levels, and power and/or communication failure. The District intends to further upgrade components of the existing telemetry system, as further described in Section 7 of this Plan.

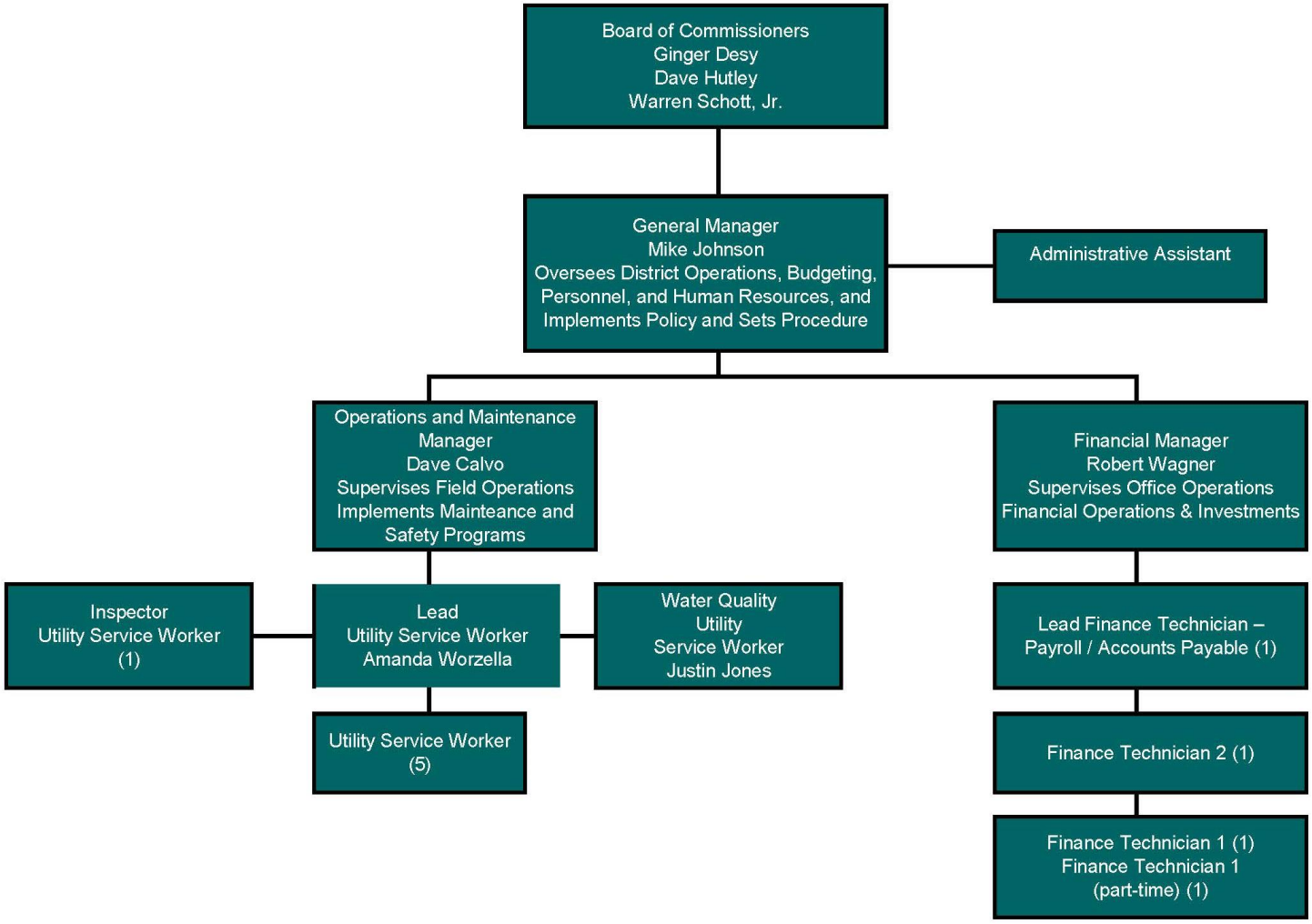

Figure 8-1: Organization Chart

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8.6 ROUTINE OPERATION AND MAINTENANCE

Cross Valley maintains a detailed routine operation and maintenance program in order to ensure proper operation of all mechanical facilities and maximize the efficiency and life of the system. Routine operations involve the activities required to ensure that facilities are functioning efficiently and meeting quality and pressure requirements, as well as water system demands. These activities include making rounds to visually check system facilities, monitoring of flow and reservoir recording devices on a regular basis and respond to customer inquiries. Additionally, preventive maintenance such as regularly servicing pumps and motors, exercising valves and hydrants, cleaning and painting reservoirs and flushing pipelines is required for overall operation and maintenance of the system. The primary components of the District's overall operations and maintenance program are described below. Routine and preventive maintenance is accomplished through detailed record-keeping on forms and with maintenance management computer software.

8.6.1 Treatment Facility

The Water Treatment Facility is visited daily to check security, monitor source quality and quantity, and verify site conditions. In addition to daily monitoring of water quality as described in paragraph 8.7 of this section, monthly maintenance and daily monitoring of the storage tanks are accomplished as detailed in the treatment plant operations and maintenance manual.

8.6.2 Metering Points

The District's source metering points from the CWSA and Everett systems are checked weekly to verify security and proper operation of facilities. Repairs and/or calibrations are completed on an as-needed basis.

8.6.3 Storage Reservoirs

Storage reservoirs and standpipes are visited daily to verify security and check overall site conditions. The District's reservoirs are routinely inspected. Inspection of the integrity of reservoir coatings is accomplished as part of the reservoir inspection process and reservoirs are spot painted as required to prevent rusting or degradation of coating systems. Complete recoating of reservoirs is scheduled based on the results of these periodic cleanings and inspections.

8.6.4 Pump Stations

Pump Stations are checked daily to verify site conditions and security and the proper operation of all equipment. Pump data is recorded by the operational telemetry system and monitored to identify any irregularities in the system. Pumps are serviced regularly as determined by hours of service.

8.6.5 Valves and Hydrants

Cross Valley has a valve maintenance schedule, which includes painting and numbering each valve for reference purposes and the annual exercising of all valves in the system. Hydrants are exercised and tested as appropriate by the District. Pressure regulating valves are inspected biannually and calibrated as required. Pilot controls on all pressure regulating facilities are rebuilt yearly or as required. Pressure regulating valve settings are identified in Section 3 of this Plan.

8.6.6 Distribution System

Dead-end mains are flushed at least annually to provide necessary cleaning of potential water quality problem areas. Additionally, water mains are flushed as necessitated by customer complaints or pipeline repairs or other operations that may result in water quality degradation. All water main flushing is recorded.

8.6.7 Sampling Stations

Sampling is a requirement and a very important part in assuring the water quality for the District customers. Historically, the District used hose bibs from customers buildings as sample stations. This presented a challenge if the hose bibs were winterized or if the homes had aerators.

The District takes 20 samples a month per the District's sampling plan and DOH requirements. The District in total has forty sample sites. This allows the District to alternate sample sites every other month. In 2021, the District installed 40 Kupferle MainGuard #94WM sampling stations at various locations throughout the District. This allows for the District to control the sample sites and ensure everything is clean while sampling.

8.7 WATER QUALITY MONITORING

Cross Valley obtains its water supply from a combination of metered connections to CWSA Supply, City of Everett, from the wells it operates and on an emergency basis from Silver Lake Water and Sewer District. Therefore, the District shares water quality monitoring responsibilities with the City of Everett, with each jurisdiction responsible for monitoring of its own source. Daily monitoring of the District's Water Treatment Facility is accomplished in accordance with the State Department of Health prescribed form. Table 8-2 presents a summary of testing requirements and the District's water quality monitoring schedule.

A copy of the District's most recent Consumer Confidence Report and other Water Quality Monitoring information is provided in Appendix I. Also included in Appendix I is a copy of the City of Everett's Water Quality Report. Cross Valley works with Everett to ensure proper lead and copper testing is performed within the District's service area.

TABLE 8-2: WATER QUALITY MONITORING SCHEDULE

SAMPLE TYPE	DESCRIPTION	LAST TEST	NEXT TEST	STATUS	SAMPLE LOCATION
Asbestos	One sample every nine years.	07/02/2013	July 2022	Current	From one of the sampling sites in an area that has asbestos cement pipe
Chlorine Residual	Maintain monthly records of chlorine residuals and send results to DOH by 10th of each month	Daily	Daily	Current	Distribution System and at Water Treatment Facility
Coliform (Distribution System)	Minimum 20 samples per month of Everett Supply.	Monthly	Monthly	Current	Representative points
Dioxin, Endothall, Diquant & Glyphisphate	State granted waiver	N/A	TBD		All sources
EDB and other soil fumigants	State waiver through December 2022	N/A	TBD		All sources
Herbicides, General Pesticides & Insecticides	State waiver through December 2022	N/A	TBD		All sources
Lead & Copper	One set of 30 samples from target sites (customer taps) throughout system	Sept 2021	Sept 2024	Current	Interior tap in customer home
Inorganic Contaminants	State granted waiver	04/09/2019	April 2028	Current	From representative points after treatment prior to distribution system (well site locations)

SAMPLE TYPE	DESCRIPTION	LAST TEST	NEXT TEST	STATUS	SAMPLE LOCATION
Nitrates	One sample annually when Complete Inorganic and Physical not tested	04/20/2021	April 2022	Current	Sample taps at Well locations and Treatment Facility
Radionuclides	Gross Alpha, Radium 228; One sample every six years	June 2021	June 2027	Current	Sample taps at Well locations and Treatment Facility
Surface Water Treatment Rule[1]	Send reports to DOH by 10th of following month	Daily	Daily when Operating	Current	Everett Water Treatment Facility
Total Trihalomethanes & HAA5 (Purchased Water)	One sample quarterly from unblended area of distribution system	Quarterly	Quarterly	Current	District collects from locations identified in the Disinfection Byproducts (DBP) monitoring plan.
Total Trihalomethanes & HAA5	Once per quarter from Water Treatment Facility	Quarterly	Quarterly	Current	District collects from locations identified in the Disinfection Byproducts (DBP) monitoring plan. 1 sample from Water Treatment Facility, representative of longest detention
Volatile Organic Contaminants	Waiver for 6 years	06/13/2018	June 2024	Current	Sample tap at Treatment Plant

Notes: 1 – The City of Everett and the CWSA performs water quality monitoring regionally to cover requirements established under the Surface Water Treatment Rule.

8.8 COLIFORM MONITORING PLAN

Additional information on the District's coliform monitoring program is identified in the Coliform Monitoring Plan that is on file at the District office and in Appendix I of this Plan. This Plan was first completed in 2005 and last modified in July 2019. This document includes specific testing location sites as well as information regarding the public notification process. Coordination with the City of Everett and the Clearview Group ensures that coliform monitoring in accomplished for all regional supplies in addition to the District's independent sources.

8.9 CROSS-CONNECTION CONTROL PROGRAM

The District's Cross-Connection Control Program (CCCP) was first established by District Resolution 1991-9-6, a copy of which is included in the Appendices to this Plan. The cross connection control program is in compliance with WAC 246-290-490 and addresses the following nine key elements required for Cross Connection Control:

Element 1: Establish Legal Authority

On August 20. 2019, Cross Valley Water District adopted Resolution No. 2019-8-3 that re-establishes legal authority to implement a cross connection control program. This resolution contains policies and enforcement to ensure that consumers comply. A copy of this resolution is located in the Appendices.

Element 2: Procedures/Schedules for Hazard Evaluations

The District evaluates new and existing service connections to make sure the connection does not pose a danger to the distribution system. The District requires that premise isolation with a Reduced-Pressure Backflow assembly (RPBA) is installed on all commercial connections and high hazard connections in accordance with WAC 246-290-490 (4)(b)(iii) (Table 9). All new connections are protected at the time of installation. Existing connections are protected when an upgrade in plumbing occurs or when the District requires a re-evaluation of the devices. Resolution No. 2019-8-3 states that "The RPBA must be tested upon installation and then annually thereafter." The owner provides the annual reports required by the CCCP to the Cross Connection Specialist (CCS). Re-evaluations of service schedules and procedures for notification to the consumer and the local administrative agency are located in the approved CCCP on file with DOH.

Element 3: Procedures/Schedules to Eliminate/Control Cross Connections

The resolution and the CCCP require that approved assemblies be installed to protect the public water supply. At a minimum, annual testing of the backflow devices at the owner's expense is required in accordance with the District's CCCP.

Element 4: Provide Qualified Personnel

Cross Valley maintains fulltime certified Cross Connection Specialists, as indicated previously in Table 8-1.

Element 5: Procedures/Schedules for Backflow Preventer Inspection and Testing
At a minimum, the District requires annual testing of the backflow devices at the owner's expense in accordance with the District's CCCP.

Element 6: Assembly Testing Quality Assurance/Quality Control (QA/QC)
The District ensures that results from backflow prevention assembly inspections and tests are documented and reported in an acceptable manner. The District's data base monitors tester certifications and test kit calibrations and requires test reports to be filled out completely and to be submitted in a timely manner.

Element 7: Backflow Incident Response Plan
The District has procedures for responding to a backflow incident and implementing enforcement (when appropriate) in accordance with Resolution 2019-8-3, the CCCP, and WAC 246-290-490.

Element 8: Public Education
The District provides cross connection educational material for customers that include pamphlets, periodic bill inserts, and the District's website. This educational material reports on the Cross-Connection control program, its purpose and rationale.

Element 9: Establish/Maintain Cross-Connection Control Records
The District, through their Cross-Connection Specialist (CCS), has developed and maintained cross connection control records in accordance with WAC 246-290-490(3)(j) and (8). The District maintains a data base that tracks all relevant information including a master list of service connections, inventory information, backflow incidents and annual summary reports.

Element 10: Meet Additional Reclaimed Water Requirements
None of the Cross Valley customers currently receive reclaimed water service. The District has entered into an agreement with King County as part of the mitigation related to construction of the Brightwater Wastewater Treatment Plant within the Cross Valley service area that established the District as the purveyor of reclaimed water within the service area. The District will work directly with King County to establish such service if it is requested and appropriate. Cross connection control facilities will be required and enforced by the District as part of its regular Cross Connection Control program.

8.10 DISINFECTION BYPRODUCTS MONITORING PLAN

The District's Stage 2 Disinfection Byproducts Monitoring Plan has been approved under the guidelines established under the Disinfection Byproducts Rule (DBPR). The District began the Stage 2 DBPR monitoring in 2012. Stage 1 DBPR monitoring is on-going.

8.11 RISK AND RESILIENCY ASSESSMENT

Cross Valley has prepared a Risk and Resiliency Assessment in accordance with the requirements of the America's Water Infrastructure Act (AWIA) that was signed into law in October 2018 and required the completion of the assessment by June 30, 2021, which was accomplished. The results of this Risk and Resiliency Assessment were evaluated and

considered in subsequent CIPs. In addition, the below referenced Emergency Response Plan was developed with the benefit of the vulnerability assessment.

As a requirement of the AWIA, an update to the Risk and Resiliency Assessment and Emergency Response Plan is required every 5 years.

8.12 EMERGENCY RESPONSE

8.12.1 Emergency Call-up List

The District's Emergency Call-up List for use in emergency conditions is located in the Emergency Response Plan and given to key or “on-call” personnel. As indicated, primary contacts for various agencies, neighboring jurisdictions, media and outside assistance are identified to give the user an easy reference in the event of an emergency situation.

8.12.2 Emergency Response Plan

Cross Valley Water District has a detailed emergency response plan that outlines procedures to be followed in the event of an emergency that affects the District's water and/or sanitary sewer systems. The Emergency Response Plan has been updated to comply with the requirements of the AWIA. The Emergency Response Plan is intended to be a "stand alone" document with detailed information and procedures for implementation under adverse conditions. A summary of the contents of the Emergency Response Plan is as follows:

8.12.2.1 Introduction

This section describes the purpose, goals, regulatory requirements, access control protocol and overall organization of the Emergency Response Plan (ERP).

8.12.2.2 General Emergency Planning Information

This section presents Cross Valley’s emergency planning partnerships, general emergency response policies, procedures and documents, and summarizes scenarios from the Risk and Resiliency assessment that are addressed in the ERP.

8.12.2.3 Emergency Response Plan – Core Elements

This section provides specific information about Cross Valley’s water system, identifies alternate water sources, presents emergency response chain-of-command information, and describes Cross Valley’s communication procedures, personnel safety provisions, critical equipment sources, property protection procedures, training programs, and ERP assessment protocol.

8.12.2.4 Decision Process and ERP Activation

Means in which threats may be received into the utility as well as what steps to take in order to activate the emergency response procedures and or the emergency operations center are discussed in this section.

8.12.2.5 Action Plans

This section initiates action in response to an incident from which point specific Action Plans in Appendix D can be utilized. Site specific threats to Cross Valley that have been categorized as high risk in the Risk and Resiliency assessment, natural disasters, and significant events are summarized here.

8.12.2.6 Emergency Plan Approval, Update, Training, and Exercises

This section describes the ERP review and approval process and provides a plan for ERP updates and emergency response training program management.

8.12.2.7 References and Links

This section Provides references and web links to additional emergency planning information for water utilities.

8.12.2.8 Appendices

This section contains specific protocols and plans as well as the action plans that will be used

8.12.3 Treated and Untreated Water Mixing - District Response Protocol

In the event of an emergency or unplanned event in the 640 zone and Lee Forest Reservoir, the District is notified of the potential mixing of surface water and groundwater or chlorinated and non-chlorinated water. The Lee Forest Reservoir and 640 zone is a non-chlorinated or ground water supply. Lee Forest Reservoir is considered full at the reservoir elevation level of 60 feet. The Districts SCADA system is set to alarm employees in the event the reservoir level reaches the elevation of 40 feet. The PRV stations that have the capability to supply the 640 zone and Lee Forest Reservoir will activate only if the reservoir reaches the elevation level of 15 feet. The buffer of 25 feet allows the District staff to respond prior to reaching the elevation of 15 feet. If the PRVs are activated staff will flush and sample downstream of the PRVs for CL2 levels until it has been dispersed.

CHAPTER 9
FINANCIAL ANALYSIS

9.1 INTRODUCTION

This chapter summarizes the financial history of the water utility, describes the financial policies, capital funding sources and provides a financing plan for the capital improvements along with the impact on rates and connection charges. This chapter has been prepared by Katy Isaksen & Associates.

9.2 FINANCIAL VIABILITY

Financial viability is the ability for the water system to meet its financial needs to operate, meet debt obligations, repair/replace/improve the system components, and maintain reserves, as necessary. Financial viability is very important to make sure the water utility remains in a position to provide safe and reliable drinking water for years into the future. The District has shown its commitment to financial viability with recent rate studies, established capital reserves to save for planned improvements, annual funding for system replacement, a conservation rate structure to charge customers for water used in an inclining 4-tier rate system (each tier gets more expensive as customers use more water), typically adopting multi-year rate increases, and reducing the distribution system leakage. The District has adopted two-year rates, 2022 and 2023, based on the planned operations and improvements recommended in this draft WSP. Next, the District will be updating connection charges to be sure they are in line with the capital improvement program.

9.3 SUMMARY FINANCIAL HISTORY

Cross Valley provides water service throughout the District and sewer service in a much smaller portion of the District. The water utility is self-supporting and is budgeted and accounted for separately from the sewer utility. The District has a firm policy that the water customers should not subsidize sewer customers. Each year during budget preparation, the District reviews the financial outlook to ensure that water revenue is meeting the necessary water expenditures. Table 9-1 shows the three-year summary financial history of the water utility.

Table 9-1: Water Financial History			
Summary Financial History	**2018**	**2019**	**2020**
Water Revenue			
Water Service Sales	4,559,293	4,805,793	5,044,925
Other Operating Revenue	191,021	279,257	172,201
Facilities Charges (General & Local)	1,082,226	788,479	536,170
Meter Installations	42,245	33,871	21,867
Miscellaneous	9,725	4,953	16,406
Investment Interest	107,183	194,668	125,982
Total Water Revenue	**5,991,693**	**6,107,021**	**5,917,551**
Water Expenditures			
Operating Expense	3,696,810	3,663,619	3,713,888
Existing Debt Service	444,696	213,621	370,433
Capital Improvements	1,931,562	1,453,883	454,027
Total Water Expenditures	**6,073,068**	**5,331,123**	**4,538,348**
Annual Increase/(Use) of Reserves	**(81,375)**	**775,898**	**1,379,203**

Operating revenue has been sufficient to fund the operating expense and debt obligations each year. Total water revenue of approximately $6 million, including facilities charges collected from new development, provides $3.7 million for operating expense, between $200,000-$400,000 for existing debt service, and between $500,000-$1.9 million for capital improvements each year. The result has been an increase in reserves for future improvements after funding capital improvements in 2019-2020, with 2018 very close.

The District has invested in expansion and capital replacement over the years, funded with a combination of rates, connection charges, reserves and borrowing. As the District facilities get older, they require more maintenance and system replacement. Cross Valley has been focusing on increasing maintenance programs to extend the life of the current facilities and has budgeted replacement reserves for regular annual funding to avoid drastic future impacts on rates.

Over the years, Cross Valley has merged several smaller systems, Swans Trail, Mountain View Terrace and Woodlane. These systems were required to be brought up to District standards with the system customers paying for the necessary improvements through monthly surcharges.

The District has three primary sources of supply – District-owned wells, the City of Everett direct supply and the City of Everett supply through the Clearview Water Supply facilities. The growth in supply has come primarily from outside purchases, particularly through the Clearview Supply. Based on Table 2-2, the average 2016-2018 well production (366.78 MG) was 57% and outside purchases (279.47 MG) was 43% of the annual water supply.

Cross Valley owns an interest in the Clearview supply facilities, along with Alderwood and Silver Lake districts. Together they formed the Clearview Water Supply Agency (CWSA) in 2005 to provide for joint management, operation and funding of the facilities. The initial assessment was based on the percentage share of system capacity, and along with water sales funds the annual cost. The CWSA operates on a breakeven basis.

The District acts as its own treasurer and manages its cash investments as one entity. As of December 31, 2020, the unrestricted cash & investments was $19,882,000. Water's share was approximately $15,032,000, as shown in Table 9-2. After a cash flow/emergency reserve of $4,437,000 is set aside, there was $10.6 million available for water capital improvements.

Table 9-2: Water Cash & Investments

Water Balance	Amount	Comments
Cash & Investments Unrestricted	$19,881,631	as of Dec. 31, 2019
Less: Sewer portion	-$4,849,244	
Subtotal Water Balance	$15,032,387	
Less: Cash Flow / Emergency Reserve	-$4,437,000	1-year operations + debt
Total 2020 Water Balance Available	**$10,595,387**	**for capital improvements**

The King County Brightwater treatment plant is within the District's service area and was constructed around 2010.

There are no outstanding water and sewer ULID bonds or assessments.

9.4 OUTSTANDING DEBT

Cross Valley has been successful at using low interest loans from Washington State Public Works Trust Fund (PWTF) program and the Drinking Water State Revolving Fund (DWSRF) loans jointly administered by PWTF and the Department of Health. Although there are no revenue bonds outstanding at this time, the PWTF and DWSRF loans would be junior in lien to future revenue bonds. The existing debt issues are shown in Table 9-3 with values at the end of 2021.

Table 9-3: Outstanding Water Debt

Outstanding Debt Issue	Original Principal	Interest Rate	Remaining Principal	Remaining P+I	Year Ends
PW02 SR9/SR22 Waterline Replacement, Preconstruction	$ 103,900	0.50%	$ 5,528	$ 5,556	2022
PW04 Mtn. View Terrace / Seattle Hill / Lowell Larimer	$1,407,766	0.50%	$ 235,326	$ 237,679	2024
PW07 Lowell-Larimer Main Repl, Ph 1	$ 532,525	0.50%	$ 170,969	$ 173,961	2027
PW12 Lowell-Larimer Main Repl, Ph 2	$ 754,146	0.25%	$ 396,919	$ 402,377	2031
Total Outstanding Water Debt	**$2,798,337**		**$ 808,742**	**$ 819,572**	

The interest rates on the outstanding PWTF loans range are all less than 1.0%, between 0.25% to 0.50%.

For financial planning purposes, the outstanding debt repayment is charted to see whether there are opportunities in the coming years to schedule additional debt for necessary projects without impacting monthly rates. Figure 9-1 shows the outstanding debt repayment (principal + interest) is declining and will be paid off in 2031.

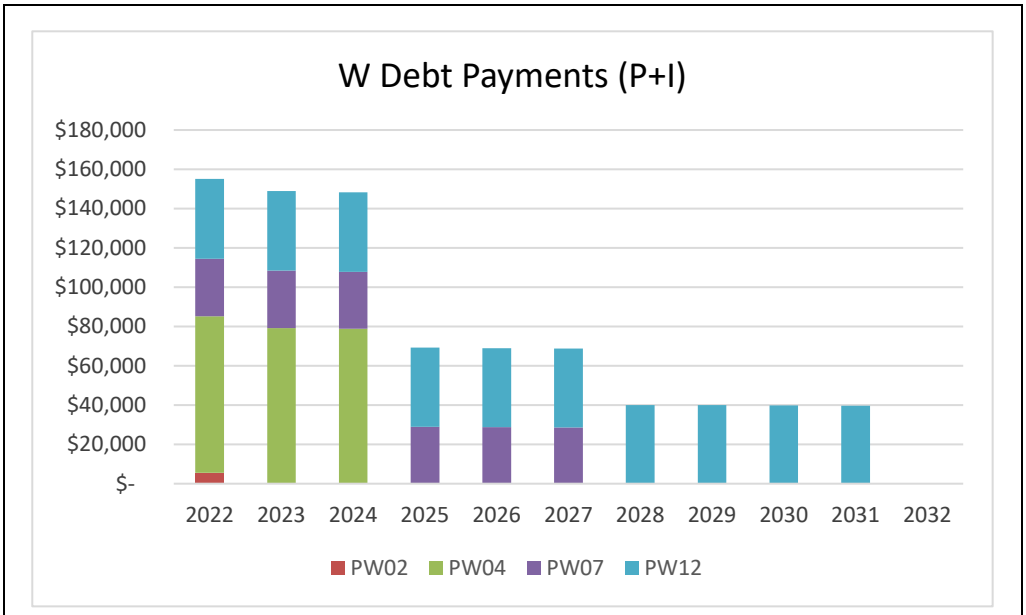

Figure 9-1: Outstanding Water Debt Payments

The earliest loan will be paid off in 2022, then 2024, 2027 and 2031, each with an annual reduction in debt service. Unfortunately, current projects are typically much more costly and require higher debt payments that the loans being retired. The largest opportunity for funding

capital projects without impacting rates comes in 2025 after the Mtn. View Terrace and Seattle Hill Rd loan (approximately $80,000 per year) has been paid in full.

9.5 FUNDING PRIORITIES

Water service charges in the form of bi-monthly rates are the primary source of revenue for on-going maintenance, operations, administration, debt repayment and capital replacement. Other operating revenue includes surcharges toward debt, late charges, reimbursements for work orders and inspections, rental income and miscellaneous income. Any surplus is held in reserves for cash flow, emergencies, and future capital improvements.

New connections pay for their share of capital facilities at connection. General facilities charges are collected from all new water connections. Local facilities charges are collected from new connections that have not otherwise paid directly for the local water lines, such as through a ULID, developer extension or latecomer's agreement. These connection charges are deposited into the reserves and used for capital projects. Additional revenue programmed toward capital includes meter installation, miscellaneous revenue such as disposal of assets and foreclosures, interest income and loan proceeds when applicable. There are not currently any outstanding utility local improvement district assessments.

The target emergency reserve is $1,000,000. The District plans out future capital expenditures funded by reserves to ensure that the water balance does not fall below the target.

Long-term debt is planned and used when appropriate for capital improvements. The District has been successful at obtaining low-interest loans to complete planned capital projects. The District plans ahead for potential bond sales to ensure that coverage requirements can be met.

The District prepares an annual budget to ensure that planned expenditures do not exceed planned revenue. The bi-monthly rates are reviewed along with the budget to ensure that the estimated revenue will meet on-going operations and debt repayment. For costs that are shared with sewer, an allocation is made between water and sewer to ensure that both sets of customers meet their obligations.

The Cross Valley infrastructure with pumps and pipes is aging. The District is focused on funding annual maintenance programs to extend the life of the current facilities, protect quality drinking water and public health for generations into the future. An outcome of this plan has been to evaluate the level of annual funding and reserves to optimize maintenance programs and avoid drastic future impacts on rates.

9.6 CURRENT RATES AND CHARGES

9.6.1 Current Water Rates

The water customers are charged a combination of a base rate plus an increasing 4-tier usage rate on all water consumption to promote conservation and to provide incentive to correct leaks. The residential customers pay a base rate per dwelling unit and non-residential, other and mixed-use customer classes pay base rates by the size of the

water meter, with larger meters paying more to reflect the demand placed on the system. Customers are billed bi-monthly.

The District completed a rate study in late 2021 based on the recommendations in this plan and the Board adopted rates for 2022 & 2023, as shown in Table 9-4.

Table 9-4: Current Water Rates

Water Rates, Bi-Monthly	Base + Water	2022	2023
Residential	**by Dwelling Unit**		
Base Rate per Unit	per dwelling unit	$63.10	$66.90
Non-Residential and Other/Mixed Use	**by Size of Meter**		
Base Rate by Meter Size	Meter Factor		
5/8" x 3/4" meter	1.00	$63.10	$66.90
3/4" x 3/4" meter	1.20	$75.70	$80.30
1" meter	2.00	$126.20	$133.80
1 1/2" meter	4.00	$252.40	$267.60
2" meter	6.40	$403.80	$428.20
3" meter	12.00	$757.20	$802.80
4" meter	20.00	$1,262.00	$1,338.00
6" meter	40.00	$2,524.00	$2,676.00
Additional Units	per unit	$63.10	$66.90
Consumption Charge	**by Usage Tier**		
0-1,500 cf	per 100 cubic feet	$3.12	$3.31
1,501-3,000 cf	per 100 cubic feet	$3.69	$3.91
3,001-6,000 cf	per 100 cubic feet	$4.83	$5.12
6,001+ cf	per 100 cubic feet	$6.29	$6.67

9.6.2 Current Connection Fee

Water general facilities charges (also referred to as system development fees, capital facilities charges, connection charges or participation fees) are collected from each new or upgraded connection to the water system. These charges are for the right to connect into and make use of the system and are described in Chapter 9.10 Cross Valley Water District Code. The local facilities charges are paid only by those customers connecting into District facilities that have not otherwise paid directly through developer extension, latecomers or ULID.

The current general facilities charge is $9,412 per equivalent residential 5/8" x ¾" meter connection. The fee increases as the meter size increases, based on per the American Water Works Association industry standard meter size capacity ratio. The calculation follows State law and includes a pro-rata share of existing facilities, an allocated share of 10-year future capital improvements for growth, excludes allowable interest, and attempts to be moderate, yet fair and equitable.

The current local facilities charge is $3,683 per equivalent residential 5/8" x ¾" meter connection and increase by the size of the meter. Both general and local connection fees are adjusted each September by the change in Consumer Price Index (CPI) per Chapter 9.10 Cross Valley Water District Code.

Multi-family units that are individually metered are charged the residential equivalent fee of $9,412 for the first unit and 0.81 percent for each additional unit. Multi-family units served by a master meter are charged based on the size of the meter, meter capacity ratio, and multiplier for the number of units per master meter: first unit at 1.0, units 2-4 at 0.81 and units 5+ at 0.70.,

Table 9-5 shows the current general and local facilities charges effective September 1, 2021. These fees are expected to be reviewed in 2022 based on the planned capital improvements in this plan. In addition to the charges shown in Table 9-5, new connections are required to apply for water service, pay the cost of meter installation, inspection and other costs described in District code.

Table 9-5: Current Water General & Local Facilities Charges

Water Facilities Connection Charges	Meter Size Capacity Ratio (AWWA)	General Facilities Charge	Local Facilities Charge
Single Family	**By Meter Size**		
5/8" Meter	1.00	$ 9,412.00	$3,683.00
3/4" Meter	1.50	$14,117.00	$5,524.00
1" Meter	2.50	$23,529.00	$9,207.00
Multi-Family – Individual Metered	**Per Dwelling Unit**		
First Unit	1.00	$ 9,412.00	$3,683.00
Additional Units	0.81	$ 7,624.00	$2,983.00
Multi-Family – Master Metered	**By Meter Size & No. of Units**		
5/8" Meter	1.00	$ 9,412.00	$3,683.00
3/4" Meter	1.50	$14,117.00	$5,524.00
1" Meter	2.50	$23,529.00	$9,207.00
Other	**By Meter Size & Peak Demand**		
To be determined on case by case basis, with minimum by meter size and meter capacity ratio		$ 9,412.00	$3,683.00

9.7 CAPITAL IMPROVEMENT FUNDING

9.7.1 Capital Funding Sources

Cross Valley has used a variety of capital funding sources over the years, including utility local improvement districts (ULID), revenue bonds, USDA-Rural Development under the previous Farmers Home Administration, Public Works Trust Fund (PWTF) program low-interest loans, Drinking Water State Revolving Fund (DWSRF) program low-interest loans, connection charges, rates and reserves. The following programs are reviewed for potential capital funding sources for major improvements.

With the Coronavirus Covid-19 pandemic, there have been several federal aid programs with funding available to support water infrastructure, such as the coronavirus state recovery fund, American Rescue Plan and upcoming Infrastructure bill. Unfortunately, this federal aid is targeted to states, counties and existing funding programs and is not available directly to water districts. The District is staying in communication with Snohomish County, WA State DOH, and legislators on potential new federal infrastructure funds that may become available.

The Washington State Department of Health (DOH) typically has four DWSRF funding opportunities each year: grants for preconstruction or consolidation in April and May; loans for preconstruction are open year-round; construction loans in October and November; and emergency loans open year-round. The opportunities require funding from the State capital budget and federal capital budget. Specific information is available on the DOH website (www.doh.wa.gov, DWSRF page). A 1-percent loan fee is included in a successful construction application and the standard interest rate is currently 1.75 percent for a 20-year loan term. Disadvantaged systems and consolidation projects qualify for 1.25 percent interest rate, up to 50 percent principal forgiveness (subsidy), and up to 30-year loan term. The interest rates and terms can be adjusted for each new application window. This is partially a federally funded program under the U.S. Environmental Protection Agency (EPA) (partially State funded) and there are a number of federal requirements that must be met. EPA has a recent focus on asset management. Bonus points have been available for attending asset management training and for submitting a completed asset inventory. The DWSRF program scores all project applications based on the health risk being addressed. The goal is to provide loans for capital improvements that increase public health protection and compliance with drinking water regulations and protect the health of people throughout the State by ensuring safe and reliable drinking water. The new federal infrastructure funds are expected to increase funding available for repair and replacement of aging systems. Stay tuned to DWSRF web page for details due out in 2022.

The Public Works Board, operating with the Washington State Department of Commerce, offers the PWTF program currently known as the Traditional Program. The program is focused on completing necessary infrastructure projects to recirculate the funds to the next round of projects. This requires that projects be ready to proceed and thus the loans must be drawn within 36 months of approval. The maximum per

jurisdiction is $10 million per biennium. The program relies on a State capital budget appropriation and has been on hold or had limited funds for several years with the State education and budget crises. The program will accept applications when funds are available, the most current funding was made available in the 2021 legislative session to the Public Works Assistance Account, with a July application cycle for construction (maximum $10 million) or preconstruction (maximum $1 million) loans. The standard interest rate is 0.47% for loans up to 5 years, 0.94% for loans 5-20 years. There are lower interest rates and potential subsidy for communities determined to be distressed where monthly water rates are greater than 2% of median household income. Emergency loans are offered year-round as long as funds are available. More detailed information is available on the Public Works Board website (www.pwb.wa.gov).

Other funding sources include the Washington State Department of Commerce energy efficiency grants and the Community Economic Revitalization Board (CERB) program geared to infrastructure improvements for job creation.

On the federal assistance side, there is the US Department of Agriculture-Rural Development Program (USDA-RD) that provides low-interest loans with potential grant subsidy for water systems in communities up to 25,000. There is also a federal Economic Development Administration (USEDA) with a Public Works grant and loan program available. Community Development Block Grant (CDBG) is another federal program, managed at the State Department of Commerce, with limited grants for improvements that benefit low to moderate income customers.

To keep current with infrastructure funding programs, a database is provided by the Infrastructure Assistance Coordinating Council (IACC). The District can use this database to monitor available funding and contact information. The database can be accessed on the web directly on the IACC website (www.infrafunding.wa.gov). This database is helpful in determining which funding assistance programs may be available at the time the District is considering a project and how to contact the agencies.

Other information is available from Washington Association of Sewer and Water Districts, of which Cross Valley is a member, and Snohomish County.

9.7.2 Local Funding Sources

Monthly water rates provide an on-going level of funds for planned capital repairs, system replacement, and improvements. These funds are appropriate for repair and replacement of the water system to serve existing customers. General facilities charges from new connections are available to fund improvements to the water system. The District can borrow from the above-mentioned financial assistance programs and any loans will need to be repaid by monthly rates and connection charges. The District also can sell revenue bonds to fund planned system improvements. Revenue bonds will be repaid by water rates and connection fees.

Some of the projects will be the responsibility of developers to connect their property to the system. When developers complete approved infrastructure projects, the

infrastructure is deeded over to the District. The developer can negotiate a latecomer agreement with the District to be reimbursed by new development making use of the facilities constructed by the developer for a specified period allowed by state law. In certain instances, on a case by case basis, such as when additional capacity is provided by a developer-funded project, the District may opt to participate in a cost sharing mechanism.

The District has the option to complete area-specific projects and be reimbursed as new development occurs in that area through a special connection charge. The District also has the option to establish a utility local improvement district (ULID), where the properties specially benefiting from an infrastructure investment would pay their share through an assessment.

In addition to the capital funding sources mentioned above, the District attempts to seek efficiencies by collaborating with partners such as with Clearview Water Supply Agency, WA State and Snohomish County on culvert replacement and highway widening projects that require realignment of existing water lines.

9.7.3 Affordability

The EPA requires DOH to award subsidy, or principal forgiveness, of at least 20 percent of the EPA capitalization grant award. In order to determine how best to award the subsidy, communities are evaluated on affordability of water compared to the median household income (MHI). EPA defines affordable water rates as 2 percent of MHI for a community. This also reflects the test applied by DOH to determine the level of hardship in a community when applying for grants (subsidy) and loans for water improvement projects. The level of hardship can influence the financial assistance offer. If the cost of water service is higher, the community will be considered in hardship and could be eligible for some financial assistance in the offer, resulting in a grant (subsidy), a lower interest rate loan, or a combination of the two.

The Census Bureau operates a Quick Facts portal of data (www.census.gov) that provides information for a community, including MHI. For Snohomish City, the closest incorporated city, the current MHI is $71,800 in 2019 dollars based on 2015-2019 American Community Survey. The same measure for Snohomish County is $86,700. The threshold for hardship at 2.0 percent of MHI would be residential monthly water rates of $119.67 for the City, or $144.50 for the County. For a 2-month bill, the range would be $239.00 to $289.00. A lower threshold of 1.5 percent of MHI could result in a 0.5% reduction in the interest rate. A typical residence in Cross Valley paid $53.62 per month for 800 cubic feet of water in 2021 and pays $56.80 per month in 2022. The 2-month bill was $107.23 for 1,600 cubic feet of water in 2021 and is $113.59 in 2022. This level is considered affordable and would not be eligible for subsidy.

Another measure of affordability is what residents in local jurisdictions are paying. Table 9-6 compares 2021 water rates for a typical single-family residence, 5/8-inch meter using 800 cubic feet of water per month, or 1,600 cubic of water per 2-month bill. Using

this measure, Cross Valley currently is in the middle tier compared to other local water utilities. The comparison will vary depending on the amount of water used in a home, the season of the year, the rate structure (base fee and usage tiers), and timing of the next rate adjustment.

Table 9-6: 2021 Residential Water Rate Comparison @ 800 cubic feet

Service Provider	Monthly Water
Cross Valley - Current 2021	**$53.62**
Cross Valley – 2022	**$56.80**
Alderwood W/WWD	$32.71
Mukilteo WD	$36.88
Silver Lake WD	$38.20
Northshore UD	$45.70
Snohomish PUD	$51.14
Monroe	$54.93
Snohomish	$55.90
Duvall	$61.63
Woodinville WD – Winter	$62.59
Woodinville WD – Summer	$71.60
Sultan	$78.87
Highland WD	$85.02
Average residential water usage is approximately 1,600 cubic feet per 2-month bill, or 800 cu ft per month. *Conversion to gallons: 1 cu ft = 7.48 gallons, 800 cu ft = 5,984 gal.*	
Comparisons updated based on 2021 website information	

While it is interesting to note what other jurisdictions are charging for water service, it is important to realize that each system should be self-supporting and many other factors could be affecting the rates or charges, including size of area, customer base, age of infrastructure, type of supply, etc.

9.8 WATER CAPITAL IMPROVEMENTS

Chapter 7 of this WSP identifies $36.8 million in 20-year recommended capital improvements, and $13.5 million in 10-year annual programs for maintenance, replacement and updates of existing system components. Table 7-3 also identified other improvements to be funded under annual programs, other projects, developers, etc. as the opportunity arises, including $6.9

million in fire flow improvements, $5.6 million in undersized main replacement projects, and $240 million in AC water main replacement.

Chapter 7 cost estimates are in 2021 dollars. It is reasonable to assume that the costs will be higher in the future when projects are scheduled for completion. Therefore, this financial chapter has escalated the project estimates to the year scheduled to help ensure that sufficient funding is available in future years. Construction cost escalation is included at 5.0 percent per year.

9.8.1 Ten-Year Capital Improvement Plan

This financial plan addresses the District-funded ten-year capital improvements totaling $55.6 million (escalated). Table 9-7 shows the recommended 10-year projects grouped by funding source, including Reserves & Connection Charges, Potential Borrowing, and Rates.

Table 9-7: Water Ten-Year Capital Improvement Plan

#	Water CIP Project	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Reserves & Connection Charges											
C-1	60th Ave Main Replacement	–	168,000	–	–	–	–	–	–	–	–
C-2	Back-up Generators	–	283,500	–	–	–	–	–	–	–	–
C-3	Storage Tank Seismic Retrofit Improvements	–	328,125	328,125	–	–	–	–	–	–	–
C-4	Water Treatment Study	–	52,500	–	–	–	–	–	–	–	–
C-5	Water Treatment Plant Upgrades	–	–	100,000	2,446,775	use reserves if possible, otherwise borrow	–	–	–	–	–
C-6	640 Zone East Water Main - prelim	–	–	350,000			PWTF redundancy, big area of homes, fire flow	–	–	–	–
C-7	Echo Lake Booster Pump Station	–	–	–	578,813	–	–	–	–	–	–
C-8	Broadway Ave Main Supply Project Replacement – Phase 1	–	–	–	–	2,114,981	–	–	–	–	–
C-9	640 Zone Pump at Water Treatment Plant	–	–	–	–	–	209,310	–	–	–	–
C-10	Reservoir at Lee Forest - prelim	–	–	200,000	–			PWTF redundancy, fire flow	–	–	–
C-11	180th St SE and 51st Ave SE Improvements	–	–	–	–	–	–	–	105,533	–	–
C-12	Lowell Larimer Water Supply Project	–	–	–	–	–	–	–	–	300,000	
C-16	SR 9 West Side Improvements - prelim	–	–	–	–	300,000			–	–	–
C-17	HWY 524 Interchange Improvements & Widening	–	–	–	–	–	–	100,000		–	–

#	Water CIP Project	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
C-18	SR 9 Highway Widening Improvements - prelim	–	–	–	–	–	–	–	–	300,000	
C-19	**Property Acquisition for District expansion**	**–**	**–**	**–**	**–**	**–**	**425,427**	**425,427**	**425,427**	**–**	**–**
P-1	AC Water Main Replacement Program (50%)	250,000	250,000	250,000	250,000	262,500	275,625	300,000	300,000	300,000	300,000
	Subtotal Reserves & Connection Charges	*250,000*	*1,082,125*	*1,228,125*	*3,275,588*	*2,677,481*	*910,362*	*825,427*	*830,960*	*900,000*	*300,000*
Potential Borrow: PWTF/DWSRF/Bonds											
C-6	640 Zone East Water Main - construction				2,894,063	2,894,063					
C-10	Reservoir at Lee Forest - construction					1,910,143	1,910,143				
C-12	Lowell Larimer Water Supply Project - construction										3,556,420
C-16	SR 9 West Side Improvements - construction						2,069,454	2,069,454			
C-17	HWY 524 Interchange & Widening - construction								1,869,941	–	–
C-18	SR 9 Highway Widening Improvements - construction										12,110,626
C-21	CWSA Storage Expansion - Placeholder (TBD)										
	Subtotal Potential Borrow	–	–	–	*2,894,063*	*4,804,206*	*3,979,597*	*2,069,454*	*1,869,941*	–	*15,667,046*
Rates											
P-1	AC Water Main Replacement Program (50%)	250,000	250,000	250,000	262,500	275,625	289,406	300,000	300,000	300,000	300,000
P-2	Undersized Main Replacement Program	300,000	300,000	300,000	315,000	330,750	347,288	350,000	350,000	350,000	350,000
P-3	Snohomish Co. & WSDOT Road/Culvert Improv.	250,000	250,000	250,000	262,500	275,625	289,406	300,000	300,000	300,000	300,000
P-4	CWSA System Improvements	100,000	100,000	100,000	105,000	110,250	115,763	120,000	120,000	120,000	120,000
P-5	PRV Improvements Program	100,000	100,000	100,000	105,000	110,250	115,763	120,000	120,000	120,000	120,000

#	Water CIP Project	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
P-6	Well Head Protection Implementation Program	30,000	30,000	30,000	31,500	33,075	34,729	35,000	35,000	35,000	35,000
P-7	Risk & Resiliency Assessments, Emergency Response Planning	–	–	–	–	–	127,628	–	–	–	–
P-8	Financial Plan, Connection Charges, Rates	25,000	–	25,000	–	30,388	–	33,000	–	33,000	–
C-20	GIS Update/Asset Management	30,000	30,000	30,000	31,500	33,075	34,729	35,000	35,000	35,000	35,000
	Subtotal Rates	*1,085,000*	*1,060,000*	*1,085,000*	*1,113,000*	*1,199,038*	*1,354,711*	*1,293,000*	*1,260,000*	*1,293,000*	*1,260,000*
	Total 10-Year Water CIP (escalated)	**1,335,000**	**2,142,125**	**2,313,125**	**7,282,650**	**8,680,724**	**6,244,670**	**4,187,881**	**3,960,900**	**2,193,000**	**17,227,046**
	Total 10-Year Water CIP (escalated)	**55,567,121**									

The funding plan was developed to reflect the District's outlook and prioritization of projects with conservative growth. The capital funding plan has the following categories:

- Reserves & Connection Charges - to be funded with existing reserves. Additional growth beyond the conservative assumption will result in higher reserves to fund improvements. For projects to be funded by debt, the plan assumes preliminary and design is funded with reserves to prepare for construction.
- Potential Borrow – the projects identified include high cost improvements that will serve the District for years into the future, beyond any debt repayment. The plan assumes borrowing for construction to increase likelihood of scoring in highly competitive low-interest loan funds.
- Rates for Annual Programs- to be included in rate revenue requirements. The plan recognizes the need for annual funding for maintenance, repair, and replacement of the aging infrastructure. These allowances provide management with a tool to plan for the highest priority projects to be completed each year.
- Fire flow improvements will typically be funded with other projects, such as AC main replacement, undersized main replacement, culvert improvement, PRV improvements, road widening projects, developer-required improvements, etc.
- Undersized main replacement projects will be funded through the annual program and with other projects.
- AC main replacement projects will be funded through the annual program with the District managing the highest priority projects within the funds available. Occasionally opportunities may arise that require a higher level of funding, such as replacement of a section of main that has developed multiple leaks. This may be funded by additional reserves, potential borrowing or several years of annual program funds.
- Developer-funded improvements will be constructed as needed depending on development activity.

The District is interested in minimizing additional debt burden whenever practical. However, there are projects that are beyond the schedule control of the District. These include improvements required due to State highway widening, County road improvements and culvert improvements along State and County rights-of-way.

There are three WSDOT projects listed in the 10-year improvements: C-16 SR 9 Westside Improvements, C-17 HWY 524 Interchange Improvements & Widening, and C-18 SR 9 Highway Widening. The District monitor's WSDOT's schedule and must complete its water line realignment prior to WSDOT's work. The challenge is to be prepared to respond to the uncertain WSDOT schedule and have access to necessary funding. The funding plan assumes HWY 524 improvements are funded with reserves, and the two SR 9 improvements are designed with reserves and construction funding is borrowed. CIP C-18 SR 9 widening will be a costly project, estimated at $8 million in 2021, escalated to $12 million by 2030. It is shown at the end of the 10-year period as a reminder that it will be needed at some point but is likely to be delayed beyond 2030. An updated financial evaluation will be necessary when this project becomes likely to ensure that the rates are sufficient to meet the projected debt service on the

updated design estimated costs. Grants or legislative appropriations to assist with this project would improve the outlook.

Table 9-8 summarizes the planned funding sources for the 10-year improvements. Grants have not been included in this conservative outlook as there is no assurance of receiving funding.

Table 9-8: Water CIP Funding Sources

Water CIP Funding Source	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Reserves & Connection Charges	250,000	1,082,125	1,228,125	3,275,588	2,677,481	910,362	825,427	830,960	900,000	300,000
Potential Borrow	–	–	–	2,894,063	4,804,206	3,979,597	2,069,454	1,869,941	–	15,667,046
Grants	–	–	–	–	–	–	–	–	–	–
Rates	1,085,000	1,060,000	1,085,000	1,113,000	1,199,038	1,354,711	1,293,000	1,260,000	1,293,000	1,260,000
Total Water CIP Funding Sources	1,335,000	2,142,125	2,313,125	7,282,650	8,680,724	6,244,670	4,187,881	3,960,900	2,193,000	17,227,046

9.8.2 Capital Improvements Beyond 2030

Several of the projects identified in Table 7-3 are planned for the 20-year period beyond 2030 and are not reflected in Tables 9-7 or 9-8. These future projects include CIP C-12 Lowell Larimer Water Supply Project (2030-2031), CIP C-13 Water System Plan Update, CIP C-14 79th Ave SE Extension & Lee Forest PRV Improvements, CIP C-15 Broadway Ave Main Supply Project Replacement-Phase 2. CIP C-21 CWSA Storage Expansion is currently being evaluated in a pumping and storage analysis for the next several decades, with timing and estimated cost to be determined. Annual programs are expected to continue beyond 2030.

9.9 TEN-YEAR OUTLOOK

The projected ten-year outlook for water operations is shown in Table 9-9. The capital improvement funding plan has been included with anticipated debt repayment and direct capital funding by rates. The annual increase/(use) of reserves shows that the anticipated revenue and expenditures can be balanced with the annual rate increases of 6% per year 2022-2026, then 7%-12% for 2027-2030. The 2021 bi-monthly residential base rate of $59.50 is projected to be $119.80 in 10 years. This level is expected to be affordable according to the EPA/DOH threshold of 2.0% of median household income. The District has completed a rate study focused on 2022-2026 and the Board has adopted rates for 2022-2023. The borrowing identified in this plan begins in 2024 after design is complete with update cost estimates. The plan will continue to be refreshed with new information, updated growth patterns, cost estimates and timing of capital improvements over the 10-year period.

Table 9-9: Ten-Year Water Rate Outlook

Financial Outlook	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Growth - New ERUs	**85**	**80**	**40**	**30**	**20**	**20**	**20**	**20**	**20**	**20**
Water Operating Revenue										
Metered water service sales (existing rates)	5,225,700	5,287,135	5,344,955	5,373,866	5,395,549	5,410,004	5,424,459	5,438,914	5,453,369	5,467,825
Metered water - irrigation	178,800	189,500	200,900	213,000	225,800	239,300	256,100	286,800	321,200	359,700
Other Revenue	131,900	107,200	107,200	107,200	103,300	101,300	101,300	101,300	101,300	101,300
Additional Revenue for Capital	1,825,036	1,041,630	566,305	466,140	327,037	333,718	341,339	349,626	362,699	386,320
Additional Revenue from Rate Increase		264,357	584,476	906,619	1,230,135	1,554,590	1,665,264	1,970,424	2,065,105	2,178,432
Estimated Water Revenue	**7,361,436**	**6,889,822**	**6,803,837**	**7,066,825**	**7,281,821**	**7,638,913**	**7,788,462**	**8,147,064**	**8,303,674**	**8,493,577**
Water Operating Expense										
Labor & Benefits	2,127,476	2,298,189	2,414,018	2,511,303	2,612,257	2,717,270	2,826,504	2,940,130	3,058,323	3,181,267
Other Operating Costs	1,604,635	1,654,721	1,705,942	1,758,011	1,811,418	1,866,274	1,922,780	1,980,987	2,040,945	2,102,707
Purchased Water	441,171	505,200	523,084	541,549	568,735	597,285	627,269	658,758	691,827	726,557
Equipment Replacement	107,606	103,500	103,500	103,500	103,500	103,500	103,500	103,500	103,500	103,500
Estimated W Operating Expense	*4,280,887*	*4,561,610*	*4,746,544*	*4,914,363*	*5,095,910*	*5,284,329*	*5,480,053*	*5,683,374*	*5,894,595*	*6,114,032*
Debt Repayment	155,870	155,208	149,019	325,385	540,109	783,267	909,867	1,024,267	1,024,267	1,024,267
Capital Improvements										
Special Projects	730,352	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Capital Funded by Rates	1,085,000	1,060,000	1,085,000	1,113,000	1,199,038	1,354,711	1,293,000	1,260,000	1,293,000	1,260,000
Total Water Expense	**6,252,109**	**5,796,818**	**6,000,562**	**6,372,747**	**6,855,057**	**7,442,307**	**7,702,920**	**7,987,641**	**8,231,862**	**8,418,299**
Annual Increase/(Use) of Reserves	**1,109,327**	**1,093,003**	**803,275**	**694,077**	**426,764**	**196,606**	**85,542**	**159,423**	**71,812**	**75,279**
Rate Increase This Scenario		*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*7.0%*	*12.0%*	*12.0%*	*12.0%*
Estimated Residential Base Rate (2-Mo.)	*$59.50*	*$63.10*	*$66.90*	*$70.90*	*$75.20*	*$79.70*	*$85.30*	*$95.50*	*$107.00*	*$119.80*
Increase For Single Family Base Rate (2-Mo.)		*$3.60*	*$3.80*	*$4.00*	*$4.30*	*$4.50*	*$5.60*	*$10.20*	*$11.50*	*$12.80*

9.9.1 Key Assumptions

Several key assumptions were used in making the 10-year projections and are shown in Table 9-10. These include the number of new connection equivalent residential units (ERUs) per year, cost escalation factors on purchased water, general and construction costs, and bi-monthly rates. The assumptions are meant to be conservative to increase the probability of meeting revenue and expense projections over time, such as slower revenue growth and reasonable expense escalation.

Table 9-10: Key Financial Assumptions

Factor	Amount
Growth - New ERUs per Year	Declining from 85 to 20
Cost Escalation - Purchased Water	3.5% - 5.0%
Cost Escalation - Labor & Benefits	5.5% - 4.0%
Cost Escalation – General	3.0%
Cost Escalation - Construction/CIP	5.0%
Water General Facilities Charge	3.0%
Single Family 2-Month Base Rate	$59.50 effective 1/1/21 $63.10 effective 1/1/22 $66.90 effective 1/1/23

Growth has been active in 2021 and expected to continue about the same level in 2022 at the equivalent of 80 new homes (ERUs). There are a number of small, medium and large-scale projects being planned within the District boundaries. Because there is no certainty on the timing of the development, the rate outlook is conservative in the growth assumption with the ERUs stepping back to 40 in 2023, and down to 20 by 2026 for the remainder of the planning period. Additional new connections will improve the financial outlook through building reserves to fund capital projects with the connection charges, and more ratepayers to share in the cost of operations.

Purchased water cost projections are lower in the early years based on the City of Everett's adopted water rates and higher in the later years when factors are unknown.

Labor and benefits are a significant portion of the operating costs and are escalated 5.5% in 2022, 5.0% in 2023 and back to the typical 4.0% in 2024+. Due to the pandemic and other supply chain worldwide issues, the costs are increasing more rapidly in 2021 and continuing. The assumptions were updated during the rate study and development of the District's budget and assumed to be temporary increases that will settle back down.

Both general and construction cost escalation are flat during the 10-year outlook.

The current general facilities charges are increased each September based on the Consumer Price Index as of June each year. The outlook assumes the general and

local facilities charges will increase 3.0% each year, however both charges are expected to be updated in 2022 to reflect the current recommended improvements from this plan.

9.9.2 Detailed Ten-Year Water Outlook

Table 9-11 is the detailed model printout showing the revenue and expense line by line.

Table 9-11: Detailed Ten-Year Water Outlook

Water Balance Outlook	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Assumptions										
Growth - New ERUs	85	80	40	30	20	20	20	20	20	20
Growth escalator	0.08%	0.08%	0.04%	0.03%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
Labor & Benefits cost escalator	4.0%	5.5%	5.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Purchased water cost escalator		3.5%	3.5%	3.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
General cost escalator	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Investment Interest	0.5%	0.5%	0.5%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Water Operating Revenue										
Metered water service sales (existing)	5,225,700	5,287,135	5,344,955	5,373,866	5,395,549	5,410,004	5,424,459	5,438,914	5,453,369	5,467,825
Metered water - irrigation	178,800	189,500	200,900	213,000	225,800	239,300	256,100	286,800	321,200	359,700
Fire hydrant water sales	16,700	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500
Surcharges (MtnViewTerr)	5,900	5,900	5,900	5,900	2,000					
Late charges	–	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Reimbursement (WO, Inspect)	24,500	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Miscellaneous	44,500	44,500	44,500	44,500	44,500	44,500	44,500	44,500	44,500	44,500
Rental Income	40,300	40,300	40,300	40,300	40,300	40,300	40,300	40,300	40,300	40,300
Total Water Revenue	5,536,400	5,583,835	5,653,055	5,694,066	5,724,649	5,750,604	5,781,859	5,827,014	5,875,869	5,928,825
Water Operating Expense										
Labor & Benefits	2,127,476	2,298,189	2,414,018	2,511,303	2,612,257	2,717,270	2,826,504	2,940,130	3,058,323	3,181,267
Water Mains	44,049	45,406	46,786	48,204	49,660	51,160	52,705	54,296	55,936	57,625
Wells, Pumps & Tanks	77,308	79,689	82,112	84,600	87,155	89,787	92,498	95,292	98,169	101,134
Meters	33,784	34,825	35,883	36,970	38,087	39,237	40,422	41,643	42,901	44,196
O&M	101,149	104,265	107,434	110,690	114,032	117,476	121,024	124,679	128,444	132,323
CWSA Clearview Group	75,144	77,458	79,813	82,232	84,715	87,273	89,909	92,624	95,421	98,303
Water Treatment Plant	78,528	80,947	83,407	85,935	88,530	91,204	93,958	96,795	99,719	102,730

Water Balance Outlook	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Purchased Water (2022 see below)	441,171	505,200	523,084	541,549	568,735	597,285	627,269	658,758	691,827	726,557
Customer Records	29,339	30,242	31,162	32,106	33,075	34,074	35,103	36,164	37,256	38,381
General & Administrative										
State Excise Tax	305,316	314,720	324,287	334,113	344,203	354,598	365,307	376,339	387,705	399,414
Meter communications	–	1,352	2,664	3,398	4,004	4,469	4,948	5,442	5,950	6,473
Other General & Administrative	860,017	885,818	912,392	939,764	967,957	996,996	1,026,906	1,057,713	1,089,444	1,122,128
Equipment Replacement - vehicles	38,342	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000
Equipment Replacement - IT	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Equipment Replacement - admin. bldg.	21,910	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500
Equipment Replacement - security	10,955	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Equipment Replacement - WTP	2,191	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200
Replacement - well pumps	13,146	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500
Leak Detection Equipment	1,063	300	300	300	300	300	300	300	300	300
Total Operating Expense	4,280,887	4,561,610	4,746,544	4,914,363	5,095,910	5,284,329	5,480,053	5,683,374	5,894,595	6,114,032
Debt Repayment										
Existing PWTF Debt	155,870	155,208	149,019	148,385	69,309	69,067	69,067	69,067	69,067	69,067
New Debt for CIP		–	–	177,000	470,800	714,200	840,800	955,200	955,200	955,200
Total Debt Repayment	155,870	155,208	149,019	325,385	540,109	783,267	909,867	1,024,267	1,024,267	1,024,267
Total Oper & Debt	4,436,757	4,716,818	4,895,562	5,239,747	5,636,019	6,067,596	6,389,920	6,707,641	6,918,862	7,138,299
Operating Revenue Available for CIP	1,099,643	867,016	757,493	454,318	88,630	(316,992)	(608,061)	(880,627)	(1,042,993)	(1,209,474)
Additional Revenue for Capital										
General Facilities Charges	1,462,346	821,693	423,172	326,900	224,471	231,206	238,142	245,286	252,645	260,224
Local Facilities Charges	72,706	96,457	49,676	38,374	26,350	27,141	27,955	28,794	29,658	30,547
General & Local Connections - Existing	126,930	20,000	21,218	23,185	26,095	30,252	36,122	44,426	56,277	73,429
Meter Installations (5/8")	72,058	60,480	30,240	22,680	15,120	15,120	15,120	15,120	15,120	15,120
Misc. (Int.,Foreclosure/Disp Assets)	8,508	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Investment Interest	82,488	38,000	37,000	50,000	30,000	25,000	19,000	11,000	4,000	2,000

Water Balance Outlook	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Additional Revenue for Capital	1,825,036	1,041,630	566,305	466,140	327,037	333,718	341,339	349,626	362,699	386,320
Total Available for Capital	2,924,679	1,908,647	1,323,799	920,458	415,667	16,726	(266,722)	(531,001)	(680,293)	(823,154)
Capital Improvements Funded										
Special Projects	730,352	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Capital Funded by Rates	1,085,000	1,060,000	1,085,000	1,113,000	1,199,038	1,354,711	1,293,000	1,260,000	1,293,000	1,260,000
Total Capital Funded	1,815,352	1,080,000	1,105,000	1,133,000	1,219,038	1,374,711	1,313,000	1,280,000	1,313,000	1,280,000
Additional Revenue from Rate Increase		264,357	584,476	906,619	1,230,135	1,554,590	1,665,264	1,970,424	2,065,105	2,178,432
Annual Increase/(Use) of Reserves	**1,109,327**	**1,093,003**	**803,275**	**694,077**	**426,764**	**196,606**	**85,542**	**159,423**	**71,812**	**75,279**
Rate Increase This Scenario		*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*7.0%*	*12.0%*	*12.0%*	*12.0%*
Estimated Residential Base Rate (2-Mo.)	*$59.50*	*$63.10*	*$66.90*	*$70.90*	*$75.20*	*$79.70*	*$85.30*	*$95.50*	*$107.00*	*$119.80*
Increase For Single Family Base Rate (2-Mo.)		*$3.60*	*$3.80*	*$4.00*	*$4.30*	*$4.50*	*$5.60*	*$10.20*	*$11.50*	*$12.80*

9.9.3 Ten-Year Water Balance Outlook

The ten-year water balance projections are shown in Table 9-12. The water balance begins with $19.8 million in unrestricted cash & investments as of December 31, 2020. After setting aside $4.8 million for the sewer utility portion and $4.4 million emergency reserve, the water beginning balance is $10.5 million available for future capital improvements. This is programmed according to the 10-year CIP program. The water balance is projected to be sufficient to meet the operations, debt repayment and CIP program with the rate increases indicated.

Table 9-12: Ten-Year Water Balance Outlook										
Water Balance Outlook	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Water Balance										
Cash & Investments Unrestricted 12/31	19,881,631									
Due to Sewer	(4,849,244)									
Emergency Reserve Set Aside	(4,437,000)									
Beginning Water Balance	**10,595,387**	**9,821,489**	**8,664,367**	**8,239,517**	**5,658,006**	**3,407,290**	**2,693,533**	**1,953,648**	**1,282,111**	**453,923**
Capital Funded by Reserves/Borrow	(1,883,225)	(2,250,125)	(1,228,125)	(6,169,650)	(7,481,687)	(4,889,959)	(2,894,881)	(2,700,900)	(900,000)	(15,967,046)
Proceeds from Borrowing				2,894,063	4,804,206	3,979,597	2,069,454	1,869,941	–	15,667,046
Subtotal	8,712,162	7,571,364	7,436,242	4,963,929	2,980,526	2,496,927	1,868,106	1,122,688	382,111	153,923
Annual Increase/(Use) of Reserves	1,109,327	1,093,003	803,275	694,077	426,764	196,606	85,542	159,423	71,812	75,279
Ending Water Balance	**9,821,489**	**8,664,367**	**8,239,517**	**5,658,006**	**3,407,290**	**2,693,533**	**1,953,648**	**1,282,111**	**453,923**	**229,201**

9.10 FINANCIAL CONCLUSION

This financial plan demonstrates how the recommended 10-year capital improvements can be funded and the impact on bimonthly rates using conservative assumptions. Cross Valley prepares annual budgets and conducts regular 2-year rate studies to plan ahead for the next six years to ensure financial viability and to be sure the District can continue to provide reliable safe drinking water at affordable prices for generations into the future.

This plan was developed with reasonable assumptions based on current knowledge and cost estimates. As with all projections, real life will vary from the projections. The District will monitor the plan through the annual budget process and update as necessary to achieve balance between maintenance and operations, completing necessary improvements, and the impact on rates. The District infrastructure (pumps, pipes, reservoirs, etc.) are aging. The maintenance programs are designed to extend the useful life of infrastructure and replace as necessary to meet water quality and public health standards.

Key elements of this plan are the level of growth over the years, the willingness and ability to borrow funds at low-interest, the impact of partners schedules for road or highway widening, the end of the pandemic and reasonable inflationary factors.

Cross Valley
WATER DISTRICT

Water System Plan
Cross Valley Water District

Appendix A
Water Facilities Inventory

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

WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 1
Updated: 09/25/2020
Printed: 9/9/2021
WFI Printed For: On-Demand
Submission Reason: No Change

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
16270 F	CROSS VALLEY WATER DISTRICT	SNOHOMISH	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS

MIKE R. JOHNSON [GENERAL MANAGER]
CROSS VALLEY WATER DISTRICT
8802 180TH ST SE
SNOHOMISH, WA 98296

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

7. OWNER NAME & MAILING ADDRESS

CROSS VALLEY WATER DISTRICT
MIKE R. JOHNSON
8802 180TH ST SE
SNOHOMISH, WA 98296-4804

GENERAL MANAGER

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

9. 24 HOUR PRIMARY CONTACT INFORMATION

Primary Contact Daytime Phone: (360) 668-6766 x102
Primary Contact Mobile/Cell Phone: (425) 239-9843
Primary Contact Evening Phone: (xxx)-xxx-xxxx
Fax:
E-mail: xxxxxxxxxxxxxxxxxxx

10. OWNER CONTACT INFORMATION

Owner Daytime Phone: (360) 668-6766
Owner Mobile/Cell Phone: (425) 239-9843
Owner Evening Phone: (xxx)-xxx-xxxx
Fax: (360) 668-9634
E-mail: xxxxxxxxxxxxxxxxxxx

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

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

SMA NAME: _____ SMA Number:

12. WATER SYSTEM CHARACTERISTICS (mark all that apply)

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

13. WATER SYSTEM OWNERSHIP (mark only one)

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

14. STORAGE CAPACITY (gallons)

8,245,000

- SEE NEXT PAGE FOR A COMPLETE LIST OF SOURCES -

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
16270 F	CROSS VALLEY WATER DISTRICT	SNOHOMISH	A	Comm

15	16	17	18									19			20	21						22	23	24			
	SOURCE NAME	INTERTIE	SOURCE CATEGORY									USE				TREATMENT						DEPTH		SOURCE LOCATION			
Source Number	LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER. Example: WELL #1 XYZ456 IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME Example: SEATTLE	INTERTIE SYSTEM ID NUMBER	WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	PERMANENT	SEASONAL	EMERGENCY	SOURCE METERED	NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	DEPTH TO FIRST OPEN INTERVAL IN FEET	CAPACITY (GALLONS PER MINUTE)	1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	24050L/Everett (5)	24050 L										X			Y	X							4700			00N	00E
S02	AGB982 Well 1 - Well in a Wellfield				X							X			Y	X						171	130	NW SW	24	27N	05E
S03	AGB986 Well 3 - Well in a Wellfield				X							X			Y	X						208	350	SE NE	25	27N	05E
S04	AGB998 Well 5 - Well in a Wellfield				X							X			Y		X	X			X	217	450	SE NW	24	27N	05E
S05	AGB984 Well 6 - Well in a Wellfield				X							X			Y		X	X			X	234	400	SE NW	24	27N	05E
S06	AGB988 Well 7a -Well in a Wellfield				X							X			Y	X						104	150	NW SW	35	27N	06E
S07	24050L/Everett /CWSA (3)	24050 L										X			Y	X							13700			00N	00E
S08	AGB989 Well 7 - Well in a Wellfield				X							X			Y	X						171	350	NW SW	35	27N	06E
S09	AGB987 Well 8 - Well in a Wellfield				X							X			Y	X						174	350	NE NE	25	27N	05E
S10	AGB999 Well 9 - Well in a Wellfield				X							X			Y	X						262	900	NW SW	24	27N	05E
S11	79250B/Silver Lake W&S District	79250 B												X	Y	X							0	NW NE	03	28N	05E
S12	AGB985 Woodlane		X									X			Y	X						156	40	NW NE	35	27N	05E
S14	Well #10 - Well in a Wellfield				X							X			Y		X	X			X	220	700	SE NW	24	27N	05E
S15	Wells 5, 6 & 10			X								X			Y		X	X			X	217	1550	SE NW	24	27N	05E
S16	01300E/Alderwood	01300 E												X	Y	X							300	NE NE	34	27N	05E
S17	Wells 1& 9			X								X			Y	X						171	1030	NW SW	24	27N	05E
S18	Wells 3 & 8			X								X			Y	X						174	700	SE NE	25	27N	05E
S19	Wells 7,7a&7b			X								X			Y	X						104	500	NW SW	35	27N	00E
S24	APP315 Well 7b				X							X			Y	X						187	500	NW SW	35	27N	006

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
16270 F	CROSS VALLEY WATER DISTRICT	SNOHOMISH	A	Comm

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED CONNECTIONS
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)		6239	Unspecified
A. Full Time Single Family Residences (Occupied 180 days or more per year)	6090		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	149		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	260	260	
28. TOTAL SERVICE CONNECTIONS		6499	

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 17280

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

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

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

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	20	20	20	20	20	20	20	20	20	20	20	20

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

35. Reason for Submitting WFI:

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

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

SIGNATURE: _____ **DATE:** _____

PRINT NAME: _____ **TITLE:** _____

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WS ID	WS Name
16270	CROSS VALLEY WATER DISTRICT

Total WFI Printed: 1

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

Water Facilities Inventory (WFI)

Report Create Date:	9/9/2021		
Water System Id(s):	16270F		
Print Data on Distribution Page:	ALL		
Print Copies For:	DOH Copy		
Water System Name:	ALL		
County:	-- Any --		
Region:	ALL		
Group:	ALL		
Type:	ALL		
Permit Renewal Quarter:	ALL		
Water System Is New:	ALL		
Water System Status:	ALL		
Water Status Date From:	ALL	**To**	ALL
Water System Update Date	ALL	**To**	ALL
Owner Number:	ALL		
SMA Number:	ALL		
SMA Name:	ALL		
Active Connection Count From:	ALL	**To:**	ALL
Approved Connection Count	ALL	**To:**	ALL
Full-Time Population From:	ALL	**To:**	ALL
Water System Expanding	ALL		
Source Type:	ALL		
Source Use:	ALL		
WFI Printed For:	On-Demand		

Cross Valley
WATER DISTRICT

Water System Plan
Cross Valley Water District

Appendix B
SEPA, RESOLUTIONS, AND APPROVALS

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CROSS VALLEY WATER DISTRICT
WATER SYSTEM PLAN

DETERMINATION OF NON-SIGNIFICANCE

Description of the Proposal: *Adoption of the updated Cross Valley Water District Water System Plan. The Plan addresses future water service system needs within the District's retail water service area and sets forth a Capital Improvement Program for system improvements.*

Proponent: *Cross Valley Water District*

Location: *The District's service area is generally located in South Snohomish County with its boundaries extending from approximately the City of Snohomish on the north, to the King/Snohomish County line on the south, and from the Snohomish and Snoqualmie rivers on the east to 51st Avenue SE on the west.*

Lead Agency: *Cross Valley Water District*

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

This DNS is issued under 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date of publication. **Comments must be submitted by April 15th, 2022**

Responsible Official: *Mike Johnson*

Position/Title: *General Manager*

Address: *8802 180th Street SE*
Snohomish, WA 98296-4804

Phone: (360) 668 -6766 (ext. 102)

Date: March 16, 2022

Signature: Mike Johnson

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CROSS VALLEY WATER DISTRICT
WATER SYSTEM PLAN
SEPA ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. Name of proposed project, if applicable: *Cross Valley Water District Comprehensive Water System Plan*

2. Name of applicant: *Cross Valley Water District*

3. Address and phone number of applicant and contact person:

Applicant:
Cross Valley Water District
Mike Johnson , General Manager
8802 180th Street SE
Snohomish, WA 98296-4804
(360) 668 -6766 (ext. 102)

Contact Person/Agent:
PACE Engineers, Inc.
Paul Weller, PE, AICP
11255 Kirkland Way, Suite 300
Kirkland, WA 98033
(425) 827-2014

4. Date checklist prepared: *September 9, 2021*

5. Agency requesting checklist: *Cross Valley Water District*

6. Proposed timing or schedule (including phasing, if applicable):

A recommended Capital Improvement Plan is included in Section 7 of the Plan. Specific timing of improvements will depend on the availability of funding, the pattern of growth, and water system requirements.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

Please refer to Section 7 of the Plan for detailed information regarding future improvements contemplated for the water system. The Comprehensive Plan does not propose land use expansion or changes and only considers the water system improvements which are required to meet the existing and future population of the water service area, as outlined in the Plan.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

None known.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain:

None known.

10. List government approvals or permits that will be needed for your proposal, if known.

Approvals from the State of Washington Department of Ecology and Snohomish County are required in accordance with State (RCW 57.16.010) and County regulations governing utility planning.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

This proposal contemplates the adoption of the Cross Valley Comprehensive Water System Plan. The Plan addresses future water system needs within the District's water service area boundaries as described in the Plan. The Plan puts forth a recommended Capital Improvement Plan in accordance with the design criteria and system analysis developed as part of the Plan.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

As indicated on Figure 2-1 of the Plan, The District's service area is generally located in South Snohomish County with its boundaries extending from approximately the City of Snohomish on the north, to the King/Snohomish County line on the south, and from the Snohomish and Snoqualmie rivers on the east to 51st Avenue SE on the west.

B. ENVIRONMENTAL ELEMENTS

1. EARTH

a. General description of the site (underlined): Flat , rolling , hilly , steep slopes , mountains, other:

b. What is the steepest slope on the site (approximate percent slope)?

Not Applicable. Will be addressed on a project-specific basis.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

Not Applicable. Will be addressed on a project-specific basis.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Not Applicable. Will be addressed on a project-specific basis.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Not Applicable. Will be addressed on a project-specific basis.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Not Applicable. Will be addressed on a project-specific basis.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Not Applicable. Will be addressed on a project-specific basis.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Not Applicable. Will be addressed on a project-specific basis.

2. AIR

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Not Applicable. Will be addressed on a project-specific basis.

b. Are there any off-site sources of emissions or odor that may effect your proposal? If so, generally describe.

Not Applicable. Will be addressed on a project-specific basis.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Not Applicable. Will be addressed on a project-specific basis.

3. WATER

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

The water service area is located to the west of Snohomish River. Lakes within the water service area include Crystal Lake, Devil's Lake, Echo Lake, and Shadow Lake.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Not Applicable. Will be addressed on a project-specific basis.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water to wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

Not Applicable. Will be addressed on a project-specific basis.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

Specific projects recommended in the Plan may lie within the 100 year floodplain. This will be addressed on a project-specific basis.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No.

b. Ground Water

1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

No.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals . . . agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

Not Applicable.

c. Water Runoff (including storm water):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Not Applicable. Will be addressed on a project-specific basis.

2) Could waste materials enter ground or surface waters? If so, generally describe.

Not Applicable. Will be addressed on a project-specific basis.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

Not Applicable. Will be addressed on a project-specific basis.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

Not Applicable. Will be addressed on a project-specific basis.

4. PLANTS

a. Check or circle types of vegetation found on the site:

_x_ deciduous tree: alder, maple, aspen, other
_x_ evergreen tree: fir, cedar, pine, other:
_x_ shrubs,

_x_ grass
__ pasture
___ crop or grain
___ Orchards, vineyards or other permanent crops.
_x_ wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other
___ water plants: water lily, eelgrass, milfoil, other
_x_ other types of vegetation:

b. What kind and amount of vegetation will be removed or altered?

Not Applicable. Will be addressed on a project-specific basis.

c. List threatened or endangered species known to be on or near the site.

None Known. Will be addressed on project-specific basis.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Not Applicable.

e. List all noxious weeds and invasive species known to be on or near the site.

None Known. Will be addressed on project-specific basis.

5. ANIMALS

a. Circle (Underlined) birds and animals which have been observed on or near the site or are known to be on or near the site:

birds: hawk , heron , eagle, songbirds , other:

mammals: deer , bear, elk, beaver, small mammals , other: cougar

fish: bass, salmon , trout, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.

Bald Eagle, Chinook Salmon and Bull Trout, but they will not be impacted by adoption of this Plan.

c. Is the site part of a migration route? If so, explain.

The Greater Puget Sound region is part of the Pacific flyway for migratory birds.

d. Proposed measures to preserve or enhance wildlife, if any:

Not Applicable. Will be addressed on project-specific basis.

e. List any invasive animal species known to be on or near the site.

Not Applicable. Will be addressed on project-specific basis.

6. ENERGY AND NATURAL RESOURCES

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Not Applicable, but operation of the District's water system requires electricity and fuel. The District will make every effort to utilize energy efficient equipment as improvements to the water system are implemented.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

Not Applicable. Will be addressed on a project-specific basis. The District will make every effort to utilize energy efficient equipment when making decisions about new equipment purchases.

7. ENVIRONMENTAL HEALTH

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

No.

1) **Describe any known or possible contamination at the site from present or past uses.**

   Not Applicable. Will be addressed on project-specific basis.

2) **Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.**

   Not Applicable. Will be addressed on project-specific basis.

3) **Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.**

   Not Applicable. Will be addressed on project-specific basis.

4) **Describe special emergency services that might be required.**

   Not Applicable. Will be addressed on project-specific basis.

5) **Proposed measures to reduce or control environmental health hazards, if any:**

   Not Applicable. Will be addressed on project-specific basis.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

None.

2) What types of levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

None. Will be addressed on a project-specific basis.

3) Proposed measures to reduce or control noise impacts, if any:

Not Applicable. Will be addressed on a project-specific basis.

8. LAND AND SHORELINE USE

a. What is the current use of the site and adjacent properties?

Existing land use in the District is identified on Figure 2-2. Single family residential accounts for a significant portion of the Districts service area, with commercial and open space areas located throughout the District.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

The project is a water system plan and is not project specific. No agricultural or forest land will be converted as a result of this Plan.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No.

c. Describe any structures on the site.

Not Applicable. Will be addressed on a project-specific basis.

d. Will any structures be demolished? If so, what?

No. Will be addressed on a project-specific basis.

e. What is the current zoning classification of the site?

The current zoning classifications within the District vary, but are predominantly Single Family Residential with some limited commercial areas (see Figure 2-2).

f. What is the current comprehensive plan designation of the site?

Future land use designations within the District vary, but are predominantly Single Family Residential with a limited amount of commercial/industrial.

g. If applicable, what is the current shoreline master program designation of the site?

Not Applicable.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

Environmentally sensitive areas are present throughout the District. Adoption of this Comprehensive Water Plan will not impact any of these areas. Potential impacts to these areas will be addressed on a project-specific basis.

i. Approximately how many people would reside or work in the completed project?

None.

j. Approximately how many people would the completed project displace?

None.

k. Proposed measures to avoid or reduce displacement impacts, if any:

Not Applicable.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

This Comprehensive Plan was developed to address the future water system needs of the Cross Valley Water District, based on existing and projected land use and population, as determined by the Comprehensive Land Use Plans of the jurisdictions within which the District serves.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

Not Applicable.

9. HOUSING

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

Not applicable.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

Not applicable.

c. Proposed measures to reduce or control housing impacts, if any:

Not Applicable.

10. AESTHETICS

a. What is the tallest height of any proposed structure(s), not including antennas: what is the principal exterior building material(s) proposed?

Not Applicable. Will be addressed on a project-specific basis.

b. What views in the immediate vicinity would be altered or obstructed?

Not Applicable. Will be addressed on a project-specific basis.

c. Proposed measures to reduce or control aesthetic impacts, if any:

Not Applicable. Will be addressed on a project-specific basis.

11. LIGHT AND GLARE

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Not applicable. Will be addressed on a project-specific basis.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Not Applicable.

c. What existing off-site sources of light or glare may affect your proposal:

Not Applicable.

d. Proposed measures to reduce or control light and glare impacts, if any:

Not Applicable. Will addressed on a project-specific basis.

12. RECREATION

a. What designated and informal recreational opportunities are in the immediate vicinity.

Numerous park and recreational facilities, both designated and informal, are located throughout the District.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Not Applicable.

13. HISTORIC AND CULTURAL PRESERVATION

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe.

None Known. Will be evaluated on a project-specific basis.

b. . Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

None known. Will be evaluated on a project-specific basis.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Not Applicable. Will be evaluated on a project-specific basis.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

Not applicable

14. TRANSPORTATION

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

Not Applicable. Will be identified on a project-specific basis.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

Not Applicable.

c. How many parking spaces would the completed project have? How many would the project eliminate?

Not Applicable.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

No. Will be evaluated on a project-specific basis.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

Not Applicable.

f. How many vehicular trips per day would be generated by the completed project?

Not Applicable.

g. If known, indicate when peak volumes would occur.

Not Applicable.

h. Proposed measures to reduce or control transportation impacts, if any:

Not Applicable.

15. PUBLIC SERVICES

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, school, other)? If so, generally describe.

Not Applicable.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Not Applicable.

16. UTILITIES

The District's service area is generally located in South Snohomish County with its boundaries extending from approximately the City of Snohomish on the north, to the King/Snohomish County line on the south, and from the Snohomish and Snoqualmie rivers on the east to 51st Avenue SE on the west.

a. Circle utilities currently available at the site (underlined): electricity , Natural gas, water, refuse service , telephone , sanitary sewer , septic system , other:

b. Describe the utilities that are proposed for the project, the utility providing service, and the general construction activities on the site or in the immediate vicinity which might be needed.

This proposal establishes a plan for the future development of the water system within the District's service area boundaries.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Paul Weller

Paul S. Weller, PE, AICP

Date Submitted : January 7th, 2022

D. SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Capital improvement projects identified in the Plan will likely result in temporary construction-related impacts, including production of noise and emissions to the air from construction equipment.

Proposed measures to avoid or reduce such increases are:

Compliance with local noise ordinances and requirements related to dust control, temporary erosion and sedimentation control, vehicle emissions, etc.

2. How would the proposal be likely to affect plants, animals, fish or marine life?

Potential impacts will be evaluated on a project-specific basis and will be dependent on a variety of factors, including project type, size and location.

Proposed measures to protect or conserve plants, animals, fish or marine life are:

Appropriate measures to protect or conserve plants, animals, fish or marine life will be identified and implemented on a project-specific basis.

3. How would the proposal be likely to deplete energy or natural resources?

Construction of new water system facilities identified in the Plan will require the use of construction materials typical to this type of work.

Proposed measures to protect or conserve energy or natural resources are:

Efficient planning and design of utilities will assist in the conservation of water. In addition, energy efficient equipment for new and upgraded facilities will be utilized to the fullest extent possible.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farm lands?

Projects identified in the Plan may be located/occur within or adjacent to the types of areas listed above. Efforts will be made during project design to avoid areas that would be sensitive to this type of development activity. However, in circumstances where no other feasible location exists, projects will be compliant with all applicable Federal, State and local sensitive area regulations.

Proposed measure to protect such resources of to avoid or reduce impacts are:

Any future work associated with Cross Valley Water District's water system will be consistent with the regulations and policies governing the protection of such resources.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses consistent existing plans?

The District's Water System Plan is based on the population projections and land use designations included in the current Comprehensive Land Use Plans for the jurisdictions within which the District serves, as required by State law. Neither the Plan, nor projects included in the Plan, will affect land and shoreline use inconsistent with existing plans.

Proposed measures to avoid or reduce shoreline and land use impacts are:

Not applicable. The District has no land use or shoreline regulatory authority.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

This proposal will not increase demands on transportation or public utilities, but will provide a guideline for future development of the District's water system, based on projected growth.

Proposed measures to reduce or respond to such demands are:

Not Applicable.

7. Identify, if possible, whether the proposal may conflict with local, state or federal laws requirements for the protection of the environment.

This proposal will not conflict with any such laws.

MINUTES OF REGULAR MEETING OF BOARD OF COMMISSIONERS OF CROSS VALLEY WATER DISTRICT OF SNOHOMISH COUNTY, WASHINGTON

Held March 15, 2022

A regular meeting of the Board of Commissioners of Cross Valley Water District of Snohomish County, Washington, was held via remote means due to the COVID-19 declared federal, state, and local emergency, and in accordance with the Governor's Proclamation No. 20-28, as amended. The public had the opportunity to participate in the District's remote meeting using the call-in and additional connection information provided for the meeting with the meeting agenda and on the District's website. The meeting was called to order by Commissioner Dave Hutley on Tuesday, March 15, 2022, at 2:30 PM. Verbal roll call commenced, Commissioner Dave Hutley, Commissioner Warren Schott, and Commissioner Ginger Desy were present. Also, present were Attorney, Rosemary Larson; Mike Johnson, General Manager; Robert Wagner, Finance Manager; Lorrie Rogers, Special Projects; and Chris Lamb.

1. Executive Session: General Manager Johnson announced that an executive session would be held for 10 minutes, pursuant to RCW 42.30.110(1)(i), to discuss the legal risks of current or proposed action, and potential litigation with legal counsel. The open meeting was recessed at 2:31 pm and the Executive Session convened with the Commissioners, General Manager Johnson, and Attorney Rosemary Larson attending.

Engineer Bill Reynolds, and Paul Weller, PACE Engineer entered the meeting.

At 2:42 pm., the Executive Session was concluded, and the open meeting resumed. Attorney Rosemary Larson stated the Hertzogs have withdrawn their appeal of the District's decision to impose connection charges for the ADU at 6019 76th Drive SE, Snohomish Washington, and therefore the continued appeal hearing is not needed. Commissioner Ginger Desy made a motion to approve the settlement of the Hertzog ADU connection charge matter for a payment to the District in the amount of $9,238.00. Commissioner Warren Schott seconded the motion, which passed 3-0.

2. Addition / Deletions to Agenda: Deletion of the Continued Appeal Hearing.

3. Continued Appeal Hearing on Imposition of Connection Charges: Deleted

4. Public: No public was present.

5. Financial Voucher Summary: Informational only. No discussion.

6. Consent Agenda:

Commissioner Warren Schott moved to approve the consent agenda consisting of the following:

Minutes. Minutes of the March 1, 2022, Regular Board Meeting

District Claims:

Claim Nos.:	45395 through 45433 20220211 through 20220214 20220301 through 20220307
Total Amount:	$411,325.05
Claim Nos.:	10441 through 10455
Fund:	Payroll
Total Amount:	$36,668.85

Commissioner Ginger Desy seconded the motion, which passed 3-0.

7. Business:

1. Water Comprehensive Plan Public Review Approval General Manager Johnson stated PACE Engineering has completed the Final Draft of the Water Comprehensive Plan and introduced Engineers Bill Reynolds and Paul Weller. Engineer Weller explained the next process for the Comprehensive plan to the Board. Discussion followed on the plan. Commissioner Ginger Desy made a motion to approve the Final Draft of the Water Comprehensive Plan for public review. Commissioner Warren Schott seconded the motion, which passed 3-0.

2. Draft Employee Handbook Revisions General Manager Johnson stated revisions to the Employee Handbook are presented. Discussion occurred on the Employee benefits. Commissioner Warren Schott made a motion to approve the revised Employee Handbook effective April 1, 2022. Commissioner Ginger Desy seconded the motion, which passed 3-0.

Resolution No. 2022-3-2 A RESOLUTION of the Board of Commissioners of Cross Valley Water District of Snohomish County, Washington, amending the Cross Valley Water District Employee Handbook.

3. Easements- Developer Extension Brasswood 2019-33. General Manager Johnson explained the easements under the project of Brasswood 2019-33. Discussion occurred on the easements and project. Engineer Bill Reynolds recommended the board approve the release of easements. Commissioner Ginger Desy made a motion to approve and authorize the General Manager to sign the Easement Amendment to release the easement under Snohomish County recording number for the easement is 1942367. Commissioner Warren Schott seconded the motion, which passed 3-0. Commissioner Ginger Desy made a motion to approve and authorize the General Manager to sign the Release of Easement to release the easement under Snohomish County recoding numbers for the easements are 1942364 and 1942365. Commissioner Warren Schott seconded the motion, which passed 3-0.

8. Reports / Review.

1. Attorney Report. Attorney, Rosemary Larson reported to the Board that House Bill 1329 has passed and the District is already in compliance with the law.

2. Finance Manager Report. Finance Manager Wagner presented the cash and investment analysis, monthly finance report and updated the board on accounts in arrears.

3. Operations and Maintenance Report. General Manager Johnson presented the Well Depth Reports and stated staff is in the pre-employment hiring process with a candidate.

4. General Manager Report. General Manager Johnson briefed the Board on the Snohomish County LIHWAP. The Board agreed to continue review and move forward. General Manager Johnson stated the Developer Extension books are under review by Attorney Larson. General Manager Johnson updated the board on COVID-19 and stated the District is resuming the service interruptions on March 22, 2022.

5. Commissioner Comments. Commissioner Warren Schott reported to the Board on the discussion with the auditors from Clifton Larson Allen LLC. Commissioner Dave Hutley inquired on communications on backflow testing. Discussion occurred on communications.

7. Next Meeting. Commissioner Dave Hutley stated that the next regular meetings will be on Tuesday, April 5, 2022, and April 19, 2022.

THERE BEING NO FURTHER BUSINESS to bring before the Board, the meeting was adjourned at 3:29 PM.

CROSS VALLEY WATER DISTRICT

Dave Hutley, President

Ginger Desy, Vice President

Warren E. Schott, Jr., Secretary

RESOLUTION NO. 2022-4-3

A RESOLUTION of the Board of Commissioners of Cross Valley Water District of Snohomish County, Washington, relating to the District's Water Use Efficiency Goals; repealing Resolution 2008-1-12; and amending Chapter 6.20 of the Cross Valley Water District Code.

WHEREAS, the District adopted Water Efficiency Goals in Resolution 2008-1-12 in accordance with the requirements of the State Department of Health; and

WHEREAS, the District has adopted and follows the City of Everett Water Use Efficiency Program as the District's water use efficiency program, which is included in the District's Comprehensive Water System Plan; and

WHEREAS, the District is updating its Water Comprehensive Plan, including the District's Water Efficiency Program, and advertised the proposed water use efficiency goals and program on the District's website and posted a notice at the District office on March 16, 2022 informing the public of the public hearing on April 19, 2022 for the proposed water use efficiency goals and program; and

WHEREAS, the District proposes to continue participation in the City of Everett's Regional Conservation Plan and Water Use Efficiency Program, which includes the following: a public education program, a leak detection program, home indoor conservation kits, outdoor conservation kits, a lawn watering schedule, and conservation pricing; and

WHEREAS, the District proposes to maintain a water distribution system leakage rate of less than 10 percent; and

WHEREAS, after considering any public input at the public hearing on the proposed water use efficiency goals and program, the District's Board of Commissioners have determined that the District's proposed water use efficiency goals and program should be approved; now, therefore

BE IT RESOLVED by the Board of Commissioners Cross Valley Water District of Snohomish County, Washington as follows:

Section 1. Chapter 6.20 of the Cross Valley Water District Code is amended to read as follows:

6.20 Water Use Efficiency Goals.

6.20.010 City of Everett Regional Conservation Plan/Water Efficiency Program.

The District shall participate in and follow the City of Everett's Water Use Efficiency Program, as now existing and as may be amended in the future, and which is adopted as an Appendix to the District's Water System Comprehensive Plan.

6.20.020 Water Distribution System Leakage Goal.

The District strives to maintain a water distribution system leakage rate of less than 10 percent.

Section 2. Resolution No. 2008-1-12 is repealed.

PASSED BY THE BOARD OF COMMISSIONERS of Cross Valley Water District of Snohomish County, Washington, at the regular meeting held April 19, 2022.

Dave Hutley, President

Ginger Desy, Vice President

Warren E. Schott Jr., Secretary

RESOLUTION NO. 2022-11-1

A RESOLUTION of the Board Commissioners of Cross Valley Water District of Snohomish County, Washington, adopting and approving the 2022 Comprehensive Water System Plan.

WHEREAS, Cross Valley Water District ("District") is a municipal corporation providing water and sewer utility services pursuant to Title 57 RCW; and

WHEREAS, RCW 57.16.010 authorizes the District to adopt a general comprehensive water system plan, and State law and administrative regulations, including WAC 296-290-100, require that the District's comprehensive water system plan be updated periodically; and

WHEREAS, the Board of Commissioners previously adopted a Comprehensive Water System Plan on May 18, 2010 by the adoption of Resolution No. 2010-5-5; and

WHEREAS, the Board of Commissioners approved Water System Plan Amendment No. 1 for the Annexation No. 13 area by the adoption of Resolution 2014-3-7; and

WHEREAS, the Department of Health approved the District's request to extend the effective date of the District's Comprehensive Water System Plan to February 20, 2021 by a letter dated March 24, 2017 and the Board adopted the extension with Resolution 2017-4-6; and

WHEREAS, it is in the best interest of the District to adopt a new Comprehensive Water System Plan to enable it to meet its goals of providing a safe water supply, providing for fire protection, promoting the efficient use of the water supply, protecting water resources, and demonstrating financial accountability; and

WHEREAS, the Board of Commissioners authorized PACE, engineers for the District, to prepare an updated Comprehensive Water System Plan, by the adoption of Resolution No. 2019-4-2 on April 15, 2019, and accordingly PACE prepared a draft 2022 Comprehensive Water System Plan; and

WHEREAS, by motion on March 15, 2022, the Board of Commissioners authorized the public review of the draft 2022 Comprehensive Water System Plan, and the submission of the draft 2022 Comprehensive Water System Plan to all agencies with jurisdiction to approve the Plan, and, as required by the State Environmental Policy Act, authorized PACE to prepare a State Environmental Policy Act Checklist for the draft 2022 Comprehensive Water System Plan; and

WHEREAS, on March 16, 2022, based on the Environmental Checklist for the proposed 2022 Comprehensive Water System Plan, the District's Responsible Official issued a Determination of Non-Significance, and the DNS was published and circulated to agencies with jurisdiction in accordance with law; and

WHEREAS, on April 19, 2022, the Board of Commissioners conducted a duly noticed public hearing on the proposed Water Use Efficiency Goals, the SEPA Determination of Non-Significance for the draft 2022 Comprehensive Water System Plan, and the draft Plan, at which time all interested persons were heard; and

WHEREAS, in accordance with the motion passed by the Board of Commissioners on March 15, 2022, the draft 2022 Comprehensive Water System Plan was submitted to all local agencies with jurisdiction, and to the appropriate State agencies, including the Department of Health, for review and comment by those agencies; and

WHEREAS, the District considered all comments received from the local agencies and State agencies with jurisdiction, and incorporated said comments in the draft 2022 Comprehensive Water System Plan; and

WHEREAS, the District's Board of Commissioners now desires to approve and adopt the 2022 Comprehensive Water System Plan, subject to the approval of the 2022 Plan by the local agencies with jurisdiction and the State Department of Health, as required by law; now therefore

BE IT RESOLVED by the Board of Commissioners of Cross Valley Water District of Snohomish County, Washington as follows:

1. Comprehensive Water System Plan Approval. The Final Comprehensive Water System Plan of Cross Valley Water District, Snohomish County, Washington, dated 2022, on file at the District's offices and incorporated herein by this reference, is hereby approved and adopted as the 2022 Comprehensive Water System Plan for the District.

2. Regulatory Approvals. The District is hereby authorized to submit the 2022 Comprehensive Water System Plan to all agencies with jurisdiction to approve the Plan, including the State Department of Health and Snohomish County, as required by law.

3. Repealer. Resolution No. 2010-5-5, 2017-4-6, and any other resolution inconsistent herewith, are amended, superseded and/or repealed to be in accordance with this Resolution.

PASSED BY THE BOARD OF COMMISSIONERS of Cross Valley Water District of Snohomish County, Washington, at the regular meeting held November 1, 2022.

Dave Hutley, President

Ginger Desy, Vice President

Warren E. Schott Jr., Secretary

Cross Valley
WATER DISTRICT

Water System Plan
Cross Valley Water District

Appendix C
Contracts and Agreements

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RESOLUTION NO. 2010-12-4

A RESOLUTION of the Board of Commissioners of Cross Valley Water District of Snohomish County, Washington, approving the First Amendment to CWSA Interlocal Agreement.

WHEREAS, Alderwood Water and Wastewater District, Silver Lake Water District and Cross Valley Water District (the "Districts") formed the Clearview Water Supply Agency in February 2005 by execution of an Interlocal Joint Operating Agreement which was approved by the Board of Commissioners of the District by the adoption of Resolution No. 2005-2-11 on February 15, 2005.

WHEREAS, Districts desire to officially recognize and accept the final construction expenses for the construction of the CWSA improvements by the adoption of the First Amendment to the Clearview Water Supply Agency Interlocal Joint Operation Agreement, now therefore

BE IT RESOLVED that the Board of Commissioners hereby approves the First Amendment to the Clearview Water Supply Agency Interlocal Joint Operation Agreement in the form attached hereto.

BE IT FURTHER RESOLVED that the Board of Commissioners is authorized to execute the First Amendment to the Clearview Water Supply Agency Interlocal Joint Operation Agreement.

PASSED BY THE BOARD OF COMMISSIONERS of Cross Valley Water District of Snohomish County, Washington, at the regular meeting held December 21, 2010.

Chris Kuehn, President

Warren E. Schott Jr., Secretary

Mark Cassell, Commissioner

FIRST AMENDMENT TO
CLEARVIEW WATER SUPPLY AGENCY
INTERLOCAL JOINT OPERATING AGREEMENT

This First Amendment to Interlocal Joint Operating Agreement is entered into by the Board of Directors of Clearview Water Supply Agency ("CWSA"), which is comprised of elected representatives of Alderwood Water and Wastewater District, Cross Valley Water District, and Silver Lake Water District, which collectively are the members of CWSA. All parties to this Amendment may be referred to individually as "District" and collectively as "Districts."

RECITALS

A. WHEREAS, the Districts formed the CWSA in February 2005 by execution of an Interlocal Joint Operating Agreement (the "Operating Agreement"), and

B. WHEREAS, the Operating Agreement contained a document, titled Exhibit A, that provided estimated construction costs for five construction segments, and an allocation for each District of current and future capacities at each of the five construction segments; and

C. WHEREAS, the construction phase (known as Phase II) of CWSA was officially completed in 2006, and expenses incurred during the construction phase were recorded and accounted for in accordance with the five identified construction segments, and

D. WHEREAS, the Districts desire to officially recognize and accept the final construction expenses, and to amend the Operating Agreement accordingly; and

E. WHEREAS, paragraphs 23 and 24 of the Operating Agreement permit amendment of the Operating Agreement by unanimous vote of the Districts acting through the elected CWSA Board of Directors.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained herein, the Districts agree as follows:

1. The Operating Agreement is amended by substituting the attached Exhibit A, dated November 2010, for the Exhibit A attached to the Operating Agreement in February 2005. The attached Exhibit A shall be effective for all purposes.

Exhibit A

(Revised November 2010)

CWSA Phase II (Construction)

Table I

Initial Construction Capacities & Expenses

	Pump Station $6,252,853			River Crossing $12,090,437			Pipeline A $16,650,130			Pipeline B $1,412,126			Reservoir $5,074,894		
Agency	Capacity	% Share	Segment Expenses	Capacity	% Share	Segment Expenses	Capacity	% Share	Segment Expenses	Capacity	% Share	Segment Expenses	Capacity	% Share	Segment Expenses
AWWD	18.5	55.22%	$3,452,825	18.5	40.66%	$4,915,972	18.5	55.22%	$9,194,202	18.5	71.98%	$1,016,511	7.5	63.03%	$3,198,463
SLWD	9	26.87%	$1,680,142	9	19.78%	$2,391,488	9	26.87%	$4,473,890	1.2	4.67%	$ 65,936	2.4	20.17%	$1,023,508
CVWD	6	17.91%	$1,119,886	18	39.56%	$4,782,977	6	17.91%	$2,982,038	6.0	23.35%	$ 329,679	2.0	16.81%	$ 852,923
Totals	**33.5**	**100.00%**	**$6,252,853**	**45.5**	**100.00%**	**$12,090,437**	**33.5**	**100.00%**	**$16,650,130**	**25.7**	**100.00%**	**$1,412,126**	**11.9**	**100.00%**	**$5,074,894**

Table II

Future Capacities

	Pump Station			River Crossing			Pipeline A			Pipeline B			Reservoir		
Agency	Capacity	% Share	Incremental Capacity	Capacity	% Share	Incremental Capacity	Capacity	% Share	Incremental Capacity	Capacity	% Share	Incremental Capacity	Capacity	% Share	Incremental Capacity
AWWD	18.5	38.14%	0	18.5	38.14%	-0-	18.5	38.14%	-0-	18.5	45.45%	-0-	13.9	58.40%	6.4
SLWD	12.0	24.74%	3	12.0	24.74%	3	12.0	24.74%	3	4.2	10.32%	3	2.4	10.08%	-0-
CVWD	18.0	37.11%	12	18.0	37.11%	-0-	18.0	37.11%	12	18.0	44.23%	12	7.5	31.51%	5.5
Totals	**48.5**	**100.00%**	**15**	**48.5**	**100.00%**	**3**	**48.5**	**100.00%**	**15**	**40.7**	**100.00%**	**15**	**23.8**	**100.00%**	**11.9**

RESOLUTION NO. 2010-3-5

A RESOLUTION of the Board of Commissioners of Cross Valley Water District of Snohomish County, Washington, approving Amendment to Interlocal Agreement with Silver Lake Water & Sewer District.

WHEREAS, the District was authorized to execute an Interlocal Agreement with Silver Lake Water District by the adoption of Resolution No. 1994-4-2 on April 19, 1994, which agreement provided for the provision of water and sewer service to customers of both District's in the vicinity of the common boundary line of both districts; and

WHEREAS, the Boards of Commissioners of Cross Valley and Silver Lake Water Districts executed an amended Interlocal Agreement incorporating changes requested by Snohomish County which was approved by the adoption of Resolution No. 2001-10-5 on October 16, 2001; and

WHEREAS, the Board of Commissioners approved an amendment to the Interlocal Agreement to add several lots in Waldenwood 5 for service by the adoption of Resolution No. 2007-1-8 on January 16, 2007; and

WHEREAS, the Board of Commissioners approved an amendment to the Interlocal Agreement to expand Silver Lake's sewer service area within Cross Valley's boundaries (identified as Area B); setting a rate at 117% of Silver Lake's current customers residing within its Everett sewer basin, and adding a provision to allow the rate charged to the District's customers to be changed by written mutual agreement of the Districts' Boards by the adoption of Resolution No. 2008-6-2 on June 3, 2008; and

WHEREAS, the Districts have agreed to amend the Interlocal Agreement to expand Silver Lake's sewer service area within Cross Valley's boundaries (identified as Area B), which expanded service area includes certain property designated as Valley Investments-Farm Worker Housing,

which is outside the Urban Growth Boundary (UGA) as defined by Snohomish County and is zoned Riverway Commercial Farmland; and

WHEREAS, the Board of Commissioners have executed a Hold Harmless Agreement with Larry R. Jensen, owner of Valley Investments, and Whidbey Island Bank, Mr. Jensen's Lender, which indemnifies the District from any liability for the provision of sewer service outside the UGA; and

WHEREAS, the Board of Commissioners of the District has determined that it is in the best interest of the District to approve an amendment to the current Silver Lake Interlocal, now therefore,

BE IT RESOLVED that the Board of Commissioners hereby approves approve an amendment to the current Silver Lake Interlocal Agreement to expand Silver Lake's sewer service area within Cross Valley's boundaries (identified as Area B).

BE IT FURTHER RESOLVED that the Board of Commissioners is authorized to execute the amendment to the Interlocal Agreement in the form attached hereto.

PASSED BY THE BOARD OF COMMISSIONERS of Cross Valley Water District of Snohomish County, Washington, at the special meeting held March 18, 2010.

Chris Kuehn, President

Warren E. Schott Jr., Secretary

Mark Cassell, Commissioner

SILVER LAKE WATER-SEWER DISTRICT
CROSS VALLEY WATER DISTRICT
2009 AMENDMENT TO INTERLOCAL AGREEMENT

This Amendment entered into this 18th day of March, 2010 between the Cross Valley Water District (hereinafter referred to as "Cross Valley") and the Silver Lake Water-Sewer District (hereinafter referred to as "Silver Lake") (Cross Valley and Silver Lake are herein referred to singularly as "District" and collectively as "Districts") amends the Interlocal Agreement between the Districts dated October 16, 2001 as amended by Agreement signed by the Districts on December 14, 2006 and February 20, 2007, respectively, (hereinafter referred to as 2007 Amendment) redefining and replacing Exhibit C of the Interlocal Agreement dated October 16, 2001.

WITNESSETH:

WHEREAS, the Districts entered into an Interlocal Agreement dated October 16, 2001 regarding the provision of water and sewer service in each other's District (herein referred to as "Interlocal"). A copy of the Interlocal is attached to this Amendment as Exhibit A-1; and

WHEREAS, the Districts amended this Interlocal to redefine and replace Exhibit C of the Interlocal by the 2007 Amendment; and

WHEREAS, the Districts wish to amend the Interlocal to expand the sewer service area for Silver Lake within Cross Valley's boundaries (Area B); and

WHEREAS, certain property within this expanded service area in Cross Valley designated as Valley Investments-Farm Worker Housing site depicted and described on Exhibit B-1 (Valley Investments) is outside the Urban Growth Area as defined by Snohomish County and has a Zoning Designation of Riverway Commercial Farmland; and

WHEREAS, Valley Investments has requested sewer service from Cross Vally and Silver Lake; and

WHEREAS, Snohomish County Planning and Development Serivices have determined that the Valley Investment property is allowed sewer service since the property meets SCC 30.29.110 (1) an exception to SCC prohibition of sewer service outside of a UGA; and

WHEREAS, Valley Investments has received approval of the Washington State Department of Health (DOH) for construction of Farm Worker Housing on its site provided such housing is connected to public sewer; and

WHEREAS, DOH has issued to Valley Investments a Construction Permit for Migrant Farm Worker Housing for its site in Cross Valley; and

WHEREAS, Silver Lake is the only viable sewer provider for the Valley Investments Migrant Farm Worker Housing; and

WHEREAS, the Districts are special purpose municipal corporations in Snohomish County, Washington, organized under the laws of the State of Washington; and

WHEREAS, the Districts desire to enter into this Amendment pursuant to the authority granted in Chapter 39.34 of the Revised Code of Washington and RCW 57.08.007; and

WHEREAS, each District has the authority to construct, condemn and purchase, acquire, add to, alter, maintain and operate waterworks, and sewer systems, within or without their corporate limits, for the purpose of furnishing its inhabitants or any other persons with an ample supply of water and for the purpose of disposing of wastewater; and

WHEREAS, the Districts wish to protect and promote their interests and the interests of their rate payers and to provide water service and sewer service to certain customers located within their respective Districts by both using water lines and sewer lines owned and operated by the other District and by providing for the wholesale of water between the Districts; and

WHEREAS, state law does not allow a special purpose water and sewer district to extend service to customers located within the boundaries of a different water and sewer district without such district's consent and approval; and

WHEREAS, both Districts desire to cooperate in providing water and sewer service to certain properties near or adjacent to the Districts' common boundary lines; and

WHEREAS, both Districts recognize that the other District has the sole lawful authority to provide water and sewer service to properties within its jurisdiction; and

WHEREAS, in accordance with RCW 57.08.007, and by interlocal agreement, the Districts may provide for water and sewer service by one District in the other District's area.

NOW, THEREFORE, the Districts do hereby agree as follows:

Section 1. Purpose.

The purpose of this Amendment is to add lands to Area "B" as described in the Interlocal so as to allow additional land area to be subject to the terms of the Interlocal to provide for future sewer service by Silver Lake to properties within Area "B."

Section 2. Expanded Area B.

Area "B" of the Interlocal is amended to add the lands as described and depicted on Exhibit B-1 attached hereto. For ease of future administration of the Interlocal, the Districts

agree that Exhibit B-1 may be inserted as the substitute exhibit for Exhibit B in the Interlocal and Exhibit C-1 of the 2007 Amendment may be inserted as the substitute for Exhibit C in the Interlocal.

Section 3. A new paragraph is added to Section 5 of the Interlocal to read as follows:

The sewer rate applied by Silver Lake to sewer customers within Area B shall be calculated at 117%, or as otherwise set by written mutual agreement of the Districts' Boards of Commissioners, of the then current rate as now or hereafter amended for Silver Lake sewer customers residing within its Everett sewer basin; that is, Silver Lake customers within its own jurisdiction whose sewer flows through piping and sewer facilities to the Everett Water Pollution Control Facility.

Section 4. A new sub-paragraph (f) is added to Section 10 of the Interlocal to read as follows:

Cross Valley shall indemnify, defend and hold the District and its elected and appointed officials, officers, employees, agents and volunteers (collectively the "District") harmless from and against all damages, losses, expenses and all claims, demands, payments, suits, actions, liabilities, including regulatory enforcement actions, recoveries, and judgments of every nature and description including attorneys' fees and costs (collectively "Claims" or "Damages") incurred by or brought or recovered against the District relating to or arising out of, directly or indirectly, the District providing sewer service to the property located along the 5300 block of Lowell-Larimer Road, Everett, Washington 98296 having Tax Parcel No. 280522-003-015-00 and legally described on Exhibit D attached hereto and incorporated herein by this reference (the "Property"), provided, however, Cross Valley's obligation to indemnify, defend and hold the District harmless under this provision shall not apply to any Claims or Damages arising out of or related to, directly or indirectly, the District's operation of its sewer system to serve the Property .

District and Cross Valley agree that all third party claims for Damages against District for providing sewer service to Tax Parcel No. 280522-003-015-00 not related to, directly or indirectly, the District's operation of its sewer system for which Cross Valley's insurance carrier does not accept defense of District may be tendered by District to the Cross Valley who shall, if so tendered by District, accept and undertake to defend or settle with the Claimant. District retains the right to approve claims investigation and legal counsel assigned to said claim or actions acting reasonably and all investigation and legal work product regarding said claim shall be performed under a fiduciary relationship to the District.

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Section 4. Incorporation and Ratification.

All other terms of the October 16, 2001 Interlocal are hereby ratified and remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as of this 18th day of MARCH, 2010.

SILVER LAKE WATER DISTRICT:

Bill Anderson
President

Karl Keppler
Commissioner

Commissioner

ATTESTED TO:

Secretary-Commissioner

CROSS VALLEY WATER DISTRICT:

President

Commissioner

Commissioner

ATTESTED TO:

Secretary-Commissioner

RESOLUTION NO. 2008-6-2

A RESOLUTION of the Board of Commissioners of Cross Valley Water District of Snohomish County, Washington, approving amendment to Silver Lake Interlocal Agreement.

WHEREAS, the District was authorized to execute an Interlocal Agreement with Silver Lake Water District by the adoption of Resolution No. 1994-4-2 on April 19, 1994, which agreement provided for the provision of water and sewer service to customers of both District's in the vicinity of the common boundary line of both districts; and

WHEREAS, the Boards of Commissioners of Cross Valley and Silver Lake Water Districts executed an amended Interlocal Agreement incorporating changes requested by Snohomish County which was approved by the adoption of Resolution No. 2001-10-5 on October 16, 2001; and

WHEREAS, the Board of Commissioners approved an amendment to the Interlocal Agreement to add several lots in Waldenwood 5 for service by the adoption of Resolution No. 2007-1-8 on January 16, 2007; and

WHEREAS, the Districts have agreed to amend the Interlocal Agreement to expand Silver Lake's sewer service area within Cross Valley's boundaries (identified as Area B); setting a rate at 117% of Silver Lake's current customers residing within its Everett sewer basin, and adding a provision to allow the rate charged to the District's customers to be changed by written mutual agreement of the Districts' Boards; and

WHEREAS, the Board of Commissioners of the District has determined that it is in the best interest of the District to approve an amendment to the current Silver Lake Interlocal, now therefore,

BE IT RESOLVED that the Board of Commissioners hereby approves approve an amendment to the current Silver Lake Interlocal Agreement to expand Silver Lake's sewer service

area within Cross Valley's boundaries (identified as Area B); setting a rate at 117% of Silver Lake's current customers residing within its Everett sewer basin, and adding a provision to allow the rate charged to the District's customers to be changed by written mutual agreement of the Districts' Boards.

BE IT FURTHER RESOLVED that the Board of Commissioners is authorized to execute the amendment to the Interlocal Agreement in the form attached hereto.

PASSED BY THE BOARD OF COMMISSIONERS of Cross Valley Water District of Snohomish County, Washington, at the regular meeting held June 3, 2008.

Mark Cassell, President

Warren E. Schott Jr., Secretary

Chris Kuehn, Commissioner

SILVER LAKE WATER-SEWER DISTRICT
CROSS VALLEY WATER DISTRICT
2008 AMENDMENT TO INTERLOCAL AGREEMENT

This Amendment entered into this _____ day of _____, 2008 between the Cross Valley Water District (hereinafter referred to as "Cross Valley") and the Silver Lake Water-Sewer District (hereinafter referred to as "Silver Lake") (Cross Valley and Silver Lake are herein referred to singularly as "District" and collectively as "Districts") amends the Interlocal Agreement between the Districts dated October 16, 2001 as amended by Agreement signed by the Districts on December 14, 2006 and February 20, 2007, respectively, (hereinafter referred to as 2007 Amendment) redefining and replacing Exhibit C of the Interlocal Agreement dated October 16, 2001.

WITNESSETH:

WHEREAS, the Districts entered into an Interlocal Agreement dated October 16, 2001 regarding the provision of water and sewer service in each other's District (herein referred to as "Interlocal"). A copy of the Interlocal is attached to this Amendment as Exhibit A-1; and

WHEREAS, the Districts amended this Interlocal to redefine and replace Exhibit C of the Interlocal by the 2007 Amendment; and

WHEREAS, the Districts wish to amend the Interlocal to expand the sewer service area for Silver Lake within Cross Valley's boundaries (Area B); and

WHEREAS, the Districts are special purpose municipal corporations in Snohomish County, Washington, organized under the laws of the State of Washington; and

WHEREAS, the Districts desire to enter into this Amendment pursuant to the authority granted in Chapter 39.34 of the Revised Code of Washington and RCW 57.08.007; and

WHEREAS, each District has the authority to construct, condemn and purchase, acquire, add to, alter, maintain and operate waterworks, and sewer systems, within or without their corporate limits, for the purpose of furnishing its inhabitants or any other persons with an ample supply of water and for the purpose of disposing of wastewater; and

WHEREAS, the Districts wish to protect and promote their interests and the interests of their rate payers and to provide water service and sewer service to certain customers located within their respective Districts by both using water lines and sewer lines owned and operated by the other District and by providing for the wholesale of water between the Districts; and

WHEREAS, state law does not allow a special purpose water and sewer district to extend service to customers located within the boundaries of a different water and sewer district without such district's consent and approval; and

WHEREAS, both Districts desire to cooperate in providing water and sewer service to certain properties near or adjacent to the Districts' common boundary lines; and

WHEREAS, both Districts recognize that the other District has the sole lawful authority to provide water and sewer service to properties within its jurisdiction; and

WHEREAS, in accordance with RCW 57.08.007, and by interlocal agreement, the Districts may provide for water and sewer service by one District in the other District's area.

NOW, THEREFORE, the Districts do hereby agree as follows:

Section 1. Purpose.

The purpose of this Amendment is to add lands to Area "B" as described in the Interlocal so as to allow additional land area to be subject to the terms of the Interlocal to provide for future sewer service by Silver Lake to properties within Area "B."

Section 2. Expanded Area B.

Area "B" of the Interlocal is amended to add the lands as described and depicted on Exhibit B-1 attached hereto. For ease of future administration of the Interlocal, the Districts agree that Exhibit B-1 may be inserted as the substitute exhibit for Exhibit B in the Interlocal and Exhibit C-1 of the 2007 Amendment may be inserted as the substitute for Exhibit C in the Interlocal.

Section 3. A new paragraph is added to Section 5 of the Interlocal to read as follows:

> The sewer rate applied by Silver Lake to sewer customers within Area B shall be calculated at 117%, or as otherwise set by written mutual agreement of the Districts' Boards of Commissioners, of the then current rate as now or hereafter amended for Silver Lake sewer customers residing within its Everett sewer basin; that is, Silver Lake customers within its own jurisdiction whose sewer flows through piping and sewer facilities to the Everett Water Pollution Control Facility.

Section 4. Incorporation and Ratification.

All other terms of the October 16, 2001 Interlocal are hereby ratified and remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as of this _____ day of _____, 2008.

SILVER LAKE WATER DISTRICT:

_____
President

_____
Commissioner

_____
Commissioner

ATTESTED TO:

_____
Secretary-Commissioner

CROSS VALLEY WATER DISTRICT:

_____
President

_____
Commissioner

_____
Commissioner

ATTESTED TO:

_____
Secretary-Commissioner

RESOLUTION NO. 2005-2-11

A RESOLUTION of the Board Commissioners of Cross Valley Water District of Snohomish County, approving Clearview Water Supply Agency Interlocal Joint Operating Agreement.

WHEREAS, the Board of Commissioners of Cross Valley Water District authorized the District to execute an Interlocal Agreement with the Clearview Group for the Clearview Subregional Project on November 22, 1996 by the adoption of Resolution No. 1996-11-2; and

WHEREAS, the Board of Commissioners authorized the District to participate in Phase II of the Clearview Subregional Project ("Clearview Project General Facilities") by the adoption of Resolution No. 1998-10-1 on October 20, 1998; and

WHEREAS, the members of the Clearview Water Supply Agency, which are Alderwood Water and Wastewater District, Silver Lake Water District and Cross Valley Water District, have negotiated and agreed to an Interlocal Joint Operating Agreement; and

WHEREAS, the Board of Commissioners has determined that it is in the best interest of the District to approve the Interlocal Joint Operating Agreement among Alderwood Water and Wastewater District, Silver Lake Water District and Cross Valley Water District; now therefore,

BE IT RESOLVED that the Board of Commissioners hereby approves the Interlocal Joint Operating Agreement among Alderwood Water and Wastewater District, Silver Lake Water District and Cross Valley Water District in the form attached hereto.

PASSED BY THE BOARD OF COMMISSIONERS of Cross Valley Water District of Snohomish County, Washington, at the regular meeting held February 15, 2005.

Dale Deierling, President

Warren E. Schott Jr., Secretary

Ginger Desy, Commissioner

CLEARVIEW WATER SUPPLY AGENCY
INTERLOCAL JOINT OPERATING AGREEMENT

This Interlocal Joint Operating Agreement (the "Agreement") is made and entered into by and between the following parties:

Alderwood Water and Wastewater District, a Washington municipal corporation (hereinafter referred to as "AWWD");

Cross Valley Water District, a Washington municipal corporation (hereinafter referred to as "CVWD"); and

Silver Lake Water District, a Washington municipal corporation (hereinafter referred to as "SLWD").

All the parties to this Agreement may be referred to individually as "District" and collectively referred to as "Districts."

RECITALS

A. WHEREAS, the Districts provide water service to residents in Southwest Snohomish County; and

B. WHEREAS, the Districts entered into an interlocal agreement to construct a project known as the "Clearview Project", which includes a water pump station, approximately eight miles of water transmission line, a river crossing, and a reservoir (the "Clearview Project Facilities"); and

C. WHEREAS, the Districts will jointly operate the Clearview Project Facilities into the future to provide water to the residents of each respective District; and

D. WHEREAS, each District will benefit from the joint operation of the Clearview Project Facilities; and

E. WHEREAS, the purpose of this Agreement is to provide for joint management, administration, and funding of the Clearview Project Facilities; and

F. WHEREAS, this Agreement is entered into by the undersigned Districts, municipal corporations organized under the laws of the State of Washington, pursuant to the Interlocal Cooperation Act, Chapter 39.34 RCW, and after authorization by the legislative bodies of each of the Districts.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained herein, the Districts hereby agree as follows:

I.
CREATION AND ORGANIZATION

1. Creation of Organization. The Districts hereby agree to create an administrative entity under the provisions of Chapter 39.34 RCW to be known as Clearview Water Supply Agency.

1.1. Initial Formation Expenses. All expenses incurred by AWWD in the formation of Clearview Water Supply Agency shall be submitted to Clearview Water Supply Agency for reimbursement, and such expenses shall be borne equally by all the Districts.

1.2. Initial Board of Directors. Clearview Water Supply Agency shall be governed by a Board of Directors. The initial Board of Directors of Clearview Water Supply Agency shall consist of one representative appointed by each District, who must be an elected official for that District.

1.3. Adoption of Bylaws. The Board of Directors may adopt bylaws for the efficient operation of Clearview Water Supply Agency.

2. Membership in Clearview Water Supply Agency. Membership in Clearview Water Supply Agency shall be limited to water districts organized pursuant to Chapter 57 RCW or other government agencies that provide water services.

2.1. Initial Members. The undersigned Districts shall constitute the three initial members of Clearview Water Supply Agency.

2.2. New Members. Additional members may be added to this Agreement by the unanimous agreement of each District. Additional members shall be required to reasonably participate in the funding and financing of Clearview Project Facilities and the Clearview Water Supply Agency upon terms and conditions recommended by the Board of Directors and approved by all Districts.

2.3. Annual Meeting of the Members. Each year, the Boards of Commissioners of each District shall hold a joint meeting to receive a report from the Board of Directors of Clearview Water Supply Agency concerning the status of Clearview Water Supply Agency and the Clearview Project Facilities. The annual

meeting shall be held at a place directed by the Board of Directors and shall be held on the third Wednesday of June of each and every year, at 7:00 p.m., or such other date and time as the Districts may agree.

3. Governance of Clearview Water Supply Agency. Clearview Water Supply Agency shall be governed by a Board of Directors consisting of one representative from each District (the "Board of Directors"). By execution of this Agreement, each District fully authorizes its appointed Director to act on its behalf regarding all matters within the authority of the Board of Directors relating to Clearview Water Supply Agency and the Clearview Project Facilities.

3.1. Appointment of Director and Alternate. The Board of Commissioners of each District shall appoint its representative to serve on the Board of Directors. The Board of Commissioners may also designate an Alternate Director; provided that alternates shall be designated in writing prior to any meeting of the Board of Directors at which the alternate attends and acts on behalf of a District. These Directors and Alternate Directors shall serve under the terms and conditions of this Agreement until such time as they resign or are replaced. Individuals eligible to serve as Directors and Alternate Directors must be elected officials of each District. Directors and Alternate Directors shall not receive any compensation from the Clearview Water Supply Agency, but rather may be paid by their Districts.

3.2. Lead Agency. By execution of this Agreement, the Districts agree that AWWD shall be the initial lead agency of Clearview Water Supply Agency (the "Lead Agency"). The Lead Agency shall be authorized and required to execute all actions, including execution of all contracts, properly authorized by the Board of Directors. The Board of Directors may select a new District to serve as the Lead Agency upon a majority vote of the Board of Directors. Clearview Water Supply Agency shall reimburse the District for administrative staff time directly associated with the operation and maintenance of the Clearview Project Facilities, with the exception that no reimbursement to AWWD's designee shall be made for attendance at meetings of the Technical Committee or Board of Directors.

3.3. Board of Directors – President. The Director representing AWWD shall serve as initial President of Clearview Water Supply Agency. Thereafter, and annually, the Board of Directors shall elect one of the Directors as President. The President shall preside over meetings of the Board of Directors. The President shall be the official public spokesperson for Clearview Water Supply Agency.

3.4. Board of Directors – Secretary. The Board of Directors shall annually elect one of the Directors as Secretary.

3.5. Meetings of the Board of Directors. The Board of Directors shall hold regular meetings on a monthly basis or upon a schedule determined by the Board of Directors. In addition, any District, through its Director, may call a special Board meeting by providing two (2) business days prior written notice of the time and place of the meeting to all other Directors. The Board of Directors shall be responsible for providing any required legal notice of meetings to other parties interested in Clearview Water Supply Agency or Clearview Project Facilities matters. The Lead Agency shall provide services for notice of meetings and meeting facilities, as legally required, unless otherwise authorized by the Board of Directors.

3.6. Vacancy on Board of Directors. The District shall appoint a new Director within sixty (60) days should a vacancy occur.

3.7. Quorum. A quorum is required to conduct a valid meeting of the Board of Directors. A quorum is defined as the physical presence of the majority of the Directors. Any other director may attend by electronic communication.

3.8. Decisions of the Board of Directors. Except as otherwise provided in this Agreement, all actions of the Board of Directors authorizing contracts or budgets shall be unanimous. All emergency decisions and other decisions affecting Clearview Water Supply Agency or the Clearview Project Facilities shall be by majority vote of the Directors. The Board of Directors shall take no action at a regular or special Board meeting unless a quorum is present. The Board of Directors shall act in good faith to ensure that all Directors are properly notified of all regular and special Board meetings.

3.9. Compliance with Laws. The Board of Directors, and each Director and alternate, shall comply with all applicable laws and regulations.

4. Purpose of Agreement. The purpose of this Agreement and of the establishment of Clearview Water Supply Agency is to provide for the administration and funding for the operation and maintenance of the Clearview Project Facilities which are held in common by the Districts.

II.
FINANCES AND OPERATIONS

5. Powers of Clearview Water Supply Agency. Pursuant to Chapter 39.34 RCW and this Agreement, Clearview Water Supply Agency shall have the powers, privileges, and authority as provided by law and as delegated by the Districts pursuant to this Agreement, including, but not limited to the power to:

a. acquire, construct, receive, own, manage, purchase, sell, and lease real, personal, and intangible property;

b. operate and maintain facilities;

c. enter into contracts;

d. hire and fire personnel;

e. sue and be sued;

f. exercise the power of eminent domain (through its member Districts at their individual discretion unless and until Clearview Water Supply Agency has that power under applicable law);

g. purchase and sell water and services;

h. provide services or facilities to any District, other governmental water utilities, or governmental service providers;

i. invest its funds;

j. establish policies, guidelines, or regulations to carry out its powers and responsibilities;

k. purchase insurance, including participation in pooled insurance and self-insurance programs, and indemnify its member Districts, officers, and employees in accordance with law;

l. exercise all other powers within the authority of, and that may be exercised individually by all of its member Districts with respect to water supply, conservation, reuse, treatment, and transmission; and

m. exercise all other powers that Clearview Water Supply Agency may exercise under the law relating to its formation and that are not inconsistent with this Agreement or with Chapter 39.34 RCW or other applicable law.

In carrying out its duties under this Agreement, Clearview Water Supply Agency shall utilize, operate, and maintain real and personal property that is owned by one or more of the member Districts. This property includes the pump station site owned by CVWD, the reservoir site owned by AWWD, and Clearview Project Facilities owned in

common by the Districts. Except as provided in this Agreement, none of the Clearview Project Facilities or other assets of the Clearview Water Supply Agency may be sold without a unanimous affirmative vote of the Board of Directors and the written authorization of the District that holds title to the asset proposed to be sold. Any party may convey its unused capacity to other parties to this Agreement or any municipal purveyor. Capacity Conveyances to another municipal purveyor shall not include membership in the Clearview Water Supply Agency, except in compliance with Section 2.2 hereof. No water supply capacity in the Clearview Facilities may be sold to non-members of the Clearview Water Supply Agency without unanimous affirmative vote of the Board of Directors. Except as provided by this Agreement or as otherwise unanimously agreed to by the Districts in writing, Clearview Water Supply Agency shall have no power or authority to act on behalf of, or in the stead of, the undersigned Districts.

6. Ownership of Clearview Water Supply Agency. Each District's initial ownership interest in Clearview Water Supply Agency is based on and in proportion to each District's percentage share of the total capacity as shown on Exhibit "A" of this Agreement. The Board of Directors may amend the respective ownership interests of the member Districts only by unanimous consent. The Board of Directors is authorized to admit new members into Clearview Water Supply Agency and to sell ownership interests, by unanimous consent, to any authorized entity that is approved for admission by the Boards of Commissioners of the Districts pursuant to Section 2.2 of this Agreement.

7. Technical Committee. The Board of Directors shall establish a technical committee (the "Technical Committee") consisting of one designee provided by each respective member of Clearview Water Supply Agency. The Technical Committee shall be responsible for day-to-day management of the Clearview Project Facilities operations. Any disputes or disagreements amongst the members of the Technical Committee shall be presented to and resolved by a majority vote of the Board of Directors at a properly held meeting of the Board of Directors. The members of the Technical Committee will not be compensated by the Clearview Water Supply Agency, but rather will be reimbursed by their respective Districts for attendance at Technical Committee meetings or Clearview Water Supply Agency meetings.

8. Operations. The Technical Committee shall develop, and update from time to time, an "Operations and Maintenance Manual" which shall be submitted for final review and approval to the Board of Directors. The Operations and Maintenance Manual shall detail the necessary functions required by each District to provide safe and efficient operation and maintenance of the Clearview Project Facilities.

9. Excess Capacity. Each District's allocated share of total water supply capacity for each of the Clearview Project Facilities is attached to this Agreement as Exhibit "A". Nothing in this Agreement shall be construed to prevent a member District from selling or transferring water supply capacity allocated to that District to another member District. An agreement between two member Districts to reallocate water supply capacity amongst those two Districts shall not require the approval or consent of the Board of Directors.

10. Operating Fund. Upon execution of this Agreement by all Districts, the Lead Agency shall establish an operational fund (the "Fund"). Each District shall provide AWWD with the initial amount listed below for the purpose of establishing the Fund. The initial payment shall be based upon the Clearview Water Supply Agency Budget and in proportion to each District's respective share of the Budget. It is agreed that the Fund shall be initiated by payment of the initial three months of the annual budget. The Fund shall be maintained separately from all other Lead Agency funds and accounts. All interest shall accrue to the benefit of the Fund. The Lead Agency shall maintain all accounting records related to the Fund and may charge the Fund for the reasonable costs of accounting services. The Lead Agency shall provide all Districts with a monthly accounting of the Fund income and expenses and the balance of funds on hand. The Lead Agency shall provide for the annual state audit of the Fund and may charge the Fund for the reasonable costs of the audit.

III.
ADMINISTRATIVE SERVICES

11. Administrative Services. The Lead Agency, selected per Section 3.2, shall perform and be responsible for all general administrative tasks necessary to carry out the functions and operations of Clearview Water Supply Agency and the Clearview Project Facilities. Such administrative tasks include, but shall not be limited to, clerical and secretarial tasks, word processing and document creation, scheduling, file organization and retention, payment of expenses and other financial services, providing of notices and facilities for meetings, and recordkeeping.

12. Budget. Prior to the beginning of each year, the Lead Agency shall, in conjunction with the Technical Committee, prepare a proposed budget for the estimated costs of performing the necessary administrative and operations services for Clearview in the upcoming year. This budget shall be presented to the Clearview Board of Directors for final approval not later than the November meeting of the Board of Directors, and may be increased or decreased thereafter by the Board of Directors. The Lead Agency shall prepare financial reports on a periodic basis and submit them to the Board of Directors.

13. Reimbursement.

13.1 The Lead Agency's personnel who perform administrative tasks related to Clearview Water Supply Agency or the Clearview Project Facilities shall track and record the amount of time and expenses that is spent working on such matters. On a monthly basis, the Lead Agency shall calculate the amount of personnel time and expenses allocated to Clearview administrative tasks and shall bill Clearview Water Supply Agency the reasonable costs of performance of those tasks. Clearview Water Supply Agency shall reimburse the Lead Agency the reasonable costs of all personnel time and expenses properly allocated to Clearview Water Supply Agency administrative tasks; however no reimbursement shall be had for attendance at meetings of the Technical Committee or Board of Directors. Bills shall be payable to the Lead Agency within thirty days of receipt. Clearview agrees to pay interest at the rate of one percent (1%) per month for any delinquency greater than sixty (60) days after the billing date.

13.2 In Addition to Lead Agency administrative services, from time to time personnel and equipment of the Districts may be used on Clearview Water Supply Agency administrative matters and operations and maintenance of Clearview Project Facilities. Districts incurring such expenses shall on a monthly basis calculate the amount of personnel time and expenses and shall bill the Clearview Water Supply Agency for the reasonable costs of the performance of such tasks. The Clearview Water Supply Agency shall reimburse the Districts for the reasonable costs of all personnel time and expenses and equipment use so allocated to Clearview Water Supply Agency administration and operations and maintenance tasks. No reimbursement shall be had for attendance at meetings of the Technical Committee or Board of Directors. Bills shall be payable to the District within thirty (30) days of receipt by the Lead Agency. Clearview agrees to pay interest at the rate of one percent (1%) per month on any delinquency greater than sixty (60) days after billing date.

14. Responsibility for Employees. The Lead Agency shall retain full control over its personnel and shall remain responsible for payment of the wages, salaries, and benefits, as applicable, of its personnel. Nothing in this Agreement shall be construed to make Clearview Water Supply Agency the employer of any personnel of the Lead Agency or any other District.

15. Insurance. The Lead Agency shall assist the Clearview Water Supply Agency in obtaining quotes for a contract for comprehensive personal liability and property damage insurance covering the Clearview Project facilities. Such insurance (i) shall include coverage for any accident resulting in bodily injury to or death of any person and consequential damages arising therefrom; (ii) shall include comprehensive property damage insurance; (iii) shall be in an amount of not less than $1 million per occurrence; and (iv) shall be issued by a financially responsible insurance company or companies. The Clearview Water Supply Agency shall name its members as additional insureds on such insurance. 16. Allocation of Liability. The Lead Agency and Clearview Water Supply Agency shall be legally responsible for their own conduct in the

performance of their respective obligations arising under this Agreement. Neither the Lead Agency nor Clearview Water Supply Agency assumes any responsibility or liability for actions or omissions taken by or under the control of the other party.

IV.
MISCELLANEOUS TERMS

17. Term of Agreement. The initial term of this Agreement shall commence upon execution by all the Districts, and shall continue in effect through December 31, 2054. Unless the Board of Directors unanimously agrees otherwise by ten (10) years before the end of a term, this Agreement shall automatically renew for additional twenty-year terms. A District may withdraw from this Agreement only by providing ten (10) years prior notice to the other Districts of its intent to withdraw.

18. Dissolution. Clearview Water Supply Agency may be dissolved prior to the expiration of a term only upon the unanimous consent of the member Districts. Upon dissolution, all valid outstanding expenses, liabilities, and obligations of Clearview Water Supply Agency on the effective date of dissolution shall be paid in accordance with this Agreement. Any remaining balance on hand in the Fund on the effective date of dissolution shall be distributed to the Districts in proportion to their respective ownership interests on the effective date of dissolution. Any other assets of Clearview Water Supply Agency on the effective date of dissolution shall be liquidated, with the proceeds distributed to the Districts in proportion to their ownership interest on the effective date of dissolution. Assets of Clearview Water Supply Agency that are unable to be liquidated prior to the effective date of dissolution shall be held in common by the Districts in proportion to their ownership interest on the effective date of dissolution until such liquidation occurs.

19. Dispute Resolution. If a dispute cannot be resolved by mediation, any District may petition for arbitration.

A petition for arbitration shall be in writing directed to each District having membership in the Clearview Water Supply Agency and shall state: (1) the nature of the dispute, (2) the relief requested, (3) the name and address of the Co-Arbitrator appointed by the Petitioning District, and (4) a list of three or more Arbitrators (with background information) nominated by the Petitioning District to be the Chief Arbitrator on the arbitration panel.

Within thirty (30) days of mailing of the Petition for Arbitration, each of the other Districts having membership in the Clearview Water Supply Agency shall submit to all other parties a Response Petition, stating: (1) the nature of the dispute, (2) the relief requested, (3) the name and address of the Co-Arbitrator appointed by the

Responding District, and (4) a list of three or more arbitrators (with background information) nominated by the Responding District to be the Chief Arbitrator on the arbitration panel.

Within sixty (60) days of mailing of the Petition for Arbitration, the Co-Arbitrators shall confer on and select, by unanimous agreement, the Chief Arbitrator.

The Co-Arbitrators appointed by the Districts and the Chief Arbitrator shall constitute the arbitration panel to hear and decide the dispute. The Co-Arbitrators may participate in the hearing and all deliberations of the panel. Co-Arbitrators shall submit a recommended decision to the Chief Arbitrator. The Chief Arbitrator alone shall make a Final Decision that will be binding on all parties.

A District may participate without a Response; provided that, if a District fails to submit a timely Response naming its Co-Arbitrator and nomination for the Chief Arbitrator(s), then the remaining District(s) submitting timely Responses and the Petitioning District may agree on the Chief Arbitrator.

Should the Petitioner and District(s) submitting timely Responses fail to agree unanimously in the selection of Chief Arbitrator, then any party may petition the Superior Court of the State of Washington for Snohomish County for an Arbitration Order. The Court shall select the Chief Arbitrator only from persons nominated by the parties in the Petition and Responses.

20. Governing Law. This Agreement, and the rights of the parties hereto, shall be governed by and construed in accordance with the laws of the State of Washington, and the Districts agree that any litigation that arises out of this Agreement shall take place in Snohomish County, Washington.

21. Severability. In case one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision hereof, and this Agreement shall be construed as if such invalid, illegal, or unenforceable provision had never been contained herein.

22. Counterparts. This Agreement may be executed in any number of counterparts, and each such counterpart hereof shall be deemed to be an original instrument, but all such counterparts shall together constitute one integrated agreement.

23. Amendments. No modification, termination, or amendment of this Agreement may be made except by unanimous vote of the Board of Directors.

24. Neutral Authorship. Each provision of this Agreement has been reviewed and negotiated, and represents the combined work product of all Districts hereto. No presumption or other rules of construction that would interpret the provisions of this Agreement in favor of or against the District preparing the same shall be applicable in connection with the construction or interpretation of any of the provisions of this Agreement.

25. Entire Agreement. The entire agreement between the Districts hereto is contained in this Agreement, and this Agreement supersedes all of their previous understandings and agreements, written and oral, with respect to the subject matter of this Agreement. This Agreement may be amended only by written instrument executed by the Districts subsequent to the date hereof.

ADOPTED in open public meetings of the Boards of Commissioners of the undersigned Districts on the dates indicated below.

ALDERWOOD WATER AND WASTEWATER DISTRICT

_____ _____
President Date

_____
Secretary

SILVER LAKE WATER DISTRICT

Roger Summy 02-10-05
President Date

Rod Keppler
Secretary

CROSS VALLEY WATER DISTRICT

Mike Dierling FEB 15 2005
President Date

Secretary

Cost	Capacity	Pipeline B $1,366,780 % Share	Cost	Capacity	Reservoir $6,080,000 % Share	Cost
$8,492,588	18.5	71.98%	$983,869	7.5	63.03%	$3,831,933
$4,131,529	1.2	4.67%	$63,819	2.4	20.17%	$1,226,218
$2,754,353	6	23.35%	$319,093	2	16.81%	$1,021,849
$15,378,470	25.7	100.00%	$1,366,780	11.9	100.00%	$6,080,000

incremental capacity	Capacity	Pipeline B % Share	incremental capacity	Capacity	Reservoir % Share	incremental capacity
0	18.5	45.45%	0	13.9	58.40%	6.4
3	4.2	10.32%	3	2.4	10.08%	0
12	18	44.23%	12	7.5	31.51%	5.5
15	40.7	100.00%	15	23.8	100.00%	11.9

EXHIBIT "A"
Clearview Phase II

Table I
Initial Construction Capacities

Agency	Pump Station $5,870,000 Capacity	% Share	Cost	River Crossing $ 3,460,000 Capacity	% Share	Cost	Pipeline A $15,378,470 Capacity	% Share	Cost	Pipeline B $1,366,780 Capacity	% Share	Cost	Reservoir $6,080,000 Capacity	% Share	Cost
Alderwood	18.5	55.22%	$ 3,241,642	18.5	40.66%	$ 1,406,813	18.5	55.22%	$8,492,588	18.5	71.98%	$983,869	7.5	63.03%	$3,831,933
Silver Lake	9	26.87%	$ 1,577,015	9	19.78%	$ 684,396	9	26.87%	$4,131,529	1.2	4.67%	$63,819	2.4	20.17%	$1,226,218
Cross Valley	6	17.91%	$ 1,051,343	18	39.56%	$ 1,368,791	6	17.91%	$2,754,353	6	23.35%	$319,093	2	16.81%	$1,021,849
total	33.5	100.00%	$ 5,870,000	45.5	100.00%	$ 3,460,000	33.5	100.00%	$15,378,470	25.7	100.00%	$1,366,780	11.9	100.00%	$6,080,000

Table II
Future Capacities

Agency	Pump Station Capacity	% Share	incremental capacity	River Crossing Capacity	% Share	incremental capacity	Pipeline A Capacity	% Share	incremental capacity	Pipeline B Capacity	% Share	incremental capacity	Reservoir Capacity	% Share	incremental capacity
Alderwood	18.5	38.14%	0	18.5	38.14%	0	18.5	38.14%	0	18.5	45.45%	0	13.9	58.40%	6.4
Silver Lake	12	24.74%	3	12	24.74%	3	12	24.74%	3	4.2	10.32%	3	2.4	10.08%	0
Cross Valley	18	37.11%	12	18	37.11%	0	18	37.11%	12	18	44.23%	12	7.5	31.51%	5.5
total	48.5	100.00%	15	48.5	100.00%	3	48.5	100.00%	15	40.7	100.00%	15	23.8	100.00%	11.9

RESOLUTION NO. 2002-8-6

A RESOLUTION of the Board Commissioners of Cross Valley Water District of Snohomish County, Washington approving amendment to Interlocal Agreement with Silver Lake Water District for service to lots for the Plat of The Village At Outcrop Creek located at 152nd Street SE and 75th Avenue SE.

WHEREAS, the Board of Commissioners of Cross Valley Water District previously approved an Interlocal Agreement with Silver Lake Water District for temporary water and sewer to be provided by Silver Lake to property located within the corporate boundaries of Cross Valley by the adoption of Resolution No. 1998-12-1 on December 15, 1998; and

WHEREAS, the District has received a request for approval of an Amendment to the Agreement entitled "Agreement as to Service Lots by District For the Plat of The Village at Outcrop Creek;" and

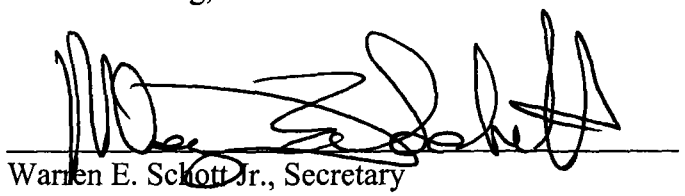
WHEREAS, the purpose of such Amendment is to specify which lots will be ultimately be served water and sewer service by Cross Valley, and, therefore, which lots are required to pay Cross Valley's sewer and water connection charges; and

WHEREAS, the Board of Commissioners has determined that it is in the best interest of the District to approve the Amendment to the Interlocal Agreement; now, therefore,

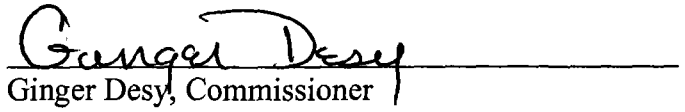
BE IT RESOLVED that the Amendment to the Interlocal Agreement with Silver Lake Water District entitled "Agreement as to Service Lots by District for the Plat of the Village at Outcrop Creek;" is approved, and the District is authorized to enter into the Amendment to the Interlocal Agreement in the form attached hereto as Exhibit A.

PASSED BY THE BOARD OF COMMISSIONERS of Cross Valley Water District of Snohomish County, Washington, at the regular meeting held August 20, 2002.

Dale Deierling, President



Warren E. Schott Jr., Secretary



Ginger Desy, Commissioner

SILVER LAKE WATER DISTRICT
CROSS VALLEY WATER DISTRICT
AGREEMENT AS TO SERVICE LOTS BY DISTRICT
FOR THE PLAT OF THE VILLAGE AT OUTCROP CREEK

This agreement entered into this 22 day of August, 2002 between Cross Valley Water District and the Silver Lake Water District to finalize which lots will be ultimately served by Cross Valley Water District. The road alignment of the Plat of The Village at Outcrop Creek was laid out with existing topography and does not closely follow the District Boundary between Silver Lake Water District and Cross Valley Water District. Cross Valley Water District lies southerly of the north line of the southwest one-quarter of the northeast one-quarter of Section 2, Township 27 North, Range 5 East of the Willamette Meridian which splits approximately ten lots in the Plat of The Village at Outcrop Creek. The lots to be served by Cross Valley Water District, at such time Cross Valley is able to and does serve lots within this plat in accordance with the terms of that certain interlocal agreement between the parties dated December 22, 1998, will be per attached 'Exhibit A' and described as follows: Lot 18 of Division 1 of the Plat of Outcrop Creek, Lots 1 through 34 of Division 2 of the Plat of Outcrop Creek and Lots 7 through 29 of Division 3 of the Plat of Outcrop Creek. One lot in Division 1, 34 lots in Division 2 and 23 lots in Division 3 for a total of fifty-eight (58) lots.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of this 22 day of August, 2002.

SILVER LAKE WATER DISTRICT

By: _____

CROSS VALLEY WATER DISTRICT

By: _____

Its: General Manager Its: PRESIDENT AND COMMISSIONER

REPRESENTATIVE ACKNOWLEDGMENT

STATE OF WASHINGTON)
) ss.
COUNTY OF SNOHOMISH)

I certify that I know or have satisfactory evidence that, Patrick Curran is/are the person(s) who appeared before me, and said person(s) acknowledged that (he/she/they) signed this instrument, on oath stated that (he/she) was authorized to execute the instrument and acknowledged it as the General Manager of Silver Lake Water Dist. to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: August 22, 02

Mary Ann Eastman
(Signature)

Mary Ann Eastman
(print name)

NOTARY PUBLIC in and for Washington State, residing at Everett, WA

My appointment expires 7-28-2003

MARY-ANN EASTMAN NOTARY PUBLIC COMMISSION EXPIRES 7-28-2003 STATE OF WASHINGTON
(Seal or stamp)

REPRESENTATIVE ACKNOWLEDGMENT

STATE OF WASHINGTON)
) ss.
COUNTY OF SNOHOMISH)

I certify that I know or have satisfactory evidence that, DALE DEIERLING is/are the person(s) who appeared before me, and said person(s) acknowledged that (he/she/they) signed this instrument, on oath stated that (he/she) was authorized to execute the instrument and acknowledged it as the PRESIDENT of CROSS VALLEY WATER DISTRICT to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: AUGUST 20, 2002

Carole A. Gabrio
(Signature)

CAROLE A. GABRIO
(print name)

NOTARY PUBLIC in and for Washington State, residing at SNOHOMISH

My appointment expires 3-23-2003

CAROLE A. GABRIO NOTARY PUBLIC COMMISSION EXPIRES 3-23-2003 STATE OF WASHINGTON
(Seal or stamp)

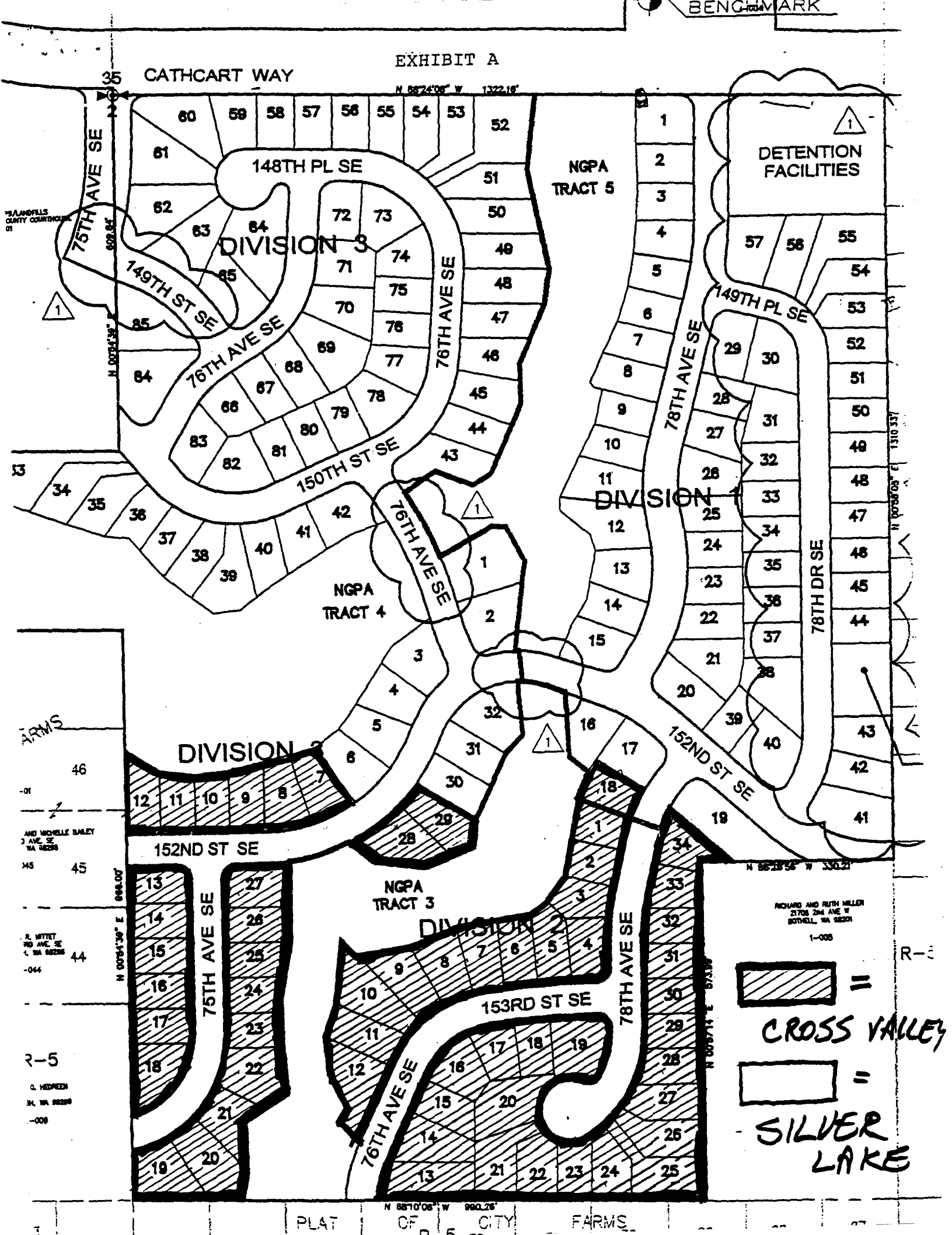


EXHIBIT A
BENCHMARK
35
CATHCART WAY
N 88°24'08" W 1322.16'
148TH PL SE
149TH ST SE
150TH ST SE
149TH PL SE
152ND ST SE
153RD ST SE
75TH AVE SE
76TH AVE SE
78TH AVE SE
78TH DR SE
DIVISION 3
DIVISION 1
DIVISION 2
DETENTION FACILITIES
NGPA TRACT 5
NGPA TRACT 4
NGPA TRACT 3
= CROSS VALLEY
= SILVER LAKE
PLAT OF CITY FARMS

RESOLUTION NO. 1994-4-2

A RESOLUTION of the Board of Commissioners of Cross Valley Water District of Snohomish County, Washington approving Interlocal Agreement with Silver Lake Water District.

WHEREAS, the District and Silver Lake Water District ("Silver Lake") share a long common boundary line; and

WHEREAS, the District and Silver Lake desire to provide water service and sewer service to certain customers located within their respective Districts by both using water lines and sewer lines owned and operation by the other District and by providing for the wholesale of water between the Districts; and

WHEREAS, District is currently providing water service to certain properties within the boundaries of Silver Lake, and Silver Lake desires to provide sewer service to certain properties within the boundaries of Cross Valley, and both Districts desire to provide for the wholesaling of water to the other District: now therefore,

BE IT RESOLVED that the Board of Commissioners of Cross Valley Water District hereby approves the Interlocal Agreement attached hereto as Exhibit A between the District and Silver Lake, and the District is authorized to immediately implement the terms of the Agreement.

PASSED BY THE BOARD OF COMMISSIONERS of Cross Valley Water District of Snohomish County, Washington, at the regular meeting held April 19, 1994.

Warren Schott, President

Dale Deierling, Secretary

Arthur Sigurdson, Commissioner

SILVER LAKE WATER DISTRICT
CROSS VALLEY WATER DISTRICT
INTERLOCAL AGREEMENT

This Agreement entered into this _____ day of _____, 1994 between the Cross Valley Water District (hereinafter referred to as "Cross Valley" and the Silver Lake Water District (hereinafter referred to as "Silver Lake"),

W I T N E S S E T H:

WHEREAS, the Districts are special purpose municipal corporations in Snohomish County, Washington, organized under the laws of the State of Washington; and

WHEREAS, the Districts desire to enter into this Agreement pursuant to the authority granted in Chapter 39.34 of the Revised Code of Washington and RCW 57.08.045; and

WHEREAS, each District has the authority to construct, condemn and purchase, acquire, add to, alter, maintain and operate waterworks, and sewer systems, within or without their corporate limits, for the purpose of furnishing its inhabitants or any other persons with an ample supply of water and for the purpose of disposing of wastewater; and

WHEREAS, the Districts wish to protect and promote their interests and the interests of their rate payers and to provide water service and sewer service to certain customers located within their respective Districts by both using water lines and sewer lines owned and operated by the other District and by providing for the wholesale of water between the Districts; and

WHEREAS, Cross Valley has provided service to certain properties within the City Farms area of the Silver Lake as a private and public water purveyor; and

WHEREAS, Cross Valley Water District has recently been lawfully organized as a municipal corporation in accordance with Title 57 RCW; and

WHEREAS, state law does not allow a special purpose water and sewer district to extend service to customers located within the boundaries of a different water and sewer district; and

WHEREAS, both Districts desire to cooperate in providing water and sewer service to certain properties near or adjacent to the Districts common boundary lines; and

WHEREAS, both Districts recognize that the other District has the sole lawful authority to provide water and sewer service to properties within its jurisdiction; and

WHEREAS, by interlocal agreement the Districts may provide for water and sewer service by one District in the other District's area.

NOW, THEREFORE, the Districts do hereby agree as follows:

Section 1. Purpose.

The purpose of this Agreement is to provide delivery of water service to properties within the City Farms area as shown on Exhibit "A" attached hereto (hereinafter Area "A") of Silver Lake Water using water systems owned and operated by Cross Valley. It is the further purpose of this agreement to provide future wholesale of water by Silver Lake to Cross Valley for water service to properties within an area of Cross Valley as shown on Exhibit "B" attached hereto (hereinafter Area "B") and to provide for future sewer service by Silver Lake to properties within Area "B". All deliveries of water by Cross Valley from existing facilities owned and operated by Cross Valley within Area "A", shall be allowed by Silver Lake pursuant to the terms, conditions,and limitations of this Agreement. All deliveries of sewer by Silver Lake within Area "B", shall be allowed by Cross Valley pursuant to the terms, conditions, and limitations of this Agreement.

Section 2. Area "A" New Customers - Interim Service.

Cross Valley shall have the right and permission of Silver Lake to provide service to existing customers and to extend service to new customers and properties within Area "A". As a condition of any such new service extension, Cross Valley shall collect from property owners within Area "A" as a condition of water service to such property owner by Cross Valley all then existing Silver Lake water connection charges, capital improvement charges and other fees, except meter installation charges which will be retained by Cross Valley, which would be collected by Silver Lake for water service in accordance with its Resolutions and regulations. Such Silver Lake charges collected by Cross Valley are to be paid to Silver Lake within thirty days of the date collected by Cross Valley.

Section 3. Area "A" Maintenance and Repair.

All maintenance, operation, and repair costs and expenses of the water system shall be the sole responsibility of Cross Valley. Any and all construction, repair, reconstruction, replacement or other work on the existing system shall be done by Cross Valley. All new service line installation shall be constructed in accordance with Silver Lake standards and specifications. Any extension of the water system within Area "A" caused by a subdivision of property or new development within Area "A" shall be constructed in accordance with Silver Lake standards and specification. Any construction or improvement of the water facilities within Area "A" for existing general system improvements by Cross Valley may be constructed to

Cross Valley standards and specification. The existing water system lines set forth on Exhibit "A", which is incorporated herein as a part of this agreement, are integral to the integrity of operation of Cross Valley's system and shall be retained by Cross Valley.

For those projects requiring construction in accordance with Silver Lake standards and specifications, Cross Valley shall submit engineering plans to Silver Lake for approval at least 60 days prior to construction, and shall notify Silver Lake at least seven days prior to beginning actual construction work.

Section 4. Transfer of Customers Area "A".

At its sole discretion and election, Silver Lake may give notice to Cross Valley that Silver Lake intends to take over the customers within Area "A" 60 days from such notice. Cross Valley shall provide to Silver Lake a current list of the names and addresses of all Cross Valley water customers within the Agreement area. Silver Lake shall send notice of take over to all customers being served by Cross Valley advising them of their new water purveyor and that billing and payment of future water bills shall be handled by Silver Lake.

At such time of notice Cross Valley shall wholesale to Silver Lake sufficient water to serve all properties within Area "A" whether then being served or not should Silver Lake decide to purchase water from Cross Valley. Nothing herein shall require Silver Lake to purchase water from Cross Valley.

At the time of take over of the water system, Silver Lake shall be responsible for maintenance and operation of the water system within Area "A", except for those lines set forth on Exhibit "A".

Section 5. Area "B" New Sewer Customers.

Silver Lake shall have the right and permission of Cross Valley to extend sewer service to customers and properties within Area "B". Any and all construction of sewer facilities within Area "B", shall be constructed in accordance with Silver Lake standards and specifications. Silver Lake shall maintain and operate such sewer system. Silver Lake may collect any and all connection charges, capital improvement charges, monthly rates and charges and other fees which would be collected by Silver Lake in accordance with its Resolutions and regulations. Nothing herein shall preclude Silver Lake from entering into a sewer service extension agreement with individual property owners within Area "B".

Section 6. Silver Lake Wholesale of Water to Cross Valley - Area "B".

Subject to the provisions of Section 8, Silver Lake agrees to wholesale water to Cross Valley sufficient to serve all customers and properties within Area "B". Any and all costs of construction, maintenance and repair of facilities required to wholesale water to Cross Valley, such as master meter(s), shall be paid solely by Cross Valley. Such facilities shall be constructed in accordance with Silver lake standards and specification. Nothing herein shall require Cross Valley to purchase water from Silver Lake. Provided, however, that both water and sewer shall be provided by Silver Lake for that area delineated by the number 1 within Area "B" set forth on Exhibit "C" incorporated herein, which comprises approximately 20 lots of Waldenwood Subdivision, Phase II.

Section 7. Water Quality.

Each District warrants that it will purvey water meeting the state water quality standards and requirements to the other District and to all residents within the other District. Each District agrees to protect, hold harmless, indemnify and defend the other for any claim, demand or suit arising out of purveying water to customers within the other District or the wholesaling of water to the other District.

Section 8. Delinquent Account Collection. In order to ensure that each District can protect revenue sources and protect bond covenants as well as the operational integrity of its system, every customer of both water and sewer service in Area "B" shall be treated as though that customer was receiving both water and sewer service from Silver Lake. Any and all remedies for non-payment of utility bills, including but not limited to cut off of service as authorized by RCW 57.08.090, shall pertain to Silver Lake. At all times that Silver Lake is providing sewer service to a customer within Area "B" that is being provided water service by Cross Valley, Cross Valley shall apply any water bill payment first to any Silver Lake sewer bill for the same customer that is 30 days past due. Such Cross Valley payment shall be forwarded to Silver Lake within 30 days. Should delinquency by any such customer continue, Cross Valley shall turn off that customer's water service as provided by state law.

Section 9. Water Service to Cathcart Landfill. Both Districts understand that in order to provide water to the Snohomish County Cathcart Landfill, Cross Valley has purveyed water to Cathcart even though it is in Silver Lake. Both Districts agree and understand that at such time that Silver Lake can serve water to Cathcart, Silver Lake may give notice to Cross Valley that Silver Lake will take over service of water to Cathcart and Cross Valley will cease water delivery to Cathcart.

Section 10. Miscellaneous.

a. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their successors and assigns.

b. This document constitutes the entire agreement of the parties with respect to the subject matter hereof and may be modified only by an agreement in writing signed by all the parties hereto.

c. Waiver by any party of any term or condition of this Agreement shall not be deemed or construed as a waiver of any other term or condition, nor shall a waiver of any subsequent breach, whether of the same or of a different provision of this Agreement.

d. If any provision of this Agreement is held invalid or unenforceable, the remainder of the Agreement shall not be affected and shall remain in full-force and effect.

e. Any notices required or permitted under this Agreement shall be delivered to the District's business office.

Section 11. Arbitration.

Any controversy or claim arising out of or related to this contract or the breach thereof shall be settled by a Board of three arbitrators one of whom shall be selected by Cross Valley and one by Silver Lake and the third selected jointly by the first two, and the parties hereto agree that any decision of the arbitrators shall be binding upon both parties hereto and judgment upon the award rendered may be entered in any court having jurisdiction thereof, all in accordance with Chapter 7.04 RCW. Any costs, expenses, and legal fees incurred in arbitration or other legal action shall be awarded to the prevailing party.

Section 12. Effective Date, Duration, and Termination.

This Agreement shall become effective on the date on which this Agreement has been duly authorized and executed by the Districts. As to Area "A", this Agreement shall terminate at such time as Silver Lake's system is able to serve the properties within Area "A" receiving water from Cross Valley and Silver Lake has accomplished take over of water service in Area "A". This agreement may be terminated at an earlier date by mutual agreement of the Districts.

///

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of this _____ day of _____, 1994.

SILVER LAKE WATER DISTRICT:	CROSS VALLEY WATER DISTRICT
_____	_____
President	President
_____	_____
Commissioner	Commissioner
_____	_____
Commissioner	Commissioner
ATTESTED TO:	ATTESTED TO:
_____	_____
Secretary-Commissioner	Secretary-Commissioner

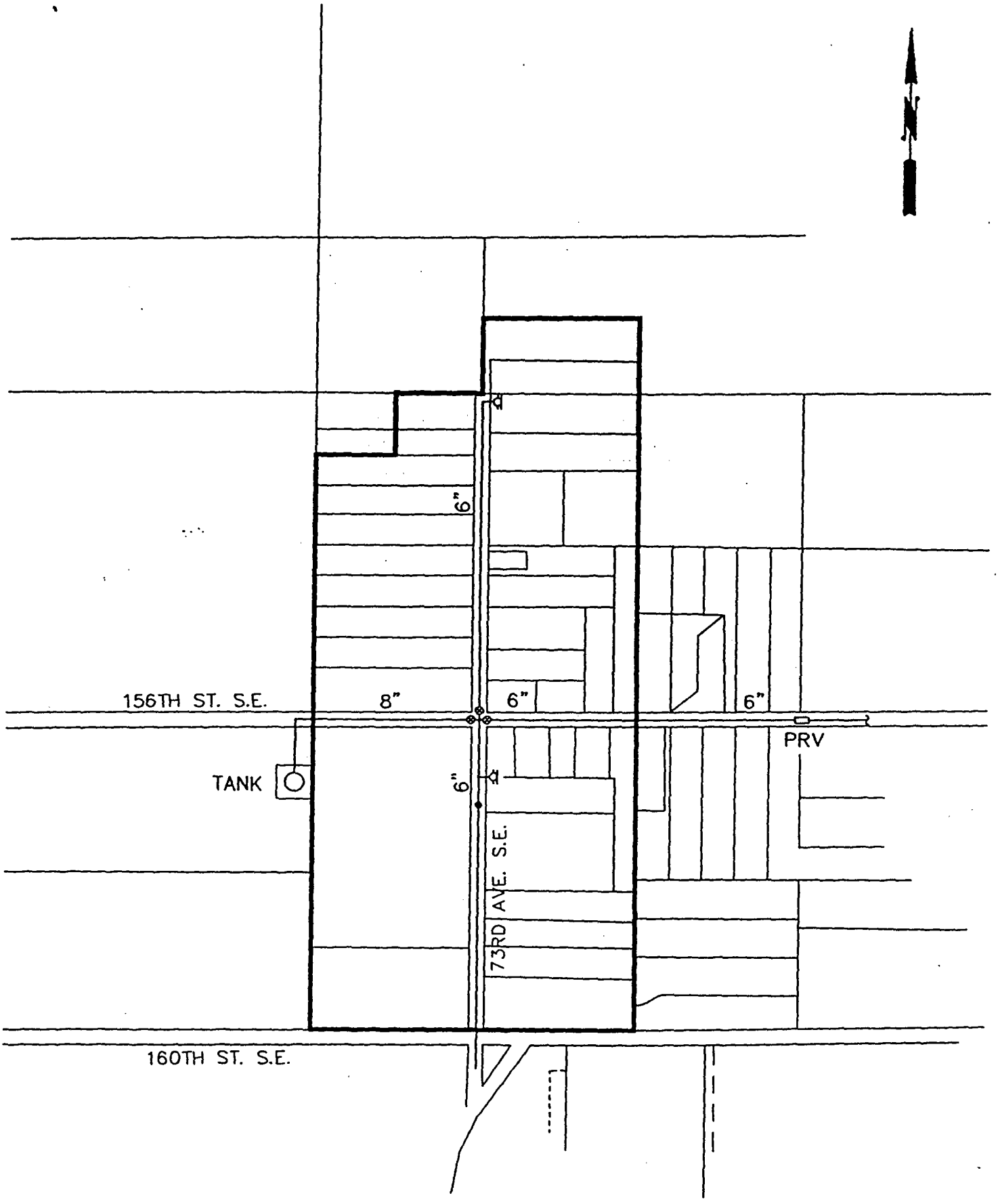


EXHIBIT A

SILVER LAKE WATER DISTRICT

LEGAL DESCRIPTION

EXHIBIT A

That portion of the West 1/2, Section 2, Township 27, Range 5 East described as follows:

Beginning at the SW corner of Lot 57 of the Plat of City Farms, thence Northerly along the West line of said Plat to the SW corner of Lot 49 of said Plat, thence Easterly along the South line of said Lot 49 to the SE corner of the West 1/2 of said Lot 49 thence Northerly along the East line of the West 1/2 of said Lot 49 and Lot 48 to the South line of Lot 47 of said Plat, thence Easterly along the South line of said Lot 47 to the SW corner of Lot 46 of said Plat, thence Northerly along the West line of said Lot 46 to the NW corner of said Lot 46, thence Easterly along the North line of said Lot 46 to the NE corner of said Lot 46 and the North-South centerline of said Section 2, thence Southerly along said North-South centerline to the North margin of 160th Street S.E., thence Westerly along said North margin to the West line of the NE 1/4 of the SW 1/4 of said Section 2, thence Northerly along said West line to the SW corner of said Lot 57 and the true point of beginning.

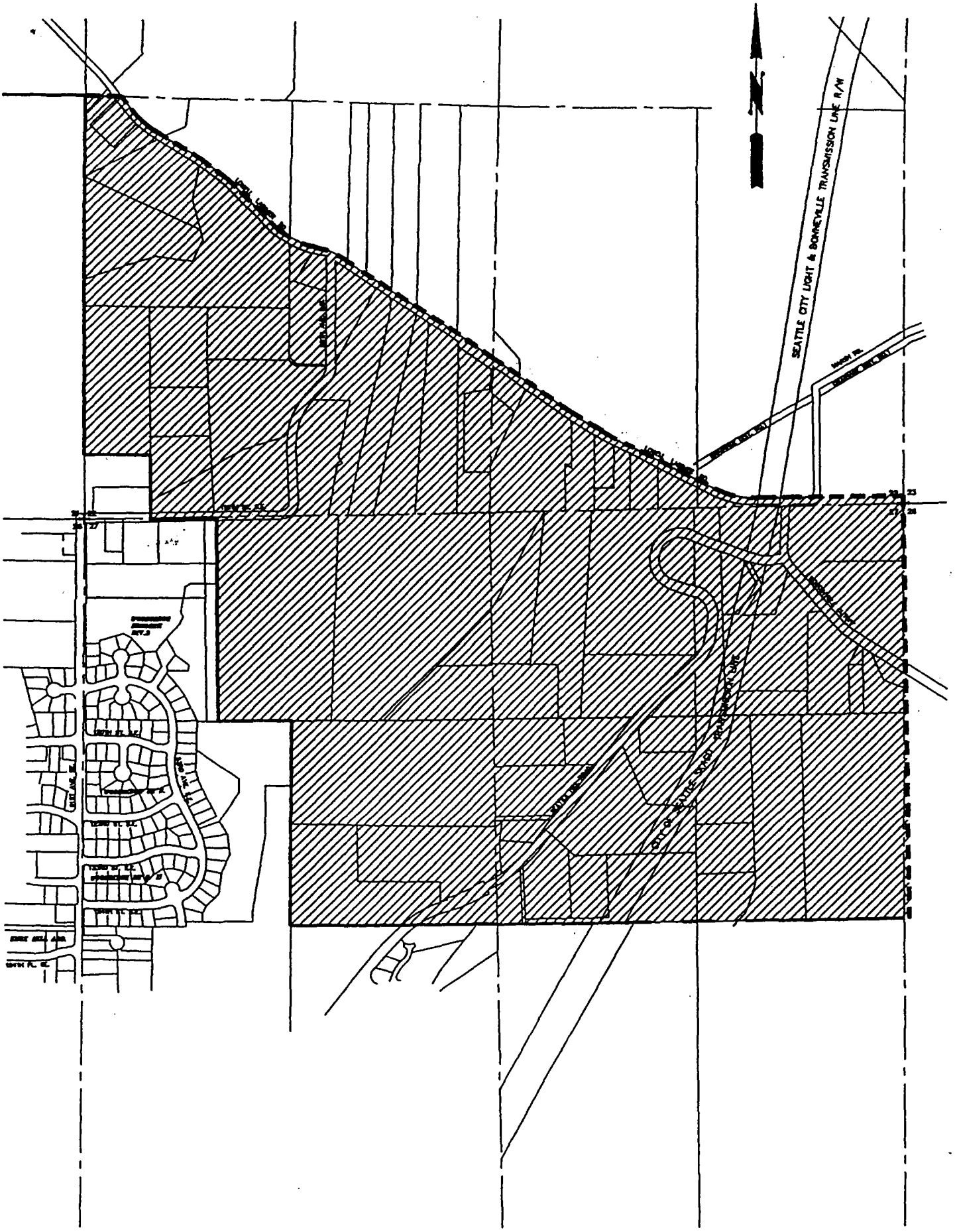


EXHIBIT B

SILVER LAKE WATER DISTRICT

LEGAL DESCRIPTION

EXHIBIT B

Beginning at the southeast corner of Lot 9 Plat of Woodridge Heights Division 1 being the true point of beginning; thence northerly along the east line of said Plat to the northeast corner of Tract 999 of said Plat; thence westerly along the north line of said Tract 999 to a point lying 800.25 feet east of the west line of Section 27, Township 28 N, Range 5 E, W.M.; thence northerly to a point on the southerly margin of 116th Street S.E. said point lying 825 feet east and 30 feet south of the northwest corner of said Section 27; thence westerly along the southerly margin of 116th Street S.E. a distance of 420 feet; thence northerly across 116th Street S.E. a distance of 60 feet to a point on the northerly margin of 116th Street S.E. said point lying 405 feet east of the west line of Section 22, Township 28 N, Range 5 E, W.M.; thence continuing northerly a distance of 400 feet to a point lying 405 feet east of the west line of said Section 22; thence westerly a distance of 405 feet to a point on the west line of said Section 22 said point lying 430 feet north of the southwest corner of said Section 22; thence northerly along the west line of said Section 22 to the northeasterly margin of Lowell-Larimer Road; thence southeasterly along said northeasterly margin of Lowell-larimer Road to the intersection of the easterly margin of Marsh Road and East Lowell-Larimer Road: thence continuing easterly to the east line of said Section 22; thence southerly along the east line of said Sections 22 and 27 to the southeast corner of said Section 27; thence westerly along the south line of said Section 27 to the southeast corner of Lot 9 Plat of Woodridge Heights Division 1 and the true point of beginning.

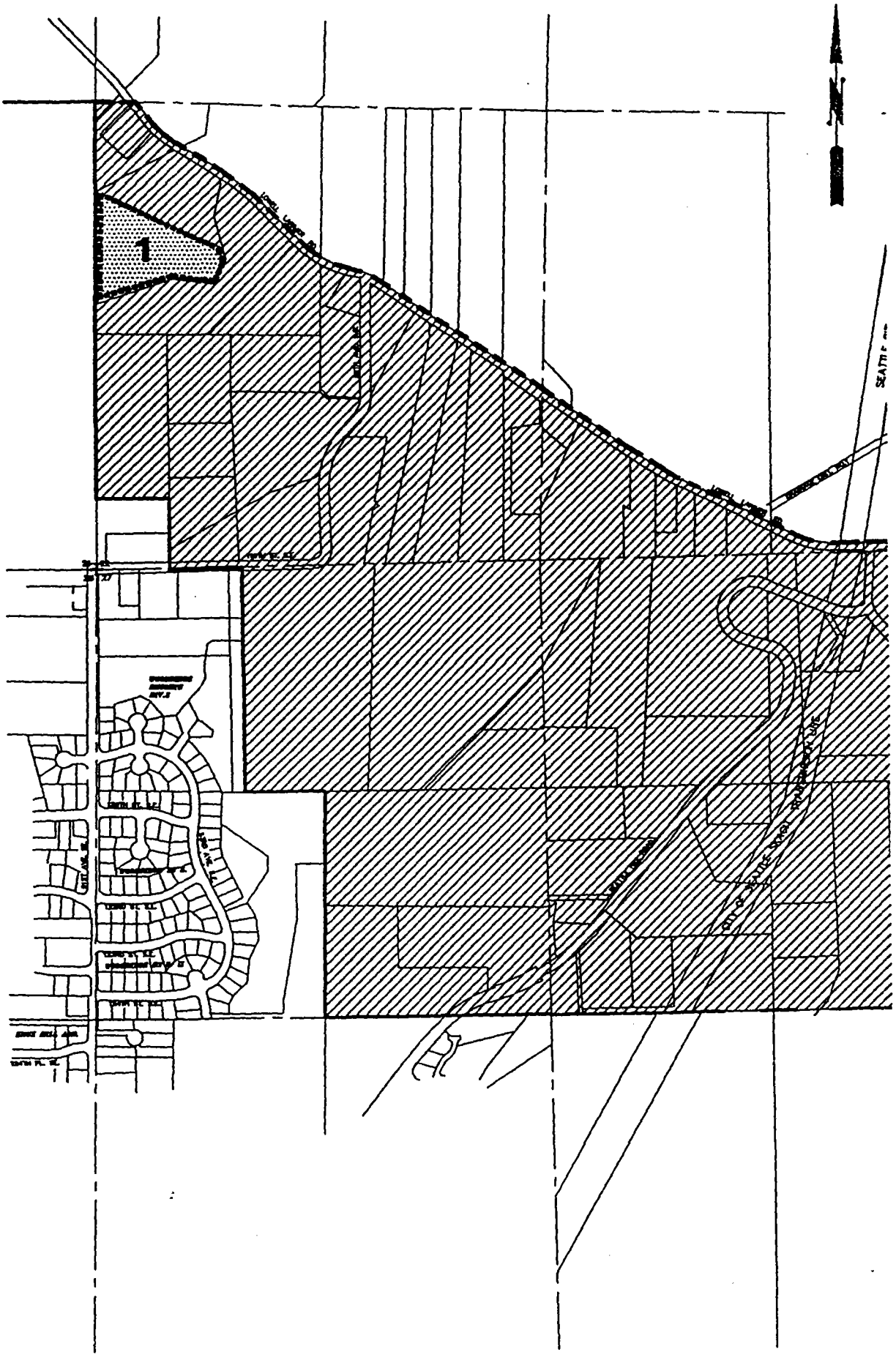


EXHIBIT C

SILVER LAKE WATER DISTRICT

LEGAL DESCRIPTION

PARCEL 1, EXHIBIT C

That portion of Section 22, Township 28 N, Range 5 E, W.M. described as follows:

BEGINNING AT A POINT 504.38 FEET SOUTH OF THE NORTHWEST CORNER OF THE N.W. 1/4 S.W 1/4; THENCE S 65° 57' 15" E A DISTANCE OF 827.05 FEET; THENCE S 14° 27' 30" E A DISTANCE OF 55.97 FEET; THENCE S 22° 24' 00" W A DISTANCE OF 160.80 FEET; THENCE N 82° 59' 00" W A DISTANCE OF 243.70 FEET; THENCE S 72° 06' 00" W A DISTANCE OF 232.90 FEET; THENCE S 76° 00' 00" W A DISTANCE OF 269.40 FEET TO THE WEST LINE OF SECTION 22; THENCE NORTH TO THE POINT OF BEGINNING.

EXHIBIT "A"
SNOHOMISH COUNTY
TERMS AND CONDITIONS OF UTILITY FRANCHISE

INDEX OF TERMS AND
CONDITIONS OF UTILITY FRANCHISE

1. Scope and Duration
2. Definition of Terms
3. Permits, Plans and Specifications
4. Performance of Work
5. Aesthetic/Scenic Considerations
6. Maintenance of Utility Facilities
7. Hazardous Wastes, Substances
8. Relocation
9. Non-Exclusive/Other Occupants
10. Insurance and Security
11. Hold Harmless and Indemnity
12. Reservation of Police Power
13. Applicable Laws
14. Eminent Domain, Powers of the People
15. Annexation
16. Vacation
17. Termination
18. Assignment
19. Effective Date
20. Severability
21. Limitation of Liability
22. Hazardous Conditions
23. Notices
24. Governing Law and Stipulation of Venue

1. **Scope and Duration**

(Name of Grantee) Cross Valley Water District, a (Type of Entity) municipal corporation, its successors and assigns (hereinafter called "Grantee") are granted a franchise to enter upon and use the Snohomish County roads and rights-of-way stated in the ordinance granting a utility franchise for the construction, maintenance, and operation of its (type of utility facilities) water and sewer lines and facilities incidental to such lines for a period of twenty-five (25) years, all in accord with the ordinance granting this franchise, all applicable provisions of Title 13 Snohomish County Code (SCC), whether specifically referred to or not, this Exhibit A, Chapter 36.55 RCW, and Chapter 136-40 WAC. Provisions of Title 13 SCC shall control over inconsistent terms contained in Exhibit A. Provisions of Exhibit A not inconsistent with those in Title 13 SCC shall be cumulative to the requirements of Title 13 SCC.

2. **Definition of Terms**

BLANKET UTILITY PERMIT	A single permit granted a franchised utility to cover a series of activities in rights-of-way

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COUNTY	Snohomish County
COUNTY COUNCIL	Snohomish County Council
COUNTY ENGINEER	Director of the Department of Public Works or his/her designee
DEPARTMENT	Department of Public Works, Snohomish County
FRANCHISE	Occupancy and use document required for occupancy of road rights-of-way in accordance with Chapters 36.55 and 80.32 RCW
GRANTEE	The person named in any permit as permittee, and any successor to any rights or interests of a permittee under a permit or in property installed on the right-of-way pursuant to a permit. In the event of any transfer of any permit or any property installed on the right-of-way, all grantors and grantees shall remain permittees
MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)	Latest edition of the MUTCD, Manual on Uniform Traffic Control Devices for Streets and High ways, U.S. Department of Transportation, Federal Highway Administration
DESIGN STANDARDS	The design standards and specifications of the Department of Public Works
MAP OF DEFINITE LOCATION	Construction plans - plans and specifications; design standards and specifications--SCC 13.01.030
PERMIT	A document including any license, permit or franchise, authorizing specified use of county right-of-way and granted under the provisions of this franchise and Title 13 SCC
RESTORATION	A general term denoting replacing, repairing or otherwise restoring the right-of-way to same or equal conditions as before any change or construction thereon
RIGHT-OF-WAY	All property in which the County has any form of ownership or title and which is held for public road purposes, regardless of whether or not any road exists thereon or whether or not it is used, improved, or maintained for public travel
ROADWAY	The portion of the right-of-way, within the outside limits of the side slopes or between curb lines, used for vehicular travel

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STANDARDS AND SPECIFICATIONS	For road and bridge construction - the latest compilation of standard requirements for road and bridge construction issued by the Department of Public Works, including the latest edition of the WSDOT Design Standards and Specifications
STATE DIRECTOR OF TRANSPORTATION	The Director of the State of Washington Transportation and Highways Commission
TITLE 13 SCC	Title 13 of the Snohomish County Code as is now written and/or hereinafter amended
TRAFFIC CONTROL	A general term more definitively described in the MUTCD

3. **Permits, Plans and Specifications**

Prior to commencing any work, other than maintenance and repairs of existing facilities within any county road or right-of-way, Grantee shall apply for and receive a permit to do such work from Snohomish County pursuant to Title 13 SCC. Such application will include plans and specifications in duplicate showing: the position, depth and location of lines and facilities to be constructed at that time and their position in relation to any involved county road and within right-of-way. These plans, all drawn to scale, shall be known as the "map of definite location." Specifications will include class and type of materials and equipment to be used, manner of excavation, construction, installation and backfill; location of temporary and permanent structures to be erected; description of road facilities which will be disturbed and plans for their restoration; traffic controls; traffic turnouts and detours; road obstructions; and such other details as are required by the County Engineer. To the extent work is permitted under a blanket utility permit issued pursuant to Title 13 SCC, detailed plans and specifications stated above are not required. Grantee shall pay all costs and expenses incurred by the County in reviewing plans and specifications.

4. **Performance of Work**

A. No work on any county road or right-of-way shall be commenced until a permit has been issued by the County and a set of plans and specifications reviewed and approved and endorsed by the County Engineer have been returned to Grantee.

B. All work shall be performed in accordance with applicable plans and specifications and be subject to inspection and incremental approval by the County Engineer. Grantee shall pay all costs and expenses incurred by the County in inspecting and approving the work. Grantee shall remain solely responsible for compliance with all applicable laws, regulations, codes and standard plans and specifications in the design and construction of utility facilities.

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C. Lines and other facilities shall be laid in exact conformance with the map of definite location except where deviations are allowed in writing by the County Engineer pursuant to application by Grantee, in which case Grantee shall file a corrected map of definite location.

D. Any work which disturbs any soil, surface or structure of any county road or right-of-way shall be controlled by WAC 136-40, applicable design standards and specifications of the County, and applicable provisions of Title 13 SCC. Grantee, at its expense, shall restore such surface or other facility or make other provisions therefore, all to the satisfaction of the County Engineer. The County Engineer may cause to be done, at the expense of Grantee, all work the County Engineer deems necessary to render any county road or right-of-way safe where a condition which is dangerous to life, health, or property is created by Grantee or where Grantee fails, upon demand by the County Engineer, to restore any facility of the county.

E. All work shall be done in accordance with the current County standards in a thorough, professional and workmanlike manner with minimum interference in public use of the county road. Where any work includes opening of trenches and/or ditches and/or tunneling under a county road or right-of-way, Grantee shall take all precautions necessary to protect and guard the public from any condition caused by the work. Grantee shall conform to the Manual on Uniform Traffic Control Devices, including directing traffic, signs, and barricades. If any line, pole or other facility of Grantee is so located that, in the opinion of the County Engineer, any hazard to travel or the public is created, Grantee shall remove or relocate the line, pole or other facility at its expense upon request of the County Engineer. Grantee shall be liable for any damages, including any costs incurred by the County in remedying any failure to perform by Grantee, resulting from its failure to safely perform the work or failure to provide adequate traffic controls and protection to members of the public and their property.

F. Before any work which may affect any existing monuments or markers of any nature relating to subdivisions, plats, roads, or other surveys is performed under this franchise, Grantee shall reference all such monuments and markers. Reference points shall be so located that they will not be disturbed during Grantee's operations under this franchise. The method of referencing monuments or other points to be referenced shall be approved by the County Engineer. The replacement of all such monuments or markers disturbed during construction shall be made as expeditiously as conditions permit and as directed by the County Engineer. The cost of monuments or markers lost, destroyed, or disturbed, and the expense of replacement of approved monuments shall be borne by Grantee. A complete set of reference notes for monument and other ties shall be filed with the Department. Grantee shall comply with Title 13 SCC.

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G. All work shall be performed by the Grantee in a manner to asvoid or minimize impacts on wetlands contained within the County right-of-way. Wetland impacts may occur where work related to installation, maintenance and/or repair of the Grantee's facility occurs in the wetland, or near enough to decrease the wetland's functional values. If the Grantee is unable to perform its work without wetland impacts, then it shall be responsible to take measures to mitigate those wetland impacts. Those mitigation measures within the County right-of-way shall be in compliance with all applicable Federal, State and County laws and regulations and County policies.

5. Aesthetic/Scenic Considerations

A. Utility installations shall be designed and constructed to minimize the adverse effect on existing roadside manmade or natural amenities. Special efforts shall be taken to minimize any potential negative impact on areas of scenic beauty (i.e., scenic strips, viewpoints, rest areas, recreation areas, public parks or historic sites, etc.).

B. Overhead utility installations shall be permitted in areas of scenic beauty when other utility locations are not available, are not technically feasible, are unreasonably costly, or are less desirable from the standpoint of visual quality.

C. If the utility intends to use chemical sprays to control or kill weeds and brush in scenic areas, prior approval must be granted by the County at least annually. The County may limit or restrict the types, amounts, and timing of applications if a significant negative impact on the aesthetics of the area is anticipated, provided such limitations or restrictions are not in conflict with State law governing utility right-of-way maintenance.

D. Refuse and debris resulting from the installation or maintenance of the utility facilities shall be promptly removed once the work is completed.

6. Maintenance of Utility Facilities

The County will not assume responsibility for damage to the utility's property and various objects that are placed in county roads and rights-of-way. The Grantee will take necessary steps to maintain a clear area around all objects permitted and installed within county road right-of-way. A minimum of 5 feet of clearance will be maintained around each object so as to provide clear visibility for County operations and maintenance.

7. Hazardous Wastes, Substances

Grantee agrees that it will not cause nor permit in any manner, including accidental or non-negligent acts or omissions, release of any hazardous substance, waste, or pollutant or contaminant into or upon any county road or right-of-way contrary to any state or fed-

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eral law with respect thereto. Grantee shall notify the Department and the State Department of Ecology in writing of any such release. Grantee shall be completely liable for any and all consequences of such a release, including liability under any federal or state statute or at common law. Grantee shall indemnify and hold the County harmless, as provided in paragraph 10, from any and all liability resulting from such a release and shall have full responsibility for completely cleaning up, as required by any government agency, any and all contamination from a release. The County shall be entitled to full contribution for all costs incurred by it as the result of any release of such materials by Grantee. Upon any release of a hazardous substance by Grantee, the County may give immediate notice of termination of this franchise, or enter the franchised premises and take whatever steps it deems appropriate to cure the consequences of any such release, all at the expense of the Grantee.

8. **Relocation**

A. If any county road or right-of-way is constructed, improved, relocated, realigned or otherwise changed, including traffic controls, drainage and illumination, or if any part of such road or right-of-way becomes a state highway and relocation or readjustment is directed by the State Director of Transportation so as to reasonably necessitate removal, relocation and/or reconstruction of any facility of the Grantee on such road or right-of-way, upon notice of the County Engineer or the State Director of Transportation, Grantee, in a timely manner, at its sole expense, shall remove, relocate, reconstruct or otherwise adjust its facilities so as to conform to and permit such construction, improvement, relocation, realignment, or change by or on behalf of the County or State.

B. The County Engineer shall have final approval of the removal or relocation schedule. Grantee shall be responsible for timely compliance with utility relocation and coordinate with the County or County's contractor.

In accordance with paragraph 10, Grantee shall hold harmless and indemnify the County against all claims, lawsuits, damages caused in whole or in part by the utility relocation work, including but not limited to, problems, accommodations and delays, including non-negligent acts or omissions of the Grantee, its agency or employees.

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

9. **Non-Exclusive/Other Occupants**

A. This franchise is not exclusive. It shall not prohibit the

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County from granting other franchises or permits for use of any county roads or rights-of-way or parts thereof. Subject to this franchise, Grantee shall not prevent or prohibit the County from constructing, altering, maintaining or using any of said roads or rights-of-way, or affect its jurisdiction over them or any part of them, the County having full power to make all necessary changes, relocations, repairs, maintenance, etc., of the same as the County may deem fit.

B. All installation, operation, maintenance and repair by the Grantee on any county road or right-of-way shall be done so as not to interfere with installation, construction, operation, maintenance or repair of other utilities, drains, ditches, structures, or other improvements permitted upon such road or right-of-way. Owners, public or private, of any such facilities installed prior to construction and/or installation of lines and facilities of Grantee, shall have preference as to positioning and location of such facilities. Such preference shall continue if relocating is required as a result of any construction relocation, realignment, and/or change of grade by the County.

10. <u>Insurance and Security</u>

Prior to the effective date of this franchise and during its life, the franchisee shall obtain and maintain continuously liability insurance necessary to comply with the hold harmless agreement herein with limits of liability not less than:

$1,000,000.00 per occurence

The Director may further determine that Business Auto Liability Insurance may also be required.
Such insurance shall include Snohomish County, its officers, elected officials, agents, and employees as an additional insured and shall not be reduced or canceled without thirty days written prior notice to the county.
Such insurance, in its provision for additional insured, shall include a "Cross Liability Endorsement," "Severability of Interests," or "Separation of Insureds" provision indicating:

"The inclusion of more than one insured under this policy shall not affect the rights of any insured as respects any claim, suit, or judgment made or brought by or for any other insured or by or for any employee of any other insured. The policy shall protect each insured in the same manner as though a separate policy had been issued to each except that nothing herein shall operate to increase the company's liability beyond the amount or amounts for which the insurer would have been liable had only one insured been named."

If the insurance is underwritten on a claims made basis, the retroactive date shall be prior to or coincident with the date of the franchise, and the insurance policy shall state that the coverage is claims made, and state the retroactive date. The franchisee shall maintain coverage for the duration of the franchise and for the three years following the expiration of same. The franchisee

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shall provide the County annually a signed renewal binder or other document as evidence of such insurance. It is further agreed that either the franchisee or County may invoke the tail option on behalf of the other party and that the Extended Reporting Period premium shall be paid by the franchisee.

Proof of all insurance shall be in the form of a full copy of the policy with all endorsements and exclusions attached thereto. All insurance documentation shall be submitted and reviewed by the County Executive prior to final execution of the franchise.

The County may require any additional bond, insurance, deposit or security as provided in Title 13 SCC. Acceptance by the County of any work performed by the Grantee at the time of completion shall not be a ground for avoidance of this covenant.

11. Hold Harmless and Indemnity

The Grantee shall assume the risk of, and be liable for, and pay all damage, loss, cost and expense of any party arising out of Grantee's use of the right-of-way, except that caused by negligence and/or willful misconduct solely of Snohomish County and its employees acting within the scope of their employment. The Grantee shall protect, hold harmless from and indemnify Snohomish County, its appointed and elected officials, agents, and employees, against all claims, losses, suits, actions, costs, counsel fees, litigation costs, expenses, damages, judgments, or decrees by reason of damage to any property or business and/or any death, injury or disability to or of any person or party arising out of or suffered, directly or indirectly, by reason of or in connection with the use by Grantee of the right-of-way, or any action, error or omission of the Grantee, Grantee's employees, agents, or subcontractors, whether by negligence, including voluntary negligence, or otherwise in connection with the use of county right-of-way, except for those damages caused by the negligence or willful misconduct solely of the County, its appointed and elected officials, agents or employees.

Provided that, for only those provisions of this franchise which a court of competent jurisdiction determines are subject to RCW 4.24.115, then, in the event of damages arising out of bodily injury to persons or damage to property caused by or resulting from the concurrent negligence of the County, its appointed and elected officials, agents or employees, and the Grantee or the Grantee's agents or employees, the Grantee's liability to hold harmless and indemnify the County is enforceable only to the extent of the Grantee's negligence.

The Grantee's obligation shall include, but not be limited to, investigating, adjusting and defending all claims alleging loss from any act, error or omission or from any breach of any common law, statutory or other delegated duty of the Grantee or his employees, agents or subcontractors.

In case suit or action is brought against the County of Snohomish for damages arising out of or by reason of the above-mentioned causes, the Grantee will, upon notice to him of the commencement of

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said action, defend the same at its sole cost and expense, and in case judgment shall be rendered against the County of Snohomish in suit or action, the Grantee will fully satisfy said judgment within ninety (90) days after suit or action shall have finally been determined, if determined adversely to Snohomish County.

It is specifically and expressly understood that the hold harmless and indeminification provided in this franchise constitutes the Grantee's waiver of immunity under the State Industrial Insurance Law, Title 51 RCW, solely for the purpose of this hold harmless and indemnification and that this waiver has been mutually negotiated by the parties.

12. Reservation of Police Power

In granting this franchise, the County does not waive any of its police powers to regulate the use of County roads or rights-of-way in the interest of public health, safety, and the general welfare.

13. Applicable Laws

Grantee shall comply with all federal, state and local laws, rules and regulations applicable to any work, facility or operation of Grantee upon County roads or rights-of-way during the life of this franchise.

14. Eminent Domain, Powers of the People

This franchise is subject to the power of eminent domain and the right of the Council or the people acting for themselves through the initiative or referendum to repeal, amend, or modify the franchise in the interest of the public. In any proceeding under eminent domain, the franchise itself shall have no value.

15. Annexation

If any road or right-of-way covered by this franchise is incorporated into the limits of any city or town, this franchise shall terminate as to any road or right-of-way within the corporate limits of such city or town; but this franchise shall continue as to County roads and rights-of-way not incorporated into a city or town.

16. Vacation

If the County vacates all or a portion of any county road or right-of-way which is subject to this franchise, and said vacation is for the purpose of acquiring the fee or other property interest in said road or right-of-way for the use of the County in either its proprietary or governmental capacity, the County Council may, at its option and by giving thirty (30) days' written notice to the Grantee, terminate this franchise with reference to any County road or right-of-way so vacated, and the County shall not be liable for any damages or loss to the Grantee by reason of such termination.

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Whenever a county road or right-of-way or any portion thereof is vacated upon a finding that is not useful and the public will be benefited by the vacation, the County may retain an easement in respect to the vacated land for the construction, repair and maintenance of public utilities and services which at the time of the vacation are specifically authorized under paragraph 3 or physically located on a portion of the land being vacated, but only in accordance with the provisions of RCW 36.87.140. It shall be the responsibility of the Grantee to request that the County Council specifically include a provision retaining an easement in respect to any proposed Council action on a particular vacation. The County shall not be liable for any damages or loss to the Grantee by reason of any such vacation.

17. Termination

A. If Grantee defaults on any term or condition of this franchise, the County Council may terminate this franchise as provided in Title 13 SCC. Upon termination for any cause, all rights of Grantee hereunder shall cease.

B. Upon compliance with Title 13 SCC, the County Council, at its option, may terminate this franchise, as to those roads and rights-of-way upon which Grantee has not constructed or placed any facility, within five years of the effective date of this franchise.

C. In the event that the use of all or any part of the facility is discontinued for any reason, including, but not limited to, discontinuance, obsolescence or abandonment of the facility, or the abandonment, termination or expiration of this franchise, the Grantee is solely responsible for the removal and proper disposal of the abandoned/surplus facilities. The Grantee is not entitled to abandon any facilities in place without the County's prior express agreement and written consent. The Grantee shall restore the county roads and rights-of-way from which such facilities have been removed to the same or equal conditions as before.

18. Assignment

All terms and conditions of this franchise are burdens upon the successors and assigns of Grantee, and all privileges as well as all obligations and liabilities of the Grantee inure to its successors and assigns equally as if they were specifically mentioned wherever the Grantee is mentioned. Neither this franchise nor any interest therein shall be sold, transferred or assigned without the prior written consent of the County Council.

19. Effective Date

This franchise shall be effective thirty (30) days after approval by the County Council; PROVIDED, that Grantee, within such time, has signed a copy thereof and returned it to the County Council.

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20. Severability

If any provision of this franchise or its application to any person or circumstance is held to be invalid, such decision shall not affect the validity of the remaining portions of this franchise or its application to other persons or circumstances.

21. Limitation of Liability

Administration of this franchise shall not be construed to create the basis for any liability on the part of the County, its appointed and elected officials, and employees for any injury or damage from the failure of the Grantee to comply with the provisions of this franchise; by reason of any plan, schedule or specification review, inspection, notice and order, permission, or other approval or consent by the County; for any action or inaction thereof authorized or done in connection with the implementation or enforcement of this franchise by the County; or for the accuracy of plans submitted to the County.

22. Hazardous Conditions

Whenever the Director determines that any conditions or operations caused by any activity covered by this franchise have become a hazard to life and limb, endanger property or public resources, or adversely affect the safety, use, or stability of a public way or drainage channel; the Director shall notify the Grantee in writing of the property upon which the condition or operation is located, or other person or agent in control of said property, and direct them to repair or eliminate such condition or operation within the period specified therein so as to eliminate the hazard and be in conformance with the requirements of this franchise.
Should the Director have reasonable cause to believe that the situation is so adverse as to preclude written notice, he/she may take the measures necessary to eliminate the hazardous situation, provided that he/she shall first make a reasonable effort to notify the Grantee before acting. In such instance, the Grantee responsible for the creation of the situation shall be responsible for the payment of any reasonable costs incurred.

If costs are incurred and the hazardous situation has been created in conjunction with or as a result of an operation for which a bond has been posted pursuant to this title or any other County authority, the Director shall have the authority to forfeit the bond or other security to recover costs incurred.

23. Notices

Notices provided for in this Franchise shall be sent to the following addresses:

1) Department of Public Works
Snohomish County
2nd Floor Wall Street Building
Everett, WA 98201

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2) Grantee
Cross Valley Water District
P.O. Box 131
Snohomish, WA 98290-0131

The Grantee shall promptly notify the County of any change in notice address.

24. Governing Law and Stipulation of Venue

The Grantee hereby agrees to be bound by the laws of the State of Washington and subjected to the jurisdiction of the State of Washington. The parties hereby stipulate that this franchise shall be governed by the laws of the State of Washington and that any lawsuit regarding this contract must be brought in Snohomish County, Washington, or in the case of a federal action, in the United States District Court for the Western District of Washington at Seattle.

Approved:

John P. Bubelnik
County Engineer

Dated this 4TH day of FEBRUARY, 1994.

SNOHOMISH COUNTY

Karen Miller
Chairman of the County Council
Snohomish County, Washington

Dated this 13th day of April, 1994.

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APPROVED AS TO FORM ONLY:

Barbara Dykes
Deputy Prosecuting Attorney

DATE: Jan 24, 1994

Snohomish County Executive

DATE: 4-13-94

Snohomish County Risk Management

DATE: 12/30/93

ACCEPTED: Gary Hajek

GENERAL MANAGER
(Official Title)

DATE: 5/4/94

APPROVED:

(Title)

DATE:

ATTEST:

Carole A. Gabris
(Title) DISTRICT TREASURER

DATE: 5/4/94

s:utility/NM/dlh/hd
Revised 4/92

RECORDED
'94 JUN -6 P4:00
BOB TERWILLIGER AUDITOR
SNOHOMISH COUNTY, WASH.

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CROSS VALLEY WATER ASSOC., INC.
P.O. Box 131
Snohomish, WA 98290

5.00

NO EXCISE TAX
REQUIRED
APR 15 1985
KIRKE SIEVERS Snohomish County Treasurer
By Valerie Davis
Deputy

8504150231

WATER SERVICE AGREEMENT

WHEREAS Cross Valley Water Association (hereinafter the "Association") and King County Water District No. 104, a municipal corporation (hereinafter the "District") provide water service to its members or customers, respectively, and

WHEREAS the service area of the Association is located predominantly in Snohomish County, Washington, and

WHEREAS the service area of the District is located predominantly in King County, Washington, and

WHEREAS there are circumstances where users or potential users of water lie within the service area of a party but water service can more feasibly be provided by the other party,

NOW THEREFORE, it is mutually covenanted and agreed as follows:

1. No Service Without Consent. Neither party will serve water in the service area of the other without the written consent of the other party. In addition, neither party shall permit or encourage a customer to hook up to the water lines of a party without the consent of such party. All service provided shall be done by Developer Extension. The parties hereby ratify and consent to all existing instances of service by one party to customers within the service area of the other.

2. Membership Fees and Charges. Presently the Association charges a membership fee for connection to the water system. The District charges as a capital contribution to the District fees in the form of assessments or developer extension fees, and a hookup charge for temporary water service. In the event that a customer of the Association, though located in the service area of the District, has paid a membership fee to the Association, and the District thereafter assumes responsibility for furnishing water to that customer, no further charges will be made to the customer except charges for water used by the customer, hydrant charges, or charges customarily paid by a District customer. Conversely, in the event that a customer of the District, though located in the service area of the Association, has paid to the District the charges referenced above, and the Association thereafter assumes responsibility for furnishing water to that customer, no further charges will be made to the customer except charges for water used by the customer, hydrant charges, or charges customarily paid by an Association member.

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3. Latecomer Agreements. Presently each party has a policy of permitting latecomer reimbursement for a period of five years under certain circumstances. The District presently reimburses 80% of the amount collected in lieu of assessment whereas the Association presently reimburses 100%. Presently the District charges a latecomer's fee in lieu of assessment and the Association only charges the membership fee. The latecomer's policy of the Association shall apply to members of the Association located within the District's service area, even after the District has assumed responsibility for serving such member. The latecomer's policy of the District shall apply to customers of the District located within the Association's service area, even after the Association has assumed responsibility for serving such customer.

4. Termination of Interim Service. If a party has consented to the other furnishing water service to a customer and thereafter the party so consenting is in a position to provide water service to that customer whose property lies within its service area, the party seeking to take over the furnishing of water shall give 90 days written notice to the other of intention to do so. The party providing water service in the consenting party's service area shall provide a quit claim deed, assignment, or bill of sale, as may be appropriate, for the facilities at the time service is assumed by said consenting party. Any facilities required to furnish water service, or expense involved in providing such service, shall be borne by the party assuming the responsibility for providing water service.

5. Collection of Outstanding Accounts. At the time of the transfer contemplated in the following paragraph, each party agrees to cooperate in collecting any unpaid amounts due from the customer.

6. Approved by the Association by Resolution No. _____, duly adopted on _____, 1985.

7. Approved by the District by Resolution No. 1863, duly adopted on March 4, 1985.

Dated this 9th day of April, 1985.

CROSS VALLEY WATER ASSOCIATION

By Barkley R Keith
Its President

8504150231

KING COUNTY WATER DISTRICT NO. 104,
a municipal corporation,

By _____
Its General Manager

2265B

RECORDED
1985 APR 15 PM 1:31
DEAN V. WILLIAMS, AUDITOR
SNOHOMISH COUNTY, WASH.
DEPUTY

850415 02 31

ALDERWOOD-CLEARVIEW WATER SUPPLY CONTRACT

This Water Supply Contract (the "Contract") is made and entered into by and between Alderwood Water and Wastewater District, a municipal corporation of the State of Washington ("Alderwood"), and the Clearview Water Supply Agency, an administrative entity created pursuant to Chapter 39.34 RCW ("Clearview"), all of whom taken together shall be referred to as "the Parties."

RECITALS

A. WHEREAS, Alderwood, Silver Lake Water District ("Silver Lake"), and Cross Valley Water District ("Cross Valley") formed an interlocal organization known as the Clearview Group to construct facilities and infrastructure for the purpose of providing water to the residents in the respective districts (the "Clearview Project"); and

B. WHEREAS, after the new facilities for the Clearview Project were constructed, Alderwood, Silver Lake, and Cross Valley formed a new administrative interlocal organization known as the Clearview Water Supply Agency; and

C. WHEREAS, Clearview is responsible for overseeing management and operation of the Clearview Project, which consists of a water pump station, approximately eight miles of water transmission line, a river crossing, and a reservoir; and

D. WHEREAS, Alderwood has entered into a water supply contract with the City of Everett in which it has agreed to purchase water for its own use and for the use of Clearview and its members; and

E. WHEREAS, Alderwood desires to supply water to Clearview pursuant to the terms described below; and

AGREEMENT

NOW, THEREFORE, for the mutual benefits to be derived, the parties agree as follows:

1. WATER SUPPLY

1.1 Sale of Water to Clearview. Alderwood agrees to provide and sell to Clearview, for use by Cross Valley, a maximum of 18 million gallons of water per day ("MGD"). Alderwood agrees to provide and sell to Clearview, for use by Silver Lake, a maximum of 12 MGD. Alderwood agrees to provide and sell to Clearview, for use by Alderwood, a maximum of 18.5 MGD.

1.2 Point of Delivery. Alderwood shall deliver water to Clearview at agreed connection points. The present agreed connection point is the connection of the Clearview pipeline with the City of Everett's pipeline number 5.

1.3 Quantity of Water. Alderwood shall provide to Clearview water in an amount not to exceed 48.5 MGD, as noted in section 1.1. All water shall be metered at the master meter provided by Clearview and now owned and maintained by the City of Everett located at the Clearview pump station site.

1.4 Quality of Water. Alderwood agrees that all water delivered to Clearview shall be of the same standard and quality as normally delivered to Alderwood's wholesale customers. Alderwood shall be responsible for meeting state and federal standards for drinking water at the connection points. All water supplied by Alderwood to Clearview shall become the property of Clearview. Alderwood shall have no liability for degradation of water quality and resulting damages that occur beyond that point.

1.5 Rates and Charges. Clearview shall pay to Alderwood the same rates and charges for water delivered that Alderwood pays to the City of Everett pursuant to paragraph 5 of the Alderwood/City of Everett water supply contract, attached as Exhibit A.

1.6 Payment. On a monthly basis, Alderwood shall bill Clearview for water delivered through the pipeline master meters. The bills shall be payable within thirty (30) days after the issuance date of the invoice. Delinquent bills shall accrue interest at the rate of twelve percent (12%) per annum for any delinquency greater than sixty (60) days after the issuance date of the invoice.

1.7 Resale or Distribution of Water. After water has passed the point of delivery and has entered the Clearview system, said water becomes the property of Clearview and under its exclusive authority, subject only to the following express limitations.

A. Clearview shall distribute water received from Alderwood in a manner consistent with Alderwood's water contract with the City of Everett.

B. Clearview shall not serve water received from Alderwood, pursuant to the terms of this Agreement, in areas outside the areas limited by the terms of Alderwood's agreement with the City of Everett.

1.8 Continuity of Service.

A. To the extent feasible, Alderwood shall continuously maintain service to Clearview. In the event of a general emergency or water shortage affecting Alderwood's water supply system requiring restrictions on the delivery of water, general restrictions may be placed upon deliveries to Alderwood's water customers, including

Clearview. In the event of localized emergency problems, temporary service interruptions may result. In the event of restrictions, water supplied through the Clearview master meter shall be proportionally reduced on a pro-rata basis using the three prior monthly average flows metered at all three master meters that Alderwood has with the city of Everett. In the event that restrictions are placed on deliveries made by Alderwood pursuant to this section, Clearview may obtain water from alternative sources for the duration of the restriction period.

B. Alderwood shall provide oral notice to all members of the Clearview technical committee, and may temporarily interrupt or reduce deliveries of water, if Alderwood determines that such interruption or reduction is necessary or reasonable in case of system emergencies. Except in cases of emergency, and in order that Clearview's operations will not be unreasonably interfered with, Alderwood shall give five (5) days notice of any other interruption or reduction in services, the reason therefore, and the probable duration thereof.

1.9 Water Management. Clearview shall prepare a water management and conservation plan, which shall be approved by Alderwood. Approval by Alderwood shall not be unreasonably withheld. The plan shall address efficient management of the water supplied to Clearview by Alderwood and shall include at a minimum the average and peak day flows for Clearview and for the water supplied by Clearview to each of its member districts. Clearview shall provide annually a report to Alderwood providing prior years water efficiency and conservation results. The report shall be submitted to Alderwood by the end of January of each year.

2. MISCELLANEOUS

2.1 Term of Contract. The term of this Contract shall be from the date of its mutual acceptance by the parties through December 31, 2054. The parties may renew this Contract by mutual written agreement upon such terms and conditions as the parties may later agree.

2.2 Force Majeure and Changes in Law. None of the Parties shall be considered to be in default in respect to any obligations in this Contract if they are prevented from fulfilling such obligations due to conditions beyond their reasonable control, or due to changes in state or federal law. If a party is unable to perform in whole or in part because of such condition or change in the law, the party shall diligently and promptly take reasonable steps to allow it to perform.

2.3 Indemnification. Each party shall defend, hold harmless, and indemnify the others from any and all claims, demands, suits, and judgments arising out of its conduct. If, and to the extent, two or more parties are liable to a third party claimant, each party shall be responsible to the extent of its fault, and shall defend, hold harmless, and indemnify the others for its fault.

2.4 Consequential Damages. Notwithstanding any other provision of this Contract, no party shall be liable to the other for indirect, incidental, special, exemplary, or consequential damages, including but not limited to damages for lost revenues or benefits, even if a party has been advised of the possibility or existence of such damages.

2.5 Waivers. Any waiver at any time by a party of its right with respect to a default under this Contract, or with respect to any other matter arising in connection therewith, shall not be deemed a waiver with respect to any subsequent default or matter. Any party may waive any notice or agree to accept a shorter notice than specified in this Contract. Such waiver of notice or acceptance of shorter notice by a party at any time regarding a notice shall not be considered a waiver with respect to any subsequent notice required under this Contract.

2.6 Interpretation and Invalid Provision. The headings used herein are for convenience of reference only and shall not affect the meaning or interpretation of this Contract. The invalidity or unenforceability of any provision of this Contract shall not affect the other provisions hereof; and this Contract shall be construed in all respects as if such invalid or unenforceable provisions were omitted.

2.7 Assignment and Subcontracts; Binding Agreement. No party may assign this Contract, or assign or subcontract all or any part of such party's rights or obligations under this Contract, without the prior written consent of the other parties, which consent shall not be unreasonably withheld. Without in any way limiting the foregoing, this Contract shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and permitted assigns.

2.8 Dispute Resolution. Any dispute under or in connection with this Contract may, upon the mutual agreement of the parties, be submitted for resolution by mediation. Disputes not resolved in such manner shall be resolved in Superior Court for Snohomish County, Washington.

2.9 Construction. No provision of this Contract shall be construed in favor of or against any of the parties by reason of the extent to which any such party or its counsel participated in the drafting or by reason of the extent to which such provision or any other provision or provisions of this Contract is or are inconsistent with any prior draft.

2.10 Entire Agreement. This Contract, together with all attachments, sets forth the entire agreement of the Parties. No change, amendment, or modification of any provision of this Contract shall be valid unless set forth in a written amendment to this Contract signed by all parties.

2.11 Notice. Formal notice and official communications between the parties regarding this Contract shall be sent by first class mail as follows:

To Alderwood:
General Manager

Alderwood Water and
Wastewater District
3626 156th Street SW
Lynnwood, WA 98037

To Clearview:

Technical Committee
c/o Alderwood Water and
Wastewater District
3626 156th SW
Lynnwood, WA 98037

ADOPTED in open public meeting of the Board of Commissioners of the undersigned on the dates indicated below.

ALDERWOOD WATER AND WASTEWATER DISTRICT

Phillip B. Fay
President

March 21, 2005
Date

Donna J. Cross
Secretary

CLEARVIEW WATER SUPPLY AGENCY

Donna J. Cross
President

March 9, 2005
Date

Secretary

AGREEMENT
BETWEEN ALDERWOOD WATER AND WASTEWATER DISTRICT
AND
CROSS VALLEY WATER DISTRICT
FOR
PROVISION OF POTABLE WATER SUPPLY
AND
ADDRESSING THE BEAR CREEK TRUNK SEWER

THIS AGREEMENT, made and entered into this 28th day of MARCH, 2006, by and between the ALDERWOOD WATER AND WASTEWATER DISTRICT, a special purpose municipal corporation, hereafter called the "Alderwood", and CROSS VALLEY WATER DISTRICT, a special purpose municipal corporation, hereafter called the "Cross Valley," both of which are located in and existing under the laws of the State of Washington.

WHEREAS, Alderwood and Cross Valley are located in Snohomish County and share, in part, a common boundary; and

WHEREAS, Alderwood and Cross Valley supply water to customers within their respective boundaries; and

WHEREAS, Alderwood and Cross Valley entered into an agreement on June 1, 1999 such that Alderwood could provide interim and emergency water supply to Cross Valley at or near the intersection of 228th Street SW and Highway 9; and

WHEREAS, Cross Valley installed a connection between its system and Alderwood's system at the intersection of 228th and Highway 9 for the purpose of providing temporary and emergency supply to either party; and

WHEREAS, King County is constructing a wastewater treatment plant (the Brightwater Treatment Plant) and related conveyance, portal, and outfall system in south Snohomish County (the Brightwater Project); and

WHEREAS, King County has requested potable water supply for the Brightwater Treatment Plant construction and startup which is located in Cross Valley's service area near the intersection of 228th Street SE and Highway 9; and

WHEREAS, Cross Valley's ability to meet the King County demands from its ground water supply under normal operation conditions will be taxed, and during periods of peak demands, Cross Valley may not be able to supply the King County demand; and

WHEREAS, Alderwood has sufficient supply so that it could supply Cross Valley with water to meet the King County demand; and

WHEREAS, Cross Valley has requested Alderwood to provide it with supply for the Brightwater Treatment Plant through the existing connection at 228th SE and SR 9; and

WHEREAS, Alderwood and King County entered an agreement on October 17, 2005 regarding the supply of water to the Brightwater Treatment Plant; and

WHEREAS, the agreement between Alderwood and King County also addressed the emergency provision of water to Alderwood and Cross Valley customers in the event that construction of the Brightwater Project causes permanent damage to the water supply of either Alderwood or Cross Valley's private wells in their respective service areas such that there is no longer an adequate water supply or water quality for a particular customer or resident; and

WHEREAS, Alderwood's ability to supply water to it's customers along Highway 9 is limited and Cross Valley is currently installing a water distribution system in Highway 9; and

WHEREAS, pursuant to the provisions of RCW 57.08.044, Cross Valley is willing to provide temporary water service to said properties and Alderwood is willing to authorize such temporary service; and

WHEREAS, Alderwood and Cross Valley entered an interlocal agreement dated June 3, 1997 for sanitary sewer construction for the Bear Creek Sewer Trunk; and

WHEREAS, Alderwood and Cross Valley entered an interlocal agreement dated September 9, 1999 for maintenance and operation of the Bear Creek Sewer Trunk; and

WHEREAS, Cross Valley and King County entered into the Lower Bear Creek Acquisition Agreement on October 24th, 2000 which conveyed the lower Bear Creek Trunk Sewer to King County for a set reimbursement; and

WHEREAS, Cross Valley entered a mitigation agreement with King County on December 20, 2005 to address water supply issues associated with the Brightwater Project and to convey the remainder of the Bear Creek Trunk Sewer from Cross Valley to King County for a set payment;

NOW THEREFORE, it is mutually agreed as follows:

1. PURPOSE

The purpose of this Agreement is to set forth the mutual obligations and rights of Alderwood and Cross Valley for the following activities:

A. Establishing an interim and emergency potable water supply connection between Cross Valley and Alderwood. (Refer to Section 3.)

B. Provision of emergency potable water supplies for Alderwood customers now on private potable water wells near the Brightwater Project. (Refer to Section 4.)

C. Provision of emergency potable water supplies for Cross Valley customers now on private potable water wells near the Brightwater Project. (Refer to Section 4.)

D. Provision of interim potable water supplies to King County associated with the construction and startup of the Brightwater Project. (Refer to Section 5.)

E. Provision of water supply for Cross Valley in the event the construction of the Brightwater Project causes permanent damage to the water supply of Cross Valley so that there is no longer an adequate water supply. (Refer to Section 6.)

F. Provision of temporary water service to the Alderwood customers near the Alderwood and Cross Valley boundary. (Refer to Section 7.)

G. Addressing the outstanding activities between Alderwood and Cross Valley regarding the Bear Creek Trunk Sewer. (Refer to Section 8.)

2. DURATION

This Agreement shall become effective immediately upon the signing by all parties and shall remain in effect until terminated; provided, however that the respective indemnification obligations of Alderwood or Cross Valley in "Section 8. Legal Relations" shall survive the expiration or termination of this Agreement.

This agreement supersedes the June 1, 1999 agreement between Alderwood and Cross Valley.

3. EXISTING CONNECTION

A. Cross Valley installed a connection between its system and Alderwood's system at the intersection of 228th and Highway 9 for the purpose of providing emergency supply to either party. This connection consists of an 8-inch pipe, meter, and backflow prevention device, which is valved to provide emergency supply by manual operation. Alderwood made the tap connection to the Alderwood system.

B. Alderwood paid the labor costs of it's own staff associated with installation. Cross Valley paid for all material, fees, all non-labor construction costs, including permitting, and the labor costs associated with installation.

C. Cross Valley shall be responsible for maintaining the connection between the systems, including the by-pass facilities, at its expense. Cross Valley shall test the 4-inch meter for flow accuracy no less than annually. Copies of the test report shall be provided annually to Alderwood at the address provided in Item 19. below.

D. Cross Valley shall test the cross connection control facilities for this connection on an annual basis. Copies of the test report shall be provided annually to Alderwood at the address provided in Item 19. below.

4. EMERGENCY SUPPLY

Whenever either party requires emergency supply, that party shall request the other party's permission to use the emergency connection. When the request is made, an estimate of the time the connection will be open shall be provided.

5. INTERIM SUPPLY

Interim supply to King County shall become effective immediately upon execution of this agreement and shall remain in effect until terminated or until King County has provided written notice to Alderwood of completion of the construction, startup and commissioning of the Brightwater Treatment Plant. Within 10 days of written notice by King County of the commissioning of the Brightwater Treatment Plant, Alderwood shall notify Cross Valley of the intent to terminate the interim supply.

The need for this interim supply is estimated to last to about 2011. Pursuant to this agreement, Alderwood agrees to supply Cross Valley with 850 gpm for Cross Valley, such that Cross Valley can supply 850 gpm to King County's Brightwater Project through the connection at SE 288th and SR 9. King County will purchase the water and make the required connections through Cross Valley.

6. WATER SUPPLY

Provisions of water supply by Alderwood to Cross Valley shall be provided through the emergency connection provided for herein. Supply shall be only that amount necessary to replace Cross Valley's water supply lost due to permanent damage caused by the Brightwater Project construction.

7. TEMPORARY WATER SERVICE

A. **Service**. Cross Valley may provide temporary individual water service to that property described on Exhibit "A", which is incorporated by reference herein, which property is located within the boundaries of Alderwood. No other property within Alderwood shall be allowed to connect to the system serving the property without the prior approval of both Alderwood and Cross Valley. Service by Cross Valley shall terminate when Alderwood notifies Cross Valley that it is prepared to provide service. All costs associated with termination of service and transfer of service to Alderwood shall be the responsibility of Alderwood. Services charges will be prorated to the date Alderwood terminates service.

B. **Fees and Charges**. Cross Valley shall collect all fees and charges required by its resolution, its Developer Extension Agreement, and imposed by Cross Valley as a condition of connecting to its system.

C. **Service/Billing Procedure**. Water service shall be provided to the property at Cross Valley's service rates as established or as hereafter amended, by resolution, which shall be collected by Cross Valley pursuant to Cross Valley's normal billing and collection procedures, including the right to lien and foreclose, if necessary.

D. **Construction/Installation**. Construction and installation of the water service to the properties shall be in accord with Cross Valley's Developer Extension Agreement and Cross Valley's standards and specifications.

E. **Operation.** The extension to the property shall be operated pursuant and subject to Cross Valley's resolutions, rules and regulations.

F. **Nondiscrimination.** Cross Valley agrees not to discriminate against customers services pursuant to this Agreement with respect to rates and charges, conditions of service, or imposition of emergency measures.

G. **Other Agreement**. Cross Valley will enter into any agreements with property owners necessary to implement this agreement.

8. BEAR CREEK TRUNK SEWER

A. Within 45 days of the payment from King County for the Bear Creek Trunk Sewer described in the Cross Valley and King County mitigation agreement dated December 20, 2005, Cross Valley shall reimburse Alderwood for it's share of the cost to design and construct the Bear Creek Trunk Sewer. This cost is $802,686.95.

B. Within 30 days of receipt of this payment, Alderwood shall notify Cross Valley in writing that the Alderwood and Cross Valley interlocal agreement dated June 3, 1997 for construction of the Bear Creek Sewer Trunk, and the interlocal agreement dated

September 9, 1999 for maintenance and operation of the Bear Creek Sewer Trunk are terminated.

9. WATER COMPATIBILITY

It is understood by both parties that the water source for Alderwood is surface whereas Cross Valley's source is ground water. Neither party shall be responsible to the other for water compatibility issues.

10. PAYMENT

A. **General Terms**. Meter readings for all master meters associated with this agreement shall be taken by Cross Valley and provided to Alderwood within five to seven days of reading. Bills for water shall be submitted in the next practicable billing cycle. Payment shall be due thirty days after the date of billing. Delinquent amounts shall bear interest of 12% per annum.

B. **Emergency and Water Supply**. Emergency supply shall be paid for at the connection's maximum rate of hourly flow times, the number of hours supply is provided, or portion thereof, times the wholesale cost per gallon. The wholesale rate shall be equivalent to the rate Alderwood charges its wholesale customers.

C. **Interim Supply.** Cross Valley shall reimburse Alderwood for the required meter and connection charge to Alderwood. This water supply shall be billed by Alderwood to Cross Valley at Alderwood's then current, out of District, multi-commercial rate, as amended by resolution.

11. LEGAL RELATIONS

This is an agreement for interim, emergency and temporary supply of water, and temporary water service. The parties are neither partners nor joint ventures; and neither is the agent of the other. Each party agrees to defend, indemnify and hold the other party harmless from any claim, liability, damage, or judgment, including reasonable attorney's fees, arising from or related in any way to supplying water on such interim, temporary and emergency bases as set forth herein, but only to the extent of the indemnifying party's negligence. Cross Valley agrees to defend, indemnify and hold Alderwood harmless from any claim, liability, damage, or judgment, including reasonable attorney's fees, arising from or related in any way to supplying temporary water service to Alderwood customers, but only to the extent of the Cross Valley's negligence.

12. INSURANCE

Each party shall seek and maintain with responsible insurers all such insurance as is customarily maintained with respect to water systems of like character a policy or policies of comprehensive personal liability and property damage insurance. Each party shall supply to the other party upon request a certificate showing such insurance to be in force.

13. NO TRANSFER OF OWNERSHIP

Neither party shall by virtue of this Agreement acquire any proprietary or governmental interest in the water system of the other party.

14. WAIVER

No waiver by either party of any term or condition of this Agreement shall be deemed or construed as a waiver of any other term or condition nor shall a waiver of any subsequent breach, whether of the same or of a different provision of this Agreement.

15. DISPUTES

If a dispute arises between Alderwood and Cross Valley, the parties agree that they will attempt to resolve the issues through mutual negotiation. In the event that the parties are not able to reach an agreement through such negotiation, the parties agree to engage in mediation in order to resolve the dispute. Mediation may be requested by either party, and shall be attempted prior to the institution of any lawsuit arising under this Agreement. The parties agree to share the costs of mediation equally. Venue for any litigation arising out of or related to this Agreement shall vest in the Superior Court of Snohomish County, Washington.

16. TERMINATION

Alderwood and Cross Valley have the right to terminate this Agreement only by mutual agreement.

17. CHANGES AND MODIFICATIONS

Either party may request changes, amendments, or additions to any portion of this Agreement; however, except as otherwise provided in this Agreement, no such changes, amendments, or addition to any portion of this Agreement shall be valid or binding upon either party unless it is agreed to in writing. All amendments shall be made part of this Agreement.

18. NO THIRD PARTY BENEFICIARY

This Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective heirs, successors and assigns. This Agreement shall not release or discharge any obligation or liability of any third party to any party herein.

19. NOTICES

Any notice, reports and payments to be given pursuant to this Agreement may be given orally via phone and shall be followed up formally in writing and delivered to each party as follows:

Cross Valley Water District
8802 – 180th Street SE
Snohomish WA 98296-4804
FAX: 360-668-9634

Alderwood Water and Wastewater District
3626 - 156th Street S.W.
Lynnwood, WA 98087-4021
FAX: 425-742-4562

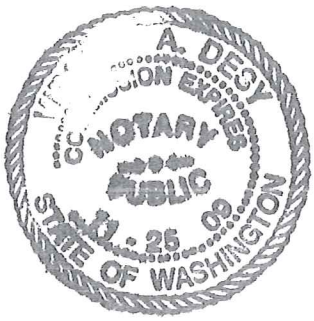
or to such other address as the parties may designate in writing from time to time to the other. Notices mailed by either party shall be deemed effective on the date received. Notices sent via facsimile by either party shall be deemed effective on the date sent, with proof of that the facsimile transmission was successful (i.e. facsimile confirmation sheet). Either party may change its addressor facsimile number for receipt of reports, notices, or payments by giving the other written notice of not less than five days prior to the effective date.

20. ENTIRE AGREEMENT

These provisions represent the entire and integrated agreement of the parties and may not be modified or amended except as provided herein. Any understanding, whether oral or written which is not incorporated herein is expressly excluded.

This Agreement is to take effect upon ratification by the Board of Commissioners Alderwood Water and Wastewater District and ratification by the Board of Commissioners of Cross Valley Water District.

SIGNED this 28 day of MARCH, 2006



ALDERWOOD WATER & WASTEWATER DISTRICT

By: Roy M George

Its: PRESIDENT

CROSS VALLEY WATER DISTRICT

By: Grenger Desy

Its: PRESIDENT

STATE OF WASHINGTON
COUNTY OF SNOHOMISH

On this date, March 20, 2006 personally appeared before me known to be the President of the Board of Commissioners of Alderwood Water & Wastewater a municipal corporation that executed the within and foregoing instrument, and acknowledged said instrument to be the fee and voluntary act and deed of said municipal corporation, for the uses and purposes therein mentioned, and on oath stated that he/she was authorized to execute said instrument and that the seal affixed is the corporate seal of said municipal corporation.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.

Virginia A. Dery
Notary Public in and for the state of
Washington, residing at Snohomish
My Appointment Expires 11/25/09

STATE OF WASHINGTON
COUNTY OF SNOHOMISH

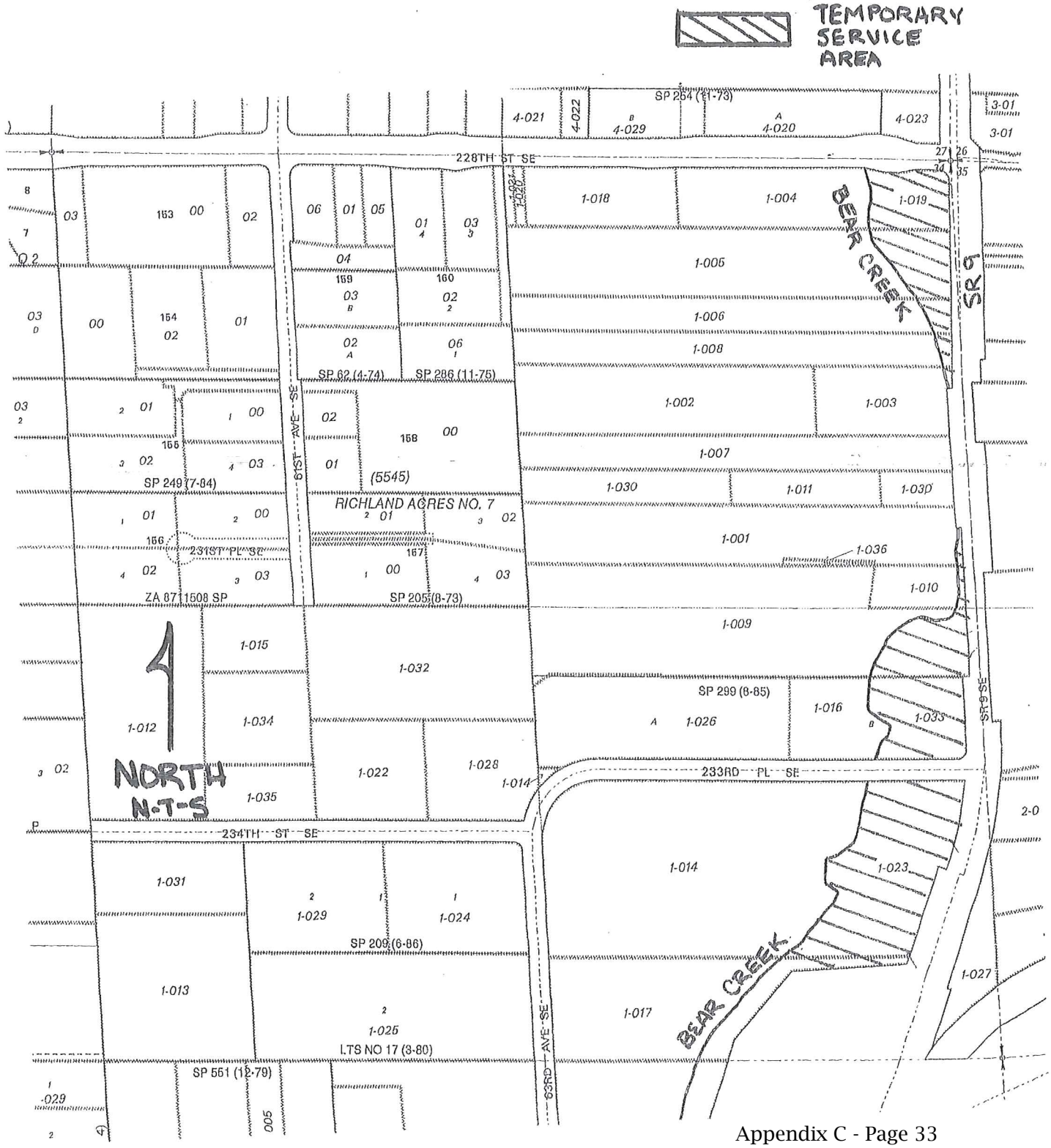
On this date, March 28, 2006 personally appeared before me known to be the President of the Board of Commissioners of Cross Valley Water Dist; a municipal corporation that executed the within and foregoing instrument, and acknowledged said instrument to be the fee and voluntary act and deed of said municipal corporation, for the uses and purposes therein mentioned, and on oath stated that he/she was authorized to execute said instrument and that the seal affixed is the corporate seal of said municipal corporation.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.

Notary Public in and for the state of
Washington, residing at Snohomish
My Appointment Expires Dec 10, 2008

ROBERT B. WAGNER
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES DEC 10, 2008

EXHIBIT A


TEMPORARY SERVICE AREA
228TH ST SE
234TH ST SE
233RD PL SE
231ST PL SE
61ST AVE SE
63RD AVE SE
BEAR CREEK
SR 9
SR 9 SE
RICHLAND ACRES NO. 7
(5545)
SP 249 (7-84)
SP 62 (4-74)
SP 286 (11-75)
SP 205 (8-73)
ZA 87-1508 SP
SP 299 (8-85)
SP 209 (6-86)
LTS NO 17 (3-80)
SP 551 (12-79)
SP 264 (11-73)
NORTH
N.T.S

SILVER LAKE WATER DISTRICT
CROSS VALLEY WATER DISTRICT
PILLING PROPERTY INTERLOCAL AGREEMENT

This Agreement entered into this 22nd day of December _____, 1998 between the Cross Valley Water District (hereinafter referred to as "Cross Valley" and the Silver Lake Water District (hereinafter referred to as "Silver Lake"),

W I T N E S S E T H:

WHEREAS, the Districts are special purpose municipal corporations in Snohomish County, Washington, organized under the laws of the State of Washington; and

WHEREAS, the Districts desire to enter into this Agreement pursuant to the authority granted in Chapter 39.34 of the Revised Code of Washington and RCW 57.08.045; and

WHEREAS, each District has the authority to construct, condemn and purchase, acquire, add to, alter, maintain and operate waterworks, and sewer systems, within or without their corporate limits, for the purpose of furnishing its inhabitants or any other persons with an ample supply of water and for the purpose of disposing of wastewater; and

WHEREAS, the Districts wish to protect and promote their interests and the interests of their rate payers and to provide water service and sewer service to certain customers located within their respective Districts by using water lines and sewer lines owned and operated by Silver Lake; and

WHEREAS, state law does not allow a special purpose water and sewer district to extend service to customers located within the boundaries of a different water and sewer district; and

WHEREAS, both Districts desire to cooperate in providing water and sewer service to certain properties near or adjacent to the Districts common boundary lines; and

WHEREAS, both Districts recognize that the other District has the sole lawful authority to provide water and sewer service to properties within its jurisdiction; and

WHEREAS, by interlocal agreement the Districts may provide for water and sewer service by one District in the other District's area.

NOW, THEREFORE, the Districts do hereby agree as follows:

Section 1. Purpose.

The purpose of this Agreement is to provide temporary water and sewer service by Silver Lake to the Pilling Property area as shown on Exhibit "A" attached hereto (hereinafter Area "A") using water and sewer systems owned and operated by Silver Lake. All deliveries of water and sewer service by Silver Lake within Area "A", shall be allowed by Cross Valley pursuant to the terms, conditions, and limitations of this Agreement.

Section 2. Area "A" New Customers - Interim Service.

Silver Lake shall have the right and permission of Cross Valley to extend temporary water and sewer service to new customers and properties within Area "A". Nothing herein shall require Silver Lake to provide service to properties within Area "A". As a condition of any such new temporary service extension, Silver Lake shall require from property owners within Area "A" as a condition of water service to such property owner, a Letter of Approval of Connection to Silver Lake Facilities by Cross Valley. Cross Valley may collect any and all of its connection charges and fees prior to issuing Letter of Approval. Silver Lake may collect any and all connection charges, capital improvement charges, monthly rates and charges and other fees which would be collected by Silver Lake in accordance with its Resolutions and regulations for services provided in Area "A". Nothing herein shall preclude Silver Lake from entering into a water and sewer service extension agreement with individual property owners within Area "A".

All new water and sewer facilities shall be constructed in accordance with the more stringent standards and specifications of the two Districts and shall be constructed to facilitate future connection to the Cross Valley Water District water and sewer system, if feasible. Cross Valley Water District shall review and comment on plans and specifications prior to construction.

Section 3. Area "A" Maintenance and Repair.

All maintenance, operation, and repair costs and expenses of the water and sewer systems shall be the sole responsibility of Silver Lake, until take over by Cross Valley.

Section 4. Transfer of Customers Area "A".

At such time Cross Valley has facilities and infrastructure to serve both water and sewer to all property within area "A" it may request assumption of service to such property. Upon request from Cross Valley, Silver Lake, shall transfer to Cross Valley customers within Area "A" 180 days from notice of such transfer. Silver Lake shall provide to Cross Valley a current list of the names and addresses of all customers within the Agreement area; provided Silver Lake shall send notice of take over to all customers being served advising them that Cross Valley will be their new water and sewer purveyor and that billing and payment of future service bills shall be handled by Cross Valley.

Section 5. Water Quality.

Each District warrants that it will purvey water meeting the state water quality standards and requirements to the other District and to all residents within the other District. Each District agrees to protect, hold harmless, indemnify and defend the other for any claim, demand or suit arising out of purveying water to customers within the other District or the wholesaling of water to the other District.

Section 6. Service Responsibility

Nothing herein requires Silver Lake to extend service to any property owners within Area "A". Extension of utility service

outside its boundaries and into Area "A" is left to the sole discretion of Silver Lake.

Section 7. Miscellaneous.

a. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their successors and assigns.

b. This document constitutes the entire agreement of the parties with respect to the subject matter hereof and may be modified only by an agreement in writing signed by all the parties hereto.

c. Waiver by any party of any term or condition of this Agreement shall not be deemed or construed as a waiver of any other term or condition, nor shall a waiver of any subsequent breach, whether of the same or of a different provision of this Agreement.

d. If any provision of this Agreement is held invalid or unenforceable, the remainder of the Agreement shall not be affected and shall remain in full-force and effect.

e. Any notices required or permitted under this Agreement shall be delivered to the respective District's business office.

Section 7. Arbitration.

Any controversy or claim arising out of or related to this contract or the breach thereof shall be settled by a Board of three arbitrators one of whom shall be selected by Cross Valley and one by Silver Lake and the third selected jointly by the first two, and the parties hereto agree that any decision of the arbitrators shall be binding upon both parties hereto and judgment upon the award rendered may be entered in any court having jurisdiction thereof, all in accordance with Chapter 7.04 RCW. Any costs, expenses, and legal fees incurred in arbitration or other legal action shall be awarded to the prevailing party.

Section 8. Effective Date, Duration, and Termination.

This Agreement shall become effective on the date on which this Agreement has been duly authorized and executed by the Districts. This agreement may be terminated by mutual agreement of the Districts.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of this _____ day of _____, 1998.

SILVER LAKE WATER DISTRICT:

Rod Kryppler
President

Don A Fisher
Commissioner

Bill Anderson
Commissioner

ATTESTED TO:

Bill Anderson
Secretary-Commissioner

CROSS VALLEY WATER DISTRICT

President

Dale Doerfling
Commissioner

Commissioner

ATTESTED TO:

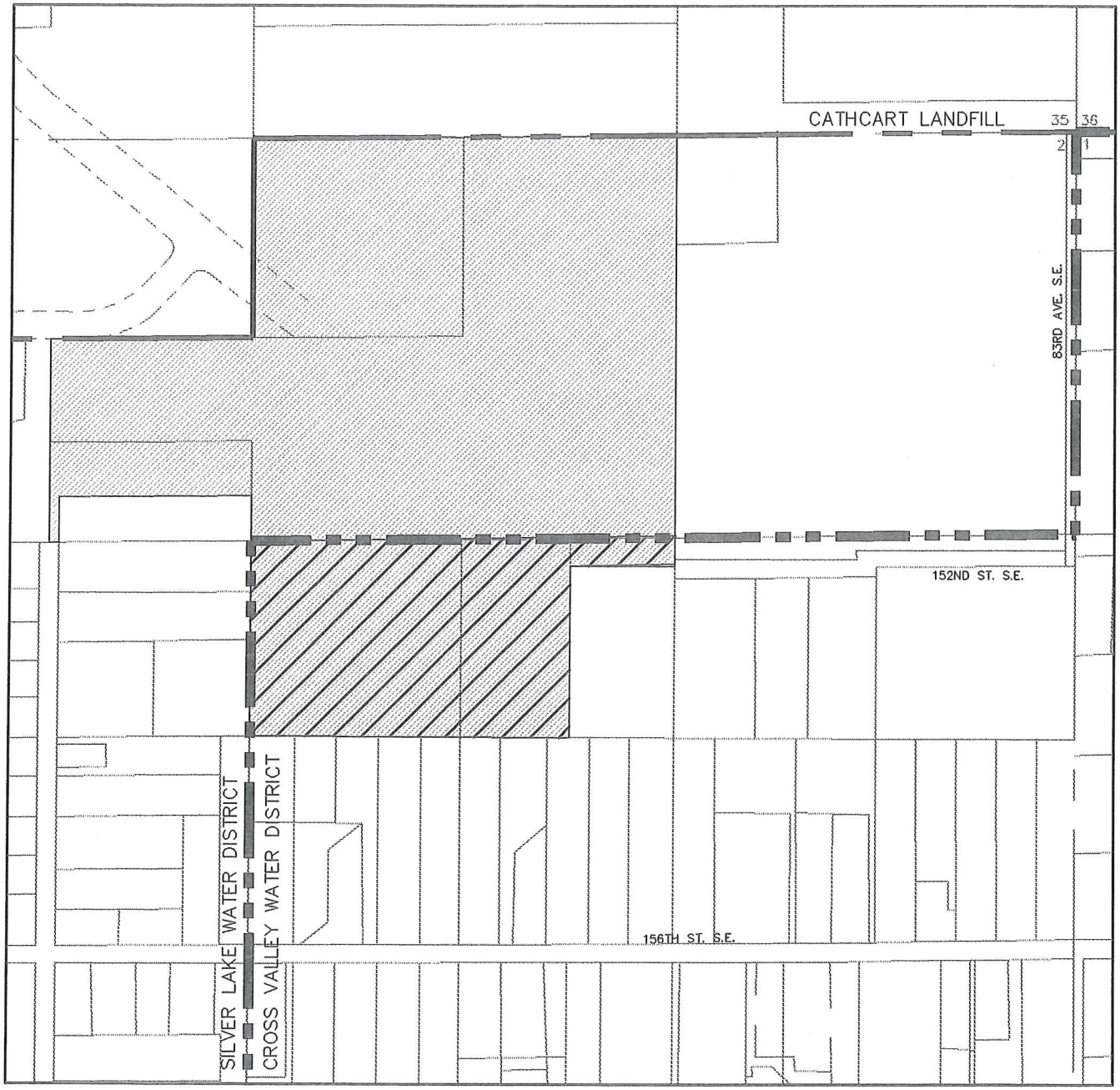
Dale Doerfling
Secretary-Commissioner

4:19 PM 12/01/98

PILLING PROPERTY
LEGAL DESCRIPTION OF
INTERLOCAL AGREEMENT AREA

BEGINNING AT THE NORTHWEST CORNER OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 2, TOWNSHIP 27N, RANGE 5E, W.M.; THENCE SOUTH ALONG THE WEST LINE OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE EAST ALONG THE SOUTH LINE OF THE NORTH HALF OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE NORTH ALONG THE EAST LINE OF THE WEST HALF OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE EAST ALONG THE SOUTH LINE OF THE NORTH 92.5 FEET OF THE EAST HALF OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER; THENCE NORTH ALONG THE EAST LINE OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE WEST ALONG THE NORTH LINE OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION TO THE TRUE POINT OF BEGINNING.

SEE EXHIBIT A FOR VICINITY MAP



VICINITY MAP
SCALE: 1" = 500'

LEGEND

PILLING PROPERTY

INTERLOCAL AGREEMENT AREA

SILVER LAKE WATER DISTRICT SERVICE AREA BOUNDARY

SILVER LAKE WATER DISTRICT
PILLING PROPERTY
INTERLOCAL AGREEMENT AREA
EXHIBIT A

Gray & Osborne, Inc.
CONSULTING ENGINEERS

SILVER LAKE WATER DISTRICT
CROSS VALLEY WATER DISTRICT
AGREEMENT AS TO SERVICE LOTS BY DISTRICT
FOR THE PLAT OF THE VILLAGE AT OUTCROP CREEK

This agreement entered into this 22 day of August, 2002 between Cross Valley Water District and the Silver Lake Water District to finalize which lots will be ultimately served by Cross Valley Water District. The road alignment of the Plat of The Village at Outcrop Creek was laid out with existing topography and does not closely follow the District Boundary between Silver Lake Water District and Cross Valley Water District. Cross Valley Water District lies southerly of the north line of the southwest one-quarter of the northeast one-quarter of Section 2, Township 27 North, Range 5 East of the Willamette Meridian which splits approximately ten lots in the Plat of The Village at Outcrop Creek. The lots to be served by Cross Valley Water District, at such time Cross Valley is able to and does serve lots within this plat in accordance with the terms of that certain interlocal agreement between the parties dated December 22, 1998, will be per attached 'Exhibit A' and described as follows: Lot 18 of Division 1 of the Plat of Outcrop Creek, Lots 1 through 34 of Division 2 of the Plat of Outcrop Creek and Lots 7 through 29 of Division 3 of the Plat of Outcrop Creek. One lot in Division 1, 34 lots in Division 2 and 23 lots in Division 3 for a total of fifty-eight (58) lots.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of this 22 day of August, 2002.

SILVER LAKE WATER DISTRICT

By: _____

CROSS VALLEY WATER DISTRICT

By: _____

Its: General Manager Its: PRESIDENT AND COMMISSIONER

REPRESENTATIVE ACKNOWLEDGMENT

STATE OF WASHINGTON)
) ss.
COUNTY OF SNOHOMISH)

I certify that I know or have satisfactory evidence that, Patrick Curran is/are the person(s) who appeared before me, and said person(s) acknowledged that (he/she/they) signed this instrument, on oath stated that (he/she) was authorized to execute the instrument and acknowledged it as the General Manager of Silver Lake Water Dist. to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: August 22, 02

Mary Ann Eastman
(Signature)

Mary Ann Eastman
(print name)

NOTARY PUBLIC in and for Washington State, residing at Everett, WA

My appointment expires 7-28-2003

MARY-ANN EASTMAN NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES 7-28-2003
(Seal or stamp)

REPRESENTATIVE ACKNOWLEDGMENT

STATE OF WASHINGTON)
) ss.
COUNTY OF SNOHOMISH)

I certify that I know or have satisfactory evidence that, DALE DEIERLING is/are the person(s) who appeared before me, and said person(s) acknowledged that (he/she/they) signed this instrument, on oath stated that (he/she) was authorized to execute the instrument and acknowledged it as the PRESIDENT of CROSS VALLEY WATER DISTRICT to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: August 20, 2002

Carole A. Gabrio
(Signature)

CAROLE A. GABRIO
(print name)

NOTARY PUBLIC in and for Washington State, residing at SNOHOMISH

My appointment expires 3-23-2003

CAROLE A. GABRIO NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES 3-23-2003
(Seal or stamp)

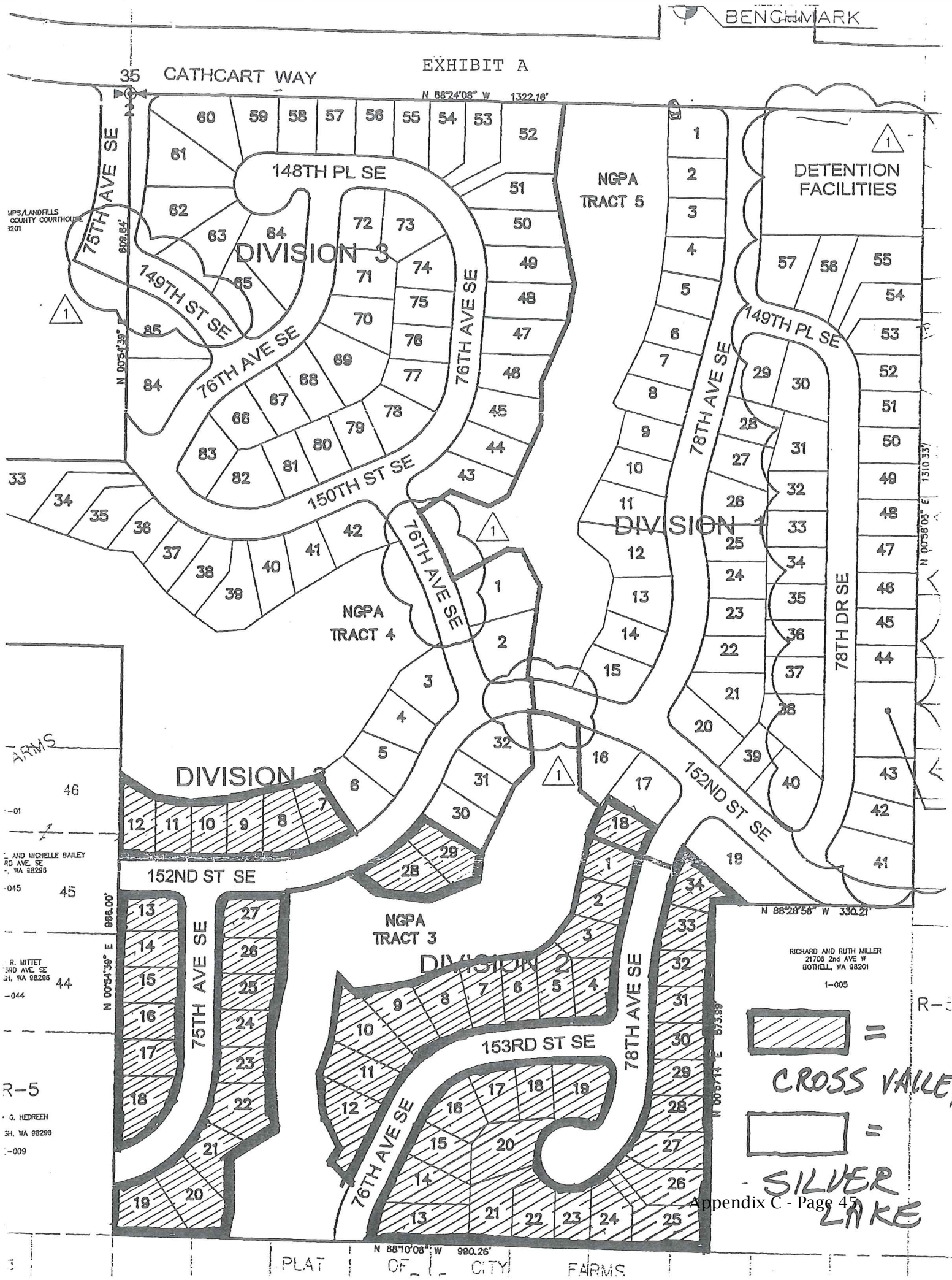


EXHIBIT A
BENCHMARK
35 CATHCART WAY
N 88°24'08" W 1322.16'
148TH PL SE
149TH ST SE
149TH PL SE
150TH ST SE
152ND ST SE
153RD ST SE
75TH AVE SE
76TH AVE SE
78TH AVE SE
78TH DR SE
DIVISION 3
DIVISION 1
DIVISION 2
NGPA TRACT 5
NGPA TRACT 4
NGPA TRACT 3
DETENTION FACILITIES
N 88°28'58" W 330.21'
N 88°10'06" W 990.26'
RICHARD AND RUTH MILLER
21708 2nd AVE W
BOTHELL, WA 98201
1-005
= CROSS VALLEY
= SILVER LAKE
PLAT OF CITY FARMS

SILVER LAKE WATER-SEWER DISTRICT
CROSS VALLEY WATER DISTRICT
2009 AMENDMENT TO INTERLOCAL AGREEMENT

This Amendment entered into this 18th day of March, 2009 between the Cross Valley Water District (hereinafter referred to as "Cross Valley") and the Silver Lake Water-Sewer District (hereinafter referred to as "Silver Lake") (Cross Valley and Silver Lake are herein referred to singularly as "District" and collectively as "Districts") amends the Interlocal Agreement between the Districts dated October 16, 2001 as amended by Agreement signed by the Districts on December 14, 2006 and February 20, 2007, respectively, (hereinafter referred to as 2007 Amendment) redefining and replacing Exhibit C of the Interlocal Agreement dated October 16, 2001.

WITNESSETH:

WHEREAS, the Districts entered into an Interlocal Agreement dated October 16, 2001 regarding the provision of water and sewer service in each other's District (herein referred to as "Interlocal"). A copy of the Interlocal is attached to this Amendment as Exhibit A-1; and

WHEREAS, the Districts amended this Interlocal to redefine and replace Exhibit C of the Interlocal by the 2007 Amendment; and

WHEREAS, the Districts wish to amend the Interlocal to expand the sewer service area for Silver Lake within Cross Valley's boundaries (Area B); and

WHEREAS, certain property within this expanded service area in Cross Valley designated as Valley Investments-Farm Worker Housing site depicted and described on Exhibit B-1 (Valley Investments) is outside the Urban Growth Area as defined by Snohomish County and has a Zoning Designation of Riverway Commercial Farmland; and

WHEREAS, Valley Investments has requested sewer service from Cross Vally and Silver Lake; and

WHEREAS, Snohomish County Planning and Development Serivices have determined that the Valley Investment property is allowed sewer service since the property meets SCC 30.29.110 (1) an exception to SCC prohibition of sewer service outside of a UGA; and

WHEREAS, Valley Investments has received approval of the Washington State Department of Health (DOH) for construction of Farm Worker Housing on its site provided such housing is connected to public sewer; and

WHEREAS, DOH has issued to Valley Investments a Construction Permit for Migrant Farm Worker Housing for its site in Cross Valley; and

WHEREAS, Silver Lake is the only viable sewer provider for the Valley Investments Migrant Farm Worker Housing; and

WHEREAS, the Districts are special purpose municipal corporations in Snohomish County, Washington, organized under the laws of the State of Washington; and

WHEREAS, the Districts desire to enter into this Amendment pursuant to the authority granted in Chapter 39.34 of the Revised Code of Washington and RCW 57.08.007; and

WHEREAS, each District has the authority to construct, condemn and purchase, acquire, add to, alter, maintain and operate waterworks, and sewer systems, within or without their corporate limits, for the purpose of furnishing its inhabitants or any other persons with an ample supply of water and for the purpose of disposing of wastewater; and

WHEREAS, the Districts wish to protect and promote their interests and the interests of their rate payers and to provide water service and sewer service to certain customers located within their respective Districts by both using water lines and sewer lines owned and operated by the other District and by providing for the wholesale of water between the Districts; and

WHEREAS, state law does not allow a special purpose water and sewer district to extend service to customers located within the boundaries of a different water and sewer district without such district's consent and approval; and

WHEREAS, both Districts desire to cooperate in providing water and sewer service to certain properties near or adjacent to the Districts' common boundary lines; and

WHEREAS, both Districts recognize that the other District has the sole lawful authority to provide water and sewer service to properties within its jurisdiction; and

WHEREAS, in accordance with RCW 57.08.007, and by interlocal agreement, the Districts may provide for water and sewer service by one District in the other District's area.

NOW, THEREFORE, the Districts do hereby agree as follows:

Section 1. Purpose.

The purpose of this Amendment is to add lands to Area "B" as described in the Interlocal so as to allow additional land area to be subject to the terms of the Interlocal to provide for future sewer service by Silver Lake to properties within Area "B."

Section 2. Expanded Area B.

Area "B" of the Interlocal is amended to add the lands as described and depicted on Exhibit B-1 attached hereto. For ease of future administration of the Interlocal, the Districts

agree that Exhibit B-1 may be inserted as the substitute exhibit for Exhibit B in the Interlocal and Exhibit C-1 of the 2007 Amendment may be inserted as the substitute for Exhibit C in the Interlocal.

Section 3. A new paragraph is added to Section 5 of the Interlocal to read as follows:

The sewer rate applied by Silver Lake to sewer customers within Area B shall be calculated at 117%, or as otherwise set by written mutual agreement of the Districts' Boards of Commissioners, of the then current rate as now or hereafter amended for Silver Lake sewer customers residing within its Everett sewer basin; that is, Silver Lake customers within its own jurisdiction whose sewer flows through piping and sewer facilities to the Everett Water Pollution Control Facility.

Section 4. A new sub-paragraph (f) is added to Section 10 of the Interlocal to read as follows:

Cross Valley shall indemnify, defend and hold the District and its elected and appointed officials, officers, employees, agents and volunteers (collectively the "District") harmless from and against all damages, losses, expenses and all claims, demands, payments, suits, actions, liabilities, including regulatory enforcement actions, recoveries, and judgments of every nature and description including attorneys' fees and costs (collectively "Claims" or "Damages") incurred by or brought or recovered against the District relating to or arising out of, directly or indirectly, the District providing sewer service to the property located along the 5300 block of Lowell-Larimer Road, Everett, Washington 98296 having Tax Parcel No. 280522-003-015-00 and legally described on Exhibit D attached hereto and incorporated herein by this reference (the "Property"), provided, however, Cross Valley's obligation to indemnify, defend and hold the District harmless under this provision shall not apply to any Claims or Damages arising out of or related to, directly or indirectly, the District's operation of its sewer system to serve the Property .

District and Cross Valley agree that all third party claims for Damages against District for providing sewer service to Tax Parcel No. 280522-003-015-00 not related to, directly or indirectly, the District's operation of its sewer system for which Cross Valley's insurance carrier does not accept defense of District may be tendered by District to the Cross Valley who shall, if so tendered by District, accept and undertake to defend or settle with the Claimant. District retains the right to approve claims investigation and legal counsel assigned to said claim or actions acting reasonably and all investigation and legal work product regarding said claim shall be performed under a fiduciary relationship to the District.

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Section 4. Incorporation and Ratification.

All other terms of the October 16, 2001 Interlocal are hereby ratified and remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as of this 18th day of MARCH, 2009.

SILVER LAKE WATER DISTRICT:

Bill Anderson
President

Rod Keppler
Commissioner

Commissioner

ATTESTED TO:

Secretary-Commissioner

CROSS VALLEY WATER DISTRICT:

President

Commissioner

Commissioner

ATTESTED TO:

Secretary-Commissioner

SILVER LAKE WATER-SEWER DISTRICT
CROSS VALLEY WATER DISTRICT
2008 AMENDMENT TO INTERLOCAL AGREEMENT
EXHIBIT A-1 - OCTOBER 16, 2001 INTERLOCAL AGREEMENT

SILVER LAKE WATER DISTRICT
CROSS VALLEY WATER DISTRICT
INTERLOCAL AGREEMENT

EX. A-1

This Agreement entered into this 16 day of OCTOBER, 2001 between the Cross Valley Water District (hereinafter referred to as "Cross Valley" and the Silver Lake Water District (hereinafter referred to as "Silver Lake"),

W I T N E S S E T H:

WHERAS, the District's entered into this agreement in 1994, and;

WHEREAS, the Districts have determined to re-execute this agreement to clarify the legal authority to provide water and sewer service in each others district; and

WHEREAS, the Districts are special purpose municipal corporations in Snohomish County, Washington, organized under the laws of the State of Washington; and

WHEREAS, the Districts desire to enter into this Agreement pursuant to the authority granted in Chapter 39.34 of the Revised Code of Washington and RCW 57.08.007; and

WHEREAS, each District has the authority to construct, condemn and purchase, acquire, add to, alter, maintain and operate waterworks, and sewer systems, within or without their corporate limits, for the purpose of furnishing its inhabitants or any other persons with an ample supply of water and for the purpose of disposing of wastewater; and

WHEREAS, the Districts wish to protect and promote their interests and the interests of their rate payers and to provide water service and sewer service to certain customers located within their respective Districts by both using water lines and sewer lines owned and operated by the other District and by providing for the wholesale of water between the Districts; and

WHEREAS, Cross Valley has provided service to certain properties within the City Farms area of the Silver Lake as a private and public water purveyor; and

WHEREAS, state law does not allow a special purpose water and sewer district to extend service to customers located within the boundaries of a different water and sewer district without such district's consent and approval; and

WHEREAS, both Districts desire to cooperate in providing water and sewer service to certain properties near or adjacent to the Districts common boundary lines; and

WHEREAS, both Districts recognize that the other District has the sole lawful authority to provide water and sewer service to properties within its jurisdiction; and

WHEREAS, in accordance with RCW 57.08.007, and by interlocal agreement the Districts may provide for water and sewer service by one District in the other District's area.

NOW, THEREFORE, the Districts do hereby agree as follows:

Section 1. Purpose.

The purpose of this Agreement is to provide delivery of water service to properties within the City Farms area as shown on Exhibit "A" attached hereto (hereinafter Area "A") of Silver Lake Water using water systems owned and operated by Cross Valley. It is the further purpose of this agreement to provide future wholesale of water by Silver Lake to Cross Valley for water service to properties within an area of Cross Valley as shown on Exhibit "B" attached hereto (hereinafter Area "B") and to provide for future sewer service by Silver Lake to properties within Area "B". All deliveries of water by Cross Valley from existing facilities owned and operated by Cross Valley within Area "A", shall be allowed by Silver Lake pursuant to the terms, conditions, and limitations of this Agreement. All deliveries of sewer by Silver Lake within Area "B", shall be allowed by Cross Valley pursuant to the terms, conditions, and limitations of this Agreement.

Section 2. Area "A" New Customers - Interim Service.

Cross Valley shall have the right and permission of Silver Lake to provide service to existing customers and to extend service to new customers and properties within Area "A". As a condition of any such new service extension, Cross Valley shall collect from property

owners within Area "A" as a condition of water service to such property owner by Cross Valley all then existing Silver Lake water connection charges, capital improvement charges and other fees, except meter installation charges which will be retained by Cross Valley, which would be collected by Silver Lake for water service in accordance with its Resolutions and regulations. Such Silver Lake charges collected by Cross Valley are to be paid to Silver Lake within thirty days of the date collected by Cross Valley.

Section 3. Area "A" Maintenance and Repair.

All maintenance, operation, and repair costs and expenses of the water system shall be the sole responsibility of Cross Valley. Any and all construction, repair, reconstruction, replacement or other work on the existing system shall be done by Cross Valley. All new service line installation shall be constructed in accordance with Silver Lake standards and specifications. Any extension of the water system within Area "A" caused by a subdivision of property or new development within Area "A" shall be constructed in accordance with Silver Lake standards and specification. Any construction or improvement of the water facilities within Area "A" for existing general system improvements by Cross Valley may be constructed to Cross Valley standards and specification. The existing water system lines set forth on Exhibit "A", which is incorporated herein as a part of this agreement, are integral to the integrity of operation of Cross Valley's system and shall be retained by Cross Valley.

For those projects requiring construction in accordance with Silver Lake standards and specifications, Cross Valley shall submit engineering plans to Silver Lake for approval at least 60 days prior to construction, and shall notify Silver Lake at least seven days prior to beginning actual construction work.

Section 4. Transfer of Customers Area "A".

At its sole discretion and election, Silver Lake may give notice to Cross Valley that Silver Lake intends to take over the customers within Area "A" 60 days from such notice. Cross Valley shall provide to Silver Lake a current list of the names and addresses of all Cross Valley water customers within the Agreement

area. Silver Lake shall send notice of take over to all customers being served by Cross Valley advising them of their new water purveyor and that billing and payment of future water bills shall be handled by Silver Lake.

At such time of notice Cross Valley shall wholesale to Silver Lake sufficient water to serve all properties within Area "A" whether then being served or not should Silver Lake decide to purchase water from Cross Valley. Nothing herein shall require Silver Lake to purchase water from Cross Valley.

At the time of take over of the water system, Silver Lake shall be responsible for maintenance and operation of the water system within Area "A", except for those lines set forth on Exhibit "A".

Section 5. Area "B" New Sewer Customers.

Silver Lake shall have the right and permission of Cross Valley to extend sewer service to customers and properties within Area "B". Any and all construction of sewer facilities within Area "B", shall be constructed in accordance with Silver Lake standards and specifications. Silver Lake shall maintain and operate such sewer system. Silver Lake may collect any and all connection charges, capital improvement charges, monthly rates and charges and other fees which would be collected by Silver Lake in accordance with its Resolutions and regulations. Nothing herein shall preclude Silver Lake from entering into a sewer service extension agreement with individual property owners within Area "B".

Section 6. Silver Lake Wholesale of Water to Cross Valley - Area "B".

Subject to the provisions of Section 8, Silver Lake agrees to wholesale water to Cross Valley sufficient to serve all customers and properties within Area "B". Any and all costs of construction, maintenance and repair of facilities required to wholesale water to Cross Valley, such as master meter(s), shall be paid solely by Cross Valley. Such facilities shall be constructed in accordance with Silver lake standards and specification. Nothing herein shall require Cross Valley to purchase water from Silver Lake. Provided, however, that both water and sewer shall be provided by Silver Lake

for that area delineated by the number 1 within Area "B" set forth on Exhibit "C" incorporated herein, which comprises approximately 20 lots of Waldenwood Subdivision, Phase II.

Section 7. Water Quality.

Each District warrants that it will purvey water meeting the state water quality standards and requirements to the other District and to all residents within the other District. Each District agrees to protect, hold harmless, indemnify and defend the other for any claim, demand or suit arising out of purveying water to customers within the other District or the wholesaling of water to the other District.

Section 8. Delinquent Account Collection. In order to ensure that each District can protect revenue sources and protect bond covenants as well as the operational integrity of its system, every customer of both water and sewer service in Area "B" shall be treated as though that customer was receiving both water and sewer service from Silver Lake. Any and all remedies for non-payment of utility bills, including but not limited to cut off of service as authorized by RCW 57.08.090, shall pertain to Silver Lake. At all times that Silver Lake is providing sewer service to a customer within Area "B" that is being provided water service by Cross Valley, Cross Valley shall apply any water bill payment first to any Silver Lake sewer bill for the same customer that is 30 days past due. Such Cross Valley payment shall be forwarded to Silver Lake within 30 days. Should delinquency by any such customer continue, Cross Valley shall turn off that customer's water service as provided by state law.

Section 9. Water Service to Cathcart Landfill. Both Districts understand that in order to provide water to the Snohomish County Cathcart Landfill, Cross Valley has purveyed water to Cathcart even though it is in Silver Lake. Both Districts agree and understand that at such time that Silver Lake can serve water to Cathcart, Silver Lake may give notice to Cross Valley that Silver Lake will take over service of water to Cathcart and Cross Valley will cease water delivery to Cathcart.

Section 10. Miscellaneous.

a. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their successors and assigns.

b. This document constitutes the entire agreement of the parties with respect to the subject matter hereof and may be modified only by an agreement in writing signed by all the parties hereto.

c. Waiver by any party of any term or condition of this Agreement shall not be deemed or construed as a waiver of any other term or condition, nor shall a waiver of any subsequent breach, whether of the same or of a different provision of this Agreement.

d. If any provision of this Agreement is held invalid or unenforceable, the remainder of the Agreement shall not be affected and shall remain in full-force and effect.

e. Any notices required or permitted under this Agreement shall be delivered to the District's business office.

Section 11. Arbitration.

Any controversy or claim arising out of or related to this contract or the breach thereof shall be settled by a Board of three arbitrators one of whom shall be selected by Cross Valley and one by Silver Lake and the third selected jointly by the first two, and the parties hereto agree that any decision of the arbitrators shall be binding upon both parties hereto and judgment upon the award rendered may be entered in any court having jurisdiction thereof, all in accordance with Chapter 7.04 RCW. Any costs, expenses, and legal fees incurred in arbitration or other legal action shall be awarded to the prevailing party.

Section 12. Effective Date, Duration, and Termination.

This Agreement shall become effective on the date on which this Agreement has been duly authorized and executed by the Districts. As to Area "A", this Agreement shall terminate at such time as Silver Lake's system is able to serve the properties within Area "A" receiving water from Cross Valley and Silver Lake has accomplished take over of water service in Area "A". This agreement maybe terminated at an earlier date by mutual agreement of the Districts.

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IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of this

16th day of OCTOBER, 2001.

SILVER LAKE WATER DISTRICT:

President

Commissioner

Commissioner

Commissioner

ATTESTED TO:

Secretary-Commissioner

CROSS VALLEY WATER DISTRICT

President

Commissioner

Commissioner

ATTESTED TO:

Secretary-Commissioner

SILVER LAKE WATER DISTRICT

LEGAL DESCRIPTION

EXHIBIT A

That portion of the West 1/2, Section 2, Township 27, Range 5 East described as follows:

Beginning at the SW corner of Lot 57 of the Plat of City Farms, thence Northerly along the West line of said Plat to the SW corner of Lot 49 of said Plat, thence Easterly along the South line of said Lot 49 to the SE corner of the West 1/2 of said Lot 49 thence Northerly along the East line of the West 1/2 of said Lot 49 and Lot 48 to the South line of Lot 47 of said Plat, thence Easterly along the South line of said Lot 47 to the SW corner of Lot 46 of said Plat, thence Northerly along the West line of said Lot 46 to the NW corner of said Lot 46, thence Easterly along the North line of said Lot 46 to the NE corner of said Lot 46 and the North-South centerline of said Section 2, thence Southerly along said North-South centerline to the North margin of 160th Street S.E., thence Westerly along said North margin to the West line of the NE 1/4 of the SW 1/4 of said Section 2, thence Northerly along said West line to the SW corner of said Lot 57 and the true point of beginning.

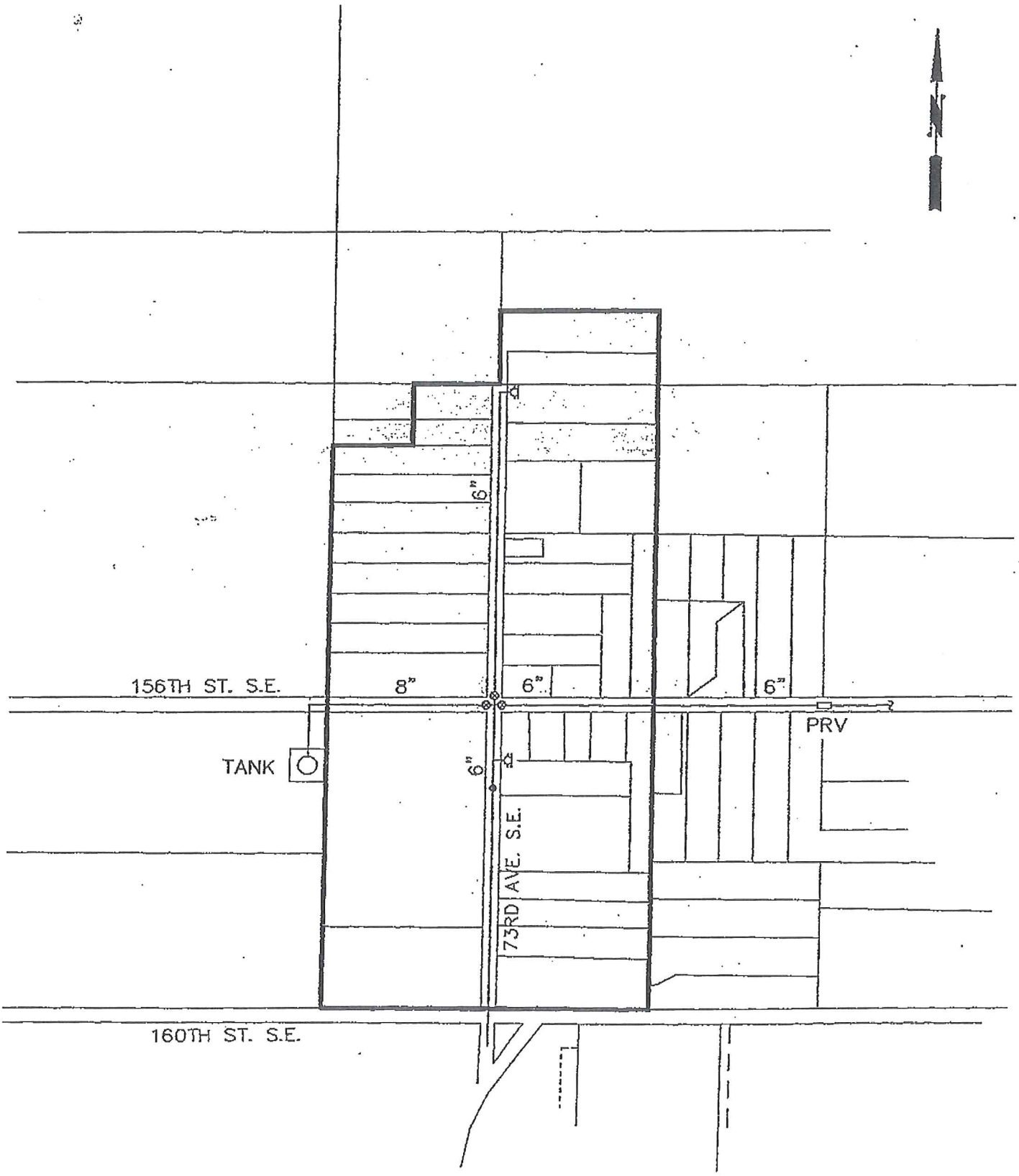

EXHIBIT A

SILVER LAKE WATER DISTRICT

LEGAL DESCRIPTION

EXHIBIT B

Beginning at the southeast corner of Lot 9 Plat of Woodridge Heights Division 1 being the true point of beginning; thence northerly along the east line of said Plat to the northeast corner of Tract 999 of said Plat; thence westerly along the north line of said Tract 999 to a point lying 800.25 feet east of the west line of Section 27, Township 28 N, Range 5 E, W.M.; thence northerly to a point on the southerly margin of 116th Street S.E. said point lying 825 feet east and 30 feet south of the northwest corner of said Section 27; thence westerly along the southerly margin of 116th Street S.E. a distance of 420 feet; thence northerly across 116th Street S.E. a distance of 60 feet to a point on the northerly margin of 116th Street S.E. said point lying 405 feet east of the west line of Section 22, Township 28 N, Range 5 E, W.M.; thence continuing northerly a distance of 400 feet to a point lying 405 feet east of the west line of said Section 22; thence westerly a distance of 405 feet to a point on the west line of said Section 22 said point lying 430 feet north of the southwest corner of said Section 22; thence northerly along the west line of said Section 22 to the northeasterly margin of Lowell-Larimer Road; thence southeasterly along said northeasterly margin of Lowell-larimer Road to the intersection of the easterly margin of Marsh Road and East Lowell-Larimer Road: thence continuing easterly to the east line of said Section 22; thence southerly along the east line of said Sections 22 and 27 to the southeast corner of said Section 27; thence westerly along the south line of said Section 27 to the southeast corner of Lot 9 Plat of Woodridge Heights Division 1 and the true point of beginning.

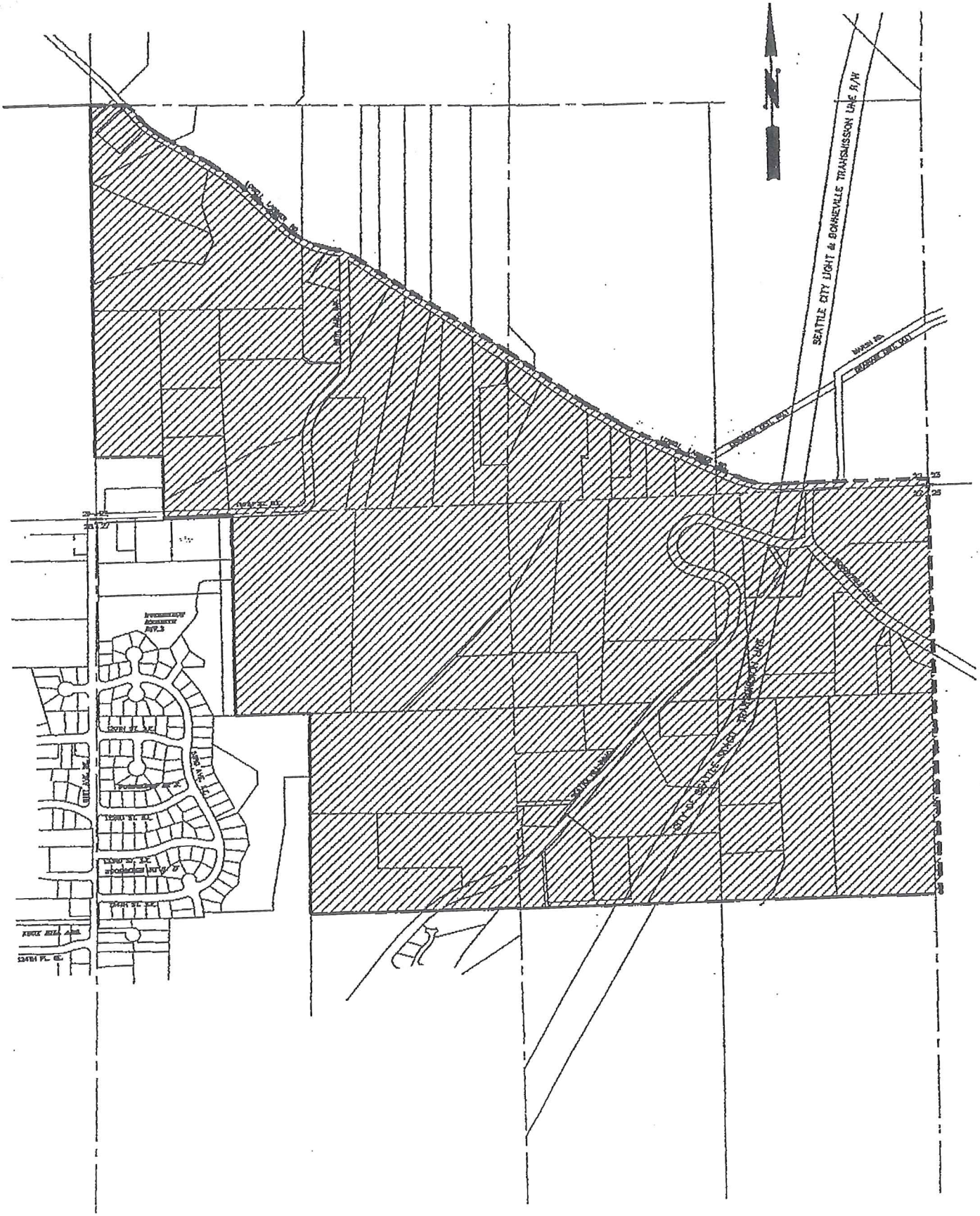

EXHIBIT B

SILVER LAKE WATER DISTRICT

LEGAL DESCRIPTION

PARCEL 1, EXHIBIT C

That portion of Section 22, Township 28 N, Range 5 E, W.M. described as follows:

BEGINNING AT A POINT 504.38 FEET SOUTH OF THE NORTHWEST CORNER OF THE N.W. 1/4 S.W 1/4; THENCE S 65° 57' 15" E A DISTANCE OF 827.05 FEET; THENCE S 14° 27' 30" E A DISTANCE OF 55.97 FEET; THENCE S 22° 24' 00" W A DISTANCE OF 160.80 FEET; THENCE N 82° 59' 00" W A DISTANCE OF 243.70 FEET; THENCE S 72° 06' 00" W A DISTANCE OF 232.90 FEET; THENCE S 76° 00' 00" W A DISTANCE OF 269.40 FEET TO THE WEST LINE OF SECTION 22; THENCE NORTH TO THE POINT OF BEGINNING.

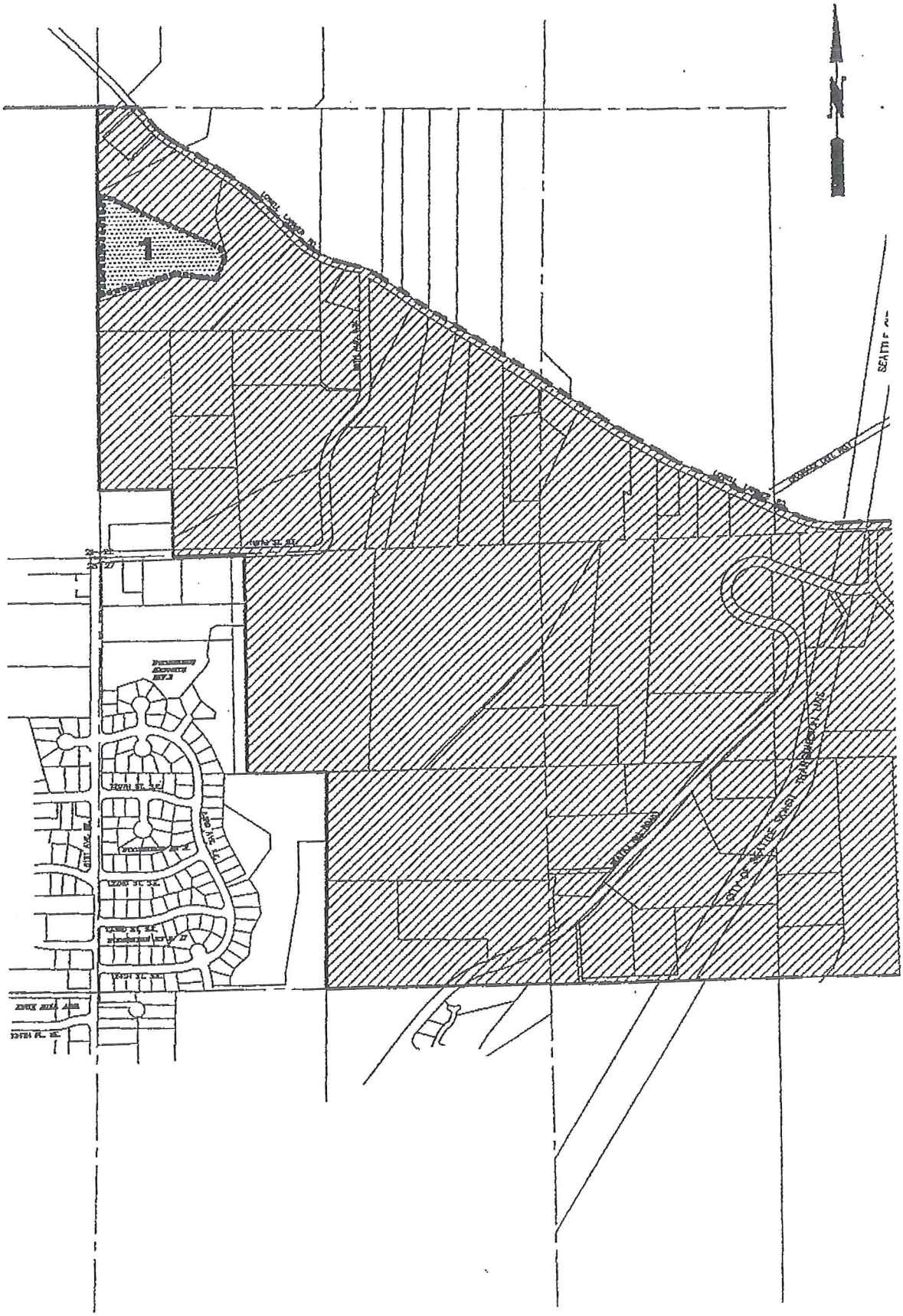

EXHIBIT C

2009 AMENDMENT
EXHIBIT B-1
LEGAL DESCRIPTION

BEGINNING at the Southwest corner, of the Southeast quarter, of the Northwest quarter, of Section 27, Township 28 North, Range 5 East, of the W.M.; THENCE Northerly to the Northwest corner, of said subdivision; THENCE Westerly, along the North line, of the Southwester quarter, of the Northwest quarter, of said Section 27, to a point lying 800.25 feet East, of the West line, of said Section 27; THENCE Northerly, to a point on the Southerly margin of 116th Street S.E., said point lying 825 feet East and 30 feet South of the Northwest corner, of said Section 27; THENCE Westerly, along the Southerly margin of 116th Street S.E. 420 feet; THENCE Northerly. 60 feet to a point on the Northerly margin of 116th Street S.E., said point lying 405 feet East, of the West line of Section 22, Township 28 North, Range 5 East, of the W.M.; THENCE continuing Northerly 400 feet, to a point lying 405 feet East, of the West line, of said Section 22; THENCE Westerly 405 feet, to a point on the West line of said Section 22, said point lying 430 feet North, of the Southwest corner of said Section 22; THENCE Northerly, to the Northwest corner, of the Southwest quarter, of said Section 22; THENCE Westerly, to the Southwest corner, of the Southeast quarter, of the Northeast quarter, of Section 21, Township 28 North, Range 5 East, of the W.M.; THENCE Northerly, along the West line of said subdivision, to the Northeasterly margin of Lowell-Larimer Road; THENCE Southeasterly, along the Northeasterly margin of said Lowell-Larimer Road, to the following described line; BEGINNING at the Northeast corner, of the Northwest quarter, of the Southwest quarter, of said Section 22; THENCE North 87°29'48" West 500.00 feet, along the North, of said subdivision; THENCE South 01°54'04" West 200.00 feet; THENCE South 44°22'49" West 207.86 feet, to the Northeasterly margin of Lowell-Larimer Road and the TERMINUS of this line description; THENCE North 44°22'49" East 207.86 feet; THENCE North 01°54'04" East 200.00 feet, to the North line, of the Northwest quarter, of the Southwest quarter, of said Section 22; THENCE South 87°29'48" East 500.00 feet, to the Northeast corner of said subdivision; THENCE continuing Easterly 50.00 feet, along the North line, of the Northeast quarter, of the Southwest quarter, of said Section 22; THENCE Southerly, parallel with and 50.00 feet Easterly of the West line of said subdivision, to the Northeasterly margin of Lowell-Larimer Road; Thence continuing Southeasterly, along the Northeasterly margin of Lowell-Larimer Road to its intersection with the Easterly margin of Marsh Road; THENCE continuing Southerly and Southeasterly, along the Easterly and Northeasterly margin of Lowell-Larimer Road, to the East line, of the Southeast quarter, of Section 26, Township 28 North, Range 5 East, of the W.M.; THENCE Southerly, to the Southeast corner of said Section 26; THENCE Westerly, to the Southwest corner, of said Southeast quarter; THENCE Northerly, to the Northwest corner, of the South half, of said Southeast quarter; THENCE Westerly, along the Southerly line, of the North half, of the Southwest quarter, of said Section 26, to the East line, of Tract 902, Snohomish Cascade Sector 8, Division 2, as recorded under Auditor's Fee Number 200203135008, records of Snohomish County, Washington; THENCE Northerly, to the Northeast corner of said

Plat; THENCE Westerly, along the North line of said Plat, to the West line, of the Northeast quarter, of the Southwest quarter, of said Section 26; Thence Northerly, to the Northwest corner, of the Northeast quarter, of the Southwest quarter, of said Section 26; THENCE Westerly, to the Southwest corner, of the Northwest quarter, of Section 26; THENCE Westerly, to the Southwest corner, of the Northeast quarter, of said Section 27; THENCE Westerly to the Southwest corner, of the Southeast quarter, of the Northwest quarter, of said Section 27 and the POINT OF BEGINNING.

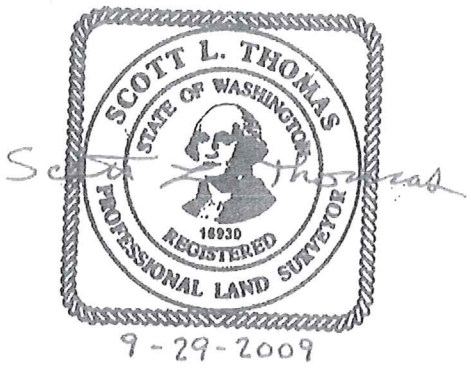

EXHIBIT B-1
VALLEY INVESTMENTS
FARM WORKER HOUSING SITE

That portion of the Northwest quarter, of the Southwest, of Section 22, Township 28 North, Range 5 East, of the W.M., lying Northeasterly of Lowell-Larimer Road and Easterly of the following described line:
COMMENCING at the Northeast corner, of said Northwest quarter, of the Southwest quarter; THENCE North 87°29'48" West, along the North line thereof 500.00 feet to the TRUE POINT OF BEGINNING; THENCE South 01°54'04" West 200.00 feet; THENCE South 44°22'49" West 207.86 feet, to the Northeasterly right-of-way of said Lowell-Larimer Road and TERMINUS of said Line;
TOGETHER WITH the West 50.00 feet, of that portion of the Northeast quarter, of the Southwest quarter, of said Section 22, lying Northeasterly of Lowell-Larimer Road.

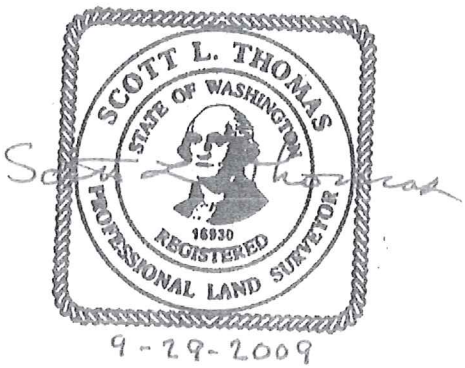

EXHIBIT B-1
REVISED 2-26-2009
EXPANDED CVWD/SLWSD AGREEMENT AREA
VALLEY INVESTMENTS - FARM WORKER HOUSING SITE
P.O.B.
LOWELL LARIMER
AIRPORT
SR 9
MARSH
STREAM
STREAM
27TH
PUGET PARK
SEATTLE HILL
N
56TH
16TH
45TH
40TH
105TH
108TH
39TH
110TH
112TH
39TH
38TH
116TH
119TH
40TH
42ND
42ND
43RD
44TH
121ST
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119TH
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122ND
123RD
51ST
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53RD
52ND
53RD
122ND
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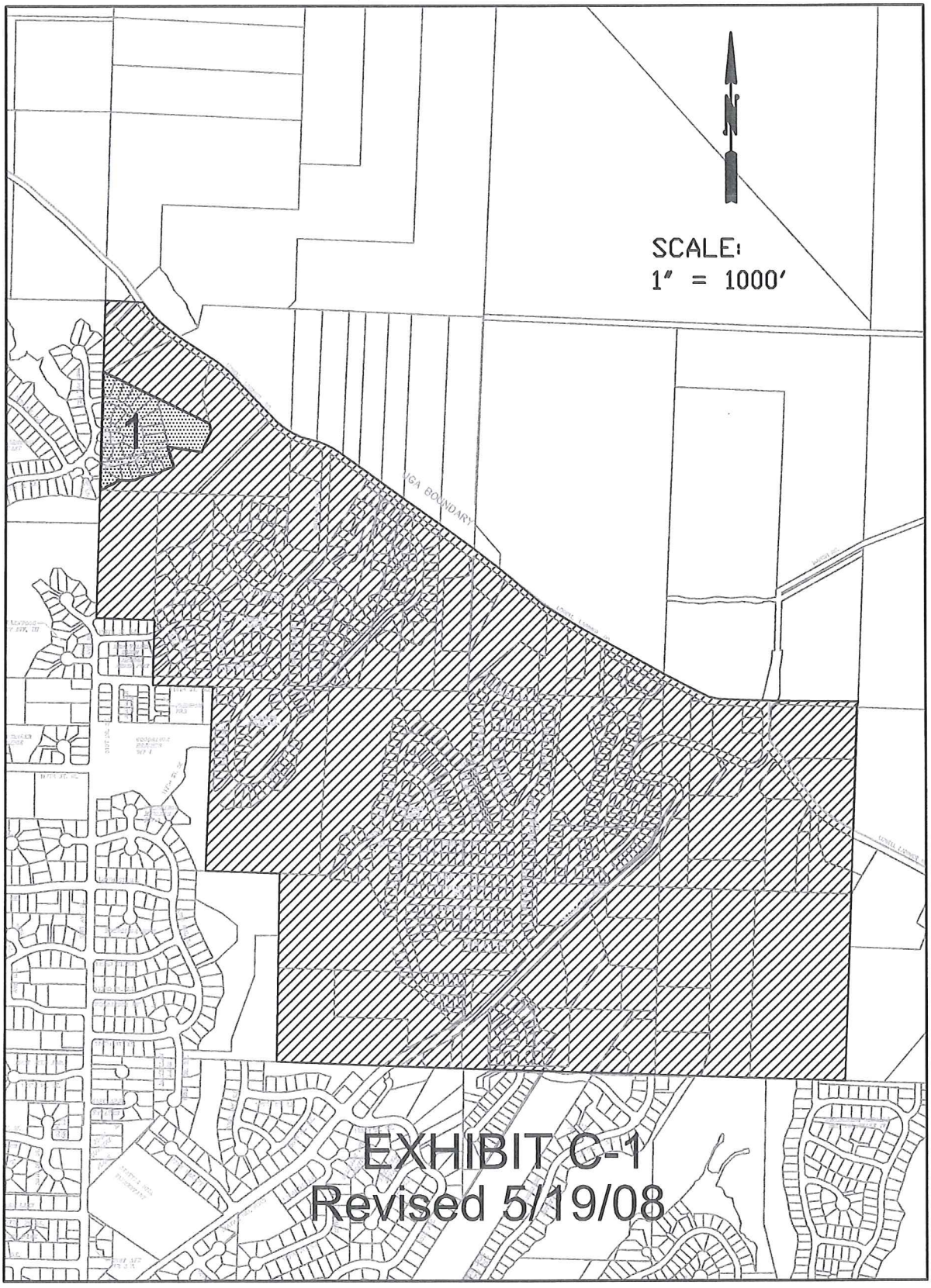
46TH
124TH
125TH
126TH
125TH
126TH
127TH
126TH
127TH
128TH
47TH
47TH
48TH
130TH
131ST
43RD
132ND
132ND
133RD
134TH
135TH
136TH
49TH
51ST
48TH
54TH
53RD
52ND
54TH
54TH
55TH
57TH
58TH
125TH
131ST
133RD
60TH
62ND
135TH
61ST
62ND
136TH
64TH
138TH
59TH
138TH

SILVER LAKE WATER DISTRICT
CROSS VALLEY WATER DISTRICT
2008 AMENDMENT TO INTERLOCAL AGREEMENT
EXHIBIT C-1 - REPLACES 2001 EXHIBIT C



M:\SLWD\06680\EXHIBIT C-1.DWG, EXHIBIT C, 5/19/2008 1:34:55 PM, 1:1

RESOLUTION NO. 2019-10-2

A RESOLUTION of the Board of Commissioners of Cross Valley Water District, Snohomish County, Washington, accepting the terms and conditions of Snohomish County Council Ordinance No. 19-040, granting the District a non-exclusive franchise authorizing limited use of the public rights-of-way in Snohomish County, Washington.

WHEREAS, Cross Valley Water District, a Washington special purpose municipal corporation ("District"), owns and operates water and sewer facilities ("Facilities") located in Snohomish County, and a portion of such Facilities are located within unincorporated Snohomish County ("County") public rights-of-way; and

WHEREAS, RCW 57.08.005(3) authorizes the District to conduct water throughout the District and any city and town therein, and construct and lay facilities along and upon public highways, roads and streets within and without the District; and

WHEREAS, RCW 57.08.005(5) authorizes the District to conduct sewage throughout the District and throughout other political subdivisions within the District, and construct and lay sewer pipe along and upon public highways, roads, and streets, within and without the District; and

WHEREAS, RCW 36.55.010 authorizes the County to grant non-exclusive franchises for the use of the public streets above or below the surface of the ground by publicly owned and operated water and sewer facilities; and

WHEREAS, the County has prepared a Franchise Agreement in the form of an Ordinance to provide for the location and operation of District Facilities within County right-of-way; and

WHEREAS, the Snohomish County Council authorized granting the District a non-exclusive franchise to construct, maintain, operate, replace and repair water and sewer systems within public rights-of-way of the County by the passage of Ordinance No. 19-040 on September 19, 2019, in the form attached hereto as **Exhibit A** and incorporated herein by this reference ("Ordinance" or "Franchise"); and

WHEREAS, the Ordinance provides in Section 31 that the rights and privileges granted to the District under the Franchise shall cease and terminate unless the District, within ninety (90) days after the passage and approval of the Franchise, files with the County Council an unconditional acceptance of the Franchise; now, therefore,

BE IT RESOLVED, by the Board of Commissioners of Cross Valley Water District, Snohomish County, Washington, as follows:

1. Incorporation of Recitals. The recitals set forth above are hereby adopted as if set forth in full herein.

2. Acceptance of Franchise. The terms and conditions of the Franchise as contained in Ordinance No. 19-040 and **Exhibit A** to this Resolution are hereby accepted; and the District General Manager is authorized and directed to sign on the District's behalf the "Acceptance" of such Franchise

attached to the Ordinance and file such executed "Acceptance" of Franchise with the Snohomish County Council.

3. Effective Date. This Resolution shall be effective the date set forth below.

ADOPTED by the Board of Commissioners of Cross Valley Water District, Snohomish County, Washington, at the regular meeting held on October 15, 2019.

Ginger Desy, President

Dave Hutley, Vice President

Warren E. Schoff Jr., Secretary

EXHIBIT A

ORDINANCE NO. 19-040

After Recording Return To:

201911190127 28 PGS
11/19/2019 10:08am $130.50
SNOHOMISH COUNTY, WASHINGTON

Asst. Clerk of the Council
Snohomish County Council
3000 Rockefeller, M/S 609
Everett, WA 98201

Grantor:	Snohomish County
Grantee:	Cross Valley Water District
Tax Account No:	Not Assigned
Legal Description:	See Section 1.3
Ref. # of Docs. Affected:	9406060825
Document Title:	An Ordinance of Snohomish County Council Granting a Nonexclusive Franchise Authorizing Limited Use of Public Road Rights-of-Way in portions of Snohomish County, Washington to Cross Valley Water District

SNOHOMISH COUNTY COUNCIL
Snohomish County, Washington

ORDINANCE NO. 19-040

GRANTING A NON-EXCLUSIVE FRANCHISE AUTHORIZING LIMITED USE OF THE PUBLIC ROAD RIGHTS-OF-WAY IN PORTIONS OF SNOHOMISH COUNTY, WASHINGTON TO CROSS VALLEY WATER DISTRICT

WHEREAS, the Washington State Constitution, by and through its general grant of police power, and Section 36.55.010 of the Revised Code of Washington authorize counties to grant franchises for use of public rights-of-way; and

WHEREAS, Section 9.20 of the Snohomish County Charter and Title 13 of the Snohomish County Code specify requirements for franchises in Snohomish County rights-of-way; and

WHEREAS, a franchise is a legislative authorization to use public rights-of-way, however, actual construction and activities in the rights-of-way will also be subject to approved right-of-way use permits after review of specific plans; and

WHEREAS, Cross Valley Water District has applied to Snohomish County, Washington, for a non-exclusive franchise to construct, maintain, operate, replace and repair a water distribution, sewer collection system in, on, across, over, along, under, and/or through public rights-of-way within unincorporated Snohomish County; and

WHEREAS, the Snohomish County Council considered the Engineer's Report of the Department of Public Works, attached to and incorporated into this ordinance by reference, which report recommends that the subject franchise be granted, and further sets out guidelines and expectations for the right-of-way use permit process; and

WHEREAS, the Snohomish County Council held a public hearing on September 18, 2019, to solicit comments from the public and to consider whether to grant the requested franchise to Cross Valley Water District; and

WHEREAS, it has been found to be in the public interest that a franchise, authorizing use of public rights-of-way for a water distribution system, be granted to Cross Valley Water District.

NOW, THEREFORE, BE IT ORDAINED:

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Section 2. Non-Exclusive Franchise.
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Section 7. Restoration of Public Rights-of-Way.
Section 8. Record Plans, Record Drawings, and Records of Grantee Facility Locations.
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Section 10. Undergrounding of Grantee Facilities.
Section 11. Maintenance of Grantee Facilities.
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Section 15. Fees, Compensation for Use of Public Rights-of-Way, and Taxes.
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Section 17. Limitation of County Liability.
Section 18. Insurance.
Section 19. Performance Security.
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Section 22. Assignment.
Section 23. Termination, Revocation, and Forfeiture.
Section 24. Remedies to Enforce Compliance; No Waiver.
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Section 26. Eminent Domain, Powers of the People.
Section 27. Survival and Force Majeure.
Section 28. Governing Law and Stipulation of Venue.
Section 29. Severability.
Section 30. Notice and Emergency Contact.
Section 31. Acceptance.
Section 32. Effective Date.

Section 1. Grant of Franchise.

1.1 Pursuant to Section 36.55.010 of the Revised Code of Washington ("RCW"), Section 9.20 of the Snohomish County Charter and Chapter 13.80 of the Snohomish County Code ("SCC"), Snohomish County, a political subdivision of the State of Washington (the "County"), hereby grants to Cross Valley Water District, a municipal corporation, (the "Grantee"), a non-exclusive franchise to use those portions of the County's rights-of-way described in Section 1.3 below, for the purposes described in Section 1.2 below, subject to compliance with all applicable provisions of the SCC, the Engineering Design & Development Standards (EDDS) and the terms and conditions contained in this franchise ordinance (the "Franchise").

1.2 This Franchise grants the Grantee the right, privilege and authority to use portions of the Public Rights-of-Way (as such term is defined below) of the County for the sole purposes of constructing, maintaining, operating, replacing and repairing its water and sewer utility facilities (the "Permitted Use") and for no other purpose or use whatsoever. The term "Public Rights-of-Way" as used in this Franchise shall mean all public streets, roads, ways, or alleys of the County as now or hereafter laid out, platted, dedicated or improved. Pursuant to this Franchise, the Grantee shall have the right to install, locate, construct, operate, maintain, use, replace and/or remove such equipment and facilities as may be reasonably necessary or convenient for the conduct of the Permitted Use (the "Grantee Facilities"), in, on, across, over, along, under or through certain Public Rights-of-Way of the County, subject to all applicable provisions of Title 13 SCC (including EDDS), Chapter 36.55 RCW, and the terms and conditions of County right-of-way use permits issued pursuant to Title 13 SCC and Section 4 of this Franchise. This Franchise merely authorizes the Grantee to occupy and use the Public Rights-of-Way at issue, and does not transfer, convey or vest any easement, title, servitude, or other real property interest in or to any Public Right-of-Way or portion thereof in or to the Grantee.

1.3 This Franchise covers all Public Rights-of-Way located within the following portions of unincorporated Snohomish County:

Township	Range	Sections
Twp. 28N	Rge. 5E, W.M	Sects. 1, 2, 3, 10, 11, 12, 13, 14, 16, 21, 22, 24, 25, 26, 27 & 36
Twp. 28N	Rge 6E, W.M.	Sects. 30 & 31
Twp. 27N	Rge 5E, W.M.	Sects. 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25, 26, 27, 34 & 35
Twp. 27N	Rge. 6E,W.M.	Sects. 6, 7, 8, 16, 17, 18, 19, 20, 21, 26, 27, 28, 29, 30, 31, 32, 33, 34 & 35

Section 2. Non-Exclusive Franchise.

2.1 This Franchise is granted upon the express condition and understanding that it shall be a non-exclusive franchise which shall not in any manner prevent or hinder the County from granting to other parties, at other times and under such terms and conditions as the County, in its sole discretion, may deem appropriate, other franchises or similar use rights in, on, to, across, over, upon, along, under or through any Public Rights-of-Way. Owners, whether public or private, of any authorized facilities or equipment installed in, on, across, over, along, under, and/or through a Public Right-of-Way prior to the construction and/or installation of Grantee's Facilities in the same location, shall have preference as to positioning and location of their facilities. The position and location of all Grantee's Facilities in the Public Rights-of-Way shall be subject to the authority of the County Engineer.

2.2 This Franchise shall in no way prevent, inhibit or prohibit the County from using any of the Public Rights-of-Way covered or affected by this Franchise, nor shall this Franchise affect the County's jurisdiction, authority or power over any of them, in whole or in part. The County expressly retains its power to make or perform any and all changes, relocations, repairs, maintenance, establishments, improvements, dedications, or vacations of or to any of the Public Rights-of-Way as the County may, in its sole and absolute discretion, deem fit, including the dedication, establishment, maintenance and/or improvement of new Public Rights-of-Way, thoroughfares and other public properties of every type and description.

Section 3. Term, Early Termination, and Amendments.

3.1 The initial term of the Franchise shall be for a period of ten (10) years (the "Initial Term"), beginning on the Effective Date (as such term is defined in Section 32 of this Franchise) of the Franchise, and continuing until the date that is one day prior to the tenth (10^{th}) anniversary of the Effective Date (the "Initial Term Expiration Date"), unless earlier terminated, revoked or amended pursuant to the provisions of this Franchise.

3.2 This Franchise shall automatically renew for an additional term of ten (10) years (the "Extended Term," and, together with the Initial Term, the "Term"), subject to the County's right to renegotiate and/or unilaterally terminate the Franchise at any time after the Initial Term Expiration Date, as more fully described in Section 3.3 below.

3.3 The County shall have the right, in its sole and absolute discretion, at any time after the Initial Term Expiration Date, to unilaterally elect to open negotiations with the Grantee regarding proposed amendments, alterations or other changes to the terms and conditions of this Franchise. In such event, the County shall deliver written notice to the Grantee stating the County's general desire to amend the terms and conditions of the Franchise. Within thirty (30) days after the date on which the Grantee receives the County's notice letter, the Grantee and the County shall enter into good faith negotiations regarding potential amendments to the initial terms and conditions of the Franchise. Should the parties reach agreement regarding any such amendments, the parties

shall memorialize such amendments and seek approval of same from the County Council or such other County authority as may be proper. Should the parties prove unable to reach agreement regarding any proposed amendments within ninety (90) days after the date on which negotiations commenced, then this Franchise shall automatically terminate.

3.4 Other than the process set forth in Section 3.3 for amendments, this Franchise may be amended only upon the written consent of the County and the Grantee set forth in writing in the form of a County ordinance, signed by both parties, which states that it is an amendment to this Franchise and is approved and executed in accordance with the laws of the State of Washington.

Section 4. Regulation of Use; Permits Required.

4.1 The installation, location, maintenance, operation, relocation, removal or any other work related to any of the Grantee Facilities occurring in, on, across, over, along, under, and/or through any Public Right-of-Way covered by this Franchise, shall be performed in a safe and workmanlike manner, in such a way as to minimize interference with the free flow of traffic and the use of adjacent property, whether such property is public or private.

4.2 The Grantee shall not commence any work within Public Rights-of-Way until a right-of-way use permit authorizing such work has been issued by the County pursuant to Title 13 SCC. In addition to any standards of performance imposed by this Franchise, any and all work performed by Grantee pursuant to this Franchise shall be performed in accordance with all current County standards applicable to such work, including the County approved plans and specifications for the work, and the terms and conditions of any right-of-way use permit and/or other permits and/or approvals required under Title 13 SCC in order to accomplish the work (e.g., lane closure or road detour permits). Grantee understands and acknowledges that some or all of Grantee's activities may require additional project permits and approvals under County land use codes and development regulations, and Grantee accepts full responsibility for obtaining and complying with same.

4.3 In addition to any criteria set forth in Title 13 SCC, the EDDS, and the County's utility accommodation policies, in reviewing the Grantee's application for any right-of-way use permit pursuant to this Franchise, the County Engineer may apply the following criteria in reviewing proposed utility routes and in the issuance, conditioning, or denial of such permit:

(i) the capacity of the Public Rights-of-Way at issue to accommodate the proposed Grantee Facilities;

(ii) the capacity of the Public Rights-of-Way at issue to accommodate additional utility, cable, telecommunications, or other public facilities if the right-of-way use permit is granted;

(iii) the damage or disruption, if any, to public or private facilities, improvements, service, travel, or landscaping if the right-of-way use permit is granted;

(iv) the public interest in minimizing the cost and disruption of construction within the Public Rights-of-Way at issue, including, but not limited to, coordination with future utility installation or County projects;

(v) recent and/or proposed construction and/or improvements to the Public Rights-of-Way at issue;

(vi) the availability of alternate routes, locations, and/or methods of construction or installation for the proposed Grantee Facilities, including, but not limited to, whether other routes are preferred; and

(vii) whether the Grantee has received all requisite licenses, certificates, and authorizations from applicable federal, state, and local agencies with jurisdiction over the activities proposed by the Grantee.

4.4 Prior to commencing any work in a critical area as defined by SCC 30.91C.340, the Grantee shall comply with all applicable requirements of the County's critical areas regulations in chapters 30.62A, 30.62B, 30.62C and 30.65 SCC, and shall obtain any and all required permits and approvals. The granting of this Franchise shall in no way relieve the Grantee from its responsibility for avoiding "take" of any threatened or endangered species as defined by the Endangered Species Act of 1973, 16 U.S.C. § 1531, et seq., as amended, in the performance of any work authorized by this Franchise and/or any right-of-way use permits.

Section 5. Emergency Work.

Should any of the Grantee Facilities in the Public Rights-of-Way break or become damaged such that an immediate danger to the property, life, health or safety of any individual is presented, or should any site upon which the Grantee is engaged in construction or maintenance activities pursuant to this Franchise for any reason be in such a condition that an immediate danger to the property, life, health or safety of any individual is presented, the Grantee shall immediately take such measures as are reasonably necessary to repair the Grantee Facilities at issue or to remedy the dangerous conditions on the site at issue so as to protect the property, life, health or safety of individuals. In the event of an emergency described above, the Grantee may take corrective action immediately, without first applying for or obtaining any permits or other authorizations that might otherwise have been required by the SCC and/or this Franchise. However, the emergency provisions contained in this Section 5 shall not relieve the Grantee from its obligation to obtain any permits necessary for the corrective actions taken, and the Grantee shall apply for all such permits as soon as is reasonably possible after the occurrence of the emergency. In the event of any emergency described in this Section 5, the Grantee shall notify the County of the emergency as soon as may be reasonably feasible after the Grantee discovers the emergency (such notice may be telephonic).

Section 6. Compliance with Applicable Laws; Performance Standards.

6.1 The Grantee shall at all times during the Term of the Franchise undertake the Permitted Use in compliance with all federal, state and local laws, rules and regulations (including, but not limited to, the County's comprehensive plan, zoning code, and other development regulations) that are applicable to any and all work or other activities performed by Grantee pursuant to or under authority of the Franchise.

6.2 During any period of installation, maintenance, operation, relocation, removal or any other work related to any of the Grantee Facilities subject to this Franchise, Grantee shall use industry accepted best-practices to ensure that, to the extent reasonably feasible, such work does not impede: (i) public use of the Public Rights-of-Way at issue for vehicular and pedestrian transportation; (ii) construction and/or maintenance within Public Rights-of-Way and other authorized facilities, equipment and improvements; (iii) the operation, maintenance or improvement by the County of the Public Rights-of-Way or other public property impacted by Grantee's work; or (iv) use of the Public Rights-of-Way for other governmental purposes.

6.3 During any periods of construction within the Public Rights-of-Way, the Grantee shall at all times post and maintain proper barricades and comply with all applicable safety regulations as required by the SCC, the EDDS, or the laws of the State of Washington, including, but not limited to, RCW 39.04.180 for the construction of trench safety systems.

6.4 Before the Grantee commences any work under this Franchise which may affect any existing monuments or markers of any nature relating to subdivisions, plats, roads, or other surveys, Grantee shall reference all such monuments and markers using a method or methods approved by the County Engineer, and a complete set of reference notes for monuments and other ties shall be filed with the County prior to the commencement of construction. Reference points shall be so located that they will not be disturbed during Grantee's operations. The replacement of all such monuments or markers disturbed during construction shall be made as expeditiously as conditions permit, as directed by the County Engineer, and to federal, state and local standards. All costs incurred pursuant to this Section 6.4 shall be borne by Grantee.

6.5 If the Grantee shall at any time plan to make excavations in any area covered by the Franchise, the Grantee shall, upon receipt of a written request to do so, provide an opportunity for the County and/or any other grantees or authorized users of the Public Right-of-Way at issue to participate in such excavation, and shall coordinate the location and installation of its Grantee Facilities with the County or such other grantees or authorized entities, PROVIDED THAT, Grantee need not permit the County or any other party (ies) to participate in an excavation if the County Engineer determines that any of the following are true:

(i) such joint use would unreasonably delay the performance of Grantee's work;

(ii) despite good-faith efforts, the parties involved are unable to agree upon reasonable terms and conditions for accomplishing such joint use; or

(iii) valid safety reasons exist for denying a request for such joint use.

6.6 If the Grantee shall at any time plan to include communication facilities in furtherance of the Permitted Use, the Grantee shall provide an opportunity for the County to enter into negotiations for shared use of such communication facilities, and shall coordinate negotiation of shared use of its communication facilities with the County; PROVIDED THAT, Grantee need not permit the County to participate in shared use of communication facilities if any of the following are true, in the reasonable judgment of the County and the Grantee:

(i) such shared use would unreasonably delay the performance of Grantee's work;

(ii) despite good-faith efforts, the parties involved are unable to agree upon reasonable terms and conditions, including but not limited to allocation of costs amongst various parties, for accomplishing such shared use;

(iii) valid safety reasons exist for denying a request for such shared use and/or the proposed facilities of the third party are in conflict with the best practices employed by the Grantee; or

(iv) the installation of communication facilities is for the purpose of an emergency action to protect the property, life, health or safety of individuals.

Section 7. Restoration of Public Rights-of-Way.

Promptly after completing any work in, on, under, over, across or upon any Public Rights-of-Way, including, but not limited to any excavation, installation, construction, relocation, maintenance, repair or removal of any Grantee Facilities, Grantee shall, at Grantee's sole cost and expense, restore the Public Rights-of-Way and any adjacent affected areas as required by the EDDS consistent with the SCC. Grantee shall also comply with any and all restoration conditions contained in applicable permits or approvals. The County Engineer shall have final authority to determine in each instance of restoration whether adequate restoration has been performed, reasonable wear and tear excepted.

Section 8. Record Plans, Record Drawings, and Records of Grantee Facility Locations.

8.1 The Grantee shall maintain adequate records to document obligations performed under this Franchise. The Grantee agrees and covenants that it shall, promptly upon substantial completion of any construction project involving a Public Right-of-Way, provide to the County, at no cost to the County, a copy of all as-built plans, maps and records revealing the approximate final locations and conditions of the Grantee Facilities located within such Public Right-of-Way. Additionally, the County may, at any time, deliver a written request to the Grantee for copies of maps and records showing the approximate location of all or any portion of the Grantee Facilities. In such event, the Grantee shall provide the County, at no cost to the County, with copies of the requested record plans, record drawings and other records within a reasonable time after receiving the County's request for same. The County shall have the right to review the

Grantee's records regarding the subject matter of this Franchise at reasonable times, upon reasonable notice. The right to review records shall last for six (6) years from the expiration or earlier termination of this Franchise. In addition to the maps and records of the Grantee Facility locations, the Grantee shall provide the County, upon the County's request, with copies of records of construction, maintenance, operation, inspections, or regulatory compliance for all Grantee Facilities subject to this Franchise as may be deemed necessary by the County, in its sole discretion, to manage the county roads, Public Rights-of-Way, or other property, or to protect the public health, safety, and welfare. Nothing in this Section 8 shall be construed to require Grantee to violate state or federal law concerning customer privacy, nor shall this Section 8 be construed to require Grantee to disclose proprietary or confidential information without adequate safeguards for its confidential or proprietary nature.

8.2 If the Grantee considers any portion of its records provided to the County, whether in electronic or hard copy form, to be protected from disclosure under law, the Grantee shall clearly identify any specific information that it claims to be confidential or proprietary. If the County receives a request under the Public Records Act, Chapter 42.56 RCW, to inspect or copy the information so identified by the Grantee and the County determines that release of the information is required by the Act or otherwise appropriate, the County's sole obligations shall be to notify the Grantee (a) of the request and (b) of the date that such information will be released to the requester unless the Grantee obtains a court order to enjoin that disclosure pursuant to RCW 42.56.540. If the Grantee fails to timely obtain a court order enjoining disclosure, the County will release the requested information on the date specified. The County has, and by this section assumes, no obligation on behalf of the Grantee to claim any exemption from disclosure under the Act. The County shall not be liable to the Grantee for releasing records not clearly identified by the Grantee as confidential or proprietary. The County shall not be liable to the Grantee for any records that the County releases in compliance with this section or in compliance with an order of a court of competent jurisdiction.

Section 9. Relocation of Grantee Facilities.

9.1 The Grantee agrees and covenants that it will promptly, at its sole cost and expense, protect, support, temporarily disconnect, relocate, or remove from the Public Rights of Way any Grantee Facilities when the County Engineer determines after full and fair consideration, and in the reasonable exercise of discretion, that such a relocation is necessary for any of the following reasons: (i) traffic conditions; (ii) public safety; (iii) dedications of new Public Rights-of-Way and the establishment and/or improvement thereof; (iv) widening and/or improvement of existing Public Rights-of-Way; (v) vacations of Public Rights-of-Way; (vi) freeway construction; (vii) change or establishment of road grade; or (viii) the construction of any public improvement or structure by any governmental agency acting in a governmental capacity; PROVIDED that the Grantee shall generally have the privilege to temporarily bypass, in the authorized portion of the same Public Right-of-Way, upon approval by the County Engineer, any Grantee Facilities required to be temporarily disconnected or removed. In the event of a conflict between this

Section 9 and the specific terms of any existing real property interests and rights owned by the Grantee, such as a utility easement or other servitude, the terms of this Section 9 shall be subject to the specific terms of the real property interests and rights owned by the Grantee unless and until those rights are extinguished or amended (i) by mutual agreement, (ii) pursuant to a judicial condemnation order, (iii) by negotiated sale of said property rights between Grantee and the County in-lieu of condemnation, or (iv) by any other lawful means.

9.2 Upon the request of the County and in order to facilitate County improvements to Public Rights-of-Way, the Grantee agrees to locate and, if reasonably determined necessary by the County, to excavate and expose, at its sole cost and expense, portions of the Grantee Facilities for inspection so that the location of the facilities may be taken into account in the improvement design.

9.3 Grantee shall, upon reasonable prior written request of any person or entity holding a permit issued by the County to move any structure, temporarily move its facilities to allow the moving of such structure; PROVIDED (i) Grantee may impose a reasonable charge on the permittee for the movement of Grantee's Facilities; (ii) Grantee is granted a permit by the County for such work if a permit is needed; and (iii) Grantee is given not less than ten (10) business days' notice to arrange for such temporary relocation; EXCEPT in any case where the County Engineer determines Grantee Facilities are not reasonably movable.

9.4 Where the County imposes conditions or requirements on a third party development requiring the relocation of any Grantee Facilities, the County shall not be responsible for paying any costs related to such relocation. Nothing in this Franchise is intended or shall be construed to prohibit the Grantee from assessing on such person or entity, other than the County, the costs of relocation as a condition of such relocation.

9.5 To assist Grantee with anticipating relocations of Grantee Facilities related to County improvements to the Public Rights-of-Way, upon request, the County will provide the Grantee with copies of the most recently adopted Six-Year Transportation Improvement Program ("TIP") and Annual Construction Program ("ACP").

9.6 If the County determines that a County project necessitates the relocation of existing Grantee Facilities, the parties shall proceed as follows:

(i) The County shall provide the Grantee at least one hundred twenty (120) days written notice prior to the commencement of the construction phase of the County project at issue; PROVIDED, that under the following circumstances the County need only provide the Grantee with written notice as soon as may be reasonably practicable: (a) in the event of an emergency posing a threat to public safety, health or welfare; (b) in the event of an emergency beyond the control of the County and which will result in adverse financial consequences to the County; or

(c) where the need to relocate the Grantee Facilities could not reasonably have been anticipated by the County.

(ii) The County shall provide the Grantee with copies of pertinent portions of the designs and specifications for the County project as well as a proposed new location for the Grantee Facilities at least one hundred twenty (120) days prior to the commencement of the construction phase of the County project to enable Grantee to promptly relocate such Grantee Facilities. Upon request of the Grantee, thirty-percent (30%), sixty-percent (60%) and ninety-percent (90%) design plans shall be provided to the Grantee. The County and the Grantee shall, upon the request of either party, meet to discuss the plans, specifications and schedule of the County project at issue at a mutually agreed time in a location determined by the County.

(iii) After receipt of such notice and such plans and specifications, the Grantee shall complete relocation of its facilities within the Public Right-of-Way at least ten (10) days prior to commencement of the construction phase of the County project at no charge, cost or expense to the County, unless otherwise agreed to within a separate agreement executed by both Parties. Relocation shall be accomplished in such a manner as to accommodate the County's project. In the event of an emergency, the Grantee shall relocate the Grantee Facilities at issue within a time period reasonably specified by the County Engineer.

(iv) The County and the Grantee may, for each individual County project, enter into an agreement for costs incurred by the County for relocation of Grantee's Facilities and associated work tied to the relocation.

(v) In the event of an emergency, the Grantee shall relocate the Grantee Facilities at issue within a time period reasonably specified by the County Engineer.

9.7 The Grantee may, after receipt of written notice requesting a relocation of any Grantee Facilities in accordance with Section 9.6, submit to the County proposed written alternatives to such relocation. The County shall evaluate such alternatives and advise the Grantee in writing if one or more of the alternatives are suitable to accommodate the County project. If so requested by the County, the Grantee shall submit additional information to assist the County in making such evaluation. The County shall give each alternative proposed by the Grantee full and fair consideration. Where, upon the request of the Grantee, the County incurs additional costs in performing any maintenance, operation, or improvement of or to public facilities due to measures taken by the County to avoid damaging or to otherwise accommodate one or more Grantee Facilities, the Grantee shall reimburse the County for the full amount of such additional costs promptly upon receiving the County's invoice for same. In the event the County ultimately determines that there is no reasonable or feasible alternative to relocation, the Grantee shall relocate the Grantee Facilities at issue as otherwise provided in this Section 9.

9.8 The provisions of this Section 9 shall in no manner preclude or restrict the Grantee from making any arrangements it may deem appropriate when responding to a request for relocation

of any Grantee Facility by any person or entity other than the County, where the facilities to be constructed by said person or entity are not or will not become County-owned, operated or maintained facilities, provided that such arrangements do not unduly delay any County projects. The Grantee shall provide certified record drawings (or as-built drawings) detailing the location of Grantee's Facilities within the Public Right-of-Way required to be relocated or removed for the purpose of the non-County project.

9.9 Should relocation be required for a County project pursuant to this Section 9, the Grantee shall be responsible for timely relocation of the Grantee Facilities at issue and the coordination of such relocation with the County (or the County's contractor for the County project). The Grantee shall be fully responsible for the costs of any delays to County projects resulting from relocations of any Grantee Facilities. The Grantee shall indemnify, defend and hold harmless the County from and against any and all claims, lawsuits, or damages, including those brought by a contractor of the County engaged in a County project, arising out of or caused in whole or in part by the location or relocation of one or more Grantee Facilities, as more fully set forth in Section 16 of this Franchise.

Section 10. Undergrounding of Grantee Facilities.

10.1 The undergrounding requirements of this Section 10 shall apply where the Grantee Facilities consist of cable or any other facilities, equipment or systems which are reasonably capable of being placed underground. Where the Grantee Facilities consist of antennae or other facilities, equipment or systems which are required to remain above ground in order to be functional, the terms and conditions of this Section 10 shall not apply.

10.2 In any area of the County in which there are no aerial facilities other than antennae or other facilities required to remain above ground in order to be functional, or in any area in which telephone, electric power wires or other cables have been placed underground, the Grantee shall not be permitted to erect poles or to run or suspend wires, cables or other similar facilities thereon, but shall lay all such wires, cables or other facilities underground in the manner required by the County. The Grantee acknowledges and agrees that, even if the County does not require the undergrounding of all or any portion of the Grantee Facilities at the time the Grantee applies for the applicable right-of-way use permit, the County may, at any time in the future, and in the County's sole and absolute discretion, require the Grantee to convert all or any portion of the aerial Grantee Facilities to underground installation at the Grantee's sole cost and expense.

10.3 Whenever the County may require the undergrounding of the aerial facilities in any area of the County, the Grantee shall underground the aerial Grantee Facilities in that area of the County in the manner specified by the County, and concurrently with the other affected facilities. Where other facilities are present or proposed and involved in the undergrounding project, the Grantee shall only be required to pay its fair share of common costs borne by all facilities, in addition to the costs specifically attributable to the undergrounding of the Grantee Facilities. "Common costs" shall include necessary costs not specifically attributable to the installation or

undergrounding of any particular facility, such as costs for common trenching and utility vaults. "Fair share" shall be determined for a project on the basis of the number and size of the Grantee Facilities being installed or undergrounded in comparison to the total number and size of all other utility facilities being installed or undergrounded.

Section 11. Maintenance of Grantee Facilities.

11.1 The Grantee shall maintain all Grantee Facilities in the County's Right-of-Way in good condition and repair, in accordance with industry accepted best practices.

11.2 The Grantee shall take necessary steps to maintain a reasonably clear area around all Grantee Facilities installed above ground within Public Rights-of-Way. A minimum of five (5) feet of clearance will be maintained around each such object so as to provide clear visibility from the roadway for County operations and maintenance. Prior to using any chemical sprays within the Public Rights-of-Way to control or kill weeds and brush, the Grantee must obtain the County's permission. The County may limit or restrict the types, amounts, and timing of applications provided such limitations or restrictions are not in conflict with State law governing utility right-of-way maintenance.

Section 12. Hazardous Materials.

12.1 The County understands and agrees that the Permitted Use contemplated by the Grantee involves the use by Grantee of certain chemicals and/or materials within the Public Rights-of-Way that are classified as hazardous or otherwise harmful to life, health and/or safety (any such chemical or material, a "Hazardous Material") under one or more applicable federal, state or local laws, rules, regulations or ordinances (collectively, the "Hazardous Materials Laws"). The Grantee shall be permitted to use such Hazardous Materials within the Public Rights-of-Way as are reasonably necessary for the Grantee's conduct of the Permitted Use and which are customary for the industry in which the Grantee is engaged; PROVIDED, however, that the Grantee's use of any such Hazardous Materials within the Public Rights-of-Way shall at all times be undertaken in full compliance with all Hazardous Materials Laws, including any orders or instructions issued by any authorized regulatory agencies.

12.2 The Grantee covenants and agrees that it will neither cause nor permit, in any manner, the release, seepage or spill of any Hazardous Material upon, into, under, over, across or through any Public Right-of-Way or property adjacent thereto, whether public or private, in violation of any applicable Hazardous Materials Law. Any such release, seepage or spill of any Hazardous Material within the Public Rights-of-Way that is in violation of any applicable Hazardous Materials Law and is caused by Grantee or its directors, officers, agents, employees or contractors, is, referred to as "Release."

12.3 Should a Release occur, the Grantee shall immediately upon receiving notice thereof provide written notice of the Release to the County and the Washington State Department of Ecology. The Grantee agrees it shall indemnify, defend and hold the County, its elected and

appointed officials, employees, agents and volunteers (collectively, the "County Parties") harmless from and against any and all claims, lawsuits, actions, judgments, awards, penalties, fines and other damages (including, but not limited to, reasonable attorneys' fees and costs) incurred or suffered by any of the County Parties, to the extent the Release is caused by any act or omission of Grantee or its directors, officers, agents, employees or, contractors (collectively, the "Grantee Parties") within Public Rights-of-Way or property adjacent thereto, whether public or private. Grantee shall be responsible, at its sole cost and expense, for completely cleaning up and remediating, as required by any governmental agency having jurisdiction, any Release caused by any Grantee Party within Public Rights-of-Way or property adjacent thereto, whether public or private. Notwithstanding the Grantee's obligation to completely remediate same; in the event of any Release by a Grantee Party, the County may (but need not), in the interest of protecting the health, safety, welfare and property of the public, immediately take whatever actions it deems necessary or advisable, in its sole discretion, to contain, clean up or remediate the Release at issue. Should the County choose to take any actions pursuant to the preceding sentence, the County shall be entitled to repayment from the Grantee of any and all reasonable costs and expenses incurred by the County in performing such actions.

12.4 Should the Grantee cause a Release as described in Section 12.2 above, failure to promptly comply with all orders or instructions lawfully issued by any authorized regulatory agencies regarding clean-up and remediation shall constitute a material breach of this Franchise, and the County Council may terminate or suspend the Franchise in accordance with Section 23.

Section 13. Dangerous Conditions, Authority for County to Abate.

13.1 Whenever the Grantee's excavation, construction, installation, relocation, maintenance, repair, abandonment, or removal of Grantee Facilities authorized by this Franchise has caused or contributed to a condition that, in the reasonable opinion of the County Engineer, substantially impairs the lateral support of the adjoining road or public or private property, or endangers the public, an adjoining public place, road facilities, County property or private property, the County Engineer may direct the Grantee to remedy the condition or danger to the satisfaction of the County Engineer, within a specified period of time and at the Grantee's sole cost and expense.

13.2 In the event that the Grantee fails or refuses to promptly take the actions directed by the County Engineer, or fails to fully comply with such directions, or if emergency conditions exist which require immediate action, in accordance with Section 13.1 above, the County may enter upon the property and take such actions as are reasonably necessary to protect the public, to protect the adjacent roads, or road facilities, to maintain the lateral support thereof, or to ensure the public safety, and the Grantee shall be liable to the County for all reasonable costs and expenses incurred by the County in performing such actions.

Section 14. Removal of Grantee Facilities; Abandonment of Grantee Facilities.

14.1 In no event may all or any portion of any Grantee Facility located in, on, under, over, across or through the public right-of-way be abandoned or temporarily abandoned in place by the Grantee without the express written consent of the County. Should the Grantee desire to deactivate, abandon, or temporarily abandon in place all or any portion of the Grantee Facilities, the Grantee shall request the County's permission to do so by delivering a written request to the County not later than thirty (30) days after the date on which the Grantee discontinues use of any Grantee Facilities for any reason or this Franchise expires or terminates, whichever is earlier. The Grantee's request shall specify which Grantee Facilities the Grantee desires to deactivate or abandon in place. Within a reasonable time after the date on which the County receives the Grantee's written request, the County shall deliver a written response to the Grantee setting forth the County's decision, which shall be made in the County's sole and absolute discretion. If the County denies the Grantee's request with respect to all or any portion of the Grantee Facilities at issue, then the Grantee must promptly proceed to remove those Grantee Facilities for which the Grantee's request for abandonment has been denied.

14.2 If the County grants its approval to the Grantee's request for deactivation or abandonment, either in whole or in part, the County may impose conditions on such approval. The Grantee shall, at its sole cost and expense, as directed by the County, purge the Grantee Facilities that will be deactivated, abandoned, or temporarily abandoned of any product, Hazardous Material and/or other substance so as to render such Grantee Facilities safe in accordance with applicable law or such other standards as may be reasonably deemed appropriate by the County. The County's consent to such action by the Grantee shall not relieve the Grantee of the obligation and/or costs to remove or to alter such Facilities in the future in the event it is reasonably determined by the County that removal or alteration is necessary or advisable for the health and safety of the public, in which case the Grantee shall perform such work at no cost to the County. This paragraph shall survive the expiration, revocation or termination of this Franchise.

14.3 Should the Grantee fail to comply with the requirements of Section 14.1 within a reasonable time after either: (i) the expiration or earlier termination of the Franchise; or (ii) the County's denial of the Grantee's request for permission to deactivate or abandon all or any portion of the Grantee Facilities, the Grantee shall be deemed to have deactivated or abandoned the Grantee Facilities without authorization. In the event of any unauthorized abandonment of all or any portion of the deactivated or abandoned Grantee Facilities by the Grantee, the County may, at its election, and in addition to any other remedies or enforcement options available to the County under this Franchise, at law or in equity, remove all or any portion of the deactivated or abandoned Grantee Facilities on behalf of the Grantee and restore the Public Rights-of-Way following such removal. Should the County choose to perform any such removal and restoration activities on the Grantee's behalf, the County may dispose of the removed Grantee Facilities in any manner it deems fit and in accordance with applicable laws, and the Grantee shall be liable to the County for all costs and expenses incurred by the County in performing such removal and restoration activities.

Section 15. Fees, Compensation for Use of Public Rights-of-Way and Taxes.

15.1 The Grantee shall be subject to all permit fees allowed by law associated with activities undertaken within Public Rights-of-Way through the authority granted to the Grantee by this Franchise or under applicable provisions of the SCC.

15.2 Grantee shall pay itemized costs and expenses incurred by the County in the examination and report of the proposed franchise under SCC 13.80.030(4) and any other fees required under chapter 13.110 SCC.

15.3 In addition, the Grantee shall reimburse the County for any and all documented costs the County reasonably and necessarily incurs in response to an emergency involving any Grantee Facilities. The Grantee shall promptly reimburse the County, upon submittal by the County of an itemized billing, for the Grantee's proportionate share of all actual, identified costs and expenses incurred by the County in repairing any County facility, or altering such County facility if at the Grantee's request, as the result of the presence of any Grantee Facilities in the Public Right-of-Way. Such costs and expenses shall include, but not be limited to, the Grantee's proportionate share of the costs of County personnel assigned to review construction plans or to oversee or engage in any work in the Public Right-of-Way as a result of the emergency and the presence of the Grantee Facilities in the Public Right-of-Way. Any and all costs will be billed on an actual cost basis. The billing may be on an annual basis, but the County shall provide the Grantee with the County's itemization of costs at the conclusion of each project for informational purposes.

Section 16. Hold Harmless and Indemnification.

16.1 Grantee agrees to indemnify, defend, and hold harmless any County Party (as such term is defined in Section 12 above) from any and all claims, demands, liability, suits, and judgments, including costs of defense thereof, for bodily injury to persons, death, or property damage arising out of the acts or omissions of any of the Grantee Parties (as such term is defined in Section 12 above) in the use of a Public Right-of-Way pursuant to this Franchise. This covenant of indemnification shall include, but not be limited to, any and all claims, demands, liability, suits, and judgments arising out of the placement of Grantee's existing utility fixtures and any and all third party claims, demands, liability, suits, and judgments arising out of any of the Grantee Parties' failure to complete all utility related adjustments, relocations, repairs, or work in accordance with this Franchise and the work plan and schedule agreed to by the County and Grantee. In the event of liability for damages arising out of bodily injury to persons, death or property damage caused by or resulting from the concurrent negligence of Grantee and the County, its officers, employees and agents, Grantee's liability hereunder shall be only to the extent of Grantee's negligence.

16.2 In the event the County incurs attorneys' fees, legal expenses, or other costs to enforce the provisions of this Section 16 against Grantee, all such fees, expenses, and costs shall be recoverable from Grantee to the extent the County prevails in such enforcement action.

16.3 It is specifically and expressly understood that, solely to the extent required to enforce the indemnification, defense and hold harmless obligations contained in this Section 16, Grantee waives its immunity under RCW Title 51; provided, however, the foregoing waiver shall not in any way preclude Grantee from raising such immunity as a defense against any claim brought against Grantee by any of its employees. This waiver has been mutually negotiated by the parties.

16.4 The County shall give Grantee timely written notice of the matter of any claim or of the commencement of any such action, suit or other proceeding covered by the indemnification, defense and hold harmless obligations contained in this Section 16. In the event any such claim arises, the County or any other indemnified party shall tender the defense thereof to Grantee and Grantee shall have the right and duty to defend, settle or compromise any claims arising hereunder and the County shall cooperate fully therein.

16.5 The County's permitting approval, inspection, lack of inspection, or acceptance of any work performed by the Grantee Parties in connection with work authorized on Grantee Facilities, pursuant to this Franchise or pursuant to any other permit or approval issued in connection with this Franchise, shall not be grounds for avoidance of any of the indemnification, defense and hold harmless obligations contained in this Section 16.

16.6 The indemnification, defense and hold harmless obligations contained in this Section 16 shall survive the expiration, abandonment or termination of this Franchise.

Section 17. Limitation of County Liability.

The County's administration of this Franchise shall not be construed to create the basis for any liability on the part of the County Parties, except for and only to the extent of the County's negligence.

Section 18. Insurance.

18.1 Insurance Requirements

A. Insurance Required

Grantee shall procure, and maintain for the duration of this Franchise, insurance against claims for injuries to persons or damages to property which may arise from, or in connection with, the performance of work hereunder by the Grantee, its agents, representatives, employees and/or contractors /subcontractors. The Grantee or contractor/subcontractor shall pay the costs of such insurance. The Grantee shall furnish separate certificates of insurance and policy endorsements from each contractor/subcontractors as evidence of compliance with the insurance requirements of this Franchise.

The Grantee is responsible for ensuring compliance with all of the insurance requirements stated herein. Failure by the Grantee, its agents, employees, officers, contractor/subcontractors to comply with the insurance requirements stated herein shall constitute a material breach of this Franchise.

Each insurance policy shall be written on an "occurrence" form; except that insurance on a "claims made" form may be acceptable with prior County approval. If coverage is approved and purchased on a "claims made" basis, the Grantee warrants continuation of coverage, either through policy renewals or the purchase of an extended discovery period, if such extended coverage is available, for not less than three years from the date of Franchise termination, and/or conversion from a "claims made" form to an "occurrence" coverage form.

Nothing contained within these insurance requirements shall be deemed to limit the scope, application and/or limits of the coverage afforded by said policies, which coverage will apply to each insured to the full extent provided by the terms and conditions of the policy(s). Nothing contained in this provision shall affect and/or alter the application of any other provision contained within this Franchise.

B. Risk Assessment by Grantee

By requiring such minimum insurance, the County shall not be deemed or construed to have assessed the risks that may be applicable to the Grantee under this Franchise, nor shall such minimum limits be construed to limit the limits available under any insurance coverage obtained by the Grantee. The Grantee shall assess its own risks and, if it deems appropriate and/or prudent, maintain greater limits and/or broader coverage.

C. Minimum Scope and limits of Insurance. Coverage shall be at least as broad as and with limits not less than the following:

(i) General Liability

Insurance Services Office form number (CG 00 01) covering COMMERCIAL GENERAL LIABILITY including XCU coverage: $1,000,000 combined single limit per occurrence by bodily injury, personal injury, and property damage; and for those policies with aggregate limits, a $ 2,000,000 aggregate limit.

(ii) Automobile Liability

Insurance Services Office form number (CA 00 01) covering BUSINESS AUTO COVERAGE, symbol 1 "any auto"; or the appropriate coverage provided by symbols 2, 7, 8, or 9: $ 1,000,000 combined single limit per

accident for bodily injury and property damage if the use of motor vehicles is contemplated.

(iii) Workers' Compensation

Workers' Compensation coverage, as required by the Industrial Insurance Act of the State of Washington, as well as any similar coverage required for this work by applicable federal or "Other States" state law: Statutory requirements of the state of residency.

(iv) Stop Gap/Employers Liability

Coverage shall be at least as broad as the indemnification, protection provided by the Workers' Compensation policy Part 2 (Employers Liability) or, in states with monopolistic state funds, the protection provided by the "Stop Gap" endorsement to the general liability policy: $1,000,000 .

D. Minimum Limits of Insurance - Construction Period

Prior to commencement of Construction and until Construction is complete and approved by the Grantee and the County, the Grantee shall cause the Construction Contractor and related professionals to procure and maintain insurance against claims for injuries to persons or damages to property which may arise from, or in connection with the activities related to this Franchise. The Grantee and the County shall be named as additional insureds on liability policies except Workers Compensation and Professional Liability. The cost of such insurance shall be paid by the Grantee and/or any of the Grantee's contractor/subcontractors. The Grantee shall cause the Construction Contractor and related professionals to maintain limits no less than the following:

(i) Commercial General Liability: $ 1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage and $2,000,000 in the aggregate.

(ii) Automobile Liability: $ 1,000,000 combined single limit per accident for bodily injury and property damage.

(iii) Professional Liability, Errors & Omissions: $ N/A , Per Claim and in the Aggregate.

(iv) Workers Compensation: Statutory requirements of the state of residency.

(v) Stop Gap or Employers Liability Coverage: $ 1,000,000 .

E. Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions must be declared to, and approved by, the County. The deductible and/or self-insured retention of the policies shall not apply to the Grantee's liability to the County and shall be the sole responsibility of the Grantee.

F. Other Insurance Provisions

The insurance policies required in this Franchise are to contain, or be endorsed to contain, the following provisions:

(i) All Liability Policies except Professional and Workers Compensation.

a. The County, its officers, officials, employees, and agents are to be covered as additional insured with respect to liability arising out of activities performed by or on behalf of the Grantee/contractor in connection with this Franchise. Such coverage shall include Products-Completed Operations.

b. To the extent of the Grantee's/contractor's negligence, the Grantee's/contractor's insurance coverage shall be primary insurance with respect to the County, its officers, officials, employees, and agents. Any insurance and/or self-insurance maintained by the County, its officers, officials, employees, or agents shall not contribute with the Grantee's insurance or benefit the Grantee in any way.

c. The Grantee's insurance shall apply separately to each insured against whom claim is made and/or lawsuit is brought, except with respect to the limits of the insurer's liability.

(ii) All Policies

Coverage shall not be suspended, voided, canceled, reduced in coverage or in limits, except by the reduction of the applicable aggregate limit by claims paid, until after 45 days prior written notice has been given to the County. In the event of said cancellation or intent not to renew, the Grantee shall obtain and furnish to the County evidence of replacement insurance policies meeting the requirements of this Section by the cancellation date. Failure to provide proof of insurance could result in suspension of the Franchise.

G. Acceptability of Insurers

Unless otherwise approved by the County, insurance is to be placed with insurers with a Bests' rating of no less than A-VII, or, if not rated with Bests, with minimum surpluses the equivalent of Bests' surplus size VIII.

Professional Liability, Errors, and Omissions insurance may be placed with insurers with a Bests' rating of B+VII. Any exception must be approved by the County.

If, at any time, the foregoing policies shall fail to meet the above requirements, the Grantee shall, upon notice to that effect from the County, promptly obtain a new policy, and shall submit the same to the County, with appropriate certificates and endorsements, for approval.

H. Verification of Coverage

The Grantee shall furnish the County with certificates of insurance and endorsements required by this Franchise. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates and endorsements for each insurance policy are to be on forms approved by the County prior to the commencement of activities associated with the Franchise. The County reserves the right to require complete, certified copies of all required insurance policies at any time.

I. Subcontractors

The Grantee shall include all subcontractors as insured under its policies or shall require separate certificates of insurance and policy endorsements from each subcontractor. If the Grantee is relying on the insurance coverage provided by subcontractors as evidence of compliance with the insurance requirements of this Franchise, then such requirements and documentation shall be subject to all of the requirements stated herein.

J. Insurance Review

In consideration of the duration of this Franchise, the parties agree that the Insurance section herein, at the discretion of the County Risk Manager, may be reviewed and adjusted with each amendment and within ninety (90) days of the end of the first five (5) year period of the term of this Franchise and the end of each successive five (5) year period thereafter. Any adjustments made as determined by the County Risk Manager, shall be in accordance with reasonably prudent risk management practices and insurance industry standards and shall be effective on the first day of each successive five (5) year period.

Adjustment, if any, in insurance premium(s) shall be the responsibility of the Grantee. Any failure by the County to exercise the right to review and adjust at any of the aforementioned timings shall not constitute a waiver of future review and adjustment timings.

18.2 Grantee shall furnish the County with original certificates and a copy of the amendatory endorsements, including but not necessarily limited to the additional insured endorsements, evidencing the insurance requirements of the Grantee before commencement of the work.

18.3 In satisfaction of the insurance requirements set forth in this Section 18, Grantee may self-insure against such risks in such amounts as are consistent with good utility practice. Grantee shall provide the County with reasonable written evidence that Grantee is maintaining such self-insurance.

Section 19. Performance Security.

In accordance with RCW 36.32.590 and SCC 13.10.104(4), Grantee is a unit of local government and shall not be required to secure the performance of a County-issued permit with a surety bond or other financial security device.

Section 20. Annexation.

If any Public Right-of-Way, or portion thereof, is incorporated into the limits of any city or town, it shall not be subject to the terms of this Franchise.

Section 21. Vacation.

If any Public Right-of-Way, or portion thereof, is vacated, it shall not be subject to the terms of this Franchise. The County may retain a utility easement as allowed under RCW 36.87.140 when a Public Right-of-Way, or portion thereof, is vacated. The Grantee may request the County retain a utility easement; however in no case shall the County be obligated to retain such an easement. The County shall not be liable for any damages or loss to the Grantee by reason of such vacation and termination.

Section 22. Assignment.

22.1 Neither this Franchise nor any interest therein shall be leased, sold, partitioned, transferred, assigned, disposed of, or otherwise subject to a change in the identity of the Grantee (each such activity, a "Transfer"), in whole or in part, in any manner, without the prior written consent of the County Council. Should any such Transfer be approved by the County, then each and every one of the provisions, conditions, regulations and requirements contained in this Franchise shall be binding upon the approved transferee beginning on the date of the Transfer, and all privileges, as well as all obligations and liabilities of the Grantee shall inure to such

transferee equally as if such transferee was specifically mentioned wherever the Grantee is named herein.

22.2 In the case of a Transfer to secure indebtedness, whether by mortgage or other security instrument, the County's consent shall not be required unless and until the secured party elects to realize upon the collateral. The Grantee shall provide prompt, written notice to the County of any assignment to secure indebtedness.

22.3 Any attempt by Grantee to Transfer this Franchise in violation of this Section 22 shall constitute a material breach by Grantee.

Section 23. Termination, Revocation, and Forfeiture.

If the Grantee (i) defaults on any material term or condition of this Franchise; (ii) willfully violates or fails to comply with any of the provisions of this Franchise; or (iii) through willful misconduct or gross negligence fails to heed or comply with any notice given the Grantee by the County under the provisions of this Franchise, then the Grantee shall, at the election of the County Council, forfeit all rights conferred hereunder and the Franchise may be terminated by the County Council. Upon termination for any cause, all rights of the Grantee granted hereunder or under any right-of-way use permit shall cease, and the Grantee shall immediately commence to remove or, with approval of the County Engineer, abandon in place all of the Grantee Facilities from the Public Rights-of-Way in accordance with Section 14 above.

Section 24. Remedies to Enforce Compliance; No Waiver.

24.1 In lieu of termination, revocation or forfeiture as provided in Section 23, and without prejudicing any of its other legal rights and remedies, the County may elect to obtain an order from the Superior Court or other court, tribunal, or agency having competent jurisdiction compelling the Grantee to comply with the provisions of this Franchise and to recover damages and costs incurred by the County by reason of the Grantee's failure to comply. In addition to any other remedy provided herein, the County reserves the right to pursue any remedy to compel or force the Grantee and/or its permitted successors and assigns to comply with the terms hereof, and the pursuit of any right or remedy by the County shall not prevent the County from thereafter declaring a forfeiture or revocation for breach of the conditions herein.

24.2 Failure of the County to exercise any rights or remedies under this Franchise shall not constitute a waiver of any such right or remedy and shall not prevent the County from pursuing such right or remedy at any future time.

24.3 Nothing in this Franchise is or was intended to confer third-party beneficiary status on any person or entity to enforce the terms of this Franchise.

Section 25. County Ordinances and Regulations – Reservation of Police Power.

Nothing in this Franchise shall restrict the County's ability to adopt and enforce all necessary and appropriate ordinances regulating the performance of the conditions of the Franchise, including, but not limited to, any ordinances adopted under the County's police powers in the interest of public safety and for the welfare of the public. The County shall have the authority at all times to control by appropriate regulations, including design standards, and utility accommodation policies, the location, elevation, manner of construction, and maintenance of any Grantee Facilities located within any Public Right-of-Way, and the Grantee shall promptly conform with all such regulations, unless compliance would cause the Grantee to violate other requirements of law. In the event of a conflict between the regulatory provisions of this Franchise and any other ordinance(s) enacted under the County's police power authority, such other ordinance(s) shall take precedence over the provisions set forth herein.

Section 26. Eminent Domain, Powers of the People.

This Franchise is subject to the power of eminent domain and the right of the County Council or the people acting for themselves through initiative or referendum to repeal, amend or modify the Franchise in the interest of the public. In any proceeding under eminent domain, the Franchise itself shall have no value.

Section 27. Survival and Force Majeure.

27.1 Until such time as all of the Grantee Facilities have been removed from the Public Rights-of-Way in accordance with Section 14.1 above, or have been deactivated or abandoned in place in accordance with Sections 14.2 and 14.3 above, all of the provisions, conditions and requirements contained in the following sections of this Franchise shall survive the expiration, revocation, forfeiture or early termination of the Franchise: (i) Section 4 (Regulation of Use; Permits Required); (ii) Section 5 (Emergency Work); (iii) Section 6 (Compliance with Applicable Laws; Performance Standards); (iv) Section 7 (Restoration of Public Rights-of-Way); (v) Section 8 (Record Plans, Record Drawings, and Records of Grantee Facility Locations); (vi) Section 10 (Undergrounding of Grantee Facilities); (vii) Section 12 (Hazardous Materials); (viii) Section 13 (Dangerous Conditions, Authority for County to Abate); (ix) Section 14 (Removal of Grantee Facilities; Abandonment of Grantee Facilities); (x) Section 15 (Fees, Compensation for Use of Public Rights-of-Way and Taxes); (xi) Section 16 (Hold Harmless and Indemnification); (xii) Section 17 (Limitation of County Liability); (xiii) Section 18 (Insurance); (xiv) Section 19 (Performance Security); and (xv) Section 24 (Remedies to Enforce Compliance; No Waiver).

27.2 After such time as all Grantee Facilities have been either removed from the Public Rights-of-Way or abandoned/deactivated in place to the County's satisfaction pursuant to Section 14 above, only the following provisions shall survive the expiration or earlier termination of the Franchise: (i) Section 8 (Record Plans, Record Drawings, and Records of Grantee Facility Locations); (ii) Section 12 (Hazardous Materials); (iii) Section 16 (Hold Harmless and Indemnification); and (iv) Section 17 (Limitation of County Liability.

27.3 If the Grantee is prevented or delayed in the performance of any of its obligations under this Franchise by reason of a Force Majeure, then Grantee's performance shall be excused during a Force Majeure occurrence. Upon removal or termination of the Force Majeure occurrence the Grantee shall promptly perform its obligations in an orderly and expedited manner using industry accepted best practices. Grantee's performance shall not be excused by economic hardship nor by the misfeasance or malfeasance of its directors, officers, or employees.

27.4 For the purposes of this Franchise, "Force Majeure" means any event or circumstance (or combination thereof) and the continuing effects of any such event or circumstance (whether or not such event or circumstance was foreseeable or foreseen) that delays or prevents performance by the Grantee of any of its obligations under this Franchise, but only to the extent that and for so long as the event or circumstance is beyond the reasonable control of the Grantee and shall include, without limitation, all of the following events and circumstances: (i) acts of nature, including volcanic eruption, landslide, earthquake, flood, lightning, tornado or other unusually severe storm or environmental conditions, perils of the sea, wildfire or any other natural disaster; (ii) acts of public enemies, armed conflicts, act of foreign enemy, acts of terrorism (whether domestic or foreign, state-sponsored or otherwise), war (whether declared or undeclared), blockade, insurrection, riot, civil disturbance, revolution or sabotage; (iii) any form of compulsory government actions, acquisitions or condemnations, changes in applicable law, export or import restrictions, customs delays, rationing or allocations; (iv) accidents or other casualty, damage, loss or delay during transportation, explosions, fire, epidemics, quarantine or criminal acts; (vi) inability, after the use of commercially reasonable efforts, to obtain from any governmental authority any permit, approval, order, decree, license, certificate, authorization or permission to the extent required by applicable law; (vii) inability, after the use of commercially reasonable efforts, to obtain any consent or approval required by the Franchise; and (viii) third-party litigation contesting all or any portion of the Franchise or Grantee's rights under this Franchise.

Section 28. Governing Law and Stipulation of Venue.

This Franchise and all use of Public Rights-of-Way granted herein shall be governed by the laws of the State of Washington, unless preempted by federal law. Any action relating to this Franchise shall be brought in the Superior Court of Washington for Snohomish County, or in the case of a federal action, the United States District Court for the Western District of Washington at Seattle, unless an administrative agency has primary jurisdiction.

Section 29. Severability.

If any section, sentence, clause, phrase or provision of this Franchise or the application of such provision to any person or entity should be held to be invalid or unconstitutional by a court of competent jurisdiction, such invalidity or unconstitutionality shall not affect the validity or constitutionality of any other section, sentence, clause, phrase or provision of this Franchise nor the application of the provision at issue to any other person or entity.

Section 30. Notice and Emergency Contact.

Any notice or information required or permitted to be given to the parties under this Franchise may be sent to the following addresses unless otherwise specified:

SNOHOMISH COUNTY Department of Public Works 3000 Rockefeller Avenue, M/S 607 Everett, WA 98201	CROSS VALLEY WATER DISTRICT 8802 180th Street SE Snohomish, WA 98296
Attn. Right-of-Way Coordinator Phone: (425) 388-3488	Attn. Mike Johnson, General Manager Phone: 360-668-6766 x 102

The Grantee shall also provide the County a current emergency contact name (or title) and phone number available 24-hours a day, seven days a week. The Grantee shall promptly notify the County of any change in the notice address or emergency contact (or title) and phone number.

Section 31. Acceptance.

Within ninety (90) days after the passage and approval of this Franchise by the County Council, the Franchise may be accepted by the Grantee by its filing with the County Council an unconditional written acceptance thereof. Failure of the Grantee to so accept the Franchise within said period of time shall be deemed a rejection thereof by the Grantee, and the rights and privileges herein granted shall automatically cease and terminate, unless the time period is extended by ordinance duly passed for that purpose.

Section 32. Effective Date.

This Franchise shall take effect, if at all, on the date on which each and every one of the following conditions have been met (the "Effective Date"): (i) ten (10) days have passed since the County Executive executed this Franchise, or this ordinance was otherwise enacted; (ii) the Grantee executes a copy of this Franchise and returns it to the County Council within the time provided in Section 31 above; (iii) the Grantee presents to the County acceptable evidence of insurance as required in Section 18 above; and (iv) the Grantee pays all applicable fees as set forth in Section 15 above.

PASSED this 18th day of September, 2019.

SNOHOMISH COUNTY COUNCIL
Snohomish County, Washington

Council Chairperson

ATTEST:

Asst. Clerk of the Council

(✓) APPROVED
( ) VETOED
( ) EMERGENCY

Snohomish County Executive

DATE: 9/24/19

ATTEST:

Approved as to Form Only:

Deputy Prosecuting Attorney

Date: 6/12/19

D-6

ACCEPTANCE:

The provisions of this Franchise are agreed to and hereby accepted. By accepting this Franchise, Cross Valley Water District covenants and agrees to perform and be bound by each and all of the terms and conditions imposed by the Snohomish County Charter, Snohomish County Code, and this Franchise.

Dated: October 17, 2019

CROSS VALLEY WATER DISTRICT

By: Mike Johnson

Printed Name: Mike Johnson

Title: General Manager

CERTIFICATION OF COMPLIANCE WITH CONDITIONS AND EFFECTIVE DATE:

I certify that I have received confirmation that: (1) the Grantee returned a signed copy of this Franchise to the County Council within the time provided in Section 31; (2) the Grantee has presented to the County acceptable evidence of insurance as required in Section 18 of this Franchise; and (3) the Grantee has paid all applicable processing costs and fees as set forth in Section 15 of this Franchise.

THE EFFECTIVE DATE OF THIS ORDINANCE IS:

NOVEMBER 19, 2019

By: Maria Elena Lado

Name: MARIA ELENA LADO

Title: ASST. CLERK OF THE COUNCIL

Snohomish County
Public Works

COUNTY ENGINEER'S REPORT

FRANCHISE – WATER & SEWER FACILITIES
CROSS VALLEY WATER DISTRICT

Pursuant to chapter 36.55.010 Revised Code of Washington (RCW), Section 9.20 Snohomish County Charter, and Title 13 of the Snohomish County Code (SCC), the Cross Valley Water District has applied to Snohomish County (the "County") for a franchise to construct, maintain, operate, replace and repair its water and sewer system facilities in County public rights-of-way, and for no other purpose or use whatsoever. Chapter 36.55 RCW and Snohomish County Charter Section 9.20 authorize the County to grant nonexclusive franchises for use of County public rights-of-way. Snohomish County's franchise procedure is contained in chapter 13.80 SCC. The requirements for this Engineer's report are described in SCC 13.80.040.

FINDINGS

1. Applicant

Cross Valley Water District (the "District") is a Washington special purpose municipal corporation first formed in 1989 and governed by a three person board of commissioners, which provides water and sewer services to over 6500 customers in unincorporated Snohomish County. The District's service area is approximately 50 square miles, extending from the Snohomish-King County line, north to the City of Snohomish, with a west boundary running near 51st Avenue Southeast and Lowell Larimer Rd stretching east to the Snohomish and Snoqualmie Rivers. The District was previously granted a utility franchise via Ordinance 94-023 approved on May 13, 1994 and recorded under Auditor's File Number 9406060825, which expired on May 12, 2019.

2. Description of Facilities

The District's water is primarily supplied by a series of ground water wells and supplemented by interties with adjacent water purveyors including City of Everett, Clearview Water Supply Agency, Alderwood Water and Wastewater District, and Silver Lake Water and Sewer District. The District operates a series of storage reservoirs, a water treatment plant, pumping facilities, and more than 174 miles of water transmission and distribution pipe ranging in size from 2 to 24 inches. The District's sanitary sewer system contains approximately 7 miles of 8 inch or larger gravity and force main piping, routing into King County's Brightwater Wastewater Treatment Plant located near Highway 9 and 228th St SE. The District's operations require placement in the public rights-of-way of water and sewer pipes of various sizes, manholes, fire hydrants, valves, pump stations and other appurtenances. Nearly all structures are placed underground with access (e.g. manholes and valve covers) placed flush with the road surface. All work shall be performed in compliance with federal, state and local laws, rules and

regulations (including, but not limited to, the County's comprehensive plan, zoning code, and other development regulations) that are applicable to any and all work or other activities performed by the Public Works Department pursuant to or under authority of the Franchise as more fully described within the proposed franchise and Section 6 of this report.

3. Insurance

The Cross Valley Water District has agreed to provide proof of insurance in accordance with SCC 13.10.100 and Section 18 of the franchise. The Risk Management Division has reviewed and approved the insurance requirements contained in the Section 18. In accordance with Section 32 of the franchise, the franchise shall not take effect until the Cross Valley Water District provides evidence of insurance acceptable to the Risk Management Division.

4. Description of County Rights-of-Way Covered by the Proposed Franchise

The proposed franchise includes all county rights-of-way located in the portions of unincorporated Snohomish County as indicated by township, range and section below:

Township	Range	Sections
28N	5E	1-3, 10-14, 16, 21, 22, 24-27 & 36
28N	6E	30 & 31
27N	5E	1-3, 9-15, 22-27, 34 & 35
27N	6E	6-8, 16-21 & 26-35

5. Term of Franchise

The initial term of the franchise shall be for a period of ten (10) years (the "Initial Term"), beginning on the Effective Date as that term is defined in Section 32 of the franchise, and continuing until the date that is one day prior to the tenth (10th) anniversary of the Effective Date (the "Initial Term Expiration Date"), unless earlier terminated, revoked or modified pursuant to the provisions of the franchise. The franchise automatically renews for an additional term of ten (10) years (the "Extended Term," and, together with the Initial Term, the "Term"), subject to the County's right to open negotiations regarding any amendments to the franchise at any time after the Initial Term Expiration Date, as more fully described in Section 3.3 of the franchise.

6. Terms and Conditions of Franchise

Under the franchise, the Cross Valley Water District will:

- Comply with the requirements of State law, County Charter, Title 13 SCC, the Engineering Design and Development Standards (EDDS), the county's Utility Accommodation Policy, and all right-of-way use permit application, review and construction standards.
- Not in any event abandon in place all or a portion of their facilities without the express written consent of the county as more fully described in franchise Section 14.
- Compensate the county for its administrative expenses in preparing the franchise.

- Provide the county with adequate insurance appropriate for a water distribution system franchise.
- Post a security device sufficient to ensure performance of its obligations when required by the County Engineer.
- Not assign any franchise rights or obligations without prior written consent of the county as more fully described in franchise Section 22.
- Indemnify, defend and hold harmless any County Party from any and all claims, demands, liability, suits, and judgments, including costs of defense thereof, for bodily injury to persons, death, or property damage arising out of its use of Public rights-of-way pursuant to the franchise as more fully described in franchise Section 16.
- Promptly, at its sole cost and expense, relocate or remove its facilities from county rights-of-way when the County Engineer determines it to be necessary due to: (i) traffic conditions; (ii) public safety; (iii) dedications of new public rights-of-way and the establishment and/or improvement thereof; (iv) widening and/or improvement of existing public rights-of-way; (v) vacations of public rights-of-way; (vi) freeway construction; (vii) change or establishment of road grade; or (viii) the construction of any public improvement or structure by any governmental agency acting in a governmental capacity.

COUNTY ENGINEER'S RECOMMENDATION

Based on the above findings, the Department of Public Works recommends the County Council grant a right-of-way franchise to the Cross Valley Water District under the terms and conditions of County Charter, County Code and the ordinance granting a franchise.

Prepared by:

Brook Chesterfield

Brook Chesterfield, P.E.
Special Projects Coordinator

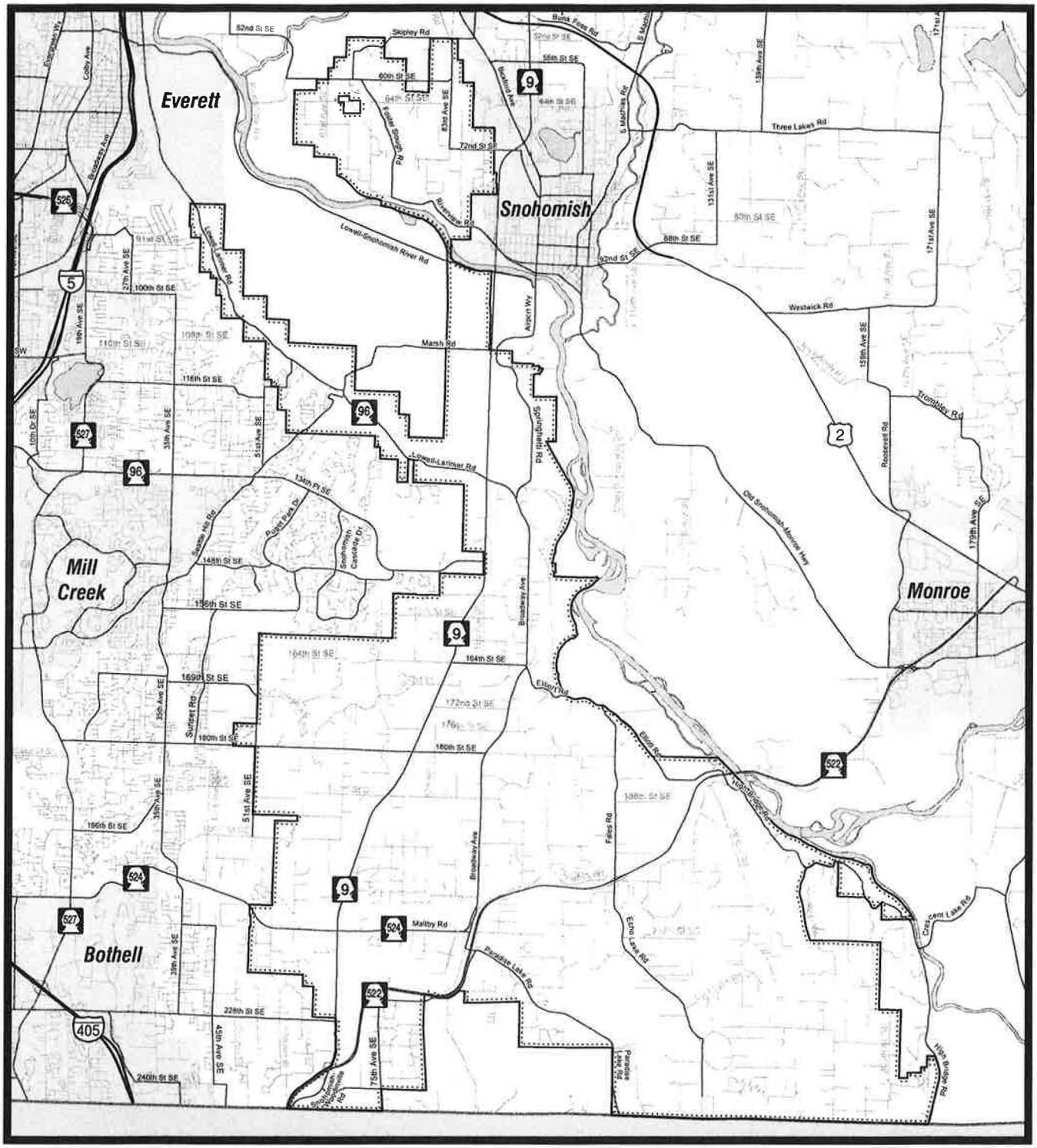
Date: 6/18/19

Approved by:

Douglas W. McCormick

Douglas W. McCormick, P.E.
County Road Engineer

Date: 6/21/19



Snohomish County disclaims any warranty of merchantability or warranty of fitness of this map for any particular purpose, either express or implied. Any user of this map assumes all responsibility for use thereof, and further agrees to hold Snohomish County harmless from and against any damage, loss, or liability arising from any use of this map.

Exhibit A. Cross Valley Water District Proposed Franchise Area

(The proposed franchise applies exclusively to county rights-of-way located in the portions of unincorporated Snohomish County depicted above.)

Cross Valley
WATER DISTRICT

Water System Plan
Cross Valley Water District

Appendix D
Water Rights Information

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Water Right Self-Assessment Form for Water System Plans

331-372 • 1/13/2017

All water right permits, claims, and certificates must be evaluated in a water right self-assessment for all sources used to supply the water system. The self-assessment compares the parameters and other limitations of existing water rights against current and forecasted water production, as described in your water system plan, to determine whether the rights are adequate to serve your system's current and future water needs.

You must account for all sources of supply and total quantities of water withdrawn from the source. If you purchase water from another purveyor through a non-emergency intertie, you must complete the INTERTIES section of the self-assessment.

A Note on Exempt Wells

If you're seeking DOH approval of a new Group A or Group B water system using an exempt well, you must complete the self-assessment, although certain fields will not apply. Talk to your DOH regional planner about using the Water Right Self-Assessment form for a Small Water System Management Program instead of this version.

Local governments must ensure that an adequate potable water supply is available from the exempt well before issuing a building permit. Before developing a permit exempt well, check with your local authorities on their criteria for establishing an adequate potable water supply for your planned public water system.

Water Right Parameters

Below is a brief description of the parameters associated with a typical water right. For the self-assessment, you only need to describe the last two bulleted items if they apply to your water rights.

Source Type – this refers to whether the source is surface water, groundwater or a spring.

Source Location – this refers to the location of points of groundwater withdrawal or surface water diversion for each right.

Purpose of Use – this refers to the type of use, such as municipal water supply, community domestic, industrial or agricultural purposes.

Place of Use – this describes where water can be put to beneficial use under the right. Under the 2003 Municipal Water Law, RCW 90.03.386, the place of use for a water right held for municipal water supply purposes may be the system's service area as identified in an approved water system plan or small water system management program. See Ecology Policy 2030 for information on how Ecology administers the Municipal Water Law.

Washington State Department of Health

If you need this publication in an alternative format, call 800.525.0127 (TDD/TTY call 711). This and other publications are available at www.doh.wa.gov/drinkingwater.

Period of Use – this refers to time-of-year limitations in which the water right may be put to use. If any water right has a time-of-year limitation, please include this information in the INTERRUPTIBLE WATER RIGHTS section.

Provisions or Limiting Conditions – this refers to any provisions or conditions placed on the water right. If a water right has a limiting condition or other provision, such as a collection and reporting requirement, other than a time-of year limitation, include this information in the ADDITIONAL COMMENTS section at the bottom of the self-assessment and in the water system plan narrative.

See Ecology Policy 1040 for more information on water right terminology. If you have questions about your water rights, please contact the Ecology regional office in your area.

Completing the Water Right Self-Assessment Form

The self-assessment is a Word document to allow users to make changes or to expand the document. You may use another format, if preferred, as long as all required information is included. Below is a description of all fields and how to complete them. This form is divided into four different sections. Each section is described in the headings below.

See the column identifiers (A, B, C, etc) at the bottom of each column for guidance in completing the necessary calculations.

Water Right Permit, Certificate, or Claim Number: This number is assigned by Ecology when a permit application is filed. It's listed at the top of the permit or certificate. For water right claims, this is the registration number stamped in the lower left hand corner of the claim form.

WFI Source #: Identify the individual sources (e.g. well #1, well #2) as defined on the DOH Water Facilities Inventory form. If a water right is associated with multiple sources, list all sources in the same row in this column. If a source is associated with multiple water rights, identify each water right on a separate row.

If you have any source(s) that is not currently being used (categorized as standby, back-up, or emergency), and the source has an associated water right that is not listed in column #1, please include the source and water right information in the ADDITIONAL COMMENTS section. This will identify that the source is still intended for a beneficial use under RCW 90.03.015(4). See Ecology Policy 1040.

EXISTING WATER RIGHTS SECTION *(olive green color, top section)*

This section refers to existing water rights. It does not include any water right applications that have been submitted to Ecology.

Primary Qi (Instantaneous Quantity): This is also known as instantaneous flow rate. It's the amount of water allowed to be taken under the right from the source during a period of peak operation. For surface water, this is generally expressed in terms of cubic feet per

second (cfs). For groundwater, this is generally expressed in terms of gallons per minute (gpm). One cfs equals 448.8 gpm. Please indicate the units of measurement you are using for each source. If there are situations where the flow rate will be limited (e.g. limitations established on the source when other sources are utilized), please note them in the ADDITIONAL COMMENTS section in the form and in the WSP narrative.

Non-Additive Qi: This term was formally known as "supplemental." Your water rights may use the old terminology. See Ecology Policy 1040 for more information. Not all water rights have non-additive quantities. If a water right has non-additive Qi quantities, include the non-additive quantity in this field. This is generally listed in the "quantity, type of use, period of use" section on both permits and certificates. *Non-additive quantities should not be included in the primary Qi totals.*

Primary Qa (Annual Quantity): This is the amount of water that can be taken from the source under the right on an annual basis. It's usually expressed in terms of acre-feet. An acre-foot is the amount of water necessary to submerge an acre of land to a depth of one foot. One acre-foot equals 43,560 cubic feet or 325,851 gallons of water.

Non-Additive Qa: This term was formerly known as "supplemental." Your water rights may use the old terminology. See Ecology Policy 1040 for more information. Not all water rights have non-additive quantities. If a water right has non-additive Qa quantities, include the non-additive quantity in this field. This is generally listed in the "quantity, type of use, period of use" section on both permits and certificates. *Non-additive quantities should not be included in the primary Qa totals.*

CURRENT SOURCE PRODUCTION SECTION *(light green color, top section)*

This section refers to how much water is withdrawn from the source under each water right for the most recent full calendar year. You will need to determine any excess or deficiency for each water right after calculating how much water was withdrawn compared to how much water is allowed under each water right. If demand has decreased over past years, you may wish to include historic maximum production information in the ADDITIONAL COMMENTS section. This will provide a more complete picture of the use of your water rights.

Use the water use data and demand projections from your water system plan to define current and projected water needs. You can determine if you'll need additional water rights based on the comparison of existing water rights, current water production, and projected 10- and 20-year needs.

Total Qi (Instantaneous Quantity): This refers to the total maximum instantaneous flow rate withdrawn from the source under each water right during the most recent calendar year. For surface water, this is expressed in terms of cubic feet per second (cfs). For groundwater, this is expressed in terms of gallons per minute (gpm). One cfs equals 448.8 gpm.

Current Excess or Deficiency (Qi): Please calculate the excess or deficiency for each water right after comparing the total amount withdrawn against each water right. Please use parentheses for deficient amounts.

Total Qa (Annual Quantity): This refers to the total volume of water withdrawn from each source under each water right during the most recent calendar year. It's usually expressed in acre-feet.

Current Excess or Deficiency (Qa): Please calculate the excess or deficiency for each water right after comparing the total amount withdrawn against each water right. Please use parentheses for deficient amounts.

10-YEAR FORECASTED SOURCE PRODUCTION SECTION *(light blue color, top section)*

This section refers to how much water you project to withdraw from each source in ten years as determined in your water system plan. Please complete this section in the same manner (using the same units of measurement) as the current source production section using your 10-year forecasted amounts.

20-YEAR FORECASTED SOURCE PRODUCTION SECTION *(darker blue color, top section)*

This section refers to how much water you project to withdraw from each source in twenty years as determined in your water system plan. Please complete this section in the same manner (using the same units of measurement) as the current source production section using your 20-year forecasted amounts. If you are unable to provide 20-year forecasts for each source, you may choose to include the combined 20-year total at the bottom.

PENDING WATER RIGHTS SECTION *(second section of form)*

Please complete this section for any water right applications that have been submitted to Ecology. Please include the application number, whether it's a new or a change application, the date submitted, and the total quantities requested.

INTERTIES SECTION *(third section of form)*

This section must be completed by purveyors who purchase any amount of wholesale water. If your system sells water to another public water system, include the quantity sold in the CURRENT SOURCE PRODUCTION section.

Purchasers of wholesale water must account for all water obtained through the intertie for non-emergency supply purposes. This is to ensure that all sources of supply are considered when evaluating whether new water rights are needed within 20 years.

Please identify the maximum quantity of water, expressed in the same manner as the above sections, allowed under each intertie contract. If there are limiting conditions or temporary

agreements that effect the long-term use of the intertie, you must account for such limiting conditions when evaluating the current and forecasted water supply needs in your water system plan.

Finally, purchasers of wholesale water are responsible for ensuring that the underlying water right (held by the purveyor selling water) are adequate for such use. You should confirm that the selling system has accounted for the wholesale area in their water system plan to ensure that the water right authorizes the distribution of water through the intertie.

INTERRUPTIBLE WATER RIGHTS SECTION *(bottom section of form)*

This section refers to water rights that have an annual time-of-year interruption. Please complete this section for any water right listed in the above fields that has a time-of-year interruption. Please include the water right number, describe the limitation, and the time period of interruption. Purveyors with interruptible rights should develop a water shortage response plan as part of their water system plan to describe how demand will be met during periods of interruption through aggressive demand-side conservation, fixing leaks or other means.

ADDITIONAL COMMENTS SECTION *(bottom section of form)*

If the system has any source that is not currently being used on a regular basis (such a source may be categorized as stand-by, back-up, emergency), you should identify the source in this section if the source has an associated water right that is not listed in the above sections. The purpose is to identify that such water rights are still intended for a future beneficial use as required under RCW 90.03.015(4). See Page 2, Item 9 (b) in ECY Policy 2030. For these water rights, please briefly describe the future intended use of the source and when you expect to utilize the water right. This does not refer to sources categorized as seasonal sources.

You should also include any other comments in this section that will explain aspects of your water right portfolio that are not identified above.

Water Right Self-Assessment Form for Water System Plan

Mouse-over any link for more information. Click on any link for more detailed instructions.

Water Right Permit, Certificate, or Claim # *If water right is interruptible, identify limitation in yellow section below	WFI Source # If a source has multiple water rights, list each water right on separate line	Existing Water Rights Qi= Instantaneous Flow Rate Allowed (GPM or CFS) Qa= Annual Volume Allowed (Acre-Feet/Year) This includes wholesale water sold				Current Source Production – Most Recent Calendar Year Qi = Max Instantaneous Flow Rate Withdrawn (GPM or CFS) Qa = Annual Volume Withdrawn (Acre-Feet/Year) This includes wholesale water sold				10-Year Forecasted Source Production (determined from WSP) This includes wholesale water sold				20-Year Forecasted Source Production (determined from WSP) This includes wholesale water sold			
		Primary Qi Maximum Rate Allowed	Non-Additive Qi Maximum Rate Allowed	Primary Qa Maximum Volume Allowed	Non-Additive Qa Maximum Volume Allowed	Total Qi Maximum Instantaneous Flow Rate Withdrawn	Current Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume Withdrawn	Current Excess or (Deficiency) Qa	Total Qi Maximum Instantaneous Flow Rate in 10 Years	10-Year Forecasted Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume in 10 Years	10-Year Forecasted Excess or (Deficiency) Qa	Total Qi Maximum Instantaneous Flow Rate in 20 Years	20-Year Forecasted Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume in 20 Years	20-Year Forecasted Excess or (Deficiency) Qa
1 Cert. 6472	S02 – AGB982 Well 1	160		250		0.02	159.98	0.004	249.996	0.005	160	0.004	249.996	0	160	0.006	249.994
3 Cert – 7424	S03 – AGB986 Well 3	400		400		184	216	116	284	205	195	129	271	250	150	158	242
5 G1-00594C	Unknown Well – Mount Forest	110		88			0		0	0	110		0	0	110	0	0
8 G1-2055OC	S04 – AGB998 Well 5	500		400		6	494	2	398	7	493	3	397	8	492	3	397
6 G1-22043C	AGB989 Well 7A	55	110		88						55				55		
9 G1-22974C	S05 – AGB984 Well 6	900		1200		208	692	137	1063	231	669	152	1048	283	617	186	1014
11 G1-23131C	S12 – AGB985 - Woodlane Well	40		37		57	-17	41	-4	63	-23	46	-9	77	-37	56	-19
7 G1-23697	S08 – AGB989 (Wells 7) AGB988 (Well 7A)	700		659		304	396	151	508	338	362	168	491	413	287	204	455
4 G1-24816C	S09 – AGB987 Well 8	500		600		223	277	90	510	248	252	100	500	303	197	122	478
2 G1-24906C	S10 – AGB983 Well 9	900		1008		636	264	423	585	707	193	470	538	865	35	575	433
10 G1-25582P	AGB999 Well 10	700			784	377	323	249	-249	419	281	277	507	512	188	339	445
	TOTALS =	**4,965**		**4,642**		**1,995**	**2,970**	**1,209**	**3,433**	**2,218**	**2,747**	**1,345**	**3,297**	**2,711**	**2,254**	**1,643**	**2,999**
Column Identifiers for Calculations:		A		B		C	=A-C	D	=B-D	E	= A-E	F	=B-F	G	=A-G	H	=B-H

PENDING WATER RIGHT APPLICATIONS: Identify any water right applications that have been submitted to Ecology.

Application Number	New or Change Application?	Date Submitted	Quantities Requested			
			Primary Qi	Non-Additive Qi	Primary Qa	Non-Additive Qa

INTERTIES: Systems receiving wholesale water complete this section. Wholesaling systems must include water sold through intertie in the current and forecasted source production columns above.

Name of Wholesaling System Providing Water	Quantities Allowed In Contract		Expiration Date of Contract	Currently Purchased Current quantity purchased through intertie				10-Year Forecasted Purchase Forecasted quantity purchased through intertie				20-Year Forecasted Purchase Forecasted quantity purchased through intertie			
	Maximum Qi Instantaneous Flow Rate	Maximum Qa Annual Volume		Maximum Qi Instantaneous Flow Rate	Current Excess or (Deficiency) Qi	Maximum Qa Annual Volume	Current Excess or (Deficiency) Qa	Maximum Qi 10-Year Forecast	Future Excess or (Deficiency) Qi	Maximum Qa 10-Year Forecast	Future Excess or (Deficiency) Qa	Maximum Qi 20-Year Forecast	Future Excess or (Deficiency) Qi	Maximum Qa 20-Year Forecast	Future Excess or (Deficiency) Qa
1. Fobes Master Meter	1600	-		1600	-	75		1600	-	83	-	1600	-	102	-
2. Swan's Trail Master Meter	500	-		500	-	0		500	-	0	-	500	-	0	-
3. Skipley Road Master Meter	1600	-		1600	-	101		1600	-	112	-	1600	-	137	-
4. Lowell- Larimer Road Master Meter	500	-		500	-	45		500	-	50	-	500	-	61	-
5. Mt. View Terrace Master Meter	500	-		500	-	0		500	-	0	-	500	-	0	-
6.CWSA Supply Meter (15830 73rd Ave SE)	3800	3,559		3800	-	596	2,963	3800	-	663	2,896	3800	-	810	2,749
7. CWSA Supply Meter (8114 64th Street SE)	7500	1,581		7500	-	70	1,511	7500	-	78	1,503	7500	-	95	1,486
8. CWSA Supply Meter (77th Ave SE and Lowell-Larimer Road)	2400	1,581		2400	-	198	1,383	2400	-	220	1,361	2400	-	269	1,312
9. SLWSD/CVWD	N/A	-		N/A	-	-	-	N/A	-	-	-	N/A	-	-	-
10. AWWD Interim and Emergency Supply Intertie	850	-		850	-	-	-	850	-	-	-	850	-	-	-
TOTALS =	**19,250**	**6,721**		**19,250**		**1,085**	**5,857**	**19,250**		**1,206**	**5,760**	**19,250**		**1,474**	**5,546**
Column Identifiers for Calculations:	A	B		C	=A-C	D	=B-D	E	=A-E	F	=B-F	G	=A-G	H	=B-H

INTERRUPTIBLE WATER RIGHTS: Identify limitations on any water rights listed above that are interruptible.

Water Right #	Conditions of Interruption	Time Period of Interruption
1		
2		
3		

ADDITIONAL COMMENTS:

No. 3361 (PS) 8-67

Well #1

CERTIFICATE RECORD NO. 13 PAGE NO. 6472-A

STATE OF WASHINGTON, COUNTY OF Snohomish

Certificate of Ground Water Right

2095456

Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Water Resources thereunder.

THIS IS TO CERTIFY That CROSS VALLEY WATER ASSOCIATION, INC.

of Snohomish, Washington, has made proof to the satisfaction of the Department of Water Resources of Washington, of a right to the use of the ground waters of a well located within NW¼SW¼ Sec 24, Twp. 27 N., R. 5 E. W.M., for the purpose of Municipal supply under and subject to provisions contained in Ground Water Permit No. 8289 issued by the Department of Water Resources and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the Department of Water Resources of Washington and entered of record in Volume 13 at page 6472-A; that the right hereby confirmed dates from July 31, 1967; that the quantity of ground water under the right hereby confirmed for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 160 gallons per minute, 250 acre-feet per year for municipal supply

Special provisions required by the Department of Water Resources: Those special provisions contained in Ground Water Permit No. 8289 are by this reference expressly incorporated herein and made a part of this certificate of water right.

A description of the lands to which such ground water right is appurtenant:

Area served by Cross Valley Water Association

2098486

OFFICIAL RECORDS

RECORDED

REQUEST OF

1969 JUN 15 PM 10 49

SNOHOMISH COUNTY, WASH.

DEPUTY

Cross Valley Water Assn

P.O. Box 151

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 Sections 6 and 7, Chapter 122, Laws of 1929.

This certificate of ground water right is specifically subject to relinquishment for nonuse of water as provided in Section 18, Chapter 233, Laws of 1967.

WITNESS the seal and signature of the Assistant Director, Division of Water Management, Department of Water Resources affixed this 13th *day of* June, 1969

Glen D. Fiedler

Assistant Director
Division of Water Management
Department of Water Resources

OFFICIAL RECORDS

VOL. 325 PAGE 83

Ground Water Permit No. 8289

CERTIFICATE OF GROUND WATER RIGHT

Recorded in the Department of Water Resources, Olympia, Washington, in Book No. 13 *of Ground Water Right Certificates, on page* 6472-A, *on the* 13th *day of* June 19 69

STATE OF WASHINGTON,
County of } ss.

I certify that the within was received and duly recorded by me in Volume of *Book of Water Right Certificates, at page* , *on the* day of , 19

STATE PRINTING PLANT OLYMPIA WASH.

(361—(Rev 6-70))

Well #3

CERTIFICATE RECORD NO. 15, PAGE NO. 7424-A

STATE OF WASHINGTON, COUNTY OF Snohomish

CERTIFICATE OF GROUND WATER RIGHT

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

THIS IS TO CERTIFY That CROSS VALLEY WATER ASSOCIATION, INC.

of Snohomish, Washington, has made proof to the satisfaction of the Department of Ecology of a right to the use of the public ground waters of the State of Washington from a well

located within NE¼SE¼NE¼

Sec. 25, Twp. 27 N., R. 5 E. W.M.,

for the purpose(s) of municipal supply

under and specifically subject to provisions contained in Ground Water Permit No. 10007 issued by the Department of Ecology and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the Department of Ecology and entered of record in Volume 15 at page 7424-A; that the priority of the right hereby confirmed dates from June 24, 1970; that the quantity of ground water under the right hereby confirmed for the aforesaid purposes, is limited to an amount actually beneficially used for said purposes, and shall not exceed 400 gallons per minute, 400 acre-feet per year, during entire year for municipal supply.

A description of the lands to which such ground water right is appurtenant is as follows:

Area served by the Cross Valley Water Association, Inc.

A220071

OFFICIAL RECORDS
VOL. OF
PAGE
REQ. OF
1971 OCT 26 PM 1 21
SNOHOMISH COUNTY, WASH.
DEPUTY

Cross Valley Water Assn
P.O. Box 131

The right to use of 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 ground water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and seal of this office at Olympia, Washington, this 22nd day of October, 19 71

JOHN A. BIGGS, Director
Department of Ecology

by

Engineering Data
OK

A220071

OFFICIAL RECORDS VOL 548 PAGE 552

Ground Water Permit No. 10007

Certificate of Ground Water Right

Recorded in the Department of Ecology, Olympia, Washington, in Book No. 15 *of Ground Water Right Certificates, on page* 7424-A, *on the* 22nd *day of* October 19 71.

STATE OF WASHINGTON,
County of ..... } *ss.*

I certify that the within was received and duly recorded by me in Volume ..... *of Book of Water Right Certificates, at page* ..... *on the* ..... *day of* ....., 19.....

.....

STATE PRINTING PLANT, OLYMPIA, WASHINGTON

2388063

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Well #5

CERTIFICATE OF WATER RIGHT

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

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

CERTIFICATE NUMBER	PERMIT NUMBER	APPLICATION NUMBER	PRIORITY DATE
G1-20550C	G1-20550P	G1-20550	April 12, 1973

NAME
CROSS VALLEY WATER ASSOCIATION, INC.

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
P.O. Box 131	Snohomish	Washington	98290

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 - 10"x200' (Well #5)

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	500.0	400.0

QUANTITY, TYPE OF USE, PERIOD OF USE
Municipal Supply - continuous use

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION/WITHDRAWAL
800 feet West and 450 feet North of center of Sec. 24

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼SE¼NW¼	24	27	5 E.	08	Snohomish

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY WATER TO BE USED ON

Area served by Cross Valley Water Association, Inc.

OFFICIAL RECORDS
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Nothing in this permit shall be construed as excusing the permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations including those administered by local agencies under the Shoreline Management Act of 1971.

OFFICIAL RECORDS

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 15th *day of* May, *19* 75.

JOHN A. BIGGS, *Director*
Department of Ecology

by R. JERRY BOLLEN, Assistant Director

FOR COUNTY USE ONLY

OFFICIAL RECORDS
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2388063
D - 10

Well #6

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

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

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

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
October 5, 1977	G1-22974	G1-22974P	G1-22974C

NAME
CROSS VALLEY WATER ASSOCIATION, INC.

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
P. O. Box 131	Snohomish	Washington	98290

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
Well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	900.0	1,200.0

QUANTITY, TYPE OF USE, PERIOD OF USE
Municipal Supply - continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION-WITHDRAWAL
850 feet west and 550 feet north from center of Section 24

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SE¼NW¼	24	27	5 E.	7	Snohomish

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The service area of the Cross Valley Water Association.

RECORDED
1980 NOV 10 AM 10 40
HENRY B. WHALEN, AUDITOR
SNOHOMISH COUNTY, WASH.
DEPUTY

80111001 26

VOL 1683 PAGE 1978

ECY 040 1 2 (Rev. 4-77) (SEE REVERSE SIDE) CERTIFICATE

PROVISIONS

An approved measuring device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through WAC 508-64-040.

All water wells constructed within the state shall meet the minimum standards for construction and maintenance as provided under RCW 18.104 (Washington Water Well Construction Act of 1971) and Chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Water Wells).

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

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 Redmond *Washington, this* 31st *day of* October, *19* 80.

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY
ENGINEERING DATA
OK

Department of Ecology

by Robert K. McCormick
ROBERT K. McCORMICK, Regional Manager

FOR COUNTY USE ONLY

D-12

8011100126

VOL. 1683 PAGE 1973

4 0 -

Well #1 ... 12
Source IDs 508 & 506
Well #7 & 7A

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

8203160091

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

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

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
October 20, 1980	G1-23697	G1-23697P	G1-23697

NAME
CROSS VALLEY WATER ASSOCIATION

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
8710 - 180th Street S. E.; P.O.Box 131,	Snohomish	Washington	98290

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
Two wells

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	700	659.0

QUANTITY, TYPE OF USE, PERIOD OF USE
Community domestic supply - continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
New - 520 feet east and 350 feet south of W¼ corner Sec. 35

Old - 520 feet east and 310 feet south of W¼ corner Sec. 35

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NW¼SW¼	35	27	6 E	7	Snohomish

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Water will be used throughout the Cross Valley Water Association service area, generally described as portions of: T. 27N., R. 5 E.
T. 27N., R. 6 E.
T. 28N., R. 5 E.
T. 28N., R. 6 E.

RECORDED
1982 MAR 16 AM 10 00
DEPUTY

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8203160091
(SEE REVERSE SIDE)

ECY 040-1-2 (Rev. 4-77)

D - 13

CERTIFICATE

PROVISIONS

An approved measuring device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through WAC 508-64-040.

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 Redmond *Washington, this* 15th *day of* March, *19* 82.

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

ENGINEERING DATA

OK

Department of Ecology

by Robert K. McCormick

ROBERT K. McCORMICK, Regional Manager

FOR COUNTY USE ONLY

8203160091

Well #8

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

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

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

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
April 21, 1986	G1-24816	G1-24816P	G1-24816C

NAME
Cross Valley Water Association Inc.

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
P.O. Box 131	Snohomish	Washington	98290

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

PUBLIC WATER TO BE APPROPRIATED

SOURCE
Well #8

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
---	500	600

QUANTITY, TYPE OF USE, PERIOD OF USE
Municipal domestic supply - continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
NE¼NE¼

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NE¼NE¼	25	27	5E	8	Snohomish

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by Cross Valley Water Association generally described as portions of: Township 27N., Range 5E., Township 27N., Range 6E., Township 28N., Range 5E., Township 28N., Range 6E.

87 OCT 22 AM 10:34

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PROVISIONS

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

An approved measuring device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through WAC 508-64-040 (Installation, operation and maintenance requirements attached hereto).

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use he 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 RC 90.14.180.

Given under my hand and the seal of this office at Redmond, *Washington, this* 15 *day of* October, *19* 87

STATE OF WASHINGTON · DEPARTMENT OF ECOLOGY · OLYMPIA
ENGINEERING DATA
OK

Department of Ecology

by Nancy Ellison
Nancy Ellison, Regional Manager

FOR COUNTY USE ONLY

Cross Valley Water Association Inc.
P.O. Box 131
Snohomish, WA 98290

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Well #9

CERTIFICATE OF WATER RIGHT

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

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

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
October 3, 1986	G1-24906	G1-24906P	G1-24906C

8909150159

NAME
Cross Valley Water Association Inc.

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
Post Office Box 131	Snohomish	Washington	98290

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

PUBLIC WATER TO BE APPROPRIATED

SOURCE
Well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
---	900	1008

QUANTITY, TYPE OF USE, PERIOD OF USE
Municipal domestic supply - continuously

RECEIVED
AUG 24 1989
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
950 feet east and 100 feet south from W¼ corner of Section 24.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NW¼ SW¼	24	27N	5E	8	Snohomish

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by Cross Valley Water Association service area generally described as portions of T.27N., R.5E., T.27N., R.6E, T.28N., R.5E., T.28N., R.6E. All in Snohomish County, Washington.

RECORDED
89 SEP 15 AM 11:29
DEAN V. WILLIAMS, AUDITOR
SNOHOMISH COUNTY, WASH.
By _____ Deputy

8909150159

VOL. 2264 PAGE 0971

ECY 040-1-2 (Rev 4-81) (SEE REVERSE SIDE) CERTIFICATE

PROVISIONS

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

An approved measuring device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through WAC 508-64-040 (Installation, operation and maintenance requirements attached hereto).

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 Redmond *Washington, this* ...15th... *day of* ...August..., *19*..89.....

Department of Ecology

ENGINEERING DATA
OK.....

by Herman H. Huggins

Herman H. Huggins, Section Supervisor Water Resour

FOR COUNTY USE ONLY

VOL. 2264 PAGE 0972

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8909150159

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PERMIT

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

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

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

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
December 11, 1989	G1-25582	G1-25582 P	

NAME
Cross Valley Water District

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
P.O. Box 131	Snohomish	Washington	98290

The applicant is, pursuant to the Report of Examination which has been accepted by the applicant, hereby granted a permit to appropriate the following described public waters of the State of Washington, subject to existing rights and to the limitations and provisions set out herein.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well #10

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	700	784*

QUANTITY, TYPE OF USE, PERIOD OF USE

Municipal supply
*Total acre-feet per year from all sources shall not exceed 4605 acre-feet per year

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL

760 feet west and 400 feet north of the center of Section 24

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
N½ SW¼ NW¼	24	27	5E	8	Snohomish

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by Cross Valley Water District bounded on the north by the Snohomish River, on the east by the Snoqualmie River, on the west by Silver Lake and Alderwood Water District, and on the south by the Snohomish-King County line within Townships 27 north and 28 north, Ranges 5 and 6 east Willamette Meridian in Snohomish County.

DESCRIPTION OF PROPOSED WORKS

Well #10, 278 feet X 16 inches, static water level 103.5
Storage reservoirs
Delivery lines

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	August 16, 1994	August 16, 1997

PROVISIONS

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

This permit is subject to the implementation of the minimum requirements established in the Interim Guidelines for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology and Conservatio Programs, July 1990.

In order to monitor the resource, static water level (SWL) shall be measured at least once each month. Measurements shall be taken after the pump has been shut off in wells #5, 6, and 10 and the water level in th wells has stabilized. Applicant will forward static water level measurements for all Cross Valley Water Distri wells annually to Ecology Northwest Water Resources for review. Measurements must be accurate. At end of a five year period Ecology will review all data to determine effect of pumping Cross Valley's wells with base flows of Bear Creek.

If the district cannot obtain accurate static water level data from the operating wells, monitoring wells should be placed into both aquifer zones with continuous recording Steven's type recorders.

An approved measuring device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through 508-64-040. Meter readings shall be recorded monthly and this data shall be maintained and be made available to the Department of Ecology upon request.

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or fail to give notice to the Department of Ecology on forms provided by that Departme documenting such compliance.

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

this 16th day of August, 1993.

Department of Ecology

ENGINEERING DATA
OK_____

by Stephen J. Hirschey
Stephen J. Hirschey, Section Supervisor, Water Resources

EXAMINATION

No. G1-25582.P

Woodlane

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

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

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

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
June 1, 1978	G1-23131	G1-23131P	G1-23131C

NAME
FREYLAND INC.

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
21004 Bothell-Everett Highway	Bothell	Washington	98011

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
Well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	40.0	37.0

QUANTITY, TYPE OF USE, PERIOD OF USE
Community domestic supply - continuously (41 proposed services)

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
750 feet south and 100 feet east from N¼ corner of Sec. 35

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, E. OR W.	W.M.	W.R.I.A.	COUNTY
NW¼NE¼	35	27	5 E.		8	Snohomish

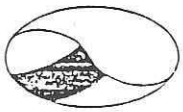
RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The NW¼NE¼ of Sec. 35, T. 27 N., R. 5 E.W.M., situated in Snohomish County.

ROBINSON & NOBLE, INCORPORATED
GROUND WATER & ENVIRONMENTAL GEOLOGISTS
5915 ORCHARD STREET WEST
TACOMA, WASHINGTON 98467
(206) 475-7711
253-475-7711



GROUND WATER RESOURCE EVALUATION FOR CROSS VALLEY WATER ASSOCIATION

JULY, 1983

GROUND WATER RESOURCE EVALUATION FOR CROSS VALLEY WATER ASSOCIATION

JULY, 1983

INTRODUCTION

We were authorized by the Cross Valley Water Association to perform a regional ground water resource evaluation and determine if the present sources will continue to provide their needs. This report should be considered an update of the 1973 ground water study by John Noble. Considerably more information has become available from well drilling in the area. This information has been summarized and placed on what we have designated as a water atlas. This format allows additional data to be immediately processed. In addition to preparing the water atlas, we have summarized the available information on the Cross Valley wells, refined the hydrologic recharge/discharge relations from the previous study, and provided new estimates for utilization of the present source.

STUDY AREA AND WATER ATLAS DESCRIPTION

The Cross Valley study area is located west of the Snohomish River, north of the King County line, except for the Lake Tuck area, and east of the Bear Creek drainage. To summarize the information on new wells a water atlas was prepared. Information about the wells was condensed and placed on the map in an abbreviated form. The following designations were used.

Y - Potential yield, which is the specific capacity (ratio of the actual yield in gallons per minute over the drawdown in feet) times 66% of the available drawdown or 100 feet, whichever is less.

This value provides a reasonable estimate for the ideal capacity of a production well drilled near the indicated area on the map. The actual yield of a production well could be more or less depending on long term aquifer drawdown characteristics, the efficiency of the data well, and the accuracy of the driller's record.

W - Water elevation (in feet), which is the static water level of the well after it has been referenced to mean sea level. The elevations of the well sites have been obtained from USGS topographic maps.

This information represents the typical water elevation for wells in a common area that penetrate similar water-bearing formations. Generally, large areas that have similar water elevations can be used to identify the areal extent of an aquifer.

Z - Water-bearing zone which is the elevation in feet of the bottom or lowest known depth of the water-bearing formation. Most of the wells in this study do not fully penetrate the water-bearing formation.

This information indicates the anticipated completion elevation for a well that penetrates an aquifer that is common to other wells. The actual depth of a production well would be the land surface elevation minus the elevation of the water-bearing zone which is given on the map at each well site.

ROCK - The elevation of the top of older consolidated formations commonly termed bedrock.

This information indicates that wells completed below this elevation would not be suitable for a production situation. Most deep rock wells in this area have low yields.

The water atlas information is extracted from the Water Well Report forms that are completed by drillers and sent to the Washington State Department of Ecology. Other sources were the US Geological Survey's Water Supply Paper 1135 (Snohomish County), John Noble's report, "Ground Water Study For Cross Valley Water Association, Inc., South Service Area", and files from our office.

GEOLOGY

The Cross Valley area subsurface geology is well defined in John Noble's 1972 report. The additional information obtained in this report supports the cross sections that were presented in that report. The cross sections have been updated and redrawn to reflect hydrologic conditions. The original cross sections depicted Vashon Till over Esperance Sand over rock or older glacial drift. They now show the wells that penetrate the same aquifer as the Cross Valley Wells 1, 3, 5 and 6. We have named this aquifer the Cross Valley Aquifer. These wells are completed in the Esperance or older glacial drift deposits. It is difficult to identify the formation that each well penetrates, however, they all appear to be hydraulically connected.

No known deep drilling has been accomplished to indicate conditions below the Cross Valley Aquifer. It is likely that bedrock would be encountered near sea level elevation.

SUMMARY OF CROSS VALLEY PRODUCTION WELLS

WELL 1

The average yield is 56.4 gpm for the months of March, April, and May of 1983. (A new pump was installed in February, 1983). The static water level was 120 feet in February, 1983. The original pumping test showed 49 feet of drawdown, from a static water level of 120 feet, at 160 gpm. This equates to a specific capacity of 3.2 gpm per foot of drawdown. The potential yield as defined in this report is 109 gpm. The present pump is capable of 125 gpm. Aquifer characteristics have not been determined from pumping tests. The aquifer is believed to be hydraulically connected to Wells 5 & 6. The present usage has not depleted the aquifer.

WELL 3

Average use during 1982-1983 is 113.2 gpm. The static water level was 159 feet on May 26, 1983. The original pump test was 390 gpm with 28 feet of drawdown, from a static water level of 162 feet. Presently the well has 16.6 feet of drawdown at 350 gpm. The specific capacity appears to have improved from 14 to 21 pgm per foot of drawdown. The potential yield for this well is rated at 600 gpm. Aquifer characteristics have not been determined from pumping tests. The aquifer is believed to be hydraulically connected to Wells 5 & 6. Based on limited measurements, production wells drilled near Well 3 could be equal to Wells 5 & 6.

WELL 5

Average use during 1982-1983 is 152.8 gpm. The static water level on April 22, 1983 was 102.5 feet. The original pump test showed 500 gpm with 33 feet drawdown, from a static water level of 96 feet. Presently the well produces 460 gpm with 13.9 feet of drawdown. The specific capacity appears to have improved from 15.5 to 33.2 gpm per foot of drawdown. However, the differences in rates between tests could be related to the difference in specific capacity. A new test at 500 gpm would be expected to show somewhat less than 33 gpm/foot. The potential yield for this well is over 1000 gpm.

WELL 6

Average use during 1982-1983 is 149 gpm. The static water level on April 22, 1983 was 98.5 feet. The original pump test showed 97 feet of drawdown from a static water level of 94.6 feet at 900 gpm. Presently the well has 110 feet of drawdown at 480 gpm. The specific capacity has dropped from 9 to 4.4 gpm per foot of drawdown. The potential yield is presently 450 gpm.

Wells 5 & 6 are 120 feet apart and they penetrate the same aquifer. The calculated aquifer transmissivity is 35,000 to 45,000 gpd/ft. The storage coefficient is .0004. Although the formation is capable of producing considerable quanities of water, Well 6 has difficulty producing over 500 gpm. It would be possible to expand the well field with more 500 gpm wells if 1000 gpm wells are not practical.

WELL 7

Average use during 1982-1983 is 86.8 gpm. The static water level on May 26, 1983 was 70.35 feet. The original pump test showed 66.5 feet of drawdown from a static water level of 68 feet at 425 gpm. Presently the well has 59 feet of drawdown at 425 gpm. The well has maintained a specific capacity of 7 gpm/foot of drawdown. The potential yield for this well is 475 gpm. The calculated aquifer transmissivity is 20,000 gpd/ft. The storage coefficient is .003. The formation could be utilized more aggressively by using Well 7A, but the maximum pumping rate for both wells would be about 700 gpm. Other wells drilled at this site would not be recommended.

CLIMATE, RECHARGE AND DISCHARGE

The 1973 report by John Noble has a brief description of the hydrologic recharge and discharge situation for the Cross Valley south service area. Generally, the basis of information for these figures is still the same. The annual precipitation at Monroe was used for these calculations which may be slightly optimistic. The area lies equidistant from Monroe and Everett. The average rainfall for Everett is about 10 inches less than Monroe. For example:

PRECIPITATION

STATION	1982 Inches	AVERAGE FOR 50+ YEARS Inches	1982 OCT-MAY Inches
Monroe	52.4	47.8	43
Everett	43 (approx)	35.4	35

It would be more conservative to use the average of the Monroe and Everett precipitation figures. The following table has the monthly average of Monroe and Everett precipitation. The potential evapotranspiration figures represent the amount of water that would be lost through vegetation and soil to the atmosphere if the surrounding soil were adequately saturated. This condition does not naturally occur because during the late summer months soil moisture is depleted. Actual evapotranspiration is probably 5 inches less than the potential.

CALCULATED PRECIPITATION
FOR THE CROSS VALLEY STUDY AREA

MONTH	MONTHLY PRECIPITATION (Average of Monroe and Everett) Inches	POTENTIAL EVAPOTRANSPIRATION Inches*	SURPLUS AVAILABLE FOR RUNOFF AND INFILTRATION
JAN	5.35	.5	4.85
FEB	4.24	.8	3.44
MAR	3.7	1.0	2.7
APR	2.3	1.8	.5
MAY	2.57	2.8	-.23
JUNE	2.35	3.5	-1.15
JULY	1.07	4.4	-3.33
AUG	1.42	4.0	-2.58
SEPT	2.32	2.8	-.48
OCT	4.34	1.7	2.64
NOV	5.66	1.0	4.66
DEC	5.8	.5	5.3
TOTAL	41.12	24.8	16.32

*Potential evapotranspiration figures from Washington State Department of Conservation derived by S.E.Shumway from the Thornthwaite method.

Potential evapotranspiration is used for these calculations to remain conservative.

Based on the figures from the table, there is 16.3 inches of rainfall available for stream runoff and ground water recharge. If only 30% of the 16.3 inches infiltrates, then ground water recharge would amount to 5 inches annually. This recharge would then be equal to about 166 gpm per square mile.

Streamflow data was researched for measurements on Ricci, Elliot, Anderson, Evans, and Bear Creek. It does not appear that any measurements have been taken since August, 1957. As mentioned in the Noble report, only Evans Creeks has a significant flow in August. Assuming that this flow is from ground water discharge and is sustained, it is possible to determine the ground water infiltration rate in the Evans Creek drainage area. The lowest recorded flow is 3.16 cfs on August 8, 1959. The drainage area is 4.84 square miles above the measurement point. The recharge in this area would be .6528 cfs per square mile or 292 gpm per square mile. This would be one acre foot or 12-inches of precipitation that infiltrates into the ground water regime in the Evans Creek area.

In a ground water system, recharge must equal discharge. The recharge calculation of 5-inches or 166 gpm per square mile is somewhat less than the discharge calculations for the Evans Creek area of 12-inches or 293 gpm per square mile. This could be due to the conservative use of potential evapotranspiration in the recharge calculations or unusual conditions in the Evans Creek area. The relationship of greater indicated discharge than recharge is encouraging because projections based on the recharge calculations would probably be conservative.

HYDROLOGY

The Cross Valley Aquifer is shared by all of the wells that are presently used by the Association. On the Water Atlas the outline of the aquifer is depicted with rock to the northeast and flood plain of the Snoqualmie River to the east. The remaining boundaries were determined by comparing completion depths and water levels of the various wells in the area. The southern boundary is not well defined. The approximate area of the Cross Valley Aquifer is 37 square miles.

The water elevations for the wells were joined with contour lines to form a potentiometric map. The water levels have a natural gradient to the south. The gradient is 10 feet per mile near Wells 5 and 6 and it is 100 feet per mile near Well 7. Generally, this indicates that the aquifer transmisivity is higher near Wells 5 and 6. The updated and revised cross sections from the 1973 Noble report indicate that the Mount Forest wells penetrate a similar formation as Wells 1, 3, 5, and 6. The hydraulic continuity between these wells and Well 7 (at Mount Forest) is poor and the aquifer should be considered a separate and limited source.

FUTURE USE

The available recharge to the Cross Valley Aquifer indicates that if 166 gpm per square mile could be obtained from the 37-square mile aquifer as much as 6150 gpm would be available. This would be difficult to achieve everywhere as evidenced by the poor results in drilling Test Well 4. However,

if 25% of the water could be recovered from properly spaced wells 1535 gpm would be obtained. Of this, an appreciable quantity would be recycled through drainfields.

Current population projections from ST Engineers indicate that 2900 gpm may be required for peak demands by year 2000. If peak demand is 2.5 times average demand, then 1200 gpm could be continuously required in the future. Therefore it appears that the future demands of the Association may be readily met by utilizing the Cross Valley Aquifer. Note that average yield is the critical concern under most conditions because the aquifer serves as a major storage reservoir.

OTHER SOURCES

Wells near Bear Creek that are completed at an elevation of about 100 feet are capable of significant yields. These wells may not increase the ultimate capability of the area because they depend on the same recharge system as the Cross Valley Aquifer. However, they could provide increased peak capacity. The Bear Creek area has three wells capable of 300 to 500 gpm. They are 27/5E-22F, 22N, and 35F.

Additional water could be obtained from the Cross Valley area by deeper wells that go below the Cross Valley Aquifer. The presence of a deeper aquifer below the Cross Valley Aquifer is only indicated by two wells (27/6E-18R & 32P) which should be investigated more thoroughly.

If yet a further source were necessary, infiltration supplies near the Snohomish, lower Snoqualmie, and Skykomish Rivers are excellent potentials and would be acceptable to Washington Department of Ecology. There are no closures on these rivers but there are defined minimum flows. At this time the ground water influence on minimum flows would be of no concern.

WATER QUALITY

The water quality records from the Cross Valley Wells indicate that the aquifer is capable of producing good quality water. Some of the wells have manganese levels that are slightly over the maximum contaminant level. This may not cause a problem at those concentration of levels but is likely to cause staining of fixtures if it is above 1 mg/l. Manganese concentration can be reduced slightly with system chlorination. The Mount Forest Well 7 has very low concentrations of nitrate and chloride. The remaining wells have higher chloride levels (10 mg/l) which are not excessive. The possible influence of fertilizers and domestic septic systems could be observed by monitoring these wells.

No significant water quality data is available for the rest of the Cross Valley area. Wells drilled into the Cross Valley Aquifer would be expected to have similar water quality characteristics as the Cross Valley supply wells. Some wells to the east of the area drilled on the east side of the Snohomish River have very high concentrations of iron. Despite this, wells have been completed near the Skykomish River with good quality water. The depth and construction techniques of river infiltration wells in this area is critical due to the presence of stratified ion rich water bearing zones that must be isolated.

Prior to test drilling anywhere in the entire Cross Valley area, nearby wells should be sampled for water quality. A selected area that is under consideration for drilling could be field investigated using the data wells in this report as sampling points.

SOLE OR PRINCIPAL SOURCE AQUIFER

The water atlas for the Cross Valley area summarizes the information available for sole source aquifer determination. The proposed regulations (40 cfr part 148, FRL 778-8) require information regarding the aquifer and its location; the recharge and streamflow source zones for the aquifer; and the sources of recharge to the aquifer and their location.

The Cross Valley Aquifer as identified on the water atlas is proposed as a sole source aquifer in its entirety. The streamflow zones are also shown. However, the streams should be assumed to carry direct runoff from precipitation and ground water discharge, and are not a recharge source for the aquifer. The principal source of recharge to the aquifer is from direct precipitation. Consideration of the aquifer hydrology should be given when land use plans of the area are proposed. Although the aquifer is confined by soils of low permeability, all recharge water must penetrate these soils from the surface. Sources of pollution and major changes of surface drainage could both have a negative impact on the Cross Valley Aquifer. Any such proposed changes should be evaluated with a site-specific hydrologic study.

CONCLUSIONS AND RECOMMENDATIONS

The Cross Valley Aquifer appears to be able to suport the needs of the Association through year 2000. The following items are recommended for maximum utilization of the resource.

- All Cross Valley Wells should be monitored at least monthly for static water levels and pumping water levels.
- Well 5 should be tested at higher rates to determine its maximum capability. Well 6 should be redeveloped and tested to determine the maximum, safe, long-term yield.
- Additional wells could be drilled near Well 3.
- Ground water sources related to the Snoqualmie-Snohomish Rivers could be considered.

Respectfully submitted,

ROBINSON & NOBLE, INC.

Chandler Ellis

Chandler Ellis

DEPARTMENT OF ECOLOGY
State of Washington

WATER RESOURCES PROGRAM
Showing of Compliance with RCW 90.44.100(3)

Water Right Certificate or Permit Number: G1-23697

Parcel tax identification number: 27063500303500 County: Snohomish

Landowner(s) name: Cross Valley Water District

Lat.Long. of well: **Original:** - **New:** 47°46'52.91" N 122°00'39.04"(Same)

To amend the associated water right permit or certificate when drilling an additional or replacement well, you must submit this form (signed and notarized) to the Department of Ecology to affirm that you have met the statutory criteria of RCW 90.44.100(3). Please attach the water well report for the new well and any other information you have to support this affidavit.

Affidavit:

I, Mike Johnson, do certify that the well described in the attached water well report has been drilled as an additional or replacement well for use under Water Right Number G1-23697. This notice and attached documents describe and support my assertion that the replacement or additional well complies with RCW 90.44.100(3) (a-g) and RCW 90.44.100(4):

Please check one:

☒ This is an additional well (Attach well report)

☐ This is a replacement well (Attach well report for new Well & Decommissioning report for old well)

Please confirm the following:

a. The new well(s) tap the same body of public groundwater as the original well.

b. If a replacement well is constructed, use of the original well(s) shall stop and the original well(s) properly decommissioned.

c. The combined withdrawal of water from all wells authorized by the water right certificate does not enlarge the water right developed (perfected) and maintained by use of water (i.e. no increase in total instantaneous (Qi) or annual (Qa) withdrawals).

d. The construction and use of the new well(s) does not interfere with or impair water rights with an earlier priority date.

e. The new well(s) is located no closer than the original well to a well or surface water body with which it might interfere.

f. The new well was constructed in compliance with chapter 18.104 RCW and chapter 173-160 WAC, as well as any other conditions specified.

g. The new well(s) is located within the area described as the point of withdrawal in the public notice published for the original application for water right, or the most current legal description published for the right.

Therefore the well is in compliance with the requirements for a statutorily granted amendment to the water right permit or certificate.

I understand the acceptance of this affidavit, and any attachments, by the Department of Ecology shall not be construed as affirming the validity of any water right permit or certificate. The responsibility to comply with RCW 90.44.100(3) is with the water right permit or certificate holder asserting an amendment pursuant to RCW 90.44.100(3).

Mike Johnson	mjohnson@crossvalleywater.net
Name or Authorized Agent	Email:
8802 180th Street SE	Snohomish, WA 98296-4804
Address	City, State, ZIP
General Manager	360-668-6766
Relationship to Water Right holder	Phone

Mike Johnson — Signature

09/21/2022 — Date

Acknowledgement:

State of Washington
County of Snohomish

I certify that I know or have satisfactory evidence that Mike Johnson *is the person who appeared before me, and said person acknowledged that (he/she) signed this affidavit and acknowledged it to be (his/her)free and voluntary act for the uses and purposes mentioned in the affidavit.*

Dated: 9.21.22

NOTARY PUBLIC
STATE OF WASHINGTON
CHRISTINE LAMB
License Number 32487
My Commission Expires 10-26-2024

(Signature)
Bothell
Residing in
Notary
Title
My appointment expires: 10-26-2024

If you have any questions please contact the Water Resources Section of the closest regional office. Please submit copies of new well reports and decommissioned well reports along with this completed and notarized form to the nearest regional office.

Northwest Regional Office
3190 - 160th Avenue SE
Bellevue, WA 98008-5452
(425) 649-7000

Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775
(360) 407-6300

Central Regional Office
1250 W. Alder St.
Union Gap, WA 98903-0009
(509) 575-2597

Eastern Regional Office
4601 N. Monroe St.
Spokane, WA 99205-1265
(509) 329-3400

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

DEPARTMENT OF ECOLOGY State of Washington

Construction/Decommission *("x" in circle)*

☒ Construction

☐ Decommission *ORIGINAL INSTALLATION*

Notice of Intent Number _____

PROPOSED USE: ☐ Domestic ☐ Industrial ☒ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other _____

TYPE OF WORK: Owner's number of well (if more than one) 7B

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

DIMENSIONS: Diameter of well 20 inches, drilled 211 ft. Depth of completed well 211ft.

CONSTRUCTION DETAILS

Casing Installed: ☒ Welded 20" Diam. from +2.4 ft. to 185 ft.
☒ Liner installed 16" Diam. from +2.6 ft. to 186.7 ft.
☐ Threaded 16" Diam. From 199.4 ft. to 211 ft.

Perforations: ☐ Yes ☒ No

Type of perforator used _____

SIZE of perfs ___ in. by ___ in. and no. of perfs ___ from ___ ft. to ___ ft.

Screens: ☒ Yes ☐ No ☐ K-Pac Location 186.7'-199.4'

Manufacturer's Name Johnson

Type Stainless Steel Model No. _____

Diam. 16 Slot size 75 from 186.7 ft. to 199.4 ft.

Diam. ___ Slot size ___ from ___ ft. to ___ ft.

Gravel/Filter packed: ☒ Yes ☐ No Size of gravel/sand S-1, #4510

Materials placed from 65 ft. to 202 ft.

Surface Seal: ☒ Yes ☐ No To what depth? 18ft.

Material used in seal Bentonite

Did any strata contain unusable water? ☐ Yes ☒ No

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

PUMP: Manufacturer's Name _____

Type: _____ H.P. _____

WATER LEVELS: Land-surface elevation above mean sea level 451 ft.

Static level 77 ft. below top of well Date 10-10-2014

Artesian pressure ___ lbs. per square inch Date _____

Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☒ Yes ☐ No If yes, by whom? Charon/R&N

Yield: 300gal./min. with 36.7ft. drawdown after 1hrs.
Yield: 407gal./min. with 54.5ft. drawdown after 1hrs.
Yield: 515gal./min. with 73.6ft. drawdown after 1hrs.

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

Time	Water Level	Time	Water Level	Time	Water Level
1	143.12	60	85.45	480	80.72
10	87.77	120	84.17	960	78.29
30	86.42	240	82.68	1440	77.16

Date of test 10/13/2014

Bailer test ___ gal./min. with ___ ft. drawdown after ___ hrs.

Airtest ___ gal./min. with stem set at ___ ft. for ___ hrs.

Artesian flow ___ g.p.m. Date _____

Temperature of water ___ Was a chemical analysis made? ☒ Yes ☐ No

CURRENT

Notice of Intent No. WE18578

Unique Ecology Well ID Tag No. APP315

Water Right Permit No. G1-23697

Property Owner Name Cross Valley Water District

Well Street Address 23630 165th Ave SE

City Unincorporated County Snohomish

Location NW1/4-1/4 SW1/4 Sec 35 Twn 27 R 6 EWM ☒ Or WWM ☐

(s, t, r Still REQUIRED)

Lat/Long Lat Deg 47 Lat Min/Sec 46'52.92"
Long Deg 122 Long Min/Sec 039.04"

Tax Parcel No. (Required) 27063500303500

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Brown sandy silt	0	24
Brown sandy silt with clay	24	49
Gray sandy silt and clay	49	
with some gravel		80
Gray silty sand and gravel	80	
- water bearing		83
Gray silty claybound gravel	83	117
Brown silty claybound gravel	117	130
Gray to gray-green silty,	130	
clayey gravel, layered with		
fine silt layers		165
Tan silt, clay, sand, and	165	
gravel, compact, till-like		175
Brown silty fine to medium	175	
sand with occl. gravel		184
Brown siltbound gravel	184	186
Brown medium to coarse sand	186	
and gravel, water bearing		200
Dark gray clay and silt,	200	
occl. sand and gravel,		
compacted		211

Start Date 7/7/2014 Completed Date 10/24/2014

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

☒ Driller ☐ Engineer ☐ Trainee Name (Print) Dave Charon

Driller/Engineer/Trainee Signature

Driller or trainee License No. 1190

IF TRAINEE: Driller's License No:

Driller's Signature:

Drilling Company Charon Drilling, Inc.

Address 12719 - 224th St East

City, State, Zip Graham , WA. 98338

Contractor's Registration No. CHARODi133NF Date 12/8/2014

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
NORTHWEST DRINKING WATER REGIONAL OPERATIONS
20425 72nd Avenue South, Suite 310, Kent Washington 98032-2388

October 3, 2017

MIKE JOHNSON
CROSS VALLEY WATER DISTRICT
8802 180TH ST SE
SNOHOMISH, WA 98296

Subject: Cross Valley Water District (ID#16270)
Snohomish County
Well 7B Approval and Construction Completion for Well 7B
Submittal #15-1009

Dear Lewis:

The revised engineering report and construction documents for Well 7 B, which was received in this office on October 14, 2015, with additional information received on March 17, 2016 and September 21, 2017 have been reviewed and, in accordance with the provisions of WAC 246-290 are hereby **APPROVED**. The approval issued herein is only valid as it relates to current standards outlined in WAC 246-290, effective December 14, 2016.

Design Summary: Well 7B is equipped with a submersible pump capable of 500 gpm. This well will be the primary source of the wellfield, with Wells #7 and & 7A augmenting flows up to the water right limit of 700 gpm. Well 7B and associated apparatus have already been constructed, with a construction completion report received on September 26, 2017.

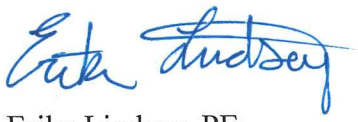
Based on the water quality parameters provided in the September 21, 2017 email, Well 7B appears to be similar in water quality to the existing Wells 7 and 7A and therefore is not expected to negatively impact lead and copper sample results. Please collect 30 lead and copper samples after the well has been online for at least three months and prior to October of 2018.

The 1.62 MG Eco Lake Reservoir and new 700 pressure zone is still under construction. A separate construction completion report will need to be submitted once these aspects of the project have been constructed and prior to placing them into service.

The department's acceptance of the construction completion report for the above project does not confer or guarantee any right to a specific quantity of water. The approved project is based on your representation of available water quantity. If the Washington Department of Ecology, a local planning agency, or other authority responsible for determining water rights and water system adequacy determines that you have use of less water than you represented, the number of approved connections may be reduced commensurate with the actual amount of water and your legal right to use it.

All provisions for the approval of Well 7B have been met and this well may now be placed into service.

Sincerely,



Erika Lindsey, PE
NW Office of Drinking Water
253/395-6766

cc: Snohomish County Public Health
Daren Rogers - Cross Valley Water District
Dave Hutley, PE – PACE Engineering
Krista Chavez, Steve Hulsman – DOH

Cross Valley
WATER DISTRICT

Water System Plan
Cross Valley Water District

Appendix E
Municipal Water Law and Agency Comments

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

Local Government Consistency Determination Form

Water System Name: Cross Valley Water District PWS ID: 162070 F

Planning/Engineering Document Title: Water System plan Update Plan Date: 2022

Local Government with Jurisdiction Conducting Review: Snohomish County

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with the **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies and inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system: Identify the page(s) in submittal	For use by local government: Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	Section 2.4	Yes
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	Section 2.5	Yes
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	N/A	N/A
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	Section 1.2.3 Section 1.4	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	Section 2.2.2	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with the adopted local plans and development regulations.

Signature

Date: 06/13/2022

Terri Strandberg, Principal Planner, Snohomish County Planning and Development Services

Printed Name, Title, & Jurisdiction

Local Government Consistency Determination Form

Water System Name: Cross Valley Water District PWS ID: 16270 F

Planning/Engineering Document Title: Water Sys. Plan Update Plan Date: 2022

Local Government with Jurisdiction Conducting Review: City of Snohomish

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system: Identify the page(s) in submittal	For use by local government: Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	Sections 2.4	YES
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	Sections 2.5	YES
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	N/A	N/A
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	N/A	N/A
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	Section 2.2.2	YES

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signature

10.5.22
Date

YOSHIHIRO MONZAKI, CITY ENGINEER
Printed Name, Title, & Jurisdiction CITY OF SNOHOMISH

Consistency Review Guidance

For Use by Local Governments and Municipal Water Suppliers

This checklist may be used to meet the requirements of WAC 246-290-108. When using an alternative format, it must describe all of the elements; 1a), b), c), d), and e), when they apply.

For **water system plans (WSP)**, a consistency review is required for the service area and any additional areas where a municipal water supplier wants to expand its water right's place of use.

For **small water system management programs**, a consistency review is only required for areas where a municipal water supplier wants to expand its water right's place-of-use. If no water right place-of-use expansion is requested, a consistency review is not required.

For **engineering documents,** a consistency review is required for areas where a municipal water supplier wants to expand its water right's place-of-use (water system plan amendment is required). For noncommunity water systems, a consistency review is required when requesting a place-of-use expansion. All engineering documents must be submitted with a service area map (WAC 246-290-110(4)(b)(ii)).

A) Documenting Consistency: The planning or engineering document must include the following when applicable.

a) A copy of the adopted **land use/zoning** map corresponding to the service area. The uses provided in the WSP should be consistent with the adopted land use/zoning map. Include any other portions of comprehensive plans or development regulations that relate to water supply planning.

b) A copy of the **growth projections** that correspond to the service area. If the local population growth projections are not used, explain in detail why the chosen projections more accurately describe the expected growth rate. Explain how it is consistent with the adopted land use.

c) Include water service area policies and show that they are consistent with the **utility service extension ordinances** within the city or town boundaries. *This applies to cities and towns only.*

d) All **service area policies** for how new water service will be provided to new customers.

e) **Other relevant elements** the Department of Health determines are related to water supply planning. See Local Government Consistency – Other Relevant Elements, Policy B.07, September 2009.

B) Documenting an Inconsistency: Please document the inconsistency, include the citation from the comprehensive plan or development regulation, and explain how to resolve the inconsistency.

C) Documenting a Lack of Local Review for Consistency: Where the local government with jurisdiction did not provide a consistency review, document efforts made and the amount of time provided to the local government for review. Please include: name of contact, date, and efforts made (letters, phone calls, and emails). To self-certify, please contact the DOH Planner.

The Department of Health is an equal opportunity agency. For persons with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

Cross Valley Water System Plan - Review Comment/Response Form

Review Phase: 1st Submittal

Reviewed By: Richard Rodriguez, Jolyn Leslie - DOH; Andrea Lauden - Ecology

Comment

Contact: Paul Weller, PACE Engineers

Date: **Latest comments received January 5, 2023**

No.	Dwg. Sheet No. / Spec. & Page No.	Sector / Paragraph No.	Comment	Reviewer last name or agency	Response	Responder	2nd Round Comment	2nd Round Response
Department of Health								
1	Page 2-2	2.2.2.1	Please confirm that the entire District service area is located wholly within unincorporated Snohomish County; it appears that there may be a very small portion within the city limits of Snohomish. Please provide determinations of local government consistency from Snohomish County Planning & Development Services and any other applicable agencies/cities.	Richard Rodriquez	Yes, confirming that there is a small portion within the City of Snohomish City Limits. This is noted in section 2.2.2.1. The Plans have been sent to Snohomish County and the City of Snohomish County for their consistency statement. The letters will be included in Appendix E.			
2	Page 2-16		The data in table 2-2 is already 4 years out of date. Does current usage data track well with this; were there any noted impacts over the past 2 years?	Richard Rodriquez	Production and purchase data for years 2019 - 2021 track consistently with historical growth and usage patterns. No unusual impacts occurred within the last two years.			
3			What is the district's policy on consolidating small surrounding Group A and Group B water systems?	Richard Rodriquez	District doesn't have a policy of assuming small water systems, but the District will respond effectively if requested			
4	Page 2-19, (Table 2-7), Page 6-2 (Table 6-2)		What are the design criteria for forecasting future demands? There doesn't appear to be a clear connection/relationship between the data usage history (MDD values in MGD) in chapter 2 and design demands (MDD values in gpm) in chapter 6. A summary table for design demand values as well as source, storage, treatment, distribution capacities that then identifies which is the limiting factor in capacity. Which zones are expected to experience the most growth/demand? How are ERUs assigned/tracked for large users?	Richard Rodriquez	Projected ERUs from Table 2-7 were allocated into the service areas/zones shown in Table 6-2 for the source analysis. These same ERU projected values were used to determine Storage Capacity in Table 6-4. The available ERUs were provided in tables 6-2 and 6-4. The system is too complex to have one table with limited capacities so available ERUs were added to these tables. Demand from large users are included in the hydraulic model. Section 6.3 was added entitled, "Water Treatment Facility Analysis" which provides the limiting capacity of the Treatment Facility for the District North Area.		Table 6-4 appears to indicate some zones will not have capacity by 2030.	Page 6-7, second to last paragraph addresses this concern. Here is the section...*"With the growth that has occurred in the Fobes Hill and Lowell Larimer area, there is a deficiency in the Storage beginning in 2030. As shown in Table 6-4, the deficiency indicates an approximately 150,000-gallon deficit in 2040. Future plans for CWSA consist of constructing an identical reservoir adjacent to the existing reservoir, from which the District will receive an additional 6 MG of storage in the future. Therefore, no proposed storage is considered for this area at this time. Only when the deficit becomes higher than the required 540,000 gallons for FSS, will the District need to address storage needs in the service area."*
5	Page 6-4, 6-7 and 6-8	6.3.4, 6.3.6 (last paragraph)	Were any diurnal analyses used to support demand? Table 6-4; it is not clear why no equalizing storage or operational storage is required in some of the tanks. Also, does the required volume of standby storage include any credit for multiple sources? Please provide additional information on how these volumes were calculated.	Richard Rodriquez	Diurnal curves/values were not used in the demand analysis. The following paragraph is added as to why the equalizing storage and operational storage is provided as such. *"As shown in Table 6-4, equalizing storage is inputted as zero in all the service areas because the source capacity is much larger than peak hour demand in all service areas. The equalizing storage capacity is calculated by subtracting Peak Hour Demand (gpm) from the source capacity (gpm) and then multiplying that value by 150 minutes. ".* According to the DOH manual, we only get credit if the multiple sources have on-site power generation. We included on-site power generation projects in the CIP at the locations that don't have them. See section 6.3.4 for the methods of calculating Standby Storage.		Still not clear why no operational storage is required.	The operation storage was calculated based on the minimum pressure that should be provided for the customers at the highest elevations in the service zone. For the Fobes Hill/Lowell/Larimer Areas and the District Treated north service areas with storage reservoirs with pumping capacity at the site no dead storage or operational storage was needed.

No.	Dwg. Sheet No. Spec. & Page No.	Sector Paragraph No.	Comment	Reviewer last name or agency	Response	Responder	2nd Round Comment	2nd Round Response
6	Page 3-13, Figure 3-1; Figure 7-1		It appears that the Vine Street pump station pumps treated district water into the Everett/Clearview supply zones. Are water quality impacts well understood in the event that this booster pump station needs to be activated? Has the mixing of treated groundwater and surface water been considered, and possible water quality impacts anticipated?	Richard Rodriquez	The District has deactivated Vine Street Pump Station in lieu of Clearview's Supply. Plan to remove it completely is in place. The pump station has been removed from the Map (Figure 7-1) and the Hydraulic Profile. Mixing of treated and untreated will only occur in emergency situations. A water quality study will be considered in the future.		Remaining questions/issue of surface water and groundwater mixing and also chlorinated surface water and unchlorinated groundwater	The District intends to work with DOH to develop a plan to address the issue of treated and untreated water mixing when a PRV is actuated. The following chapter was added to section 3.11 and 8.12.3… "In the event of an emergency or unplanned event in the 640 zone and Lee Forest Reservoir the District is notified of the potential mixing of surface water and groundwater or chlorinated and non-chlorinated water. The Lee Forest Reservoir and 640 zone is a non-chlorinated or ground water supply. Lee Forest Reservoir is considered full at the level of 60ft. The Districts SCADA system is set to alarm employees in the event the reservoir level reaches 40ft. The PRV stations that have the capability to supply the 640 zone and Lee Forest Reservoir will activate if and only if the reservoir reaches the level of 15ft. The buffer zone of 25ft allows the District staff to respond. If the PRVs are activated staff will flush and sample downstream of the PRVs for CL2 levels until it has been dispersed."
7	Page 3-13, Figure 3-1; Figure 7-1		It would be useful to indicate which wells are chlorinated and which wells are not in the hydraulic profile, figure 3-1.	Richard Rodriquez	The wells are technically not chlorinated but the water goes through the Treatment Plant to be chlorinated. It shows the wells 5, 6, and 10 running through the Water Treatment Plan on the hydraulic profile and then what zones these affect.	Paul		
8			Regarding reliability and source of supply, are all of the Everett/CVWA interties on one single transmission line?	Richard Rodriquez	The interties that go to the District and Clearview all come from off of Everett's Transmission Line No. 5. No additional detail added in the Plan.		Does the district's emergency response address the potential for Everett's 5-line to be down?	Yes, the Emergency Response Plan discusses reliability and redundancy of their source of supply. The District has wells and interties for redundancy and is designed for uninterruptible water service.
9		5.8.4	Section 5.8.4, please also note the L&I requirement for PRVs on pressure tanks.	Richard Rodriquez	The District does not have any pressurized tanks. PRVs on pressure tanks do not apply to the District, however, text has been added to the section to provide this requirement.			
10	Page 6-10	Paragraph No. 1	There are several interconnections between the treated (surface water and groundwater) and untreated portions of the system via emergency PRVs. Do these actuate automatically based on pressure? Is there an indication of when/if they are actuated?	Richard Rodriquez	The PRVs have been set to actuate when fire flow conditions arise. A sentence has been added that reads as such, "The PRVs that connect similar pressure zones have been set to allow for flow through the valves under fire flow conditions and do not actuate under normal operating conditions." The District is not notified when they are actuated.		Same as above, with no indication of when/if the PRV is actuated, this could trigger additional monitoring requirements.	See response above for references in document. The District intends to work with DOH to develop a plan to address the issue of treated and untreated water mixing when a PRV is actuated.
11			Table 3-5 appears to indicate static pressures at the PRVs; are the static pressures at nearby connections high in these areas as well?	Richard Rodriquez	Yes, the static pressures are high in the nearby areas. And, individual PRVs are required in areas where 80 psi and over are located. No additional text added to the Plan.			
12		Appendix G	I assume that the hydraulic analysis in Appendix G is a summary/condensed version of the entire hydraulic analysis as there is very limited information? Does the district own and maintain the hydraulic model or is that kept by PACE? Was the hydraulic model calibrated with field tests?	Richard Rodriquez	Yes, Appendix G is a summary/condensed version of the hydraulic model. It shows the results of the tests and scenarios required from the DOH Design Manual. PACE maintains the District's model and regularly updates it with new DEs. Recently PACE updated the PRVs with survey data and new settings. The model output is regularly confirmed with field staff for consistency with actual field conditions.			
13			Are there any requirements on the individual booster pump stations – does the district review all designs or require any backflow prevention devices on these connections?	Richard Rodriquez	The District requires backflow prevention devices on all individual booster pump stations. The District requires all new and upgraded commercial sites to include RPBAs. No additional updates to the Plan are provided.			

No.	Dwg. Sheet No. / Spec. & Page No.	Sector / Paragraph No.	Comment	Reviewer last name or agency	Response	Responder	2nd Round Comment	2nd Round Response
14		Appendix G	Section 6.6.3.4. does the local fire authority have any comment regarding the lack of available fire flow in the industrial area? It also appears that only fire flow of 500 gpm was included in the modeling, yet it appears that there are some areas of the system that have much higher fire flow requirements; please comment.	Richard Rodriquez	The model was ran again with fireflows corresponding to the land use zoning (4500 gpm in industrial, 2500 gpm in commercial, and 1000 in residential). New tables are provided in the Appendix G. Lack of fire flow in small areas are a concern for the District and upsizing the pipes to provide more flow is a priority for the District.	Paul	Velocities over 8 fps? Text does not match App G	Section 6.7.3.3 has been modified to read as the following: *Generally, any pipe which currently has high flow velocities will have increased flow velocity in future PHD planning years, therefore, no other year was reviewed. As a conservative measure, sections of pipe with velocities over 8 fps were first analyzed using 2040 PHD's. The results indicated that there are few pipes that exceed velocities of 8 fps in the system distribution mains – see Appendix G in Table G-7. These pipes primarily are small diameter pipes and will be included in the small main replacement program. Two other pipes of sizes 10 and 12 inch are in the vicinity of the Clearview Elevated Tank and will be reviewed to determine if further evaluation is necessary.*
15		Appendix F	We don't have any WUE reports in our database since 2018; it appears that the reports for 2019 and 2020 have not been submitted/received.	Richard Rodriquez	The District has submitted these reports to DOH and has included the info in appendix F.			
16			What is the status of the District's well head protection program? When was the last time that notices were sent out to landowners within the time of travel radii? What other measures are in place for well head protection?	Richard Rodriquez	The Wellhead Protection Plan will be updated upon approval of the Water System Plan. The District has not sent anything out to landowners since the completion of the Wellhead Protection Plan. No additional update included in Plan		WAC 246-290-135 (3)(c)(iii), inventory list is required to be updated every 2 years. Also recommended that notifications be sent out again as land owners can/do change.	Noted, the District intends to review and complete this process very soon.
17			The plan shows a large employment population, 8400+ that does not appear to be reflected in monitoring plans and does not match what is in our Sentry database. To update your population, we ask that the non-residential population included in the plan also be used to update the Water Facilities Inventory (WFI) form (Appendix A) in boxes 31 and 32 of the form, which will then be used to update Sentry. If you can, you should try to not include any individual already accounted for in your full-time population as this can have an impact on your water quality monitoring requirements.	Richard Rodriquez	The District believes that an estimated 10% of the residential population will remain in the District boundary as "non-residential" users of the District's water. Therefore we have subtracted this value from the District's employment values and provided this in the WFI. For example, in 2020 we have 8567 Employees and 22,312 residential persons according to the Planning Values from the Water System Plan. That is 2,231 persons that should not be double counted, so therefore, of the 8567 employees, 6,336 would come from outside of the District. 6,336 will be included on line 32 of the WFI for a 2020 WFI. This methodology will be used for calculating this value in the future.			
18		Appendix I	We did not see copies of any water quality monitoring plans (coliform, E. coli response, DBP, lead/copper, etc). Please submit copies of these plans.	Richard Rodriquez	The latest Coliform Monitoring Plan has been included in Appendix I. Also, we have inlcuded the water quality report from City of Everett since they test the water we pull from them. We have included the testing frequencies in Table 8-2.		Table 8-2 references the DBP monitoring plan, but it is not provided. Also, does the district participate in the Everett regional LCR monitoring or do they monitor separately? We'll also need an updated CMP once the 10 additional sample sites have been added. And it appears that the e. Coli response portion of the plan is still blank.	The District will provide an updated Coliform Monitoring Plan when the additional sites are set.
19		Appendix L	Have you adopted the Water Main Break Response Protocol for Chlorinated Systems (DOH Publication 331-583)? Please note, that main break response in the unchlorinated portion of the system would be handled differently. Your response plan should address these areas separately.	Richard Rodriquez	The District's water main break response SOP is now included in Appendix L.		Unchlorinated portions are treated differently, all breaks are of high concern.	The District has updated their watermain break protocol. Appendix L has been updated to include this.

No.	Dwg. Sheet No. / Spec. & Page No.	Sector / Paragraph No.	Comment	Reviewer last name or agency	Response	Responder	2nd Round Comment	2nd Round Response
20			Has the district developed a staffing plan and/or evaluated staffing levels to ensure adequate numbers of operators? How is O&M for Clearview tracked/performed and who is responsible. Are there any duties that the district performs for Clearview?	Richard Rodriquez	Alderwood operates and administers Clearview. The District maintains the pipeline and reservoir within the District's service area. The District continues to monitor staffing levels and ensure the staff level is appropriate to the work level. No additional updates to the Plan are included.			
21	Page 8-5	8.6.3	Section 8.6, recommend also including routine schedules for inspecting the tops of the storage tanks as well as vents, hatches, etc. Does the district have a standard tank cleaning schedule? Once every 5 years is the general industry standard. Is there any standard schedule for main flushing of non-dead-end mains? Is unidirectional flushing used/practiced with main flushing?	Richard Rodriquez	Language has been added to 8.6 for inspection of storage tanks. The District does have a tank cleaning schedule, a main flushing schedule, and unidirectional flushing is used when flushing.			
22			Cross connection control program: does anyone CCS have the lead responsibility for the CCC Program or is it shared equally? How many district-owned devices are there and who does the testing. Does the district have a specific program for tracking testing of installed devices? For the unchlorinated portion of your system, are there any specific cross connection control policies in place? For example, the Mountain View Edgewood Water Co in Pierce County is a large unchlorinated system (~4,000 connections) that has very progressive policies related to cross connection control that support their efforts to	Richard Rodriquez	Lead - Dave; 16 Devices, privately tested; BSI Online tracks the data; No policies are provided in the unchlorinated portions of our system. The District is diligent in coordinating with the customers in the untreated portion of the District. No additional updates to the Plan are included.			
23			Do you retain Construction Completion Reports for all distribution main replacements and extensions?	Richard Rodriquez	Yes, all reports are maintained at the District.			
24		Appendix L	We did not find any standard specs for water main installation, including disinfection, pressure testing, bacteriological testing. Also, do the District's standards include specific procedures for handling of AC pipes? In the standard plans, on the detail for the air-vac valve assembly, we do not recommend the type with a weephole due to sanitary issues.	Richard Rodriquez	The District includes water main installation, disinfection, pressure testing and bacteriological testing within the standard specifications. The appendix has been updated to include a link to the District's website where the standards, specifications, etc. are located. The District has updated the standards to not include the			
25			Has the District implemented elements of an asset management (AM) program?	Richard Rodriquez	Not officially, but the District has a small main, ac main replacement, and a prv maintenance program etc. No additional updates are included in the Plan.			
26		Appendix C	Is a new updated franchise agreement with the county needed? The copy provided indicated it was good for a period of 25 years and was signed in 1994.	Richard Rodriquez	The franchise agreement has been updated. The appendix C has been updated to include this.			
27		Appendix G	Please provide a summary that clearly relates the deficiencies identified in the hydraulic modeling with specific CIP projects or identify those in the CIP table.	Richard Rodriquez	A map has been provided in Appendix G that includes a map of the deficiences along with the CIP projects.			
28		Appendix B	The WSP contains a signed SEPA Checklist. Provide a signed SEPA Threshold Determination with the final WSP.	Richard Rodriquez	Appendix B has been modified to include the Signed DNS.			
29			The water system must meet the consumer input process outlined in WAC 246-290-100(8). Please include documentation of a consumer meeting discussing the WSP, prior to DOH approval of the WSP.	Richard Rodriquez	The consumer input process has been met. Documentation is included in appendix E			
30			Prior to DOH approval, the water system's governing body must approve and adopt the WSP.	Richard Rodriquez	The board has approvided and adopted the WSP. Documentation is included in Appendix B.			
31		Appendix E	Please provide copies of any comments made by adjacent purveyors or other interested parties along with the (water system's) response to those comments.	Richard Rodriquez	Copy of this review comment/response form is included in Appendix E			
32			Is the District a member of WAWARN?	Richard Rodriquez	Yes. No additional information is provided in the Plan.			

No.	Dwg. Sheet No. / Spec. & Page No.	Sector / Paragraph No.	Comment	Reviewer last name or agency	Response	Responder	2nd Round Comment	2nd Round Response
Department of Ecology								
1			In reviewing the Existing Water System, Chapter 3, a source of supply was identified that does not appear to be authorized by Cross Valley's portfolio of water rights. All sources must be recognized by a water right. Well 7B does not appear to be an authorized point of withdrawal for G1-23697, as suggested by the Water Right Self-Assessment (Appendix D). As Well 7B is located within the published area of G1-23697 and withdraws from the same source, a Showing of Compliance with RCW 90.44.100(3) may be submitted to add Well 7B as a point of withdrawal for G1-23697. Based on our review, we recommend that Cross Valley discuss their options for	Andrea Lauden	The District has discussed this with Andrea Lauden at Ecology. The District is submitting all the documents necessary for the approval of well 7B as an authorized point of withdrawal.			
2		Appendix D	In the water rights documentation presented in the Water Rights Self-Assessment (Appendix D), an incorrect relationship between those water rights which are additive and those which are non-additive, historically referred to as "supplemental", was identified. The designation of additive/non-additive within a portfolio of water rights is critical. Additive rights increase the capacity of the water system, whereas non-additive rights typically add operational flexibility between well fields or wells. Please be advised that often the additive/non-additive relationship is expressed in documents preceding the water right certificate. The correct relationship between Cross Valley's portfolio of water rights appears to be documented in the Report of Examination for G1-25582. Please see Table 1, under General Information below, for	Andrea Lauden	The Water Right Self-Assessment has been modified accordingly.			
3			Please note that, as a provision of permit G1-25582 added in a permit extension dated November 9, 2004, Cross Valley is required to record weekly water use data and maintain records in order to facilitate prompt submittal of monthly water use data to Ecology by January 31 of the following year. Annual total water use data, in lieu of monthly water use data, was reported for 2020 and 2021. Additionally, a provision of Permit G1-25582 required Cross Valley to collect and report monthly static water level data for wells #5, 6, and 10. These data were not submitted with the annual reporting for 2020 or 2021. I perform metering and provision tracking work in your area and will reach out to you to offer technical assistance, as applicable, and setup a schedule for	Andrea Lauden	The District has been coordinating with Ecology to assure proper reporting is occuring. The District is updating their reporting to monthly. No additional detail in the Plan is provided.			
4		Appendix D	Please see Table 1 below for a comprehensive list of Cross Valley's water rights and their respective relationships and limitations as understood by Ecology. Please note that the water rights summarized here DO NOT AGREE with the Cross Valley Water Right Self-Assessment (Appendix D), dated March 15, 2022.	Andrea Lauden	The Water Right Self-Assessment has been modified accordingly.			
5		Appendix D	Source, Qi, and Qa of Certificates G1-00594 and G1-22043 were not identified in the Water Right Self-Assessment and should be included. The point of withdrawal for G1-00594 was the source for Mount Forest Water Company, which was acquired by Cross Valley in 1977, and does not appear to describe an existing Cross Valley source.	Andrea Lauden	The Water Right Self-Assessment has been modified accordingly.			
6			Well 10 does not appear to be identified by an Ecology well tag number. If Well 10 does not have an Ecology well tag in order to meet the requirements of WAC 173-160-311, then Cross Valley should contact Ecology's well construction and licensing support staff, Tara Roberts, at tara.roberts@ecy.wa.gov or 360-407-6650 to properly tag Well 10.	Andrea Lauden	The District is in the process of tagging the Well. According to Ecology's Andrea Lauden, since the District has begun the process of rectifiying this issue, this should not hold up the approval of the Plan.			

No.	Dwg. Sheet No. / Spec. & Page No.	Sector / Paragraph No.	Comment	Reviewer last name or agency	Response	Responder	2nd Round Comment	2nd Round Response
7			*Permit G1-25582 states, "total acre-feet per year from all sources shall not exceed 4605 acre-feet per year." This permit was issued in 1993, before Cross Valley acquired the Woodlane Well and assumed Woodland Water Company in 1994. This provision therefore did not account for the acquisition of Certificate G1-23131 (37 ac-ft/yr) and thus the total approved annual quantity is 4,642 ac-ft/yr, not 4,605 ac-ft/yr. The total instantaneous rate and annual quantity under all rights is	Andrea Lauden	The Water Right Self-Assessment has been modified accordingly.			

Table 1. Existing Water Rights

Water Right	Priority Date	Source Name	Instantaneous Rate (gpm)		Annual Quantity (ac-ft/yr)	
			Additive	Non-Additive	Additive	Non-Additive
GWC 6472 (G1-*08872)	7/31/1967	Well 1 (AGB982)	160		250	
GWC 7424 (G1-*11000)	6/24/1970	Well 3 (AGB986)	400		400	
G1-00594	9/26/1969	Unknown Well (Mount Forest)	110		88	
G1-20550	4/12/1973	Well 5 (AGB998)	500		400	
G1-22043	8/12/1974	Well 7A (AGB989)	55	110		88
G1-22974	10/5/1977	Well 6 (AGB984)	900		1,200	
G1-23131	6/1/1978	Woodlane (AGB985)	40		37	
G1-23697	10/20/1980	Wells 7 (AGB989) and 7A (AGB988)	700		659	
G1-24816	4/21/1986	Well 8 (AGB987)	500		600	
G1-24906	10/3/1986	Well 9 (AGB999)	900		1,008	
G1-25582 (permit)	12/11/1989	Well 10 (?)	700			784
		TOTALS:	4,965		4,642*	

gpm = Gallons per Minute; ac-ft/yr = Acre-feet per Year

Cross Valley
WATER DISTRICT

Water System Plan
Cross Valley Water District

Appendix F
WUE and Public Education

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Chapter 5. Water Use Efficiency Program

5.1 Introduction

This chapter has four purposes:

1. Review compliance with conservation planning requirements.
2. Describe historical conservation measures.
3. Document historical conservation savings.
4. Describe the water use efficiency (WUE) program that will be implemented in the Everett Water Service Area (EWSA) from 2020 through 2029.

Everett has a long-standing commitment to water conservation. Everett's conservation program began in the early 1980s and has evolved significantly since then.

Everett administers both a regional conservation program implemented throughout the EWSA, as well as conservation elements that pertain exclusively to the Everett retail service area. The goal of these conservation efforts is to maximize benefits of the Sultan River resource by encouraging efficient use of water.

The conservation program was expanded as part of the *2000 CWP*, when a rigorous least-cost analysis was conducted. A committee of Everett staff and wholesale water customers evaluated over 20 potential demand-side measures that could be implemented regionally. Based on cost-effectiveness, market potential, consumer acceptance and other criteria, additional elements were added to the program that significantly strengthened the conservation effort. Similar analyses were repeated during the development of the *2007 CWP* and the *2014 Addendum to the 2007 CWP*.

As part of the 2020 CWP, a progressive conservation program for the next 10 years has been developed through a collaborative process involving Everett staff, wholesale water customers, and the Everett City Council. This program builds on the success of the previous conservation efforts and focuses on activities that meet or exceed Washington State's WUE program requirements, while dedicating a level of investment that is in line with the economic abilities of the water system.

5.2 Objectives/Goals

Everett enjoys an abundance of water with a delivery system that is capable of meeting the near-term water demand in the EWSA with relatively modest capital improvements. Although there is little financial motivation for conducting an aggressive water conservation program, the City and its wholesale customers support stewardship of regional water resources, and also must comply with State WUE requirements. This includes providing financial support for activities that promote water conservation and assisting consumers with installing measures that increase end-use water efficiency which demonstrate the City's support of these objectives. The goal of the 2020-2029 regional water conservation program is to reduce the regional demand for water, based on typical current consumption volumes, by approximately 1.4 MGD on an annual basis by the end of 2029.

5.3 Compliance with Water Use Efficiency Planning Requirements

As part of the 2003 Municipal Water Law, the Washington State Legislature directed the DOH to adopt an enforceable WUE program. This program became effective January 2007 and is administered by the Office of Drinking Water. The WUE program is intended to achieve a consistently high level of stewardship by incorporating water use efficiency into the water system planning process. The specific requirements are found in WAC 246-290, the Third Edition of the Water Use Efficiency Guidebook (DOH 331-375), and the DOH Water System Planning Handbook (update pending). To summarize, municipal water suppliers must:

- Publicly establish water savings goals.
- Evaluate or implement water-saving measures to achieve the goals.
- Develop and implement a WUE program to support the established goals.
- Report annually on the progress towards achieving the goals.
- Achieve a standard of no more than 10 percent water loss.

The requirements are intended to support the goal of ensuring safe and reliable drinking water by contributing to long-term water system reliability and public health protection, promoting good stewardship of water resources and ensuring the efficient operation and management of water systems.

There are seven main categories of WUE requirements:

1. water meters
2. data collection
3. demand forecasting
4. WUE program
5. distribution system leakage
6. goal setting and public forum
7. annual WUE reporting

Everett has been in, and remains in, compliance with the WUE requirements, with the exception of metering all service connections. Everett is actively installing meters on non-metered service connections and plans to complete the program by July 2021.

The remainder of this chapter addresses category 4, the WUE program, which has nine requirements:

1. Describe the WUE program
2. Estimate water savings
3. Identify goals
4. Evaluate conservation measures

5. Describe the next 10-year conservation program
6. Educate customers
7. Project water savings from measures
8. Evaluate program effectiveness
9. Estimate system leakage (Chapter 3)
10. Evaluate reclaimed water opportunities (Chapter 2)
11. Evaluate rate structure (Chapter 10)

5.4 Historical WUE Programs

The conservation measures evaluation conducted for the 2014 Comprehensive Water Plan resulted in the implementation of a number of measures, summarized in Table 5-1. For each measure, the table indicates the years implemented and whether the measure included Everett's wholesale customers. The details of measure implementation between 2014 and 2019 are discussed in the subsequent sections.

Table 5-1. 2014 - 2019 WUE Program Overview

Measure	Years Implemented						Included Wholesale Customers?
	2014	2015	2016	2017	2018	2019	
Public Education							
School Outreach	X	X	X	X	X	X	Yes
Speakers Bureau	X	X	X	X	X	X	No
Program Promotion	X	X	X	X	X	X	Yes
Theme Shows & Fairs	X	X	X	X	X	X	No
Incentives/Measures							
Indoor Kits							
Showerheads	X	X	X	X	X	X	Yes
Bathroom Faucet Aerators	X	X	X	X	X	X	Yes
Kitchen Faucet Aerators	X	X	X	X	X	X	Yes
Toilet Leak Detection Strips	X	X	X	X	X	X	Yes
Outdoor Kits and Watering Timers	X	X	X	X	X	X	Yes
ICI Audits			X	X	X		Yes
Miscellaneous [a]	X	X	X	X	X	X	Yes

[a] This category refers to costs that do not fit in any other category. Expenditures in this category were $2,500 each year.

5.4.1 WUE Program Measures (2014 – Present)

Public Education

This measure includes education programs targeted to increase awareness of local water resources and encourage water conservation practices.

School Outreach

Everett's school outreach program consists of classroom presentations, teacher workshops, and classroom educational materials, all of which are made available throughout the EWSA.

Everett's classroom presentations are facilitated by trained instructors with curriculum designed for elementary, middle, and high school students. The presentations are marketed to teachers through newsletters and other communications. The presentations were redesigned in recent years to keep content fresh and relevant. This has resulted in a significant increase in the number of presentations.

Everett has offered teacher workshops to assist teachers in educating students about water resource issues, including conservation. Teachers participate in activities, experiments, and field trips and can receive continuing education credits or clock hours.

Everett provides teachers with a broad collection of classroom educational materials pertaining to water use efficiency including books, videos, posters, and other supplies.

Speakers Bureau

Everett provides staff to groups requesting presentations on water resource issues, including conservation. Everett offers this service exclusively in its retail service area.

Program Promotion

Everett publicizes the need for water conservation through television and radio public service announcements, news articles, public water system bill inserts, and other means.

In addition to program-specific outreach, Everett engages in general program promotion intended to build and reinforce a water conservation ethic among customers throughout the EWSA.

Everett has developed and distributes several educational brochures. For example, the "Everyday Conservation" brochure provides conservation tips for inside and outside the home, the "Smart Watering" brochure contains information on efficient lawn and garden watering techniques, and the "Growing Healthy Soil" brochure has information on how soil can be improved as a means to reduce watering.

Everett develops and distributes approximately 150,000 summer watering calendars each year in the EWSA that encourages residential customers to water every third day (staggered, based on their street address). This effort can help to reduce the daily peak demand for water in the summer by reducing the amount of watering that occurs on a given day.

In terms of marketing efforts, Everett has used transit advertising to help convey conservation messaging. Billboards promoting various conservation themes have been posted on buses during the summer months when demand peaks. It is estimated these billboards are seen by over 75 percent of the residents of the EWSA each year. Since 2003, Everett has also participated in tri-county (Snohomish, King, and Pierce) water conservation marketing campaigns which included radio and/or television messages.

Theme Shows and Fairs

Everett exhibits displays, along with other education materials, at a variety of special events within its retail service area.

INDOOR KITS

Indoor kits contain easily installed water saving devices for single-family residential homes. Owners and managers of apartment buildings and condominiums can also receive indoor kits.

Everett has offered free indoor water conservation kits to residential customers throughout the EWSA since 2001. The kits are marketed through advertisements in local newspapers and bill inserts. From 2001 to 2003, the indoor kits were only distributed to Class A water systems in the EWSA due to the limited number of the kits. Since 2004, the kits have also been distributed to Class B systems.

This measure applies to the single family and multifamily sectors. It is assumed that 75 percent of customers targeted are single family, and 25 percent are multifamily. Indoor kits are free to customers and currently include 1.75 gpm showerheads, 1.0 gpm bathroom faucet aerators, a brochure and thread seal tape. Additionally, 1.5 gpm kitchen faucet aerators and toilet leak detection dye strips are offered separate from the packaged indoor kits. The showerheads, bathroom faucet aerators, and kitchen faucet aerators are more efficient than the maximum allowed under the plumbing code. As such, indoor kits are distributed to both existing and new customers.

Outdoor Kits

Since 2001, Everett has offered free outdoor conservation kits to residential customers throughout the EWSA. This measure applies to the single family sector, both existing and new customers. Outdoor kits are designed to encourage consumers to reduce watering and other outdoor water use. The free outdoor irrigation kits include devices and information to improve the irrigation efficiency of residential customers that manually irrigate their landscaping (e.g. spring-loaded hose nozzle, rain gauge, hose washers, conservation brochure). Most recently, the outdoor kits consisted of three items that can be distributed in any combination based on individual customer need, to reduce the possibility of parts not being used. These include a hose nozzle, a moisture meter, and a watering timer with shut-off device.

Industrial/Commercial/Institutional Indoor and Outdoor Audits

This measure provides free indoor and outdoor audits to large volume industrial, commercial, and institutional (ICI) customers to determine efficiencies that could be achieved through hardware improvements, operational changes, or irrigation efficiency improvements. This measure targets ICI customers who consume several million gallons of water each year. There is no exact volume of water that denotes a "large volume ICI customer," and a customer's eligibility for this measure is determined at Everett's discretion. The audits are performed by a contracted professional auditor.

Other Incentives and Miscellaneous Measures

This measure allows for special water conservation projects and/or possible incentives for the large customer audit program. Opportunities to adopt other incentives and miscellaneous measures are evaluated on an individual basis and with respect to the available funds over the program period.

5.5 Historical Conservation Savings

The conservation savings Everett achieved between 2014 and 2019 are shown in Table 5-2. As of the end of 2019, it was estimated that these measures collectively saved about 1.08 MGD over the six year period. These numbers were compiled by Everett staff based on conservation program planning and empirical data. Additionally, savings related to the plumbing code requirements continued over this period as older, fixtures were replaced at the end of their useful lives by more efficient models. These savings are considered incidental to the water use efficiency program, and are not reflected in the 1.08 MGD total listed in the table.

Table 5-2. Estimated Savings From 2014-2019 (MGD)

Measure	2014	2015	2016	2017	2018	2019	Total
Education	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Indoor Kits	0.02	0.05	0.04	0.04	0.06	0.04	0.25
Outdoor Kits	0.02	0.02	0.02	0.02	0.03	0.03	0.14
ICI Audits	-	-	0.04	0.05	0.00	-	0.09
Miscellaneous [a]	-	-	-	-	-	-	-
Totals	**0.64**	**0.67**	**0.70**	**0.71**	**0.69**	**0.67**	**1.08**
Cumulative Totals	-	0.71	0.81	0.92	1.01	1.08	

[a] No direct savings attributed to the "Miscellaneous" category but remains in the table since costs were incurred under the category.

5.6 Water Use Efficiency Program for 2020 – 2029

A water use efficiency program for Everett for the next 10 years was developed based on an evaluation of various measures and analyses of associated costs and water savings. The following sections describe the analyses which informed development of the 2020-2029 water use efficiency program. A summary of the program is presented in Section 5.6.3.

5.6.1 Avoided Cost of Supply Analysis

When water is saved through efficiency and conservation, certain costs associated with the water and wastewater systems are avoided. These can include operational costs such as chemical costs associated with water and wastewater treatment, energy costs associated with pumping drinking water and wastewater, as well as capital costs associated with expanding the capacity of facilities to convey higher volumes of water or wastewater. Collectively these are termed "avoided costs of supply." Conservation measures where the cost of implementation is below the avoided cost of supply are considered cost-effective.

The total potential avoided cost of supply due to conservation is $0.41 per ccf. This represents the potential savings Everett could realize for each unit of water not supplied if water use efficiency and conservation efforts result in avoided capital projects and operational expenses. A technical memorandum detailing the information gathered, the analysis methodology, and the results of the avoided cost of supply analysis is included in Appendix K.

5.6.2 Conservation Measure Analysis

An analysis of several measures was conducted to include updated demographic information and revise savings estimates of measures previously employed in the conservation program. The

analysis included consideration of demographics, participation rates, estimated water savings, and implementation costs. The analysis included 16 measures, applied to the single family, multifamily, and ICI sectors as appropriate, shown in Table 5-3. All conservation measures in the current program were reanalyzed (except education, which is not analyzed in the model). Note that this was not an exhaustive analysis of all potential measures, but rather a focused analysis of measures considered applicable to Everett and its wholesale customers.

Table 5-3. Conservation Measures Analyzed

Measure	Single Family	Multifamily	ICI
Toilets - leak detection	X	X	X
Showerheads – 1.75 gpm	X	X	
Showerheads – 1.5 gpm	X	X	
Faucet aerators bathroom - 1.0 gpm	X	X	
Faucet aerators bathroom - 0.5 gpm			X
Faucet aerators kitchen – 1.5 gpm	X	X	
Clothes washers - residential capacity (in common areas)		X	
Clothes washers - commercial capacity (in Laundromat)			X
Outdoor Irrigation Kits	X	X	
Combined Indoor and Outdoor Audit			X
Irrigation Systems - school audits only			X

The measures were analyzed for both the 10-year and 20-year planning periods associated with this CWP. A summary of the results for the 10-year planning period, which is most applicable to Everett's conservation program for 2020-2029, is shown in Table 5-4. A technical memorandum discussing data inputs, measure definitions, analysis methodology, assumptions, and detailed results for both the 10-year and 20-year planning periods is included in Appendix L.

Table 5-4. Summary of Conservation Measure Analysis for the 10-Year Planning Period

	Conservation Measure	Savings Generating Customers	Savings		Direct Costs	
			Annual Average GPD at Full Implementation	CCF Over Measure Life	Total Cost Over Plan Period	Cost per CCF Saved Over Measure Life
Single Family	Toilets - leak detection	6,148	111,894	496,864	$9,594	$0.02
	Showerheads – 1.75 gpm	7,546	45,276	220,925	$86,140	$0.39
	Showerheads – 1.5 gpm	4,611	37,810	175,277	$57,500	$0.33
	Faucet aerators bathroom - 1.0 gpm	8,384	51,981	253,634	$16,770	$0.07
	Faucet aerators kitchen – 1.5 gpm	8,384	34,386	167,782	$55,890	$0.33
	Outdoor Irrigation Kits	3,029	2,312	10,264	$52,806	$5.14
Multifamily	Toilets - leak detection	6,905	94,608	420,107	$7,176	$0.02
	Showerheads – 1.75 gpm	9,854	44,356	216,451	$57,720	$0.27
	Showerheads – 1.5 gpm	5,179	31,599	146,476	$31,230	$0.21
	Faucet aerators bathroom - 1.0 gpm	9,351	43,963	214,523	$18,700	$0.09
	Faucet aerators kitchen – 1.5 gpm	9,351	29,001	141,515	$62,340	$0.44
	Clothes washers - residential capacity (in common area)	1,324	13,374	76,356	$28,470	$0.37
	Outdoor Irrigation Kits	927	161	713	$19,994	$28.04
Commercial	Toilets - leak detection	181	40,725	180,840	$4,459	$0.02
	Faucet aerators bathroom - 0.5 gpm	1,526	67,754	297,607	$10,680	$0.04
	Clothes washers - commercial capacity (in Laundromat)	4	5,376	30,693	$6,910	$0.23
	Combined Indoor and Outdoor Audit[1]	3	46,554	113,582	$10,650	$0.09
	Irrigation Systems - school audits only	7	2,449	11,524	$6,750	$0.59

5.6.3 2020 – 2029 Conservation Program

The conservation program for 2020 – 2029 was developed using detailed conservation measure analyses along with other considerations such as conservation drivers, budgetary constraints, and success of prior programs. It will continue the efforts of the prior program with minor changes as described in the measure descriptions below. The general premise in establishing the program was to select a suite of measures that would: 1) provide assistance to all water use sectors, 2) select measures with implementation costs that are within a reasonable range of Everett's avoided cost of supply, 3) have annual budgets similar to current conservation program expenditures, and 4) contain at least the minimum number of required measure under the WUE rule.

The conservation program for 2020 – 2029 consists of the following five categories:

Education

Measures in this category are a continuation of the EWUC's current educational efforts described in Section 5.4.1. The savings associated with education measures are estimated to be approximately one percent of the forecasted demand without conservation for each year. Note that the savings in this category are not cumulative over the ten-year period since a continuous effort must be made in order to maintain the savings each year. The budget for education is based on prior program costs, with a modest increase due to inflation and other increased costs.

Indoor Measures

Measures in this category apply to the single family and multifamily sectors. It is assumed that 75 percent of customers targeted are single family, and 25 percent are multifamily. Indoor measures are free to the customer and include 1.75 gpm showerheads, 1.0 gpm bathroom faucet aerators, a brochure and thread seal tape. Additionally, 1.5 gpm kitchen faucet aerators and toilet lead detection dye strips are offered separate from the packaged indoor kits. The showerheads, bathroom faucet aerators, and kitchen faucet aerators are more efficient than the maximum allowed under the plumbing code. As such, indoor measures will be distributed to both existing and new customers.

The conservation measure analysis noted that leak detection and repair is the most significant indoor conservation measure in terms of both savings and cost effectiveness. Therefore, Everett will place greater emphasis on providing information to customer regarding toilet leaks in the 2020-2029 program.

Outdoor Measures

This measure category applies to the single-family sector, both existing and new customers. These are free outdoor irrigation fixtures with devices and information to improve the irrigation efficiency of residential customers that manually irrigate their landscaping. The kits typically include a spring-loaded hose nozzle. Moisture meters and watering timers are also made available. Watering guides and conservation brochures are offered online and at the utility counter during spring and summer months to distribute to customers along with the devices.

ICI Indoor and Outdoor Audits

This measure provides free indoor and outdoor audits to large ICI customers to determine water use efficiency that could be achieved through hardware improvements, operational changes, or irrigation efficiency improvements. This measure targets large water users as defined in the ICI audit description in Section 5.4.1. The audits will be performed by a professional auditor contracted with Everett.

Other Incentives and Miscellaneous Measures

This category allows for special water conservation projects and/or incentives for the high-volume water use customers. Other incentives and miscellaneous measure opportunities which may arise over the next 10 years can be evaluated for implementation on an individual basis and with respect to available program funds.

Summary of 2020 – 2029 Program

The estimated number of units (e.g. fixtures, devices, audits), annual program budget, and estimated water savings for the 2020 – 2029 conservation program are summarized in Table 5-5. This table represents the overall planning goals for the conservation program. Approximately $226,000 per year will be budgeted for regional water conservation activities. However, annual budgets and units distributed to customers may vary year to year.

Table 5-5. Annual and Total Budget and Estimated Savings for the 2020-2029 Water Use Efficiency Program

Measures	Annual			Program Totals		
	Units	Budget	Savings (MGD)	Units	Budget	MGD Saved
Education	-	$165,000	0.60	-	$1,650,000	0.60
Indoor Measures	3,000	$32,000	0.06	30,000	$320,000	0.60
Outdoor Measures	4,000	$40,000	0.02	40,000	$400,000	0.20
ICI Audits	2	$6,000	0.04	20	$60,000	0.40
Miscellaneous	-	$25,000	-	-	$250,000	-
Totals	**-**	**$268,000**	**0.72**	**-**	**$2,680,000**	**2.0**

CROSS VALLEY WATER DISTRICT
WATER USE REPORT THROUGH 12/31/2019

Water Pumped From Wells in Cubic Feet:

1	-
3	3,201,880
5	106,490
6	4,026,800
7	2,421,870
7A	-
7B	5,344,428
8	3,384,760
9	18,491,000
10	7,780,100
Woodlane	1,398,545
Cubic Feet	46,155,873
Gallons	345,245,930

Water Purchased From City of Everett:

Water Purchased From Silverlake:

	They Billed	Our Read
CWSA Group Res Meter	23,316,500	23,505,200
CWSA Fobes Meter	2,358,400	2,380,300
CWSA Lowell Meter	6,470,947	6,549,607
Fobes Old	2,486,600	2,806,279
Skipley	2,982,700	3,559,192
Mountain View Terrace	-	-
Swans Trail	-	-
Marshland/Lowell Larimer	1,137,700	1,363,247
Seattle Hill	13,530	13,530
Cubic Feet	38,766,377	40,177,355
Gallons	289,972,500	300,526,615

Water Sold to CVWD Customers:

CWSA Group Res Meter	14,426,469
CWSA Fobes Meter	981,161
CWSA Lowell Meter	6,582,639
Fobes Old	2,937,463
Skipley	572,842
Mountain View Terrace	-
Swans Trail	2,802,944
Marshland/Lowell Larimer	824,483
CVWD Wells	44,095,825
Detector Checks	10,096
Cross Valley	7,657
F/H use	277,052
Cubic Feet	73,518,631
Gallons	549,919,360

Authorized Water Use

Hydrant Flushing/CL2	4,957,681
Fire Department	655
WTP Backwash/telemetry	300,100
Cubic Feet	5,258,436
Gallons	39,333,101

Water Purchased/Pumped Cubic Feet		**84,922,250**	635,218,430
Water Sold Cubic Feet		**73,518,631**	549,919,360
Authorized Water Use		**5,258,436**	39,333,101
Unnaccounted for water/leakage	**Cubic Feet**	**6,145,183**	**8%**
	Gallons	**45,965,969**	

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CROSS VALLEY WATER DISTRICT
WATER USE REPORT THROUGH 12/31/2020

Water Pumped From Wells in Cubic Feet:

1	-
3	3,373,580
5	128,750
6	4,318,800
7	4,126,720
7A	-
7B	2,399,335
8	3,689,000
9	19,042,030
10	9,266,200
Woodlane	1,083,409
Cubic Feet	47,427,824
Gallons	354,760,124

Water Purchased From City of Everett:

Water Purchased From Silverlake:

	They Billed	Our Read
CWSA Group Res Meter	21,097,767	20,939,100
CWSA Fobes Meter	2,592,386	2,553,500
CWSA Lowell Meter	7,001,803	6,958,139
Fobes Old	3,101,300	2,974,162
Skipley	3,768,500	3,411,702
Mountain View Terrace	-	-
Swans Trail	-	-
Marshland/Lowell Larimer	1,423,400	1,470,235
Seattle Hill	3,544	3,225
Cubic Feet	38,988,700	38,310,063
Gallons	291,635,476	286,559,271

Water Sold to CVWD Customers:

CWSA Group Res Meter	14,246,676
CWSA Fobes Meter	967,284
CWSA Lowell Meter	6,566,092
Fobes Old	3,001,378
Skipley	1,055,368
Mountain View Terrace	-
Swans Trail	2,258,507
Marshland/Lowell Larimer	693,413
CVWD Wells	42,799,728
Detector Checks	6,659
Cross Valley	6,485
F/H use	338,260
Cubic Feet	71,939,850
Gallons	538,110,078

Authorized Water Use

Hydrant Flushing/CL2	5,846,359
Fire Department	12,165
WTP Backwash/telemetry	1,271,630
Cubic Feet	7,130,154
Gallons	53,333,552

Water Purchased/Pumped Cubic Feet		86,416,524	646,395,600
Water Sold Cubic Feet		71,939,850	538,110,078
Authorized Water Use		7,130,154	53,333,552
Unnaccounted for water/leakage	Cubic Feet	7,346,520	9%
	Gallons	54,951,970	

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RESOLUTION NO. 2022-4-3

A RESOLUTION of the Board of Commissioners of Cross Valley Water District of Snohomish County, Washington, relating to the District's Water Use Efficiency Goals; repealing Resolution 2008-1-12; and amending Chapter 6.20 of the Cross Valley Water District Code.

WHEREAS, the District adopted Water Efficiency Goals in Resolution 2008-1-12 in accordance with the requirements of the State Department of Health; and

WHEREAS, the District has adopted and follows the City of Everett Water Use Efficiency Program as the District's water use efficiency program, which is included in the District's Comprehensive Water System Plan; and

WHEREAS, the District is updating its Water Comprehensive Plan, including the District's Water Efficiency Program, and advertised the proposed water use efficiency goals and program on the District's website and posted a notice at the District office on March 16, 2022 informing the public of the public hearing on April 19, 2022 for the proposed water use efficiency goals and program; and

WHEREAS, the District proposes to continue participation in the City of Everett's Regional Conservation Plan and Water Use Efficiency Program, which includes the following: a public education program, a leak detection program, home indoor conservation kits, outdoor conservation kits, a lawn watering schedule, and conservation pricing; and

WHEREAS, the District proposes to maintain a water distribution system leakage rate of less than 10 percent; and

WHEREAS, after considering any public input at the public hearing on the proposed water use efficiency goals and program, the District's Board of Commissioners have determined that the District's proposed water use efficiency goals and program should be approved; now, therefore

BE IT RESOLVED by the Board of Commissioners Cross Valley Water District of Snohomish County, Washington as follows:

Section 1. Chapter 6.20 of the Cross Valley Water District Code is amended to read as follows:

6.20 Water Use Efficiency Goals.

6.20.010 City of Everett Regional Conservation Plan/Water Efficiency Program.

The District shall participate in and follow the City of Everett's Water Use Efficiency Program, as now existing and as may be amended in the future, and which is adopted as an Appendix to the District's Water System Comprehensive Plan.

6.20.020 Water Distribution System Leakage Goal.

The District strives to maintain a water distribution system leakage rate of less than 10 percent.

Section 2. Resolution No. 2008-1-12 is repealed.

PASSED BY THE BOARD OF COMMISSIONERS of Cross Valley Water District of Snohomish County, Washington, at the regular meeting held April 19, 2022.

Dave Hutley, President

Ginger Desy, Vice President

Warren E. Schott Jr., Secretary

Cross Valley
WATER DISTRICT

Water System Plan
Cross Valley Water District

Appendix G
Modeling Info

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Table G-1 - Nodes with Pressures Under 30psi for 2020 Peak Hour Demand

Junction ID	Demand (gpm)	Elevation (ft)	HGL (ft)	Pressure (PSI)	Location*	Comment/Solution
J-2688	0.8	533.5	565.5	13.9	8626 180TH ST SE	Just Downstream of Vine Street Reservoir - No service
J-2700	0.8	532.3	565.6	14.4	8710 180TH ST SE	Just Downstream of Vine Street Reservoir - No service
J-708	0	585	629.8	19.4	191st and 80th	Just Downstream of Lee Forest Reservoir - No service
J-4742	0	585	630.1	19.5	191st and 80th	Just Downstream of Lee Forest Reservoir - No service
J-3070	2.4	240.1	306	28.5	72nd St Se and 85th	End of the line
J-700	0	562.5	628.5	28.6	197th and 80th	Just Downstream of Lee Forest Reservoir - No service

*Shaded entries signify a transmission main or an area next to a reservoir where there are no water services

Table G-2 - Nodes with Pressures Under 30psi for 2030 Peak Hour Demand

Junction ID	Demand (gpm)	Elevation (ft)	HGL (ft)	Pressure (PSI)	Location*	Comment/Solution
J-2688	0.9	533.5	565.5	13.9	8626 180TH ST SE	Just Downstream of Vine Street Reservoir - No service
J-2700	0.9	532.3	565.6	14.4	8710 180TH ST SE	Just Downstream of Vine Street Reservoir - No service
J-708	0	585	629.7	19.4	191st and 80th	Just Downstream of Lee Forest Reservoir - No service
J-4742	0	585	630.1	19.5	191st and 80th	Just Downstream of Lee Forest Reservoir - No service
J-3070	2.6	240.1	305.9	28.5	72nd St Se and 85th	End of the line
J-700	0	562.5	628.3	28.5	197th and 80th	Just Downstream of Lee Forest Reservoir - No service

*Shaded entries signify a transmission main or an area next to a reservoir where there are no water services

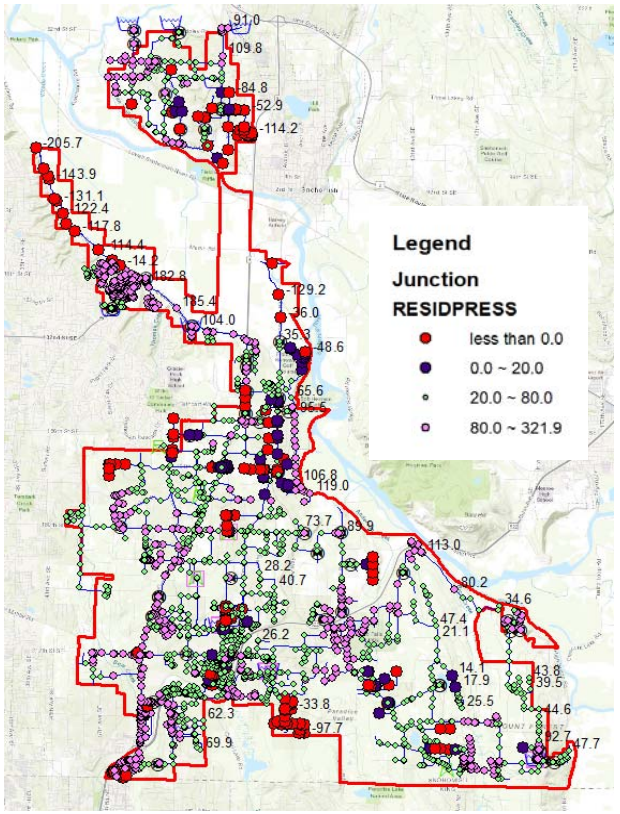
Table G-3 - Nodes with Pressures Under 30psi for 2040 Peak Hour Demand

Junction ID	Demand (gpm)	Elevation (ft)	HGL (ft)	Pressure (PSI)	Location*	Comment/Solution
J-2688	1	533.5	565.4	13.8	8626 180TH ST SE	Just Downstream of Vine Street Reservoir - No service
J-2700	1	532.3	565.4	14.3	8710 180TH ST SE	Just Downstream of Vine Street Reservoir - No service
J-708	0	585	629.4	19.2	191st and 80th	Just Downstream of Lee Forest Reservoir - No service
J-4742	0	585	629.9	19.5	191st and 80th	Just Downstream of Lee Forest Reservoir - No service
J-700	0	562.5	627.5	28.2	197th and 80th	Just Downstream of Lee Forest Reservoir - No service
J-3070	3.1	240.1	305.5	28.3	72nd St Se and 85th	End of the line

*Shaded entries signify a transmission main or an area next to a reservoir where there are no water services

Table G-4 - 2020 MDD Fireflow

Junction ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
J-2423	0	148.5	778.6	4,500.00	-1,684.30	1,114.90	20
J-5408	1	71.4	618.6	4,500.00	-1,240.90	1,252.70	20
J-2925	0	111.8	512.7	4,500.00	-1,131.20	1,427.60	20
J-2413	0	149.7	778.6	4,500.00	-978.1	1,461.60	20
J-2424	0	142.2	766.6	4,500.00	-564.5	1,788.60	20
J-3315	0	133.7	765.7	4,500.00	-542.2	1,762.30	20
J-2427	0	131.7	765.7	4,500.00	-540.8	1,751.20	20
J-2426	0	133.3	765.7	4,500.00	-540.3	1,762.30	20
J-2446	0	134.9	765	4,500.00	-540.1	1,770.10	20
J-60	0	155.3	507.5	4,500.00	-531.3	1,808.30	20
J-2447	0	132.3	765	4,500.00	-513.3	1,791.40	20
J-2452	1	132.3	764.9	4,500.00	-508.6	1,798.50	20
J-2467	0	127.7	764.3	4,500.00	-493	1,787.30	20
J-2466	0	128.2	764.3	4,500.00	-489.4	1,796.20	20
J-4720	0	128.9	764.2	4,500.00	-487	1,804.80	20
J-361	3	94.3	628.3	4,500.00	-474.8	1,481.40	20
J-4718	1	130.6	763.8	4,500.00	-466.5	1,847.70	20
J-3022	2.8	72.2	189.1	1,000.00	-287	359.9	20
J-1369	2	138.9	470.5	1,000.00	-246.2	501.7	20
J-2784	0.5	70.6	382.8	2,500.00	-237.3	1,111.50	20
J-2785	3.3	143.4	558.9	2,500.00	-231.1	1,103.90	20
J-3405	0	146.8	558.8	2,500.00	-228.2	1,128.20	20
J-5412	0.5	75.3	628.8	4,500.00	-227.1	1,775.10	20
J-5414	0	75.7	628.8	4,500.00	-225.8	1,785.20	20
J-2786	0	145.3	558.8	2,500.00	-224.1	1,126.40	20
J-2787	0	145.4	558.8	2,500.00	-224	1,127.20	20
J-2788	2.5	147.3	558.8	2,500.00	-216.4	1,157.10	20
J-2915	0	102.1	513.2	2,500.00	-214.5	1,423.70	20
J-2789	2.8	144.9	558.8	2,500.00	-210.1	1,152.90	20
J-1305	0.5	101.3	260.3	1,000.00	-205.7	478.50	20
J-2905	2.8	85.4	513.8	2,500.00	-200.8	1,250.50	20
J-1307	3.8	165.9	469.5	2,500.00	-177.4	1335.5	20
J-1306	7.3	166.1	469.5	2,500.00	-174.8	1346.3	20
J-1738	3.3	75.3	558.6	1,000.00	-172.4	507.60	20
J-5446	2	82.4	627.9	2,500.00	-171.4	1,197.20	20
J-5444	1	78.6	627.9	2,500.00	-170.6	1,170.50	20
J-1299	1	100.3	260.3	1,000.00	-165.7	514.30	20
J-1459	3.3	93.3	474.4	1,000.00	-150.7	511.70	20
J-1297	0	100.9	260.3	1,000.00	-148.9	533.30	20
J-1296	0	103.9	260.3	1,000.00	-143.9	546.90	20
J-1910	1	82.3	627.9	2,500.00	-139.4	1,283.30	20
J-2043	1.5	58.9	627.7	1,000.00	-139.3	405.50	20
J-1911	0	82.9	627.8	2,500.00	-138.5	1,289.00	20
J-5398	1.5	101.9	260.3	1,000.00	-131.2	559.40	20
J-1292	2	101.2	260.3	1,000.00	-131.1	558.20	20
J-3017	7	71.6	189.1	1,000.00	-129.2	506.9	20
J-5348	0.5	104.9	507.6	2,500.00	-124.6	1406.7	20



J-2796	2.8	91.5	622.8	1,000.00	-123.5	544.20	20
J-1290	0.5	102.2	260.3	1,000.00	-122.4	570.90	20
J-1288	0.5	97.5	260.3	1,000.00	-122.3	559.10	20
J-1286	1	100.8	260.3	1,000.00	-117.8	574.60	20
J-3033	1	86.1	306	1,000.00	-115.7	597.90	20
J-3040	0.5	86	306	1,000.00	-115.4	597.80	20
J-3039	0	86.5	306	1,000.00	-114.7	600.00	20
J-1284	1.5	101.3	260.3	1,000.00	-114.4	581.40	20
J-3043	1	88.1	306	1,000.00	-114.2	607.20	20
J-3034	1	88.5	306	1,000.00	-114	608.70	20
J-3028	0.5	99.2	306.5	1,000.00	-113.6	644.80	20
J-3030	3.3	99.2	306.5	1,000.00	-113.4	648.10	20
J-3038	1	88.9	306	1,000.00	-113.3	611.3	20
J-1764	2.8	53.5	558.8	1,000.00	-112	516.9	20
J-1843	2.8	82	625.5	1,000.00	-108.3	529.90	20
J-3042	2	90.2	306	1,000.00	-107.4	628.40	20
J-3047	1	89	306	1,000.00	-106.2	626.70	20
J-3036	4.8	97.2	306	1,000.00	-105.7	654.00	20
J-3046	3.3	92.3	306	1,000.00	-105.7	639.60	20
J-1086	3.3	88.8	753.7	1,000.00	-105.3	564.10	20
J-1763	2.8	72.9	558.6	1,000.00	-101.5	590.30	20
J-1731	4.8	73.2	558.6	1,000.00	-100.3	595.00	20
J-1077	5.8	96.4	753.7	1,000.00	-99.9	597.00	20
J-1730	1.5	74.6	558.6	1,000.00	-99.7	596.30	20
J-1765	3.8	72.2	558.6	1,000.00	-99	593.20	20
J-3048	2.5	94.5	306	1,000.00	-99	659.80	20
J-1762	0.5	73.7	558.6	1,000.00	-98.7	594.4	20
J-264	0	138.9	507.6	4,500.00	-98.7	3000.4	20
J-2795	1	93.9	622.8	1,000.00	-98.2	587.80	20
J-1768	4.3	58.1	558.6	1,000.00	-98	553.90	20
J-1729	2.8	78.2	558.6	1,000.00	-97.7	610.00	20
J-1782	4.3	55.3	558.8	1,000.00	-96.1	549.60	20
J-3051	2.5	95.6	306	1,000.00	-94.2	674.20	20
J-1761	2	54.8	558.8	1,000.00	-90.5	555.30	20
J-3069	2	45.3	306.5	1,000.00	-84.8	485.60	20
J-1757	6.8	52.8	558.7	1,000.00	-83.8	564.30	20
J-1778	3.8	53.9	558.8	1,000.00	-83.3	567.00	20
J-1771	1.5	52.4	558.7	1,000.00	-79.3	566.50	20
J-1828	2	82.7	625.5	1,000.00	-77	586.20	20
J-1078	3.8	66.1	753.7	1,000.00	-71.2	543.80	20
J-7	18	161.4	507.5	4,500.00	-70.6	3403.7	20
J-1796	3.8	50.5	558.8	1,000.00	-70.5	580.6	20
J-2725	1	121.1	832.1	1,000.00	-68	596.70	20
J-2549	0.5	89	352.5	1,000.00	-65.3	676.40	20
J-1918	9.5	58.8	627.7	1,000.00	-64.2	536.00	20
J-2723	7.3	147.1	832.1	1,000.00	-64	651.80	20
J-2724	2	122.5	832.1	1,000.00	-61.8	608.20	20
J-1070	3.8	65.9	753.7	1,000.00	-60.9	567.20	20
J-12	0	160.3	507.5	4,500.00	-58.5	3,483.60	20
J-4822	1.5	93.4	260.5	1,000.00	-55	676.70	20
J-1816	1	84.7	625.5	1,000.00	-54.9	642.20	20
J-1799	2.8	49	559	1,000.00	-54.8	613.70	20
J-3056	2.5	73.3	306.2	1,000.00	-52.9	747.50	20
J-3055	0	73.2	306.2	1,000.00	-52.6	745.80	20
J-3054	2.8	72.9	306.2	1,000.00	-51.7	751.6	20

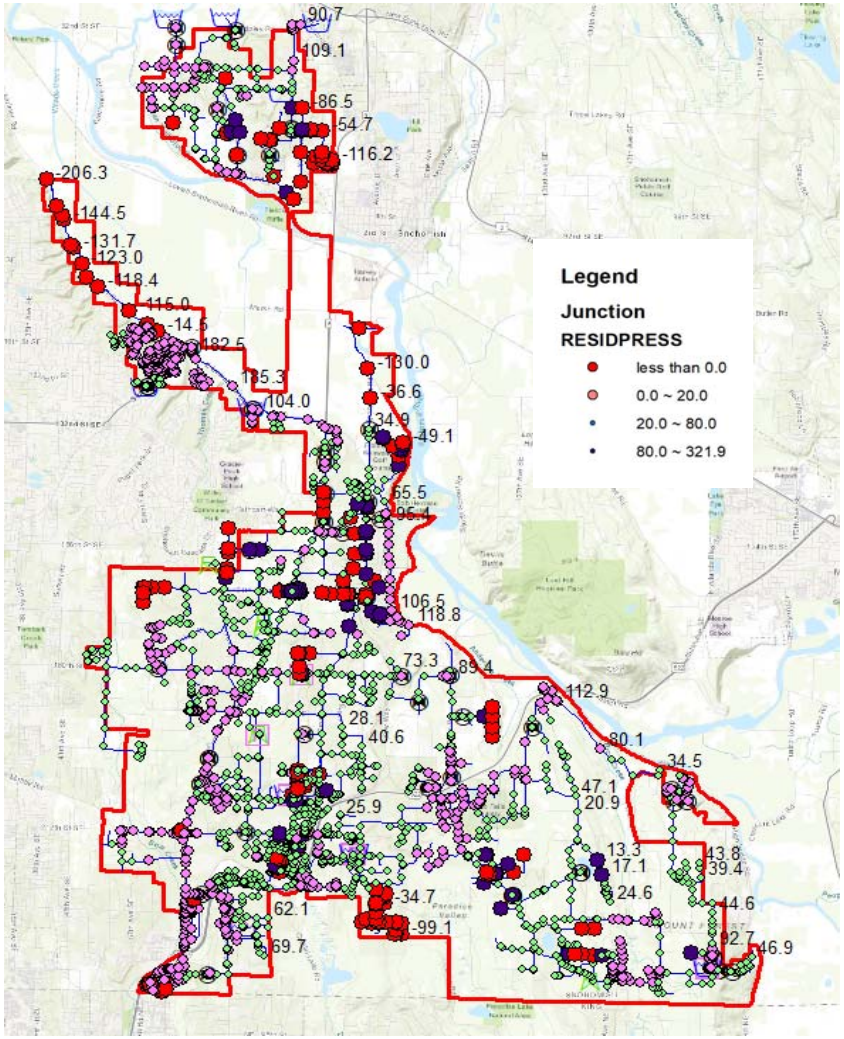
J-5154	0	159.2	507.5	4,500.00	-49	3567.4	20
J-1814	1.5	84	625.5	1,000.00	-48.9	656.40	20
J-2990	2	104.4	346.3	1,000.00	-48.6	722.40	20
J-1344	2.8	91	470	1,000.00	-44.5	641.80	20
J-2563	1.5	83.4	352.5	1,000.00	-44	724.60	20
J-1033	2.8	116.5	753.9	1,000.00	-41.2	764.70	20
J-1034	0	116.5	753.9	1,000.00	-41.2	761.90	20
J-2793	2.8	115.4	622.8	1,000.00	-41	761.40	20
J-2823	3.8	125.9	557.8	1,000.00	-40.2	547.80	20
J-1035	0	118.2	753.9	1,000.00	-39.4	769.50	20
J-1036	0	118.7	753.9	1,000.00	-37.9	774.30	20
J-3015	4.3	75.5	189.2	1,000.00	-36	761.10	20
J-3049	2	97	306.5	1,000.00	-34.7	835.10	20
J-1807	2.5	79.8	625.5	1,000.00	-33.8	689.7	20
J-1363	6.8	92	471.7	1,000.00	-33.8	722.1	20
J-2604	1	89.3	352.5	1,000.00	-33.3	777.90	20
J-1808	1	79.6	625.5	1,000.00	-33.2	689.60	20
J-1009	0	127.3	753.9	1,000.00	-30.7	807.20	20
J-3050	2.5	99.8	306.5	1,000.00	-29.6	850.10	20
J-1011	0	128.7	753.9	1,000.00	-29.4	812.80	20
J-1743	3.3	100.2	695	1,000.00	-29.3	764.30	20
J-1805	1	49.5	559.4	1,000.00	-27.1	704.60	20
J-2860	2.5	114.6	556.7	1,000.00	-26.1	411.00	20
J-2461	7.8	67	583.7	4,500.00	-25.3	3,030.00	20
J-1032	0.5	110.9	753.9	1,000.00	-24.1	803.40	20
J-432	1.5	79.4	628.3	4,500.00	-24	3,296.40	20
J-992	0	135	753.9	1,000.00	-23.7	836.80	20
J-1668	2	58.1	696.4	1,000.00	-23.4	642.2	20
J-988	0	135.5	753.9	1,000.00	-23.2	838.9	20
J-427	0	77.6	628.3	4,500.00	-23.1	3,284.90	20
J-426	3	77.8	628.3	4,500.00	-22.4	3,303.20	20
J-424	0	80	628.3	4,500.00	-22.3	3,332.00	20
J-2584	0.5	74.6	352.5	1,000.00	-22.3	788.70	20
J-3409	0.5	78.6	625.3	1,000.00	-21.8	727.40	20
J-3062	1	73.1	306.3	1,000.00	-21.3	844.40	20
J-3061	0	73.1	306.3	1,000.00	-21.2	843.80	20
J-2578	0	75.1	352.5	1,000.00	-20.6	798.30	20
J-3503	2.5	140.4	474.1	1,000.00	-19.8	792.70	20
J-2709	5.8	121.8	832.2	1,000.00	-19.7	671.10	20
J-423	0	80.1	628.3	4,500.00	-18.4	3,406.40	20
J-3058	2.8	75.9	306.3	1,000.00	-18.3	858.10	20
J-16	0	158.4	507.5	4,500.00	-17.3	3918.2	20
J-2	0	150.1	507.5	4,500.00	-16.9	3892.9	20
J-3	1.5	149.9	507.5	4,500.00	-16.5	3,898.70	20
J-422	0	80.4	628.3	4,500.00	-16.4	3,449.00	20
J-421	1.5	80.7	628.3	4,500.00	-16.4	3,454.70	20
J-1673	1.5	60.1	696.4	1,000.00	-16.2	686.80	20
J-1744	3.3	78.3	695	1,000.00	-15.2	763.40	20
J-4740	0.5	97.3	260.6	1,000.00	-14.2	816.10	20
J-2808	3.8	145.5	558.8	1,000.00	-14.1	784.80	20
J-420	0	80.7	628.3	4,500.00	-13.8	3,505.00	20
J-1678	2	60	696.4	1,000.00	-12.3	706.90	20
J-638	0	76.3	628.9	1,000.00	-11.7	783.40	20
J-1813	1.5	77.1	625.5	1,000.00	-11.5	772.60	20
J-5	1.5	149.8	507.5	4,500.00	-11.4	3,967.60	20

J-1061	2.5	66.6	753.8	1,000.00	-11.2	750.2	20
J-2838	1	115	557.1	1,000.00	-10.5	601.2	20
J-1342	2	103.1	470.1	1,000.00	-10.1	775.80	20
J-2896	2	115.4	556.5	1,000.00	-8.7	409.10	20
J-5000	0	147.4	507.5	4,500.00	-8.6	3,998.10	20
J-1352	2	129.6	469.4	1,000.00	-8.4	769.80	20
J-2060	1.5	98.1	628.4	4,500.00	-8.3	3,785.60	20
J-1343	0	104.3	470.1	1,000.00	-7.6	785.40	20
J-2792	0	103.6	559.3	1,000.00	-7.5	614.40	20
J-1914	7.5	65.3	627.8	1,000.00	-7.4	792.60	20
J-1030	1.5	95.5	753.9	1,000.00	-6.7	846.10	20
J-1341	0.5	106	470.1	1,000.00	-5.7	798.10	20
J-1340	1.5	108	470.1	1,000.00	-5.5	803.70	20
J-2791	3.8	106.9	559.2	1,000.00	-4.5	632.10	20
J-4592	3.3	61.2	753.8	1,000.00	-3.5	776.9	20
J-3026	1.5	169.8	469.4	1,000.00	-2.2	898.1	20
J-1013	1.5	89.7	751.6	2,500.00	-2.2	2,010.20	20
J-2701	1.5	122.7	832.2	1,000.00	-1.5	700.10	20
J-2983	9	68.2	346.3	1,000.00	0.1	834.00	20
J-2912	2.8	125.3	556.5	1,000.00	0.3	684.00	20
J-2972	5.8	66.5	346.3	1,000.00	0.4	828.20	20
J-2810	5.3	118.7	622.8	1,000.00	0.6	909.20	20
J-1802	1.5	103.5	691.4	1,000.00	0.7	891.30	20
J-403	4.8	92.3	628.3	4,500.00	0.7	3,940.50	20
J-2047	1	77.5	626.6	1,000.00	0.7	850.70	20
J-1302	3.8	167.7	469.4	1,000.00	0.8	910.90	20
J-1671	0.5	87	696.4	1,000.00	1.1	866.70	20
J-2312	0.5	79.9	628.9	1,000.00	1.3	862.30	20
J-2779	6	112.1	559.3	1,000.00	2.7	739.5	20
J-5360	9.8	88	382.7	1,000.00	2.9	911.9	20
J-8	0	150.7	507.5	4,500.00	3.1	4,192.20	20
J-1357	3.8	95.7	474.1	1,000.00	3.2	780.80	20
J-1915	1	65.8	627.8	1,000.00	3.2	859.00	20
J-2778	1.5	112.5	559.3	1,000.00	3.3	751.00	20
J-2836	1.5	124.1	557.1	1,000.00	3.9	807.40	20
J-398	3	87.3	628.3	4,500.00	4.1	3,993.50	20
J-1916	2	66	627.8	1,000.00	4.5	869.00	20
J-2770	2	86.5	382.7	1,000.00	4.6	911.50	20
J-1677	1.5	65.4	696.4	1,000.00	5.3	848.10	20
J-4866	3	103.6	752.9	2,500.00	5.5	2,230.10	20
J-2048	1	79.8	626.6	1,000.00	5.6	886.20	20
J-2849	4.3	123.8	557	1,000.00	6.9	832.40	20
J-3065	2.8	73.9	306.5	1,000.00	7.2	946.2	20
J-4868	0	100.1	752.9	2,500.00	7.2	2238.2	20
J-2768	0.5	110.3	382.7	1,000.00	7.3	940.60	20
J-2835	3.8	125.2	557.1	1,000.00	7.4	847.90	20
J-2765	0.5	112.1	382.7	1,000.00	8	944.50	20
J-3305	2.8	39.9	623	1,000.00	8.1	864.90	20
J-1824	1	82.2	689.3	1,000.00	8.1	902.70	20
J-3059	1.5	72.5	306.5	1,000.00	8.2	948.60	20
J-4860	2.8	111.3	752.9	2,500.00	8.4	2,285.40	20
J-3060	2	73.8	306.5	1,000.00	8.5	950.60	20
J-4988	0.5	83.7	689.2	1,000.00	8.6	907.50	20
J-4984	0	83.7	689.3	1,000.00	8.9	909.30	20
J-4858	0	100.1	752.9	2,500.00	9.2	2,264.70	20

J-4862	0	111.7	752.9	2,500.00	9.3	2,294.10	20
J-2071	1.5	98.1	628.4	4,500.00	9.6	4193	20
J-599	0	79.8	628.9	1,000.00	9.9	918	20
J-2857	2.5	121.6	556.7	1,000.00	9.9	832.80	20
J-2910	1	131	556.5	1,000.00	10.1	837.80	20
J-2862	1	121.5	556.6	1,000.00	10.3	834.40	20
J-3306	0	115.1	382.7	1,000.00	10.6	956.60	20
J-4864	0	112.2	752.9	2,500.00	11	2,323.80	20
J-2979	1.5	82.8	346.3	1,000.00	11.2	931.70	20
J-2872	2.5	121.6	556.6	1,000.00	11.5	849.30	20
J-2387	3	70.5	584.2	4,500.00	12.4	4,136.50	20
J-2977	1	84	346.3	1,000.00	12.6	941.90	20
J-2699	1	128.6	832.2	1,000.00	12.7	736.40	20
J-2975	2.5	84.1	346.3	1,000.00	12.8	945.60	20
J-1371	3.3	102.2	474.1	1,000.00	12.9	917.70	20
J-1948	2	61.1	627.1	1,000.00	12.9	917.6	20
J-9	3	149.2	507.5	4,500.00	13	4366.2	20
J-542	1	64.9	628.4	4,500.00	13.2	4,137.90	20
J-2976	0	84.6	346.3	1,000.00	13.2	946.40	20
J-1395	2.5	77.4	475	1,000.00	13.6	939.40	20
J-2688	0.5	14	565.8	1,000.00	13.7	0.50	14
J-2994	3.8	74	346.3	1,000.00	13.8	945.10	20
J-2581	0.5	84.5	352.5	1,000.00	13.8	979.20	20
J-2909	0	132.6	556.5	1,000.00	13.9	895.80	20
J-2700	0.5	14.6	566.1	1,000.00	14.1	0.50	14.6
J-1999	9	43.9	627.2	1,000.00	14.1	915.40	20
J-2159	0	96.3	628.5	2,500.00	14.3	2,401.90	20
J-2752	6.5	107.6	562.4	1,000.00	15	891.00	20
J-4874	2	94.6	751.5	2,500.00	15	2,384.10	20
J-1074	3.8	47.6	623	1,000.00	15	947.3	20
J-2967	3.3	73.6	346.3	1,000.00	15.5	959.5	20
J-2815	5.8	133.3	557.8	1,000.00	16.1	964.90	20
J-2996	5.3	78.2	346.3	1,000.00	16.5	973.30	20
J-1043	4.8	63.4	753.9	1,000.00	16.8	965.10	20
J-2908	0.5	132.3	556.5	1,000.00	17	944.50	20
J-2907	2	132.1	556.5	1,000.00	17.4	952.90	20
J-1356	0	115	474.1	1,000.00	17.4	984.00	20
J-4876	0.5	95.3	751.5	2,500.00	17.9	2,458.50	20
J-1908	5.8	56.2	627.2	1,000.00	17.9	981.10	20
J-2985	1	92.8	346.3	1,000.00	18.2	987.80	20
J-22	0	156.7	507.5	4,500.00	18.4	4,469.20	20
J-1684	1.5	59.8	697.1	1,000.00	18.6	980.90	20
J-1355	2	115.4	474.1	1,000.00	18.8	994.40	20
J-4872	0	95.8	751.5	2,500.00	19.2	2486	20
J-3307	0	95.9	751.4	2,500.00	19.6	2492.4	20
J-1353	0.5	115.5	474.1	1,000.00	19.9	999.80	20

Table G-5 - 2030 MDD Fireflow

Junction ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
J-2423	0	148.4	778.3	4,500.00	-1,684.80	1,113.10	20
J-5408	1.1	71.4	618.6	4,500.00	-1,241.60	1,250.10	20
J-2925	0	111.8	512.5	4,500.00	-1,132.60	1,423.90	20
J-2413	0	149.5	778.3	4,500.00	-978.6	1,458.80	20
J-2424	0	142.1	766.2	4,500.00	-565.1	1,784.00	20
J-3315	0	133.6	765.3	4,500.00	-542.8	1,757.40	20
J-2427	0	131.6	765.3	4,500.00	-541.4	1,746.30	20
J-2426	0	133.2	765.3	4,500.00	-540.9	1,757.40	20
J-2446	0	134.8	764.7	4,500.00	-540.7	1,765.20	20
J-60	0	155.3	507.5	4,500.00	-531.4	1,808.20	20
J-2447	0	132.2	764.7	4,500.00	-513.9	1,786.30	20
J-2452	1.1	132.1	764.5	4,500.00	-509.2	1,793.40	20
J-2467	0	127.6	764	4,500.00	-493.6	1,781.90	20
J-2466	0	128	764	4,500.00	-490	1,790.80	20
J-4720	0	128.8	763.9	4,500.00	-487.6	1,799.50	20
J-361	3.2	94.2	628	4,500.00	-475.2	1,479.10	20
J-4718	1.1	130.4	763.5	4,500.00	-467.1	1,842.20	20
J-3022	2.9	72.2	189.1	1,000.00	-287.8	359.5	20
J-1369	2.1	138.5	469.6	1,000.00	-246.8	499.2	20
J-2784	0.5	70.6	382.8	2,500.00	-238.3	1,107.40	20
J-2785	3.4	143	558	2,500.00	-232.2	1,099.90	20
J-3405	0	146.4	557.9	2,500.00	-229.2	1,124.00	20
J-5412	0.5	75.2	628.7	4,500.00	-227.3	1,772.20	20
J-5414	0	75.7	628.7	4,500.00	-226	1,782.20	20
J-2786	0	144.9	557.9	2,500.00	-225.2	1,122.10	20
J-2787	0	145	557.9	2,500.00	-225	1,122.90	20
J-2788	2.6	146.9	557.9	2,500.00	-217.4	1,152.80	20
J-2915	0	102	513.1	2,500.00	-215.3	1,420.00	20
J-2789	2.9	144.5	557.8	2,500.00	-211.1	1,148.50	20
J-1305	0.5	101.2	260.2	1,000.00	-206.3	477.5	20
J-2905	2.9	85.4	513.8	2,500.00	-201.6	1,239.80	20
J-1307	3.9	165.5	468.5	2,500.00	-178.6	1,331.30	20
J-1306	7.6	165.6	468.5	2,500.00	-176	1,342.40	20
J-1738	3.4	75.2	558.5	1,000.00	-173.7	504.7	20
J-5446	2.1	82.2	627.4	2,500.00	-172.7	1,188.90	20
J-5444	1.1	78.4	627.4	2,500.00	-171.9	1,162.00	20
J-1299	1.1	100.3	260.2	1,000.00	-166.3	513.2	20
J-1459	3.4	93.1	473.9	1,000.00	-151.6	509.5	20
J-1297	0	100.8	260.2	1,000.00	-149.4	532	20
J-1296	0	103.9	260.2	1,000.00	-144.5	545.6	20
J-1910	1.1	82.1	627.4	2,500.00	-140.6	1,274.20	20
J-2043	1.6	58.7	627.2	1,000.00	-140.3	403.7	20
J-1911	0	82.6	627.4	2,500.00	-139.7	1,279.80	20
J-5398	1.6	101.9	260.2	1,000.00	-131.7	558.2	20



J-1292	2.1	101.2	260.2	1,000.00	-131.7	557	20
J-3017	7.4	71.5	189.1	1,000.00	-130	506.6	20
J-5348	0.5	104.9	507.5	2,500.00	-124.6	1,406.60	20
J-2796	2.9	91.3	622.4	1,000.00	-124.1	542.7	20
J-1290	0.5	102.1	260.2	1,000.00	-123	569.6	20
J-1288	0.5	97.5	260.2	1,000.00	-122.8	557.8	20
J-1286	1.1	100.8	260.2	1,000.00	-118.4	573.3	20
J-3033	1.1	86	305.9	1,000.00	-117.7	596.2	20
J-3040	0.5	86	305.9	1,000.00	-117.4	596	20
J-3039	0	86.5	305.9	1,000.00	-116.7	598.3	20
J-3043	1.1	88.1	305.9	1,000.00	-116.2	605.5	20
J-3034	1.1	88.5	305.9	1,000.00	-116	607	20
J-3028	0.5	99.2	306.4	1,000.00	-115.3	644.1	20
J-3038	1.1	88.9	305.9	1,000.00	-115.3	609.6	20
J-3030	3.4	99.2	306.4	1,000.00	-115.1	648.9	20
J-1284	1.6	101.3	260.2	1,000.00	-115	580.1	20
J-1764	2.9	53.4	558.7	1,000.00	-113.3	513.2	20
J-3042	2.1	90.2	305.9	1,000.00	-109.4	626.7	20
J-1843	2.9	81.8	625	1,000.00	-109.3	527.1	20
J-3047	1.1	89	305.9	1,000.00	-108.2	624.9	20
J-3036	5	97.1	305.9	1,000.00	-107.8	652.5	20
J-3046	3.4	92.3	305.9	1,000.00	-107.7	637.9	20
J-1086	3.4	88.7	753.5	1,000.00	-105.9	562.5	20
J-1763	2.9	72.9	558.5	1,000.00	-102.8	586.5	20
J-1731	5	73.2	558.5	1,000.00	-101.6	591.2	20
J-1730	1.6	74.6	558.5	1,000.00	-101	592.4	20
J-3048	2.6	94.4	305.9	1,000.00	-101	658.1	20
J-1077	6	96.3	753.5	1,000.00	-100.4	595.5	20
J-1765	3.9	72.1	558.5	1,000.00	-100.4	589.3	20
J-1762	0.5	73.6	558.5	1,000.00	-100.1	590.4	20
J-1768	4.5	58.1	558.5	1,000.00	-99.3	549.8	20
J-1729	2.9	78.2	558.5	1,000.00	-99.1	606.2	20
J-2795	1.1	93.7	622.4	1,000.00	-98.7	586	20
J-264	0	138.9	507.5	4,500.00	-98.7	3,000.40	20
J-1782	4.5	55.3	558.7	1,000.00	-97.3	545.7	20
J-3051	2.6	95.5	305.9	1,000.00	-96.2	672.4	20
J-1761	2.1	54.7	558.7	1,000.00	-91.7	551.1	20
J-3069	2.1	45.3	306.4	1,000.00	-86.5	484.6	20
J-1757	7.1	52.8	558.6	1,000.00	-85	560.1	20
J-1778	3.9	53.9	558.7	1,000.00	-84.6	562.7	20
J-1771	1.6	52.4	558.6	1,000.00	-80.6	561.8	20
J-1828	2.1	82.5	625	1,000.00	-77.9	582.7	20
J-1078	3.9	65.9	753.5	1,000.00	-71.8	541.5	20
J-1796	3.9	50.5	558.7	1,000.00	-71.7	575.9	20
J-7	18.9	161.4	507.4	4,500.00	-70.7	3,403.40	20
J-2725	1.1	121.1	832.1	1,000.00	-68.2	595.6	20
J-2549	0.5	89	352.5	1,000.00	-65.8	676.2	20
J-1918	10	58.5	627.2	1,000.00	-65.1	533.8	20
J-2723	7.6	147.1	832.1	1,000.00	-64.2	651.1	20
J-2724	2.1	122.5	832.1	1,000.00	-61.9	607.1	20
J-1070	3.9	65.8	753.5	1,000.00	-61.4	564.7	20

J-12	0	160.2	507.4	4,500.00	-58.6	3,482.40	20
J-1799	2.9	49	559	1,000.00	-55.9	608.7	20
J-1816	1.1	84.5	625	1,000.00	-55.8	638.3	20
J-4822	1.6	93.3	260.4	1,000.00	-55.4	675.4	20
J-3056	2.6	73.3	306.1	1,000.00	-54.7	745.3	20
J-3055	0	73.1	306.1	1,000.00	-54.5	743.5	20
J-3054	2.9	72.8	306.1	1,000.00	-53.6	749.5	20
J-1814	1.6	83.8	625	1,000.00	-49.8	652.4	20
J-5154	0	159.2	507.4	4,500.00	-49.1	3,566.30	20
J-2990	2.1	104.3	345.9	1,000.00	-49.1	721.1	20
J-1344	2.9	90.6	469.1	1,000.00	-45.2	635	20
J-2563	1.6	83.4	352.5	1,000.00	-44.5	724.4	20
J-1033	2.9	116.4	753.7	1,000.00	-41.6	763.1	20
J-1034	0	116.4	753.7	1,000.00	-41.6	760.2	20
J-2793	2.9	115.2	622.4	1,000.00	-41.5	759.5	20
J-2823	3.9	125.5	556.7	1,000.00	-40.6	547.1	20
J-1035	0	118.1	753.7	1,000.00	-39.9	767.8	20
J-1036	0	118.6	753.7	1,000.00	-38.4	772.6	20
J-3015	4.5	75.5	189.2	1,000.00	-36.6	760.4	20
J-3049	2.1	97	306.4	1,000.00	-36.3	830.3	20
J-1363	7.1	91.7	470.9	1,000.00	-35.1	715.7	20
J-1807	2.6	79.6	625	1,000.00	-34.7	685.2	20
J-1808	1.1	79.3	625	1,000.00	-34.1	684.9	20
J-2604	1.1	89.3	352.5	1,000.00	-33.8	777.6	20
J-3050	2.6	99.8	306.4	1,000.00	-31.3	845.3	20
J-1009	0	127.2	753.7	1,000.00	-31.2	805.5	20
J-1743	3.4	99.9	694.3	1,000.00	-30.3	761.1	20
J-1011	0	128.6	753.7	1,000.00	-29.8	811.1	20
J-1805	1.1	49.5	559.3	1,000.00	-28.1	699.2	20
J-2860	2.6	114.1	555.5	1,000.00	-26.4	406.5	20
J-2461	8.1	66.9	583.6	4,500.00	-25.3	3,028.80	20
J-1032	0.5	110.8	753.7	1,000.00	-24.5	801.5	20
J-432	1.6	79.4	628.1	4,500.00	-24.3	3,286.00	20
J-992	0	134.9	753.7	1,000.00	-24.2	835.1	20
J-1668	2.1	57.8	695.9	1,000.00	-24.1	637.6	20
J-988	0	135.4	753.7	1,000.00	-23.7	837.2	20
J-427	0	77.5	628.1	4,500.00	-23.5	3,274.20	20
J-3062	1.1	73.1	306.3	1,000.00	-23	838.2	20
J-3061	0	73.1	306.3	1,000.00	-22.9	837.5	20
J-2584	0.5	74.6	352.5	1,000.00	-22.8	788.3	20
J-426	3.2	77.7	628.1	4,500.00	-22.8	3,292.60	20
J-3409	0.5	78.3	624.8	1,000.00	-22.7	721.9	20
J-424	0	79.9	628.1	4,500.00	-22.7	3,321.50	20
J-2578	0	75.1	352.5	1,000.00	-21.1	798	20
J-3503	2.6	140.2	473.5	1,000.00	-20.8	791.3	20
J-3058	2.9	75.9	306.3	1,000.00	-20	851.9	20
J-2709	6	121.8	832.1	1,000.00	-19.8	670.1	20
J-423	0	80	628.1	4,500.00	-18.7	3,395.50	20
J-16	0	158.4	507.4	4,500.00	-17.4	3,917.00	20
J-2	0	150.1	507.4	4,500.00	-16.9	3,892.00	20
J-1673	1.6	59.9	695.9	1,000.00	-16.9	682.1	20

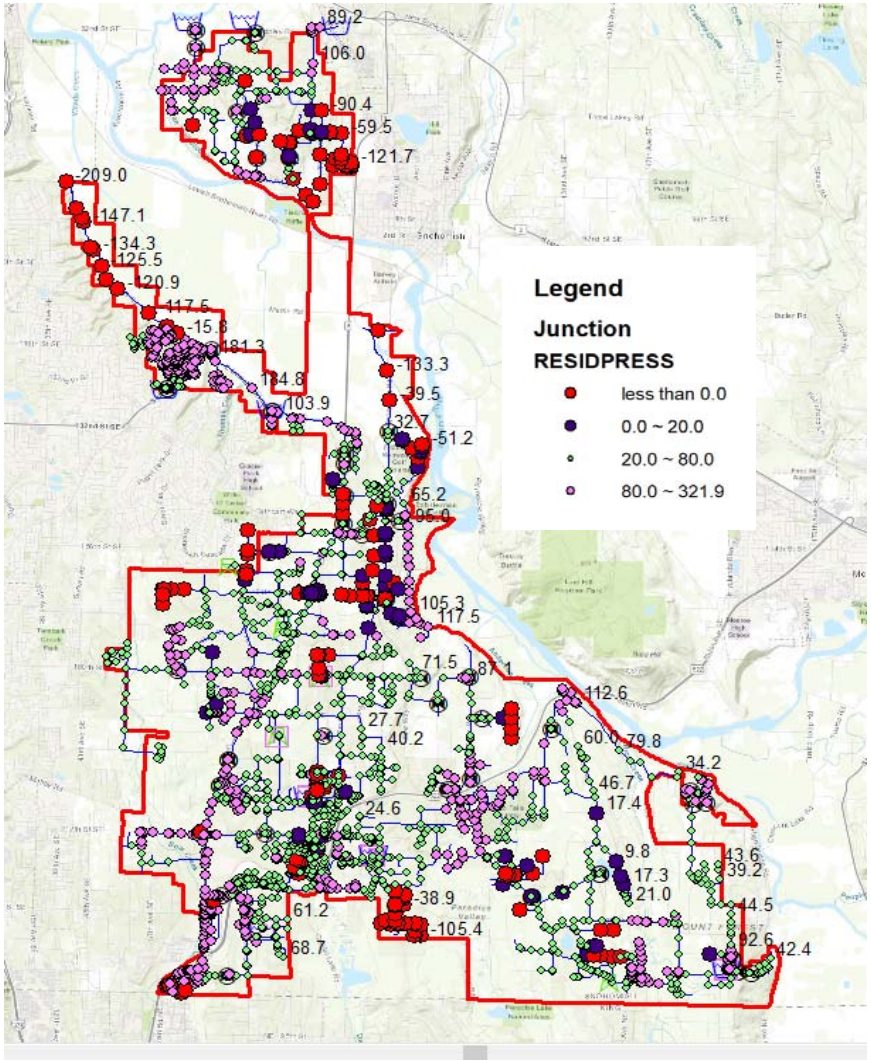
J-422	0	80.3	628.1	4,500.00	-16.7	3,438.00	20
J-421	1.6	80.6	628.1	4,500.00	-16.7	3,443.70	20
J-3	1.6	149.9	507.4	4,500.00	-16.5	3,897.80	20
J-1744	3.4	78	694.3	1,000.00	-16.2	758.9	20
J-2808	3.9	145.1	557.8	1,000.00	-14.6	782.9	20
J-4740	0.5	97.3	260.5	1,000.00	-14.5	814.7	20
J-420	0	80.6	628.1	4,500.00	-14.2	3,493.70	20
J-1678	2.1	59.7	695.9	1,000.00	-13.1	701.9	20
J-1813	1.6	76.9	625	1,000.00	-12.3	767	20
J-638	0	76.3	628.8	1,000.00	-11.9	782.5	20
J-1061	2.6	66.5	753.5	1,000.00	-11.7	746.9	20
J-5	1.6	149.7	507.4	4,500.00	-11.5	3,966.70	20
J-2838	1.1	114.5	556	1,000.00	-10.9	598.2	20
J-1342	2.1	102.7	469.1	1,000.00	-10.7	768	20
J-2896	2.1	114.9	555.3	1,000.00	-8.8	408.9	20
J-5000	0	147.3	507.4	4,500.00	-8.7	3,997.20	20
J-2060	1.6	98	628.2	4,500.00	-8.7	3,776.80	20
J-1352	2.1	129.1	468.4	1,000.00	-8.4	768.2	20
J-1343	0	103.8	469.1	1,000.00	-8.3	777.4	20
J-1914	7.9	65.1	627.3	1,000.00	-8.2	789.2	20
J-2792	0	103.2	558.3	1,000.00	-7.9	607.5	20
J-1030	1.6	95.4	753.7	1,000.00	-7.1	843.8	20
J-1341	0.5	105.6	469.1	1,000.00	-6.4	790.2	20
J-1340	1.6	107.6	469.1	1,000.00	-6.2	795.9	20
J-2791	3.9	106.6	558.3	1,000.00	-4.9	625.4	20
J-4592	3.4	61.1	753.6	1,000.00	-3.9	773.2	20
J-1013	1.6	89.5	751.1	2,500.00	-2.8	2,001.70	20
J-3026	1.6	169.4	468.4	1,000.00	-2.8	895.7	20
J-2701	1.6	122.7	832.2	1,000.00	-1.6	699	20
J-2983	9.5	68	345.9	1,000.00	-0.4	831	20
J-2972	6	66.4	345.9	1,000.00	0	825	20
J-2810	5.5	118.6	622.4	1,000.00	0	906.9	20
J-2912	2.9	124.8	555.3	1,000.00	0.1	682.8	20
J-1802	1.6	103.1	690.4	1,000.00	0.2	886.4	20
J-1302	3.9	167.2	468.4	1,000.00	0.2	908.5	20
J-2047	1.1	77.3	626.1	1,000.00	0.3	847.6	20
J-403	5	92.2	628	4,500.00	0.3	3,929.20	20
J-1671	0.5	86.7	695.9	1,000.00	0.3	862.7	20
J-2312	0.5	79.9	628.8	1,000.00	1.1	861.3	20
J-1357	3.9	95.5	473.5	1,000.00	2.3	777.1	20
J-2779	6.3	111.7	558.4	1,000.00	2.4	735.8	20
J-1915	1.1	65.6	627.3	1,000.00	2.4	852.2	20
J-5360	10.2	88	382.7	1,000.00	2.4	910	20
J-2778	1.6	112.1	558.4	1,000.00	2.9	747	20
J-8	0	150.7	507.4	4,500.00	3.1	4,191.20	20
J-2836	1.6	123.6	556	1,000.00	3.6	803.9	20
J-1916	2.1	65.8	627.3	1,000.00	3.6	862.2	20
J-398	3.2	87.2	628	4,500.00	3.8	3,981.00	20
J-2770	2.1	86.5	382.7	1,000.00	4.1	909.2	20
J-1677	1.6	65.2	695.9	1,000.00	4.6	842.4	20
J-4866	3.2	103.5	752.6	2,500.00	5.1	2,219.00	20

J-2048	1.1	79.6	626.1	1,000.00	5.2	883	20
J-3065	2.9	73.9	306.4	1,000.00	5.6	939.2	20
J-2849	4.5	123.3	555.8	1,000.00	6.5	828.9	20
J-3059	1.6	72.5	306.5	1,000.00	6.6	941.5	20
J-3060	2.1	73.7	306.4	1,000.00	6.8	943.5	20
J-4868	0	99.9	752.6	2,500.00	6.8	2,226.30	20
J-2768	0.5	110.3	382.7	1,000.00	6.9	938.6	20
J-2835	3.9	124.7	556	1,000.00	7	844.3	20
J-2765	0.5	112.1	382.7	1,000.00	7.5	942.5	20
J-3305	2.9	39.7	622.6	1,000.00	7.6	860	20
J-1824	1.1	81.7	688.2	1,000.00	7.6	896	20
J-4860	2.9	111.2	752.6	2,500.00	8	2,274.80	20
J-4988	0.5	83.3	688.2	1,000.00	8.1	900.8	20
J-4984	0	83.3	688.2	1,000.00	8.4	902.5	20
J-4858	0	99.9	752.6	2,500.00	8.8	2,252.50	20
J-4862	0	111.6	752.6	2,500.00	8.9	2,285.10	20
J-2071	1.6	98	628.2	4,500.00	9.2	4,182.50	20
J-2857	2.6	121.1	555.5	1,000.00	9.6	829.2	20
J-599	0	79.8	628.8	1,000.00	9.7	916.8	20
J-2910	1.1	130.5	555.3	1,000.00	10	836.2	20
J-2862	1.1	121	555.5	1,000.00	10.1	830.7	20
J-3306	0	115.1	382.7	1,000.00	10.1	954.6	20
J-4864	0	112	752.6	2,500.00	10.6	2,320.40	20
J-2979	1.6	82.7	346	1,000.00	10.8	928.5	20
J-2872	2.6	121.1	555.5	1,000.00	11.3	845.7	20
J-2977	1.1	83.8	346	1,000.00	12.1	938.6	20
J-1948	2.1	60.9	626.6	1,000.00	12.2	913.2	20
J-2387	3.2	70.5	584.1	4,500.00	12.4	4135.2	20
J-2975	2.6	84	346	1,000.00	12.4	942.40	20
J-1371	3.4	102	473.5	1,000.00	12.5	913.5	20
J-2699	1.1	128.5	832.2	1,000.00	12.7	735.2	20
J-1395	2.6	77.2	474.5	1,000.00	12.7	930.60	20
J-2976	0	84.4	346	1,000.00	12.8	943.00	20
J-542	1.1	64.8	628.2	4,500.00	12.9	4119.7	20
J-9	3.2	149.1	507.4	4,500.00	13	4365.2	20
J-2581	0.5	84.5	352.5	1,000.00	13.3	977.5	20
J-1999	9.5	43.8	627	1,000.00	13.3	910.1	20
J-2994	3.9	73.9	346	1,000.00	13.4	941.40	20
J-2688	0.5	14	565.8	1,000.00	13.6	0.5	14
J-2909	0	132.1	555.3	1,000.00	13.8	894	20
J-2159	0	96.2	628.3	2,500.00	14	2397.7	20
J-2700	0.5	14.6	566	1,000.00	14.1	0.5	14.6
J-4874	2.1	94.4	751.1	2,500.00	14.5	2368.8	20
J-1074	3.9	47.4	622.6	1,000.00	14.6	942.50	20
J-2752	6.8	107.3	561.7	1,000.00	14.8	884.1	20
J-2967	3.4	73.4	346	1,000.00	15.1	955.7	20
J-2815	6	132.9	556.7	1,000.00	15.7	961.10	20
J-2996	5.5	78.1	346	1,000.00	16.1	969.70	20
J-1356	0	114.8	473.5	1,000.00	16.3	977.3	20
J-1043	5	63.3	753.6	1,000.00	16.4	960.7	20
J-2908	0.5	131.8	555.3	1,000.00	16.9	942.6	20

J-1908	6	56.1	627	1,000.00	17.1	972.4	20
J-2907	2.1	131.6	555.3	1,000.00	17.3	951.10	20
J-4876	0.5	95.1	751	2,500.00	17.5	2442.2	20
J-1355	2.1	115.2	473.5	1,000.00	17.7	987.7	20
J-2985	1.1	92.7	346	1,000.00	17.8	984.7	20
J-1684	1.6	59.6	696.6	1,000.00	18.1	972.7	20
J-22	0	156.7	507.4	4,500.00	18.3	4467.8	20
J-1353	0.5	115.2	473.5	1,000.00	18.8	993.00	20
J-4872	0	95.6	751	2,500.00	18.9	2477.8	20
J-3307	0	95.7	750.9	2,500.00	19.2	2486.3	20
J-1876	10	100.1	629	1,000.00	19.6	1,007.70	20
J-527	1.6	67.1	628.2	4,500.00	19.7	4,487.20	20

Table G-6 - 2040 MDD Fireflow

Junction ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
J-2423	0	147.7	776.7	4,500.00	-1,687.50	1,104.30	20
J-5408	1.3	71.4	618.6	4,500.00	-1,244.80	1,237.40	20
J-2925	0	111.4	511.7	4,500.00	-1,139.30	1,406.80	20
J-2413	0	148.8	776.7	4,500.00	-981.3	1,445.50	20
J-2424	0	141.4	764.6	4,500.00	-568.1	1,762.20	20
J-3315	0	132.9	763.7	4,500.00	-545.8	1,734.50	20
J-2427	0	130.9	763.7	4,500.00	-544.4	1,723.20	20
J-2426	0	132.5	763.7	4,500.00	-543.9	1,734.40	20
J-2446	0	134.1	763	4,500.00	-543.7	1,742.20	20
J-60	0	155	507	4,500.00	-531.5	1,808.00	20
J-2447	0	131.5	763	4,500.00	-516.9	1,762.20	20
J-2452	1.3	131.4	762.9	4,500.00	-512.2	1,769.50	20
J-2467	0	126.9	762.3	4,500.00	-496.60	1,756.90	20
J-2466	0	127.3	762.3	4,500.00	-493.00	1,765.60	20
J-4720	0	128.1	762.3	4,500.00	-490.6	1,774.20	20
J-361	3.9	93.7	626.9	4,500.00	-477.1	1,467.90	20
J-4718	1.3	129.7	761.8	4,500.00	-470.1	1,816.50	20
J-3022	3.5	72.1	189	1,000.00	-291.6	357.70	20
J-1369	2.6	136.5	464.9	1,000.00	-249.9	487.10	20
J-2784	0.6	70.6	382.8	2,500.00	-243.2	1,087.90	20
J-2785	4.2	140.9	553.1	2,500.00	-237	1,080.80	20
J-3405	0	144.3	553	2,500.00	-234.1	1,103.90	20
J-2786	0	142.8	553	2,500.00	-230	1,101.80	20
J-2787	0	142.9	553	2,500.00	-229.90	1,102.60	20
J-5412	0.6	74.9	627.8	4,500.00	-228.60	1,758.10	20
J-5414	0	75.3	627.8	4,500.00	-227.2	1,768.00	20
J-2788	3.2	144.7	552.9	2,500.00	-222.2	1,132.70	20
J-2915	0	101.8	512.5	2,500.00	-219.4	1,402.60	20
J-2789	3.5	142.4	552.9	2,500.00	-215.9	1,128.10	20
J-1305	0.6	101.1	259.9	1,000.00	-209	472.80	20
J-2905	3.5	85.2	513.5	2,500.00	-205.7	1,189.80	20
J-1307	4.8	163.2	463.2	2,500.00	-184.6	1,311.90	20
J-1306	9.3	163.4	463.2	2,500.00	-182	1,323.70	20
J-1738	4.2	75.1	558.1	1,000.00	-180.2	491.20	20
J-5446	2.6	81.1	624.9	2,500.00	-178.90	1,149.30	20
J-5444	1.3	77.3	624.9	2,500.00	-178.10	1,121.20	20
J-1299	1.3	100.2	259.9	1,000.00	-168.9	507.90	20
J-1459	4.2	91.9	471.1	1,000.00	-155.9	498.80	20
J-1297	0	100.7	259.9	1,000.00	-152.1	526.20	20
J-1296	0	103.8	259.9	1,000.00	-147.1	539.80	20
J-1910	1.3	81.1	625	2,500.00	-146.7	1,231.10	20
J-1911	0	81.6	625	2,500.00	-145.7	1,236.50	20
J-2043	1.9	57.6	624.7	1,000.00	-144.9	395.10	20
J-5398	1.9	101.8	259.9	1,000.00	-134.3	552.40	20



J-1292	2.6	101.1	259.9	1,000.00	-134.3	551.30	20
J-3017	9	71.5	189	1,000.00	-133.30	504.70	20
J-2796	3.5	90.6	620.8	1,000.00	-126.90	535.40	20
J-1290	0.6	102	259.9	1,000.00	-125.5	563.40	20
J-1288	0.6	97.4	259.9	1,000.00	-125.4	551.50	20
J-5348	0.6	104.7	507.1	2,500.00	-124.7	1,405.70	20
J-3033	1.3	85.9	305.5	1,000.00	-123.2	588.10	20
J-3040	0.6	85.8	305.5	1,000.00	-122.9	587.90	20
J-3039	0	86.3	305.5	1,000.00	-122.3	590.00	20
J-3043	1.3	87.9	305.5	1,000.00	-121.7	597.50	20
J-3034	1.3	88.3	305.5	1,000.00	-121.6	599.10	20
J-1286	1.3	100.7	259.9	1,000.00	-120.9	567.20	20
J-3038	1.3	88.7	305.5	1,000.00	-120.90	601.60	20
J-3028	0.6	99.1	306.2	1,000.00	-119.50	641.50	20
J-3030	4.2	99.1	306.2	1,000.00	-119.3	645.50	20
J-1764	3.5	53.3	558.4	1,000.00	-119.1	495.40	20
J-1284	1.9	101.2	259.9	1,000.00	-117.5	574.10	20
J-3042	2.6	90	305.5	1,000.00	-115	618.80	20
J-3047	1.3	88.8	305.5	1,000.00	-113.8	616.60	20
J-1843	3.5	80.7	622.4	1,000.00	-113.6	513.40	20
J-3036	6.1	97	305.5	1,000.00	-113.3	645.50	20
J-3046	4.2	92.1	305.5	1,000.00	-113.2	630.30	20
J-1763	3.5	72.7	558.1	1,000.00	-109.2	568.40	20
J-1086	4.2	87.6	751	1,000.00	-108.60	539.70	20
J-1731	6.1	73	558.1	1,000.00	-107.90	573.60	20
J-1730	1.9	74.4	558.1	1,000.00	-107.4	574.10	20
J-1765	4.8	71.9	558.1	1,000.00	-106.7	571.30	20
J-3048	3.2	94.2	305.5	1,000.00	-106.5	650.10	20
J-1762	0.6	73.5	558.1	1,000.00	-106.4	571.70	20
J-1768	5.5	57.9	558.2	1,000.00	-105.5	530.50	20
J-1729	3.5	78	558.1	1,000.00	-105.4	588.30	20
J-1077	7.4	95.2	750.9	1,000.00	-103.2	588.00	20
J-1782	5.5	55.1	558.4	1,000.00	-103.2	527.00	20
J-3051	3.2	95.4	305.5	1,000.00	-101.7	664.80	20
J-2795	1.3	93.1	620.8	1,000.00	-101.50	577.60	20
J-264	0	138.7	507	4,500.00	-98.70	3,000.30	20
J-1761	2.6	54.6	558.4	1,000.00	-97.5	531.40	20
J-1757	8.7	52.6	558.3	1,000.00	-91	539.90	20
J-3069	2.6	45.2	306.3	1,000.00	-90.4	480.10	20
J-1778	4.8	53.7	558.4	1,000.00	-90.3	542.40	20
J-1771	1.9	52.3	558.3	1,000.00	-86.5	539.90	20
J-1828	2.6	81.4	622.4	1,000.00	-82.3	566.60	20
J-1796	4.8	50.3	558.4	1,000.00	-77.4	553.80	20
J-1078	4.8	64.9	751.1	1,000.00	-74.4	509.30	20
J-7	23.1	161.2	506.9	4,500.00	-71.2	3,402.30	20
J-2549	0.6	89	352.4	1,000.00	-69.70	675.10	20
J-1918	12.2	57.5	624.7	1,000.00	-69.60	523.00	20
J-2725	1.3	120.9	831.8	1,000.00	-68.8	590.50	20
J-2723	9.3	146.9	831.8	1,000.00	-64.9	647.70	20
J-1070	4.8	64.8	751.1	1,000.00	-64	532.10	20
J-2724	2.6	122.4	831.8	1,000.00	-62.5	602.10	20

J-1799	3.5	48.9	558.8	1,000.00	-61.1	585.50	20
J-1816	1.3	83.4	622.4	1,000.00	-60.1	620.10	20
J-3056	3.2	73.1	305.8	1,000.00	-59.5	733.00	20
J-3055	0	73	305.8	1,000.00	-59.2	730.10	20
J-12	0	160	506.9	4,500.00	-59.1	3,477.00	20
J-3054	3.5	72.7	305.8	1,000.00	-58.40	735.10	20
J-4822	1.9	93.2	260.2	1,000.00	-57.20	669.20	20
J-1814	1.9	82.7	622.4	1,000.00	-54.1	633.50	20
J-2990	2.6	103.5	344.1	1,000.00	-51.2	714.90	20
J-5154	0	159	506.9	4,500.00	-49.6	3,560.70	20
J-2563	1.9	83.4	352.4	1,000.00	-48.4	723.40	20
J-1344	3.5	88.4	464.2	1,000.00	-48.3	602.90	20
J-2793	3.5	114.6	620.8	1,000.00	-44.2	750.30	20
J-1033	3.5	115.7	752.1	1,000.00	-44	754.90	20
J-1034	0	115.7	752.1	1,000.00	-44	751.30	20
J-2823	4.8	123.1	551.2	1,000.00	-42.6	544.10	20
J-1035	0	117.4	752.1	1,000.00	-42.30	758.90	20
J-1036	0	117.9	752.1	1,000.00	-40.80	763.70	20
J-3049	2.6	96.9	306.3	1,000.00	-40.4	807.50	20
J-1363	8.7	89.9	466.8	1,000.00	-40.3	685.30	20
J-3015	5.5	75.4	189.1	1,000.00	-39.5	757.40	20
J-1807	3.2	78.5	622.4	1,000.00	-38.9	663.70	20
J-1808	1.3	78.2	622.4	1,000.00	-38.3	662.90	20
J-2604	1.3	89.3	352.4	1,000.00	-37.7	776.50	20
J-3050	3.2	99.7	306.3	1,000.00	-35.4	822.40	20
J-1743	4.2	98.3	690.7	1,000.00	-34.4	742.70	20
J-1009	0	126.5	752.1	1,000.00	-33.6	796.80	20
J-1805	1.3	49.5	559.3	1,000.00	-32.60	673.80	20
J-1011	0	127.9	752.1	1,000.00	-32.20	802.40	20
J-1668	2.6	56.6	693	1,000.00	-27.7	613.10	20
J-2860	3.2	111.5	549.5	1,000.00	-27.6	387.10	20
J-3062	1.3	73	306	1,000.00	-27.4	808.60	20
J-3061	0	73	306	1,000.00	-27.2	807.70	20
J-3409	0.6	77.2	622.2	1,000.00	-27.1	696.00	20
J-1032	0.6	110.1	752.1	1,000.00	-26.9	791.60	20
J-2584	0.6	74.6	352.4	1,000.00	-26.6	786.90	20
J-992	0	134.2	752.1	1,000.00	-26.6	826.50	20
J-432	1.9	78.9	627	4,500.00	-26.1	3,236.20	20
J-3503	3.2	138.9	470.6	1,000.00	-26.10	784.50	20
J-988	0	134.7	752.1	1,000.00	-26.10	828.60	20
J-2461	10	66.6	582.8	4,500.00	-25.6	3,023.10	20
J-427	0	77.1	627	4,500.00	-25.2	3,222.60	20
J-2578	0	75.1	352.4	1,000.00	-24.9	796.40	20
J-426	3.9	77.3	627	4,500.00	-24.5	3,241.50	20
J-424	0	79.4	627	4,500.00	-24.4	3,270.90	20
J-3058	3.5	75.8	306	1,000.00	-24.3	822.80	20
J-1673	1.9	58.6	693	1,000.00	-20.5	655.90	20
J-423	0	79.5	627	4,500.00	-20.5	3,343.20	20
J-1744	4.2	76.5	690.7	1,000.00	-20.2	733.20	20
J-2709	7.4	121.6	831.9	1,000.00	-20.10	665.70	20
J-422	0	79.8	627	4,500.00	-18.50	3,384.80	20

J-421	1.9	80.1	627	4,500.00	-18.5	3,391.10	20
J-16	0	158.1	506.9	4,500.00	-17.8	3,911.20	20
J-2	0	149.9	506.9	4,500.00	-17.2	3,887.60	20
J-3	1.9	149.7	506.9	4,500.00	-16.8	3,893.80	20
J-2808	4.8	143	552.9	1,000.00	-16.7	773.70	20
J-1678	2.6	58.5	693	1,000.00	-16.6	674.50	20
J-1813	1.9	75.8	622.4	1,000.00	-16.3	740.10	20
J-420	0	80.1	627	4,500.00	-15.9	3,439.50	20
J-4740	0.6	97.2	260.4	1,000.00	-15.8	808.20	20
J-1061	3.2	65.6	751.5	1,000.00	-13.80	710.50	20
J-1342	2.6	100.5	464.2	1,000.00	-13.80	730.90	20
J-638	0	75.9	628	1,000.00	-12.6	777.60	20
J-2838	1.3	112	550.2	1,000.00	-12.5	584.30	20
J-1914	9.6	64	624.8	1,000.00	-12.4	764.60	20
J-5	1.9	149.5	506.9	4,500.00	-11.8	3,962.60	20
J-1343	0	101.7	464.2	1,000.00	-11.3	739.50	20
J-2060	1.9	97.6	627.2	4,500.00	-10.2	3,734.40	20
J-2792	0	101.1	553.6	1,000.00	-9.8	575.50	20
J-1341	0.6	103.5	464.2	1,000.00	-9.4	752.40	20
J-1030	1.9	94.7	752.1	1,000.00	-9.3	831.80	20
J-1340	1.9	105.5	464.2	1,000.00	-9.20	759.00	20
J-2896	2.6	112.2	549.2	1,000.00	-9.00	408.00	20
J-5000	0	147.1	506.9	4,500.00	-9	3,992.60	20
J-1352	2.6	126.9	463.2	1,000.00	-8.5	760.10	20
J-2791	4.8	104.5	553.6	1,000.00	-6.8	594.40	20
J-1013	1.9	88.6	749.1	2,500.00	-6	1,956.70	20
J-4592	4.2	60.3	751.6	1,000.00	-5.9	735.00	20
J-3026	1.9	167.1	463.2	1,000.00	-5.7	883.90	20
J-1671	0.6	85.5	693	1,000.00	-3.3	839.10	20
J-1357	4.8	94.2	470.6	1,000.00	-2.9	759.70	20
J-1302	4.8	165	463.2	1,000.00	-2.7	896.70	20
J-2810	6.7	117.9	620.8	1,000.00	-2.50	896.00	20
J-2983	11.6	67.2	344.1	1,000.00	-2.40	816.80	20
J-1802	1.9	100.9	685.4	1,000.00	-2.2	863.10	20
J-2972	7.4	65.6	344.1	1,000.00	-2.1	809.70	20
J-2701	1.9	122.6	831.9	1,000.00	-1.7	693.50	20
J-2047	1.3	76.3	623.8	1,000.00	-1.7	832.60	20
J-1915	1.3	64.5	624.9	1,000.00	-1.6	819.30	20
J-403	6.1	91.7	627	4,500.00	-1.5	3,874.90	20
J-2912	3.5	122.2	549.2	1,000.00	-0.4	676.90	20
J-1916	2.6	64.7	624.9	1,000.00	-0.4	829.20	20
J-5360	12.5	88	382.7	1,000.00	0.2	900.80	20
J-2312	0.6	79.6	628	1,000.00	0.40	856.10	20
J-2779	7.7	109.6	553.7	1,000.00	0.50	718.10	20
J-2778	1.9	110.1	553.7	1,000.00	1	727.80	20
J-1677	1.9	63.9	693	1,000.00	1	808.90	20
J-3065	3.5	73.8	306.3	1,000.00	1.7	906.30	20
J-2770	2.6	86.5	382.7	1,000.00	2	898.30	20
J-2836	1.9	121.1	550.2	1,000.00	2	787.40	20
J-398	3.9	86.8	627	4,500.00	2	3,921.00	20
J-3059	1.9	72.4	306.3	1,000.00	2.8	907.80	20

J-8	0	150.4	506.9	4,500.00	2.8	4,186.30	20
J-3060	2.6	73.7	306.3	1,000.00	3	910.00	20
J-4866	3.9	102.9	751.1	2,500.00	3.10	2,177.00	20
J-2048	1.3	78.5	623.8	1,000.00	3.10	867.70	20
J-2768	0.6	110.3	382.7	1,000.00	4.7	929.10	20
J-4868	0	99.3	751.1	2,500.00	4.8	2,181.40	20
J-2849	5.5	120.8	550	1,000.00	5	812.30	20
J-1824	1.3	79.3	682.7	1,000.00	5.3	868.60	20
J-2765	0.6	112.1	382.7	1,000.00	5.4	933.10	20
J-2835	4.8	122.2	550.2	1,000.00	5.4	827.50	20
J-3305	3.5	39.3	621.6	1,000.00	5.5	836.80	20
J-4988	0.6	80.9	682.6	1,000.00	5.8	874.60	20
J-4860	3.5	110.5	751.1	2,500.00	6	2,252.20	20
J-4984	0	80.9	682.6	1,000.00	6.10	876.40	20
J-4858	0	99.3	751.1	2,500.00	6.70	2,215.00	20
J-4862	0	111	751.1	2,500.00	6.8	2,264.10	20
J-2071	1.9	97.5	627.2	4,500.00	7.7	4,136.30	20
J-3306	0	115.1	382.7	1,000.00	8	945.10	20
J-1395	3.2	76.1	472	1,000.00	8.2	888.60	20
J-2857	3.2	118.5	549.5	1,000.00	8.5	812.20	20
J-4864	0	111.4	751.1	2,500.00	8.6	2,294.50	20
J-2979	1.9	81.9	344.1	1,000.00	8.7	913.10	20
J-1948	2.6	59.8	624.2	1,000.00	8.9	884.80	20
J-2862	1.3	118.4	549.5	1,000.00	8.9	813.30	20
J-599	0	79.4	628	1,000.00	9.00	911.10	20
J-2910	1.3	127.8	549.2	1,000.00	9.50	828.70	20
J-2581	0.6	84.5	352.5	1,000.00	9.5	967.50	20
J-1999	11.6	43.3	626	1,000.00	9.8	859.10	20
J-2977	1.3	83	344.1	1,000.00	10.1	923.10	20
J-2872	3.2	118.5	549.4	1,000.00	10.2	828.70	20
J-2975	3.2	83.2	344.1	1,000.00	10.3	927.20	20
J-1371	4.2	100.7	470.6	1,000.00	10.6	893.30	20
J-2976	0	83.6	344.1	1,000.00	10.7	927.20	20
J-1356	0	113.5	470.6	1,000.00	11	945.30	20
J-4874	2.6	93.5	749	2,500.00	11.3	2,296.90	20
J-542	1.3	64.3	627.2	4,500.00	11.30	4,042.00	20
J-2994	4.8	73.1	344.1	1,000.00	11.30	923.80	20
J-2387	3.9	70.1	583.3	4,500.00	12.2	4,129.00	20
J-1355	2.6	113.9	470.6	1,000.00	12.4	955.90	20
J-1074	4.8	47	621.6	1,000.00	12.4	919.40	20
J-2699	1.3	128.4	831.9	1,000.00	12.6	729.60	20
J-9	3.9	148.9	506.9	4,500.00	12.7	4,360.60	20
J-2159	0	95.8	627.3	2,500.00	12.8	2,377.40	20
J-1043	6.1	62.5	751.8	1,000.00	13	919.50	20
J-2967	4.2	72.6	344.1	1,000.00	13.1	937.80	20
J-2909	0	129.4	549.2	1,000.00	13.2	885.70	20
J-1908	7.4	55.7	625.9	1,000.00	13.50	929.30	20
J-1353	0.6	114	470.6	1,000.00	13.50	960.70	20
J-2688	0.6	14	565.7	1,000.00	13.6	0.70	14
J-2815	7.4	130.5	551.3	1,000.00	13.8	943.60	20
J-2700	0.6	14.5	565.9	1,000.00	14	0.70	14.5

J-2996	6.7	77.3	344.1	1,000.00	14	952.90	20
J-2752	8.3	105.9	558.6	1,000.00	14.1	851.30	20
J-2955	1.9	92.1	511.7	1,000.00	14.1	972.10	20
J-4876	0.6	94.2	749	2,500.00	14.4	2,365.80	20
J-1684	1.9	58.5	694	1,000.00	15	928.90	20
J-1876	12.2	99.1	626.8	1,000.00	15.6	985.00	20
J-2985	1.3	91.9	344.1	1,000.00	15.70	969.70	20
J-4872	0	94.7	749	2,500.00	15.90	2,399.50	20
J-2908	0.6	129.1	549.2	1,000.00	16.3	933.50	20
J-2907	2.6	128.9	549.2	1,000.00	16.8	942.20	20
J-1366	3.2	113.5	467	1,000.00	17	976.60	20
J-1022	1.9	43.1	626.9	2,500.00	17.2	2,433.50	20
J-3307	0	94.8	748.9	2,500.00	17.2	2,430.50	20
J-1873	4.2	63.9	625.9	1,000.00	17.3	975.70	20
J-2268	7.4	38.5	625.1	1,000.00	17.4	953.90	20
J-1708	2.6	62.5	691.3	1,000.00	17.6	970.20	20
J-1838	1.3	68.4	685.2	1,000.00	17.6	958.90	20
J-22	0	156.5	506.9	4,500.00	18.00	4,461.60	20
J-1365	2.6	115.2	466.8	1,000.00	18.10	984.60	20
J-527	1.9	66.6	627.2	4,500.00	18.2	4,400.90	20
J-2804	3.2	132.8	551.9	1,000.00	18.2	985.30	20
J-3308	0	94.9	748.9	2,500.00	18.2	2,455.20	20
J-1709	1.9	64.3	691.3	1,000.00	18.3	980.80	20
J-2801	3.2	132.8	551.9	1,000.00	18.5	988.00	20
J-758	3.2	123.6	752.8	1,000.00	18.5	995.40	20
J-874	5.5	86.8	752.9	1,000.00	18.7	995.00	20
J-1358	3.5	62.6	306.7	1,000.00	19	995.80	20
J-1014	0	95	749	2,500.00	19.1	2,476.80	20
J-2816	3.5	119	620.9	1,000.00	19.40	999.80	20
J-1400	3.5	100.5	470.7	1,000.00	19.60	998.20	20
J-3504	0.6	133.4	463.8	1,000.00	19.7	998.20	20

Table G-7 - Pipe Velocities Over 8 fps for 2040 Peak Hour Demand

Pipe ID	From Node	To Node	Length (ft)	Diameter (in)	Flow (gpm)	Velocity (ft/s)
P949	V8036	J-4990	19.6	2	117.40	12
P947	J-4988	V8036	19.8	2	117.40	12
P199	WELL6PUMP	J-2412	43.9	6	987.10	11.2
P931	J-4980	V8032	42.5	2	102.00	10.4
P933	V8032	J-4982	42.4	2	102.00	10.4
3400	T5006	J-924	126.6	12	-3,171.10	9
488	J-925	J-923	29.7	10	2,024.90	8.3
1580	J-2424	J-2413	142.2	4	-316.7	8.1

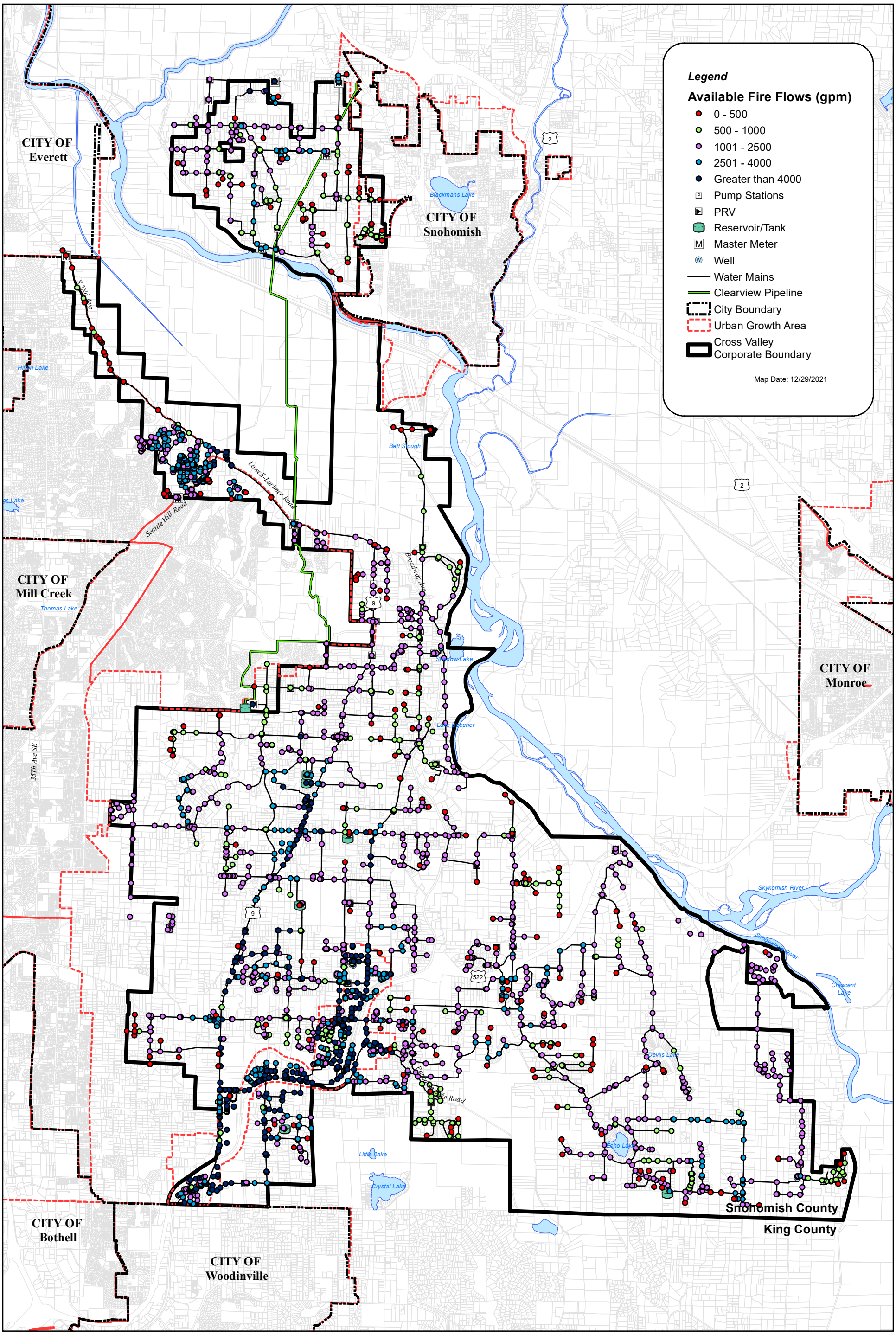


Figure G-1
Available Fire Flow Map

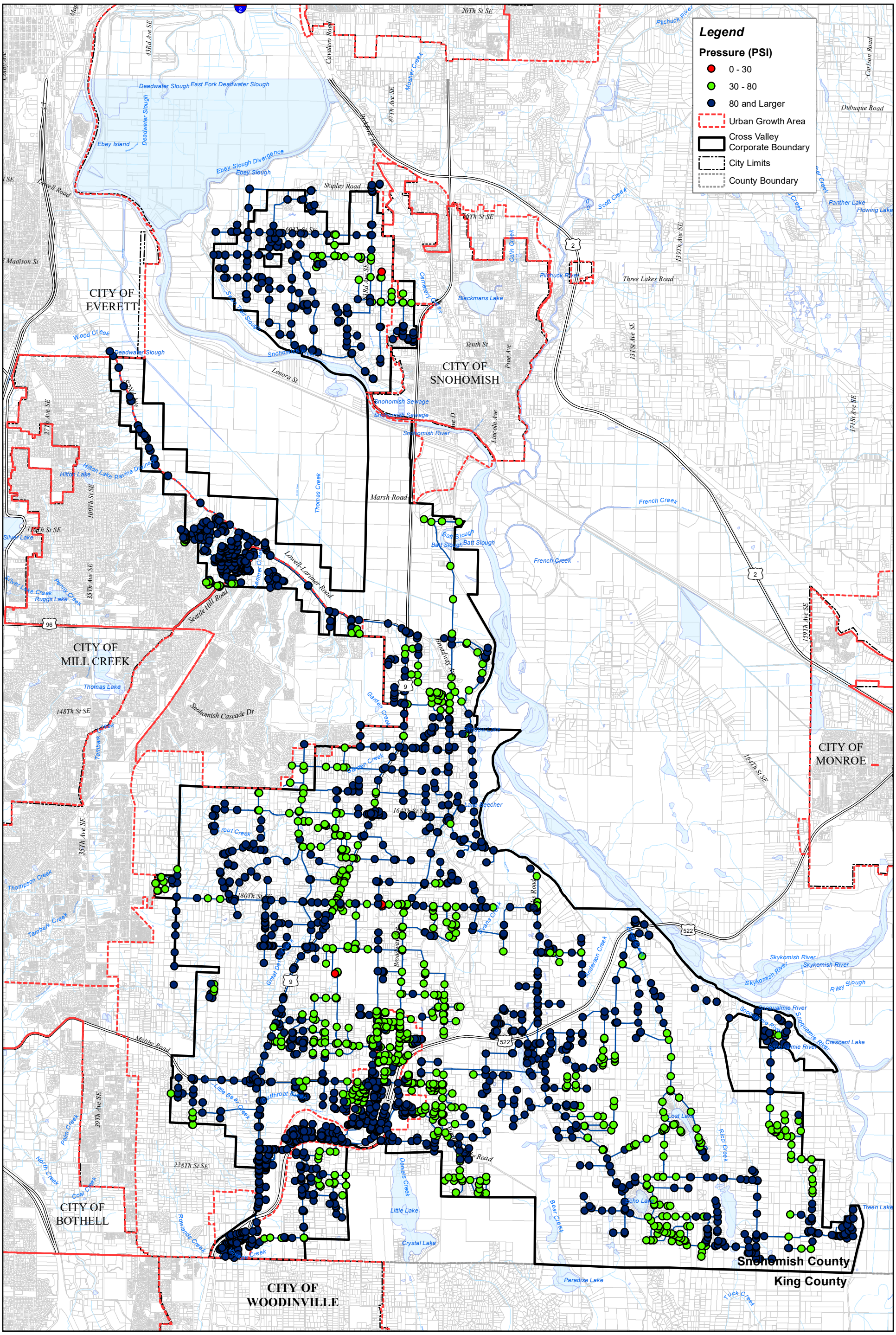
Water System Plan Update

PACE
An Engineering Services Company

Cross Valley Water District

Document Path: P:\P19\19120 CVWD 2019 Water System Plan\GIS\WaterSystemPlan2019Update\3_Cartographic\2021 Update\Figure G-1 Available Fire Flow Map.mxd

Date: 2/11/2022


Legend
Pressure (PSI)
0 - 30
30 - 80
80 and Larger
Urban Growth Area
Cross Valley Corporate Boundary
City Limits
County Boundary
CITY OF EVERETT
CITY OF SNOHOMISH
CITY OF MILL CREEK
CITY OF MONROE
CITY OF BOTHELL
CITY OF WOODINVILLE
Snohomish County
King County
Deadwater Slough
East Fork Deadwater Slough
Ebey Island
Ebey Slough Divergence
Ebey Slough
Skipley Road
Dewell Road
Madison St
20Th St SE
Cavalero Road
Mosher Creek
87Th Ave SE
Pilchuck River
Carlson Road
Dubuque Road
Panther Lake
Flowing Lake
Scott Creek
136Th St SE
139Th Ave SE
Three Lakes Road
Blackmans Lake
Cain Creek
Cemetery Creek
43Rd Ave SE
Wood Creek
Snohomish Tidal Slough
Lenora St
Tenth St
Pine Ave
Lincoln Ave
131St Ave SE
171St Ave SE
Snohomish Sewage
Snohomish River
Marsh Road
French Creek
Batt Slough
Lowell-Larimer Road
Seattle Hill Road
Broadway Ave
Garden Creek
Lake Beecher
164Th St SE
Snohomish Cascade Dr
148Th St SE
Thomas Lake
Tambark Creek
Trout Creek
180Th St SE
Thompson Creek
Silver Lake
Silver Lake Creek
Ruggs Lake
Penny Creek
Hilton Lake
Hilton Lake Ravine Drain
Thomas Creek
Larimer Creek
Great Bear Creek
Evans Creek
Anderson Creek
Skykomish River
Riley Slough
Snoqualmie River
Crescent Lake
Lost Lake
Ricci Creek
Malby Road
228Th St SE
Little Bear Creek
Bothell Creek
Palm Creek
North Creek
Coal Creek
Rowlands Creek
Daniels Creek
Little Lake
Crystal Lake
Bear Creek
Echo Lake
Treen Lake
Paradise Lake
Tuck Creek
Figure G-2
System Pressure Map
2019 Water System Plan Update
PACE
An Engineering Services Company
Cross Valley
WATER DISTRICT
Document Path: P:\P19\19120 CVWD 2019 Water System Plan\GIS\WaterSystemPlan2019Update\3_Cartographic\2021 Update\Figure G-2 System Pressure Map 11x17.mxd
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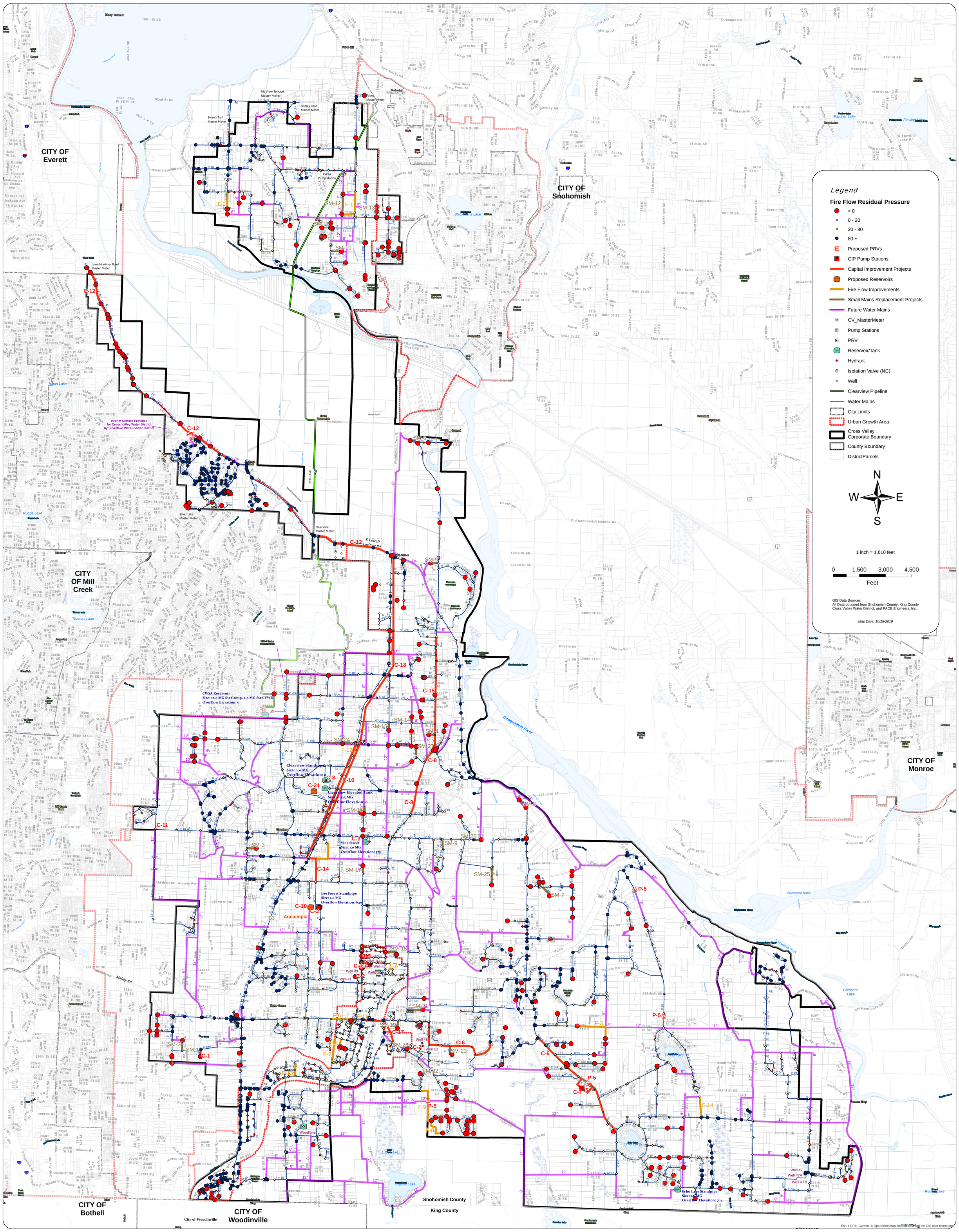

Appendix G - Modeling Info
Fire Flow Pressure Deficiencies with CIP Projects

P:\P19\19120 CVWD 2019 Water System Plan\GIS\WaterSystemPlan2019Update\3_Cartographic\2021 Update\Figure 7-1 Water System Plan.mxd

Cross Valley
WATER DISTRICT

Water System Plan
Cross Valley Water District

Appendix H
Wellhead Protection

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U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

JUN 5 1987

REPLY TO ATTN OF: WD-139

Earl Petersen, President
Cross Valley Water Assocation
Post Office Box 131
Snohomish, Washington 98290

Dear Mr. Petersen:

The Environmental Protection Agency (EPA) recently completed its evaluation and analysis of the Cross Valley Sole Source Aquifer petition submitted by the Cross Valley Water Association, Inc., and the Mount Forest Protection Association. The Cross Valley aquifer is located in southern Snohomish and northern King Counties in and around Clearview, Washington. Based on our assessment, I have determined that the Cross Valley aquifer meets the criteria for sole source aquifer classification. Formal designation of the Cross Valley aquifer as a sole source aquifer, is published in the May 18, 1987, Federal Register.

An aquifer may be designated a sole source aquifer as established under Section 1424(e) of the Safe Drinking Water Act (SDWA) of 1974. This section authorizes the EPA Administrator to determine that an aquifer is the "sole or principal" source of drinking water for an area. The sole source aquifer program also provides for EPA review of federal financially assisted projects planned for the area to determine their potential for contaminating the aquifer. Based on this review, no commitment of federal financial assistance may be made for projects "which the Administrator determines may contaminate such aquifer," although federal funds may be used to modify projects to ensure that they will not contaminate the aquifer.

Enclosed for your information is a copy of the May 18, 1987, Federal Register Designation Notice, a copy of our Support Document, and a Fact Sheet describing basic aquifer information.

We will be working closely with federal, state, and local agencies as we implement this program which complements ongoing state and local ground-water protection efforts.

Sincerely,

Robie G. Russell
Regional Administrator

Enclosures

CROSS VALLEY WATER DISTRICT
WELLHEAD PROTECTION PLAN UPDATE

EXECUTIVE SUMMARY

Wellhead protection programs in the state of Washington are required for all Group A public water systems relying on groundwater as described in WAC 246-290. CVWD prepared and submitted a WHPP to Washington Department of Health (WSDOH) in 2000 (Golder, 2000). The objective of this report is to update the Cross Valley Water District's (CVWD) Wellhead Protection Plan (WHPP). This update is intended to accomplish the following:

- Reduce the likelihood that potential contaminant sources will pollute groundwater used by the CVWD to supply their customers with drinking water;
- Identify actions that can be taken by the CVWD to foster and promote long-term management of groundwater quality;
- Provide a contingency plan that identifies alternate drinking water sources used by the CVWD in case contamination of an existing CVWD source occurs; and
- Meet the requirements of Chapter 246-290 of the Washington Administrative Code (WAC) and the provisions of the Washington State Wellhead Protection Program Guidance Document (WSDOH, 1995).

The CVWD is largely dependent on groundwater and withdraws water from a federally designated sole source aquifer (SSA). CVWD continues to experience population growth, which puts an increased demand on its water supply. Portions of CVWDs service area are zoned for commercial and industrial uses which have also increased in recent years. A major transportation corridor (State Route 9 and State Route 522) traverses the CVWD service area.

The natural water quality of the Cross Valley Aquifer is good. However, concerns about the influence of increased residential development in the CVWD Wellhead Protection Area (WHPA), and within Snohomish County in general, have raised awareness of groundwater quality issues in the CVWD WHPA. Protection of the quality of its groundwater supply is of prime concern to the CVWD.

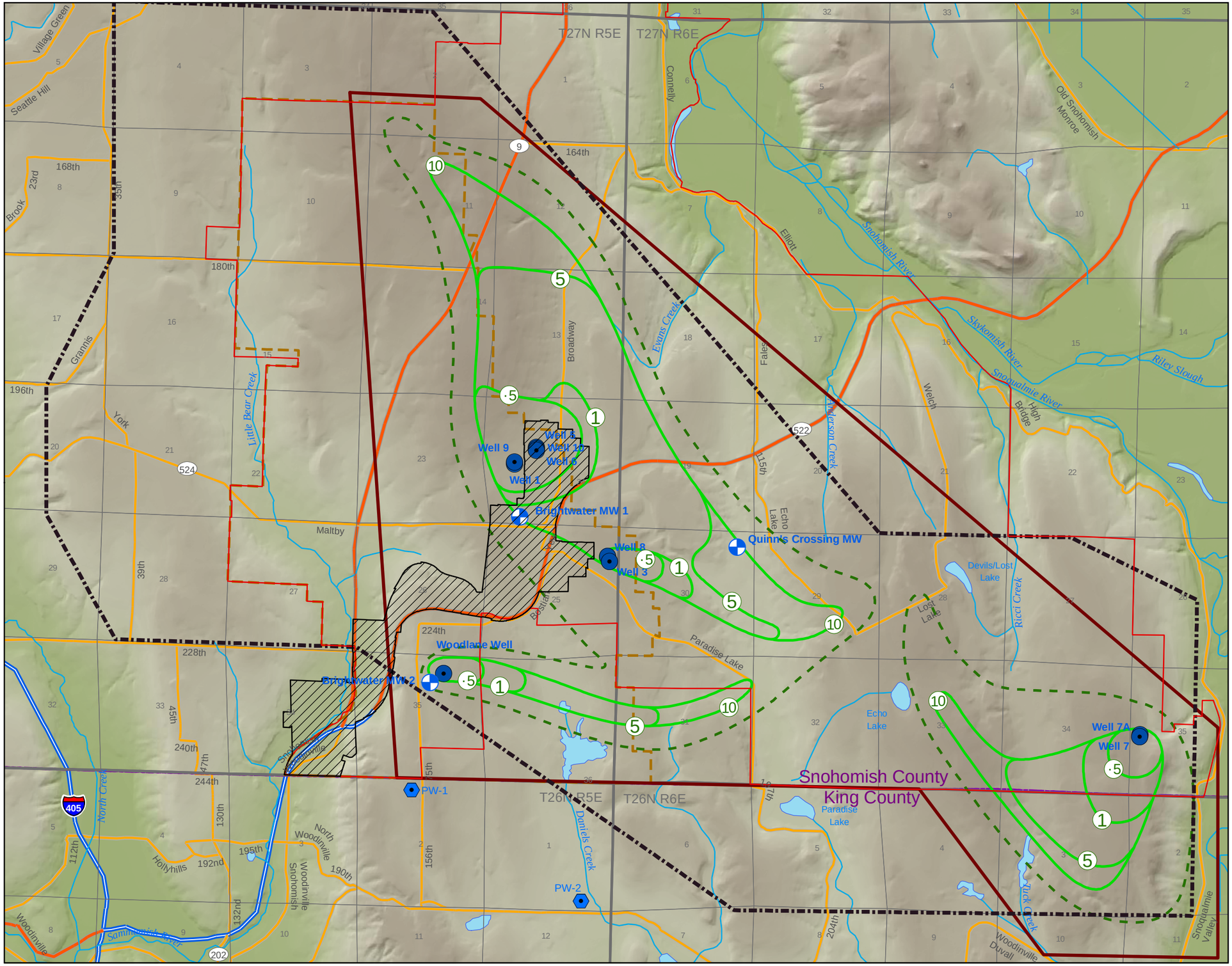
The CVWD requested the input of a stakeholder group in the update of its WHPP. The workgroup met five times in 2007: April 23, May 21, June 25, October 29, and December 17. Workgroup members included representatives from Snohomish County Planning Department, Snohomish Health District, homeowners associations, developers, and citizens. The workgroup helped identify issues of concern, wellhead protection strategies, and public outreach opportunities. The WHPP Update addresses key concerns including nitrate loading and water quality monitoring.

Water districts do not have land use jurisdiction or enforcement authority in wellhead protection areas and therefore depend on the proper implementation of existing groundwater protection programs for the protection of the water quality for its customers. Elements of CVWD's recommended wellhead protection strategy include continuing to use the designated WHPA as part of regulatory, planning, or enforcement actions aimed at groundwater protection; implementing existing programs; clarifying and implementing County permitting process within WHPAs; specifying the content of the hydrogeologic reports required as part of the County permitting process; considering alternative on-site treatment and

land acquisition/easements; monitoring existing point source contaminant sites; and developing an ambient groundwater monitoring program.

The CVWD WHPP Update (Golder, 2010) is being submitted to WSDOH in coordination with the water system plan. The WHPP Update is organized into eleven sections as follows:

- Section 1 is an introduction to the report which includes an overview of the objectives, scope, report organization, and data sources.
- Section 2 presents the hydrogeologic conceptual model, which includes an overview of the hydrogeology of the project area and discusses the surficial geology, recharge to the Cross Valley Aquifer, aquifer properties, groundwater flow, and groundwater quality.
- Section 3 discusses the use of numerical modeling to delineate wellhead protection areas around the CVWD wells. Results of the modeling are presented and include the 6-month, 1-year, 5-year, and 10-year capture zones to the wells (Figure ES-1).
- Section 4 discusses the current land use and development within the wellhead protection area. This section also includes a discussion of the potential impacts to groundwater quality from land use activities.
- Section 5 presents the findings of the contaminant source inventory. A summary is provided regarding the types and numbers of sources that were identified within the wellhead protection areas.
- Section 6 presents the nonpoint source loading approach that was used to identify the impacts of land use changes on groundwater quality. The analysis represents nitrate loading.
- Section 7 discusses wellhead protection strategies.
- Section 8 describes emergency spill response and supply contingency issues as presented in the water system plan.
- Section 9 provides an outline of activities to encourage public involvement in wellhead protection planning within the CVWD service area.
- Section 10 presents an implementation scheme for the CVWD WHPP, including an estimated budget to implement the plan.
- Section 11 lists the published texts and programs referred to in this report.



LEGEND

- Well Name — CVWD Supply Well
- Well Name — Monitoring Well (approximate location)
- Well Name — Woodinvile Water District Well
- Streams
- Limited Access
- Highway
- Major Road
- Existing Sewer Service Area
- Cross Valley Water District Boundary
- Delineated Wellhead Protection Zone and Travel Time (Years)
- Delineated Wellhead Protection Zone Buffer
- Designated Wellhead Protection Area (WHPA)
- County Limits
- Lakes and Rivers
- Cross Valley Sole Source Aquifer
- Future Potential Sewer Service Area*

* The future potential sewer service are was delineated based on the topography of the area. It represents the extext to which wastewater could flow south by gravity and does not represent any planned expansion of CVWD's sewer service area.

0 4,000
Scale in Feet

N

Map Projection:
Washington State Plane,
North Zone, NAD 83, Feet
Source: USGS, Cross
Valley Water District, ESRI,
Golder Associates (2000)

This figure was originally produced in color. Reproduction in black and white may result in a loss of information.

FIGURE **ES-1**
WELLHEAD PROTECTION AREAS
CVWD/PHASE I ADDRESS WTR QUALITY/WA

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APPENDIX B PAGE 8

Golder Associates

Cross Valley
WATER DISTRICT

Water System Plan
Cross Valley Water District

Appendix I
Water Quality

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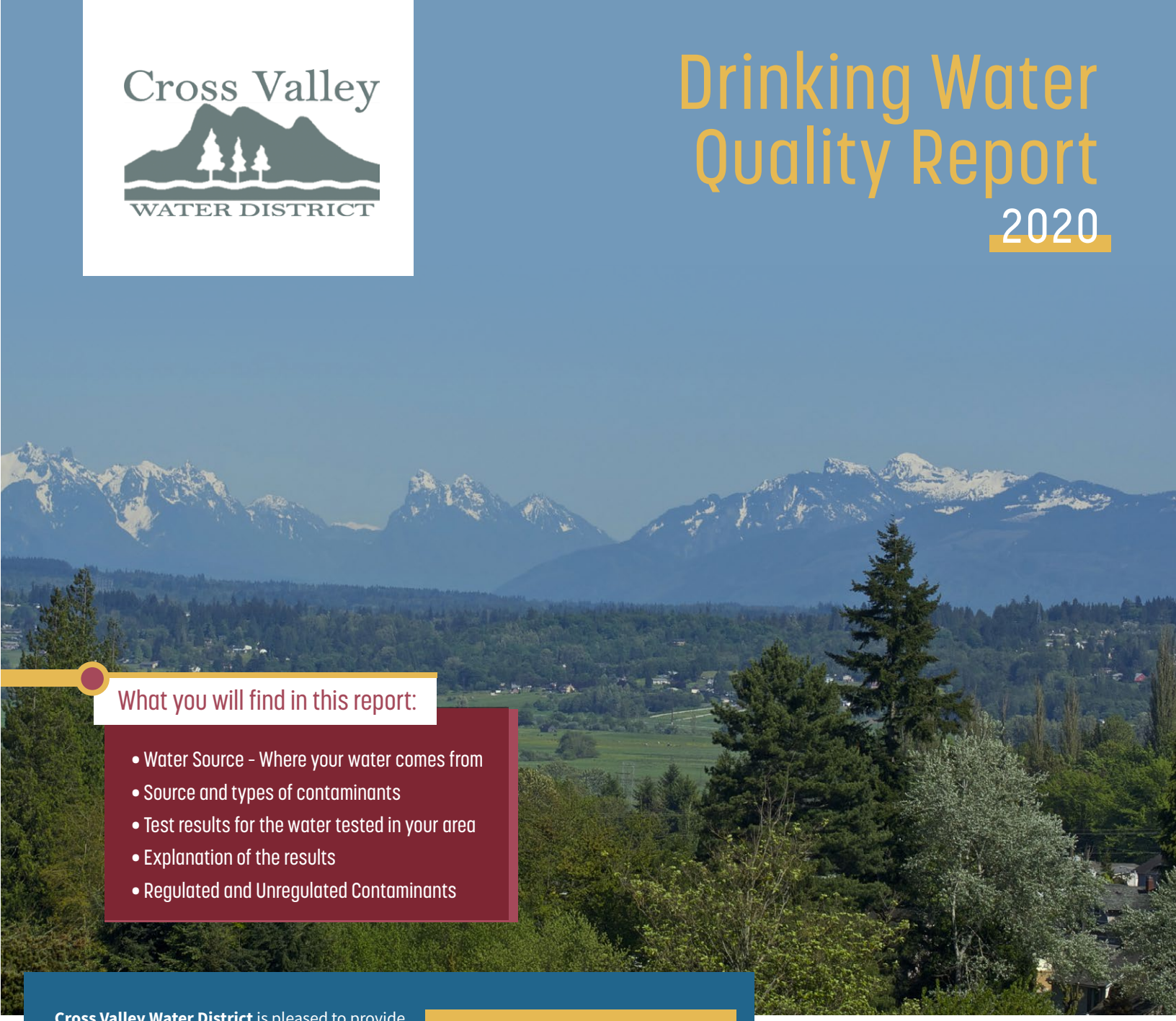
Cross Valley
WATER DISTRICT

Drinking Water Quality Report

2020



What you will find in this report:

- Water Source - Where your water comes from
- Source and types of contaminants
- Test results for the water tested in your area
- Explanation of the results
- Regulated and Unregulated Contaminants

Cross Valley Water District is pleased to provide you with our 2020 Water Quality Report. In this report we will provide you with information about your water source and the results of our water quality testing in 2020.

Cross Valley Water District welcomes public interest and participation with decisions regarding our community's drinking water. Regular meetings of the Board of Commissioners are held on the first and third Tuesday of each month at 2:30 p.m . Meetings are held at the District's Administrative Office located at 8802 180th St SE, Snohomish 98296. Please visit the District website to view the upcoming meeting agenda and if you wish to address the Board please contact the General Manager to reserve your spot on the agenda. The General Manager, Mike Johnson can be reached at 360-668-6766.

For More Information on Water Quality Issues:

Cross Valley Water District
8802 180th St. SE, Snohomish, WA, 98296-4804
(360) 668-6766
cvwd@crossvalleywater.net

City of Everett Water Quality Office
(425) 257-8800
everettwa.gov/water

EPA Safe Drinking Water
Hotline (800) 426-4791
www.epa.gov/safewater
Email questions to:
hotline-sdwa@epamail.epa.gov

Washington State Department of Health Division of Drinking Water
1-800-521-0323
www.doh.wa.gov/ehp/dw

Turbidity, Nitrate, Total Coliform, Bacteria, Fluoride, Bromodichloroacetic Acid, Chloroform, Lead, Copper… What do all these terms mean?

Maximum Contaminant Level (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL) -The level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as is feasible using the best available treatment technology.

Treatment Technique (TT) - A required process intended to reduce the level of a contaminant in drinking water.

Action Level (AL) - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

Parts per Million (ppm) / Parts per Billion (ppb) -A part per million means that one part of a particular contaminant is present for every million parts of water. Similarly, parts per billion indicate the amount of contaminant per billion parts of water.

Total Coliform Bacteria - Testing is used to monitor microbial quality in the water distribution system.

Fluoride- Is added to the water (Everett Water Supply Only) in carefully controlled levels for dental health. The Fluoride in well water, if any, comes from natural resources.

Nitrate- The small amount of nitrate comes from natural sources in the water shed.

Turbidity- Is a measure of the amount of particulates in water measured in Nephelometric Turbidity Units (NTU).

Particulates in water can include bacteria, viruses and protozoans that can cause disease. Turbidity measurements are used to determine the effectiveness of the treatment process in removing these particulates. 95% of all combined filter effluent samples, must be less than, or equal to 0.3 NTU and no single turbidity sample can be greater that 1.0 NTU.

1 Bromodichloroacetic Acid, Chloral Hydrate, Dichloroacetonitrile, 1,1 Dichloropropanone, 1,1,1 Trichloropropanone, Total Organic Hallides- These substances are by-products of the chlorine disinfection process and were monitored quarterly as part of the Information Collection Rule (ICR) requirements.

2 Bromodichloromethane, Chloroform, Dichloroacetic Acid, Trichloroacetic Acid These substances are disinfection by-products which must be monitored quarterly every year to determine compliance with the Disinfectants/Disinfection By-products Rule regulations.

Not Applicable (N/A) - Means that EPA has not established MCLGs for these substances.

Microbial, Turbidity and Inorganics - All parameters are below EPA standards.

Lead & Copper - EPA requires monitoring for the presence of lead and copper. The 90% level is the highest result obtained in 90% of the samples when ranked from lowest to highest findings. This indicates there is virtually no lead or copper in the water you are provided, but your household plumbing may contribute to the presence of lead and copper at your tap.

ND & NR - "ND" means not detected. "NR" means the contaminant was not regulated by EPA.

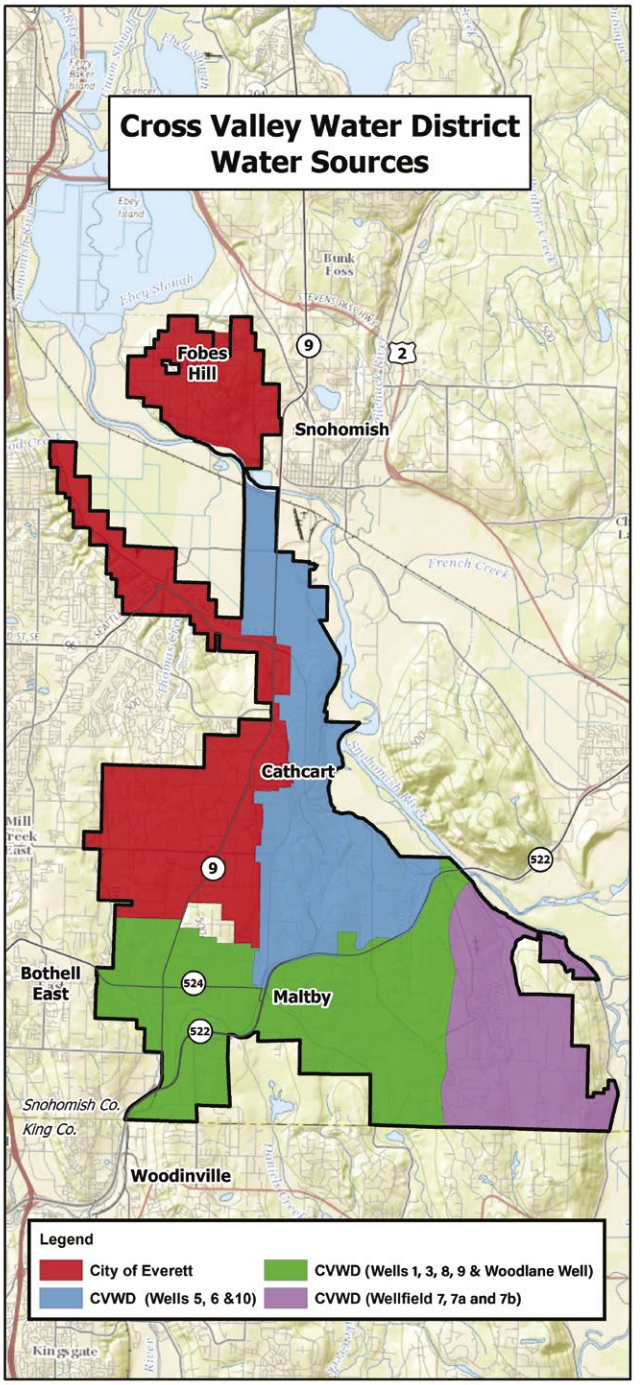
Arsenic- The maximum contaminant level (MCL) for arsenic in drinking water is ten parts per billion (10 ppb). Over the past year, Everett and Cross Valley Water District have routinely monitored the treated drinking water for arsenic. None near the MCL was detected in any of the samples collected.

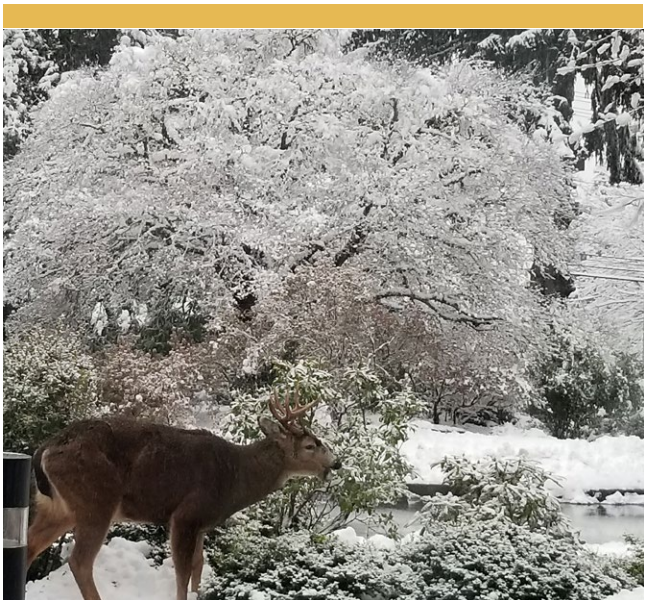
Treatment Polymers - During water treatment, polymer coagulants are added to improve coagulation and filtration that remove particulates from water. The particulates that are removed can include viruses, bacteria and other disease causing organisms. The USEPA sets limits on the type and amount of polymer that a water system can add to the water. In addition to the EPA limits, the State of Washington also requires that all polymers used be certified safe for potable water use by an independent testing organization (NSF International). During treatment, Everett adds only NSF approved polymers and the levels used are far below the safe limits set by USEPA.

Disinfection By-Products (DBPs) - These are organic compounds resulting from the interaction of chlorine with natural organic matter in water supplies. This applies to locations within the Everett service area and the portion of the Cross Valley Water Service area where the source is wells 5, 6, and 10 which are monitored to determine compliance with current regulations. Both HHA5 and TTHM content of your water have been significantly below the maximum allowed safety levels.

Halo-acetic acids (HAA 5) - A disinfection by-product of the chlorination process that is used to kill or inactivate disease-causing microbes. The EPA standard is 60 ppb.

Trihalomethane (THM) – A disinfection by-product of the chlorination process that is used to kill disease-causing organisms. The EPA standard is 80 ppb.





2020 WATER QUALITY ANALYSIS RESULTS FROM EVERETT AND THE WELLS OF CROSS VALLEY

		Wells 1, 3, 8, 9 & Woodlane					Wells 7, 7a & 7b	Wells 5,6&10	Everett				
		Results	Results	Results	Range	Average	Results	Results	Range	Average	Complies	MCL	Major Source Listed by EPA
REGULATED	Units	Woodlane	3 & 8	1 & 9						Value			
ARSENIC	mg/L	0.001	0.003	0.005	0.001-0.005	0.003	N/D	0.004	<0.1-0.2 ppm	0.1	Yes	0.01	Erosion of natural deposits: runoff from orchards, runoffs from glass & electronics production waste
ALKALINITY	mg/L	N/D	N/D	N/D	N/D	N/D	N/D	N/D	9.4-27.6 ppm	17.3	Yes		
ALUMINUM	mg/L	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0.007-0.017 ppm	0.02	Yes		
BARIUM	mg/L	0.006	0.004	0.003	0.003-0.006	0.004	0.003	0.004			Yes	2	
CHROMIUM	mg/L	0.001	0.001	N/D	N/D-0.001	0.001	N/D	N/D			Yes	0.1	
FLUORIDE	mg/L	N/D	N/D	0.1	N/D-0.1	0.003	N/D	0.14	0.3-0.7 ppm	0.7	Yes	4	CVWD - Naturally occurring, erosion of natural deposits. Everett - Fluoride is added to your water during treatment
NITRATE-N	mg/L	3.2	2.79	0.65	0.65-3.2	2.21	0.76	N/D			Yes	10	Erosion of natural deposits and animal wastes
MANGANESE	mg/L	N/D	N/D	0.003	N/D-0.003	0.003	0.002	0.004			Yes	0.05	
CHLORIDE	mg/L	6.1	5.1	3.6	3.6-6.1	4.93	2.3	5.1			Yes	250	
SULFATE	mg/L	13	10	8.9	8.9-13	10.63	8.8	6.2			Yes	250	
SODIUM	mg/L	6.63	6.74	6.1	6.1-6.74	6.49	4.46	7.94	6.1-6.6 ppm	6.4	Yes		
HARDNESS as Calcium Carbonate	mg/L	100	86.7	68.3	68.3-100	85	56.5	67.8	9.4-15.3 ppm	12.4	Yes		
ELECTRICAL CONDUCTIVITY	uS/cm	259	220	173	173-259	217.33	144	178			Yes	700	
TURBIDITY	NTU	N/D	N/D	N/D	N/D	N/D	N/D	N/D	100%	0.07	Yes	1	Soil Erosion
RADIUM	pCi/L	N/D	N/D	N/D	N/D	N/D	N/D	N/D			Yes	5	
FREE CHLORINE	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	0.63	0.2-1.1	0.7	Yes	2	
PH	s.u							7.4	7.6-9.1	8	Yes		
DISINFECTION BY-PRODUCTS													
HALO-ACETIC ACIDS HAA 5	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	36.1	22-49	38	Yes	60	By-product of drinking water chlorination
TOTAL TRIHALOMETHANE	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	48	28-50	49	Yes	80	By-product of drinking water chlorination
UNREGULATED												MRL	Minimum Reporting Level
VANADIUM	ug/L	3.97	4.65	7.88	3.97-7.88	5.5	1.01	2.39			N/A	0.2	
MOLYBDENUM	ug/L	N/D	N/D	N/D	N/D	N/D	N/D	1.05			N/A	1	
STRONTIUM	ug/L	0.9	60.7	81.4	0.9-81.4	47.667	57.7	78			N/A	0.3	
CHROMIUM	ug/L	0.001	0.001	N/D	N/D-0.001	0.001	N/D	N/D			N/A	0.2	
HEXAVALENT CHROMIUM	ug/L	1.214	1.286	N/D	1.214-1.286	1.25	0.056	0.032			N/A	0.03	

COLIFORM SAMPLIING		Cross Valley Wells					Everett Water Supply					Limit	
COLIFORM BACTERIA SAMPLES	% Pos			<1%	<1%	<1%	<1%				Yes	5% Pos	Everett collects 120-125 samples per month - CVWD collects 20 per month

LEAD AND COPPER SAMPLING		Cross Valley Wells				Everett Water Supply					
Parameter	Units	Ideal Goal	Action Level	90% Level	# exceed Action	Ideal Goal	Action level	90% level	# exceed Action	Complies	Major source listed by EPA
LEAD	ppb	0	15	2	0 of 30	0	15	2	0 of 108	Yes	Corrosion of Household Plumbing
COPPER	ppm	0	1.3	0.354	0 of 30	1.3	1.3	0.141	0 of 108	Yes	Corrosion of Household Plumbing

Total coliform bacteria monitoring is used to track microbial quality in the water distribution system. Everett collects 120-125 samples per month. Not more than 5 percent of the monthly total can be positive for total coliforms. 0 total coliforms were detected in Everett in 2020.

Cross Valley Water District collects 20 samples per month for a total of 240 annually, we had 2 samples in 2020 with positive coliform presence.

Fluoride is added to areas served by the City of Everett supply in carefully controlled levels for dental health.

The Washington State Board of Health updated and adopted WAC 246-290-460, fluoridation of drinking water on May 9, 2016, adopting the standard at 0.7 ppm.

Turbidity is a measure of the amount of particulates in water in Nephelometric Turbidity Units (NTU). Particulates in water can include bacteria, viruses and protozoans that can cause disease. Turbidity measurements are used to determine the effectiveness of the treatment processes used to remove these particulates. The values reported are the lowest monthly percentage of samples that met the EPA turbidity limit and the highest single filtered water turbidity measurement obtained during the year. In 2020, no filtered water turbidity results were above the EPA 0.3 NTU limit so the lowest percentage was 100%. The plant targets production of filter water turbidities of 0.10 NTU or less.

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Why Are We Sending This Report?

The Safe Drinking Water Act (SDWA) requires community water systems to provide customers with annual reports on the quality of their drinking water. This information is to raise consumer awareness of where their water comes from and to help them understand the process by which safe drinking water is delivered to their homes. All people are exposed to sources of disease and illness every day in many different ways. Typically, healthy people have normal immune systems that can help prevent diseases from many sources. Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium are available from the Safe Drinking Water Hotline (800-426-4791). The information in this report has been collected and reported in accordance with the water quality standards established by the EPA and DOH. Cross Valley Water District is dedicated to providing you with the safest and most reliable water supply.

The Facts on Contaminants

The sources of drinking water (both tap and bottled water) include streams, rivers, lakes, ponds, reservoirs, springs, and wells. Drinking water, including bottled water may reasonably be expected to contain at least small amounts of some contaminants. A contaminant is defined as any substance in water including minerals. The presence of contaminants does not necessarily indicate that water poses a health risk.

As water travels over the surface of the land or through the ground, naturally-occurring minerals, and in some cases radioactive material, dissolve in the water. Water can also pick up substances resulting from the presence of animals or from human activity.

Contaminants that my be present in source water are microbes, pesticides, herbicides, organic or inorganic chemicals, and radioactive minerals.

More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).

EPA Lead Statement:

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Cross Valley Water District is responsible for providing high quality drinking water, and the highest concentration of lead present in samples was 2 ppb, significantly below the action level of 15ppb. However we cannot control the variety and type of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

SOURCE NAME	FLOW RATE (In gpm)	WELL SCREEN DEPTH - FT.	PRESSURE ZONE	TREATMENT
Well 1	130	171-191	640	None
Well 3	350	208-238	640	None
Well 5	450	217-244	756 & 575	Filtration & Chlorination
Well 6	400	235-255	575 & 756	Filtration & Chlorination
Well 7	350	171-191	700	None
Well 7A	150	204-214	700	None
Well 7B	500	186-199	700	None
Well 8	350	174-244	640	None
Well 9	980	262-300	640	None
Well 10	700	220-271	575 & 756	Filtration & Chlorination
Woodlane Well	40	156-168	640	None
Everett (Surface Water)	N/A	N/A	Multiple	Filtration Chlorination Fluoridation

DO I RECEIVE GROUND WATER OR SURFACE WATER TO MY HOME?

Cross Valley Water District has several sources from which we draw water. One source is from our own wells listed above. Some of our customers also receive water that we purchase from the City of Everett source. This water is surface water that comes from the Sultan River (via Spada Reservoir), located approximately 30 miles east of Everett. This water is treated at the Lake Chaplin Treatment plant where Chlorine & Fluoride is added. Customers in the Fobes Hill, Swans Trail, Seattle Hill, Lowell Larimer Road and the general Clearview area receive water from the City of Everett source. All other customers receive ground water from Cross Valley Water District wells.

Source map on page 2.

If you do not know from which water source your water is drawn, please call our office and we can assist you .

CONSERVATION KITS

Each year we have a limited number of indoor and outdoor conservation kits available at our office. Please stop by and pick up a kit!

Cross Valley WATER DISTRICT

BOARD OF COMMISSIONERS:
Dave Hutley
Ginger Desy
W. E. (Skip) Schott

GENERAL MANAGER:
Mike Johnson

WATER QUALITY:
Justin Jones

O&M MANAGER:
Dave Calvo

В этом сообщении содержится важная информация о воде, которую вы пьёте. Попросите кого-нибудь перевести для вас это сообщение или поговорите с человеком, который понимает его содержание.

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

此报告包含有关您的饮用水的重要信息。请人帮您翻译出来，或请看懂此报告的人将内容说给您听。

RESOLUTION NO. 2019-8-3

A RESOLUTION of the Board of Commissioners of Cross Valley Water District, Snohomish County, Washington, relating to the District's Cross Connection Control Program and regulations; repealing Resolutions No. 1991-9-6 and 2001-6-2-6 and Chapter 6.15 of the Cross Valley Water District Code; and adding a new Chapter 6.15 to the Cross Valley Water District Code.

WHEREAS, Cross Valley Water District is a Washington municipal corporation operating under Title 57 RCW, and was formed for the purpose of providing water and sewer utility service to persons and property located within and without the District's service areas; and

WHEREAS, the District has responsibility under WAC 246-290-490 (1)(d) to protect the District's water distribution system from contamination by the adoption and implementation of a cross connection control program ("Program"), and the District Board of Commissioners has approved such a Program by the adoption of Resolutions No. 1991-9-6 and 2001-6-2-6, codified at Chapter 6.15 of the Cross Valley Water District Code; and

WHEREAS, the District desires to update the District's Program to comply with the requirements of WAC 246-290-490 as such has been modified, updated and amended, and the most recent edition of the Pacific Northwest Section-American Water Works Association's (PNWS-AWWA) Cross Connection Control Manual; and

WHEREAS, the District's cross connection program was developed using the following references; The Federal Safe Drinking Water Act, Washington Administrative Code 246-290-490, Cross Valley Water District Administrative Code, Cross Valley Water District Standards and Specifications, The Cross-Connection Control Manual Accepted Procedure and Practice - Pacific Northwest Section of American Water Works Association – 7th edition, and University of Southern California Foundation for Cross Connection Control and Hydraulic Research; and

WHEREAS, the District has further determined that it would be beneficial to the District to update the District's Program to provide for uniform testing dates for cross connection control devices, among other things; and

WHEREAS, the District's General Manager has recommended that the District's Board of Commissioners adopt the revised Program attached to this Resolution as Exhibit A; and

WHEREAS, the Board of Commissioners has determined that it is in the best interests of the District to adopt the revised Program attached to this Resolution as Exhibit A; now, therefore

BE IT RESOLVED by the Board of Commissioners of Cross Valley Water District, Snohomish County, Washington as follows:

Section 1. Chapter 6.15 of the Cross Valley Water District Code and Resolutions No. 1991-9-6 and 2001-6-2-6 are repealed.

Section 2. A new Chapter 6.15 is added to the Cross Valley Water District Code to read as **Exhibit A**, attached hereto and incorporated herein by this reference.

PASSED BY THE BOARD OF COMMISSIONERS of Cross Valley Water District, Snohomish County, Washington, at the regular meeting held August 20, 2019.

Ginger Desy, President

Warren E. Schott Jr., Secretary

Dave Hutley, Commissioner

EXHIBIT A

PREMISE ISOLATION
CROSS-CONNECTION CONTROL PROGRAM
Revised 2019

Chapter 6.15 PREMISE ISOLATION CROSS-CONNECTION CONTROL PROGRAM

6.15.010 Legal Authority.

The Cross Valley Water District's (District) Premise Isolation Cross-Connection Control Program (Program) was developed in accordance with the requirements of WAC 246-290-020 and was first adopted by the District Board of Commissioners in Resolution 1991-9-6. Updates to this Program were adopted on June 19, 2011 in Resolution No. 2001-6-2. The updated Program stated in this Chapter was adopted on August 20, 2019 by Resolution 2019-8-3.

6.15.020 Purpose.

The purpose of this Chapter is to protect the District's public water system from contamination through cross-connections. Accordingly, the intent of this Chapter is to provide for the permanent abatement or control, by way of backflow prevention, of all cross-connections to the District's water system as required by WAC 246-290-490. When it is deemed necessary by the General Manager or the Cross Connection Control Coordinator of the District, there shall be installed, at a customer's expense and at a customer's service connection, an approved backflow prevention assembly commensurate with the degree of health hazard to the District water supply (premise isolation).

6.15.030 Definitions.

For the purposes of this Chapter, the following terms, phrases, words, and their derivations shall have the meaning stated in this section. If not defined in this section, terms, phrases and words in this Chapter shall have the meaning stated in WAC 296-290-010, as now existing and as hereafter amended.

A. **ACCESSIBLE** means, in reference to the installation of backflow preventers, that such backflow preventers are placed so that they can be reached for testing and/or maintenance safely, but may allow access panels, doors, etc.

B. **APPROVED AIR GAP** means a physical separation between the free flowing end of a potable water supply pipeline and the overflow rim of an open or non-pressurized receiving vessel. To be approved the separation must be at least:

1. Twice the diameter of the supply piping measured vertically from the overflow rim of the receiving vessel, and in no case be less than one inch, when unaffected by vertical surfaces (sidewalls); and
2. Three times the diameter of the supply piping if the horizontal distance between the supply pipe and a vertical surface (sidewall) is less than or equal to three times the diameter of the supply pipe. Or if the horizontal distance between the supply pipe and intersecting vertical surfaces (sidewalls) is less than or equal to four times the diameter of the supply pipe and in no case less than one and one-half inches.

C. **APPROVED BACKFLOW PREVENTION** means an air gap or assembly that has been approved by the Washington State Department of Health and Cross Valley Water District for preventing backflow.

D. **AUXILIARY WATER SUPPLY** means any water supply on or available to the premise other than the Cross Valley Water District's approved public water supply. These auxiliary supplies may include water from another purveyor's public water supply, or any natural source such as a well, spring, river, stream, lake, etc. and/or reclaimed water or industrial fluids.

E. **BACKFLOW** means the undesirable reversal of flow of water or other substances through a cross-connection into the District's water system, or consumer's potable water system.

F. **BACKFLOW ASSEMBLY TESTER (BAT)** means a person who is certified by the Washington State Department of Health to test backflow prevention assemblies.

G. **BACKFLOW PREVENTION ASSEMBLY** means a certified assembly that prevents backflow into the District's water distribution system.

H. **BACKFLOW PREVENTION DEVICE** means a backflow preventer that is not designed for in-line testing.

I. **BACKFLOW / CROSS-CONNECTION SPECIALIST** means a person(s) authorized and designated by the District to inspect premises for potential cross-connection.

J. **BACKPRESSURE** means a pressure caused by a pump, elevated tank or piping, boiler, or other means on the consumer's side of the service connection that is greater than the pressure provided by the District's water system and which may cause backflow.

K. **BACKSIPHONAGE** means a form of backflow due to a negative or sub-atmospheric pressure within a water system.

L. **CERTIFIED CROSS-CONNECTION CONTROL SPECIALIST** means an individual certifiedby the State and approved by the District to administer a cross-connection control program and to conduct cross-connection surveys.

M. **CHECK VALVE** is a generic term used for a variety of valves that specifically allows flow in one direction only. The variety of such valves include slanting disc checks, silent checks (wafer or globe) automatic control valves, rubber flapper checks, double disc swing checks, swing checks (internally or externally weighted), and a spring loaded check. A check valve in an approved assembly must be an approved check valve that is drip tight in the normal direction of flow when the inlet pressure is at least one psi.

N. **CONSUMER'S WATER SYSTEM** means any potable and/or industrial water system that begins at the point of delivery from the District water meter or connection and is located on the consumer's premises. The consumer's water system includes all auxiliary sources of supply, storage, treatment, and distribution facilities, piping, plumbing and fixtures under the control of the consumer.

O. **CONTAMINANT** means any substance present in drinking water that may adversely affect the health of the consumer or the aesthetic qualities of the water.

P. **CROSS-CONNECTION** means any actual or potential physical arrangement whereby the District's water system is or may be connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device or source which contains, or may contain, contaminated water, sewage, or other waste or liquid of unknown quality which may be capable of having the potential to contaminate the District's water supply with any nonpotable water supply by backfow. By-pass arrangements, jumper connections, removable sections, swivel or changeable devices, and other temporary or permanent devices through which, or because of which, a backflow or backsiphonage may occur, are considered to be cross-connections.

Q. **CUSTOMER** means any person or organization who receives water from Cross Valley Water District.

R. **CUSTOMER'S SYSTEM** means the water piping system located immediately downstream from the

District's water meter or service connection.

S. **DEGREE OF HAZARD** means the expression of the results of an evaluation of a health, system or plumbing hazard.

T. **DISTRIBUTION SYSTEM** means the network of pipes and other facilities which are used to distribute water from the source, treatment, transmission, or storage facilities to the water user, excluding individual services.

U. **DISTRICT** means Cross Valley Water District.

V. **DISTRICT'S WATER DISTRIBUTION SYSTEM** means the water distribution system owned and operated by the District including the service connection to a water main.

W. **DOUBLE CHECK DETECTOR ASSEMBLY (DCDA)** means a state approved backflow prevention assembly consisting of two approved double check valve assemblies, set in parallel, equipped with a meter on the bypass line to detect small amounts of water leakage or use.

X. **DOUBLE CHECK VALVE ASSEMBLY (DCVA)** means a State approved backflow prevention assembly composed of two single, independently acting check valves, spring loaded to the closed position, and installed as a unit with, and between, two resilient seated shutoff valves and having four properly located resilient seated test cocks.

Y. **FACILITY SURVEY** means the on-site review for the purpose of evaluating any health hazards to the potable water system. A survey of the customer's premises is not intended to be an inspection of the entire plumbing system, it allows the District's cross-connection specialist to make a judgment of what requirements will be imposed upon the customer to obtain, or continue to obtain water from the purveyor.

Z. **HIGH-HEALTH CROSS-CONNECTION HAZARD** means a cross-connection which could impair the quality of potable water and create an actual public health hazard through poisoning or spread of disease by sewage, industrial liquids or waste.

AA. **IRRIGATION SYSTEM** means any system of underground piping, with stationary or non-stationary sprinkler heads, connected directly or indirectly to the District's distribution system, on either a temporary or permanent basis. Irrigation systems can be either low-health hazard or high-health hazard systems. High-health hazard systems contain pumps or injectors for addition of chemicals. An approved air gap or an approved reduced pressure backflow assembly is required for premise protection. The assembly is to be located at the end of the District water connection on the customer's side of the property line. A low-health hazard is assessed to all other irrigation systems. An approved double check valve assembly will be installed at the end of the meter connection on the customer's side of the property line.

BB. **LOCAL ADMINISTRATIVE AUTHORITY** means the local official, board, department, or agency authorized to administer and enforce the provisions of the Uniform Plumbing Code as adopted under chapter 19.27 RCW.

CC. **LOW-HEALTH CROSS-CONNECTION HAZARD** means a cross-connection that could cause an impairment of the quality of potable water to a degree that does not create a hazard to the public health, but does adversely and unreasonably affect the aesthetic qualities of such potable waters for domestic use.

DD. **MAXIMUM CONTAMINANT LEVEL (MCL)** means the maximum amount of a contaminant allowed in a sample of water according to federal and state regulations.

EE. **NON-POTABLE FLUID** means any water, other liquid, gas, or other substance which is not safe for human consumption, or is not part of the public potable water supply as described by the health authority.

FF. **POTABLE WATER** means water which is safe for human consumption and free from harmful or objectionable materials, as described by the health authority.

GG. **PREMISES** means a piece of land to which water is provided, including all structures and improvements located on it.

HH. **PREMISE ISOLATION** means a method of protecting the District's water system by installing approved backflow prevention assemblies at the end of the District's water meter connection on the customer's side of the property line. Cross Valley Water District utilizes premise isolation in its cross-connection control program.

II. **REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA)** means a state approved backflow prevention assembly composed of two independently acting check valves spring loaded to the closed position and an automatically opening differential relief valve located between the two check valves. Installed as a unit with, and between, two resilient seated shutoff valves and having four properly located resilient seated test cocks.

JJ. **REDUCED PRESSURE DETECTOR ASSEMBLY (RPDA)** means a state approved backflow prevention assembly incorporated of two approved reduced pressure backflow assemblies, set in parallel, equipped with a meter on the bypass line to detect small amounts of water leakage or use.

KK. **SAFE DRINKING WATER ACT** means the legislation enacted by the US Congress in 1974 to ensure that the public is provided with safe drinking water.

LL. **SERVICE CONNECTION** means the piping connection by means of which water is conveyed from the District's distribution main to a customer's property line, or to the end of the meter connection. See also WAC 296-290-010(233).

MM. **THERMAL EXPANSION** means the pressure increase due to a rise in water temperature. The problem becomes acute in heated water piping systems when such systems become "closed" due to a backflow prevention assembly, which disallows expansion beyond that point.

NN. **USC FCCCHR** is the abbreviation for the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research. It is an agency, which tests and approves backflow prevention assemblies by approved standards.

6.15.040 General Policies.

A. In order to provide for an orderly and adequate means of backflow prevention, the District has adopted the requirements in this Chapter for the protection of its distribution system as set forth in the approved District Code and the District's Standard & Specifications. New water service connections shall be installed, and existing water service connections shall be modified, to conform to these requirements where applicable.

B. The District's responsibility for backflow prevention shall begin at the water supply source and include all water treatment, storage, and distribution facilities. The District's responsibility ends at the point of delivery to the consumer's water system, which begins at the downstream end of the District's service connection water meter located on the public right-of-way or utility-held easement.

C. Under the provisions of WAC 246-290-490, the District is not responsible for eliminating or controlling cross-connections within the consumer's water system. That responsibility falls under the jurisdiction of the local administrative authority that is authorized to administer and enforce the Uniform Plumbing Code.

D. The District's water supply to any premise listed in WAC 246-290-490(4)(b)(iii)(Table 9) will require an approved Reduced Pressure Backflow Assembly (RPBA) installed directly behind the water meter, prior to any branch connections, on the customers side of the property line. These premises include, but are not limited to:

1. Farms and Dairies	11. Veterinary Clinics
2. Beverage bottling plants	12. Blood Plasma Centers
3. Car Washes	13. Laboratories
4. Chemical plants	14. Metal Platting Industries
5. Commercial laundries/dry cleaners	15. Mortuaries
6. Film processing facilities	16. Petroleum processing or storage plants
7. Food processing plants	17. Piers and Docks
8. Hospitals/Medical Centers	18. Sewer Lift stations (grinder pumps)
9. Nursing Homes	19. Survey access denied or restricted
10. Medical and Dental Clinics	20. Premises with available auxiliary water supplies when interconnected with the District's water supply

Note: District customers with wells may choose to either decommission the well, according to Washington State Department of Ecology standards, or install RPBAs.

21. Premises with separate irrigation systems using the District's water supply and with chemical additives.
22. Premises where both reclaimed water and potable water are provided.
23. Wastewater Treatment Plants
24. Nuclear reactors
25. Radioactive material processing plants

Note: RPBA's for connections serving these premises are acceptable only when used in combination with an in-plant approved air gap; otherwise the District will require an approved air gap at the service connection(s).

E. Backflow prevention requirements for single family residences, when applicable, shall comply with the following:

1. The type of backflow prevention required shall provide a level of protection commensurate with the degree of the cross-connection hazard.
2. Backflow prevention devices shall be installed according to District specifications;
3. Backflow prevention devices shall be installed, inspected and tested in accordance with WAC 296-290-490; and
4. Backflow preventer must be installed when outdoor water use (irrigation, etc) systems, swimming pools or spas, ponds or boilers are installed.

6.15.050 Premise Isolation Requirements.

District connections serving premises with activities or water uses that may create a potential or actual cross-connection require the premise owner to provide backflow prevention methods, as determined by the District, commensurate with the hazard posed by the potential or actual cross-connection. The following non-exclusive list states the type of premises, activities or water uses, at or within a premise, that require backflow prevention, and the District's minimum allowable method of backflow prevention for each. All other uses not listed in this section shall require an assessment survey, conducted by the District's Cross-Connection Control Specialist, to determine the type of backflow protection required.

A. **NON-RESIDENTIAL ACCOUNTS (Commercial, Industrial, Schools, Government, Apartment Buildings, etc.).**

All non-residential connections will require a RPBA to be installed at the end of the meter connection per District Standard detail on the customer's side of the property line or utility easement.

B. **WATER RE-USE SYSTEMS.**

Reclaimed water can be in systems that use treated sewage effluent, stormwater reuse systems, or gray water systems utilizing untreated household wastewater that has not come in contact with toilet or food processing waste. All classes of reclaimed water are considered by the District to be a high-health hazard and as such, direct connections between water re-use systems and the District's water system are strictly prohibited. Any premise utilizing a water re-use system will also be required to install a RPBA at the service connection(s) and to meet any additional Department of Health requirements under a permit issued in accordance with RCW 90.46.

C. **RECLAIMED WATER.**

Reclaimed water systems refer to the effluent derived in any part from sewage treatment systems that has been adequately treated so that it is suitable for a controlled use that otherwise could not occur. Reclaimed water is considered a high-health hazard and such, a direct connection between a reclaimed water system and the District's water system is strictly prohibited. Any premise utilizing reclaimed water will also be required to install a RPBA at the service connection(s) and to meet any additional Department of Health requirements under a permit issued in accordance with RCW 90.46.

D. **STORMWATER RE-USE.**

Stormwater reuse systems utilize rainwater collected from roof drains, roads, parking areas for lawn and irrigation purposes. All stormwater is considered a high-health hazard and as such, a direct connection between a stormwater use system and the District's water system is strictly prohibited. Any premise utilizing a stormwater reuse system will also be required to install a RPBA at the service connection(s).

E. **GRAYWATER USE.**

Graywater systems utilize the effluent from untreated household wastewater, which has not come in contact with toilet or food processing waste. This includes water from bathtubs, showers, wash basins, clothes washers, but not kitchen sinks or dishwashers. All graywater systems are considered a high-health hazard. As such, a direct connection between a graywater use system and the District's water system is strictly prohibited. Any premise utilizing a graywater use system shall also be required to install a RPBA at the service connection(s).

F. **AUXILIARY WATER SUPPLY.**

Any water supply on or available to the premise other than the Cross Valley Water District's approved public water supply. These auxiliary supplies may include water from another purveyor's public water supply, or any natural source such as a well, spring, river, stream, lake, etc. and/or reclaimed water or industrial fluids.

Auxiliary water supplies are considered a high health hazard and as such, any direct connection between an auxiliary supply system and the District's water system will be protected by the installation of an approved RPBA. If the auxiliary supply is not interconnected with the District's system, premise isolation with a RPBA is required.

G. **FIRE PROTECTION SYSTEMS.**

Fire protection systems must be considered as non-potable systems due to the poor quality of the water within. Water quality concerns include:

1. The growth of microorganisms which create taste and odor problems
2. The leaching of metals into the water

3. The addition of corrosion inhibitors or other chemicals to protect piping
4. Dry systems containing compressed air or nitrogen
5. Systems which are constructed of unapproved material

If a backflow incident should occur the hazard may vary from a low health hazard or aesthetics concern to a high-health hazard and as such, the District requires the installation of a RPBA, a Reduced Pressure Detector Assembly (RPDA), a Double Check Valve Assembly (DCVA) or a Double Check Detector Assembly (DCDA), depending upon the application and the District's hazard assessment.

H. HIGH-HAZARD FIRE SYSTEM.

This category of health hazard includes all fomite systems, systems with an auxiliary water supply connected to the fire system, and systems with chemical additives. A fire system (with antifreeze or chemical additives) will require an approved RPDA at the service connection.

The RPDA will be complete with a 3/4" bypass, 3/4" RPBA, and a 5/8" water meter, per District specifications.

I. LOW-HAZARD FIRE SYSTEM.

This category includes only fire systems with NO anti-freeze or chemical additives. The backflow protection required for this type fire system is an approved DCVA or DCDA, depending upon the application.

Should a DCDA be required, it will be complete with a 3/4" bypass, 3/4"DCVA, and a 5/8" water meter, per District specifications.

J. SEWAGE LIFT/PUMPING STATIONS.

All sewage collection and pumping stations pose a severe health hazard due to the potential presence of human pathogens in the sewage. Lift/pumping stations can be utility owned or privately owned. All sewage lift/pumping stations are required to be protected by the installation of an approved RPBA.

K. ACCESS RESTRICTED OR DENIED.

Should District staff be denied access or have restricted access to a premise, when attempting to perform an assessment survey, the District will consider the health hazard to be severe unless it has the knowledge to make an assessment otherwise. In this case, the District may deny water service to the premise, until such time District staff is able to complete an assessment survey.

At such time the assessment survey has been completed, the District will require backflow prevention commensurate with the assessed health hazard.

L. CAR WASHES.

Most automatic car washes use re-circulating water with chemical addition in heated water. The system is considered a high-health hazard because of the chemicals and bacteriological contaminants in the water. All facilities of this type are considered to be a high-health hazard, and as such, the installation, per District specifications, of an approved RPBA is required for this type of facility.

M. FARMS/DAIRIES.

The storage and handling of chemicals and unapproved auxiliary water supplies implies a high-health hazard, and as such the installation, per District specifications, of an approved air gap or an approved RPBA is required for this type of facility.

N. HOSPITALS, MEDICAL CENTERS, VETERINARY CLINICS, DENTAL CLINICS, MEDICAL CLINICS, and NURSING HOMES.

The primary health hazard is from the presence of waterborne disease transmitted in the feces, urine and blood of humans and animals. A secondary health hazard may come from the numerous chemicals used in these facilities. All facilities of this type are considered to be a high-health hazard, and as such, the installation, per District specifications, of an approved air gap or an approved RPBA is required for this type of facility.

O. IRRIGATION SYSTEMS.

A lawn irrigation system is any system of underground piping, with stationary or non- stationary sprinkler heads, connected directly or indirectly to the District's distribution system, on either a temporary or permanent basis. Irrigation can be either low-health hazard or high-health hazard systems.

1. High-health hazard systems contain pumps or injectors for addition of chemicals. The installation, per District specifications, of an approved air gap or an approved RPBA is required for this type of irrigation system.
2. A low-health hazard is assessed to all other irrigation systems. The installation, per District specifications, of an approved DCVA is required for this type of irrigation system.

P. LABORATORIES.

Laboratories are facilities using and handling chemicals and bacteriological materials such as medical, biological, chemical, environmental, and material testing laboratories, including government agencies and schools. All laboratories are considered to be a high-health hazard, and as such, the installation, per District specifications, of an approved air gap or an approved RPBA is required for this type of facility.

Q. SHOPPING MALLS.

Due to the high probability of changes in water use by tenants, shopping malls are considered a high- health hazard, and as such, the installation, per District specifications, of an approved RPBA is required for this type of facility.

R. RECREATIONAL VEHICLE PARKS.

Recreational vehicle parks usually contain a transient population that significantly increases the probability of cross-connections due to plumbing that has not been approved. Recreational vehicle parks are considered to be a high health hazard, and as such, the installation, per District specifications, of an approved RPBA is required for this type of facility.

S. HEAT EXCHANGERS/SOLAR HOT WATER SYSTEMS.

Heat exchangers physically separate one medium from another and heat or cool a medium by transferring energy from one medium to another across an enlarged surface. Whenever potable water is connected to a heat exchanger, or when a heat exchanger is used to heat potable water, a hazardous cross-connection exists. Premises with these types of systems are considered to be a high health hazard, and as such, the installation, per District specifications, of an approved RPBA is required.

T. TALL BUILDINGS (COMMERCIAL-OVER 30').

Whenever the hydraulic gradient (water pressure) falls below the elevation of a plumbing fixture, backsiphonage conditions can occur. This probability of backflow increases the risk assessment for tall buildings over residential houses. Because of this, tall buildings are considered to be a high health hazard, and as such, the installation, per District specifications, of an approved RPBA is required for this type of facility.

U. **NEW WATER MAIN CONSTRUCTION.**
New sections of water main that are installed must be separated from the existing system until approved and placed in operation. Until satisfactory flushing and bacteriological sampling has been completed, the water must be considered contaminated and backflow protection will be accomplished by the use of an approved RPBA when filling the new main during disinfection and flushing.

V. **TANKER TRUCKS.**
Tanker trucks should be assessed the same as an unapproved auxiliary source, or a high-health hazard, and as such, the utilization of an approved RPBA connected to the District's source, when filling the truck, is required. In rare cases an approved air- gap may be used in place of a RPBA upon approval from the District's Cross Connection Control Specialist.

W. **SEWER FLUSHING.**
When sewer or storm drains are flushed an approved air gap separation, between the District water source and the sewer or storm drain, will be maintained at all times to protect the potable water system. If at all possible water for flushing should be provided by tanker trucks.

X. **FIRE HYDRANTS.**
Any portable pressure spray or cleaning unit that is capable of connecting to any potable water supply will be fitted with an approved DCVA if it does not contain an approved air gap. If chemicals are used, an approved RPBA must be used in place of the DCVA.

6.15.060 Personnel.

A. **PROGRAM ADMINISTRATOR.**
The Cross Connection Control Coordinator (Program Administrator) is responsible for organizing and implementing the District's program. The Program Administrator will hold a valid Washington State Cross-Connection Control Specialist certification, be experienced in water works operations, and have specific training through recognized courses and seminars in cross-connection control and backflow prevention. Duties include the initial screening of all service applications and determination of the need for the proper backflow prevention device; issuing correspondence to customers; record keeping for the program; periodic review of customer premises and/or consumption patterns, to assure that all cross-connections are controlled; initiation of enforcement action; response to contamination events; investigation; and communication with state health authorities.

B. **CROSS-CONNECTION CONTROL SPECIALIST (CCS).**
This person must hold a valid Washington State Cross-Connection Control Specialist certification in accordance with WAC 246-292-490. Duties include plan review; initial and repeat survey of facilities; review of tests done by a certified Backflow Assembly Testers (BAT); recommendation of installation standards and procedures required for premise isolation; recommendation of material for public education; input test and device data into computer data base; and assist the program administrator.

6.15.070 Enforcement.

A. The District may immediately terminate water service, require disconnection of a cross-connection and/or impose fines when the District determines that a health hazard, or potential health hazard, exists. An example of a health hazard is an uncontrolled potential, direct or indirect cross-connection, and/or a cross-connection that is not controlled commensurate with the degree of health hazard.

B. Advanced notification will be provided before any of the above measures are taken, unless the degree of hazard, or potential degree of hazard, is so severe that it could cause immediate contamination and/or health threat. The following circumstances may result in termination of water service, the imposition of a fine, or both:

1. Refusal to install a backflow prevention assembly when required by the District, or the State Department of Health.
2. Failure to replace an improper type, and/or failure to replace or repair a defective or improperly installed backflow prevention assembly.
3. Failure to have the backflow prevention assembly tested and/or inspected per District requirements.
4. Existence of a high-health hazard cross-connection, to the District's system, that is not protected with the appropriate backflow prevention assembly.
5. Refusal to allow inspection of the premises.

In the case of application for water service, the service will not be granted if the District determines that any of the above conditions exist.

C. Prior to taking action to terminate or deny service to a premise, the appropriate Local Administrative Authority, and/or Fire Marshal will be notified.

D. In the event that water service is terminated and/or the meter removed, service will not be resumed nor the meter reinstalled until the customer has complied with the cross connection program requirements. All non-compliance fines and related fees as identified in the current Rate Resolution Rate Table II will be charged to the property.

E. In the event of cross-connection fine/s and meter lock fee being levied, the customer will pay all penalties to their account prior to paying the assessed water bill. If complete payment is not received, the service may be subject to disconnect for non-payment. Fines for non-compliance will be assessed in accordance with the District's current Rate Resolution.

F. Customers who remain out of compliance will be subject to water service termination and will remain terminated until compliance is met. The foregoing remedy for violations will not be exclusive. The District, the State Department of Health, and/or other regulatory agencies will be entitled to enforce this Cross Connection Control Program and the referenced regulations in any manner available by law.

G. The District will not be liable for damages nor will allowances be made for loss of production, sales or services, or any other consequential damages arising from the implementation of any of the measures required by and/or contained in this Program.

H. The District notifies customers per the current Cross Connection Customer Notification Procedures.

6.15.080 Annual Backflow Prevention Assembly Testing.

A. All backflow prevention assemblies shall be tested upon installation, repair, or relocation and annually by a certified Backflow Assembly Tester (BAT).

B. All tests are due to the District or the District's designee by May 31st to avoid fines and potential termination of service. Annual testing for the compliance period shall begin January 1st and end May 31st each calendar year.

C. A Backflow Assembly Tester (BAT), holding a valid Washington State BAT certification is required to complete all testing of backflow prevention assemblies.

D. Testers will be required to furnish annually a current Washington State Department of Health Certification to the District, written verification of the calibration accuracy of the test equipment and of the calibration equipment prior to the District's acceptance of any backflow prevention assembly test reports.

E. If the customer remains out of compliance they will be subject to termination of water service.

6.15.090 Records and Reports.

An adequate record system is essential for the operation of a backflow prevention program. These records form the basis for any enforcement action or legal defense by the District, as well as giving a basis for comparing test results of different backflow assemblies. The Database will consist of:

A. All backflow prevention assembly test reports will be entered into a computer program that tracks assembly testing and dates of tests
B. A separate record will be established for each individual customer that requires the installation of a backflow prevention assembly.
C. The District shall maintain inventory information on backflow preventers that protect the District's water system, including (1) approved air gaps installed in lieu of approved assemblies including exact air gap location, assessed degree of hazard, installation date, history of inspections, inspection results, and person conduction inspections; (2) approved backflow assemblies including exact assembly location, assembly description (type, manufacturer, model, size, and serial number), assessed degree of hazard, installation date, history of inspections, tests and repairs, test results, and person performing tests; and (3) approved atmospheric vacuum breakers (AVB's), if any, used for irrigation system applications including location, description (manufacturer, model and size), installation date, history of inspections(s), and person performing inspections.

6.15.100 Previously Installed Assemblies.

Backflow prevention assemblies which were approved at the time of installation but are not on the current list of approved assemblies will be permitted to remain in service provided they are maintained; are commensurate with the degree of hazard; are tested at least annually; and perform satisfactorily.

A. Backflow prevention assemblies in service but not currently listed, as an approved assembly will be replaced by an assembly on the current list of approved assemblies if the not-currently listed assembly is relocated or requires more than minimum maintenance to successfully pass the annual test.
B. If a water system protected by a backflow prevention assembly is modified to include components or additives requiring a higher level of protection against backflow, the backflow prevention assembly will be replaced with an approved assembly appropriate for the degree of hazard.

6.15.110 District Authorized to Hire Approved Contractor.

In the event the cross-connection is not abated within the prescribed time, water service to the premises will be discontinued immediately. Or, if the General Manager or designated representative determines that the service should not be interrupted, the District may hire a contractor to abate the cross-connection by means of installing an approved backflow prevention assembly. In such event, the District will bill the property owner for all costs and current administration fees incurred.

6.15.120 Consumer Education.

A. Public education is a very important aspect of the cross connection control program. Customers are provided with informational brochures describing cross-connection hazards in homes and the recommended assemblies that are to be installed by the homeowner to reduce the hazards. Public education explains the necessity of the cross connection control program and prevents misunderstandings.

B. The District's consumer education will be clear that the information provided is based on its perspective of cross-connection control and the necessary backflow prevention to protect the public water supply, and that the customer has the obligation to comply with these requirements.

C. District education programs may consist of; the District's website, brochures, consumer confidence reports, customer newsletters, and special training sessions for District employees and interested persons.

6.15.130 Backflow Prevention Assembly Installation.

A. GENERAL REQUIREMENTS.

All backflow prevention assemblies will be listed on the most current list of approved backflow prevention assemblies published by the Washington State Department of Health. Installation of backflow prevention assemblies in existing systems, especially fire sprinkler systems, will be accompanied by the necessary upsizing of the system to assure adequate flow capacity for proper operation of the system. Retrofitted fire systems will be installed by a licensed fire protection sprinkler system contractor in accordance with RCW 18.160 and meet the approval of the Fire Marshal. Installation requirements include, but are not limited to, the following:

1. Approved assemblies must be installed directly behind the water meter and on the customer side of the property line.
2. When installed in an enclosure, adequate space considerations must be given for proper testing and maintenance as per District specifications.
3. Any assembly or device with an air inlet or relief port must be installed outside any enclosure or hooded area containing fumes that are corrosive, toxic, or poisonous.
4. No part of the approved assembly will be submerged under water, nor installed at a location subject to flooding. If installed in a vault, adequate drainage will be provided.
5. In all cases, whenever access to a vault is required, follow and comply with local state, and federal safety rules regarding confined space entry. The vault will be large enough for free access for workers to enter for testing and/or repairing the assembly.
6. Assemblies 2-1/2 inches and larger will have support blocks to prevent damage to the assembly or piping.
7. For installations where 24 hour uninterrupted service is necessary, a parallel assembly should be provided to permit assembly testing and maintenance. The bypass or parallel backflow prevention assembly must be of the same type as the main line assembly.
8. Thoroughly flush the lines before installing the assembly to eliminate debris from the lines that could foul one of the checks or relief port.
9. Current District Construction Methods and Materials must be followed.
10. If any bypass piping is installed around any approved backflow preventer, the bypass piping shall be equipped with a backflow preventer that affords at least the same level of protection as

the approved backflow preventer that is being bypassed, and complies with all applicable requirements of this Chapter.

B. FREEZE PROTECTION.

Backflow prevention assemblies are installed on all types of water services, so it is not always appropriate to shut down a system to drain the assembly to prevent freezing. Backflow prevention assemblies should be protected from freezing and other severe weather, and from accidental physical damage. Experience has shown that freeze damaged assemblies are often damaged beyond repair, so they must be replaced. All backflow prevention assemblies should have provisions for freeze protection.

C. THERMAL EXPANSION.

A backflow prevention assembly placed on a water service can cause thermal expansion. Serious damage could occur to a plumbing system if the pressure and high temperature caused by thermal expansion is not relieved. Excessive water temperature or pressure inside a hot water tank, if not relieved, could cause the tank to explode. The customer's hot water tank and connected plumbing system is normally protected by a temperature/pressure relief valve located at or near the top of the hot water heater. In addition some plumbing codes require a thermal expansion tank to be installed.

6.15.140 Reduced Pressure Backflow Assembly (RPBA) Installation Requirements.

The reduced pressure backflow assembly is designed to prevent backflow caused by backpressure and backsiphonage for both low and high-health hazard assessments.

The following installation practices are common to all reduced pressure backflow assemblies and reduced pressure detector assemblies.

A. An RPBA will only be installed in the orientation for which they are approved. Any other configuration may hinder the assembly in preventing backflow.

B. The RPBA must be on Washington State DOH Approved list.

C. The RPBA must be tested upon installation & then annually thereafter.

D. The RPBA must be tested if moved or repaired.

E. An RPBA must be installed above ground at a minimum of twelve (12) inches from relief valve opening to ground level or flood level.

F. The assembly must be protected from freezing, other severe weather and from accidental damage.

G. Because of the inherent design of a reduced pressure backflow assembly, fluctuating supply pressure condition may cause nuisance dripping and potential fouling of the assembly. In a static condition the zone of reduced pressure between the check valves must be maintained at 2.0 PSI or greater differential below incoming supply pressure. Depending upon the degree of fluctuating pressure, the assembly may discharge water from time to time.

H. Approved assemblies larger than two (2) inches will have a minimum clearance of twelve (12) inches on the backside and twenty-four (24) inches on the test cock side, twelve (12) inches plus the nominal size of the assembly below the device and thirty- six (36) inches above the assembly.

Assemblies less than two (2) inches will have a minimum clearance of six (6) inches on the backside, twelve (12) inches on the test cock side of the assembly, and twelve
(12) inches plus the nominal size of the assembly below the device and thirty-six (36) inches above the assembly.

For standard details refer to the Districts Construction Methods and Materials, available on the District's website or the District office.

6.15.150 Double Check Valve Assembly (DCVA) Installation Requirements.

The double check valve assembly is designed to prevent backflow caused by backpressure and backsiphonage for low health hazard assessments.

The following installation practices are common to all double check valve assemblies.

A. Unless the DCVA has been elevated and approved by the District, it will only be installed in a horizontal configuration. Any other orientation may deter the DCVA from preventing backflow.

B. A DCVA may be installed in a pit below ground. If so, adequate room for testing and maintenance must be provided. Plugs must be installed in the test cocks to reduce the risk of ground water from being siphoned through a leaking test cock. The test cocks must be installed facing up or to one side. Sufficient draining must be provided to prevent the assembly from being submerged.

C. Approved assemblies (2) inches or larger will have a minimum clearance of six (6) inches on the backside and twelve (12) inches on the test cock side, twelve (12) inches below the assembly and adequate room above the assembly.

Assemblies less than two (2) inches will have a minimum clearance of six (6) inches on the test cock side and (6) inches below the assembly.

D. The DCVA must be on Washington State DOH Approved list.

E. The DCVA must be tested upon installation & then annually thereafter.

F. The DCVA must be tested if moved or repaired.

G. The DCVA must be protected from freezing, other severe weather and physical damage.

For standard details refer to the Districts Construction Methods and Materials, available on the District's website or the District office

6.15.160 Double Check Detector Assembly (DCDA) Installation Requirements.

The double check detector assembly is designed to prevent backflow caused by backpressure and backsiphonage. They are used for low health hazard assessments on fire lines.

The following installation practices are common to all double check detector assemblies.

A. Unless the DCDA has been elevated and approved by the District, it will only be installed in a horizontal configuration. Any other orientation may deter the DCDA from preventing backflow.

B. A DCDA may be installed in a pit below ground. If so, adequate room for testing and maintenance must be provided. Plugs must be installed in the test cocks to reduce the risk of ground water from being siphoned through a leaking test cock. The test cocks must be installed facing up or to one side. Sufficient draining must be provided to prevent the assembly from being submerged.

C. Approved assemblies larger than two (2) inches will have a minimum clearance of twelve (12) inches on the backside and twenty-four (24) inches on the test cock side, twelve (12) inches plus the nominal size of the assembly below the device and thirty- six (36) inches above the assembly.

D. The DCDA must be on Washington State DOH Approved list.

E. The DCDA must be tested upon installation & then annually thereafter.

F. The DCDA must be tested if moved or repaired.

G. The DCDA must be protected from freezing, other severe weather and physical damage.

For standard details refer to the Districts Construction Methods and Materials, available on the District's website or the District office.

6.15.170 Local Administrative Authority.

The District and the local administrative authorities agree to delineate responsibilities and coordinate activities relating to cross-connection control. The District will be responsible for the protection of the water distribution system at the property line from backflow. The local administrative authority will be responsible for cross-connection control within the property plumbing as required by the Uniform Plumbing Code.

6.15.180 Backflow Incident Investigation.

A. When a taste, color, or odor inquiry is received, the person responding should gather as much relevant information as possible by using a Backflow Incident Report.

B. After completing the Backflow Incident Report, the District shall investigate the inquiry, and determine the appropriate response for the conditions present. The following minimum steps will be appropriate for most situations:

1. The District will send an employee to the site in question to examine the water.
2. Certain minimum tests should be performed, such as pH and chlorine residual tests. If the results of these tests indicate a potential problem, a bacteriological analysis should be completed.
3. Water Management Laboratories, Inc. or another District contractor will test samples quickly and on short notice, including weekends or evenings, in the event of an extreme emergency.

CROSS VALLEY WATER DISTRICT

Coliform Monitoring Plan

A. SYSTEM INFORMATION

Cross Valley Water District
PWS ID #16270F
Snohomish County

SOURCES:

DOH source Number	Source Name (Well Depth)
#S01	Everett Water Intertie
#S02	Well 1 – 130gpm – 171 feet
#S03	Well 3 – 350gpm – 208 feet
#S04	Well 5 – 450gpm – 217 feet
#S05	Well 6 – 400gpm – 234 feet
#S06	Well 7a – 150gpm – 104 feet
#S07	Everett CWSA Water Intertie (Group Res.)
#S08	Well 7 – 350gpm – 171 feet
#S09	Well 8 – 350gpm – 174 feet
#S10	Well 9 – 900gpm – 262 feet
#S11	Silver Lake Water & Sewer Intertie
#S12	Woodlane Well – 40gpm – 156 feet
#S14	Well 10 – 700gpm – 220 feet
#S15	Well Field 5, 6 &10 – 1550gpm
#S16	Alderwood Water Intertie
#S17	Well Field 1 & 9 – 1030gpm
#S18	Well Field 3 & 8 – 700gpm
#S19	Well Field 7, 7A, 7B – 750gpm
#S24	APP315 Well 7b

STORAGE: 7 storage tanks –
Lee Forest – 1MG
Clearview Elevated Tank - .1MG
Clearview Standpipe – 2MG
Vine Street – 1MG
Echo Lake – 1.62 MG
Treatment Plant - .2MG
Clearview Group – 12MG

TREATMENT: A treatment facility with Sodium Hypochlorite & KMN04 is located at wells 5,6 & 10.

PRESSURE STATIONS: 3 booster pump stations and 41 pressure reduction stations enable each of the sources to serve the other areas when necessary.

PRESSURE ZONES: A different pressure zone serves each community. The electrical and pressure controls are designed to allow each source to serve the other areas in the case of source and back-up being out of service.

POPULATION & CONNECTIONS BY

TOTAL POPULATION SERVED: Approximately 17280
TOTAL NUMBER OF SERVICE CONNECTIONS: Approximately 6875

B. Laboratory Information

Laboratory Name Amtest	**Office Phone: 425-885-1664** **After Hours Phone** _____
Address 13600 NE 126th PL #C, Kirkland WA 98034	**Cell Phone** _____ **Email** customerservice@amtestlab.com
Hours of Operation 7am – 5pm Monday thru Friday	
Contact Name Neila	
Emergency Laboratory Name Everett Environmental Lab	**Office Phone: 425-257-8230** **After Hours Phone: 425-257-7865**
Address 4027 4th Street SE, Everett, WA 98205	**Cell Phone** _____ **Email** cmerwede@everettwa.gov
Hours of Operation 7:30am – 4pm Monday thru Friday	
Contact Name Chris Merwede	

C. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	**X1 – X39 Odd #s**	**July**	**X1 – X39 Odd #s**
February	**X2 – X40 Even #s**	**August**	**X2 – X40 Even #s**
March	**X1 – X39 Odd #s**	**September**	**X1 – X39 Odd #s**
April	**X2 – X40 Even #s**	**October**	**X2 – X40 Even #s**
May	**X1 – X39 Odd #s**	**November**	**X1 – X39 Odd #s**
June	**X2 – X40 Even #s**	**December**	**X2 – X40 Even #s**

D. Repeat Sampling Requirements

Description of Sample Collection Locations for Repeat Unsatisfactory Samples
You **must** take a total of **THREE REPEAT** samples for each unsatisfactory routine sample.
1. The same tap as the original unsatisfactory routine sample. 2. An active service within five active connections upstream from original sample location. 3. An active service within five active connections downstream from original sample location.

E. Preparation Information

System Name	Date Plan Completed	Dates Modified
Cross Valley Water District	12/15/05	4/4/07, 5/3/2010, 7/23/15, 7/1/2019
Name of Plan Preparer: Justin Jones Position: WTPO1, WDM1		Daytime Phone # (360)668-6766
State Reviewer	Date Last Review	

F. System Map Attached

G. Routine, Repeat, and Triggered Source Sample Locations*

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**	Groundwater Sources for **Triggered Sample Sites****
X1. 23008 77th Ave SE	**1-1. 23008 77th Av SE**	**S03 Well 3 well head faucet**
	1-2. 23020 77th Av SE	**S09 Well 8 well head faucet**
	1-3. 22930 77th Av SE	**S10 Well 9 well head faucet**
		S12 Woodlane well head faucet
X2. 7108 85th Ave SE	**2-1. 7108 85th Ave SE**	**S01 24050L/Everett**
	2-2. 7128 85th Ave SE	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	2-3. 7015 85th Ave SE	
X3. 22617 102nd Ave SE	**3-1. 22617 102nd Ave SE**	**S03 Well 3 well head faucet**
	3-2. 22728 102nd Ave SE	**S09 Well 8 well head faucet**
	3-3. 22609 102nd Ave SE	**S10 Well 9 well head faucet**
		S12 Woodlane well head faucet
X4. 8122 71st Pl SE	**4-1. 8122 71st Pl SE**	**S07 24050L/Everett /CWSA**
	4-2. 8131 71st Pl SE	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	4-3. 8211 71st Pl SE	
X5. 20207 123rd Ave SE	**5-1. 20207 123rd Ave SE**	**S03 Well 3 well head faucet**
	5-2. 20215 123rd Ave SE	**S09 Well 8 well head faucet**
	5-3. 20121 123rd Ave SE	**S10 Well 9 well head faucet**
		S12 Woodlane well head faucet

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**	Groundwater Sources for **Triggered Sample Sites****
X6. 5605 83rd Ave SE	**6-1. 5605 83rd Ave SE**	**S01 24050L/Everett**
	6-2. 5425 83rd Ave SE	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	6-3. 5610 83rd Ave SE	
X7. 11901 215th Pl SE	**7-1. 11901 215th Pl SE**	**S03 Well 3 well head faucet**
	7-2. 11911 215th Pl SE	**S09 Well 8 well head faucet**
	7-3. 11908 215th Pl SE	**S10 Well 9 well head faucet**
		S12 Woodlane well head faucet
X8. 5530 67th Dr SE	**8-1. 5530 67th Dr SE**	**S01 24050L/Everett**
	8-2. 5531 67th Dr SE	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	8-3. 5514 67th Dr SE	
X9. 21605 East Lost Lake Rd	**9-1. 21605 East Lost Lake Rd**	**S03 Well 3 well head faucet**
	9-2. 21425 East Lost Lake Rd	**S09 Well 8 well head faucet**
	9-3. 21617 East Lost Lake Rd	**S10 Well 9 well head faucet**
		S12 Woodlane well head faucet
X10. 10510 Lowell Larimer Rd	**10-1. 10510 Lowell Larimer Rd**	**S07 24050L/Everett /CWSA**
	10-2. 10519 Lowell Larimer Rd	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	10-3. 10502 Lowell Larimer Rd	

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**	Groundwater Sources for **Triggered Sample Sites****
X11. 23612 Linda Lane	**11-1. 23612 Linda Lane**	**S08 Well 7 well head faucet**
	11-2. 23515 Linda Lane	**S24 Well 7b well head faucet**
	11-3. 17009 Mt Forest Blvd	
X12. 11808 57th Ave SE	**12-1. 11808 57th Ave SE**	**S07 24050L/Everett /CWSA**
	12-2. 11728 57th Ave SE	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	12-3. 11812 57th Ave SE	
X13. 21712 160th Ave SE	**13-1. 21712 160th Ave SE**	**S08 Well 7 well head faucet**
	13-2. 21610 160th Ave SE	**S24 Well 7b well head faucet**
	13-3. 21716 160th Ave SE	
X14. 12925 77th Ave SE	**14-1. 12925 77th Ave SE**	**S07 24050L/Everett /CWSA**
	14-2. 12911 77th Ave SE	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	14-3. 13007 77th Ave SE	
X15. 10031 175th Pl SE	**15-1. 10031 175th Pl SE**	**S04 Well 5 well head faucet**
	15-2. 10105 175th Pl SE	**S05 Well 6 well head faucet**
	15-3. 10023 175th Pl SE	**S14 Well 10 well head faucet**

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**	Groundwater Sources for **Triggered Sample Sites****
X16. 7830 Lowell Larimer Rd	**16-1. 7830 Lowell Larimer Rd**	**S07 24050L/Everett /CWSA**
	16-2. 7908 Lowell Larimer Rd	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	16-3. 12811 77th Ave SE	
X17. 17430 100th Ave SE	**17-1. 17430 100th Ave SE**	**S04 Well 5 well head faucet**
	17-2. 17424 100th Ave SE	**S05 Well 6 well head faucet**
	17-3. 17502 100th Ave SE	**S14 Well 10 well head faucet**
X18. 8932 192nd St. S.E.	**18-1. 8932 192nd St. S.E.**	**S04 Well 5 well head faucet**
	18-2. 9005 192nd St. S.E.	**S05 Well 6 well head faucet**
	18-3. 8918 192nd St. S.E.	**S14 Well 10 well head faucet**
X19. 15506 91st Ave SE	**19-1. 15506 91st Ave SE**	**S07 24050L/Everett /CWSA**
	19-2. 15516 91st Ave SE	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	19-3. 15509 91st Ave SE	
X20. 18729 Welch Road	**20-1. 18729 Welch Road**	**S03 Well 3 well head faucet**
	20-2. 18605 Welch Road	**S09 Well 8 well head faucet**
	20-3. 18433 Welch Road	**S10 Well 9 well head faucet**
		S12 Woodlane well head faucet

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**	Groundwater Sources for **Triggered Sample Sites****
X21. 13408 Kenwanda Dr	**21-1. 13408 Kenwanda Dr**	**S04 Well 5 well head faucet**
	21-2. 13402 Kenwanda Dr	**S05 Well 6 well head faucet**
	21-3. 13416 Kenwanda Dr	**S14 Well 10 well head faucet**
X22. 14105 211th St SE	**22-1. 14105 211th St SE**	**S03 Well 3 well head faucet**
	22-2. 14121 211th St SE	**S09 Well 8 well head faucet**
	22-3. 13931 211th St SE	**S10 Well 9 well head faucet**
		S12 Woodlane well head faucet
X23. 11804 Springhetti Rd	**23-1. 11804 Springhetti Rd**	**S04 Well 5 well head faucet**
	23-2. 11910 Springhetti Rd	**S05 Well 6 well head faucet**
	23-3. 11805 Springhetti Rd	**S14 Well 10 well head faucet**
X24. 13711 Aspen Way	**24-1. 13711 Aspen Way**	**S08 Well 7 well head faucet**
	24-2. 23624 137th Dr SE	**S24 Well 7b well head faucet**
	24-3. 23707 138th Dr SE	
X25. 7212 55th St SE	**25-1. 7212 55th St SE**	**S01 24050L/Everett**
	25-2. 7216 55th St SE	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	25-3. 5433 70th Dr SE	

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**	Groundwater Sources for **Triggered Sample Sites****
X26. 10530 231st Pl SE	**3-1. 10530 231st Place SE**	**S03 Well 3 well head faucet**
	3-2. 10516 231st Place SE	**S09 Well 8 well head faucet**
	3-3. 10610 231st Place SE	**S10 Well 9 well head faucet**
		S12 Woodlane well head faucet
X27. 6515 63rd St SE	**27-1. 6515 63rd St SE**	**S01 24050L/Everett**
	27-2. 6529 63rd St SE	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	27-3. 6509 63rd St SE	
X28. 9632 Woods Pl	**28-1. 9632 Woods Place**	**S03 Well 3 well head faucet**
	28-2. 9706 Woods Place	**S09 Well 8 well head faucet**
	28-3. 9624 Woods Place	**S10 Well 9 well head faucet**
		S12 Woodlane well head faucet
X29. 4908 177th Pl SE	**29-1. 4908 177th Pl SE**	**S07 24050L/Everett /CWSA**
	29-2. 4824 177th Pl SE	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	29-3. 4922 177th Pl SE	
X30. 8121 207th St SE	**30-1. 8121 207th St SE**	**S03 Well 3 well head faucet**
	30-2. 8129 207th St SE	**S09 Well 8 well head faucet**
	30-3. 8029 207th St SE	**S10 Well 9 well head faucet**
		S12 Woodlane well head faucet

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**	Groundwater Sources for **Triggered Sample Sites****
X31. 19315 58th Ave SE	**31-1.** 19315 58th Ave SE	S07 24050L/Everett /CWSA
	31-2. 19307 58th Ave SE	Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967
	31-3. 19318 58th Ave SE	
X32. 7131 203rd St SE	**32-1.** 7131 203rd St SE	S03 Well 3 well head faucet
	32-2. 7202 203rd St SE	S09 Well 8 well head faucet
	32-3. 7123 203rd St SE	S10 Well 9 well head faucet
		S12 Woodlane well head faucet
X33. 6331 180th St SE	**33-1.** 6331 180th St SE	S07 24050L/Everett /CWSA
	33-2. 6431 180th St SE	Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967
	33-3. 6323 180th St SE	
X34. 21226 82nd Ave SE	**34-1.** 21226 82nd Ave SE	S03 Well 3 well head faucet
	34-2. 21218 82nd Ave SE	S09 Well 8 well head faucet
	34-3. 21306 82nd Ave SE	S10 Well 9 well head faucet
		S12 Woodlane well head faucet
X35. 7216 184th St SE	**35-1.** 7216 184th St SE	S07 24050L/Everett /CWSA
	35-2. 7208 184th St SE	Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967
	35-3. 7228 184th St SE	

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**	Groundwater Sources for **Triggered Sample Sites****
X36. 21323 73rd Dr SE	**36-1. 21323 73rd Dr SE**	**S03 Well 3 well head faucet**
	36-2. 21327 73rd Dr SE	**S09 Well 8 well head faucet**
	36-3. 21319 73rd Dr SE	**S10 Well 9 well head faucet**
		S12 Woodlane well head faucet
X37. 18629 67th Ave SE	**37-1. 18629 67th Ave SE**	**S07 24050L/Everett /CWSA**
	37-2. 18706 67th Ave SE	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	37-3. 18607 67th Ave SE	
X38. 21310 52nd Ave SE	**38-1. 21310 52nd Ave SE**	**S03 Well 3 well head faucet**
	38-2. 21302 52nd Ave SE	**S09 Well 8 well head faucet**
	38-3. 21326 52nd Ave SE	**S10 Well 9 well head faucet**
		S12 Woodlane well head faucet
X39. 18927 71st Ave SE	**39-1. 18927 71st Ave SE**	**S07 24050L/Everett /CWSA**
	39-2. 18902 71st Ave SE	**Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967**
	39-3. 18915 71st Ave SE	
X40. 5819 218th St SE	**40-1. 5819 218th St SE**	**S03 Well 3 well head faucet**
	40-2. 5814 218th St SE	**S09 Well 8 well head faucet**
	40-3. 5921 218th St SE	**S10 Well 9 well head faucet**
		S12 Woodlane well head faucet

H. Reduced Triggered Source Monitoring Justification (add sheets as needed):

I. Level 1 and Level 2 Assessment Contact Information

Name **Justin Jones**	**Office Phone: 360-668-6766** **After Hours Phone 425-422-7071**
Address 8802 180th Street SE, Snohomish, WA 98296	**Email: jjones@crossvalleywater.net**
Name **Erika Lindsey, P.E.** WA DOH Regional Engineer for Snohomish County	**Office Phone 425-395-6766** **After Hours Phone 1-877-481-4901**
Address Northwest Drinking Water Operations 20425 72nd Ave. South, Building 2, Suite 310 Kent, WA 98032-2358	**Email: erika.lindsey@doh.wa.gov**

*NOTE: If you need more than three routine samples to cover the distribution system, attach additional sheets as needed.

**** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.**

Important Notes for Sample Collector:

_____

_____

_____

_____

_____

_____

_____

Distribution System *E. coli* Response Checklist				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We inform staff members about activities within the distribution system that could affect water quality.	☒	☐	☐	☐
We document all water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
We can easily access and review documentation on water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
Our Cross-Connection Control Program is up-to-date.	☒	☐	☐	☐
We test all cross-connection control devices annually as required, with easy access to the proper documentation.	☒	☐	☐	☐
We routinely inspect all treatment facilities for proper operation	☒	☐	☐	☐
We identified one or more qualified individuals who are able to conduct a Level 2 assessment of our water	☒	☐	☐	☐
We have procedures in place for disinfecting and flushing the water system if it becomes necessary.	☒	☐	☐	☐
We can activate an emergency intertie with an adjacent water system in an emergency.	☒	☐	☐	☐
We have a map of our service area boundaries.	☒	☐	☐	☐
We have consumers who may not have access to bottled or boiled water.	☒	☐	☐	☐
There is a sufficient supply of bottled water immediately available to our customers who are unable to boil their	☒	☐	☐	☐
We have identified the contact person at each day care, school, medical facility, food service, and other customers who may have difficulty responding to a	☒	☐	☐	☒
We have messages prepared and translated into different languages to ensure our consumers will	☒	☐	☐	☐
We have the capacity to print and distribute the required number of notices in a short time period.	☒	☐	☐	☐
Policy Direction	**Yes**	**No**	**N/A**	**To Do List**
We have discussed the issue of *E. coli*-present sample results with our policy makers.	☒	☐	☐	☐
If we find *E. coli* in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system	☒	☐	☐	☐
(Cont.)				

Distribution System *E. coli* Response Checklist				
Potential Public Notice Delivery Methods	**Yes**	**No**	**N/A**	**To Do List**
It is feasible to deliver a notice going door-to-door.	☒	☐	☐	☐
We have a list of all of our customers' addresses.	☒	☐	☐	☐
We have a list of customer telephone numbers or access to a Reverse 9-1-1 system.	☒	☐	☐	☐
We have a list of customer email addresses.	☒	☐	☐	☐
We encourage our customers to remain in contact with us using social media.	☒	☐	☐	☐
We have an active website we can quickly update to include important messages.	☒	☐	☐	☐
Our customers drive by a single location where we could post an advisory and expect everyone to see it.	☒	☐	☐	☐
We need a news release to supplement our public notification process.	☐	☒	☐	☐

Distribution System *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call DOH.
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. _____ _____
4. _____ _____
5. _____ _____
6. _____ _____
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

***E. coli*-Present Triggered Source Sample Response Checklist – All Sources**				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☒	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☒	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them	☐ ☐	☒ ☒	☐ ☐	☐ ☐
We routinely inspect our well site(s).	☒	☐	☐	☐
We have a good raw water sample tap installed at each source	☒	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☒	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☒	☐	☐	☐
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☐	☒	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☒	☐	☐	☐

E. coli-Present Triggered Source Sample Response Checklist – Source S__*

Alternate Sources	Yes	No	N/A	To Do List
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☒	☐	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☒	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☐	☒	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☒	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☐	☒	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☐	☒	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

E. coli-Present Triggered Source Sample Response Plan – Source ___

If we have *E. coli* in Source water we will immediately:

1. Call DOH.
2. Contact Aaron Cotts at (425)257-7216 or Mark Sadler at (425)257-8967 if Everett is the source.
3. _____ _____
4. _____ _____
5. _____ _____

Cross Valley
WATER DISTRICT

Community Water System
Lead and Copper
Water Sample Procedure Plan

The Cross Valley Water District, Water System I.D #16270F, follows the Department of Health recommendations for lead and copper monitoring and the EPA's Lead and Copper Rule. Currently, the District is required to monitor Lead and Copper every three years. The District participates in the Everett Regional Consecutive Systems Lead and Copper Rule Monitoring Program.

Sample Sites
The District has identified properties located within the District boundaries as sample sites for lead and copper monitoring where samples are taken. A review and selection of the sites is conducted in June of the monitoring period. See *Lead and Cooper Sample Sites.*

Compliance and Monitoring Periods
The District notifies and collects samples between June 1 and September 30, during a monitoring year.

Customer Notification / Education / Instructions
The District reviews and updates the below provided information for compliance during a monitoring year.

The District notifies the selected property owners of the upcoming Lead and Copper sample in July/August. See *Lead and Copper Sampling Program Letter.*

The District delivers instructions, a sample bottle to the property and returns the next morning to pick up the filled sample bottle. See *Instructions for Homeowner Lead and Copper Sampling.*

The District mails the specific results and information on lead and copper to the property owner of the sample site within 30 days of receiving the laboratory results. If the results of lead are over 15ppb, customers are notified within 3 days. *Community Water System Consumer Notice Lead and Copper Water Sample Results.*

Public Education
The District publishes the results in the annual Consumer Confidence Report (CCR).

Response to Action Levels
The District follows the compliance procedures for action levels. Notification and education is sent to customers within 60 days if the District exceeds the lead action level.

References
DOH 331-111 – Revised 6/10/2019

Lead Copper Sample Sites

	Address	City	State	Zip	Premise #	Drop Off Date	Pick Up Date	Year Built	Sample
1	16224 Market Street	Snohomish	WA	98296-7034	1684			1986	
2	9608 Wall Street	Snohomish	WA	98296-5051	1641			1986	
3	10407 180th St. S.E.	Snohomish	WA	98296-8125	3142			1986	
4	18926 Waverly Dr.	Snohomish	WA	98296-5142	3256			1986	
5	9909 200th Pl. S.E.	Snohomish	WA	98296-7945	3349			1985	
6	9922 200th Pl S.E.	Snohomish	WA	98296-4807	3348			1986	
7	22510 102 Ave S.E.	Woodinville	WA	98072-8011	4536			1985	
8	22509 102 Ave S.E.	Woodinville	WA	98077-8011	4538			1984	
9	12025 215 Pl S.E.	Snohomish	WA	98290-2645	5364			1983	
10	20718 Echo Lake Road	Snohomish	WA	98296-7856	5398			1985	
11	10730 210 St. S.E.	Snohomish	WA	98296-7148	5510			1985	
12	23015 77 Ave S.E.	Woodinville	WA	98072-9505	4164			1982	
13	22930 77 Ave. S.E.	Woodinville	WA	98072-9535	4166			1982	
14	13725 Broadway Ave	Snohomish	WA	98296-8217	2048			1987	
15	21211 East Lost Lake Road	Snohomish	WA	98296-7808	5533			1986	
16	5605 83rd Ave S.E.	Snohomish	WA	98290-5171	7043			1963	

Lead Copper Sample Sites

	Address	City	State	Zip	Premise #	Drop Off Date	Pick Up Date	Year Built	Sample
17	10510 Lowell Larimer Road	Everett	WA	98208-9731	1074			1938	EVERETT
18	8121 207th St S.E.	Snohomish	WA	98296	3647			1978	
19	5530 67th Dr S.E.	Snohomish	WA	98290	6750			1968	
20	18729 Welch Road	Snohomish	WA	98296-3964	5274			1988	
21	13711 Aspen Way	Snohomish	WA	98296-7852	5822			1971	
22	9632 Woods Place	Snohomish	WA	98296-7128	4420			1970	
23	13408 Kenwanda Dr	Snohomish	WA	98296-8255	1938			1977	
24	6331 180th St S.E.	Snohomish	WA	98296	2528			1975	
25	22617 102nd Ave S.E.	Woodinville	WA	98077	4541			1985	
26	17430 100th Ave S.E.	Snohomish	WA	98296	2953			1986	
27	7905 168th St S.E.	Snohomish	WA	98296	2721			1958	EVERETT
28	8932 192nd St S.E.	Snohomish	WA	98296	3417			1969	
29	6515 63rd St S.E.	Snohomish	WA	98290	6522			1967	
30	7216 184th St S.E.	Snohomish	WA	98296	2434			1978	
31	20220 80th Ave SE	Snohomish	WA	98296	3554			1977	
32	6129 66TH DR SE	Snohomish	WA	98290	6509			1976	

Lead Copper Sample Sites

	Address	City	State	Zip	Premise #	Drop Off Date	Pick Up Date	Year Built	Sample
33	7924 206TH ST SE	Snohomish	WA	98296	3560			1978	
34	14011 228th St SE	Snohomish	WA	98296	5963			1981	
	Address	**City**	**State**	**Zip**	**Premise #**	**Drop Off Date**	**Pick Up Date**	**Year Built**	
35	9818 160th St SE	Snohomish	WA	98296	1731			1977	
36	21323 73rd Dr SE	Woodinville	WA	98072	3803			1972	
37	15625 Broadway Ave	Snohomish	WA	98296	1760			1976	
38	20326 80th Ave SE	Snohomish	WA	98296	3547			1971	
39	20403 80th Ave SE	Snohomish	WA	98296	3548			1975	
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Cross Valley
WATER DISTRICT

August , 2021

Margaret Hinkley
16224 Market Street
Snohomish, WA 98296-7034

Lead and Copper Sampling Program
RE: CVWD account - 1684

Dear Margaret Hinkley,

Your property has been participating in our Lead and Copper sampling program for years. We are required by the Department of Health to sample for Lead and Copper every 3 years. DOH would like us to continue to use your home as a sample site.

What's this?

This is a test to see how much Lead and Copper leaches into your water system from your homes plumbing and fixtures. We will share the results with you and hope it's valuable information to you.

What do I do?

Fill a sample bottle from your kitchen or bathroom cold water faucet and leave it on your front porch or doorstep. A Cross Valley Water District Employee will deliver a sample bottle to you and will return the next morning to pick up the filled sample bottle.

When do I do this?

The sample bottle will be dropped off before **3pm on September 8th**, and the next morning, **September 9th after 9am,** we will be back to collect the filled sample bottle from you.

Please let us know if you **will not** be home or able to collect the sample.

Instructions in 6 steps to follow will come with the sample bottle delivery.
1 - Choose your Sink, 2 - Flush, 3 - DO NOT USE, 4 – Take Sample, 5 – Complete bottom portion, 6 – Place on Front porch or Doorstep.

If you have any questions, please give me a call at 425-219-0718 or 360-668-6766.

Thank you for your assistance and participation,

Justin Jones
Water Quality Coordinator

Cross Valley
WATER DISTRICT

INSTRUCTIONS FOR HOMEOWNER
LEAD & COPPER SAMPLING

Thank you for participating! It's sampling time. This test will see how much Lead and Copper leaches into your water from your plumbing and fixtures. We will notify you of the results when we receive the results from the lab.

We will be back tomorrow morning, **Thursday September 30th before 9am** to pick up this sample bottle. Please follow the instructions below and fill out the bottom portion and return with the filled sample bottle.

Step 1 - Choose your Sink - Kitchen or Bathroom
The sink needs to be regularly used and have a **cold**-water faucet. You will not be able to use the sink for 6 to 12 hours after Step 2.

Step 2 - Flush
This evening, flush this faucet (Kitchen or Bathroom) thoroughly by letting the **cold water** run for about 3 minutes. *Note the time completed on the bottom of this form.*

Step 3 - DO NOT USE
Do **NOT** use this sink until the morning to collect the sample. The water must sit in the pipes for at least **6 hours** but no more than 12 hours before you take the sample.

Step 4 – Take Sample
In the morning, return to the un-used chosen sink (Kitchen or Bathroom) fill the sample bottle to the neck with the **first draw of COLD water.** Do not rise out the solution in the bottom of the sample bottle. *Note the time completed on the bottom of this form.*

Step 5 – Complete bottom portion
Be sure to fill in the information and sign. Thank you!

Step 6 – Place on Front porch or Doorstep by 9:00 am
We will be by in the morning, to pick up. (sample bottle and form, you can just attach with a rubber band)

Please call Justin Jones @ 425-219-0718 or 360-668-6766 if you have any questions.

SAMPLE SITE INFORMATION Address:_____

Name of Resident:_____ Telephone Number:_____

Water was last used: **Time:** _____ **Date:** _____

Sample was collected: **Time:** _____ **Date:** _____

I have read the above directions and have taken a tap sample in accordance with these directions.

_____ _____

Signature Date

Cross Valley
WATER DISTRICT

Community Water System
CONSUMER NOTICE
Lead and Copper Water Sample Results

The Cross Valley Water District, Water System I.D #16270F, is providing you with the lead and copper test results on the water sample collected at your location. Please share this notice with everyone who uses or drinks the water.

The results at _____

are: **LEAD** _____ **mg/L** and **COPPER** _____ **mg/L.**

The maximum contaminant level goal (MCLG) is the level of a contaminant in drinking water below which there are no known or expected risks to health. MCLGs allow for a margin of safety. The regulatory limits for lead and copper are called action levels. An exceedance occurs when the concentration of the lead or copper in more than 10 percent of the tap water samples exceeds an action level.

- The MCLG for lead is "0" and the action level is 15 ppb (or .015 mg/L).
- The MCLG and action level for copper is 1,300 ppb (or 1.3 mg/L).

Lead or copper action level exceedances will trigger corrosion control treatment or other requirements. We will notify all water users if our system exceeds the lead action level.

- ND is not detected.

Information from Washington Department of Health on Lead and Copper are on the back side of this notice.

For more information, please contact: Justin Jones at 360-668-6766 or email cvwd@crossvalleywater.net. Or by mail to; Cross Valley Water District, 8802 180th St SE, Snohomish, WA 98296

This notice is sent to you by Cross Valley Water District on _____/_____/_____

Thank you for participating.

LEAD

How Lead Gets Into Water

Lead in drinking water most often comes from water distribution lines or household plumbing rather than from the water system source. Plumbing sources can include lead pipes, lead solder, faucets, valves, and other components made of brass. Lead from other sources (such as lead-based paint and contaminated dust or soil) can increase a person's overall exposure, which adds to the effects of lead in water.

Potential Health Effects of Lead

The greatest risk of lead exposure is to infants, young children, and pregnant women. Lead can cause serious health problems if too much enters the body. Lead is stored in the bones and can be released later in life. Lead can cause damage to the brain and kidneys, interfere with production of red blood cells that carry oxygen, and may result in lowered IQ in children. During pregnancy, the child receives lead from the mother's bones, which may affect brain development. Low levels of lead can affect adults with high blood pressure or kidney problems.

COPPER

How Copper Gets Into Water

Copper is a mineral and natural component in soils. In the correct amounts, it is an essential nutrient for humans and plants. In Washington State, most copper in drinking water comes from corrosion of household plumbing. Plumbing sources can include copper pipe and brass fixtures. Copper from plumbing corrosion can accumulate overnight.

Potential Health Effects of Copper

Although copper is an essential mineral in the diet, too much copper can cause health problems. Copper is widely distributed within the tissues of the body, but accumulates primarily in the liver and kidneys. A single dose of 15 mg of copper can cause nausea, vomiting, diarrhea, and intestinal cramps. Severe cases of copper poisoning have led to anemia and to disruption of liver and kidney functions. Individuals with Wilson's or Menke's diseases are at higher risk from copper exposure.

How you can reduce exposure:

- When your water has been sitting for several hours, flush the pipe by running the cold-water tap until the water is noticeably colder before using the water for drinking or cooking. **(The longer water has been sitting in the pipes, the more dissolved metals it may contain).**
- Use only cold water for drinking, cooking, and making baby formula. Hot water may contain higher levels of lead or copper.
- Frequently clean the filter screens and aerators in faucets to remove captured particles.
- If building or remodeling, only use "lead free" or low lead piping and materials. Avoid using copper piping or brass fixtures for locations where water will be consumed or used in food preparation (such as kitchen or bathroom sinks).

PARTICIPATION AGREEMENT
EVERETT REGIONAL CONSECUTIVE SYSTEMS LEAD AND COPPER RULE MONITORING PROGRAM

THIS AGREEMENT dated July 20, 2009 between the City of Everett, a municipal corporation of the State of Washington ("City") and CROSS VALLEY WATER DISTRICT, ("Participant") witnesses:

1. City and Participant acknowledge their respective responsibilities as drinking water purveyors under the USEPA's Lead and Copper Rule (40 CFR Part 141) to monitor drinking water at customer taps for possible lead and copper contamination. Accordingly, Participant agrees:

a. To conduct monitoring, as directed by City staff and as detailed in the most current version of the Everett regional LCR monitoring plan. Participant will collect and deliver samples to City in accordance with protocols and schedules established by City, DOH, Participant, and other participants;

b. To conduct follow up monitoring and investigation on any LCR sampling location where the initial routine monitoring results exceed the action limits for lead or copper and will report results to City and DOH according to the Everett regional LCR monitoring plan, the DOH, or federal regulations;

c. To select monitoring locations meeting the requirements of the LCR and 40CFR141.86(a);

d. To assist City with water quality parameters monitoring if assigned by the plan;

e. To conduct public notification if required by the plan or DOH as part of LCR compliance.

2. City agrees to establish and administrate the Everett regional consecutive systems lead and copper monitoring program. City will be responsible for regional coordination and reporting of data timely submitted to the City by all participants.

3. City will pay all costs of sample analysis, data coordination and analysis, and reporting. Participants will pay all costs of sample collection and monitoring, staff coordination and participation, and public notification materials and mailing. (City's retail water distribution system shall perform monitoring and pay its collection and monitoring costs as a participant.)

4. This agreement is directed toward monitoring for regulatory agency compliance and reporting only. The City and each participant remain responsible for LCR compliance within their respective local distribution systems.

5. This agreement may be terminated by either party by giving 90 days notice to the other.

City of Everett:

Mayor:

Approved as to form

City Attorney:

Attest

City Clerk

Participant System:

Cross Valley Water District

System Representative Signature:

Jay Hajek, Gen. Mgr.

Mailing address:

8802 180th St. S.E.

Snohomish, WA 98296-

DOH System ID#: 16270F

Population served: ± 16,250

Guidance for Public Water System Operators

Lead and Copper Monitoring

331-111 • Revised 6/10/2019

All Group A community and nontransient noncommunity public water systems must monitor for lead and copper in drinking water. The state Department of Health (DOH) requires this monitoring to minimize the amount of lead and copper consumers get from drinking water.

Unlike other contaminants, lead and copper do not usually occur in source water. Instead, they result when building plumbing, faucets, and water fixtures corrode. Therefore, the purpose of this monitoring is to determine whether water systems are distributing corrosive water. This is determined by sampling the regularly used fixtures in homes most susceptible to corrosion of lead and copper. Systems with corrosive water must investigate and determine the best way to control corrosion.

High levels of lead can lower birth weights and slow the normal physical and mental development of infants and young children. For adults, it can damage kidneys, slightly increase blood pressure, and impair reproductive function. High levels of copper can cause nausea and diarrhea.

Distribution System Monitoring Requirements

Lead and copper requirements involve both standard and reduced monitoring. To ensure monitoring results represent the entire community, the Lead and Copper Rule sets a minimum number of required residential water samples based on population served. The rule also provides specific guidance for selecting the homes or locations where sample collection occurs.

Standard monitoring: Collect one sample from each site within a set six-month period, and then a second set of samples during the next six months (see center column below for required sites). If both sample sets are at or below the action levels for lead and copper, the water system is eligible for a reduced monitoring schedule (right column).

Reduced monitoring: If you qualify for reduced monitoring, you must take samples between June and September. Most systems will need two years of reduced sample sets after standard monitoring. If these samples are at or below the action levels, required monitoring reduces to once every three years between June and September.

Tap Samples Required for Lead and Copper Monitoring		
Population Served	Standard Monitoring—Number of sample sites	Reduced Monitoring—Number of sample sites
More than 100,000	100	50
10,001 to 100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
100 or Fewer	5	5

Selecting Sample Sites

You must establish and maintain a sampling pool of homes large enough to satisfy the number of sample sites required for standard monitoring (see table above). Furthermore, you must identify sample sites that are most vulnerable to lead and copper corrosion. Generally, these are homes with lead service lines or homes built between 1982 and 1986 with copper pipes joined by lead/tin solder. In order to select homes at highest risk for lead and copper corrosion, you should survey records documenting the materials used to construct and repair your distribution system and buildings connected to your distribution system. Sources of information includes historical plumbing codes and permit records, meter installation records, community surveys, county assessor websites and distribution system records.

If your system has enough homes with lead service lines (LSL), 50 percent of your sample sites must be from homes served by LSL, otherwise, you must collect a sample from each available site that is served by a LSL.

When a sufficient number of Tier 1 sites do not exist or are inaccessible (e.g., homeowner denies permission for you to collect a sample), complete your sampling pool with Tier 2 sites. When a sufficient number of Tier 1 and 2 sites do not exist or are inaccessible, complete your sampling pool with Tier 3 sites. Any water system without enough available sample sites that meet the tiering criteria may complete sampling at representative sites throughout the distribution system.

Other considerations in maintaining your sampling pool of lead and copper sample sites.

- As homeowners opt out of the sampling pool, replace these sites with new sites so that you always maintain a sample pool large enough to accommodate the full number of samples required under standard monitoring.
- If your water system expands to serve existing nearby homes, or expands through consolidation with another public water system, review the construction and materials records of these newly serviced homes to determine if their "tier" warrants including them in your sampling pool. You may need to add Tier 1 sites from newly expanded areas so that monitoring occurs throughout the distribution system from the highest tier sample site available.
- Keep a written record of your sampling pool, as required by WAC 246-290-415. DOH may ask to review it during a sanitary survey, or to affirm compliance with 40 CFR 141.86.

When collecting a reduced monitoring set of lead and copper samples, select from the highest tier sites available in your sampling pool.

This table summarizes the Lead and Copper Rule sample site criteria.

Site Selection Tier 40 CFR 141.86(a)(3)	Building Type(s)	Select residential sites that:
1	Single Family Residence (SFR)	• Contain copper pipes with lead solder installed after December 31, 1982, or contain lead pipes *and/or* • Are served by a lead service line (may include MFR if they make up more than 20% of the structures on the system)
2	Buildings including Multifamily Residence (MFR)	• Contain copper pipes with lead solder installed after December 31, 1982, or contain lead pipes *and/or* • Are served by a lead service line
3	SFR	• Contain copper pipes with lead solder installed before January 1, 1983
Other	Representative sites	• Contain plumbing materials typically found at other sites the water system serves

Note: You will need homeowners who volunteer to collect the samples or allow water system staff access to the premises to collect the samples.

Do not use sites with point-of-use or point-of-entry treatment or water softeners. It is best not to include homes with recent plumbing repairs or replacement. These activities can loosen scale build-up on the interior wall of pipes, which may contain lead and could result in abnormally high lead results. You may change locations for reduced sampling if an original sample site is no longer available.

For more information about sample site selection, see the U.S. Environmental Protection Agency (EPA) publication, *Lead and Copper Rule: Monitoring and Reporting Guidance for Public Water Systems (816-R-10-004)*.

Sample Collection Procedures

You must collect samples from regularly used kitchen or bathroom cold-water taps left undisturbed for at least six hours. We recommend no more than 12 hours of stagnation. Ask homeowners to take samples first thing in the morning or after coming home from work or school. This minimum six-hour standing time represents how many people receive some of their drinking water. Lead and copper levels increase as long as water stands in a home's plumbing

system. Lead levels can increase significantly even after only two hours of nonuse. Water that stands longer than 12 hours may have high lead and copper levels that do not represent typical conditions.

Be sure to provide sampling instructions for homeowners who will collect samples. Step-by-step sampling procedures are in DOH's *Lead and Copper Sampling Procedure* (331-227).

Action Levels

The "action level" is the amount of lead or copper that triggers the requirement for a water system to investigate and determine the best way to control corrosion.

The action levels are: **0.015 milligrams per liter (mg/L) for lead**

1.3 mg/L for copper

Your water system has an "action level exceedance" if more than 10 percent of your results exceed the action levels shown above. This is commonly called your 90th percentile level. When you receive the sample results from your lab, send them to us. We will calculate the 90th percentile based on all the samples you collect during the monitoring period and contact you if the results exceed an action level. (Check with your lab; most labs will submit results directly to us).

Exceeding an Action Level

Water systems exceeding the action level for lead or copper must begin follow-up investigations immediately. We may require your system to make improvements or operational changes to make the water less corrosive. If an action level exceedance occurs, you should contact us immediately because there are deadlines associated with both corrective actions and public education requirements.

Water systems that exceed the lead action level must begin a public education campaign that includes specific language and targeted outreach to specific groups that serve sensitive populations (like pediatricians and WIC programs). Two DOH fact sheets explain how lead and copper get into drinking water and the health effects related to drinking water high in lead or copper: *Lead in Drinking Water* (331-177) and *Copper in Drinking Water* (331-178). If you need help, call our regional office.

For more detailed information about the types of corrosion control treatment and how to select the right treatment for your system, see EPA's *Optimal Corrosion Control Treatment Evaluation Technical Recommendations for Primacy Agencies and Public Water Systems (EPA 816-B-16-003)*.

Provide Sample Results To Each Homeowner

You must give the homeowners in your sampling program the results of the tests you took in their homes within 30 days after receiving the results from the testing laboratory. Your consumer noticemust also include information on health effects of lead and what consumers can do to reduce their exposure to lead. To help you meet these and other requirements, we developed a

consumer notification form for your use. DOH 331-462-F includes a link to the notification form. You must inform each consumer who participates in lead and copper sampling of their sampling results. Doing so can also serve as an incentive to keep and recruit participants in your sampling program. You must also send us verification that you completed this notification. Complete and return DOH 331-462-F within three months after delivering your notices. If you need help, call our regional office.

For Technical Assistance

Eastern Region, Spokane	509-329-2100
Northwest Region, Kent	253-395-6750
Southwest Region, Tumwater	360-236-3030

Publications referenced in this document are available on our website at fortress.wa.gov/doh/odwpubs/Publications/.

Washington State Department of Health

If you need this publication in an alternative format, call 800.525.0127 (TDD/TTY call 711). This and other publications are available at www.doh.wa.gov/drinkingwater.

Cross Valley Water District
Water Main Break Response SOP
For Chlorinated and Non-Chlorinated

Water Main Breaks

The District provides both Chlorinated and Non-Chlorinated water within the distribution system that is separated by control valves due to the district's vast topography. In the event of a main break it is extremely important to know where in the system the break is occurring in relationship to the type of distribution supply and follow the correct procedures. The District performs main break repairs under pressure when repair bands can be used and throttles valves to slow the velocity but keep water flowing from the break to prevent contamination entry and keep positive pressure. The District aggressively enforces the Cross Connection Program to ensure water quality with premise isolation.

Water Main Break Categories

The water industry has recognized a need to classify water main breaks in terms of public health significance.

Table 1: Main Break Categories

Type I Break	Type II Break	Type III Break	Type IV Break
Positive pressure maintained during break	Controlled pipe repair with limited depressurization after shutdown	Loss of pressure at break site or depressurization elsewhere in the system	Catastrophic main break / water loss event resulting in complete loss of water service
Pressure maintained in pipe during repair	Pressure maintained at break site until pipe exposed & hole dewatered, shutdown limited to immediate valved off area, no loss of pressure elsewhere in system	Loss of pressure at the break site while the pipe is still buried or submerged and /or pressure loss elsewhere in the system	Water loss is extensive compared to system capacity, resulting in no pressure/ no water. Storage loss leaves limited flushing capacity.
Unlikely contamination intrusion	Limited possibility of contamination intrusion	Possible / actual contamination intrusion	Possible / actual contamination intrusion

Water Main Response Procedures

Listed below are water main break repair and response protocols for each of the four break categories.

Type I Main Break Procedures

Response Procedures	
Chlorinated	**Non-Chlorinated**
Assess environmental impacts - respond accordingly	Assess environmental impacts - respond accordingly
Call Washington 811	Call Washington 811
Excavate to below break	Excavate to below break
Maintain pit water level below break	Maintain pit water level below break
Disinfect repair parts, swab or spray repair site w/1% chlorine solution.	Disinfect repair parts, swab or spray repair site w/1% chlorine solution.
Make repair with pipe still pressurized	Make repair with pipe still pressurized
Chlorinated - Restore residual disinfectant level at the break to background levels by flushing.	Unchlorinated – Flush and take Cl_2 readings to assure all chlorine residual is dispersed.
No Boil Water Advisory (BWA)	Flush individual service lines in the affected area of the repair
No bacteriological samples	No Boil Water Advisory (BWA)
	No bacteriological samples

Type II Main Break Procedures

Response Procedures	
Chlorinated	**Non-Chlorinated**
Assess environmental impacts - respond accordingly	Assess environmental impacts - respond accordingly
Call Washington 811	Call Washington 811
Excavate to below break	Excavate to below break
Maintain pit water level below break	Maintain pit water level below break
Isolate / shut off customer services in affected area if needed	Isolate / shut off customer services in affected area if needed
Provide customer notification - door hanger, personal contact, email	Provide customer notification - door hanger, personal contact, email
Controlled shutdown (Isolation by turning valves)	Controlled shutdown (Isolation by turning valves)
Disinfect repair parts, swab or spray repair site w/1% chlorine solution (If pipe replacement - disinfect from both ends by swabbing)	Disinfect repair parts, swab or spray repair site w/1% chlorine solution (If pipe replacement - disinfect from both ends by swabbing)
Make repair	Make repair
Conduct low velocity flush to displace water in affected piping - discharge to waste	Conduct low velocity flush to displace water in affected piping - discharge to waste
Chlorinated - Restore residual disinfectant level at the break to background levels by flushing.	Unchlorinated – Flush and take Cl_2 readings to assure all chlorine residual is dispersed
Instruct customers to flush premise plumbing upon return to service. Verify service restored to all isolated customers.	Flush individual service lines in the affected area of the repair
No Boil Water Advisory (BWA) for impacted customers or water system	Instruct customers to flush premise plumbing upon return to service. Verify service restored to all isolated customers.
	No Boil Water Advisory (BWA) for impacted customers or water system
Recommendation Only: *collect investigative bacteriological samples to validate repair procedures - service may be restored prior to obtaining results.*	

Type III Main Break Procedures

Response Procedures	
Assess environmental impacts - respond accordingly	
Call Washington 811	
Provide generic water main break notification and customer response steps on Utility website asap (or directly to customers)	
Evaluate possible contamination including consideration of CCC Program	
Call DOH and local health jurisdiction - decide appropriate public notification message / methods	
Issue BWA - Update Utility website (System wide or pressure zone specific). Loss of water pressure may impact firefighting abilities and may have sanitation related impacts that should be considered.	
Isolate / shut-off customer services at the break site (if practical).	
Disinfect repair parts, swab or spray repair site w/1% chlorine solution. (Refer AWWA Std C651 Section 4.11)	
Make repair	
Post repair disinfection may be needed if an uncontrolled break has allowed contamination to enter the system. (Refer to AWWA Std C651 Sections 4.11.3.3)	
Conduct scour flush (3 ft/sec) to remove any break-related sediment.	
Conduct low velocity flush throughout the widespread area subject to low pressures to displace water and to restore background chlorine residual.	
<u>CHLORINATED -</u> Restore residual disinfectant level at the break to background levels	**<u>UNCHLORINATED</u> – Flush surrounding the break and take Cl_2 readings to assure all chlorine residual is dispersed.** **Flush individual service lines in the affected area of repair.**
Check residual disinfectant level throughout the distribution system	
Instruct customers to flush premise plumbing upon return to service	
Collect bacteriological samples to verify the effectiveness of the response and to provide basis for lifting targeted advisories. (More samples may be warranted based on water system size or size of impacted area and distribution supply).	
Rescind BWA/Boil Water Order based on water quality monitoring results. ***(Possible 24 hour BWA?)***	

Type IV Main Break Procedures

Response Procedures
Response to a Type IV break / event will be the same as Type III response procedures with additional emphasis on the following:
Supply Distribution – Chlorinated or Non-Chlorinated supply
Assess Utility capacity to deal with event - seek aid sooner **rather** than later!
Significant depletion of storage tank reserves could affect fire flow capability - **fire fighters should be notified**
Storage tank depletion may also impact ability to adequately flush the distribution system following repairs leading in (to?) delays to fully restoring water service and lifting the BWA.
Conservation messages may therefore need to be included with BWA notification.

Cross Valley
WATER DISTRICT

Water System Plan
Cross Valley Water District

Appendix J
Distribution List

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Cross Valley Water District
Water System Plan

Plan Distributed to:	Copies Delivered
Cross Valley Water District District Commissioners (3 Copies) District Staff (4 Copies)	7 Hard Copies & 10 Electronic Copies
Agency Reviewer Snohomish County Planning and Development Services 3000 Rockefeller, M/S 607 Everett, WA 98201	2 Hard Copies
Snohomish County Environmental Health 3020 Rucker Ave, Suite 104 Everett, WA 98201	1 Electronic Copy
Tim Jackson City of Snohomish Public Works 116 Union Avenue Snohomish, WA 98290	1 Electronic Copy
Patrick Sorenson General Manager Woodinville Water District 17238 Woodinville-Duvall Road Woodinville, WA 98072	1 Electronic Copy
Rick Roberts City of Woodinville Public Works 17301 – 133rd Avenue NE Woodinville, WA 98072	1 Electronic Copy
John McClellan Engineering and Development Director Alderwood Water and Wastewater District 3626 156th St. SW Lynnwood, WA 98087-5021	1 Electronic Copy

Cross Valley Water District
Water System Plan

Plan Distributed to:	Copies Delivered
Curt Brees General Manager Silver Lake Water & Sewer District P.O. Box 13888 Mill Creek, WA 98082-1888	1 Electronic Copy
Ryan Bigley City of Everett Public Works 3200 Cedar Street Everett, WA 98201	1 Electronic Copy
Jesse Greenough WSDOT – Northwest Region Utility Office P.O. Box 330310 15700 Dayton Ave N. Seattle, WA 98133-9710 MS 113	1 Electronic Copy

Cross Valley
WATER DISTRICT

Water System Plan
Cross Valley Water District

Appendix K
District History

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TABLE 1-1: DEVELOPMENT HISTORY OF CROSS VALLEY WATER DISTRICT

YEAR	MILESTONE
1964	Cross Valley Water Association incorporated.
1965	Original construction contract for approximately 26 miles of water line for $544,000 awarded to construction company Oxford and Cook.
1966	First customer, Riverview Elementary School, received water; Completed 50,000 and 20,000 gallon reservoirs; Association constructed 21,000 LF of pipeline.
1967	Served 328 customers; Association constructed 4,100 LF of pipeline; Developers constructed 13,675 LF of pipeline.
1968	Drilled and completed Well No. 1; Developers added 11,620 LF of pipeline to system.
1970	Completed 500,000 gallon Echo Lake standpipe; Drilled Well No. 2; Developers added 22,260 LF of pipeline to system.
1971	Comprehensive Plan adopted; Drilled Well No. 3; Completed 8" Echo Lake cross-tie.
1972	Groundwater study completed; Well No. 4 drilled.
1973	Acquired ownership of Marshland Water Association facilities and service to its 29 members; Drilled Well No. 5.
1975	Assumed interim operation of Clearview Water Company and service to its 192 customers; Developers added 6,077 LF of pipeline to system.
1976	Completed Clearview expansion project consisting of 6,400 LF of pipe; Constructed 125,000 gallon elevated storage in 756 Zone; Developers installed 12,579 LF of pipeline.
1977	Acquired ownership of Mount Forest Water Company facilities with 16 connections; Developers installed 11,898 LF of pipeline.
1978	Well No. 6 drilled; Completed new office and shop facilities at Clearview; Developers installed 8,387 LF of pipeline.
1980	Completed 1 MG Vine Street reservoir and booster station; Developers installed 21,804 LF of pipeline.
1981	Well No. 7 at Mount Forest was drilled; Echo Lake Reservoir was repainted; Completed 8,560 LF of transmission line to Mount Forest; Developers installed 19,668 LF of pipeline.
1982	All wells and reservoirs connected to central panel at Association Office by installation of new telemetry system; Relocated 8,500 LF of watermain along SR-9; Developers installed 9,568 LF of pipeline; Authorized comprehensive plan update; Updated groundwater study of 1971.
1983	SR-9 widening required replacement of 8,300 LF of water pipe along SR-9; Developers installed 5,280 LF of pipeline; Well No. 6 redeveloped.
1984	Completed Lost Lake Loop, 8,500 LF of pipe; Completed 5-Year Update of Comprehensive Plan; Developers installed 6,020 LF of pipe.
1985	Upgraded Well No. 7A; Purchased Lee Forest Reservoir site; Developers completed 8,000 LF of pipe.
1986	Purchased Well Site Nos. 1, 8, and 9; Drilled Wells 8 and 9; Storm damage repairs were $30,000; Developers completed 9,500 LF of pipe.
1987	Lee Forest Reservoir completed; Completed 6,500 LF of pipe, sized for future Maltby Industrial Area fire flows; Well No. 8 pumphouse completed; Received sole source aquifer designation from EPA; Developers installed 8,110 LF of pipe.
1988	Well No. 9 pumphouse completed; Paradise Lake Road/221st Street S.E. loop completed; Developers added 18,280 LF of pipe to the system.

YEAR	MILESTONE
1989	Completed 204th-206th Street S.E. loop; Completed 196th Street S.E. loop; Radio communications system installed; Rebuilt Well No. 5 pump and motor; Replaced Well No. 7A motor; Completed water quality study; Completed Comprehensive Plan 5-Year Update; Fobes Hill watermain constructed; Developers installed 6,400 LF of pipe through 6/1/89.
1989	Voters approved creation of Cross Valley Water District and election of three Commissioners. Initial Commissioners were: Art Sigurdson, Dale Deierling and Doc Pehling.
1990	Lee Forest Booster Station to 756 Zone and watermain constructed; Well No. 10 drilled and cased; Computer system upgraded; Developers added 2,223 LF of pipe to the system.
1990	Annexation 1 and 2 added to the District – East side of Connelly Road and the area of 89th Avenue SE and 80th Street SE
1991	Maltby Road watermain constructed; Water ULID Nos. 1 and 3 constructed; Telemetry system upgraded; Annexation Nos. 1 and 2 completed; Developers added 33,954 LF of pipe to the system.
1992	Clearview standpipe (47 ft. diam. x 146 ft. high) constructed; Water conservation and cross-connection control programs adopted; Developers added 20,543 LF of pipe to the system.
1992	Merger with Swans Trail Water District
1993	Water conservation water rates adopted; Swan's Trail Water District merger with CVWD; Constructed 228th Street S.E. and 155th Ave. E.E. watermain; Water ULID No. 6 formed; Annexation Nos. 5 and 7 completed; Developers added 4,994 LF of pipe to the system.
1993	Annexation No. 5 – The area South and east of SR 522, north of 240th Street SE and west of 82nd Avenue SE Annexation No. 7 – The area South of 240th Street SE, west of 75th Avenue SE and north of the King County line
1994	Fobes Hill tank property purchased; sewer ULID No. 5 formed; Lightning damage repairs; Rented pilot water treatment plant from Northwest filter; Accepted Clearview Manor waterline and PRV station; Clearview Elevated Tank repainted; Assumed Woodlane Water Company system, serving 42 connection; Awarded contract to connect Cross Valley system and Woodlane Water Company system; Developers added 8,076 LF of pipe to the system.
1995	Annexation No. 10 – Area west of 51st Avenue SE and north of 180th Street SE
1995	Developers added 2,290 LF of pipe to the system.
1996	Developers added 6,000 LF of pipe to the system.
1997	Sewer ULID 5 and Water ULID 6 construction started; Completed draft Wellhead Protection Program Delineation and Source Inventory; Developers added 14,910 LF of pipe to the system.
1998	Sewer ULID 5 and Water ULID 6 construction completed, adding approximately 45,000 LF of gravity sewer and approximately 33,000 LF of watermain to the District; SR 9 Watermain Replacement Project – Phase I completed, adding approximately 3,800 LF of watermain to the system; Developers added approximately 4,800 LF of pipe to the system.
1998	Interlocal Phase II Agreement for the Clearview Water Project Signed between Alderwood Water and Wastewater District, Silver Lake Water and Sewer District and Cross Valley Water District.
1999	Developers added 25,000 LF of watermain to the system.

YEAR	MILESTONE
2000	Wellhead Protection Plan Developed by Golder Associates.
2000	Developers added 6,800 LF of watermain to the system. New office building completed. Water Treatment Plant for Wells 5,6, & 10 completed
2001	New Water System Plan Completed.
2001	Negotiations for Interlocal Agreement with Silver Lake Water and Sewer District regarding Water/Sewer Service Area Boundaries commenced.
2001	Developers added 5,400 LF of watermain to the system.
2002	SR 9, 522 to 212th, Water Improvements.
2002	Clearview Local Facilities Transmission and Pump Station Constructed
2002	Developers added 3,300 LF of watermain to the system.
2002	Annexation No. 8 - Mountain View Terrace, area of 69th Avenue SE and Skipley Road
2003	Review & Coordination for King County Wastewater Treatment Division's new Brightwater Treatment Plan began.
2003	Water System Vulnerability Assessment completed in accordance with Homeland Security Act.
2003	Developers added 16,000 LF of watermain to the system.
2004	Emergency Response Plan
2004	SR 522 HDPE bore completed.
2004	2004 Water Improvements, Phase 2
2004	WSDOT Paradise Lake Rd Interchange System Improvements
2004	Developers added 21,500 LF of watermain to the system.
2005	Rate Study Completed Clearview project construction & agreements complete began using CWSA water Developers added 4,100 LF of watermain to the system.
2006	Developers added 3,400 LF of watermain to the system. Assumed Mt. View Terrace Water Association Brightwater Utility Construction begins.
2007	Developers added 10,300 LF of watermain to the system. 235th St. SE-Eckert Loop completed. December storm/flood repairs.
2008	Developers added 5,000 LF of watermain to the system. SR 9 Lowell-Larimer Road –Broadway Ave. connection completed. Broadway Ave Watermain Relocation Fales Road Culvert watermain replacement.
2009	New Water and Sewer System Plans Developed SR 9 SR 522 –SR 524 Watermain Relocation completed.
2009	Developers added 9,000 LF of watermain to the system. Lowell-Larimer Road Water Supply Project Phase 1 completed Snohomish County Intersection Watermain Relocation completed.
2010	180th & Interurban Improvements - 1,370 lineal feet of 8" and 12" ductile iron water main to replace existing DI and AC water main due to proposed roadway improvements by Snohomish County. The project also included replacement of services and fire hydrants, and an existing 8" PRV station.
2010	SR 9 – 212th to 176th Water Main Relocation 12,000 lineal feet of 8 to 12-inch main within the road project corridor.

YEAR	MILESTONE
2010	83rd Ave. SE Water Main Relocation - 540 LF between 152nd Street SE and Cathcart Way by Snohomish County.
2011	Annexation No. 13 – Area of High Bridge Road
2012	116th ST SE & 56th Ave SE roadway improvements – 180 LF of 12" DI water main relocated in order to allow for roundabout construction.
2012	Echo Lake Municipal Water Storage project commenced. Facility to be constructed on 1.84 acres of property southeast of SR 522 on Aspen Way to replace existing storage 'standpipe tank' with a new steel standpipe, providing 1.85 MG of water storage. Construction phase: 2
2012	40 LF of 1" diameter poly water services added to existing 12" water main at mile post 4.32 of Seattle Hill Road (SR 96) to serve single family homes.
2013	Multi-site water main relocation to accommodate construction of new fish culverts within Snohomish County right-of-way: 240 lineal feet of existing 8" AC water main west of Fales Road at 180th Street SE. 90 LF of existing 8" and 120 LF of 12" ductile iron water mains on Elliott Road and Connelly Road. 40 lineal feet of 8" ductile iron pipe replaced with 8" RJ ductile iron water line at 111th Avenue SE.
2013	Developers added 6,300 LF of 12" water main, 1,840 LF of 8" water main, and 100 LF of 6" water main to system along with 10 hydrants along 165th Ave SE, 224th St SE, 161st Ave SE, and two private roads connecting a new housing development.
2013	Water System Plan updated.
2014	30 LF of 6" AC pipe with 8" RJ ductile iron water line relocated on Maple Road to accommodate installation of storm culvert.
2014	Fire Service Cost Study completed.
2014	Developers added 9,041 LF of water main to system to accommodate four new developments.
2014	Drilling of new municipal water well (7B) on Mt. Forest site at 165th Ave. SE commenced.
2015	120 LF of 8" AC pipe relocated/replaced in the vicinity of Maple Road and Waverly Drive to accommodate the installation of a storm culver.
2015	Installation of 1,500 gallon, above-ground, duel fuel storage tank and pump facility on the District's office site commenced.
2015	Water system and hydrant plan developed for industrial site in Maltby area.
2015	Developers added approximately 3,560 LF of 8" D.I. to accommodate new residential developments and 410 LF of 8" D.I. for new athletic center.
2016	529 LF of 12" D.I. added to system at 86th Ave. SE and 206th St. SE; 320 LF of 4" D.I. and 671 LF of 8" D.I. added to system on 112th Dr. SE
2016	Developers added 3,088 LF of 8" D.I pipe and 4,637 LF of 12" D.I pipe
2016	Fire Flow Analysis conducted; New Fales Road Fire Station connected to system. New Multi-family customer billing class developed; District's Developer Extension Manuals updated.
2016	District's Developer Extension Manuals updated.
2017	Developers added 109 LF of 12" D.I. watermain added to system on 157th Ave SE.
2017	Developer replaced 550 LF of AC pipe with 12" D.I pipe
2018	Developers added 2,289 LF of 12" D.I pipe
2018	District developed Employee Handbook

YEAR	MILESTONE
2019	District replaced 0.5 MG Reservoir with a 1.85 MG Reservoir Echo Lake and created a new 700 pressure zone; District completed cellular meter reading on all district meters; District updated Cross Connection Program and Policy, Public Records Policy and Purchasing and Contracting Policy Manual, created Board of Commissioners Handbook, and developed a new website
2019	District replaced 1,050 LF of 2” galvanized pipe with 4” D.I pipe
2019	Developers added 640 LF of 8” water main to system at Maltby Industrial Park.
2019	Developers added 7,174 LF of 12” D.I pipe and 2,449 of 8” D.I pipe
2019	111th ST SE Replaced 2” with 4” DCIP 807 LF and direction drilled 502 LF of 4” HDPE
2019	District replaced 625 LF of 6” AC pipe with 350 LF of 14” HDPE and 275 LT of 12” DCIP (W2019-05)
2020	District completed telemetry SCADA upgrade

Cross Valley
WATER DISTRICT

Water System Plan
Cross Valley Water District

Appendix L
District Standards

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Cross Valley Water District maintains a set of standard specifications and details for the construction of water and sewer facilities within the District. The details and specifications are available at the following website…

https://www.crossvalleywater.net/217/Water

They are provided in PDF format and include the Standard Details, Specifications, General Provisions, Engineering Specifications, and the Water Developer Extension Book.

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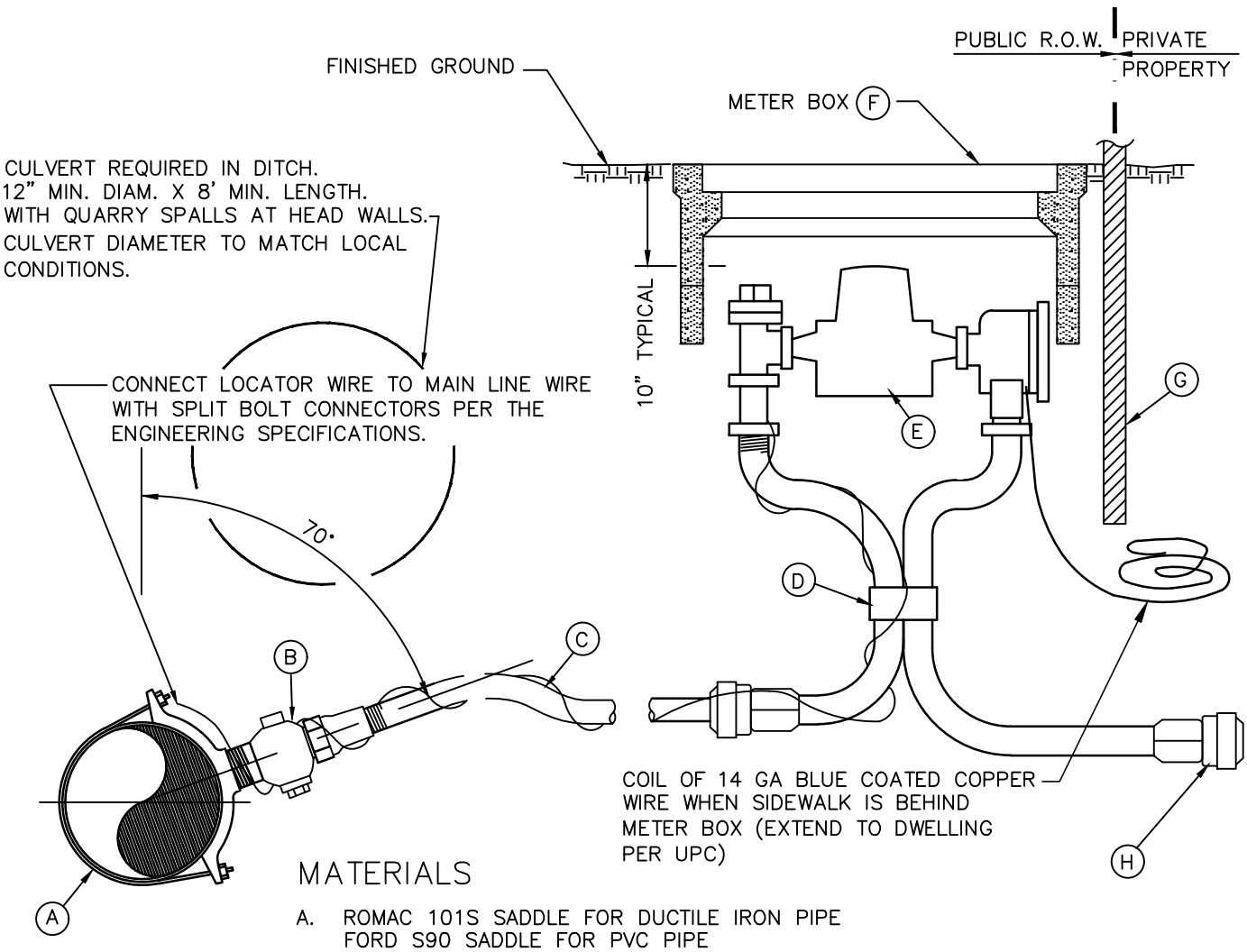


MATERIALS

A. ROMAC 101S SADDLE FOR DUCTILE IRON PIPE
FORD S90 SADDLE FOR PVC PIPE

B. FORD FB1100–4–Q–NL CORPORATION STOP (1")
IRON PIPE THREAD INLET X QUICK JOINT OUTLET

C. 1" POLYETHYLENE TUBING, SDR–9, 200 PSI PRESSURE CLASS DRISCO PIPE WITH 14 GAUGE LOCATING WIRE OR COPPER TUBING TYPE K. COPPER TUBING TO BE INSTALLED IN POLYETHYLENE WRAP FOR A MINIMUM OF 3 FEET FROM WATER MAIN. SERVICES WITHIN WSDOT ROW TO BE ENCASED IN 2" POLY, SDR–11.

D. 1" COPPER METER SETTER – FORD VBH94–15W–MM–44ZA–NL.

E. WATER METER TO BE PROVIDED BY DISTRICT. METERS SMALLER THAN 1" SHALL BE INSTALLED WITH REDUCING BUSHINGS.

F. CARSON HW 1527–18 BCF HDPE, 18" DEPTH. NON–TRAFFIC AREAS: COMPOSITE COVER WITH CAST IRON READER LID AND 2" TRANSMITTER HOLE, OLDCASTLE PART # FL1527 GP. TRAFFIC AREA: CAST IRON COVER WITH READER LID AND 2" TRANSMITTER HOLE, OLDCASTLE PART # 15274009.

G. 2"x 4"x 6' LONG MARKER POST. BURY 3'. PAINT WHITE WITH "WATER" STENCILED IN BLUE PAINT.

H. PVC CAP ON TAILPIECE. WHEN SIDEWALK IS INSTALLED BEHIND METER BOX, A COPPER TAILPIECE OF LIKE LENGTH SHALL BE EXTENDED TO THE PROPERTY SIDE OF WALKWAY.

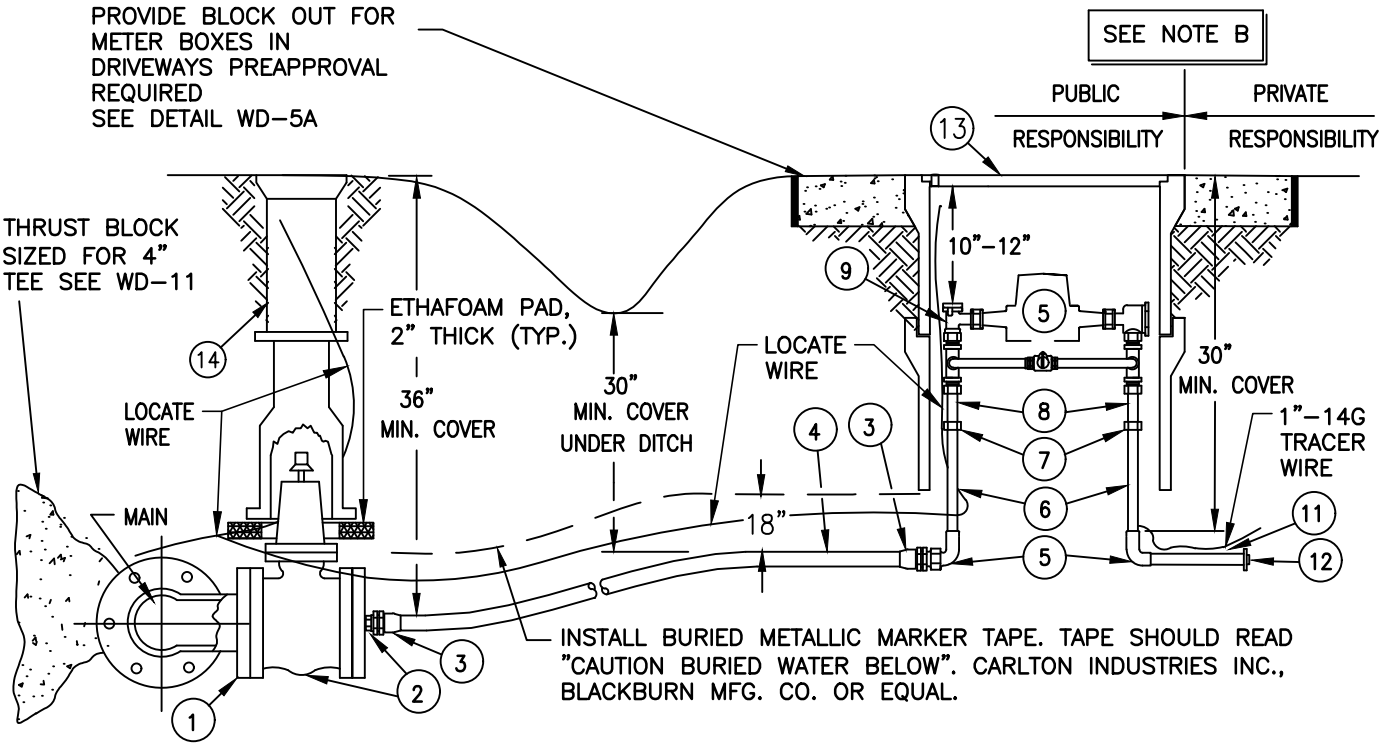
NOTE: PRESSURE REDUCING VALVE INSTALLED BY PROPERTY OWNER.

CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

TYPICAL 1" WATER SERVICE

WD–1	NOT TO SCALE	FEB 2022

FILE NAME: \\K–FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD–1.DWG



NO.	ITEM
1	DISTRICT-APPROVED TEE X 4" (FL)
2	4" R/W GATE VALVE (FL X FL) 4" X 2" COMPANION FLANGE (FIPT)
3	2" MUELLER 110, FORD GRIP JOINT
4	2" PLASTIC CAP (SCHEDULE 40)
5	2" BADGER RECORDALL METER SUPPLIED BY DISTRICT AFTER PURCHASE
6	REFER TO DETAIL WD-5 FOR METER BOX TYPE
7	2" TYPE K COPPER PIPE (SOFT) 2" SERVICE PIPE (MAIN TO METER): SDR-7, DRISCO PIPE, IPS, WITH 14-GAUGE LOCATING WIRE, OR COPPER TUBING, TYPE K, INSTALLED IN POLYETHYLENE WRAP FOR A MINIMUM OF 3' FROM WATER MAIN
8	CAST-IRON VALVE BOX WD-11, 18" TOP, 30" BOTTOM
9	2" BRASS METER SETTER WITH HIGH BYPASS FORD VBH77-12B-11-77-NL WITH VERTICAL IN AND OUT CONNECTION
10	2" BRASS NIPPLE 6" LONG MIN. (MIPT)
11	2" BRASS 90° ELBOW (FIPT)
12	2" NIPPLE 3" LONG MIN.
13	2" BRASS UNION (FIPT)
14	2" BRASS NIPPLE 2' MIN. (EXTEND TO BACK OF SIDEWALK IF NECESSARY)

NOTES:

A. NO SPLICES ALLOWED UNLESS APPROVED BY DISTRICT. USE MUELLER 110 OR FORD QUICK JOINT.

B. OWNERS ARE RESPONSIBLE FOR INSTALLING PRESSURE REDUCER ON THEIR SYSTEM TO PROTECT THEIR FACILITIES FROM HIGH PRESSURE, UNLESS OTHERWISE SHOWN ON DRAWING.

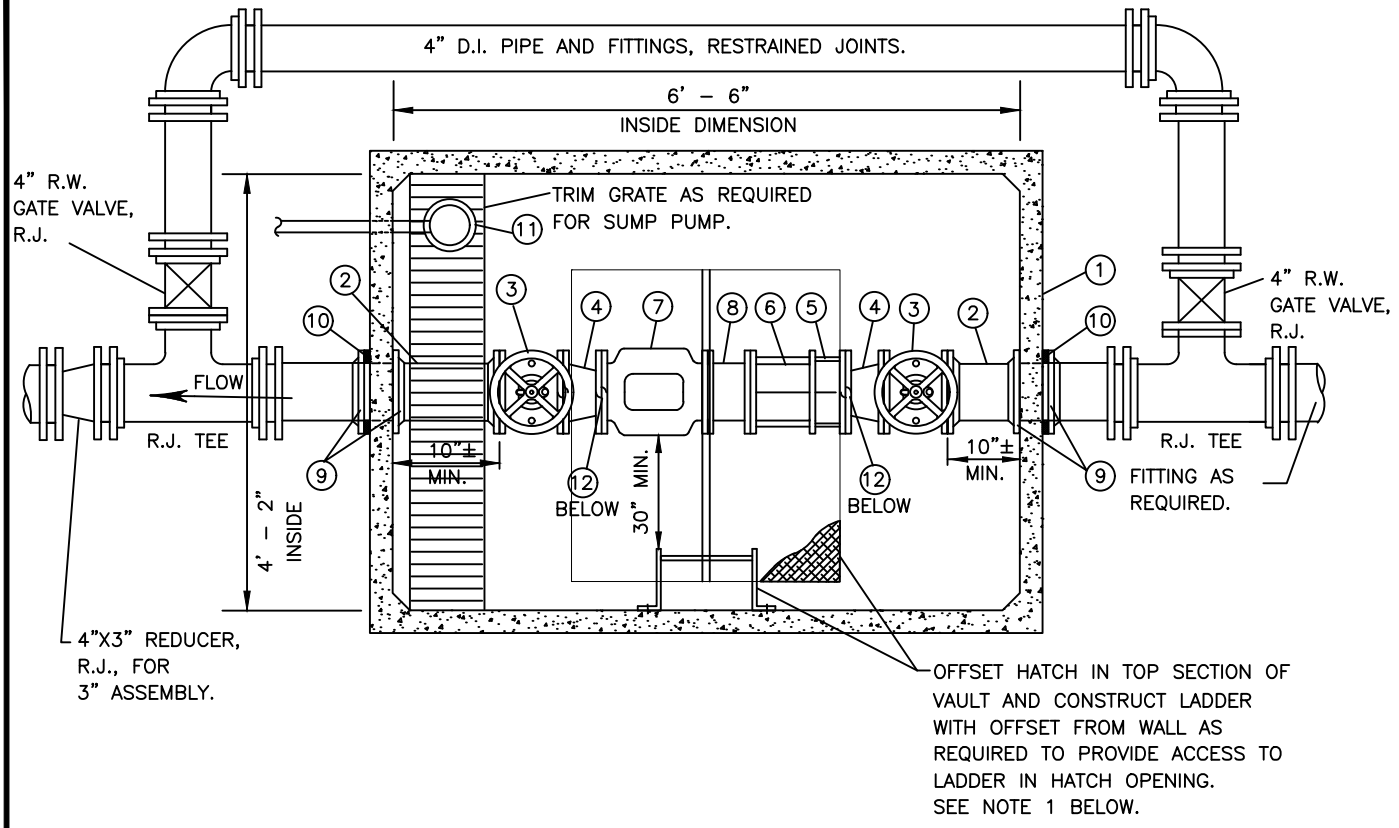
C. SURFACE RESTORATION IN ACCORDANCE WITH JURISDICTIONAL AUTHORITY.

D. 4" SAND BEDDING REQUIRED ON ALL COPPER.

E. ALL FITTINGS SHALL BE "LEAD FREE".

CROSS VALLEY WATER DISTRICT STANDARD WATER DETAILS	2" WATER SERVICE INSTALLATION		
	WD-2	NOT TO SCALE	FEB 2022

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-2.DWG



NOTES

1. PROVIDE SHOP DRAWINGS AND SUBMITTALS FOR ALL MATERIALS AND EQUIPMENT TO THE DISTRICT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR ELECTRICAL PERMITS AND APPROVALS FOR SUMP PUMP INSTALLATIONS.

SEE SHEET WD–3A FOR MATERIALS LIST

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-3.DWG

CROSS VALLEY WATER DISTRICT STANDARD WATER DETAILS	3" AND 4" WATER SERVICE		
	WD–3	NOT TO SCALE	FEB 2022

MATERIAL LIST

1. PRECAST CONCRETE UNDERGROUND VAULT – "UTILITY VAULT COMPANY": 577–LA BASE SECTION: 577 WITH SUMP AND GRATE MIDDLE SECTION: 577 WITHOUT CHANNELS AND WITH KNOCK–OUTS FOR WATER PIPING ONLY. TOP SECTION: 577 WITH CAST IN PLACE HATCH RATED TO H20 TRAFFIC LOADING.

   HATCH: HATCH SHALL BE 3'–6" x 3'–6" CLEAR OPENING, SINGLE LEAF, WITH H20 TRAFFIC RATING. OFFSET THE HATCH IN THE VAULT LID AS SHOWN TO PROVIDE ACCESS TO THE LADDER. THE HATCH SHALL BE LW PRODUCTS OR EQUAL WITH BILCO "LADDER–UP" SAFETY POST. THE HATCH SHALL DRAIN TO THE SUMP.

   LADDER: HOT DIPPED GALVANIZED BOLT–ON LADDER WITH #6 RUNGS ON 12" CENTERS AND MOUNTING BRACKETS AT TOP, MIDDLE AND BOTTOM. SECURE LADDER TO VAULT WALL WITH OFFSET SUFFICIENT TO PROJECT INTO HATCH.

   PAINTING: THE INTERIOR OF THE CONCRETE VAULT SHALL BE PAINTED AT THE VAULT MANUFACTURER WITH ONE COAT OF STEEL COAT DAMP–TEX NO. 22 PRIMER AND TWO COATS OF STEEL COAT DAMP–TEX DX 110–WHITE. THE EXTERIOR BELOW GRADE SHALL BE PAINTED WITH TWO COATS OF KOPPERS BITUMASTIC BLACK SOLUTION.

2. 2–4" D.I. ADAPTER, FL. x P.E., 4'± LONG.

3. 2–4" RESILIENT SEAT GATE VALVE, NRS, FL., O–RING PACKING WITH HANDWHEEL.

4. 2–4"x3" REDUCER, FL., FOR 3" ASSEMBLY ONLY.

5. 3" OR 4" FLANGED COUPLING ADAPTER, ROMAC FCA 501, OR EQUAL.

6. 3" OR 4" D.I. ADAPTER, FL. x P.E., 9"± LONG (VERIFY).

7. DISTRICT TO PROVIDE CURRENT SPECIFIED METER AT DEVELOPER'S EXPENSE. SIZE OT TO BE DETERMINED DURING DESIGN PROCESS WITH DEVELOPER. READ REMOTE TO BE MOUNTED IN VAULT LID BY DEVELOPER.

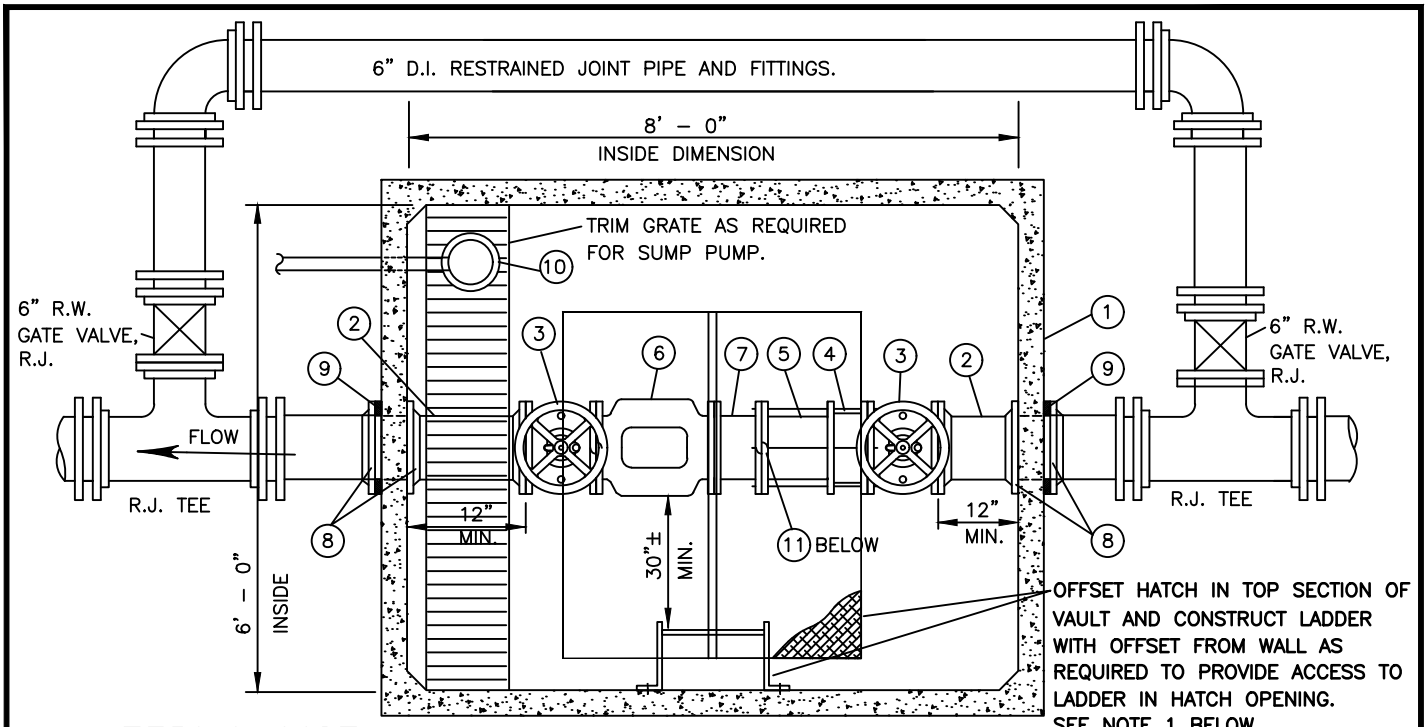
8. 3" OR 4" STRAINER, FL., AS RECOMMENDED AND PROVIDED BY METER MANUFACTURER.

9. UNI–FLANGE ADAPTER.

10. 4–2" X 2" X 1/4" MIN. WALL THICKNESS SQUARE STEEL TUBING, 6' MIN. LENGTH. BOLT TO VAULT WALL IN FOUR PLACES WITH STAINLESS STEEL ANCHOR BOLTS.

11. SUMP PUMP OR GRAVITY DRAIN AS REQUIRED BY SITE CONDITIONS, TO BE DETERMINED BY THE DEVELOPER AND CONTRACTOR AND REVIEWED AND APPROVED BY THE DISTRICT. FOR SUMP PUMP: 16" DIAM. x 6" DEEP SUMP WITH HYDROMATIC OSP33 SUMP PUMP. PROVIDE ELECTRICAL POWER PER ALL APPLICABLE CODES. CONSTRUCT 1–1/4" DISCHARGE PIPING ENCASED IN G.I.P. TO NEAREST CATCH BASIN OR APPROVED LOCATION. FOR GRAVITY DRAIN: SUMP DRAIN, ZURN Z–551, THREADED, WITH ZURN Z–1099 BACKWATER VALVE, THREADED X NO–HUB, WITH CI.I PIPE TO 12" MIN. BEYOND VAULT WALL AND 4" PVC D3034 SDR35 TO DAYLIGHT OR C.B.

12. ADJUSTABLE PIPING SUPPORT, "STANDON", OR EQUAL, TWO PLACES.



MATERIAL LIST

1. PRECAST CONCRETE UNDERGROUND VAULT – "UTILITY VAULT COMPANY": 687–LA
   BASE SECTION: 687 WITH SUMP AND GRATE
   MIDDLE SECTION: 687 WITHOUT CHANNELS AND WITH KNOCK–OUTS FOR WATER PIPING ONLY.
   TOP SECTION: 687 WITH CAST–IN–PLACE HATCH RATED TO H20 TRAFFIC LOADING.

   HATCH: HATCH SHALL BE 4'x4' CLEAR OPENING, DOUBLE LEAF WITH H20 TRAFFIC RATING. OFFSET THE HATCH IN THE VAULT LID AS SHOWN TO PROVIDE ACCESS TO THE LADDER. THE HATCH SHALL BE LW PRODUCTS OR EQUAL WITH BILCO "LADDER–UP" SAFETY POST. THE HATCH SHALL DRAIN TO THE SUMP.

   LADDER: HOT DIPPED GALVANIZED BOLT–ON LADDER WITH #6 RUNGS ON 12" CENTERS AND MOUNTING BRACKETS AT TOP, MIDDLE AND BOTTOM. SECURE LADDER TO VAULT WALL WITH OFFSET SUFFICIENT TO PROJECT INTO HATCH CLEAR OPENING.

   PAINTING: THE INTERIOR OF THE CONCRETE VAULT SHALL BE PAINTED AT THE VAULT MANUFACTURER WITH ONE COAT OF STEEL COAT DAMP–TEX NO. 22 PRIMER AND TWO COATS OF STEEL COAT DAMP–TEX DX 110–WHITE. THE EXTERIOR BELOW GRADE SHALL BE PAINTED WITH TWO COATS OF KOPPERS BITUMASTIC BLACK SOLUTION.

2. 2–6" D.I. ADAPTER, FL.x P.E., 4'± LONG
3. 2–6" RESILIENT SEAT GATE VALVE, NRS, FL., O–RING PACKING WITH HANDWHEEL.
4. 6" FLANGED COUPLING ADAPTER, ROMAC FCA 501, OR EQUAL.
5. 6" D.I. ADAPTER, FL.x P.E., 12"± LONG (VERIFY).
6. DISTRICT TO PROVIDE CURRENT SPECIFIED METER AT DEVELOPER'S EXPENSE. SIZE TO BE DETERMINED DURING DESIGN PROCESS WITH DEVELOPER. READ REMOTE TO BE MOUNTED IN VAULT LID BY DEVELOPER.
7. 6" FLANGED STRAINER AS RECOMMENDED AND PROVIDED BY THE METER MANUFACTURER.
8. UNI–FLANGE ADAPTER.
9. 2" x 2" x 1/4" MIN. WALL THICKNESS SQUARE STEEL TUBING, 6' MIN. LENGTH. BOLT TO VAULT WALL IN FOUR PLACES WITH STAINLESS STEEL ANCHOR BOLTS.
10. SUMP PUMP OR GRAVITY DRAIN AS REQUIRED BY SITE CONDITIONS, TO BE DETERMINED BY THE DEVELOPER AND CONTRACTOR AND REVIEWED AND APPROVED BY THE DISTRICT.
    FOR SUMP PUMP: 16" DIAM. x 6" DEEP SUMP WITH HYDROMATIC OSP33 SUMP PUMP. PROVIDE ELECTRICAL POWER PER ALL APPLICABLE CODES. CONSTRUCT 1–1/4" DISCHARGE PIPING ENCASED IN G.I.P. TO NEAREST CATCH BASIN OR APPROVED LOCATION.
    FOR GRAVITY DRAIN: SUMP DRAIN, ZURN Z–551, THREADED, WITH ZURN Z–1099 BACKWATER VALVE, THREADED X NO–HUB, WITH CI.I PIPE TO 12" MIN. BEYOND VAULT WALL AND 4" PVC D3034 SDR35 TO DAYLIGHT OR C.B.
11. ADJUSTABLE PIPING SUPPORT, "STANDON", OR EQUAL, THREE PLACES.

NOTES

1. PROVIDE SHOP DRAWINGS AND SUBMITTALS FOR ALL MATERIALS AND EQUIPMENT TO THE DISTRICT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR ELECTRICAL PERMITS AND APPROVALS FOR SUMP PUMP INSTALLATIONS.

CROSS VALLEY WATER DISTRICT STANDARD WATER DETAILS	6" WATER SERVICE		
	WD–4	NOT TO SCALE	FEB 2022

FILE NAME: \\K–FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD–4.DWG

SERVICE TYPE AND LOCATION	H10–UNINTENDED TRAFFIC	H20–TRAFFIC RATED	ADA–NON SKID	BOX TYPE	LID TYPE
1–INCH WATER SERVICE METER BOX IN LANDSCAPE OR DRIVEWAY (SEE NOTE 1)	X		X	CARSON HW 1527BCF HDPE W/ 18" BODY OR SIGMA/RAVEN RMB–152718–SW–B	NICOR HDPE W/ BADGER AMR RECESS AND CVWD LOGO
2–INCH WATER SERVICE METER BOX IN LANDSCAPE, BEHIND VERTICAL CURB ONLY				OLD CASTLE / CARSON HDPE 1730MSBC W/ 18" BODY PEDESTRIAN ONLY	OLD CASTLE / CARSON HDPE 1730 HDPE AMR RECESS W/ PLASTIC READER DOOR PEDESTRIAN ONLY
BLOW OFF AND STAND PIPE ASSEMBLY IN SAME BOX		X	X	CARSON HW 1527BCF HDPE W/ 18" BODY OR SIGMA/RAVEN RMB–152718–SW–B	NICOR HDPE W/ BADGER AMR RECESS AND CVWD LOGO

NOTES:

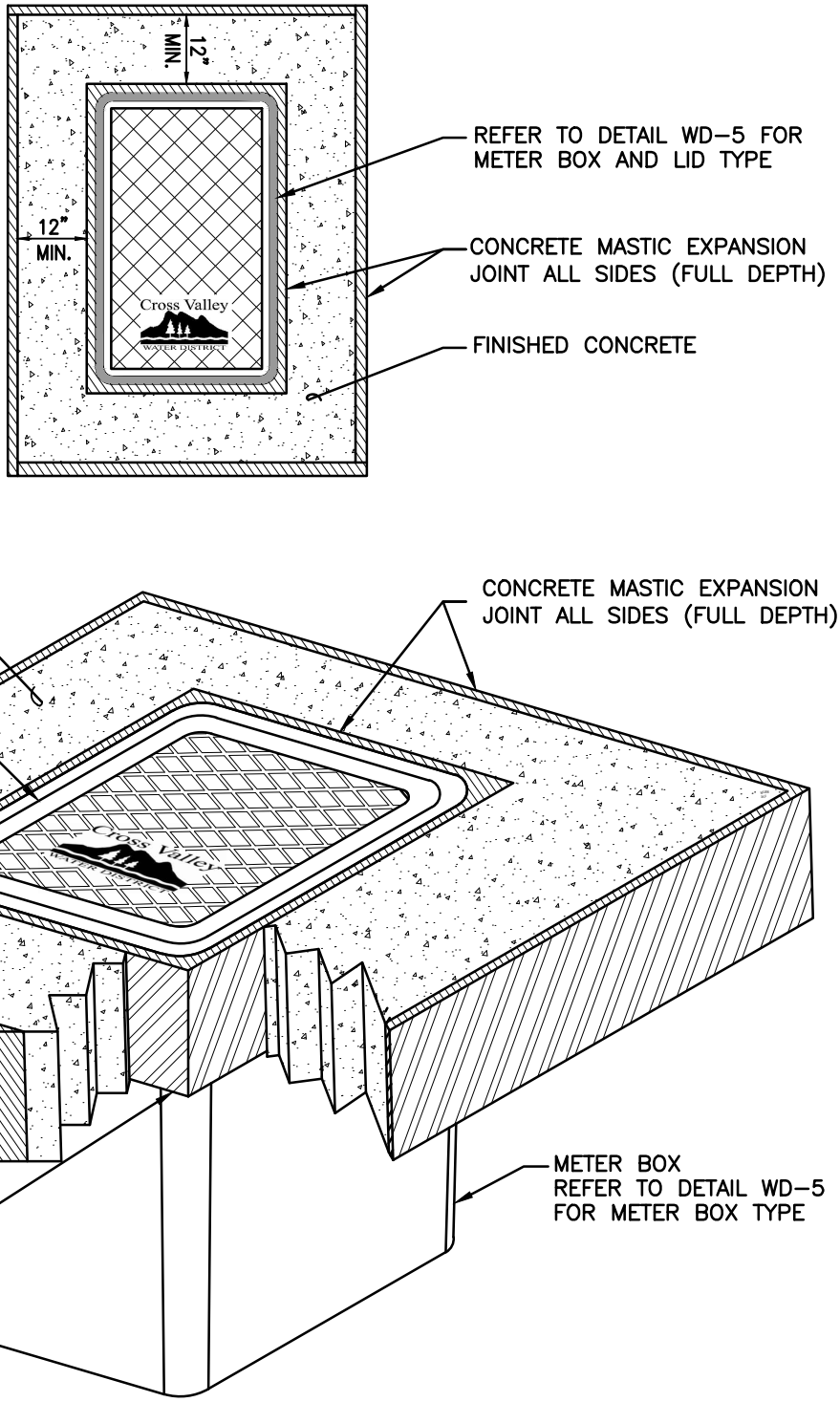
1. DISTRICT APPROVAL IS REQUIRED FOR INSTALLING METER BOXES IN DRIVEWAYS.
2. EQUIVALENT MAY BE CONSIDERED BY THE DISTRICT.

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-5.DWG

CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

METER BOXES AND LIDS

WD–5	NOT TO SCALE	FEB 2022



NOTES:

1. DISTRICT APPROVAL IS REQUIRED FOR INSTALLING METER BOXES IN DRIVEWAYS.
2. FOR USE IN CONCRETE DRIVEWAY ONLY.
3. COMPACTED 5/8" MINUS CRUSHED ROCK BASE UNDER BOX FOR SUPPORT REQUIRED.

CROSS VALLEY WATER DISTRICT **STANDARD WATER DETAILS**	BLOCK OUT FOR METER BOXES IN CONCRETE DRIVEWAYS		
	WD-5A	NOT TO SCALE	FEB 2022

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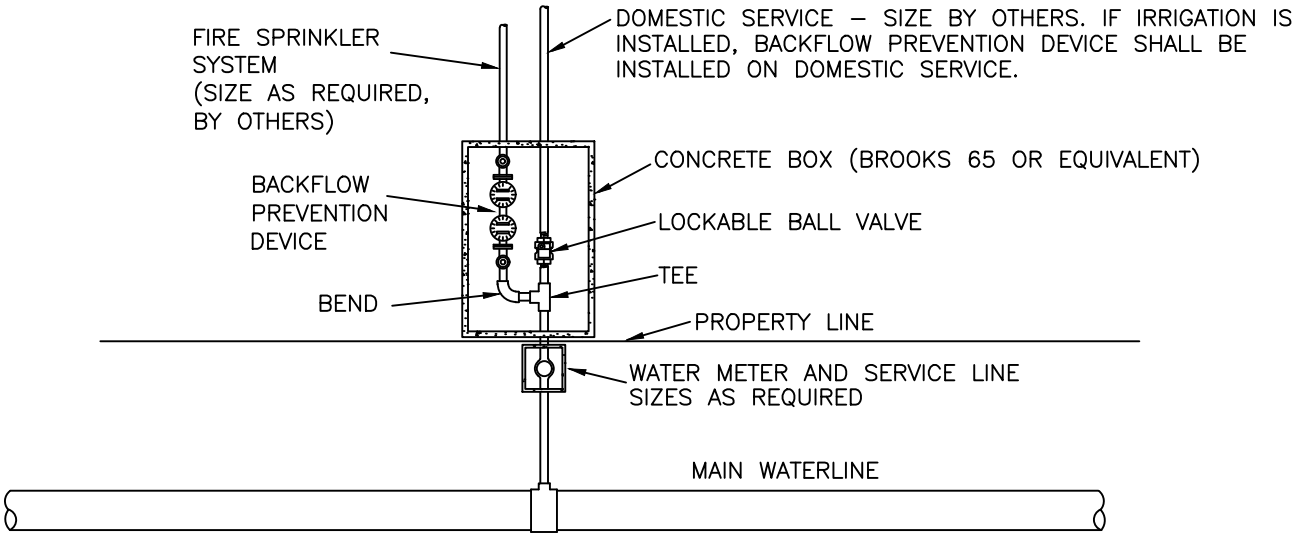


NOTES:

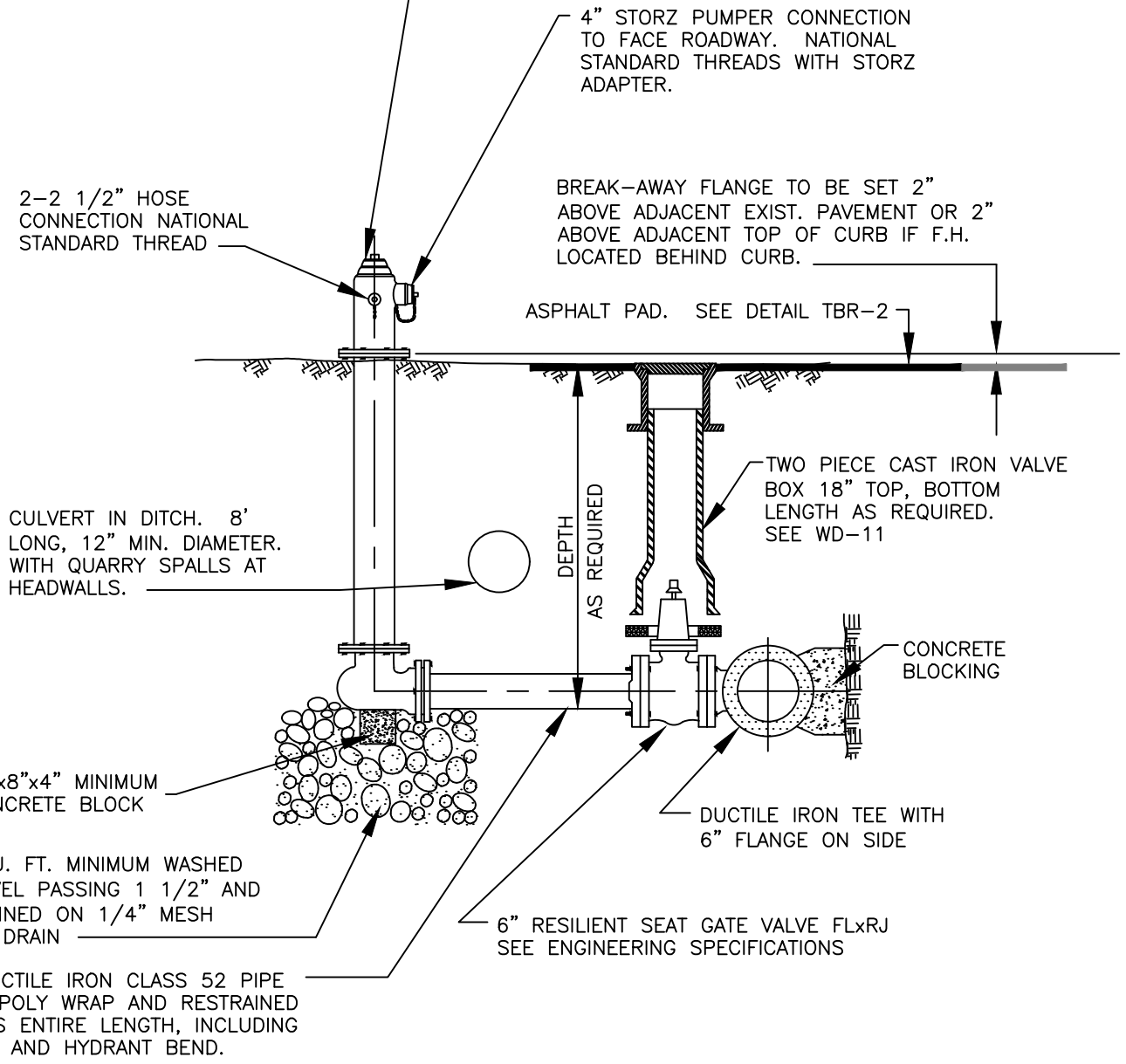
1. WATER METER AND DOMESTIC SERVICE LINE SIZES TO BE APPROVED BY DISTRICT
2. FIRE SPRINKLER PLANS TO BE REVIEWED AND APPROVED BY DISTRICT ENGINEER PRIOR TO UNLOCKING METER
3. INSTALLATION TO BE INSPECTED BY DISTRICT
4. ALL MATERIALS TO BE LEAD FREE
5. IF FLOW–THROUGH SYSTEM IS USED ON FIRE LINE, THEN NO BACKFLOW PREVENTION DEVICE IS REQUIRED. A FIRE SYSTEM PLAN SHALL BE SUBMITTED TO WAIVE THE DEVICE REQUIREMENT.
6. NO CHEMICALS ALLOWED. BACKFLOW DEVICE IS TO BE TESTED AT INSTALLATION AND ANNUALLY THEREAFTER BY WASHINGTON STATE CERTIFIED TESTER. COPY OF TEST REPORT SENT TO WATER DISTRICT.

CROSS VALLEY WATER DISTRICT STANDARD WATER DETAILS	RESIDENTIAL DOMESTIC AND FIRE SPRINKLER SYSTEMS OUTSIDE PIPING PLAN		
	WD–6	NOT TO SCALE	FEB 2022

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-6.DWG

LIST OF ACCEPTABLE FIRE HYDRANTS:
EAST JORDAN WATERMASTER 5CD250 WITH 4" STORZ
AMERICAN DARLING B62B HIGH PRESSURE
MUELLER SUPER CENTURION 250

FIRE HYDRANT 5¼" MAIN VALVE OPENING
1– 4 ½" PUMPER CONNECTION (NST) WITH 4" STORZ ADAPTER
2– 2 ½" HOSE CONNECTION (NST)
1– 6" MECHANICAL JOINT INLET WITH LUGS
1– 1 ¼" PENTAGON OPERATING NUT OPENING COUNTERCLOCKWISE.
PAINT HYDRANT WITH TWO COATS OF RUST–OLEUM
HIGH–PERFORMANCE PROTECTIVE ENAMEL 7543
"SAFETY YELLOW"

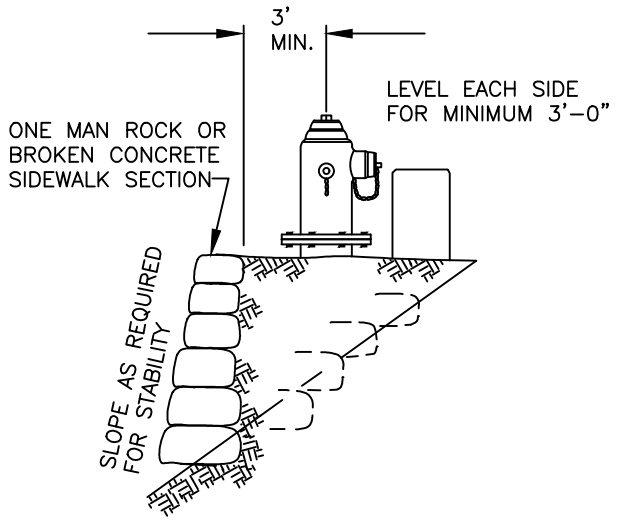


FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-7.DWG

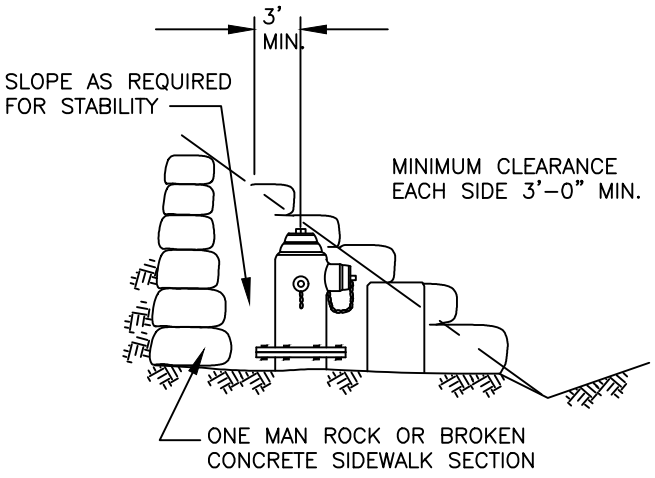
CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

FIRE HYDRANT ASSEMBLY

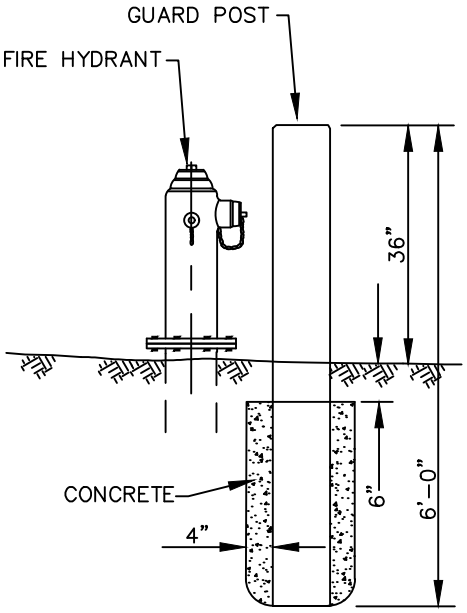
WD–7	NOT TO SCALE	FEB 2022



FIRE HYDRANT IN FILL



FIRE HYDRANT IN CUT

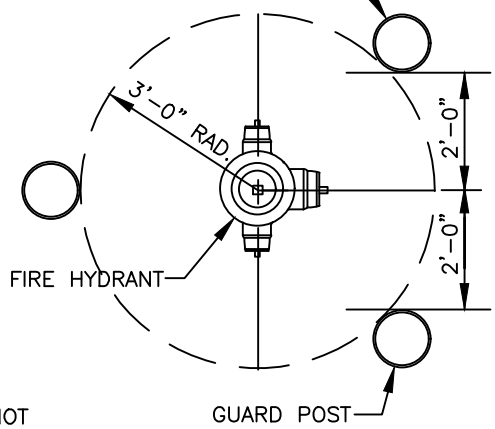


ELEVATION

NOTE:

IF CONCRETE IS NOT SPECIFIED, EARTH BACKFILL TO BE COMPACTED.

9" ROUND REINFORCED CONCRETE GUARD POST, 6'-0" LONG EQUAL TO RENTON CONCRETE PRODUCTS. TO BE INSTALLED ONLY WHERE DIRECTED. PAINT TWO COATS KELLY-MOORE "SAFETY YELLOW" INDUSTRIAL ENAMEL.



PLAN

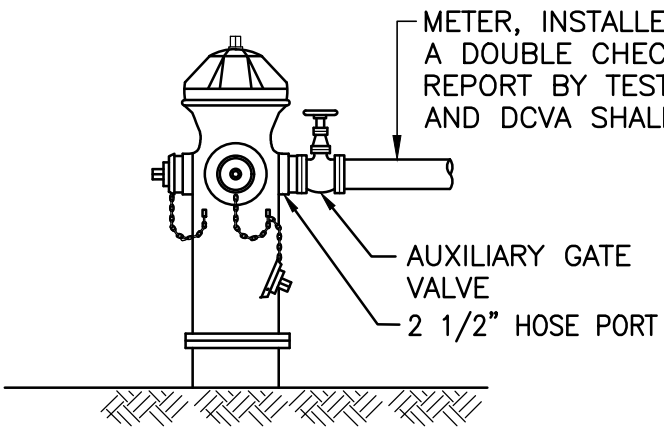
CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

FIRE HYDRANT GUARD POSTS

WD-7A	NOT TO SCALE	FEB 2022

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-7A.DWG

APPROVED METHOD OF HYDRANT USE



HYDRANT USE PROCEDURES

1. USER MUST HAVE A VALID "FIRE HYDRANT USE AND METER AGREEMENT" FOR EACH VEHICLE, FROM THE DISTRICT IN THEIR POSSESSION. ONLY APPROVED/DESIGNATED FILLING HYDRANTS CAN BE USED FOR FILLING. CONTACT OPERATION AND MAINTENANCE FOR APPROVED FILLING HYDRANT LOCATIONS AND VEHICLE INSPECTION.
2. THERE SHALL BE AN ACCEPTABLE WASHINGTON STATE APPROVED AND TESTED "BACKFLOW ASSEMBLY" AND/OR AN APPROVED AIR GAP.
3. OPENING AND CLOSING OF HYDRANT VALVE SHALL BE WITH AN ACCEPTABLE WRENCH TO RECEIVE THE 5–SIDED NUT AND SHALL BE DONE SLOWLY TO PREVENT EXCESSIVE PRESSURE SURGES ON THE WATER SYSTEM.
4. THERE SHALL BE AN AUXILIARY GATE VALVE ATTACHED TO THE 2–1/2 HOSE PORT OF THE HYDRANT PROVIDED BY PERMIT HOLDER.
5. THE HYDRANT VALVE SHALL BE FULLY OPENED AND THE WATER USE CONTROLLED EXCLUSIVELY BY THE AUXILIARY GATE VALVE.
6. THE AUXILIARY GATE VALVE SHALL BE OPERATED IN A SLOW MANNER TO PREVENT EXCESSIVE PRESSURE SURGES ON THE WATER SYSTEM.
7. WATER FROM HYDRANTS WITHIN THE DISTRICT CANNOT BE USED OUTSIDE OF THE DISTRICT BOUNDARIES. ANY VIOLATIONS ARE SUBJECT TO LOSS OF WATER USE PERMITS AND MONETARY FINE.
8. IF UNABLE TO OPERATE OR CLOSE THE HYDRANT PROPERLY, CALL THE DISTRICT IMMEDIATELY FOR ASSISTANCE – (360)668–6766.
9. DO NOT USE PRIVATELY OWNED HYDRANTS THAT ARE LOCATED WITHIN THE DISTRICT. NORMALLY, PRIVATE HYDRANTS WILL BE PAINTED WHITE.
10. SEE CVWD CODE SECTION 6.30 FOR MORE INFORMATION.

CROSS VALLEY WATER DISTRICT STANDARD WATER DETAILS	FIRE HYDRANT REQUIREMENTS		
	WD–7B	NOT TO SCALE	FEB 2022

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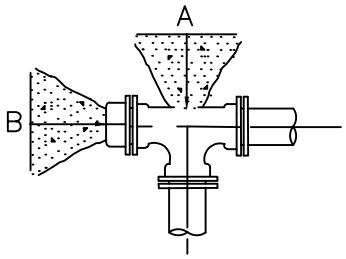
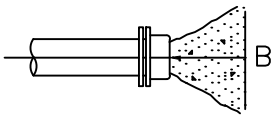
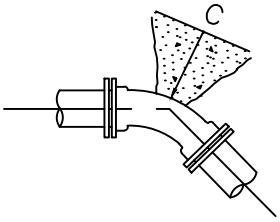


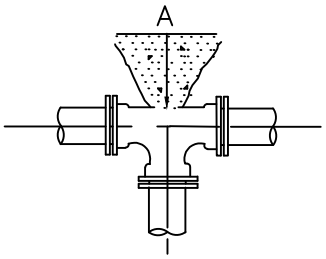
TEE W/ PLUG (MJ OR FL)
(TEE IN PLACE OF 90° BEND)



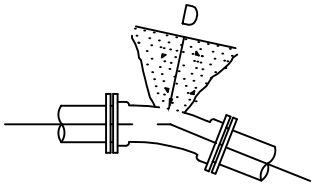
CAP OR PLUG



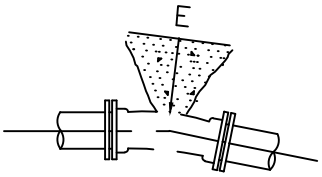
45° BEND



TEE



22 1/2° BEND



11 1/4° BEND

THRUST BLOCK – TABLE

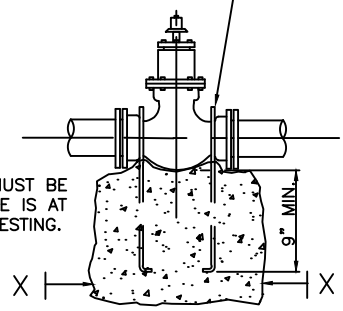
PIPE SIZE	PRESSURE PSI	MINIMUM BEARING AREA AGAINST UNDISTURBED SOIL SQUARE FEET A	B	C	D	E	X (100PSI)
4"	200 300	2/(1) 3/(2)	1/(NONE) 2/(2)	1/(NONE) 2/(1)	NONE 1/(1)	NONE NONE	NONE
6"	200 300	4/(3) 6/(4)	3/(2) 4/(3)	3/(1) 3/(2)	1/(1) 2/(1)	1/(NONE) 1/(NONE)	NONE
8"	200 300	7/(5) 11/(8)	5/(3) 8/(5)	4/(3) 6/(4)	2/(2) 3/(2)	1/(1) 2/(1)	3/(2)
10"	200 275	11/(8) 16/(11)	8/(6) 11/(7)	6/(4) 9/(6)	3/(2) 5/(3)	2/(1) 3/(2)	4/(3)
12"	200 250	16/(11) 24/(16)	11/(8) 17/(11)	9/(6) 13/(9)	5/(3) 7/(5)	3/(2) 4/(3)	5/(4)
14"	200 250	22/(13) 33/(22)	16/(11) 23/(16)	12/(8) 18/(12)	6/(4) 9/(6)	3/(2) 5/(3)	7/(6)
16"	200 225	29/(19) 32/(21)	21/(14) 23/(16)	16/(11) 17/(12)	8/(6) 9/(6)	5/(3) 5/(3)	10/(7)
18"	200	36/(24)	26/(17)	20/(13)	10/(7)	5/(4)	13/(9)
20"	200	45/(29)	32/(21)	24/(16)	13/(8)	7/(4)	16/(11)
24"	200	64/(43)	46/(30)	35/(23)	18/(12)	9/(6)	23/(16)

NOTES:

1. SQUARE FEET OF CONCRETE THRUST – BLOCK AREA BASED ON SAFE BEARING LOAD OF 2000/(3000) POUND PER SQUARE FEET.
2. AREAS MUST BE ADJUSTED FOR OTHER SIZE PIPE, PRESSURE & SOIL CONDITIONS.
3. CONCRETE BLOCKING SHALL BE CAST IN PLACE & HAVE MINIMUM OF 1/4 SQUARE FOOT BEARING AGAINST THE FITTING.
4. BLOCK SHALL BEAR AGAINST FITTINGS ONLY & SHALL BE CLEAR OF JOINTS TO PERMIT TAKING UP OR DISMANTLING JOINT.
5. CONTRACTOR SHALL INSTALL BLOCKING ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.

2 – 1/2" ø S.S. RODS FOR 10" SIZE AND SMALLER
2 – 1" ø S.S. RODS FOR LARGER THAN 10" SIZE

NOTE:
ADDITIONAL BLOCKING MUST BE PROVIDED IF GATE VALVE IS AT END OF LINE DURING TESTING.



GATE VALVE

SAFE BEARING LOADS IN LB./SQ. FT.

THE SAFE BEARING LOADS GIVEN IN THE FOLLOWING TABLE ARE FOR HORIZONTAL THRUSTS WHEN THE DEPTH OF COVER OVER THE PIPE EXCEEDS 2 FEET.

SOIL	SAFE BEARING LOAD LB. PER SQ. FT.
*MUCK, PEAT, ETC.	0
SOFT CLAY	1,000
SAND	2,000
SAND AND GRAVEL	3,000
SAND AND GRAVEL CEMENTED WITH CLAY	4,000
HARD SHALE	10,000

*IN MUCK OR PEAT, ALL THRUSTS SHALL BE RESTRAINED BY PILES OR TIE RODS TO SOLID FOUNDATIONS OR BY REMOVAL OF MUCK OR PEAT AND REPLACEMENT WITH BALLAST OF SUFFICIENT STABILITY TO RESIST THRUSTS.

CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

THRUST BLOCK

WD–8 | NOT TO SCALE | FEB 2022

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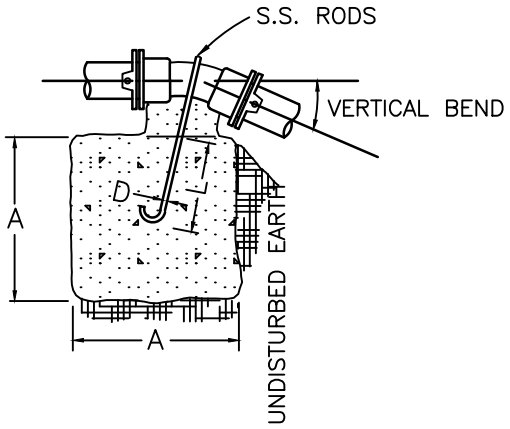
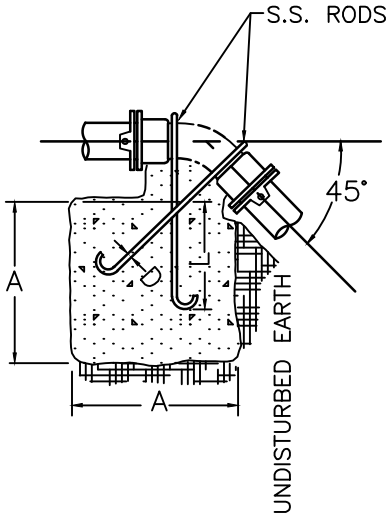
VERTICAL BLOCKING					
PIPE SIZE	VERT.BEND	CU.FT	A	D	L
4"	11–1/4°	8	2.0'	3/4"	1.5'
	22–1/2°	11	2.2'	3/4"	2.0'
	30°	17	2.6'	3/4"	2.0'
	45°	30	3.1'	3/4"	2.0'
6"	11–1/4°	11	2.2'	3/4"	2.0'
	22–1/2°	25	2.9'	3/4"	2.0'
	30°	41	3.5'	3/4"	2.0'
	45°	68	4.1'	3/4"	2.0'
8"	11–1/4°	16	2.5'	3/4"	2.0'
	22–1/2°	47	3.6'	3/4"	2.5'
	30°	70	4.1'	3/4"	2.5'
	45°	123	5.0'	3/4"	2.0'
12"	11–1/4°	32	3.2'	3/4"	2.0'
	22–1/2°	88	4.5'	7/8"	3.0'
	30°	132	5.1'	7/8"	2.5'
	45°	232	6.1'	7/8"	2.5'
16"	11–1/4°	70	4.1'	7/8"	3.0'
	22–1/2°	184	5.7'	1–1/8"	4.0'
	30°	275	6.5'	1–1/4"	4.0'
	45°	478	7.8'	1–1/8"	4.0'
20"	11–1/4°	91	4.5'	7/8"	3.0'
	22–1/2°	225	6.1'	1–1/4"	4.0'
	30°	330	6.9'	1–3/8"	4.5'
	45°	560	8.2'	1–1/4"	4.0'
24"	11–1/4°	128	5.0'	1"	3.5'
	22–1/2°	320	6.8'	1–3/8"	4.5'
	30°	480	7.9'	1–5/8"	5.5'
	45°	820	9.4'	1–3/8"	4.5'



VERTICAL BLOCKING
FOR 11 1/4°, 22 1/2° & 30° BENDS



VERTICAL BLOCKING
FOR 45° BENDS

NOTES:

1. CONCRETE BLOCKING IS BASED ON 250 PSI PRESSURE AND 2500 PSI CONCRETE STRENGTH.
2. RODS TO BE 304 STAINLESS STEEL.
3. ALL VERTICAL BENDS SHALL BE INSTALLED WITH RESTRAINED JOINTS ACCORDING TO THE ENGINEERING SPECIFICATIONS.

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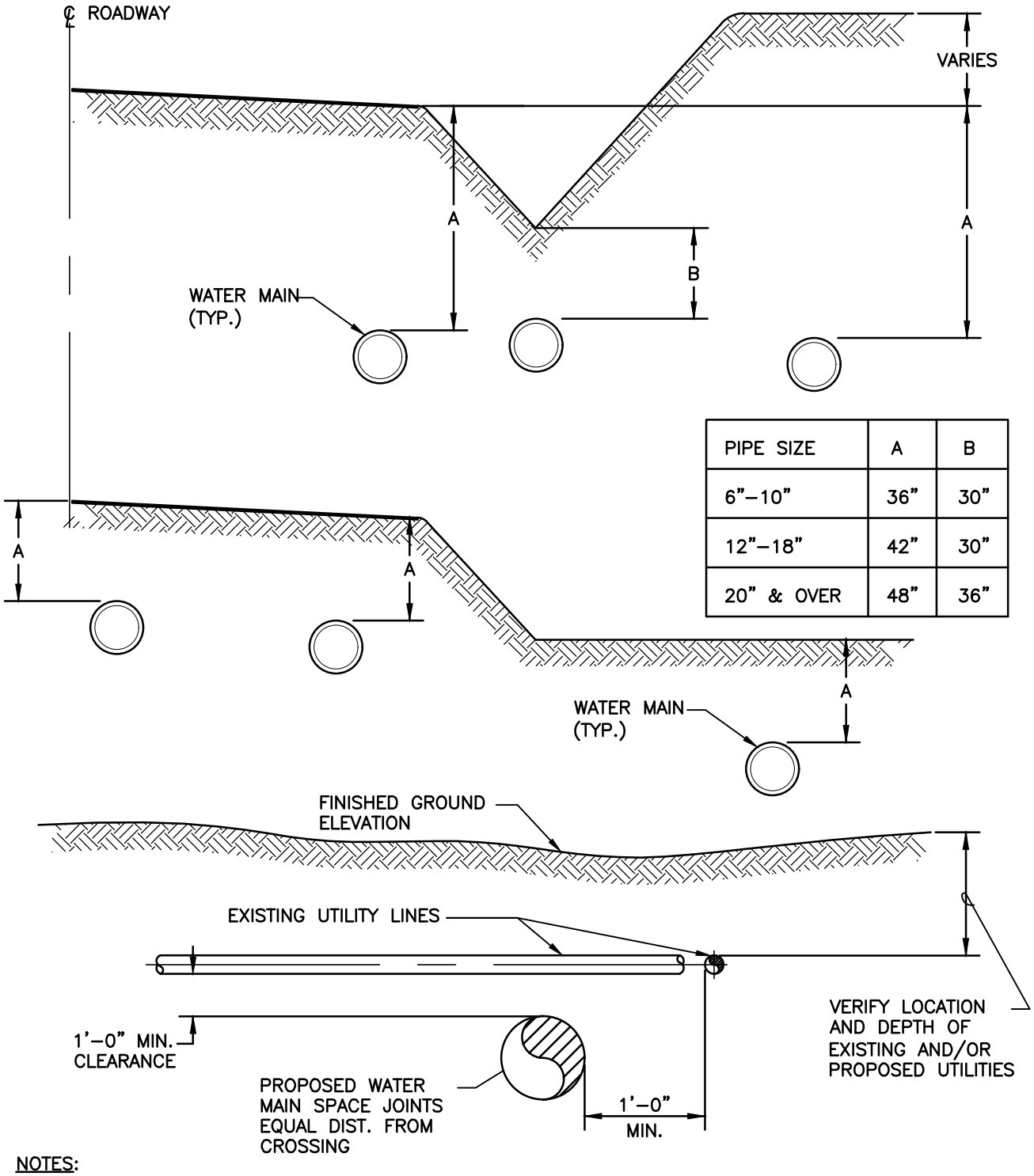
CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

CONCRETE BLOCKING FOR VERTICAL BENDS

WD-8A	NOT TO SCALE	FEB 2022



PIPE SIZE	A	B
6"–10"	36"	30"
12"–18"	42"	30"
20" & OVER	48"	36"

NOTES:

1. IN THE CASE OF CONFLICTS WITH OTHER UTILITIES, ROUTE WATER MAINS UNDER CONFLICTING UTILITIES. POTHOLING PRIOR TO INSTALLING WATER MAIN IS REQUIRED TO PROVIDE CONSISTENT LINE AND GRADE.
2. IN THE CASE OF CONFLICTS WITH SEWER LINES, FOLLOW ECOLOGY REQUIREMENTS OR AS DIRECTED.
3. MAIN TO BE INSTALLED AT CONSISTENT GRADE. MAXIMUM DEFLECTION SHALL BE 2 PERCENT AT EACH JOINT.

CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

MINIMUM STANDARD DEPTH REQUIREMENTS

WD–9	NOT TO SCALE	FEB 2022

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PARALLEL CONSTRUCTION

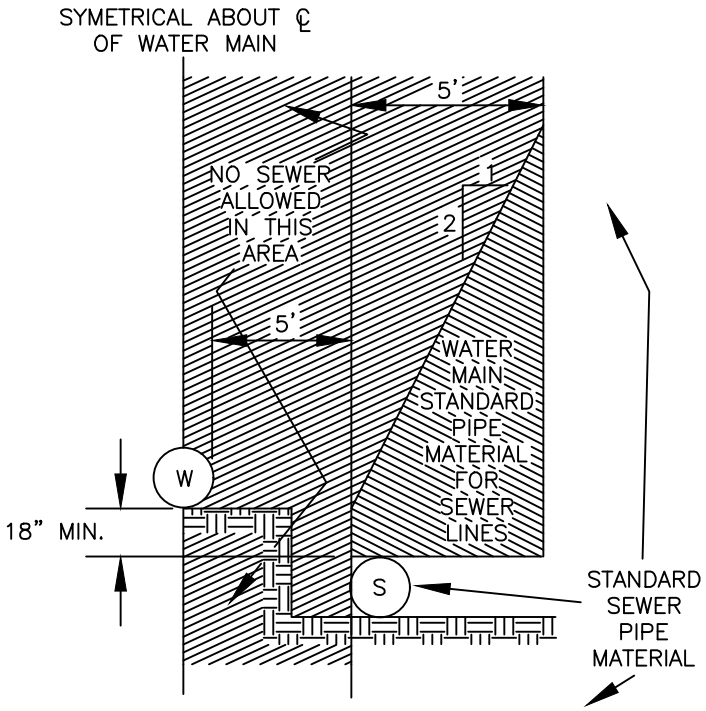

TABLE 1

WATER MAIN STANDARD PIPE MATERIAL

TYPE OF PIPE	AWWA (ASTM) STANDARD		
	PIPE	JOINT	FITTINGS
DUCTILE IRON	C 151 & C104	C 111	C 153
PVC	C900	D3139	C 111

ALL WATER AND SEWER LINE SEPARATION SHALL MEET DOE STANDARDS

NOTES:

FOR PERPENDICULAR CONSTRUCTION, MAINTAIN 18" VERTICAL SEPARATION OR CONSTRUCT SEWER LINE USING WATER MAIN STANDARDS SET FORTH ABOVE WITH MINIMUM 18 FEET LENGTH CENTERED OVER CROSSING TO MAXIMIZE JOINT SEPARATION.

PRESSURE SEWER PIPES SHALL BE CONSTRUCTED PER WATER MAIN STANDARDS.

CROSS VALLEY WATER DISTRICT STANDARD WATER DETAILS	MINIMUM SEPARATION STANDARDS		
	WD-9A	NOT TO SCALE	FEB 2022

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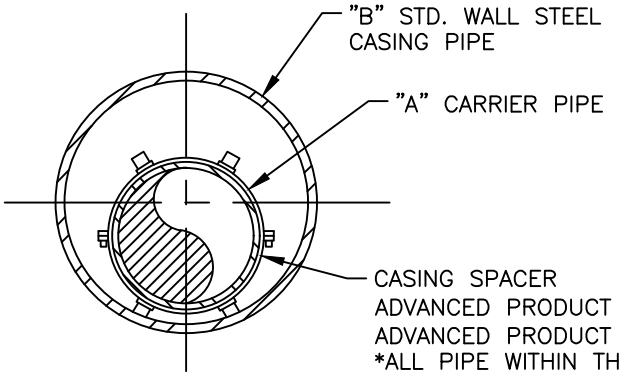
WATER PIPE SCHEDULE

"A" PIPE SIZES	"B" MIN. CASING SIZES	CASING WALL THICKNESS
6"	12"	.25"
8"	16"	.25"
10"	20"	.344"
12"	24"	.406"
14"	28"	.469"
16"	32"	.50"

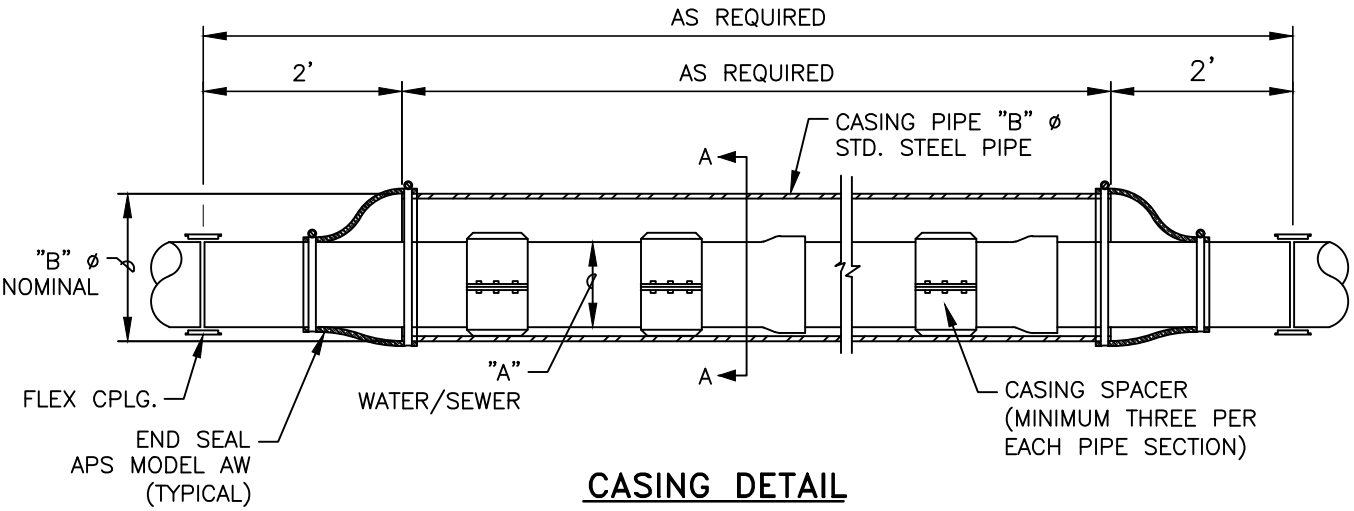
SEWER PIPE SCHEDULE

"A" PIPE SIZES	"B" MIN. CASING SIZES	CASING WALL THICKNESS
6"	12"	.25"
8"	16"	.25"
10"	18"	.312"
12"	20"	.334"
15"	24"	.406"



ADVANCED PRODUCT SYSTEMS MODEL SSI (D.I. PIPE)
ADVANCED PRODUCT SYSTEMS MODEL CI (PVC PIPE)
*ALL PIPE WITHIN THE CASING SHALL BE DI WITH RESTRAINED JOINTS INTEGRAL TO THE PIPE BELL SUCH AS U.S PIPE TR FLEX OR EQUAL. FIELD-LOCK GASKETS AND MJ RESTRAINED GLANDS ARE NOT ACCEPTABLE IN CASINGS.

SECTION A-A



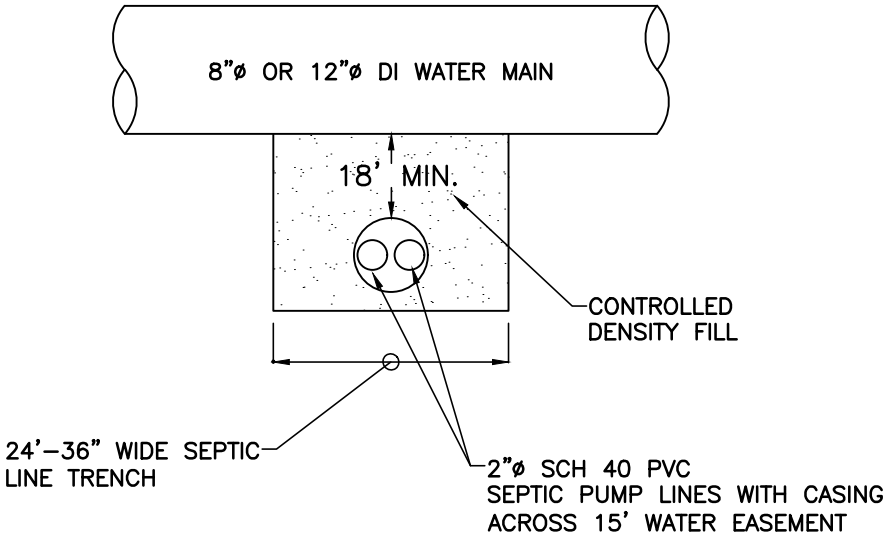
CASING DETAIL

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-9C.DWG

CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

WATER OR SEWER MAIN CASING DETAIL

WD-9C	NOT TO SCALE	FEB 2022

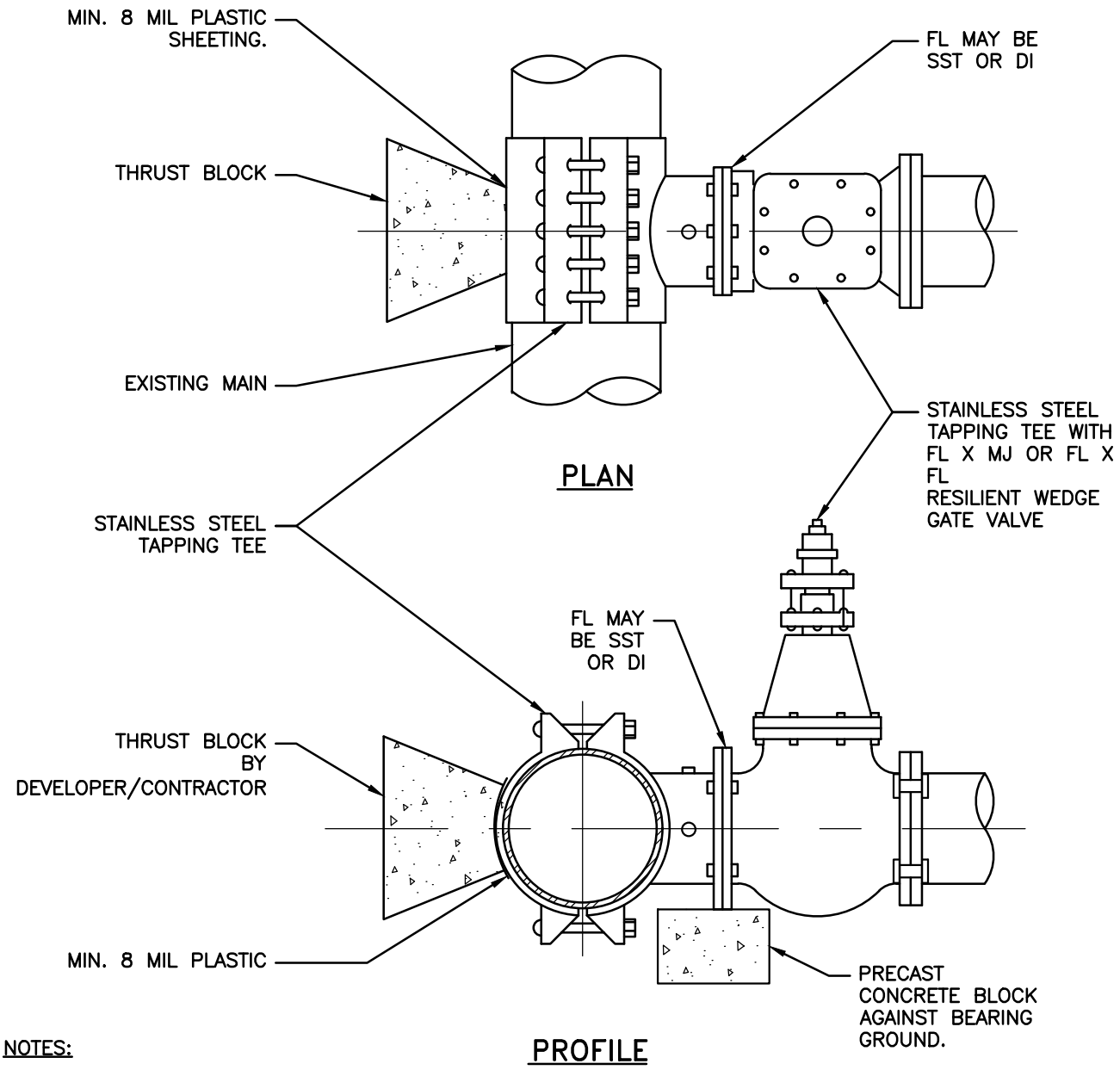


CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

WATER AND SEPTIC LINE CROSSING DETAIL

WD–9B	NOT TO SCALE	FEB 2022

FILE NAME: L:\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD–9B.DWG



NOTES:

1. STAINLESS STEEL TAPPING TEE SHALL BE ROMAC OR SMITH BLAIR ONLY. O.D. RANGES ARE FOR D.I. PIPE.

O.D. RANGES (INCHES)	
6"– 6.59–6.99	FOR LARGER SIZES, CONSULT THE DISTRICT
8"– 8.62–9.06	
12"– 12.90–13.30	
16"– 17.15–17.55	

2. ALL WATER MAIN TAPS SHALL BE BY AN APPROVED DISTRICT TAPPER DURING SUBMITTALS, UNLESS OTHERWISE SPECIFIED.
3. DEVELOPER/CONTRACTOR SHALL PROVIDE ALL REQUIRED EXCAVATION AND RESTORATION.
4. DEVELOPER/CONTRACTOR TO FURNISH ALL MATERIALS AND BLOCKING.
5. PRELIMINARY EXCAVATION MAY BE REQUIRED TO VERIFY EXISTING PIPE O.D. AND MATERIAL TYPE.
6. CONNECTIONS NOT ALLOWED ON FRIDAYS, HOLIDAYS, DAY BEFORE HOLIDAYS, OR WEEKENDS.

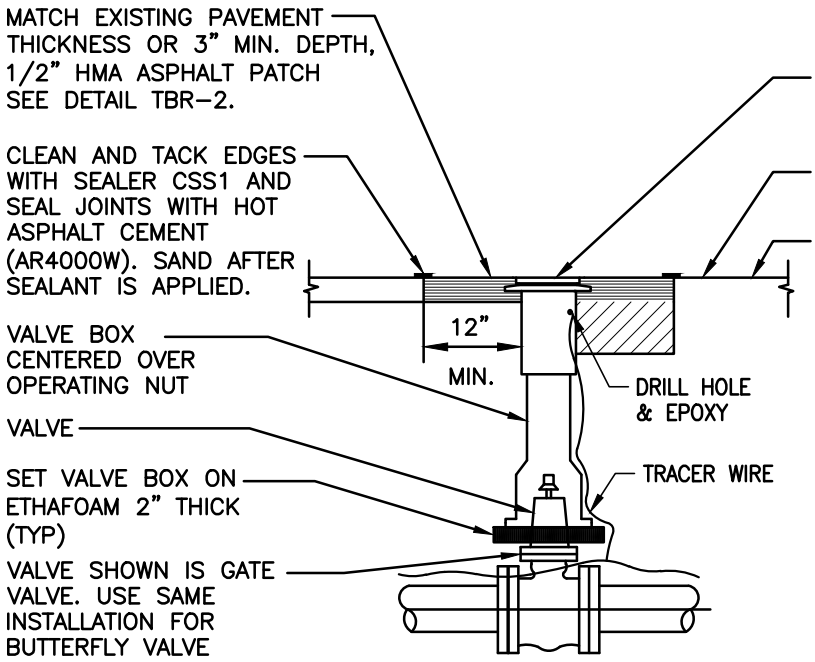
CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

TAPPING TEE AND VALVE

WD–10	NOT TO SCALE	FEB 2022

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-10.DWG

NO.	ITEM	MATERIAL	SIZE	MANUFACTURER	USE
1.	VALVE BOX BOTTOM	C.I.	30"	EJ85556030U	ALL AREAS
2.	VALVE BOX TOP	C.I.	18"	EJ00366410U	NOT IN ADA AREA
3.	VALVE BOX COVER	C.I.		EJ06800001U	ADA AREA COVER (FOR PRIVEATE LIDS USE EJIW 6800)



VALVE BOX IN ASPHALT AREA

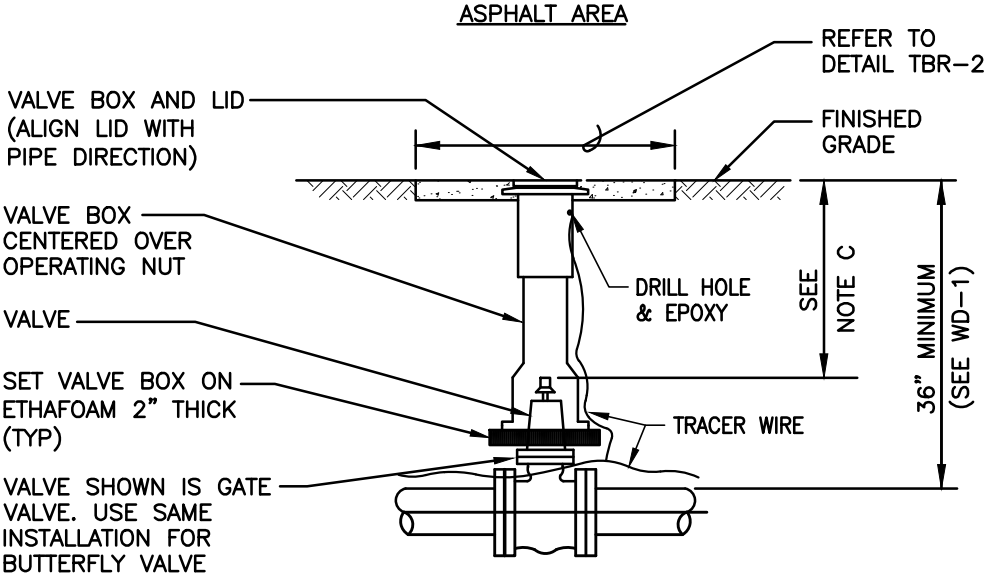
NOTES:

A. HEAVY DUTY VALVE BOX WITH MIN. 30" LENGTH BASE AND DROP HANDLE COVER.

B. PAVEMENT RESTORATION IN ACCORDANCE WITH CURRENT SNOHOMISH COUNTY ENGINEERING DESIGN AND DEVELOPMENT STANDARDS.

C. IF OPERATING NUT IS MORE THAN 3 FEET BELOW FINISHED GRADE SEE DETAIL WD-11D.

D. EJIW OR APPROVED EQUAL, MANUFACTURED IN THE U.S.A.



VALVE BOX IN UNIMPROVED AREA

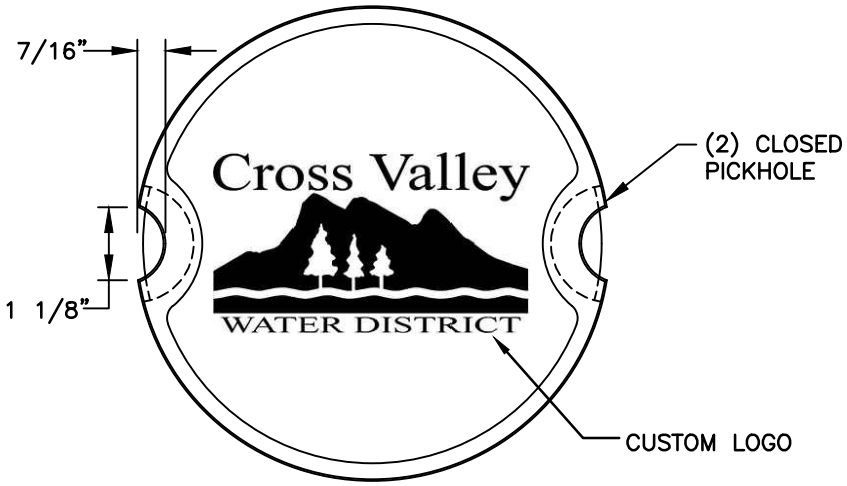
CSS1= CATIONIC SLOW SETTING TYPE 1
AR4000W= ASPHALT RUBBER TYPE 4000W
HMA = HOT MIX ASPHALT

CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

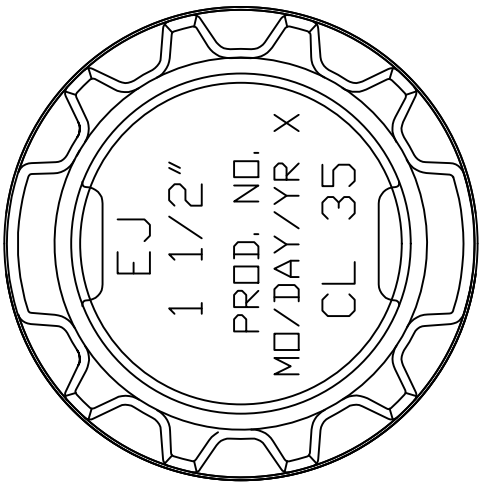
CAST IRON VALVE AND BOX

WD-11	NOT TO SCALE	FEB 2022

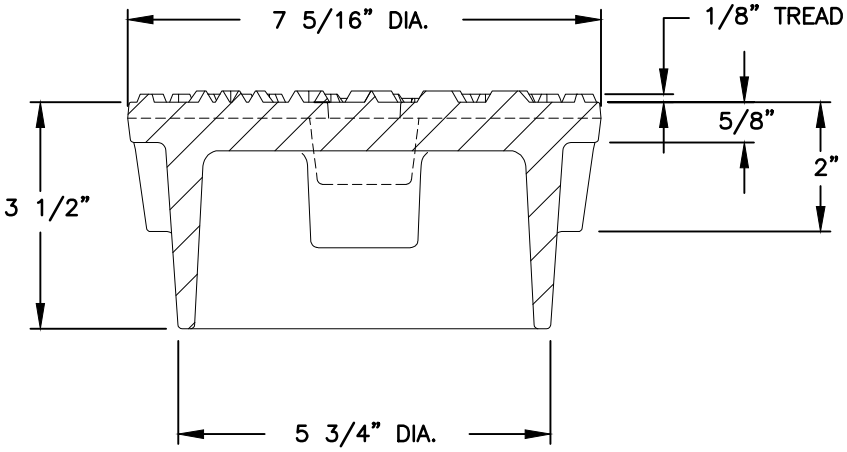
FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-11.DWG



PLAN VIEW



BOTTOM VIEW



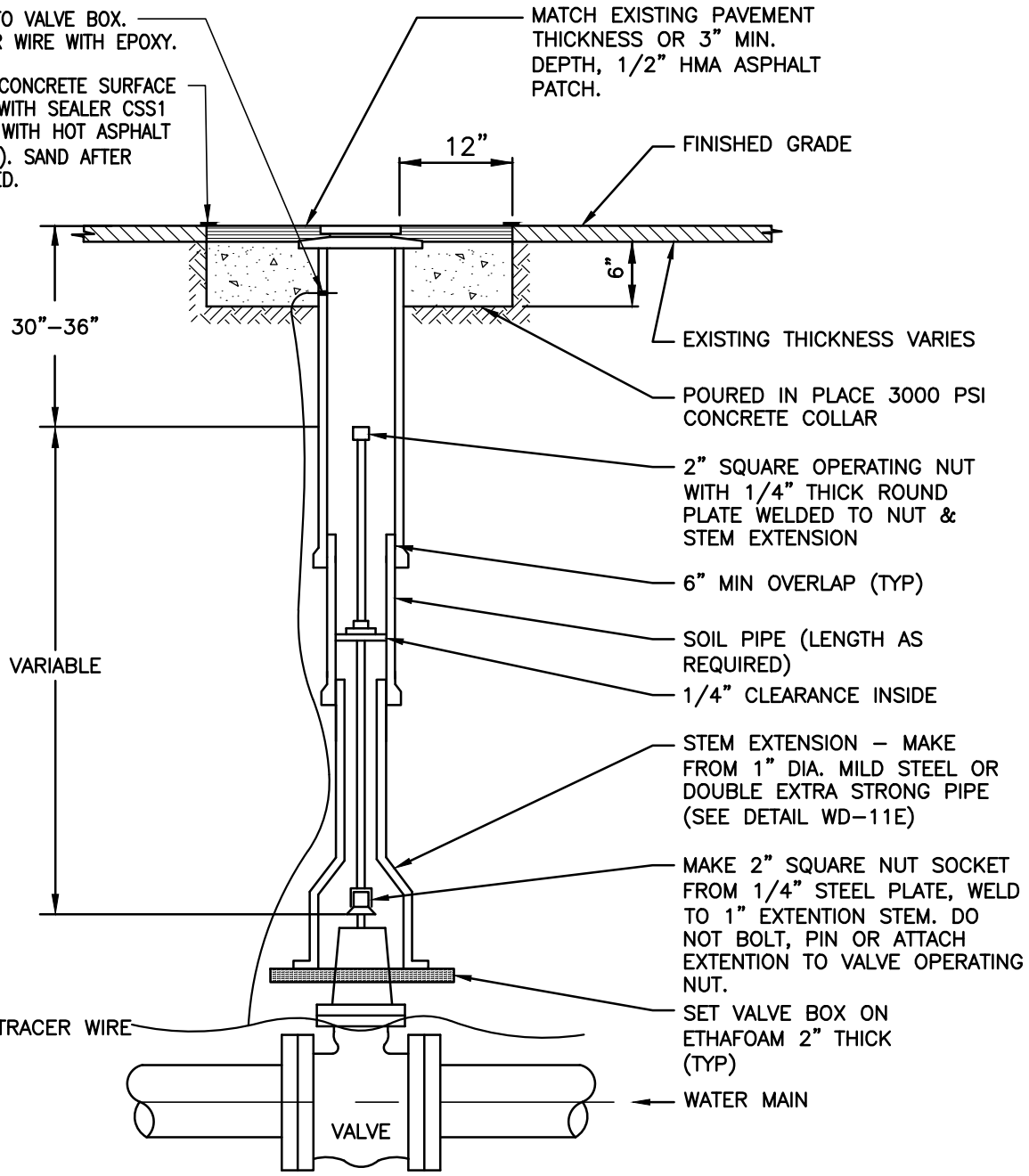
SECTION VIEW

NOTE:

EJIW 6800 TO BE USED ON PRIVATE SIDE.

CROSS VALLEY WATER DISTRICT STANDARD WATER DETAILS	VALVE BOX COVER		
	WD–11A	NOT TO SCALE	FEB 2022

FILE NAME: L:\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-11A_VALVE BOX COVER.DWG



CSS1= CATIONIC SLOW SETTING TYPE 1
AR4000W= ASPHALT RUBBER TYPE 4000W
HMA= HOT MIX ASPHALT

NOTES:

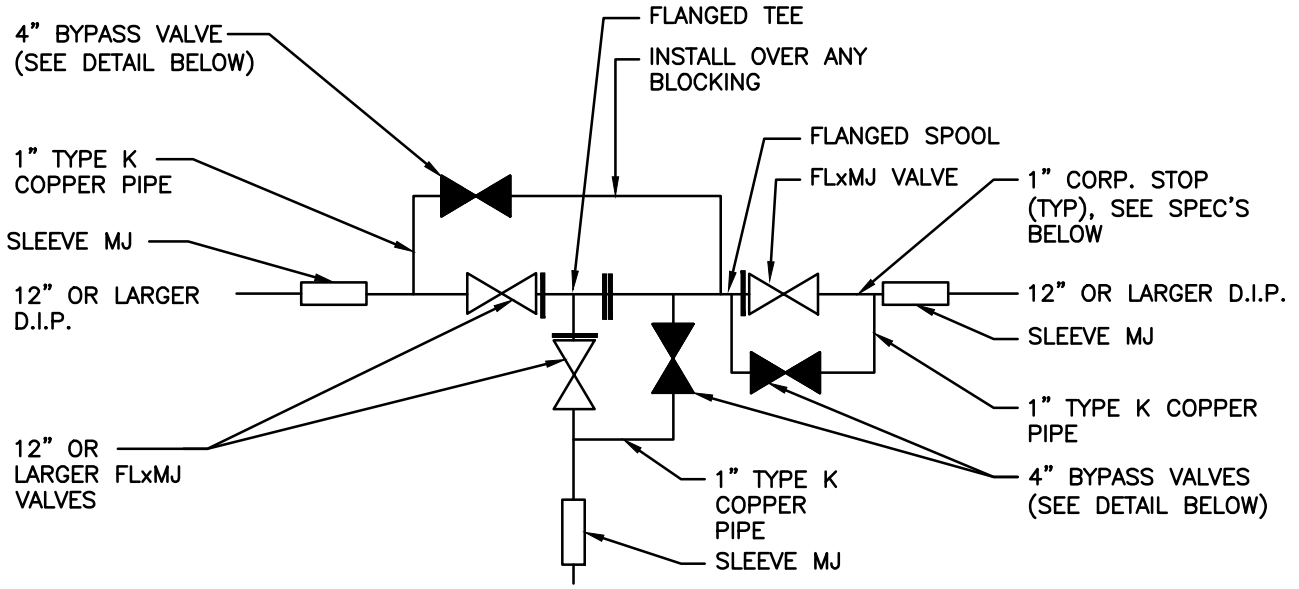
1. VALVE BOX SHALL BE ALIGNED AND CLEANED TO ENSURE PROPER VALVE OPERATION.
2. DEFECTIVE OR NON STANDARD VALVE BOX COMPONENTS SHALL BE REPLACED WITH NEW CURRENT DISTRICT STANDARD.
3. PAVEMENT RESTORATION IN ACCORDANCE WITH JURISDICTIONAL AUTHORITY AND DIVISION 7.
4. IF OPERATING NUT IS MORE THAN 3 FEET BELOW GRADE AFTER ADJUSTMENT SEE DETAIL WD–11D.

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-11A.DWG

CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

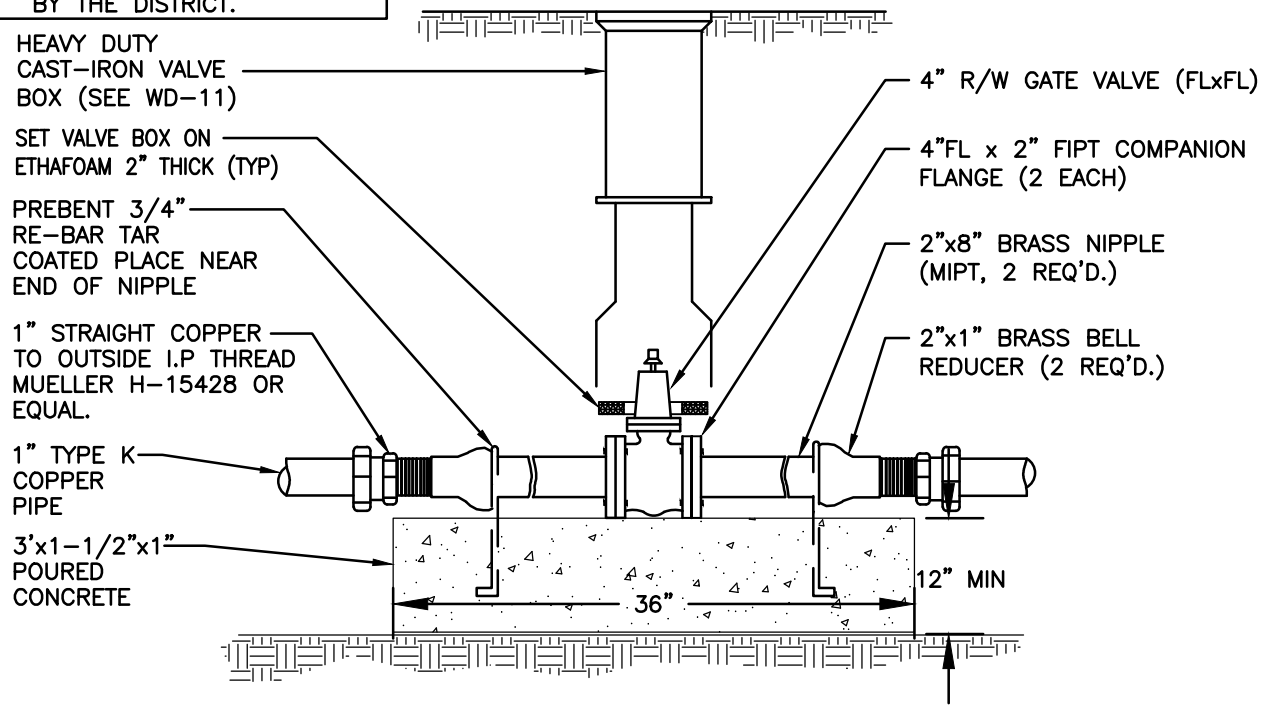
VALVE BOX ADJUSTMENT

WD–11B	NOT TO SCALE	FEB 2022



TYPICAL BYPASS VALVE PLACEMENT

NOTE: BYPASS VALVE SHALL BE USED WHEN STATIC WATER PRESSURE EXCEEDS 150 P.S.I ON WATER MAINS 12" AND LARGER, AS DIRECTED BY THE DISTRICT.



1" CORPORATION STOP*

FORD	MUELLER
FB-1000-4-Q	B-25008

*CORP STOP INSTALLED WHEN:
-VALVE IS 12" OR LARGER
-PRESSURE IS > 150 PSI
-DIRECTED BY THE DISTRICT

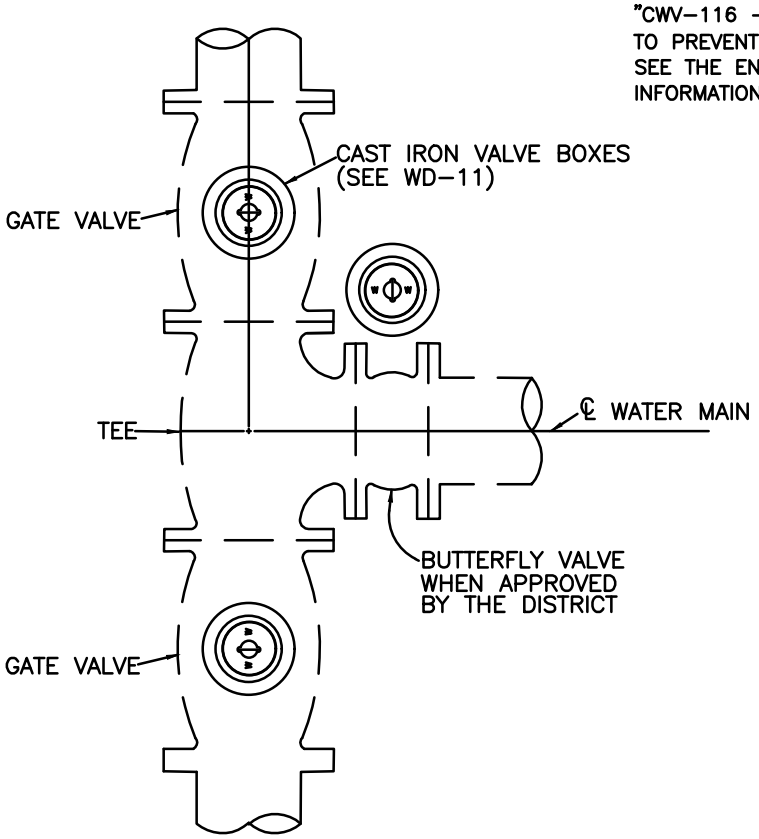
CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

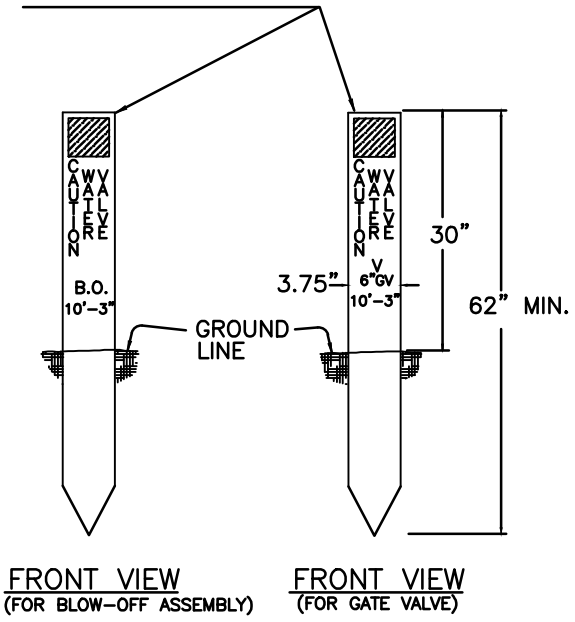
4" BYPASS VALVE

WD-11C	NOT TO SCALE	SEP 2022

FILE NAME: L:\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-11B.DWG

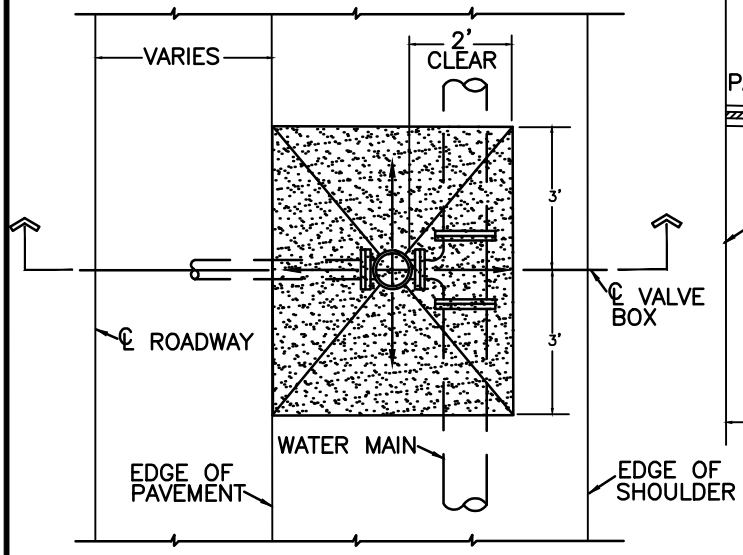
"CARSONITE CUM-375" OR EQUAL BLUE MARKER WITH 1-1/2" HIGH STENCILED LETTERING, 3" X 3" HI-INTENSITY WHITE REFLECTIVE SHEET, "CWV-116 - CAUTION WATER VALVE" DECAL, AND PRONG AT BASE TO PREVENT PULL-OUT.
SEE THE ENGINEERING SPECIFICATIONS FOR ADDITIONAL INFORMATION.



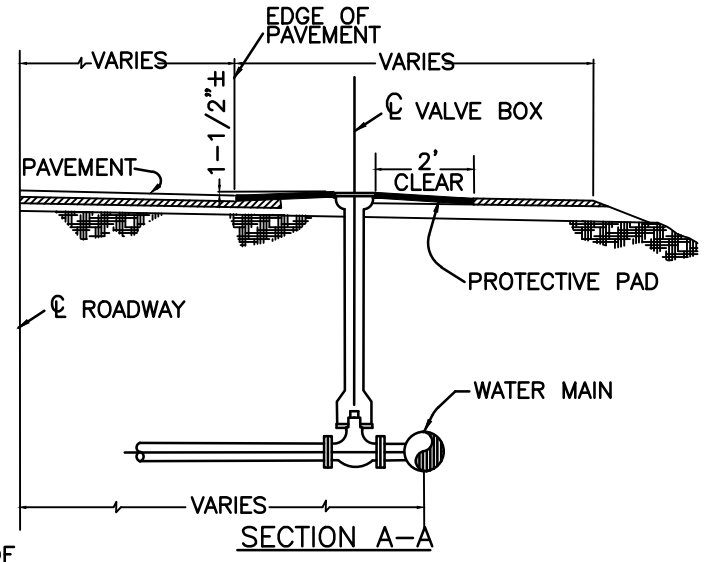


VALVE AND BLOW-OFF MARKER

VALVE BOX COVER PLACEMENT



PLAN



SECTION A-A

NOTES:

1. PROTECTIVE PAD SHALL BE 2" CLASS B ASPHALT CEMENT CONCRETE.
2. TOP EDGE OF PROTECTIVE PAD SHALL MATCH ADJACENT GRADE.

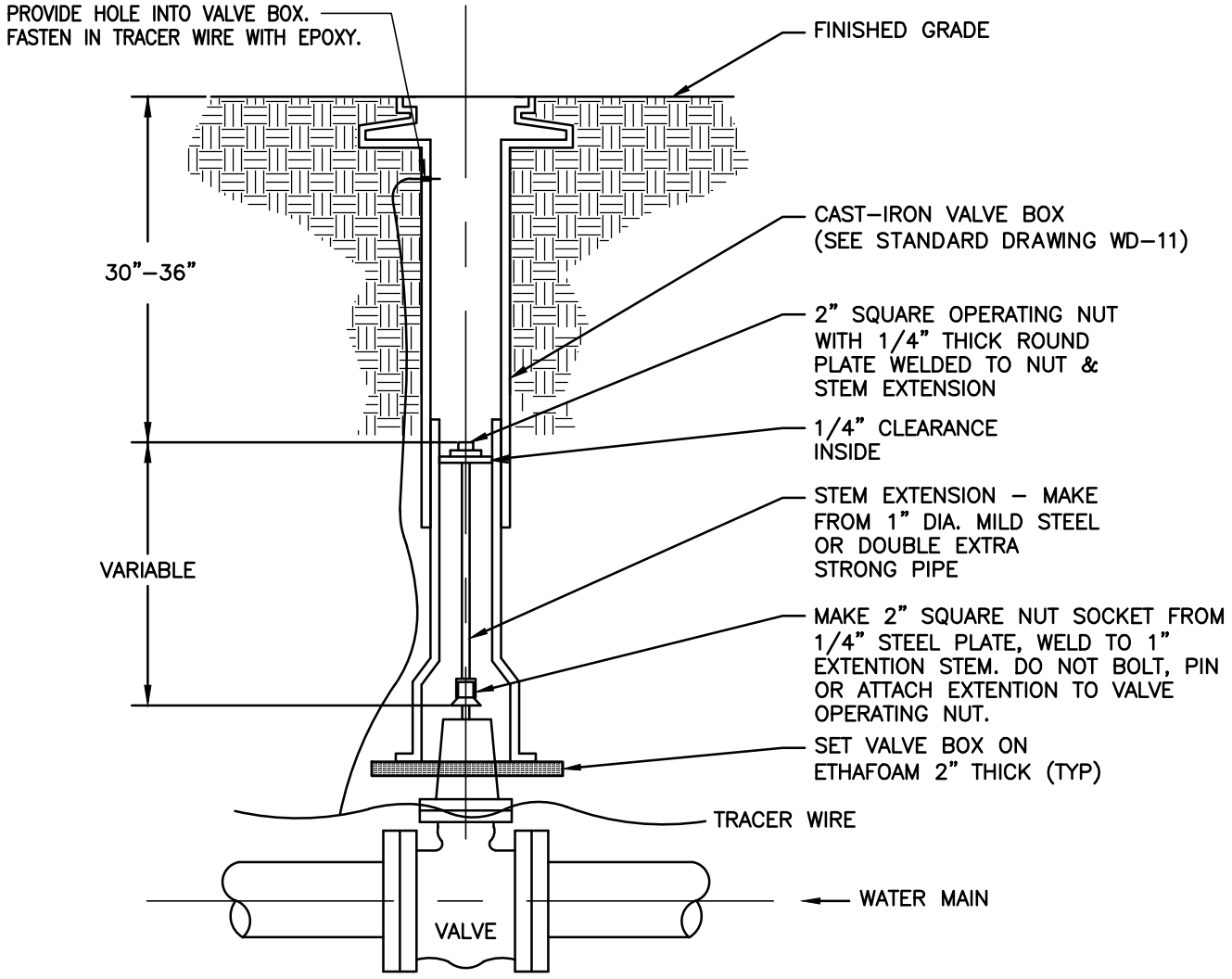
VALVE BOX PROTECTIVE PAD

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-11C.DWG

CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

VALVE BOX COVER, PROTECTIVE PAD & MARKER POST

WD-11D	NOT TO SCALE	FEB 2022

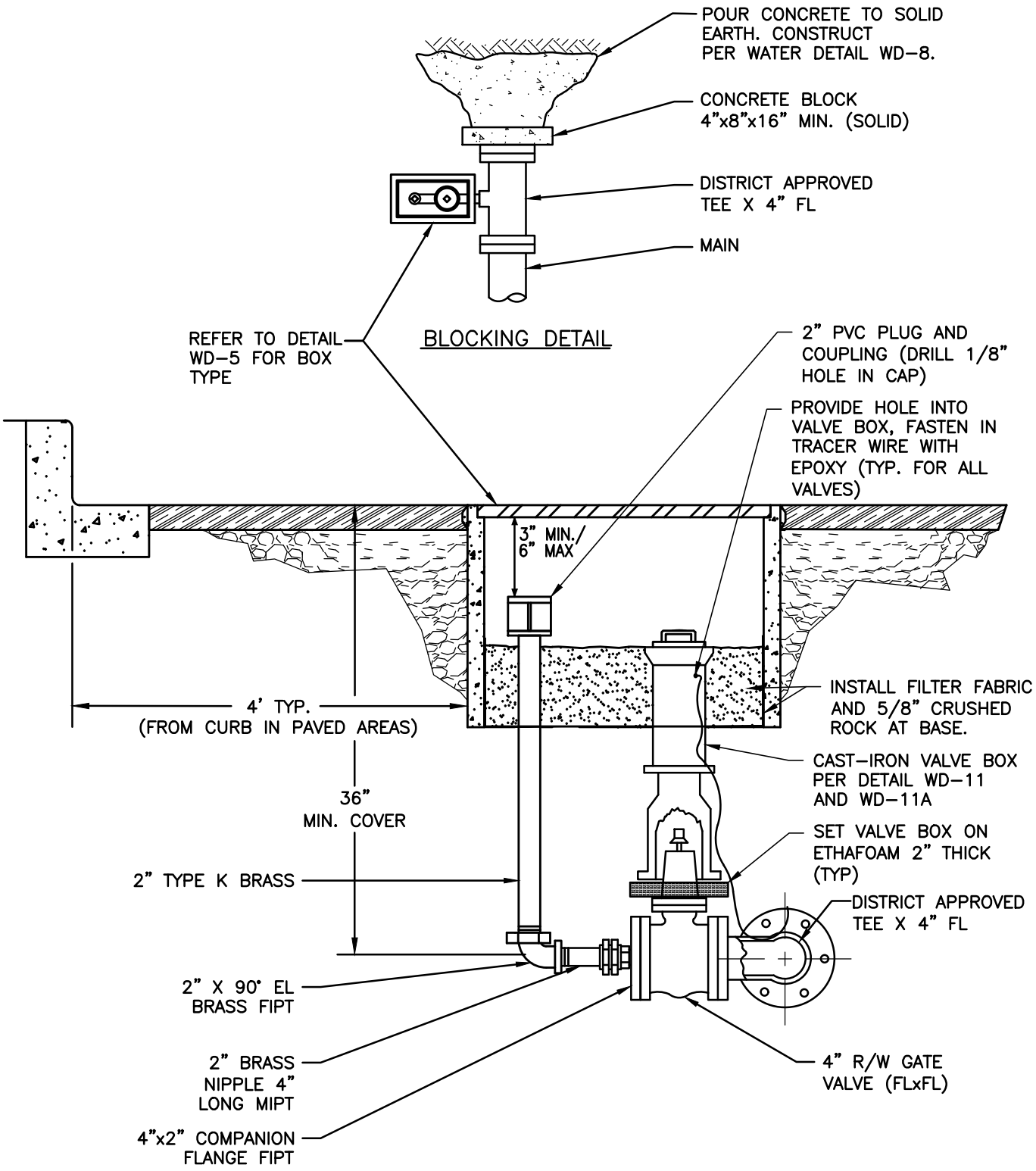


NOTE:

1. MINIMUM LENGTH OF EXTENSION IS 1 FOOT.

FILE NAME: L:\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-11D.DWG

CROSS VALLEY WATER DISTRICT STANDARD WATER DETAILS	VALVE STEM EXTENSION		
	WD–11E	NOT TO SCALE	SEP 2022

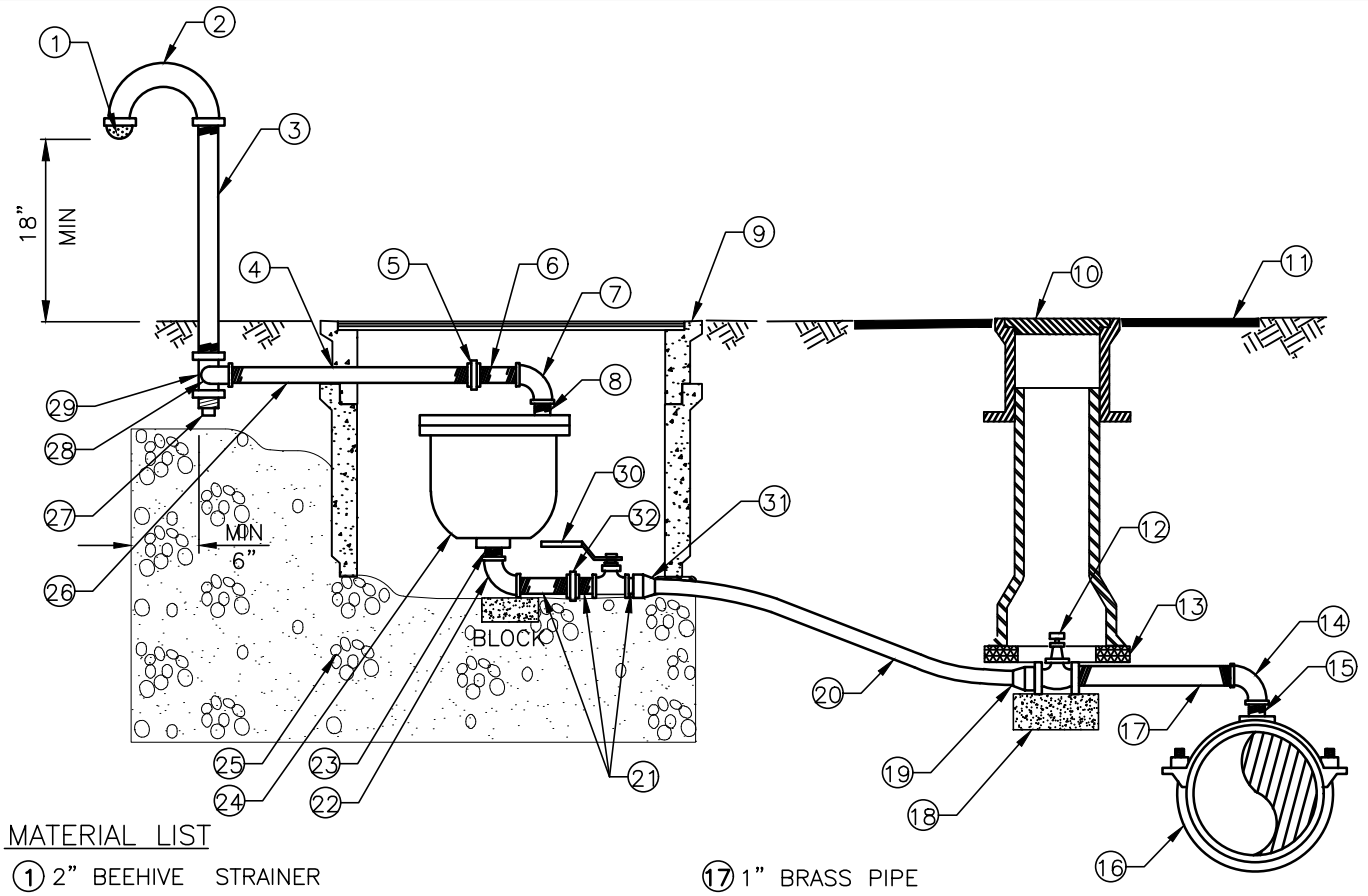


NOTES:

1. LOCATE METER BOX AS DIRECTED IN LOCATION APPROVED BY THE DISTRICT.
2. USE SAME STANDARD FOR LOCATIONS IN NON-PAVED AREAS

CROSS VALLEY WATER DISTRICT **STANDARD WATER DETAILS**	2" BLOWOFF ASSEMBLY		
	WD-12	NOT TO SCALE	SEP 2022

FILE NAME: L:\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-12.DWG



MATERIAL LIST

1. 2" BEEHIVE STRAINER
2. 2" OPEN PATTERN, RETURN BEND
3. 2" GALVANIZED IRON PIPE FIELD LOCATE
4. CUT OPENING AS REQUIRED, AFTER INSTALLATION, GROUT AROUND PIPE
5. 1" BRASS UNION
6. 1" BRASS NIPPLE
7. 1"–90° BRASS ELBOW
8. 1" BRASS CLOSE NIPPLE
9. METER BOX: CARSON HW 1527BCF HDPE W/18" BODY OR SIGMA/RAVEN RMB–152718–SW–B
10. TWO PIECE CAST IRON VALVE BOX 18" TOP, BOTTOM LENGTH AS REQUIRED, SEE DETAILS WD–11 AND WD–11A
11. 2" CLASS B ASPHALT PAD
12. 2" MUELLER A–2362 RWGV, 8" THREAD ENDS WITH 2" OPERATING NUT
13. ETHAFOAM PAD UNDER VALVE BOX
14. 1"–90° BRASS BEND, F.I.P.
15. 1" BRASS NIPPLE, M.I.P.
16. DOUBLE STAINLESS STEEL STRAP SERVICE CLAMP WITH 1" IPS TAP TO FIT EQUAL TO ROMAC 101S
17. 1" BRASS PIPE
18. 16"x8"x4" BRICK ON COMPACTED BEDDING GRAVEL
19. 2" BLIND FLANGE ON RWGV FOR TRANSITION TO 1" COUPLING
20. 1" TYPE "K" SOFT COPPER TUBING
21. 1" BRASS PIPE TO FIT
22. 1"–90° BRASS ELBOW
23. 1" BRASS CLOSE NIPPLE
24. 1" AIR & VACUUM VALVE, SCREWED APCO NO. 143C OR EQUAL
25. WASHED GRAVEL, PASSING 1 1/2" AND RETAINED ON 1/4" MESH
26. 1" BRASS PIPE TO FIT
27. 2" BRASS PLUG
28. 1"–90° BRASS ELBOW
29. 2"x2"x1" TEE, 1" CLOSE NIPPLE BETWEEN TEE & BEND
30. 1" BRASS 1/4 TURN BALL VALVE, SCREWED EQUAL TO RED–WHITE VALVE CORP. FIG. NO. 5044F
31. COUPLING, COPPER TO MALE IRON PIPE – FORD C84–44–Q–NL OR EQUAL
32. BRASS UNION

NOTES:

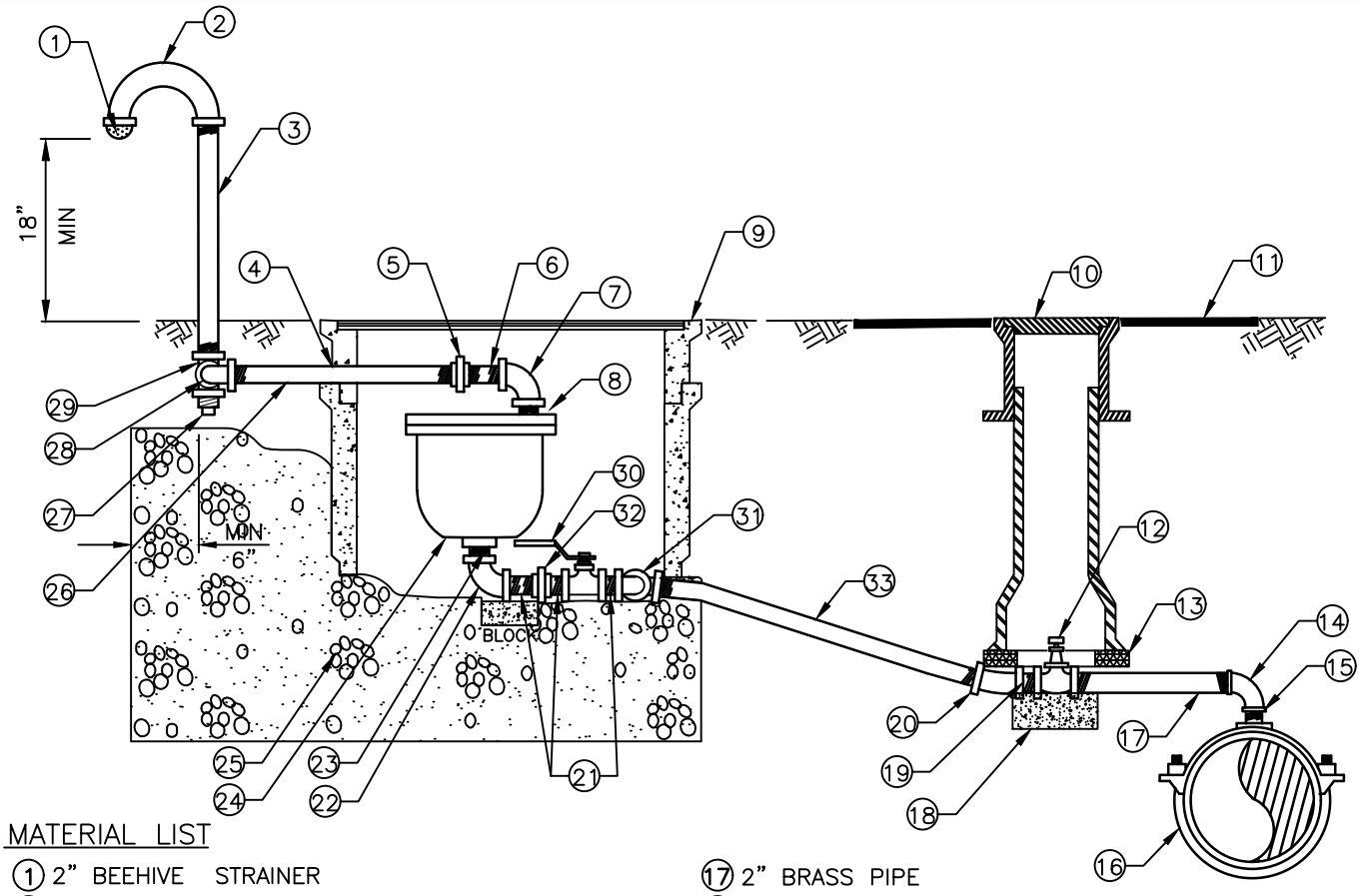
1. AIR AND VACUUM RELEASE VALVE ASSEMBLY SHALL BE INSTALLED AT THE HIGHEST POINT OF LINE. IF HIGH POINT FALLS IN A LOCATION WHERE ASSEMBLY CANNOT BE INSTALLED, PROVIDE ADDITIONAL DEPTH OF LINE TO CREATE HIGH POINT AT A LOCATION WHERE ASSEMBLY CAN BE INSTALLED.
2. THE 2" STANDPIPE ABOVE GROUND SHALL BE COATED WITH TWO COATS OF KELLY–MOORE "SAFETY YELLOW" INDUSTRIAL ENAMEL.
3. THE 1" BRASS AND COPPER TUBING SHALL BE INSTALLED IN POLYETHYLENE WRAP FOR A MINIMUM OF 3 FEET FROM WATER MAIN.
4. ALL MATERIALS TO BE LEAD FREE.

CROSS VALLEY WATER DISTRICT STANDARD WATER DETAILS

1" AIR & VACUUM RELEASE VALVE ASSEMBLY

WD–13	NOT TO SCALE	SEP 2022

FILE NAME: L:\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-13.DWG



MATERIAL LIST

1. 2" BEEHIVE STRAINER
2. 2" OPEN PATTERN, RETURN BEND
3. 2" GALVANIZED IRON PIPE FIELD LOCATE
4. CUT OPENING AS REQUIRED, AFTER INSTALLATION, GROUT AROUND PIPE
5. 2" BRASS UNION
6. BRASS SHORT NIPPLE
7. 2"–90° BRASS ELBOW
8. 2" BRASS CLOSE NIPPLE
9. METER BOX: OLDCASTLE/CARSON HDPE 1730MSBC W/18" BODY PEDESTRIAN ONLY
10. TWO PIECE CAST IRON VALVE BOX 18" TOP, BOTTOM LENGTH AS REQUIRED, SEE DETAILS WD–11 AND WD–11A
11. 2" CLASS B ASPHALT PAD
12. 2" MUELLER A–2362 RWGV, THD x THD, WITH 2" OPERATING NUT
13. ETHAFOAM PAD UNDER VALVE BOX
14. 2"–90° BRASS BEND
15. 2" BRASS NIPPLE, M.I.P.
16. DOUBLE STRAP SERVICE STAINLESS STEEL CLAMP WITH 2" IPS TAP TO FIT. EQUAL TO ROMAC 202S
17. 2" BRASS PIPE
18. 16"x8"x4" BRICK ON COMPACTED BEDDING GRAVEL
19. 2" BRASS NIPPLE
20. 2" BRASS BEND AS REQUIRED
21. 2" BRASS PIPE TO FIT
22. 2"–90° BRASS ELBOW
23. 2" BRASS CLOSE NIPPLE
24. 2" AIR & VACUUM VALVE, SCREWED APCO NO. 1452C OR EQUAL
25. WASHED GRAVEL, PASSING 1 1/2" AND RETAINED ON 1/4" MESH
26. 2" BRASS PIPE TO FIT
27. 2" BRASS PLUG
28. 2"–90° BRASS ELBOW
29. 2"x2"x2" TEE WITH CLOSE NIPPLE BETWEEN TEE & BEND
30. 2" BRASS 1/4 TURN BALL VALVE, SCREWED EQUAL TO RED–WHITE VALVE CORP. FIG. NO. 5044F
31. 2–2"–90° BRASS BENDS WITH CLOSE NIPPLE BETWEEN BENDS
32. BRASS UNION
33. 2" BRASS PIPE

NOTES:

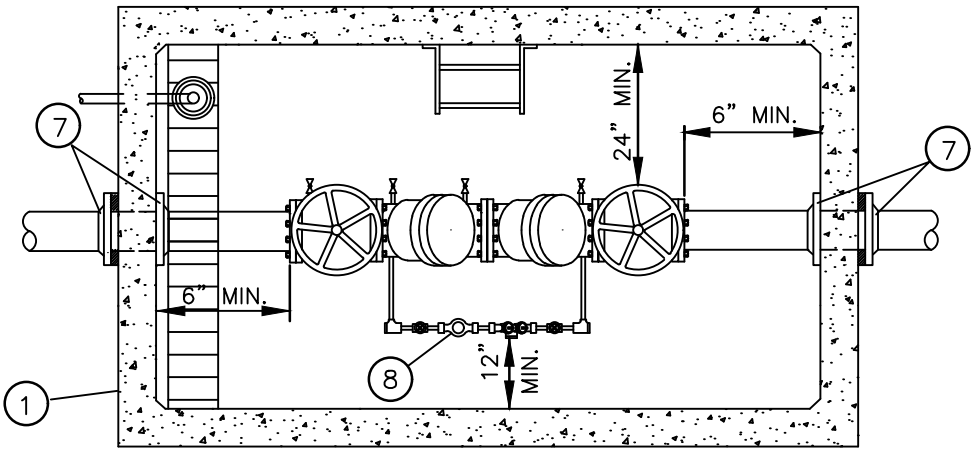
1. AIR AND VACUUM RELEASE VALVE ASSEMBLY SHALL BE INSTALLED AT THE HIGHEST POINT OF LINE. IF HIGH POINT FALLS IN A LOCATION WHERE ASSEMBLY CANNOT BE INSTALLED, PROVIDE ADDITIONAL DEPTH OF LINE TO CREATE HIGH POINT AT A LOCATION WHERE ASSEMBLY CAN BE INSTALLED.
2. THE 2" STANDPIPE ABOVE GROUND SHALL BE COATED WITH TWO COATS OF KELLY–MOORE "SAFETY YELLOW" INDUSTRIAL ENAMEL.
3. THE 2" BRASS PIPING SHALL BE INSTALLED IN POLYETHYLENE WRAP FOR A MINIMUM OF 3 FEET FROM WATER MAIN.
4. ALL MATERIALS TO BE LEAD FREE.

CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

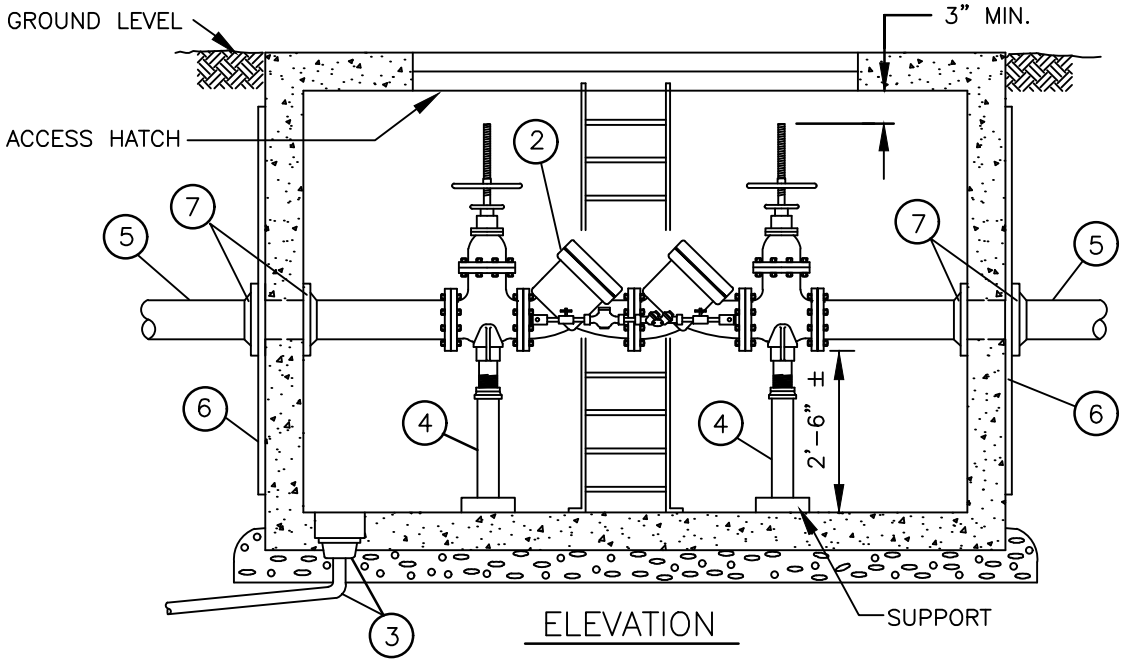
2" AIR & VACUUM RELEASE VALVE ASSEMBLY

WD–14	NOT TO SCALE	SEP 2022

FILE NAME: L:\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD–14.DWG



PLAN



ELEVATION

DEVICE SIZE	INSIDE VAULT DIMENSIONS(1)	UTIL. VAULT CO. VAULT NO.(2)	BILCO HATCH
3"	6'-6"L x 4'-2"W x 6'-0"H	577-LA	3'-6" X 3'-6" SINGLE LEAF
4"	6'-6"L x 4'-2"W x 6'-0"H	577-LA	3'-6" X 3'-6" SINGLE LEAF
6"	8'-0"L x 6'-0"W x 7'-0"H	687-LA	4'-0" X 6'-0" DOUBLE LEAF
8"	8'-0"L x 6'-0"W x 7'-0"H	687-LA	4'-0" X 6'-0" DOUBLE LEAF

1. MINIMUM INSIDE HEIGHT. ACTUAL HEIGHT MAY VARY AS SITE CONDITIONS DICTATE. PROVIDE ADJUSTING RINGS AS REQUIRED.
2. PROVIDE VAULT WITHOUT CHANNELS AND WITH KNOCK-OUTS FOR WATER PIPING ONLY.
3. HATCH SHALL BE CAST-IN-PLACE AND OFFSET IN LID AS REQUIRED TO PROVIDE ACCESS TO LADDER. HATCH SHALL BE H20 TRAFFIC LOADING RATED, SHALL DRAIN TO VAULT SUMP AND SHALL BE BILCO CO. OR APPROVED EQUAL.

SEE PAGE 15A FOR MATERIAL LIST AND NOTES.

CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

3"-8" DOUBLE CHECK DETECTOR ASSEMBLY

WD-15	NOT TO SCALE	FEB 2022

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-15.DWG

MATERIAL LIST:

1. PRECAST CONCRETE UNDERGROUND VAULT – "UTILITY VAULT COMPANY VAULT":
   SEE TABLE ON PAGE 14 FOR SIZE REQUIREMENTS.

   LADDER: HOT DIPPED GALVANIZED BOLT–ON LADDER, #6 REBAR RUNGS ON 12" CENTERS, AND MOUNTING BRACKETS TOP AND BOTTOM. PROVIDE BILCO "LADDER–UP" SAFETY POST.

   PAINTING: THE INTERIOR OF THE CONCRETE VAULT SHALL BE PAINTED AT THE VAULT MANUFACTURERS WITH ONE COAT OF STEEL COAT DAMP–TEX NO. 22 PRIMER AND TWO COATS STEEL COAT DAMP–TEX DX 110–WHITE. THE EXTERIOR BELOW GRADE SHALL BE PAINTED WITH TWO COATS OF KOOPERS BITUMASTIC BLACK SOLUTION OR EQUAL.

2. STATE APPROVED DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY.
   EPOXY COATED CAST IRON MAINLINE CASE.
   STAINLESS STEEL SPRINGS.
   BRONZE AND STAINLESS STEEL WORKING PARTS.
   CENTER ASSEMBLY IN VAULT LONGITUDINALLY.

3. SUMP PUMP OR GRAVITY DRAIN AS REQUIRED BY SITE CONDITIONS, TO BE DETERMINED BY THE DEVELOPER AND CONTRACTOR AND REVIEWED AND APPROVED BY THE DISTRICT.

   FOR SUMP PUMP: 16" DIAM. x 6" DEEP SUMP WITH HYDROMATIC OSP33 SUMP PUMP. PROVIDE ELECTRICAL POWER PER ALL APPLICABLE CODES. CONSTRUCT 1–1/4" DISCHARGE PIPING ENCASED IN G.I.P. TO NEAREST CATCH BASIN OR APPROVED LOCATION.

   FOR GRAVITY DRAIN: SUMP DRAIN, ZURN Z–551, THREADED, WITH ZURN Z–1099 BACKWATER VALVE, THREADED X NO– HUB. 4" C.I. PIPE TO 12" MIN. BEYOND VAULT EXTERIOR WALL. 4" PVC D3034 SDR35, TO DAYLIGHT OR CATCH BASIN AS REQUIRED.

4. ADJUSTABLE STEEL PIPE PIPING SUPPORTS. "STANDON", FROM MATERIAL RESOURCE, HILLSBORO, OREGON, OR EQUAL.

5. DUCTILE IRON PIPE, CLASS 53 CEMENT LINED, FL.x P.E., 4'± LONG.

6. 2"x2"x1/4" MIN. WALL THICKNESS SQUARE STEEL TUBE, 6' MIN. LENGTH, SECURED TO VAULT WALL IN FOUR PLACES WITH STAINLESS STEEL ANCHOR BOLTS.

7. UNI–FLANGE ADAPTER.

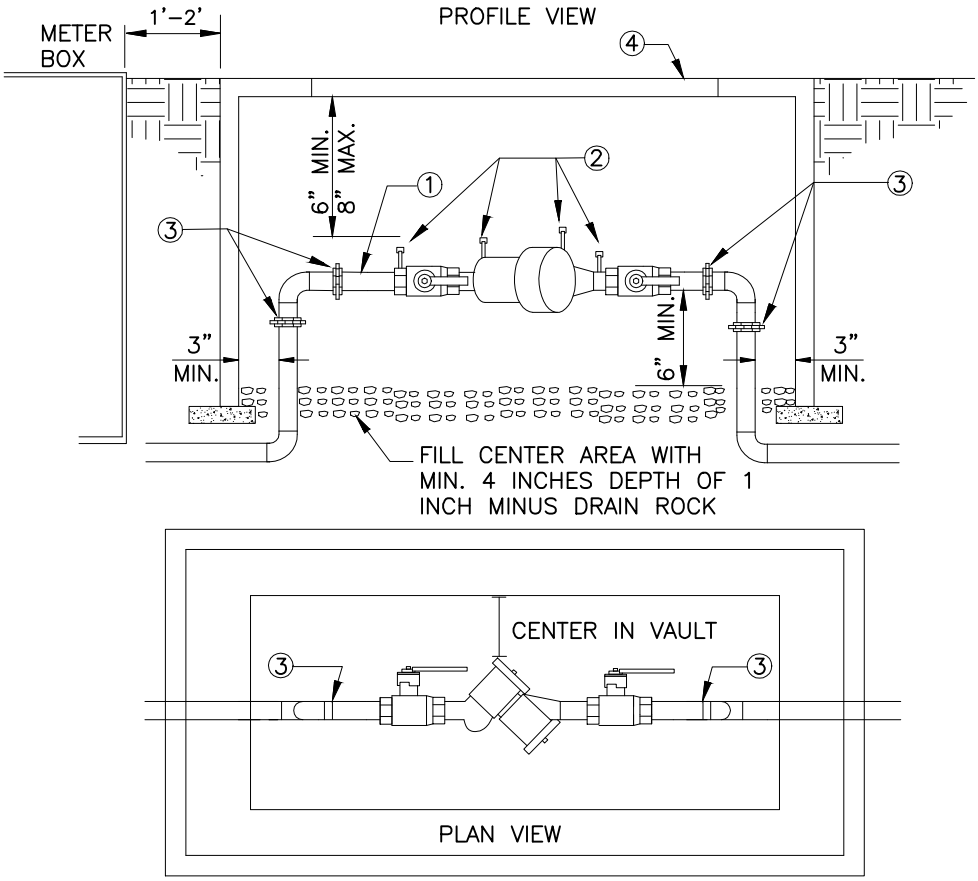
8. DISTRICT WILL PROVIDE BADGER MODEL 25 , HR–E, 1 CF , 5/8" METER WITH BEACON CELLULAR TRANSMITTER, AND WILL BILL OWNER. CONTRACTOR TO INSTALL METER.

NOTES:

1. PROVIDE SHOP DRAWINGS AND SUBMITTALS FOR ALL MATERIALS AND EQUIPMENT TO CROSS VALLEY WATER DISTRICT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
2. SEE PAGE 15 FOR ELEVATION AND PLAN VIEWS.

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-15.DWG

CROSS VALLEY WATER DISTRICT STANDARD WATER DETAILS	3"–8" DOUBLE CHECK DETECTOR ASSEMBLY		
	WD–15A	NOT TO SCALE	FEB 2022



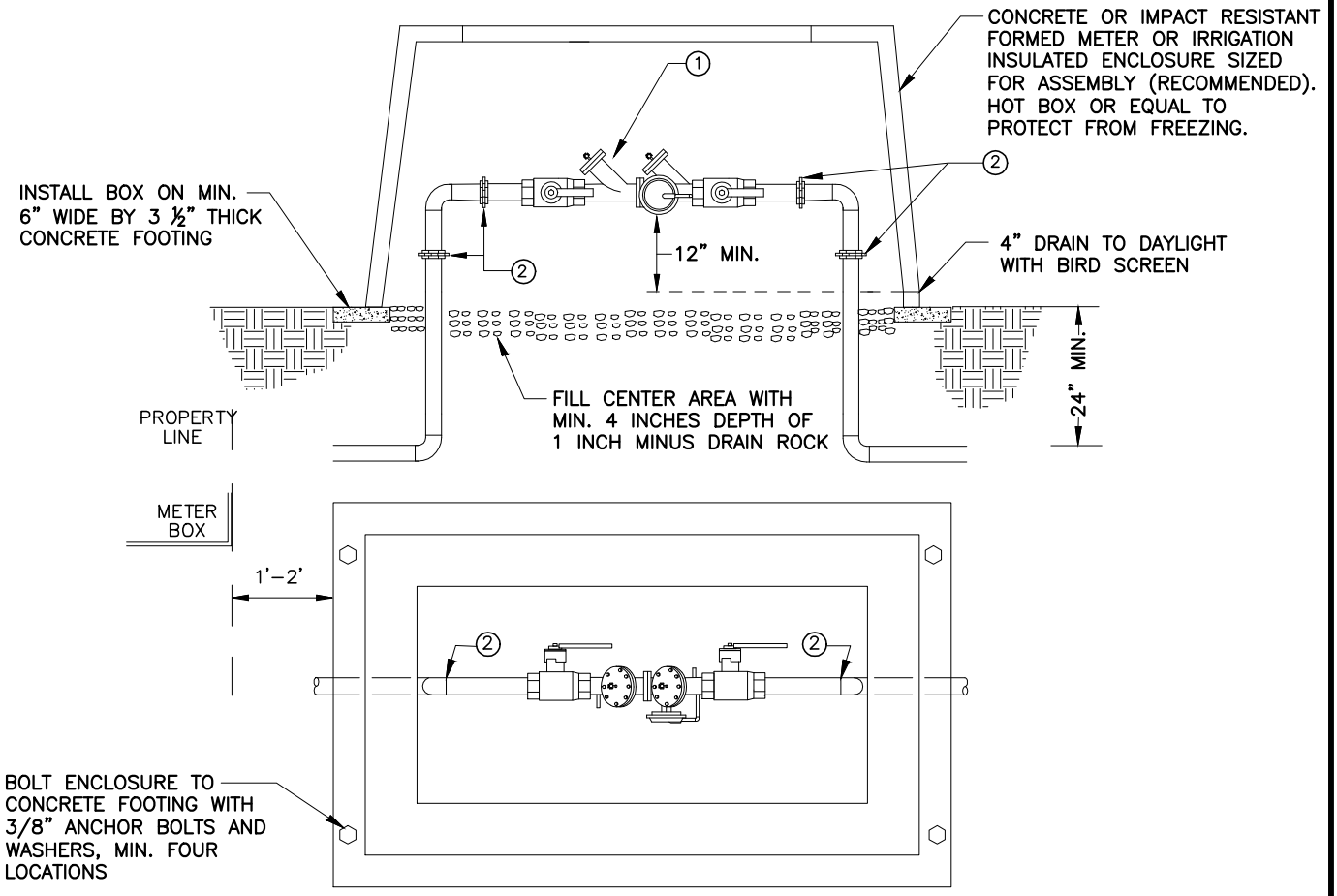
* DCVA–BOX SHALL BE LOCATED IMMEDIATELY DOWNSTREAM OF WATER METER BOX PRIOR TO AND BRANCH CONNECTIONS. WITH NO MORE THAN 1'–2' BETWEEN BOXES.

NOTES:

1. PIPING FROM METER TO DCVA SHALL BE COPPER, BRASS, OR POLY TUBING.
2. THE INSTALLER OR DEVELOPER MUST PROVIDE TEST COCK PROTECTION WITH PLUGS, CAPS OR COVERS. TEST COCKS MUST BE POINTED UP.
3. UNIONS MUST BE INSTALLED VERTICALLY OR HORIZONTALLY. DIELECTRIC UNIONS MUST BE USED TO SEPARATE DISSIMILAR MATERIALS.
4. PERMANENT ASSEMBLY SHALL BE INSTALLED BELOW GROUND WITH LID ADJUSTED TO FINISHED GRADE AND IN AN APPROVED BOX LARGE ENOUGH TO ACCOMMODATE BACKFLOW INSTALLATION AS ILLUSTRATED AND LARGE ENOUGH TO ACCESS, TEST AND MAINTAIN ASSEMBLY.
5. BACKFLOW ASSEMBLIES MUST BE SELECTED FROM WASHINGTON STATE DEPARTMENT OF HEALTH LIST OF BACKFLOW ASSEMBLIES APPROVED FOR INSTALLATION IN WASHINGTON STATE.
6. AFTER INSTALLATION OF THE BACKFLOW ASSEMBLY, THE DEVELOPER OR INSTALLER WILL CALL THE DISTRICT FOR AN INSPECTION BY A DISTRICT CROSS–CONNECTION CONTROL SPECIALIST.
7. FOLLOWING AN INSPECTION APPROVAL BY THE DISTRICT, THE BACKFLOW ASSEMBLY MUST BE SCHEDULED FOR AN INITIAL TEST BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. THE INITIAL TEST OF THE BACKFLOW ASSEMBLY MAY BE OBSERVED BY A DISTRICT CROSS–CONNECTION CONTROL SPECIALIST. THE METER MUST BE INSTALLED PRIOR TO THE INITIAL TEST.
8. DCVA MUST BE PURCHASED AND INSTALLED AS A UNIT. NO MODIFICATIONS TO ANY PART OF THE ASSEMBLY ARE ALLOWED.
9. FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER AND SHALL NOT INTERFERE WITH OPERATION OR TESTING OF THE ASSEMBLY.
10. BOX MUST BE LARGE ENOUGH FOR ASSEMBLY, UNIONS AND ALL REQUIRED CLEARANCES.

CROSS VALLEY WATER DISTRICT STANDARD WATER DETAILS	DOUBLE CHECK VALVE ASSEMBLY (3/4" – 2" ASSEMBLIES)		
	WD–16	NOT TO SCALE	FEB 2022

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-16.DWG



RPBA ABOVE GROUND INSTALLATION

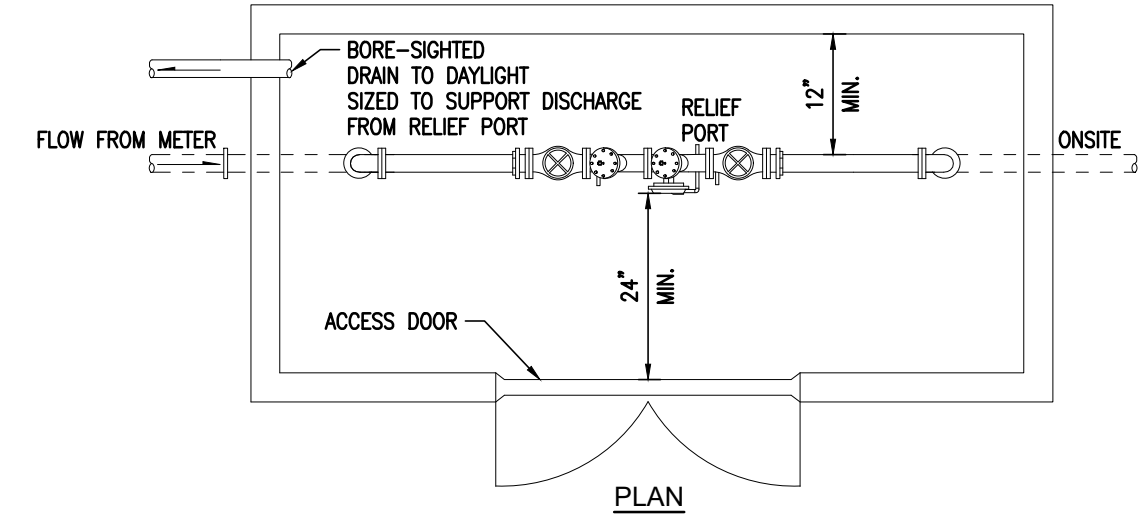
* RPBA-ENCLOSURE SHALL BE LOCATED IMMEDIATELY DOWNSREAM OF WATER METER BOX PRIOR TO ANY BRANCH CONNECTIONS, WITH NO MORE THAN 1'-2' BETWEEN BOXES. HOT BOX OR EQUAL FOR FREEZE PROTECTION.

NOTES:

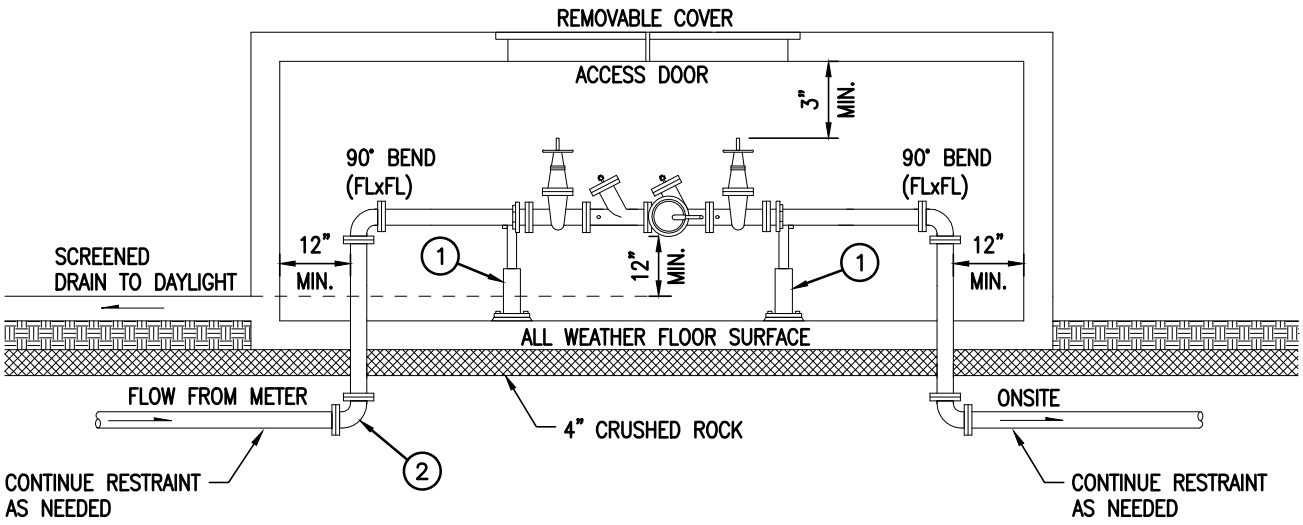
1. BACKFLOW ASSEMBLIES MUST BE SELECTED FROM WASHINGTON STATE DEPARTMENT OF HEALTH LIST OF BACKFLOW ASSEMBLIES APPROVED FOR INSTALLATION IN WASHINGTON STATE.
2. UNIONS MUST BE INSTALLED VERTICALLY OR HORIZONTALLY.
3. DIELECTRIC UNIONS MUST BE USED TO SEPARATE DISSIMILAR MATERIALS.
4. AFTER INSTALLATION OF BACKFLOW ASSEMBLY, THE CONTRACTOR OR INSTALLER WILL CALL THE DISTRICT FOR AN INSPECTION BY A DISTRICT CROSS-CONNECTION CONTROL SPECIALIST.
5. RPBA MUST BE PURCHASED AND INSTALLED AS A UNIT. NO MODIFICATIONS TO ANY PART OF THE ASSEMBLY ARE ALLOWED.
6. FREEZE PROTECTION IS THE REPONSIBILITY OF THE OWNER AND SHALL NOT INTERFERE WITH OPERATION OR TESTING OF THE ASSEMBLY.
7. FOLLOWING AN INSPECTION APPROVAL BY THE DISTRICT, THE BACKFLOW ASSEMBLY MUST BE SCHEDULED FOR AN INITIAL TEST BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. THE INITIAL TEST OF THE BACKFLOW ASSEMBLY MAY BE OBSERVED BY A DISTRICT CROSS-CONNECTION CONTROL SPECIALIST. METER MUST BE INSTALLED PRIOR TO TESTING.
8. PIPING FROM METER TO RPBA SHALL BE COPPER, **BRASS, OR POLY TUBING.**
9. THE INSTALLER/DEVELOPER MUST PROVIDE TEST COCK PROTECTION WITH PLUGS, CAPS OR COVERS.
10. MINIMUM 12" GAP FROM BOTTOM OF RELIEF PORT TO TOP OF DAYLIGHT DRAIN.

CROSS VALLEY WATER DISTRICT STANDARD WATER DETAILS	REDUCED PRESSURE BACKFLOW ASSEMBLY (3/4" – 2" ASSEMBLIES)		
	WD-17	NOT TO SCALE	FEB 2022

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-17.DWG



PLAN



NOTES:

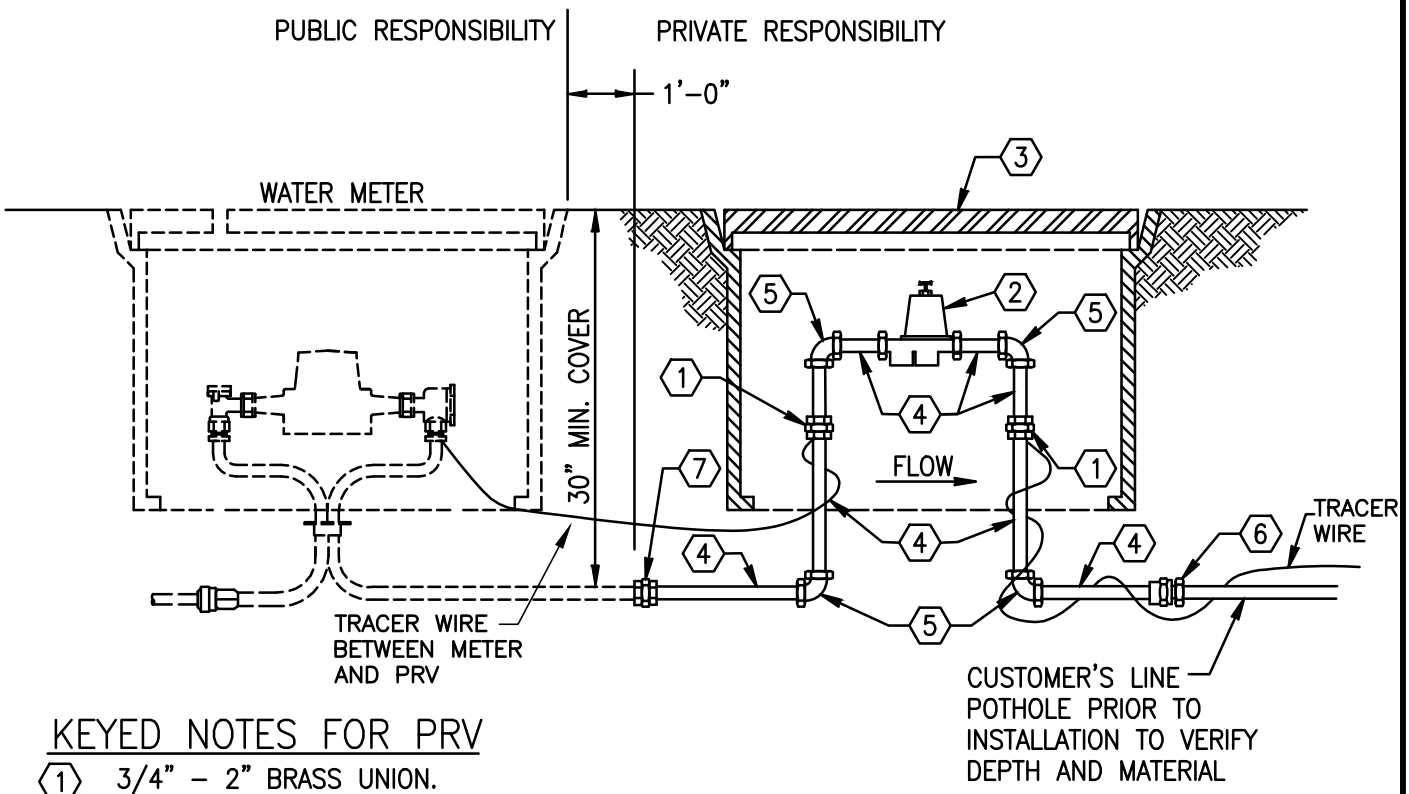
1. ADJUSTABLE PIPE SUPPORT, STANDON MODEL S-89 OR EQUAL & SHALL BE BOLTED TO THE VALVE FLANGE.
2. USING 90° ELBOWS ON BOTH SIDES OF RPBA, ALL FITTINGS SHALL BE FLANGED OR RESTRAINED.
3. AFTER INSTALLATION OF BACKFLOW ASSEMBLY, THE CONTRACTOR OR INSTALLER WILL CALL THE DISTRICT FOR AN INSPECTION BY A DISTRICT CROSS-CONNECTION CONTROL SPECIALIST.
4. FOLLOWING AN INSPECTION APPROVAL BY THE DISTRICT, THE BACKFLOW ASSEMBLY MUST BE SCHEDULED FOR AN INITIAL TEST BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. THE INITIAL TEST OF THE BACKFLOW ASSEMBLY MAY BE OBSERVED BY A CROSS-CONNECTION CONTROL SPECIALIST FROM THE DISTRICT. METER MUST BE INSTALLED PRIOR TO INITIAL TEST.
5. BACKFLOW ASSEMBLIES MUST BE SELECTED FROM WASHINGTON STATE DEPARTMENT OF HEALTH LIST OF BACKFLOW ASSEMBLIES APPROVED FOR INSTALLATION IN WASHINGTON STATE.
6. RPBA MUST BE PURCHASED AND INSTALLED AS A UNIT. NO MODIFICATIONS TO ANY PART OF THE ASSEMBLY ARE ALLOWED.
7. FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER AND SHALL NOT INTERFERE WITH OPERATION OR TESTING OF THE ASSEMBLY.
8. MUST MAINTAIN 12" MINIMUM AIR GAP FROM BOTTOM OF RELIEF PORT TO TOP OF DAYLIGHT DRAIN.

CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

REDUCED PRESSURE BACKFLOW ASSEMBLY (3" AND LARGER)

WD-18	NOT TO SCALE	FEB 2022

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-18.DWG



KEYED NOTES FOR PRV

1. 3/4" – 2" BRASS UNION.
2. PRESSURE REDUCING VALVE W/ STRAINER – 3/4" – 2" WITH UNION COUPLING ON THE INLET; EQUAL TO: ZURN NR3XL (HRSC–HIGH RANGE 15–150PSI)
3. MID–STATES HDPE METER BOX SIZED TO FIT w/ FULL PLASTIC LID; OR TRAFFIC RATED BOX IN PAVED AREAS
4. 3/4" – 2" BRASS NIPPLE LENGTH AS REQ'D.
5. 3/4" – 2" 90° BEND (FIP) BRASS.
6. CONNECTION TO CUSTOMER'S LINE SHALL BE BRASS AND SIMILAR MATERIAL TO THAT ON CUSTOMER'S SIDE. NO NYLON, PLASTIC, OR GALVANIZED FITTINGS ALLOWED.
7. 3/4" – 2" BRASS DIELECTRIC UNION.
8. CONTRACTOR TO TAKE PRE & POST CONSTRUCTION PRESSURE AT CUSTOMER'S BUILDING AND SET PRESSURE TO PRE CONSTRUCTION LEVEL. CONTRACTOR TO DOCUMENT AND PROVIDE INFORMATION TO THE DISTRICT.

INSTALLATION

THE PRESSURE REDUCING VALVE SHALL BE LOCATED "DOWNSTREAM" OF THE METER. RESPONSIBILITY FOR PROPER INSTALLATION SHALL BE THAT OF THE CONTRACTOR, AND OPERATION OF THE VALVE SHALL BE THAT OF THE PROPERTY OWNER.

NOTE:

FOR PRESSURE REDUCING VALVES LARGER THAN 2" CONTACT THE DISTRICT FOR INFORMATION REGARDING APPROVED PACKAGED SYSTEMS.

CROSS VALLEY WATER DISTRICT
STANDARD WATER DETAILS

PRESSURE REDUCING VALVE
3/4"–2"

WD–19	NOT TO SCALE	FEB 2022

FILE NAME: \\K-FS1\LIBRARY\CAD\DETAILS\DISTRICTS\CROSS VALLEY WATER DISTRICT\WD-19.DWG

Cross Valley Water District
Water Main Break Response SOP
For Chlorinated and Non-Chlorinated

Water Main Breaks

The District provides both Chlorinated and Non-Chlorinated water within the distribution system that is separated by control valves due to the district's vast topography. In the event of a main break it is extremely important to know where in the system the break is occurring in relationship to the type of distribution supply and follow the correct procedures. The District performs main break repairs under pressure when repair bands can be used and throttles valves to slow the velocity but keep water flowing from the break to prevent contamination entry and keep positive pressure. The District aggressively enforces the Cross Connection Program to ensure water quality with premise isolation.

Water Main Break Categories

The water industry has recognized a need to classify water main breaks in terms of public health significance.

Table 1: Main Break Categories

Type I Break	Type II Break	Type III Break	Type IV Break
Positive pressure maintained during break	Controlled pipe repair with limited depressurization after shutdown	Loss of pressure at break site or depressurization elsewhere in the system	Catastrophic main break / water loss event resulting in complete loss of water service
Pressure maintained in pipe during repair	Pressure maintained at break site until pipe exposed & hole dewatered, shutdown limited to immediate valved off area, no loss of pressure elsewhere in system	Loss of pressure at the break site while the pipe is still buried or submerged and /or pressure loss elsewhere in the system	Water loss is extensive compared to system capacity, resulting in no pressure/ no water. Storage loss leaves limited flushing capacity.
Unlikely contamination intrusion	Limited possibility of contamination intrusion	Possible / actual contamination intrusion	Possible / actual contamination intrusion

Water Main Response Procedures

Listed below are water main break repair and response protocols for each of the four break categories.

Type I Main Break Procedures

Response Procedures	
Chlorinated	**Non-Chlorinated**
Assess environmental impacts - respond accordingly	Assess environmental impacts - respond accordingly
Call Washington 811	Call Washington 811
Excavate to below break	Excavate to below break
Maintain pit water level below break	Maintain pit water level below break
Disinfect repair parts, swab or spray repair site w/1% chlorine solution.	Disinfect repair parts, swab or spray repair site w/1% chlorine solution.
Make repair with pipe still pressurized	Make repair with pipe still pressurized
Chlorinated - Restore residual disinfectant level at the break to background levels by flushing.	Unchlorinated – Flush and take Cl_2 readings to assure all chlorine residual is dispersed.
No Boil Water Advisory (BWA)	Flush individual service lines in the affected area of the repair
No bacteriological samples	No Boil Water Advisory (BWA)
	No bacteriological samples

Type II Main Break Procedures

Response Procedures	
Chlorinated	**Non-Chlorinated**
Assess environmental impacts - respond accordingly	Assess environmental impacts - respond accordingly
Call Washington 811	Call Washington 811
Excavate to below break	Excavate to below break
Maintain pit water level below break	Maintain pit water level below break
Isolate / shut off customer services in affected area if needed	Isolate / shut off customer services in affected area if needed
Provide customer notification - door hanger, personal contact, email	Provide customer notification - door hanger, personal contact, email
Controlled shutdown (Isolation by turning valves)	Controlled shutdown (Isolation by turning valves)
Disinfect repair parts, swab or spray repair site w/1% chlorine solution (If pipe replacement - disinfect from both ends by swabbing)	Disinfect repair parts, swab or spray repair site w/1% chlorine solution (If pipe replacement - disinfect from both ends by swabbing)
Make repair	Make repair
Conduct low velocity flush to displace water in affected piping - discharge to waste	Conduct low velocity flush to displace water in affected piping - discharge to waste
Chlorinated - Restore residual disinfectant level at the break to background levels by flushing.	Unchlorinated – Flush and take Cl_2 readings to assure all chlorine residual is dispersed
Instruct customers to flush premise plumbing upon return to service. Verify service restored to all isolated customers.	Flush individual service lines in the affected area of the repair
No Boil Water Advisory (BWA) for impacted customers or water system	Instruct customers to flush premise plumbing upon return to service. Verify service restored to all isolated customers.
	No Boil Water Advisory (BWA) for impacted customers or water system
Recommendation Only: *collect investigative bacteriological samples to validate repair procedures - service may be restored prior to obtaining results.*	

Type III Main Break Procedures

Response Procedures	
Assess environmental impacts - respond accordingly	
Call Washington 811	
Provide generic water main break notification and customer response steps on Utility website asap (or directly to customers)	
Evaluate possible contamination including consideration of CCC Program	
Call DOH and local health jurisdiction - decide appropriate public notification message / methods	
Issue BWA - Update Utility website (System wide or pressure zone specific). Loss of water pressure may impact firefighting abilities and may have sanitation related impacts that should be considered.	
Isolate / shut-off customer services at the break site (if practical).	
Disinfect repair parts, swab or spray repair site w/1% chlorine solution. (Refer AWWA Std C651 Section 4.11)	
Make repair	
Post repair disinfection may be needed if an uncontrolled break has allowed contamination to enter the system. (Refer to AWWA Std C651 Sections 4.11.3.3)	
Conduct scour flush (3 ft/sec) to remove any break-related sediment.	
Conduct low velocity flush throughout the widespread area subject to low pressures to displace water and to restore background chlorine residual.	
<u>CHLORINATED -</u> Restore residual disinfectant level at the break to background levels	**<u>UNCHLORINATED</u> – Flush surrounding the break and take Cl_2 readings to assure all chlorine residual is dispersed.** **Flush individual service lines in the affected area of repair.**
Check residual disinfectant level throughout the distribution system	
Instruct customers to flush premise plumbing upon return to service	
Collect bacteriological samples to verify the effectiveness of the response and to provide basis for lifting targeted advisories. (More samples may be warranted based on water system size or size of impacted area and distribution supply).	
Rescind BWA/Boil Water Order based on water quality monitoring results. ***(Possible 24 hour BWA?)***	

Type IV Main Break Procedures

Response Procedures
Response to a Type IV break / event will be the same as Type III response procedures with additional emphasis on the following:
Supply Distribution – Chlorinated or Non-Chlorinated supply
Assess Utility capacity to deal with event - seek aid sooner **rather** than later!
Significant depletion of storage tank reserves could affect fire flow capability - **fire fighters should be notified**
Storage tank depletion may also impact ability to adequately flush the distribution system following repairs leading in (to?) delays to fully restoring water service and lifting the BWA.
Conservation messages may therefore need to be included with BWA notification.